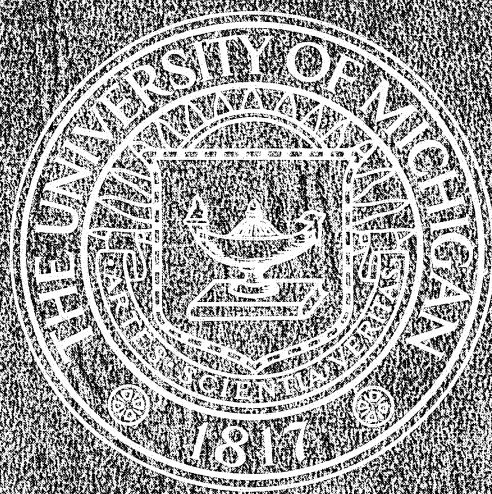


THE UNIVERSITY OF MICHIGAN

Department of Pathology

ANNUAL REPORT



1 July 1986-30 June 1987

**THE UNIVERSITY OF MICHIGAN**

**Department of Pathology**

**ANNUAL REPORT**



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## **LIST OF FACULTY**

## LIST OF FACULTY

<u>Name</u>	<u>Rank</u>	<u>Institutional Affiliation</u>
Abell, Murray R.	Professor Emeritus	The University of Michigan
Abrams, Gerald D.	Professor and Director, Anatomic Pathology	The University of Michigan
Annesley, Thomas M.	Assistant Professor	The University of Michigan
Appelman, Henry, D.	Professor	The University of Michigan
Barnes, Barbara A.	Assistant Professor	The University of Michigan
Barr Jr., Mason <sup>+</sup>	Professor	The University of Michigan
Beals, Theodore F.	Assistant Professor	Veterans Administration Medical Center
Blaivas, Mila I.	Clinical Assistant Professor	The University of Michigan
Burkholder, Peter M.	Professor	Veterans Administration Medical Center
Capps, Rodney D.	Assistant Professor	The University of Michigan
Courtney, Richard M.*	Assistant Professor	The University of Michigan
D'Amato, Constance J.	Assistant Professor	The University of Michigan
de la Iglesia, Felix**	Adjunct Research Scientist	Warner-Lambert; Parke Davis
Dixit, Vishva M.	Assistant Professor	The University of Michigan
England, Barry G.	Associate Professor	The University of Michigan
Fantone, Joseph C.	Associate Professor	The University of Michigan
Flint, Andrew	Assistant Professor	The University of Michigan
Friedman, Bruce A.	Professor	The University of Michigan
Giacherio, Donald	Assistant Professor	The University of Michigan
Gikas, Paul W.	Professor	The University of Michigan



<u>Name</u>	<u>Rank</u>	<u>Institutional Affiliation</u>
Gluck, Sandra C.	Instructor	The University of Michigan
Hanks, Carl T.*	Associate Professor	The University of Michigan
Headington, John T.	Professor	The University of Michigan
Heidelberger, Kathleen P.	Professor	The University of Michigan
Hendrix, Robert C.	Professor Emeritus	The University of Michigan
Hicks, Samuel P.	Professor	The University of Michigan
Hinerman, Dorin L.	Professor Emeritus	The University of Michigan
Hudson, Jerry L.	Assistant Professor	The University of Michigan
Johnson, Kent J.	Associate Professor	The University of Michigan
Judd, W. John	Associate Professor	The University of Michigan
Keren, David F.	Associate Professor	The University of Michigan
Kincaid, Marilyn C. <sup>++</sup>	Assistant Professor	The University of Michigan
Kunkel, Steven L.	Associate Professor	The University of Michigan
Lloyd, Ricardo V.	Associate Professor	The University of Michigan
Marasco, Wayne	Research Investigator	The University of Michigan
McClatchey, Kenneth D.	Associate Professor, Associate Chairman, Director, Clinical Laboratories	The University of Michigan
McKeever, Paul E.	Associate Professor	The University of Michigan
Midgley, A. Rees*	Professor	The University of Michigan
Naylor, Bernard	Professor	The University of Michigan
Oberman, Harold A.	Professor and Associate Director, Clinical Laboratories	The University of Michigan
Phan, Sem H.	Associate Professor	The University of Michigan

<u>Name</u>	<u>Rank</u>	<u>Institutional Affiliation</u>
Pierson, Carl L.	Assistant Professor	The University of Michigan
Regezi, Joseph A.*	Associate Professor	The University of Michigan
Remick, Daniel G.	Instructor	The University of Michigan
Robinson, J. Paul	Research Scientist	The University of Michigan
Rowe, Nathaniel H.*	Professor	The University of Michigan
Schmidt, Robert W.	Professor	The University of Michigan
Schnitzer, Bertram	Professor	The University of Michigan
Shope, Thomas C.†	Associate Professor	The University of Michigan
Silverman, Eugene M.	Clinical Associate Professor	The University of Michigan
Smolen, James E.†	Associate Professor	The University of Michigan
Stoolman, Lloyd	Assistant Professor	The University of Michigan
Till, Gerd O.	Associate Professor	The University of Michigan
Varani, James	Associate Professor	The University of Michigan
Ward, Peter A.	Professor and Chairman	The University of Michigan
Weatherbee, Lee	Associate Professor	Veterans Administration Medical Center
Wolter, J. Reimer††	Professor	The University of Michigan

\* Joint Appointment, Dental School

\*\* Clinical Appointment, Warner-Lambert, Parke Davis

+ Joint Appointment, Department of Pediatrics and Communicable Diseases

†† Joint Appointment, Department of Ophthalmology



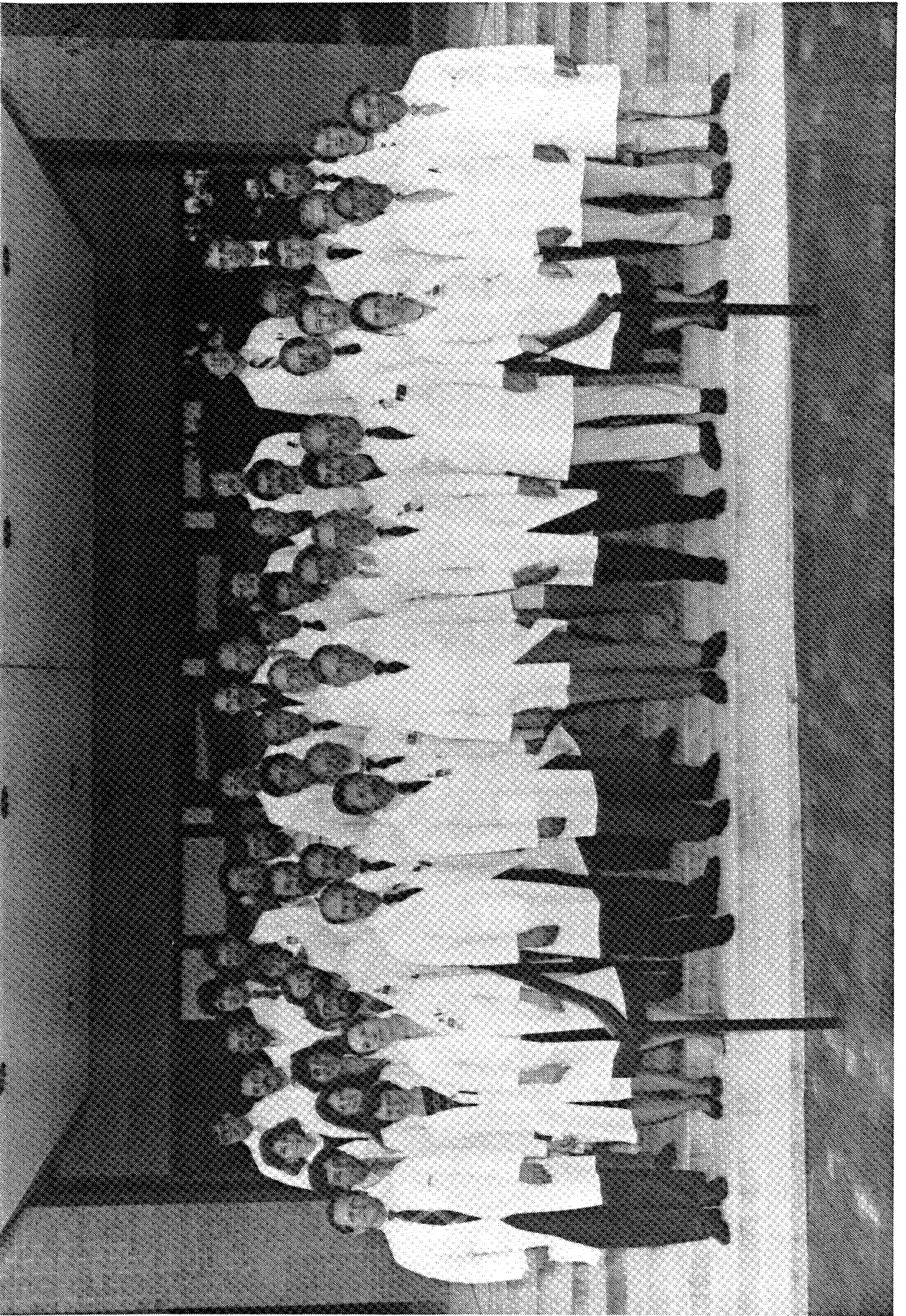
**NEWLY APPOINTED FACULTY DURING FISCAL YEAR 1987**

<b><u>Name</u></b>	<b><u>Rank</u></b>	<b><u>Former Institution</u></b>
Bonadio, Jeffrey F.	Assistant Professor	University of Washington
Chensue, Stephen	Assistant Professor*	University of Michigan
Hanson, Curtis J.	Assistant Professor	University of Minnesota
Killen, Paul D.	Assistant Professor	NIDR-Bethesda, Maryland
Lowe, John B.	Assistant Professor	Washington University
Nickoloff, Brian J.	Assistant Professor	Stanford University
Remick, Daniel G.	Instructor	University of Michigan

\*Veterans Administration Medical Center

**FACULTY PROMOTIONS DURING FISCAL YEAR 1987**

<b><u>Name</u></b>	<b><u>Former Position</u></b>	<b><u>New Position</u></b>
Flint, Andrew	Assistant Professor	Associate Professor
Keren, David F.	Associate Professor	Professor
Phan, Sem H.	Associate Professor	Granted Tenure
Warren, Jeffrey S.	Postdoctoral Fellow	Instructor





## OVERVIEW

## DEPARTMENTAL OVERVIEW

This is the completion of the seventh year of current leadership in the Department of Pathology since the retirement of Dr. A. James French. In this period of time there have been many important developments, new initiatives, program changes, and a continuous process of faculty recruitment. The Department has responded to a large number of changes driven both by internal forces as well as external pressures which emanate chiefly from changes in health care delivery and reimbursement. The continuing success of the M-Labs program and the development of a new clinical faculty sequence to accommodate to the changing environment of health care delivery are important indicators of our ability to respond to various demands.

In the Winter of 1986/87 the Internal Review Committee for the Department of Pathology completed its report and made a series of recommendations. The report was made available to all faculty members and was the basis for a faculty retreat at the Inglis House in early June, 1987. The review identified a series of concerns that required attention. These concerns were dealt with either before, during, and after the retreat. Resulting major initiatives include: (a) a clear (and revised) definition of Departmental Administrative structure; (b) changes to improve communication between the Chairman's office and the Department; (c) revision of the Residency Training Program to strengthen it and make it more flexible to the needs of residents (including the reinstatement of four residency slots which will improve the educational environment of the program and will be funded by the Department of Pathology MSP); (d) changes in the Autopsy Service in order to bring about improvements in the service as well as the educational component of this important clinical activity; (e) attention to the increasing volume of service demands by the recruitment in July, 1987, of Dr. Curtis Hanson (see below) and the initiation of recruitment efforts for expansion of faculty positions in Anatomic (Surgical) Pathology and Clinical Pathology (Blood Banking).

During the academic year of 1986/87, the clinical sequence was instituted. The presence of this sequence acknowledges the important role of faculty (at both the M.D. and Ph.D. levels) who have substantial service responsibilities related to the Clinical Laboratories, the off-site clinics, the M-Care HMO, and the extramural medical facilities with which we have continuing professional obligations requiring frequent travel by faculty. The clinical sequence is restricted to a small number of faculty in the Department of Pathology with these special service obligations. Availability of the clinical sequence will permit us to reward faculty members whose service responsibilities require that they devote the majority of their time to clinical functions at both intramural and extramural sites.

The past few months have also witnessed the discontinuance of the Medical Technology Teaching and Training Program. This program was initiated in the 1940's and had a long, distinguished record in the training of Medical Technicians, many of whom accepted staff positions in the University Hospitals.

With regard to the service activities of the Department, in February we completed a service contract agreement with University Hospitals for a four year period (dating from July 1, 1986). This represents an immensely important achievement for the Department and for the University Hospitals, since it provides a sustained period of stability which will assure the smooth functioning of the clinical laboratories. The agreement is quite different from prior ones in that there is an incentive program requiring some reductions in revenue transfers to the Department but the agreement allows the Department of Pathology to offset these financial changes with incentive payments related to extramural laboratory business and by cost reductions in the current laboratory operations. The agreement with the Hospitals represents a partnership between the Department of Pathology and the University Hospitals. Already apparent from this relationship is the increasing success of the M-Labs, the upgrading and expansion of the Laboratory Computer System throughout the University Hospitals, the development of a directed-blood donor program, an upcoming operations review of the Clinical Laboratories, and final arrangements for laboratory functions at the off-site clinics. As a recognition of the continuously expanding volume of both anatomic (surgical) pathology and clinical (laboratory) pathology activities, the Department has recruited Dr. Curtis Hanson, who arrived July 1, 1987, from the University of Minnesota, and assumes function as Director of the Clinical Flow Cytometry Laboratory. In addition, he will have responsibilities in the Hematopathology Laboratory. The Department has also initiated recruitment for two service slots: general surgical pathology and an Assistant Director of the Blood Bank. Over the past several months the Clinical Immunology Laboratory, which is under Dr. Keren's supervision, now has the additional sign-out support of Dr. Jeffrey Warren and Dr. John Lowe. These personnel changes should improve our ability to meet the recent clinical service demands of the Department. It might also be noted that two important administrative changes in the Laboratories have been made: Dr. Kenneth D. McClatchey assumed the position as Director of the Division of Clinical Pathology. Dr. Harold Oberman now functions as Co-Director of the Division and the Laboratories in addition to his continuing role as Director of the Blood Bank. Dr. Daniel Remick has been appointed Director of the Autopsy Service (with Dr. Paul Gikas functioning as Co-Director) and has already begun to initiate changes in that service.

Educational programs in the Department continue to undergo change. Dr. Joseph Fantone is Director of the Undergraduate Medical Program in the Department of Pathology. He has devoted a substantial amount of time to monitor the quality of lectures presented to students, has modified scheduling to provide the smoothest and the most comprehensible format for the lectures, has carefully analyzed the

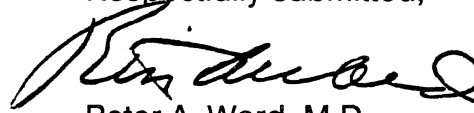
advantages and shortcomings of establishing a post-sophomore medical student preceptorship in Pathology, and has taken the leadership to develop a graduate level course in Pathology that will accommodate the needs of graduate students. As indicated above, other important changes in educational programs include substantial restructuring of the Residency Training Program resulting in block-type assignments of residents to Anatomic Pathology or Clinical Pathology with no crossing-over of assignments and call schedules during these blocks of time. Dr. Andrew Flint has accepted assignment as Coordinator of the Residency Training Program. In this position he represents a faculty member with close ties to the residents, being almost available, and he plays an important day-to-day role in coordinating recruitment of residents, clinical assignments of house officers, quarterly evaluations of residents, to name just a few of his duties.

**Research** programs in the Department continue to show continuous growth and productivity. The amount of grant support by the faculty is impressive as is the scholarly productivity as evidenced by publications and frequent invitations to faculty for participation in national and international symposia ranging from clinical forums to the most basic of investigative programs. The Department has a record number of postdoctoral fellows, 12 in the 1986/87 academic year. In each case these individuals bring their own support or are funded by research grants held by faculty members of the Department. Another important achievement has been the recruitment of four experts in the area of molecular biology/genetics during the academic year. Dr. Vishva Dixit, from Washington University (St. Louis), trained in Clinical Pathology, and is involved in the definition of biological and biochemical properties of the adhesive glycoprotein thrombospondin; Dr. John Lowe, also from Washington University (St. Louis), trained in Clinical Pathology, has been recruited under the aegis of the University of Michigan Howard Hughes Medical Institute, and works on the regulation of glycosylation of membrane proteins; Dr. Jeffrey Bonadio, from the University of Washington (Seattle), trained in Anatomic Pathology, has been recruited also under Hughes support, and studies the regulation of collagen synthesis; and Dr. Paul Killen, also from the University of Washington (Seattle) via the NIH, trained in Anatomic Pathology and is involved in the regulation and role of laminin and Type IV collagen. These young investigators represent an exciting and impressive nucleus of molecular biologists in the Department of Pathology. They are already involved in collaborations with other investigators in the Department and will be expected to have an increasing influence on the research programs of the Department as well as, ultimately, on the applications of the probes of molecular biology to clinical diseases.

All in all, the Department appears to be increasing its strengths in the areas of service, education and research. Completion of the Internal Review has provided us with the opportunity to initiate some important changes that will further strengthen our foundations. We can all take

pride in the accomplishment of the past year and look forward to continuing change and improvement in the new academic year.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Peter A. Ward", written in a cursive style.

Peter A. Ward, M.D.  
Professor and Chairman



## **FACULTY REPORTS**

**GERALD D. ABRAMS, M.D.  
PROFESSOR OF PATHOLOGY  
DIRECTOR, DIVISION OF ANATOMIC PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Surgical Pathology Services - six months.
- B. Necropsy Service - on call.
- C. Pathologist, Cardiac Transplant Team - full time.
- D. Consultant for Gastrointestinal Pathology - full time.
- E. Consultant for Cardiovascular Pathology - full time.

**II. TEACHING ACTIVITIES:**

- A. Freshman Medical Class:
  - 1. ICS 500, Sequence Coordinator and Lecturer, "Basic Concepts of Disease" - 20 contact hours.
  - 2. Histology 501 - Clinical Correlation - 1 contact hour.
- B. Sophomore Medical Class:
  - 1. ICS 600 - Clinicopathologic conferences - 8 contact hours.
  - 2. Pathology 600 - Lecture - 10 contact hours.
- C. Graduate School/Dental School/College of LS&A:
  - 1. Pathology 630 - Course Co-Director, Lecturer - 24 contact hours.
  - 2. Biology 262 - Lecturer - 2 contact hours.
- D. Hospital:
  - 1. Cardiovascular Pathology Conference - monthly.
  - 2. Internal Medicine CPC - monthly.
  - 3. Internal Medicine Necropsy Review - monthly.
  - 4. Gynecologic Pathology, Non-oncologic - monthly.
- E. House Officers:
  - 1. Training in Surgical and Necropsy Pathology.
- F. Elizabeth Crosby Award - Teaching of Basic Sciences.
- G. Sophomore Class - Excellence in Teaching Award.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Pharmacologic studies on ischemic heart (B.R. Lucchesi, Principal Investigator).

**PROJECTS UNDER STUDY:**

- A. Pathogenesis and modification of myocardial infarction (with B.R. Lucchesi et. al.).

- B. Recovery from myocardial infarction - Anatomic and functional aspects (with K. Gallagher, et. al. ).
- C. Histopathologic aspects of coronary angioplasty (with W. O'Neill et. al.).
- D. Toxicity of mitometh (with D.E.Schteingart).
- E. Natural history of myocarditis (Multi-center myocarditis study).

**IV. SERVICE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Director, Division of Anatomic Pathology, Surgical Pathology.
- B. Member, Medical Service Plan Executive Committee.

**MEDICAL SCHOOL/HOSPITAL:**

- A. Member, Academic Affairs Council, Medical School.
- B. Member, Inteflex Policy Committee, Medical School.
- C. Member, Historical Collections Committee, Medical School.
- D. Chair, Standing Committee for Investigation of Misconduct in Research, Medical School.
- E. Member, Executive Committee on Clinical Affairs, Hospital.
- F. Member, Ethics Committee, Hospital.
- G. Member, General Surgery Search Committee.

**REGIONAL AND NATIONAL:**

- A. Deputy Medical Examiner, Washtenaw County.
- B. Member, Membership Committee, Gastrointestinal Pathology Club.
- C. Member, Expert Panel, Performance Improvement Program, CAP.

**V. OTHER RELEVANT ACTIVITIES:**

- 1. International Academy of Pathology - GI Pathology Club Symposium, Chicago, Illinois, March, 1987.
- 2. Michigan Public Health Association, Mackinac Island, May, 1987.
- 3. Visiting lecturer, People's Republic of China, July 1986.
  - a. Institute of Basic Medical Sciences, Beijing.
  - b. 4th Military Medical College, Xian.
  - c. Shanghai Medical University, Shanghai.
  - d. Hubei Medical College, Wuhan.
  - e. Jinan University Medical College, Guanzhou.

**VI. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

- 1. Agha, F.P., Nostrant, T.T., Abrams, G.D., Mazanec, M., VanMoll, L., and Gumucio, J.J.: Cytomegalovirus cholangitis in a homosexual man with acquired immune deficiency syndrome. Amer. J. Gastroent. 1986;81:1068-1072.

2. Jolly, S.R., Kane, W.J., Hook, B.G., Abrams, G.D., Kunkel, S.L., and Lucchesi, B.R.: Reduction of myocardial infarct size by neutrophil depletion: Effect of duration of occlusion. *Amer. Heart J.* 1986;112:682-690.
3. Mitsos, S.E., Fantone, J.C., Gallagher, K.P., Walden, K.M., Simpson, P.J., Abrams, G.D., Schork, M.A. and Lucchesi, B.R.: Canine myocardial reperfusion injury: Protection by a free radical scavenger N-Z-mercaptopyrroline. *J. Cardiovasc. Pharmacol.* 1986;8:978-980.
4. Schweitzer, V.G., Dolan, D.F., Abrams, G.D., Davidson, T., and Snyder, R.: Amelioration of cisplatin-induced ototoxicity by fosfomycin. *Laryngoscope* 1986;96:948-958.
5. Schweitzer, V.G., Rarey, K.E., Dolan, D.F., Abrams, G.D., and Sheridan, C.: Vestibular morphological analysis of the effects of cisplatin vs. platinum analogs CBDCA (JM-8) and CHIP (JM-9). *Laryngoscope* 1986;96:959-974.
6. Susick Jr., R.L. Abrams, G.D., Zurawski, C.A., and Zannoni, V.G.: Ascorbic acid and chronic alcohol consumption in the guinea pig. *Toxicol. Appl. Pharmacol.* 1986;84:329-335.
7. Simpson, P.J., Mitsos, S.E., Ventura, A., Gallagher, K.P., Fantone, J.C., Abrams, G.D., Schork, M.A. and Lucchesi, B.R.: Prostacyclin protects ischemic reperfused myocardium in the dog by inhibition of neutrophil activation. *Amer. Heart J.* 1987;113:129-137.
8. Abrams, G.D.: Surgical pathology of the infected gut. *Amer. J. Surg. Pathol.* 1987;11:Suppl. 1:16-24.
9. Werns, S.W., Shea, M.J., Vaporciyan, A., Phan, S., Abrams, G.D., Buda, A.J., Pitt, B., and Lucchesi, B.R.: Superoxide dismutase does not cause scar thinning after myocardial infarction. *J. Amer. Coll. Cardiol.* 1987;9:898-902.
10. Stoller, D.K., Coran, A.G., Drongowski, R.A., Bank, E.R., and Abrams, G.D.: Physiological assessment of the four commonly performed endorectal pull-throughs. *Ann. Surg.* (in press).
11. Abrams, G.D.: Pathogenesis of Gastrointestinal Infections. *Amer. J. Surg. Pathol.* (in press).

**HENRY D. APPELMAN, M.D.  
PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. General surgical pathology - 6 months.
- B. Gastrointestinal and hepatic pathology consultation services - full time.
- C. Pediatric surgical pathology - 2 weeks.

**II. TEACHING ACTIVITIES:**

**MEDICAL SCHOOL/HOSPITALS:**

- A. Medical Students.
  - 1. Pathology 600 - 8 full class lectures.
  - 2. Senior medical student electives - 6 month instruction in surgical pathology in the reading room.
  - 3. Senior medical student elective in pathology rotation, supervisor 1 month.
- B. House Officers:
  - 1. Surgical Pathology Conference - 1 hour per week.
  - 2. Autopsy service tutoring, 5-6 weekends and gross autopsy conference twice a week.
  - 3. Surgical pathology diagnosing room instruction for assigned house officer - 6 months.
  - 4. Gastrointestinal and hepatic pathology tutoring - full time.
  - 5. Mentor for house officers in gastrointestinal and liver pathology subspecialty - 2 months total.
- C. Interdepartmental:
  - 1. Medical Gastrointestinal Pathology Conference.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:** None.

**PROJECTS UNDER STUDY:**

- A. Hepatic histopathologic changes in methotrexate - treated psoriatics, with A. Flint and members of the Gastroenterology Division.
- B. DNA content in gastric stromal tumors, with A. Flint.
- C. Superficial Grohn's disease, with A. McQuillan.
- D. Appendiceal epithelia neoplasia.
- E. The effects of prostaglandins on collagen deposition in livers of rats fed a cirrhogenic diet, with and without ethanol, with K.S. Henley and investigators from the Upjohn Company, Kalamazoo, Michigan. Results accepted for publication in Hepatology.

- F. Peptic-associated and Campylobacter-associated gastritis and duodenitis with Grace Elta. Results accepted for publication in Am. J. of Gastroenterol.
- G. Cell markers in gastrointestinal stromal tumors with A. Pike and R. Lloyd, results submitted for publication.

**IV. ADMINISTRATIVE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Chairman, Advisory Committee on Appointments, Promotions and Titles.

**MEDICAL SCHOOL/HOSPITALS:**

- A. Member, Cancer Work Group, University Hospital.
- B. Member, Surgical and Procedural Case Review Committee, University Hospital.

**REGIONAL AND NATIONAL:**

- A. Member, Program Committee, Michigan Society of Pathologists.
- B. Reviewer of papers for Archives of Pathology and Laboratory Medicine, and Human Pathology.
- C. Book reviewer, Gastroenterology.
- D. Chairman, Publications Committee and Member, Executive Committee, Gastrointestinal Pathology Club.
- E. Expert Pathologist, Large Bowel and Anal Canal Neoplasms and Gastric Neoplasms Panels, College of American Pathologists Performance Improvement Program.
- F. Coordinator for Pathology, Randomized Therapeutic Trial in Cancer of the Esophagus, International Organization for Statistical Studies of Diseases of the Esophagus, Paris, France.
- G. Reviewer, Atlas of Tumor Pathology, Universities Associated for Research and Education in Pathology, Inc.

**V. OTHER RELEVANT ACTIVITIES:**

**INVITED LECTURES/SEMINARS:**

1. Moderator, Subspecialty Panel on Gastrointestinal Pathology, Annual Meeting, International Academy of Pathology, Chicago, Illinois, March 10, 1987.
2. Lectures: Indeterminate colitis and Dysplasia in ulcerative colitis. Michigan Chapter of the National Foundation for Ileitis and Colitis Seminar on Inflammatory Bowel Disease. Novi, Michigan, September 6, 1986.
3. Lecture: Stromal Tumors of the GI Tract. Annual Meeting, American Society of Clinical Pathologists. Orlando, Florida, October 1, 1986.
4. Lecture: Pathology of adenocarcinoma of the upper GI tract. Southwest Wisconsin Division, American Cancer Society, Milwaukee, WI, May 9, 1987.
5. Visiting Professor: Department of Pathology, Yale University School of Medicine, New Haven, CT, May 14, 1987: Lecture: General concepts in GI biopsy diagnosis.
6. Lecture: Natural History of the bowel wall in ulcerative colitis. Grand Rounds, Department of Pathology, Emory University Medical School, Atlanta, GA, June 2, 1987.

7. Lecture: Polyps and carcinoma of the colon. Annual Meeting, Michigan Society of Histotechnologists, Lansing, MI, June 5, 1987.
8. Lectures: Second International Polydisciplinary Congress, International Organization of Statistical Studies for Diseases of the Esophagus, Paris, France, June 23-27, 1987.
  - a. Introduction to the classification of esophageal neoplasms.
  - b. The morphologic predictors of behavior of squamous cell carcinoma of the esophagus.
  - c. The morphologic features of usual squamous cell carcinoma of the esophagus.
  - d. Stromal and lymphoid tumors of the esophagus.
  - e. The development of a malignancy index for squamous cell carcinoma of the esophagus.
  - f. Differentiation between Barrett's carcinoma of the esophagus and cardiac carcinoma of the stomach.
  - g. High risk epithelium in Barrett's esophagus.
9. Inflammatory Bowel Disease. Seminar, Fall meeting of The South Carolina Society of Pathologists, Hilton Head, SC, October 25, 1986.
10. Seminar on GI Pathology, Connecticut Society of Pathologists, New Haven, CT, May 14, 1987.
11. Seminar on neoplastic diseases of the intestines, American Society of Clinical Pathologists, Course on Surgical Pathology of the Gastrointestinal Tract, Colorado Springs, Colorado, June 10, 1987.

## **VI. PUBLICATIONS:**

### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Goldfaden, D., Orringer, M.B., Appelman, H.D. and Kalish, R.: Adenocarcinoma of the distal esophagus and gastric carcia. Comparison of results of transhiatal esophagectomy and thoracoabdominal esophagogastrrectomy. J. Thorac, Cardiovasc. Surg. 1986;91:242-247.
2. Nostrant, T.T., Kumar, N.B. and Appelman, H.D.: Histopathology differentiates acute self-limited colitis from ulcerative colitis. 1987;92:318-328.

### **ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Ruwart, M.J., Schuppan, D., Hahn, E.G., Kin, K.Y., Teike, T., Risteli, J., Risteli, T., Rush, B.D., Snyder, K.F., Vidmar, T.J., Peters, K.M., Appelman, H.D. and Henley, K.S.: 16,16 Dimethyl PGE<sub>2</sub> (DMPG) and its substituted phenyl ester (DMPG-C) inhibit hepatic fibrosis induced by dietary deficiency in the rat: Association with two serological markers of collagen turnover. Hepatology 1986;6:1208.
2. Snyder, K.F., Ruwart, M.J., Rush, B.D., Henley, K.S., Peters, K.M., and Appelman, H.D.: 16,16 dimethyl PGE<sub>2</sub> (DMPG) inhibits hepatic fibrosis in rabbits fed chenodeoxycholic acid (CDC). Hepatology 1986;6:1208.
3. Ruwart, M.J., Snyder, K.F., Rush, B.D., Vidmar, T.J., Henley, K.S., Peters, K.M., Appelman, H.D., et. al.: 16,16 dimethyl PGE<sub>2</sub> (DMPG) inhibits diet-induced hepatic fibrosis as monitored by serum N-terminal procollagen III peptide (PIIIP), stainable collagen and hydroxyproline (OHPRO) without modifying these parameters in normal rat. Hepatology 1986;6:1208.

4. Elta, G., Kern, S., Nostrant, T., and Appelman, H.D.: Campylobacter like organisms in erosive gastroduodenitis. *Gastroenterology* 1987;92:1382.
5. Ruwart, M.J., Vidmar, T.J., Kim, K.Y., Hahn, E.G., Schuppan, D., Snyder, K.F., Rush, B.D., Appelman, H.D., Peters, K.M., and Henley, K.S.: Diet-induced hepatic fibrosis in the rat: correlation of serum type III procollagen peptide, aniline blue stained hepatic collagen and hepatic hydroxyproline in the presence and absence of 16,16-dimethyl PGE. *Gastroenterology* 1987;92:1769.
6. Johnson, T.L., Barnett, J., Appelman, H.D. and Nostrant, T.T.: Diagnostically useful features of candida hepatitis. Poster presented at fall meeting, Am. Soc. Clin. Pathol., Orlando, Florida, September 30, 1986.
7. Book Review: Adenomas and Adenomas Containing Carcinoma of the Large Bowel: Advances in Diagnosis and Therapy. Edited by C.M. Fenoglio-Preiser and F.P. Rossini, *Gastroenterol.* 1033, 1986.
8. Book Review: Colonic Neoplasms, by Hans Elias. *Arch. Pathol. Lab. Med.* 1986;110:1200.



**THOMAS M. ANNESLEY, PH.D.  
ASSISTANT PROFESSOR OF CLINICAL CHEMISTRY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Director, Drug Analysis and Toxicology Laboratory.
- B. Associate Director, Section of Biochemistry.
- C. Consultant to Veterans Administration Hospital, Ann Arbor, Michigan.

**II. TEACHING ACTIVITIES:**

- A. House Officers.
  - 1. Participant, Clinical Pathology Rounds.
  - 2. Lecturer, Clinical Pathology Didactic Lecture Series.
  - 3. Daily sign-out and Interpretation of Laboratory Results.
- B. Medical Students.
  - 1. Course Instructor, Pathology 600.
- C. Medical Technology.
  - 1. Course Instructor, Medical Technology Program (Pathology 410). Areas include thyroid physiology, general endocrinology, RIA/immunochemical methods.

**III. RESEARCH ACTIVITIES:**

**PROJECTS UNDER STUDY:**

- A. Microbore Applications to the analysis of drugs.
- B. Distribution of cyclosporine and metabolites in blood and tissues.
- C. Lactate production during myocardial ischemia.

**IV. ADMINISTRATIVE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Director, Drug Analysis and Toxicology Laboratory.

**MEDICAL SCHOOL/HOSPITAL:**

- A. Standardization of Procedures Committee.

**REGIONAL AND NATIONAL:**

- A. Executive Committee, Michigan Section, American Association for Clinical Chemistry.
- B. Education Committee, Michigan Section, American Association for Clinical Chemistry.

- C. Chairman, American Association for Clinical Chemistry, Michigan Section.
- D. Editorial Board, Toxicology and TDM Newsletter.

**V. OTHER RELEVANT ACTIVITIES:**

**INVITED LECTURES/SEMINARS:**

1. "CK-MM Postsynthetic Variants", Sinai Hospital, Detroit, MI, February, 1987.
2. "Distribution of cyclosporine in blood", University of Florida, Gainesville, May, 1987.

**NATIONAL AWARDS:**

1. Recipient of the 12th American Association for Clinical Chemistry Award for outstanding achievements by a young investigator.
2. Recipient of the Clinical Chemist's Recognition Award, American Association for Clinical Chemistry.

**VI. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Rocher, L.L., Giacherio, D.A., and Annesley, T.M.: Refinement in HPLC analysis for cyclosporine. *Transplant. Proc.* 1986;18:652.
2. D'Amato, C.J., O'Shea, K.S., Hicks, S.P., Glover, R.A., and Annesley, T.M.: Genetic prenatal aqueduct stenosis with hydrocephalus in rat. *J. Neuropath. Exp. Neurol.* 1986;45:665.
3. Annesley, T.M., Till, G.O., and Ward, P.A.: Cutaneous thermal burn and oxidant-mediated acute lung injury: Appearance in serum of lung-related LDH isoenzyme. *J. Free Radicals Biol. Med.* 1986;2:409.
4. Ellis, C.N., Gorsulowsky, D.C., Hamilton, T.A., Headington, J.T., Cooper, K.D., Baadsgaard, O., Duell, E.A., Annesley, T.M., Turcotte, J.G., and Vorhees, J.J.: Cyclosporine A improves psoriasis in a double blind study. *J. Amer. Med. Assoc.* 1986;256:3110.
5. Annesley, T.M., Matz, K., Balogh, L., Clayton, L., and Giacherio, D.: Liquid-chromatographic analysis for cyclosporine with use of a microbore column and small sample volume. *Clin. Chem.* 1986;32:1407.
6. Keren, D.F., Silbart, L., Lincoln, P., and Annesley, T.M.: Significance of immune response to mucosal carcinogens: A hypothesis and a workable model system. *Pathol. Immunopathol. Res.* 1986;5:265.
7. Coon, M.J., England, B.G., Giacherio, D.A., and Annesley, T.M.: Interference by goat derived anti-lymphocyte globulin in a double antibody digoxin radioimmunoassay. *Clin. Chem.* 1987;33:619.
8. Morady, F., DiCarlo, L.A., Krol, R.B., Annesley, T.M., O'Neill, W.W., DeBuitelir, M., Baerman, J.M., and Kou, W.H.: The role of myocardial ischemia during programmed stimulation in cardiac arrest survivors with coronary artery disease. *J. Am. Coll. Cardiol.* 1987;19:1004.
9. DiCarlo, L.A., Morady, F., DeBuitelir, M., Baerman, J.M., Schurig, L., and Annesley, T.M.: Effects of chronic amiodarone therapy on ventricular tachycardia induced by programmed ventricular stimulation. *Am. Heart J.* 1987;113:57.

**ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR,  
MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Silbart, L., Lincoln, P., Annesley, T.M., and Keren, D.F.: Selective immune response to parenteral immunization with different preparation of carrier proteins conjugated to 2-acetylaminofluorene. Fed. Proc. 1986;45:698.
2. Annesley, T.M., Matz, K., and Giacherio, D.A.: Concomitant effect of hematocrit, concentration, and temperature on the distribution of cyclosporine in blood. Proc. Second AACC Mich. Section Res. Exposition, Livonia, Michigan, 1987.
3. Giacherio, D.A., Matz, K., and Annesley, T.M.: Quantitation of HDL-subclasses in a normal donor population by a two-step dextran sulfate-Mg precipitation technique. Proc. Second AACC Mich. Section Res. Exposition, Livonia, Michigan, 1987.
4. Annesley, T.M.: Drug Abuse in the Workplace. Therapeutic Drug Monitoring Clinical Toxicology Newsletter 1987;2:18.
5. Johnson, R., and Annesley, T.M.: Evaluation of the Microgenics CEDIA immunoassay for digoxin in serum. Proc. Second AACC Mich. Section Res. Exposition, Livonia, Michigan, 1987.
6. Duell, E.A., Fisher, G.J., Annesley, T.M., Kowalki, J., Billings, J.K., Brown, M.B., Ellis, C.N. and Vorhees, J.J.: Levels of Cyclosporine in epidermis of treated psoriasis patients do not inhibit growth of cultured keratinocytes. Clin. Res., 1987;35:680A.
7. Coon, M.J., Smart, J.B., England, B.E., Annesley, T.M., and Giacherio, D.G.: A comparative study of the kineticcount-48 digoxin assay with three immunoassay methods. Proc. 10th Annual Mich. Clin. Ligand Assay Soc. Mtg., 1987.

**BARBARA A. BARNES, MT(ASCP) SBB  
ASSISTANT PROFESSOR OF MEDICAL TECHNOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Coordinate quality assurance activities in Blood Bank Laboratory.
- B. Coordinate training of Blood Bank Laboratory Staff.

**II. TEACHING ACTIVITIES:**

- A. House Officers.
  - 1. Blood Banking Introductory Lecture Series, Lecturer.
  - 2. Blood Bank Laboratory and Seminar Course for house officers, a nine session tutorial given three times. Planned, coordinated and taught.
- B. Medical Technology Students.
  - 1. Pathology 418. Introduction to Blood Transfusion. This course, is composed of twelve lectures given once, eight two-hour conference sessions held twice, and eight three-hour laboratory sessions held twice. Planned, coordinated and taught.
  - 2. Pathology 449. This course, which includes structured class assignments and clinical practicum, was repeated for nine groups of students. Planned, coordinated and taught.
  - 3. Pathology 410. Lecturer.
- C. Blood Bank Staff.
  - 1. Coordinate and present at weekly Continuing Education Conference.
  - 2. Instruct and supervise new employees in clinical laboratory.

**III. RESEARCH ACTIVITIES: None.**

**IV. ADMINISTRATIVE ACTIVITIES:**

**MEDICAL SCHOOL/HOSPITAL:**

- A. Participated in various committees responsible for communication and technical advice to the hospital Blood Bank.
- B. Conducted individual courses of instruction for each of two new employees of the hospital Blood Bank.
- C. Drafted and implemented a weekly schedule of in-service education for Blood Bank staff.
- D. Designed and presented a preconference workshop at Towsley Center, June, 1987.
- E. Interphase 1987, planned and taught at elective session on blood transfusion.
- F. Designed and implemented Blood Bank orientation sessions for students and residents from other departments.

**REGIONAL AND NATIONAL:**

- A. Inspector for the Inspection and Accreditation Program of the American Association of Blood Banks.
- B. American Association of Blood Banks, District Advisory Group.
- C. Michigan Technology Educators.
- D. Michigan Association of Blood Banks, Education Committee.

**IV. OTHER RELEVANT ACTIVITIES:**

**INVITED LECTURES/SEMINARS:**

- 1. Current Topics in Blood Banking Program, Department of Postgraduate Medicine, June 3, 1987. "Selection of Methods and Equipment", Workshop Director.
- 2. Lecture to Medical Technology Class, Eastern Michigan University.

**VI. PUBLICATIONS:   None.**

**MASON BARR JR., M.D.  
PROFESSOR OF TERATOLOGY  
DEPARTMENT OF PATHOLOGY;  
PROFESSOR OF PEDIATRICS  
DEPARTMENT OF PEDIATRICS**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Medical Director, Myelodysplasia Unit: inpatient and outpatient services for children with spina bifida.
- B. Attending Physician Pediatrics Infant Ward: 3 months plus 1 month as backup attending.
- C. Pediatric Genetics/Teratology Consultant for Holden and Women's Hospitals - inpatient and outpatient consultations and parent counselling.
- D. Teratology Unit (see Research Activities).

**II. TEACHING ACTIVITIES:**

- A. Teratology-Obstetrics Conference: weekly case review meeting of Obstetrics, Teratology, Neonatology for planning management of fetuses with prenatally detected malformations.
- B. Genetics Clinical Conference - weekly reviews of consultation cases and 4 times yearly didactic presentations.
- C. Pediatrics-Pathology Conference: organize and present CPC-type conferences to the Department of Pediatrics; Five per year.
- D. Neonatology Pathology Conference: quarterly review and discussion of neonatal deaths.
- E. Malformations lecture, Embryology (M-1) Course.
- F. Malformations lecture, Pathology (M-2) Course.
- G. Drugs in pregnancy: OB-GYN House Officer core curriculum.
- H. Pediatric section Sophomore Physical Diagnosis Course.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:** None.

**TERATOLOGY UNIT (DIRECTOR):**

- A. Detailed postmortem investigations of abortuses, stillborns and selected neonatal deaths for morphologic, pathologic and growth characteristics, correlations with family and prenatal histories, and counselling for future reproductive decisions by the parents.
- B. Continuing investigation of normal and abnormal patterns of somatic and visceral growth. Detection of patterns of growth abnormalities associated with specific syndromes, exposures and obstetrical antecedents.

- C. Quality control investigations for various prenatal diagnostic methodologies.
- D. Teratology Unit Activities: 190 fetal examinations; 97 inborn + 93 outborn; Elective terminations 39, stillborns 93, liveborns 58; <22 weeks gestation 80; >22 weeks gestation 10.

#### **COLLABORATIVE RESEARCH:**

- 1. Collection and allocation of fetal tissues for research projects in the Departments of Pediatrics (4), Pathology, (1), Obstetrics (1), Anatomy (2), Orthopedics (1), Internal Medicine (1), Genetics (2), and Howard Hughes Institute (1). Loan of fetal material for research investigations in the Department of Radiology.

#### **IV. ADMINISTRATIVE ACTIVITIES:**

##### **MEDICAL SCHOOL/HOSPITAL:**

- A. Departmental - Pathology: none.
- B. Departmental - Pediatrics: Editorial Board, Pediatric Rounds; Ad hoc committee to review faculty evaluation procedures; Infant Care Review Committee.
- C. Hospital: Quality Assurance Committee.

##### **REGIONAL AND NATIONAL:**

- A. Reviewer for journals: Teratology, Pediatric Pathology, American Journal of Medical Genetics.
- B. Section Editor (Clinical Teratology), Teratology.
- C. Council, Teratology Society.
- D. Publications Committee, Teratology Society.
- E. Education Committee, Teratology Society.
- F. Editorial Board, Birth Defects Encyclopedia.

#### **V. OTHER RELEVANT ACTIVITIES:**

##### **INVITED LECTURES AND SEMINARS:**

- 1. Lecture: Fetal Surgery (an Assessment). Perinatology-Neonatology 1986, Ann Arbor, Michigan, October 16-17, 1986.
- 2. Lecture: Drugs in Pregnancy (Embryo effects). Department of Obstetrics Core Curriculum Program. October 29, 1986.
- 3. Summation and Commentary: Controversies in Craniosynostosis, Denver, Colorado, October 31, 1986.
- 4. Panel: 1986 Michigan Statewide Conference on Child Abuse and Neglect. Panel on the ICRC: Ethics Committee and the Baby Doe Law. Ann Arbor, Michigan, November 3-5, 1986.

## **VI. PUBLICATIONS:**

### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Wilson, G.N., Raj, A., Waterson, J.R., Bush, M., Baty, E., Parker, J., Hamman, J., Louwsma, G., and Barr, M.: Detection of neural tube defects with -fetoprotein measurement in amniotic fluid: a protocol for managing elevated values. *J. Reprod. Med.* 1986;**31**:157-161.
2. Faix, R.G., Naglie, R.A., and Barr, M.: Intrapleural inoculation of candida in an infant with congenital cutaneous candidiasis. *Am. J. Perinatol.*, 1986;**3**:119-122.
3. Barr, M., Heidelberger, K.P. and Dorovini-Zis, K.: Scalp neoplasm associated with cranium bifidum in a 24-week human fetus. *Teratology* 1986;**33**:153-157.
4. Stevenson, R.E., Jones, K.L., Phelan, M.C., Jones, M.C., Barr, M., Clericuzio, C., Harley, R.A. and Benirschke, K.: Vascular steal: the pathogenic mechanism producing sirnomelia and associated defects of the visceral and soft tissues. *Pediatrics* 1986;**76**:451-457.
5. Wilson, G.N., Dasouki, M., and Barr, M.: Occurrence of holoprosencephaly in chromosome 13 disorders cannot be explained by duplication/deficiency of a single locus. *Am. J. Med. Genet. Suppl.* 1986;**2**:65-72, *Devel. Field Concept*:275-282.
6. Curry, C.J.R., Carey, J., Holland, J.S., Chopra, D., Fineman, R., Golabi, M., Sherman, S., Pagon, R.A., Allanson, J., Shulman, S., Barr, M., McGravey, V., Dabiri, C., Schimke, N., Ivers, E., and Hall, B.D.: Smith-Lemli-Opitz syndrome - type II: multiple congenital anomalies with male pseudohermaphroditism and frequent early lethality. *Am. J. Med. Genet.* 1987;**26**:45-57.
7. Dasouki, M., and Barr, M.: Trisomy 18 and hepatic neoplasia. *Am. J. Med. Genet.* 1987;**27**:203-205.
8. Dasouki, M., Barr, M., Erickson, R., and Cox, B.: Translocation (1:22) in a child with bilateral oblique facial clefts. *J. Med. Genet.*, Accepted for publication, 1987.

### **ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Review of: Issues and Reviews in Teratology by H. Kalter. *Teratology* 1986;**34**:225-226.
2. Barr, M.: Short rib-polydactyly syndrome type II is an autosomal recessive disorder. Presented to Teratology Society, July 7-10, 1986, Boston, Massachusetts, *Teratology* 1986;**33**:45C.
3. Barr, M.: Amelia-Splenogonadal Fusion and Hanhart Syndrome: The Same or Different Conditions? Presented to DW Smith Workshop on Malformations and Morphogenesis. Burlington, Vermont, August 11-14, 1986, *Proc. Greenwood Genet. Ctr.* 1987;**6**:180-181.
4. Barr, M.: Massive nephromegaly and unusual omphalocele. Presented to the Teratology Society, Rancho Mirage, California, June 14-18, 1987. *Teratology*, 1987;**35**:34A.
5. Amniotic volume and fetal renal weight. Presented to the Teratology Society, Rancho Mirage, California, June 14-18, 1987. *Teratology*, 1987;**35**:67A-68A.
6. Hartshorne, N., Shepard, T.H., and Barr, M.: Fetal unilateral renal agenesis with compensatory hypertrophy. Presented to the Teratology Society, Rancho Mirage, California, June 14-18, 1987. *Teratology* 1987;**35**:34A.



**THEODORE F. BEALS, M.D.  
ASSISTANT PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Director, Diagnostic Electron Microscopy Unit, Veterans Administration Medical Center.
- B. Cytopathology, Veterans Administration Medical Center.
- C. Coordinator of Decentralized Hospital Computer Program in Laboratory Service, Veterans Administration Medical Center.
- D. Fine Needle Aspiration, Veterans Administration Medical Center.
- E. Surgical/Autopsy Pathology, Veterans Administration Medical Center.
- F. Tumor Board, Veterans Administration Medical Center.
- G. Deputy Washtenaw County Medical Examiner.
- H. Consultant: diagnostic electron microscopy.

**II. TEACHING ACTIVITIES:**

- A. Pathology House Officer monthly elective: Diagnostic Electron Microscopy, 11 months.
- B. Diagnostic Electron Microscopy Case Conference, bi-weekly.
- C. Pathology House Officers, fine needle aspiration technique and interpretation.
- D. Medical School Student Summer Research Project.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Principal Investigator: Immunologically Active Cell Populations in First Set Liver Grafts, VAMC Merit Review (\$81,300 annual) 1985-88.
- B. Co-Investigator: Adjuvant Chemotherapy in Laryngeal Cancer (G. Wolf, Principal Investigator).
- C. Co-Investigator: VA Cooperative Study #268. A New Strategy to Preserve the Larynx in the Treatment of Advanced Laryngeal Cancer.
- D. Marijuana-Bronchoscopy Project (Fligiel/Gong/Tashkin).
- E. A Prospective, Controlled, Randomized and Double-Blind Multi-Center Clinical Evaluation of Monoclonal Antibody 17.13.C1.10 for its Capability to Detect Head and Neck Squamous Cell Carcinoma in Primary Site Malignancies and Lymph Nodes. (Co-investigators: Baker, Beals, Carey, Krause, McClatchey, Wolf).

**PROJECTS UNDER STUDY:**

- A. Clinical Relevance of Ultrastructural Characteristics of Small Cell Carcinoma (with R. Green, A. Forastiere).
- B. Role of Plastic Embedded Cell-Blocks and Electron Microscopy in Fine Needle Aspiration.

- C. Morphometric Analysis of Cells and Tissue using the Scanning Light Microscope.
- D. Automatic Scanning Light Microscopy in Morphometric Analysis of Immunologically Labeled Cells.
- E. Surface Markers for Antigen Localization in Scanning and Transmission Electron Microscopy.
- F. Ultrastructural localization of Herpes Simplex and Cytomegalovirus Development in Cells using cDNA (with R. Wolber).
- G. Bacteremia from indwelling catheters (with J. Gilsdorf).
- H. Mechanism of Reactive Hyperemia in Coronary Arteries Following Angioplasty Induced Injury (with E. Bates).
- I. Growth of Cells on Microcarriers (with J. Varani).
- J. Transbronchial Fine Needle Aspiration in the Delineation of Pulmonary Neoplasms (with J. Hammersley).
- K. Endothelial Cell Damage Caused by Oxidants (with D. Hinshaw).
- L. Morphology of Lymphokine Activated Killing (LAK) and NK Cell Killing (with J. Hiserodt).

#### **IV. ADMINISTRATIVE ACTIVITIES:**

##### **DEPARTMENTAL:**

- A. Electron Microscopy Committee.
- B. Resident Selection Committee.

##### **MEDICAL SCHOOL/HOSPITAL:**

- A. Surgical Case Review Committee, Veterans Administration Medical Center.
- B. Electron Microscopy Committee, Chair, Veterans Administration Medical Center.
- C. Medical Records Review Committee, Veterans Administration Medical Center.
- D. Implementation and Evaluation Subcommittee of the Computer Services Committee. Veterans Administration Medical Center.
- E. Ambulatory Care Task Force, Veterans Administration Medical Center.

##### **REGIONAL AND NATIONAL:**

- A. Veterans Administration Central Office Electron Microscopy Review Group.
- B. Practice of Pathology Committee, Michigan Society of Pathology.

#### **V. OTHER RELEVANT ACTIVITIES:**

- 1. Aspiration Biopsy Cytology of Intrathoracic Lesions, American Society of Cytology (with B. Naylor).
- 2. Diagnostic Electron Microscopy, St. Johns Hospital.
- 3. Electron Microscopy as an Aid to Diagnostic Cytopathology, American Society of Cytology, Cytoteleconference.

## **VI. PUBLICATIONS:**

### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Baugh, R.F., Wolf, G.T., Beals, T.F., Krause, C.J.: Carcinoma of the larynx: Results of therapy. Arch. Otolaryn. 1986;96:1283-1290.
2. Shenker, Y., Gross, M.D., Grekin, R.J., Rosen, S.G., Sanfield, J.A., Shapiro, B., Strodel, W., Thompson, N.W., Beals, T.F., Lloyd, R.V.: The scintigraphic localization of mineralocorticoid-producing adrenocortical carcinoma. J. Endocrinol. Invest. 1986;9:115-120.
3. Wiggins, R., Glatfelter, A., Kshirsagar, B., Beals, T.: Lipid microvesicles and their association with procoagulant activity in urine and glomeruli of rabbits with nephrotoxic nephritis. Lab. Invest. 1987;56:264-272.
4. Hom, D.B., Wolf, G.T., Beals, T.F., Krause, C.J.: Routine bronchoscopy and bronchial cytology for the detection of occult pulmonary cancers in patients with squamous carcinoma of the upper aerodigestive tract. (accepted for publication in Ann. Oto. Rhino. Laryn.).
5. Bates, E.R., McGillem, M., Beals, T.F., DeBoe, S., Nucjeksib, J., Vogel, R.: Effect of angioplasty induced endothelial denudation nersus medial injury on regional coronary blood flow. (accepted for publication in Circ.).

### **BOOKS AND CHAPTERS IN BOOKS:**

1. McDowell, E.M. and Beals, T.F.: Biopsy Pathology of the Bronchi. Chapman and Hall, 1986, W.B. Saunders, Inc., 1987, pp. 1-398.

**MILA BLAIVAS, M.D., PH.D.  
CLINICAL ASSISTANT PROFESSOR  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. 132 muscle biopsies and 52 nerve biopsies done.
- B. Three months in Autopsy Service.
- C. 3.5 weeks at Central Michigan Community Hospital in Mt. Pleasant.
- D. Visits to the Chelsea Community Hospital Laboratory, Albion Community Hospital, and coverage of M-Labs surgical pathology at the University of Michigan Hospital.

**II. TEACHING ACTIVITIES:**

- A. Taught residents, fellows and staff in Neurology, Rheumatology and Pediatrics on muscle and nerve biopsies.
- B. Taught pathology residents how to perform and read out autopsies.
- C. Lectured on muscle and nerve pathology to residents in Pathology, Neurology and sophomore medical students.
- D. Monthly conference on muscle and nerve cases with Neurology and Rheumatology department.
- E. Biweekly muscle and nerve cases review with pathology residents.

**III. RESEARCH ACTIVITIES:**

**PROJECTS UNDER STUDY:**

- A. Histology and histochemistry of orbicularis muscle.
- B. Histochemistry of local anesthetic injection side in skeletal and ocular muscles.
- C. Metabolic muscle diseases presented clinically as polymyositis.

**IV. ADMINISTRATIVE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Set up of nerve morphometry on a routine basis (with P.E. McKeever, M.D.).
- B. Improving of interdepartmental coordination of muscle and nerve biopsy service.

**REGIONAL AND NATIONAL:**

- A. Visits to Chelsea Laboratory.
- B. Visits to Albion Community Hospital Laboratory.
- C. Member, American Association of Neuropathologists.

**V. OTHER RELEVANT ACTIVITIES:**

**INVITED LECTURES/SEMINARS:**

1. Attended VI International Muscle Disease Conference in Los Angeles, California - 1 week.
2. Attended Peripheral Neuropathology Meeting - 1 week.
3. Attended AFIP Neuropathology and Neuroradiology courses in Washington, D.C. - 1 week.

**VI. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. "Histological Characteristics of Orbicularis Oculi Muscle in Children" with C.C. Nelson, Submitted, Arch. Ophthal.
2. "The Histochemical Characteristics of Orbicularis Oculi Muscle in Children" with C.C. Nelson and S. Ahrens, Submitted, Arch. Ophthal.

**PETER M. BURKHOLDER, M.D.  
PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Staff Pathologist for Anatomic Pathology Services (Surgical Pathology and Autopsy Pathology) at the Ann Arbor VA Medical Center.
- B. Chief, Microbiology Laboratory, Laboratory Medicine Service, Ann Arbor VA Medical Center.

**II. TEACHING ACTIVITIES:**

- A. Supervised and trained residents in Surgical Pathology and Autopsy Service at the Ann Arbor VA Medical Center.
- B. Pathology 631, Laboratory histopathology for dental students.
- C. Presentation of pathology case material at Tumor Board, Medical Morbidity and Mortality Conferences, and Nephrology Conferences, the Ann Arbor VA Medical Center.

**III. RESEARCH ACTIVITIES:**

- A. Consulting Pathologist and member of the Policy Board, Collaborative Study of Adult Glomerular Diseases, Peter Bent Brigham Hospital, Boston.

**IV. ADMINISTRATIVE ACTIVITIES:**

- A. Chief, Microbiology Laboratory, Laboratory Medicine Service, Ann Arbor VA Medical Center.
- B. Ad hoc reviewer for Laboratory Investigation, Archives of Pathology and Laboratory Medicine.

**V. OTHER RELEVANT ACTIVITIES:**

- A. Continuing postgraduate medical education.
  - 1. Managing People; Padgett-Thompson, Ann Arbor, MI.
  - 2. The New Hospital: Leadership and Governance; Michigan Hospital Association/Dannemiller Tyson Associates, Inc., Ann Arbor, MI.
  - 3. Physicians in Management (PIM II); American Academy of Medical Directors, Clearwater, Florida.
  - 4. Bold Initiatives for a New Era of Medicine and New Directions for Health Care Leadership and Management; American Academy of Medical Directors, Toronto, Canada.

**INVITED LECTURES AND SEMINARS:**

1. Fibronectin synthesis in cultured guinea pig glomerular epithelial cells infected with SV-40; VA Medical Center, Philadelphia, Pennsylvania.

**VI. PUBLICATIONS:**

**BOOKS AND CHAPTERS IN BOOKS:**

1. Burkholder, M.D.: Immunopathology of Renal Disease. In: Clinics in Laboratory Medicine. D. Rowlands (editor), W.B. Saunders Company, Philadelphia, 1986.

**RICHARD MITCHELL COURTNEY, D.D.S.  
PROFESSOR OF DENTISTRY  
DEPARTMENT OF ORAL PATHOLOGY  
ASSISTANT PROFESSOR OF ORAL PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Oral Pathology Biopsy Service, Dental School.
- B. Consultant in Oral Pathology for Veterans Administration Hospital.
- C. Consultant in Dentistry for patients with head and neck malignancies, The University of Michigan Hospitals.

**II. TEACHING ACTIVITIES:**

**GRADUATE DENTISTRY:**

- A. Oral Pathology 690--Seminar on current cases stressing clinical-microscopic characteristics (fall and winter terms) (one credit hour each term).
- B. Oral Pathology 691--Seminar on diseases which affect the dental pulp and periapical tissues (fall term--two sections) (one hour credit).
- C. Oral Pathology 694--Lectures on head and neck pathology (fall term) (two hours credit).
- D. Oral Pathology 697--Seminar on diseases which involve the periodontium (fall term) (one hour credit).
- E. Oral Pathology 698--Advanced seminar for graduate students in oral pathology (fall and winter terms) (two hours each term).

**DDS PROGRAM:**

- A. Pathology 631--Microscopic general pathology for sophomore dental students (fall term) (three hours credit).
- B. Oral Pathology 816 and 818--Lectures and discussions on oral pathology for senior dental students (fall and winter terms) (one hour each term).

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:** None.

**PROJECTS UNDER STUDY:**

- A. Odontogenic tumors and oral malignancies.

**IV. ADMINISTRATIVE ACTIVITIES:**

**DENTAL SCHOOL:**



- A. Chairman, Department of Oral Pathology.
- B. Departmental Chairmen Committee.
- C. Graduate Studies Committee.
- D. Member of several Master's degree thesis committees.

**MEDICAL SCHOOL/HOSPITAL:**

- A. Hospital Dentistry Department.

**REGIONAL AND NATIONAL:**

- A. Director, American Board of Oral Pathology.
- B. Past-President, American Academy of Oral Pathology.
- C. Editorial Board, Journal of Dental Research.
- D. Consultant to the American Dental Association on graduate oral pathology programs.
- E. Consultant to the American Dental Association on Hospital Dentistry programs.

**V. OTHER RELEVANT ACTIVITIES: None.**

**VI. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Regezi, J.A., Zarbo, R., Tomich, C., Lloyd, R., Courtney, R., and Crissman, J.: Immunoprofile of Benign and Malignant Fibrohistiocytic Tumors. J. Oral Path. (in press).
2. Regezi, J., Zarbo, R., McClatchey, K., Courtney, R., and Crissman, J.: Osteosarcomas and Chondrosarcomas of the Jaws: Immunohistochemical Correlations. Oral Surg., Oral Med., Oral Path. (in press).

**BOOKS AND CHAPTERS IN BOOKS:**

1. Han, S.S., and Courtney, R.M.: Aging of Oral Tissues in Oral Development and Histology; Avery, James K., editor. Williams and Wilkins, Baltimore, 1987, pages 64-78.

**ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Regezi, J.A., Courtney, R.M., Passo, S.A., and Hanks, C.T.: Oral Pathology: Clinical-Microscopic Correlations, 1982, University of Michigan, Dental School (revised 1986), 116 pages.
2. Courtney, R.M.: An Approach to the Diagnosis and Management of Oral Mucosal Abnormalities. Malaysian Dental Journal (in press).

**CONSTANCE J. D'AMATO, B.S.  
ASSISTANT PROFESSOR OF NEUROBIOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Work daily with house officers and staff in Pathology and other departments in their gross and microscopic examination and diagnosis of brains at the autopsy and from autopsies at University Hospital.
- B. Attend and participate in the removal of brains from all autopsies at University Hospital.
- C. Work in a similar way with the people in "A" on autopsy brain material sent for consultative study from University-associated hospitals, other hospitals, and institutions.
- D. Plan and participate in weekly Brain Cutting Conference with house officers, students and staff, for diagnosis and demonstrations of diagnostic methods, and teaching, using selected cases in A and B.
- E. Plan and present gross and microscopic Brain conference on alternate months for the Neurology Department.
- F. Continuous review of quality control of diagnostic techniques, autopsy and surgical neuropathology, and search for improved and new methods.

**II. TEACHING ACTIVITIES:**

- A. Neural and Behavioral Sciences 600 (NBS 600), Neuropathology for second year medical students, 19 hours, lectures and brain cutting sessions. Sequence coordinator for NBS 600, Neuropathology; responsible for implementing general plan of course, selection of much of the teaching material, coordination and integration of the lectures and brain cutting sessions of the course with other instructors.
- B. Neuropathology for Pathology house officers. This exercise is integrated with Clinical Activities A,C,D, and E.
- C. Neuropathology 858. Intensive laboratory-lecture course for house officers in Pathology, and in the several clinical services concerned with the nervous system, graduate students, and faculty. Annual, 16-18 hours. One credit hour elective.
- D. Neuropathology for house officers from the several clinical services concerned with the nervous system, and senior medical students who take an elective rotation in Neuropathology.
- E. Teach laboratory techniques and basic neuroanatomy and neuropathology to our laboratory technologists.

### III. RESEARCH ACTIVITIES:

#### SPONSORED SUPPORT:

- A. USPHS Grant NS 19825-01, "Recovery or Malformation After Fetal Injury."
- B. USPHS application, "The Role of Glutamate in Alzheimer's Disease", (5% Effort, with Anne Young and John Penney, Department of Neurology).

#### PROJECTS UNDER STUDY:

- A. Narrowing of the aqueduct in the fetal rat leading to prenatal hydrocephalus can be brought about in several ways. In one of our models, radiation (approx. 200 rads) destroys large numbers of primitive cells in the early (11th day) cephalic neural tube leading to local overgrowth that obstructs the aqueduct. In the other, a mutant gene, first morphologically expressed around the 11th day, initiates the same outcome, but there is no cell-killing. In both there is breakdown of the cephalic neuroepithelial basal lamina. We are exploring this disorder of the extracellular matrix (ECM) common to both models as an important initiating factor that leads to the hydrocephalus. Light microscopy and transmission and scanning electron microscopy, immunocytochemical and culture methods are being used. A goal is to determine why the ECM fails in the mutant and after 200 rads, but is not affected when 150 rads (also very destructive) is given and hydrocephalus does not occur. Preliminary results indicate that there is a lag in collagen IV formation in the mutant neuroepithelial basal lamina, compared with the normal, coincident with the breakdown of the latter. Also, mutant neuroepithelial cells in culture do not adhere to substrates containing collagen IV, which normals do.

In related work at other fetal stages, we have found that fetal brain macrophages produce the oxygen radical, superoxide anion. In other organs of adult subjects macrophage-produced oxygen radicals are harmful to normal tissues. It is not known yet whether the superoxide in fetuses is harmful to normal cells.

- B. The pathologic examination of human autopsy brains from patients with clinical diagnosis of Alzheimer's, Huntington's, Pick's and other dementing diseases is being done in collaboration with Drs. A.B. Young and J.B. Penney, who are examining the brains biochemically. The clinical diagnoses need to be confirmed by pathologic diagnosis.
- C. Growth, spread and antigenicity of ENU-induced gliomas in rats, in collaboration with Paul E. McKeever, M.D., Ph.D. and Terry Hood, M.D., (Neurosurgery Department).

#### **IV. ADMINISTRATIVE ACTIVITIES:**

##### **DEPARTMENTAL:**

- A. Anatomic Pathology Committee.

##### **MEDICAL SCHOOL/HOSPITAL:**

- A. Neural and Behavioral Sciences Curriculum Committee (Medical School).
- B. Neural and Behavioral Sciences Examinations Committee.
- C. Sequence Coordinator for Neural and Behavioral Sciences 600 (Neuropathology).
- D. Preprofessional Counselor, premedical and health-related students

##### **REGIONAL AND NATIONAL:**

- A. Reviewer of research grant applications for National Science Foundation Neurobiology Program.
- B. Reviewer of journal manuscripts, Teratology, Experimental Neurology, and Science.

#### **VI. PUBLICATIONS:**

##### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. D'Amato, C.J., O'Shea, K.S., Hicks, S.P., Glover, R.A., and Annesley, T.M.: Genetic prenatal aqueduct stenosis with hydrocephalus in rat. J. Neuropath. Exper. Neur. 1986;45:665-682.
2. Rheinheimer, J.S.T., O'Shea, K.S., D'Amato, C.J. and Hicks, S.P.: Early alteration in prenatal hydrocephalus. J. Neuropath. Exper. Neur. (accepted for publication, June 1987).
3. McKeever, P.E., Feldenzer, J., McCoy, J.P., D'Amato, C.J., Laug, M., Chandler, W., and Varani, J.: Flow cytometric analysis of cell cycle phases as prognostic indicators in glioma patients (Submitted for publication, April 1987).
4. D'Amato, C.J., Hood, T.W., and McKeever, P.E.: Serial transplantation of frozen experimental ethylnitrosourea glioma and neurinoma tissue (Submitted for publication, April 1987).
5. Reiner, A., Albin, R.L., Anderson, K.D., D'Amato, C.J., Penney, J.B. and Young, A.B.: Differential loss of striatal projection neurons in Huntington's Disease. (Submitted for publication, May 1987).
6. Fligiel, S.E.G., Riser, B., Varani, J., D'Amato, C.J., O'Shea, K.S., Weeks, K.J. and Hicks, S.P.: Superoxide anion in fetal rat brain macrophages. (Submitted for publication, June 1987).
7. O'Shea, K.S., Rheinheimer, J.S.T., D'Amato, C.J. and Hicks, S.P.: Alterations in the neuroepithelial basal lamina in a neurological mutant with prenatal hydrocephalus. (Submitted for publication, June 1987).

**ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR,  
MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. D'Amato, C.J., O'Shea, K.S., Fligiel, S.E.G., Varani, J. and Hicks, S.P.: Oxygen free-radicals in fetal brain macrophages. 16th Annual Meeting, Society for Neuroscience, Washington, D.C. (Abstract and poster exhibit), Soc. Neurosci. Abstr. 1986;12:867.

**VISHVA M. DIXIT, M.D.  
ASSISTANT PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

- I. CLINICAL ACTIVITIES:** None.
- II. TEACHING ACTIVITIES:**
- A. Supervised the following undergraduate students: Mary Tierney, Fred Wolf, Charles Yang.
  - B. Supervised Sheila Mane, a postdoctoral scientist.
- III. RESEARCH ACTIVITIES:**
- SPONSORED SUPPORT:**
- A. American Heart Association - "Role of Thrombospondin in Platelet and Vascular Biology" - 7/1/87-6/30/89, \$90,000 (3 years), Principal Investigator.
  - B. NIH - R01 - "Structure and Regulation of Human Platelet Thrombospondin" - 7/1/87-6/30/92, \$111,783, first year direct costs, Principal Investigator.
  - C. American Cancer Society - "Squamous Cell Carcinoma: Role for Thrombospondin" - 7/1/87-6/30/90, \$333,090, Principal Investigator.
  - D. NIHHL - "Role of Endothelial Cell Proteins in Developmental Hemostasis" - 6/1/87-5/31/90, \$104,950, Principal Investigator.
  - E. Phoenix Project - "Structure and Function of Thrombospondin" - \$4,200, Principal Investigator.
  - F. Michigan Cancer Society - "Role of Thrombospondin (TSP) in Carcinoma Cells" - 11/1/86-10/31/87, \$5,000, Principal Investigator.
  - G. Cancer Core - "Role of Thrombospondin" - 1/1/87-12/31/87, \$15,000, Principal Investigator.
  - H. Rackham - "Genomic Structure of Thrombospondin" - 5/1/87-4/30/88, \$8,000, Principal Investigator.
  - I. NIH-R01 - "Role of Thrombospondin in CNS Development" - 6/1/87-5/31/90, \$110,000, Co-Principal Investigator.
- PROJECTS UNDER STUDY:**
- A. Structure function relationships in thrombospondin.
  - B. Mechanisms of action of tumor necrosis factor.
  - C. Articles submitted for publication:
    - 1. Dixit, V.M., Germain, T.M., Vogeli, G., Slightom, J. and Majack, R.: Complete amino acid sequence of human fibroblast thrombospondin. Gene, submitted.
    - 2. Majack, R.A., Groodman, L.V. and Dixit, V.M.: Cell surface thrombospondin is functionally essential for vascular smooth muscle cell proliferation. J. Cell Biol., in press.

3. Varani, J., Nickoloff, B.J., Riser, B.L., O'Rourke, K., and Dixit, V.M.: role of thrombospondin in keratinocyte attachment and differentiation. J. Cell Biol., submitted.
4. O'Shea, K.S., Dixit, V.M.: Thrombospondin in the developing cerebellar cortex. J. Cell Biol., submitted.

#### **IV. ADMINISTRATIVE ACTIVITIES:**

##### **DEPARTMENTAL:**

- A. Participate in undergraduate research programme.
- B. Interview prospective faculty candidates.

##### **MEDICAL SCHOOL/HOSPITAL:**

- A. Review BMRC grants.

##### **REGIONAL AND NATIONAL:**

- A. Reviewer for the following journals: Journal of Biological Chemistry, Journal of Clinical Investigation.

#### **V. OTHER RELEVANT ACTIVITIES:**

##### **INVITED LECTURES AND SEMINARS:**

1. Lecture, Upjohn Company, Kalamazoo, Michigan, 1986.
2. Lecture, University of Chicago, 1987.

#### **VI. PUBLICATIONS:**

##### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNAL:**

1. Dixit, V.M., O'Rourke, K.M., Grant, G.A., Santoro, S.A., Frazier, W.A.: Identification of calcium sensitive structures in platelet thrombospondin. J. Biol. Chem. 1986;261:1962-1968.
2. Dixit, V.M., Frazier, W.A., Grant, G.A., Rotwein, P.S.: Isolation and characterization of a cDNA for Human Platelet Thrombospondin. Proc. Natl. Acad. Sci. USA, 1986;83:5449-5453.
3. Varani, J., Dixit, V.M., Gliigel, S.E.G., McKeever, P.E., Carey, T.: Thrombospondin induced attachment and spreading of human squamous carcinoma cells. Exp. Cell Research, 1986;167:376-390.
4. Wikner, N.E., Dixit, V.M., Frazier, W.A., Clark, R.F.: Human keratinocytes synthesize and secrete the extracellular matrix protein, thrombospondin. J. Invest. Dermatology, 1987;88:207-212.
5. Varani, J., Carey, T.E., Gliigel, S.E.G., McKeever, P.E. and Dixit, V.: Tumor type-specific differences in cell-substrate adhesion among human tumor cell lines. Int. J. Cancer, 1987;39:397-403.

6. Galvin, N., Dixit, V.M., Vance, P.M., Frik, B., Frazier, W.A.: Interaction of human thrombospondin with types I-V collagen: Direct binding and electron microscopy. J. Cell. Biol., 1987;104:1413-1423.
7. Majack, R.A., Milbrandt, J., and Dixit, V.M.: Induction of thrombospondin mRNA in rat aortic smooth muscle cells by PDGF. J. Bio. Chem., 1987;262:8821-8826.
8. Grant, G.A., Dixit, V.M., Galvin, N.J., O'Rourke, K.M., Santoro, S.A., Frazier, W.A.: Mapping functional domains of human platelet thrombospondin with electroblotting and high sensitivity sequencing. Proceeding of the First Meeting of the American Society of Protein Chemistry, San Diego, CA, in press.
9. Riser, B.L., Varani, J., Carey, T.E., Fligiel, S.E.G., Dixit, V.M.: Thrombospondin binding and thrombospondin synthesis by human squamous carcinoma and melanoma cells: relationship to biological activity. Exp. Cell Research, in press.

**BOOKS AND CHAPTERS IN BOOKS:** None.

**ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Dixit, V.M., Lowe, J.B.: Expression of the cDNA for the heparin binding domain of human thrombospondin in E.Coli., in press.
2. O'Shea, K.S., Dixit, V.M.: Thrombospondin in the developing cerebellar cortex. Soc. for Neurosci., 1987, in press.



**BARRY G. ENGLAND**  
**ASSOCIATE PROFESSOR OF REPRODUCTIVE BIOLOGY**  
**DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT**  
**1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Director, Ligand Assay Laboratory.

**II. TEACHING ACTIVITIES:**

- A. Pathology House Officers laboratory rotation.
- B. Medical Technology Student laboratory rotation.
- C. Medical Technology Student Mini-Course (2 week) on radioimmunoassay techniques.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. New England Nuclear Corporation: Research Grant, Study of Reproductive Endocrinology and Ligand Assay Techniques; Principle Investigator, \$15,000/yr., 1976 to present.
- B. USPHS (NIAMDD) AM20572: Michigan Diabetes Research and Training Center; Director, Ligand Assay Core Facility, \$177,000/yr, 1983-1988.

**PROJECTS UNDER STUDY:**

- A. Examination of Circulating Levels of Estradiol and Estrone Following Buccal and Trans-Dermal Administration of Estradiol-17B. B.G. England.
- B. Gonadotropin Receptor, Steroidogenesis and Prostaglandin Synthesis in Ovine Follicles. B.G. England and H. Shaw.
- C. Characterization of Mutant Forms of Insulin and of the Insulin gene in Mature Onset Diabetes of the Young. B.G. England, A. Vinik and S. Fajans.
- D. Determination of the role of steroid receptors in hormone dependent tumors and cultured cell lines derived from various tumors. S.J. Grenman, T.E. Carey and B.G. England.

**IV. SERVICE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Director, Ligand Assay Laboratory.

**MEDICAL SCHOOL/HOSPITAL:**

- A. Director, Ligand Assay Core Facility, Diabetes Research and Training Center.
- B. Co-Director, Standards and Reagents Core Facility, Reproductive Endocrinology Center.

**V. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Michniewicz, B.M., Hodges, J.C., England, B.G., Chang, T., Blankley C.J. and Nordblom, G.D.: Development of a Radioimmunoassay for the Diacid Metabolite of C1-906, a potent Angiotensin-I Converting Enzyme Inhibitor. *Journal of Clinical Immunoassay*. 1987;10:111-115.
2. Coon, M.J., England, B.G., Annesley, T.M. and Giacherio, D.A.: Interference by Goat-Derived Anti-Lymphocytic Globulin in a Double Antibody Radioimmunoassay of Digoxin. *Clinical Chemistry*. 1987;33:619-621.
3. Hoffman, W.H., England, B.G., Gomez, L.M., Rosculet, G. and Gala, R.R.: Empty Sella Associated With Inappropriate TSH Secretion. *Journal of Pediatric, Neurobiology, Neurology and Neurosurgery*. 1987;18:51-58.
4. Grenman, S.J., VanDyke, D.L., Worsham, M.J., England, B.G., del Rosario, F., Roberts, J.A., McClatchey, K.D., Schwartz, D.R. and Carey, T.E.: UM-EC-I, A New Receptor Positive, Hydrodiploid Human Cell Line Derived From a Poorly Differentiated Endometrial Cancer, (1987, submitted).
5. Grenman, S.J., Roberts, J.A., England, B.G., Gronroos M., and Carey, T.E.: In Vitro Growth regulation of Endometrial Carcinoma Cells by Tamoxifen and Medroxyprogesterone Acetate. *Gynecologic Oncology*. (1987, in press).
6. Henson, M.C., Piper, E.L., Perkins, J.L., and England, B.G.: Changes in Pelvic Conformation and Peripheral Estron levels in Pre-and Postpartum Beef Cows. *Domestic Animal Endocrinology*. (1987, in press).

**ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Hiss, R.G., Lengyel, M.C., Hess, G.E., Bowbeer, L.A., Barr, P.A., Davis, W.K., England, B.G., Floyd, J.C., Frey, M.L., Lockwood, D.L., Martin, D., and Teza, S.: Diabetes in Communities, A report by the Michigan Diabetes Research and Training Center and the Department of Postgraduate Medicine and Health Professions Education.
2. Coon, M.J., Smart, J.B., England, B.G., Annesley, T.M. and Giacherio, D.A.: A Comparative Study of the Kineticount-48 Digoxin Assay With Three Immunoassay Methods. Tenth Annual Michigan Clinical Ligand Assay Society Meeting, October, 1986, Dearborn, MI.
3. Khazaeli, M.B., Beierwalter, W.H., and England, B.G.: Monoclonal Antibodies Specific for the Unbound B-Subunit of Human Chorionic Gonadotropin. U.S. Patent, US 4,565,687 issued January 21, 1987.

**JOSEPH C. FANTONE, M.D.  
ASSOCIATE PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Autopsy Service.
- B. Occasional Surgical Pathology Interpretation.

**II. TEACHING ACTIVITIES:**

- A. Course Director: Pathology 600.
- B. Coordinator: Senior Medical Student Clerkships.
- C. Sequence Coordinator and Lecturer - Sophomore Medical Students (ICS-600) Immunopathology.
- D. Pulmonary Pathology Conference (monthly to Pulmonary Division - Internal Medicine).
- E. Lecturer - Microbiology and Immunology 624.
- F. Panel Discussant - Department of Anesthesiology: Mechanisms of ARDS.
- G. Preceptor - Undergraduate and Medical Student Research.
- H. Graduate Student Ph.D. Thesis Committee.
- I. Preceptor for three Postdoctoral Fellows.

**III. RESEARCH ACTIVITIES:**

- A. Regulation of phagocytic cell-mediated tissue injury.
- B. Mechanisms of oxygen metabolite-mediated tissue injury.

**SPONSORED SUPPORT:**

- A. Principal Investigator: Modulation of Immune Complex Lung Injury (NIH-R01-HL-32024; 1985-1990).
- B. Principal Investigator: Phagocytic Cells and Acute Lung Injury (American Heart Association. Grant-in-Aid; 1985-1988).
- C. Principal Investigator: Phagocytic Cell and Glomerular Injury. Section IV of Renal Center Grant (NIH-P50-DK39255, 1987-1992).
- D. Co-Investigator: Mechanisms and Genetic Regulation of Pulmonary Fibrosis. (S.H. Phan; Principal Investigator). (NIH-5-R01-HL-28737, 1986-1991).
- E. Co-Investigator: Pharmacologic Studies on the Ischemic Heart. (B. Lucchesi, Principal Investigator)(NIH-R01-HL-19782).

#### **IV. ADMINISTRATIVE ACTIVITIES:**

##### **DEPARTMENTAL:**

- A. Director - Educational Activities.
- B. Interview Resident Applicants.
- C. Resident Applicant Selection Committee.
- D. Department of Pathology Seven Year Internal Review Committee.
- E. Stobbe Funds Committee.
- F. Residency Review Committee.
- G. Committee on Evaluating Graduate Student Teaching (Chairman).
- H. Department of Pathology Pre-Doctoral Fellowship Committee (Chairman).

#### **V. MEDICAL SCHOOL/HOSPITAL:**

- A. Medical Student Advisor (3rd and 4th year).
- B. ICS - Executive Committee.
- C. Associate Director - Sophomore Medical Student ICS Course (ICS 600/601).
- D. Basic Science Phase Committee (Chairman).
- E. Clinical Phase Committee.
- F. Medical Student Basic Science Academic Review Board.
- G. Medical Student Clinical Phase Academic Review Board.
- H. Academic Affairs Committee.
- I. Clinical Science Phase Committee Retreat: Medical Education (November, 1986).
- J. Curriculum Coordinating Group.

##### **REGIONAL AND NATIONAL:**

- A. NIH Site Visit, Program Project: Alternative Oxygen Carriers, University of Maryland, 1987.
- B. Reviewer, Medical Research Council of Canada Research Grants.
- C. Reviewer, Veteran's Administration Research Grants.
- D. Reviewer for: J. Clin. Invest., J. Immunol., Science, Am. J. Pathol., Lab. Invest., Prostaglandins, J. Biol. Chem., Clin. Immunol., Immunopathol., Am. Rev. Respir. Dis., J. Leuk. Biol., Circ. Res. Biochem. Pharm.

#### **VI. INVITED LECTURES AND SEMINARS:**

- 1. Invited Seminar, Mechanisms of heme protein-dependent lipid peroxidation. Department of Internal Medicine, Ohio State University, Columbia, Ohio, 1986.
- 2. Invited Seminar, Regulation of Neutrophil Dependent Tissue Injury, New York Medical College, Valhalla, New York, 1987.
- 3. Invited Speaker, Symposium on Myocardial Ischemia and Reperfusion. American Heart Association, Tamarron, Colorado, 1987.
- 4. Chairman, Session on Ischemic/Traumatic Injury and Oxygen Radicals, Brooklodge Symposium on Oxygen Radicals and Tissue Injury. Upjohn Company, Augusta, Michigan, 1987.

## **VII. PUBLICATIONS:**

### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Mitsos, S., Fantone, J.C., Gallagher, K.P., Walden, K.M., Simpson, P.J., Abrams, G.D., Schork, M.A. and Lucchesi, B.R.: Canine myocardial reperfusion injury: Protection by a free radical scavenger, N-2-mercaptopropionyl glycine. *J. Cardiol. Pharm.* 1986;8:978-988.
2. Simpson, P.J., Mitsos, S.E., Gallagher, K.P., Fantone, J.C., Abrams, G.D., Schork, M.A. and Lucchesi, B.R.: Prostacyclin protects ischemic-reperfused myocardium in the dog by inhibition of neutrophil activation. *Amer. Heart J.* 1987;113:129-137.
3. Fantone, J.C., Feltner, D., Brieland, J. and Ward, P.A.: Phagocytic cell derived inflammatory mediators and lung injury. *Chest*, 1987;91:428-435.
4. Sitran, R., Brubaker, P.G. and Fantone, J.C.: Tissue fibrin deposition during acute lung injury in rabbits and its relationship to local expression of procoagulant and fibrinolytic activities. *Amer. Rev. Respir. Dis.* 1987;135:930-935.
5. Brieland, J., Kunkel, R.G., and Fantone, J.C.: Pulmonary alveolar macrophage function during acute inflammatory lung injury. *Amer. Rev. Resp. Dis.* 1987;135:1300-1306.
6. Simpson, P.J., McKelson, J., Fantone, J.C., Gallagher, K.P., and Lucchesi, B.R.: Iloprost inhibits neutrophil function in vitro and in vivo and limits experimental infarct size in canine heart. *Circulation Res.* (in press).

### **BOOKS AND CHAPTERS IN BOOKS:**

1. Fantone, J.C. and Ward, P.A.: Inflammation, in Textbook of Pathology. Rubin, E. and Farber, J., (Eds)., Lippincott Publishers, 1987.
2. Wiggins, R., Fantone, J.C. and Phan, S.H.: Mechanisms of Vascular Injury in Renal Pathology. C. Tisher, M.D. and B. Brenner, M.D., (Eds)., J.B. Lippincott Co. Publishers, 1987.
3. Simpson, P.J., Fantone, J.C. and Lucchesi, B.R. : Oxygen free radicals in myocardial ischemia and reperfusion injury and the role of the neutrophil. *Proceeding of Brook Lodge Symposium, Kalamazoo, MI, 1987 (review).*

### **ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Simpson, P.J., Smith, C.B., McKelson, J., Fantone, J.C., Gallagher, K.P., and Lucchesi, B.: Iloprost inhibits neutrophil function in vitro and in vivo and limits experimental canine myocardial infarction. *Circ.*, 1986;74:II-373.
2. Brieland, J., Balazovich, K., and Fantone, J.: Translocation of protein kinase C in pulmonary alveolar macrophages. *Fed. Proc.* 1987;46:1034.
3. Simpson, P.J., Mickelson, J., Fantone, J.C., Gallagher, K.P., and Lucchesi, B.R.: Sustained myocardial protection by iloprost with prolonged infusion in a canine model of temporary regional ischemia. *Fed. Proc.* 1987;46:1144.
4. Fantone, J., Vissers, M., Jester, S., Clark, S. and Phan, S.: Heme protein lipid peroxidation and tissue injury effects of pH. *Fed. Proc.* 1987;46:1390.

5. Simpson, P.J., Mickelson, J.K., Todd, R.F., III, Fantone, J.C., III, Griffin, J.D. and Lucchesi, B.R.: Reduction of experimental canine myocardial ischemia and reperfusion injury by a monoclonal antibody (anti-Mo1) that inhibits leukocyte adhesion. Amer. Heart Assoc., Anaheim, California, 1987.
6. Fantone, J.C., Brieland, J., and Phan, S.H.: Pulmonary macrophage  $O_2^-$  production following acute and chronic lung injury IV. International Colloquium Fibrosis, Gothenburg, Sweden, 1986.

**ANDREW FLINT, M.D.**  
**ASSISTANT PROFESSOR OF PATHOLOGY**  
**DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT**  
**1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Surgical Pathology Rotation - 18 weeks.
- B. Hematology Rotation - 3 weeks.
- C. Hematopathology Consultations - 2 weeks.

**II. TEACHING ACTIVITIES:**

- A. Pathology 600 Lectures:
  - 1. Pulmonary Inflammation I.
  - 2. Pulmonary Inflammation II.
- B. Group Leader: M4 student elective, January, 1987.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Pathology Consultant, Morphologic Studies of Diffuse Interstitial Lung Disease, A Multi-Institution Project, Reuben M. Cherniak, M.D., National Jewish Hospital, Program Director.
- B. Pathology Consultant, Prospective Investigation of Pulmonary Embolism Diagnosis, John G. Weg, M.D., Principal Investigator.
- C. Monoclonal Antibodies to Bladder Tumor Antigens, H. Barton Grossman, M.D. (Principal Investigator), Andrew Flint, M.D. (Co-investigator), July 1, 1987-June 30, 1990.
- D. Intensive Continuous Infusion High Dose Cisplatin, 5-Fluorouracil, and Mitoguazone (MGBG) Induction Chemotherapy for Advanced Head and Neck cancer, Arlene A. Forastiere, M.D., (Study Coordinator), Andrew Flint, M.D., (Co-investigator).
- E. Hormonal Synchronization Followed by Combination Chemotherapy for Locally Advanced Breast Cancer, Robert L. Cody (Principal Investigator), Andrew Flint, M.D., (Co-investigator).

**PROJECTS UNDER STUDY:**

- A. Gastric stromal tumors: Correlation of biologic behavior with DNA analysis.
- B. Metaplastic Carcinoma of the Breast: DNA analysis and correlation with biologic behavior.
- C. Wegener's Granulomatosis: Morphologic and Immunohistochemical analysis.
- D. Pathologic Manifestations of Nasal Involvement by Wegener's Granulomatosis.
- E. Hamman Rich disease Revisited: A reappraisal of the pathologic features of the original cases.

- F. Estrogen Receptors, Nuclear roundness, and DNA content of prostatic carcinoma nuclei: Correlation with biologic behavior.

**IV. ADMINISTRATIVE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Coordinator, Residency Training Program.  
B. Member, Residency Candidates Selection Committee.  
C. Coordinator, Senior Staff Service Rotation.

**V. OTHER RELEVANT ACTIVITIES:**

**INVITED LECTURES/SEMINARS:**

1. Flow Cytometry: Applications to Diagnostic Cytology. American Society of Cytology, Detroit, Michigan, 1986.
2. Tri-State Thoracic Society, Biloxi, Mississippi - Guest Pathologist, 1987.
3. Pulmonary Pathologic Didactic Seminars - Department of Pathology, University of Michigan, 1986.
4. Interstitial Lung Disease, Seminar, Division of Pulmonary Medicine, Department of Internal Medicine, University of Michigan, November, 1986.
5. Fine Needle Aspiration, Port Huron Hospital, November, 1986.
6. Fine Needle Aspiration of the Lung Workshop, Co-Director, American Society of Cytology, Detroit, November, 1986.
7. Environmental Lung Disease Seminar, School of Public Health, February, 1987.
8. Editorial Review for Human Pathology; American Review of Respiratory Diseases.

**VI. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Flint, A., McCoy, J.P., Schade, W.J., Hofheinz, D.A., Haines, H.G.: Cervical Carcinoma antigens: Distribution in neoplastic lesions of the uterine cervix in comparison to other tumor markers. Gynecologic Oncology.
2. Flint, A., Kumar, N.B., Naylor, B.: Pulmonary Hodgkins Disease: Diagnosis by fine needle aspiration. Acta Cytologica.
3. Flint, A., Smid, D.M.: Pulmonary Hodgkins Disease in Langerhans' Cell Granulomatosis. Chest.
4. Flint, A., Davenport, R.D., Lloyd, R.V., Beckwith, A.L., Thompson, N.W.: Cytophotometric Measurements of Hurthle Cell Tumors of the Thyroid Gland: Correlation with pathologic features and clinical behavior. Cancer.
5. Lampe, H.B., Flint, A., Wolf, G.T., McClatchey, K.D.: Flow Cytometry-DNA analysis of squamous cell carcinoma of the upper aerodigestive tract. Otolaryngology.
6. Kissner, D.G., Lawrence, W.D., Selis, G.E., Flint, A.: Crack Lung: Pulmonary disease due to cocaine abuse. American Review Respiratory Disease.
7. Gross, B.H., Glazer, G.M., Orringer, M.B., Spizarny, D.L., Flint, A.: Bronchogenic Carcinoma Metastatic to Normal Sized Mediastinal Lymph Nodes: Incidence and significance. Radiology.



**ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR,  
MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Davenport, R., Flint, A., Greenwood, J.: Morphometric Analysis of Lymphocyte Blast Transformation. American Society of Clinical Pathologists/College of American Pathologists.
2. McKeever, P., Fligiel, S., Varani, J., McCoy, J., Flint, A., Laug, M., Davenport, R.: Extracellular Matrix (ECM) Components of Glial Fibrillary Acidic Protein Positive (GFAP+) Gliomas. Lab. Investigation, 1987.

**BRUCE A. FRIEDMAN, M.D.  
PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Director, Pathology Data Systems.
  - 1. Supervised all PDS activities for the year including the search for a new Laboratory Information System and the successful negotiation of a contract with the Cerner Corporation.
  - 2. Supervised the participation of PDS in the rapid expansion of the Local Area network serving the hospital complex to the present activity level of more than 3,000 patient inquiries per day into the laboratory data base.
- B. Director, Phlebotomy Services/Central Distribution.
- C. Staff supervision of the autopsy service.
- D. Staff supervision of the Blood Bank/Donor Room and Apheresis Service.

**II. TEACHING ACTIVITIES:**

**MEDICAL SCHOOL/HOSPITALS:**

- A. Laboratory instructor for the Pathology 600 sophomore pathology course.
- B. Organizer of Docnet, an on-line computer conference for house officers and staff physicians in the hospital.
- C. Program director of the Fifth Annual Clinical Laboratory Computer Symposium at the Towsley Center for Continuing Medical Education in June, 1987.
  - 1. Symposium attracted 140 registrants and 13 system vendors and laboratory consultants.

**III. RESEARCH ACTIVITIES:**

- A. Development of an organizational model for information systems in hospital.
- B. Analysis of the transfusion of blood and blood products by DRG at the University of Michigan.

**IV. SERVICE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Special project to review of the integration of M-Labs activity into the teaching program of the Department.
- B. Microcomputer Steering Committee (Chairman).
- C. Ad Hoc Committee on Quality Assurance.
- D. Editor of two intradepartmental publications (Pathology Electronic News and Spectrum).

#### **MEDICAL SCHOOL/HOSPITAL:**

- A. Medical Informatics Task Force (Chairman).
- B. Physicians' Liaison Council (Chairman).
- C. Hospital Information Systems Advisory Committee.
- D. Ad Hoc Committee for the IAIMS Grant Proposal.

#### **V. OTHER RELEVANT ACTIVITIES:**

##### **INVITED LECTURES AND SEMINARS:**

- 1. The organization and control of clinical information systems in hospitals. A lecture presented to the Mid-America Health Care Exposition, Novi, Michigan, 5 March, 1987.
- 2. Living with a local area network (LAN). A lecture presented at the Fifth Annual Clinical Laboratory Computer Symposium at the Towsley Center, Ann Arbor, Michigan, 11 June, 1987.

##### **CONSULTATION:**

- 1. Advisory Panel for the Office of Technology Assessment, U.S. Congress (Study of Veterans' Administration Hospital Information Systems).

#### **VI. PUBLICATIONS:**

##### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

- 1. Wyszewianski, L., Thomas, J.W., Friedman, B.A.: Case-based payment and the control of quality and efficiency in hospitals. Inquiry 1987;24:17-25.
- 2. Friedman, B.A., Martin, J.B.: Hospital information systems: the physician's role. JAMA 1987;257:1792.
- 3. Friedman, B.A., Dieterle, R.C.: The impact of the installation of a local area network on physicians and the laboratory information system in a large teaching hospital. (Accepted for publication in the Proceedings of the 11th Annual Symposium on Computer Applications in Medical Care).

##### **ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

- 1. Friedman, B.A.: Pathologists, computers, and control of the clinical laboratory database. Pathologist 1986;40:40-46.
- 2. Friedman, B.A.: The evolution of information systems in hospitals. Source 1986;8:6-9.
- 3. Friedman, B.A., Martin, J.B.: Clinical HIS: the physician's role. Software in Healthcare 1987;June/July:30-31.
- 4. Friedman, B.A.: The competition for control of automated medical information systems. Clinical Chemistry News (in press).

**DONALD A. GIACHERIO  
ASSISTANT PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Director, General Chemistry Laboratory.
- B. Daily sign-out and interpretation of electrophoresis results.
- C. Implementation of tests from the consolidation of Special Function Laboratories.
- D. Chairman, Replacement Instrumentation Selection Committee, Biochemistry Section.

**II. TEACHING ACTIVITIES:**

**MEDICAL SCHOOL/HOSPITAL:**

- A. House Officers.
  - 1. Lecturer, Clinical Pathology Rounds, "Pediatric Cases" and "Assessment of Risk for Coronary Heart Disease".
  - 2. Lecturer, Clinical Pathology Didactic Lecture Series, "Core Lectures in Clinical Chemistry", 6 contact hours.
  - 3. Coordinator, Pathology House Officer Rotation through General Chemistry Lab.
  - 4. Review Daily sign-out and interpretation of electrophoresis results.
  - 5. Review of selected topics in Clinical Chemistry.
- B. Medical Technology.
  - 1. Lecturer, Path 410. 3 hours on adrenal and gonadal steroid chemistry.
  - 2. 3 contact hours per week during lab rotation on electrophoresis and centrifugal analyzers.
  - 3. Program Director, Continuing Education Series for Medical Technologists (biweekly).

**III. RESEARCH ACTIVITIES:**

- A. Factors influencing the distribution of cyclosporine and its metabolites in blood.
- B. Adaptation of immunoassays for Apolipoproteins A and B to the Cobas-Bio centrifugal analyzer.
- C. Comparison of Apolipoprotein B immunoassays in patients with hyperlipidemias.
- D. Evaluation and validation of a two stage precipitation assay for subclasses of High Density Lipoproteins.
- E. Determination of Creatine Kinase BB isoenzyme levels in the serum and CSF of anoxic neonates.
- F. Evaluation of affinity column method for the quantification of glycosylated hemoglobin.
- G. HPLC analysis of urinary catecholamines and their metabolites.

- H. Development of colorimetric and HPLC assays for homovanillic acid (HVA) in patients with neuroblastoma.
- I. Evaluation of new immunoassays for digoxin.
- J. Development of assays for plasma oxalate in support of the treatment of a patient with Type I Primary Hyperoxaluria by combined hepatic and renal transplantation.
- K. Evaluation of economical methods of screening for drugs of abuse.

#### **IV. SERVICE ACTIVITIES:**

##### **DEPARTMENTAL:**

- A. Quality Assurance Committee.
- B. M-Labs Technical Operations Group.
- C. Coordinator, Chemistry Lab Supervisors Meetings.
- D. Biochemistry Section Directors Group.
- E. Coordinator, Clinical Chemistry In-Service Education Program.

##### **MEDICAL SCHOOL/HOSPITAL:**

- A. Quality Control Task Force for Review of Policies and Procedures of University Hospital Blood Gas Labs.

##### **REGIONAL AND NATIONAL:**

- A. Coordinator, College of American Pathologists Clinical Chemistry Standards Assay Laboratory.
- B. Program and Education Committees, Michigan Section, AACC.
- C. Lipids and Lipoproteins Subgroup, AACC.

#### **V. OTHER RELEVANT ACTIVITIES:**

##### **INVITED LECTURES/SEMINARS:**

- 1. "Turbidimetric Immunoassays of Apolipoproteins", Warner Lambert/Parke Davis, Ann Arbor, Michigan.

#### **VI. PUBLICATIONS:**

##### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

- 1. Rocher, L.L., Giacherio, D.A., and Annesley, T.M.: Refinement in HPLC analysis for cyclosporine: Comparison of two alkyl chain columns. Transplant. Proc. 1986;18:652.
- 2. Coon, M.J., England, B.G., Annesley, T.M., and Giacherio, D.A.: Interference by goat-derived anti-lymphocyte globulin in a double antibody digoxin radioimmunoassay. Clin. Chem. 1987;33:619.
- 3. Nicklas, J.M., Giacherio, D.A., Moskowitz, D., Lemmer, J.H., Kirsh, M.J., and Grekin, R.J.: Natriuresis associated with elevated plasma atrial natriuretic hormone during supraventricular tachycardia. Circulation (submitted).

4. Annesley, T.M., Matz, K., and Giacherio, D.A.: Concomitant effect of hematocrit, concentration, and temperature on Cyclosporin A distribution in blood. Clin. Chem. (submitted).

**ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR,  
MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Giacherio, D.A., Matz, K. and Annesley, T.M.: Quantitation of HDL-subclasses in a normal donor population by a two-step dextran sulfate-Mg<sup>++</sup> precipitation technique. Proc. Mich. Section AACC Res. Expo., 1987.
2. Coon, M.J., Smart, J.B., Annesley, T.M., Giacherio, D.A., and England, B.G.: Comparison study of four digoxin immunoassay methods. 1987 Mich. Soc. Med. Tech. Meeting.
3. Annesley, T.M., Matz, K., and Giacherio, D.A.: Effects of hematocrit, concentration, and temperature on the distribution of cyclosporine in whole blood. Proc. Mich., Section AACC Res. Expo., 1987.

**PAUL W. GIKAS, M.D.  
PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Necropsy Service - eight weeks.
- B. Surgical Pathology - sixteen weeks.
- C. Cytopathology - sporadic assignment to cover when regular staff is away.
- D. Diagnostic EM - share nephropathology work with Dr. K. Johnson.
- E. Consultation service for Uropathology.
- F. Conduct monthly conference in Urologic Pathology with Urology Section.
- G. Conduct monthly conference with Rheumatology Section.
- H. Participate in weekly Renal Biopsy Conference with Dr. K. Johnson.

**II. TEACHING ACTIVITIES:**

- A. Lectures to Sophomore Pathology Class:
  - 1. Tubulo-interstitial disease of Kidney.
  - 2. Prostatic and penile lesions.
  - 3. Testicular lesions.
  - 4. Death Certification and Forensic Pathology.
  - 5. Pathogenesis of highway injuries.
- B. Lecture to N223 Personal Health and Wellness Course on Highway Injuries.
- C. Lecture to Sports Management Class on drug testing of athletes.
- D. Four lectures to HouseOfficers on Urologic Pathology, Medical Legal Autopsies, and Drug Testing of Athletes.

**III. RESEARCH ACTIVITIES:**

**PROJECTS UNDER STUDY:**

- A. Collaborate with Urology Staff and General Surgery Staff on projects.

**IV. SERVICE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Director of Necropsy Service through May 31, 1987.

**MEDICAL SCHOOL/HOSPITAL:**

- A. Hospital Medical-Legal Committee, Chairman.
- B. Hospital Claims Control Committee.
- C. Hospital Ethics Committee.
- D. Task Force on Expert Witness Tetimony.

**UNIVERSITY:**

- A. Faculty Representative to Big Ten Intercollegiate Conference and National Collegiate Athletic Association (NCAA).
- B. Chairman, Big Ten Awareness Committee on Alcohol and Drug Abuse.
- C. Board in Control of Intercollegiate Athletics.

**REGIONAL AND NATIONAL:**

- A. Member, NCAA Drug Testing Committee.
- B. Board of Directors, Physicians for Automotive Safety.
- C. Board of Directors, Public Citizen, Inc. (Ralph Nader, initial Chairman and Founder).
- D. Deputy Medical Examiner, County of Washtenaw.
- E. Reviewer for Archives of Pathology and Laboratory Medicine.

V. **OTHER RELEVANT ACTIVITIES:** None.

VI. **PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Bloom, D.A., Dipietro, M.A., Gikas, P.W., and McGuire, E.J.: Extratesticular Dermoid Cyst and Fibrous Dysplasia of Epididymis. The Journal of Urology, 1987;137:996-997.



**SANDRA C. GLUCK, M.S., M.T.(ASCP)CLS  
INSTRUCTOR OF MEDICAL TECHNOLOGY  
PROGRAM DIRECTOR, MEDICAL TECHNOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:** None.

**II. TEACHING ACTIVITIES:**

**MEDICAL SCHOOL/HOSPITALS:**

- A. Planned, coordinated and implemented Pathology 411, 431 and 441 lecture courses for Medical Technology students. Identified topics and scheduled guest lecturers. Carried sole responsibility for some topics and student exercises.

**III. RESEARCH ACTIVITIES:** None.

**IV. SERVICE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Administration of Medical Technology program.
  - 1. Direct teaching staff, coordinate curriculum.
  - 2. Act as problem-solver with teaching staff and students.
  - 3. Identify program and curriculum needs and directions.
  - 4. Plan and implement graduation picnic and laboratory staff party.
- B. Liaison with LSA and Medical School.
  - 1. Managed all student records.
  - 2. Maintain contact with LSA and Medical School faculty and staff involved with program and students.
- C. M-Labs.
  - 1. Participate in market planning, sales calls.
  - 2. Serve as Client Services Representative.

**MEDICAL SCHOOL/HOSPITAL:**

- A. Participate in Hospital Allied Health Education Program Directors' Meetings.
- B. Participate in Laboratory Communications Committee meetings.

**REGIONAL AND NATIONAL:**

- A. Critique self-studies of other Medical Technology programs for the National Accrediting Agency for Clinical Laboratory Science (NAACLS).

**V. OTHER RELEVANT ACTIVITIES:**

- A. Participate in biannual meetings of Michigan Medical Technology program directors.
- B. Attend regional and national professional meetings.
- C. Participate in variety of continuing education programs.

**VI. PUBLICATIONS:   None.**

**CARL T. HANKS, D.D.S.  
PROFESSOR OF DENTISTRY  
DEPARTMENT OF ORAL PATHOLOGY  
ASSOCIATE PROEOSSOR OF ORAL PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:** None.

**II. TEACHING ACTIVITIES:**

**D.D.S. LEVEL:**

- A. Oral Pathology 625. Oral Pathology Laboratory (one credit). (Laboratory teaching two afternoons per week, with one hour of lecture one of those afternoons). (Winter term, sophomore year).

**DENTAL HYGIENE:**

- A. Oral Pathology 293. General and Oral Pathology Lectures (two credits). (Course director and principal lecturer - 28 of 32 lectures). (Winter term, junior year).
- B. Oral Pathology 323. Clinical Oral Pathology Lectures (two credits). (Course director and principal lecturer - 16 out of 26 lectures). (Fall term; senior year).

**GRADUATE LEVEL:**

- A. Oral Pathology 698. Graduate seminar in Oral Pathology (one credit). (Histopathology seminar, two hours, participant). (Fall and Winter term).

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. National Institute of Dent. Res., Grant No. 1-R01-DE07987-01, "In Vitro Biocompatibility: Composite Resins and Bacteria, ", C.T. Hanks, (P.I.), 5/1/87-4/30/90. \$112,431 direct costs per year (\$342,464 total direct costs).
- B. Dent. Res. Institute, University of Michigan. Second year of an Associate's program between laboratories of Oral Pathology, Biomaterials, and Microbiology. C.T. Hanks (P.I.). E.R. Adams, Associate. Project entitled: "In Vitro Biocompatibility Testing Using In Vitro Pulp Chamber."
- C. Biomedical Research Committee, School of Dentistry, University of Michigan. Second year of support for project entitled: "Influence of Electric Fields on Cells in Culture," C.T. Hanks, (P.I.).
- D. Biomedical Res. Comm., School of Dentistry, University of Michigan. Second year of funding for project entitled: "Effect of Piezo-Polymers In Vivo and In Vitro," C.T. Hanks, (P.I.).

- E. Delta Dental Fund, Delta Insurance Co., "A Pulp Capping and Cavity Sealing Agent for Primary Teeth," J.K. Avery (P.I.); C.T. Hanks, L. Straffon, R.G. Craig and D.J. Chiego, Jr., co-investigators.
- F. Biomedical Res. Comm., School of Dentistry, University of Michigan. Project entitled: "Stimulation of Dentinogenesis by Dentin on Pulp Exposures," J.K. Avery, (P.I.), C.T. Hanks and D.J. Chiego, Jr., co-investigators.

**PENDING:**

- A. Multiple grants to NIH, NSF and Department of Energy, entitled: "Influence of Electromagnetic Fields on Cells In Vitro," W.C. Parkinson (Physics), (P.I.), C.T. Hanks, (Co-P.I.)
- B. Application to Presidential Initiatives Fund, University of Michigan, entitled, "Influence of Electromagnetic Fields on Cell In Vitro", C.T. Hanks, (P.I.), W.C. Parkinson, (Co-P.I.).

**IV. ADMINISTRATIVE ACTIVITIES:**

**SCHOOL OF DENTISTRY AND DEPARTMENT OF ORAL PATHOLOGY:**

- A. Master's Degree Thesis Committee for Dr. Donald George, Department of Orthodontics (Chairman).
- B. University Committee for Use and Care of Animals, (Vice-Chairman), University of Michigan (Vice-Chairman).
- C. University Senate Assembly, University of Michigan, 1984-1987.
- D. Strategic Planning Committee for the School of Dentistry, 1986-1987.
- E. Admissions Committee, School of Dentistry, 1985-1988.

**REGIONAL AND NATIONAL:**

- A. Committee on Standardization of Biocompatibility Testing for Pulp Biology, Group of International Association for Dental Research, Chair, 1987
- B. ADA Subcommittee on Biological Evaluation of Dental Materials.

**V. OTHER RELEVANT ACTIVITIES:**

**PROFESSIONAL ORGANIZATIONS:**

- A. International Association for Dental Research.
- B. American Academy of Oral Pathology.
- C. American Association for the Advancement of Science.
- D. Omicron Kappa Upsilon.
- E. Tissue Culture Association (National).
- F. Michigan Biomedical Materials and Prosthetic Group.
- G. New York Academy of Sciences.
- H. Sigma Xi.

**REVIEWER FOR JOURNALS:**

- A. Journal of Dental Research.
- B. Journal of the American Dental Association.

VI. PUBLICATIONS:

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Hanks, C.T., Kim, J.S., Edwards, C.A., "Growth Control of cultured Rat Calvarium Cells by Platelet-Derived Growth Factor," J. Oral Path., 1986;15:476-483.

**ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Adams, E.R., Hanks, C.T., Makinen, K.K., Makinen, P.L.: "Phenol Effect on Cultured Cellular Proteins as Measured by FPLC", J. Dent. Res., 1987;66:287. (Abstract 1442).
2. Edwards, C.A., Hanks, C.T., Kim, J.S., Rho, Y.B.: "Morphological Comparison of Calcified Extracellular Matrices in Two Culture Systems", J.Dent. Res., 1987;66:239. (Abstract 1058).
3. Steffensen, B., Lopatin, D.E., Caffesse, R.G., Hanks, C.T.: "Differentiation of Gingival and Junctional Epithelium by Immunohistochemical Analysis", J.Dent. Res., 1987;66:273.
4. Parkinson, W.C., and Hanks, C.T.: "Search for EMF Induced Cyclotron Resonance in Cells In Vitro", Abstract no. P-A12, pg. 23, Proceedings of Ninth Annual Meeting of the Bioelectromagnetic Society, Portland, Oregon, 1987.
5. Rathburn, M.A., Craig, R.G., Hanks, C.T., and Filisko, F.E.: "Cytotoxicity of a Bis-GMA Dental Composite Before and After Leaching", Abstract, Proceedings of 13th Annual Meeting of the Society for Biomaterials, New York, 1987.

**JOHN T. HEADINGTON, M.D.  
PROFESSOR OF PATHOLOGY AND DERMATOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Clinical Dermatology.
- B. Dermatopathology, private consultations.
- C. Dermatopathology, M-Labs.
- D. Dermatopathology, UMH.
- E. Dermatopathology, tutorials.

**II. TEACHING ACTIVITIES:**

- A. Medical Students: (second year):
  - 1. Dermatopathology lectures.
- B. Pathology and Dermatology House Officers:
  - 1. Dermatopathology.
- C. Dermatology House Officers:
  - 1. Clinical Dermatology.

**III. RESEARCH ACTIVITIES:**

**PROJECTS UNDER STUDY:**

- A. Androgenetic alopecia.
- B. Neurocristic melanomas.
- C. Regressing atypical histiocytosis.
- D. Cyclosporin and psoriasis.
- E. Anti-melanoma mouse monoclonal antibodies for detection of lymph node metastases.
- F. Retinoic acid and aging.
- G. Articles submitted for publication:
  - 1. Silverman, A.K., Shea, M. and Headington, J.T.: Unilateral Zosteriform Nevus Associated with Hypertrophic Cardiomyopathy. Arch. Dermatol.
  - 2. Auletta, M.J., and Headington, J.T.: Purpura fulminans: A cutaneous manifestation of severe protein C deficiency.
  - 3. Billings, J.K., Bovie, K.E., Headington, J.T.: Fibroblastic rheumatism.
  - 4. Weiss, J.S., Ellis, C.N., Headington, J.T., Tincoff, T., Hamilton, T.A., and Voorhees, J.J.: Topical tretinoin improves photoaged skin. A double-blind vehicle-controlled study.

**IV. ADMINISTRATIVE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Pigmented Lesion Clinic.

**MEDICAL SCHOOL/HOSPITAL:**

- A. Dermatopathology Unit.
- B. Co-Director, Clinical Microbiology Laboratory.

**REGIONAL AND NATIONAL:**

- A. Executive Board Member, The American Society of Dermatopathology.
- B. Editorial Board, Archives of Dermatology.
- C. Member, Task Force on Dermatopathology, The American Academy of Dermatology.

**V. OTHER RELEVANT ACTIVITIES:**

**INVITED LECTURES AND SEMINARS:**

1. Alopecia and trichotrophic substances. Dermato-pharmacology Symposium. Vancouver, British Columbia. August, 1986.
2. Guest consultant. Dermatology Service. Brooke Army Medical Center. Fort Sam, Houston, Texas. October, 1986.
3. Pigmented skin lesions. Flint Osteopathic Hospital, Flint, Michigan. October, 1986.
4. Extramammary Paget's disease. St. Louis Pathology Society, St. Louis, Missouri. November, 1986.
5. Pathology and treatment of alopecia areata. Owen Dermatopathology Seminar, St. Louis, Missouri. November, 1986.
6. Regressing atypical histiocytosis, American Society of Dermatopathology. New Orleans, Louisiana. December, 1986.
7. Problems of hair loss. American Academy of Dermatology, New Orleans, Louisiana. December, 1986.
8. Fibroblastic rheumatism. Clinicopathologic Conference. American Academy of Dermatology. New Orleans, Louisiana. December, 1986.
9. Adnexal Tumors of the Skin, College of American Pathology, Scottsdale, Arizona, January, 1987.
10. Histiopathology of androgenetic alopecia. Brook Lodge Symposium. Brook Lodge, Augusta, Michigan. February, 1987.
11. Cutaneous Manifestations of Systemic Disease, Recent Advances in Dermatopathology. Snowmass, Colorado. February, 1987.
12. The Spitz Nevus, Recent Advanced in Dermatopathology. Snowmass, Colorado. February, 1987.
13. Squamous cell carcinoma of skin. Melanoma and its precursor lesions. Unusual cutaneous neoplasms of the head and neck. Symposium on facial skin malignancis. Copper Mountain, Colorado. February, 1987.
14. Protein C. deficiency and congenital purpura fulminans. Michigan Society of Dermatology. Ann Arbor, Michigan. March, 1987.
15. Visiting Professor, Department of Dermatology. Vancouver, British Columbia. April, 1987.
16. The histopathology of androgenetic alopecia. XI Congreso Ibero Latino Americano de Dermatologia. Madrid, Spain. May, 1987.
17. Androgenetic alopecia and trichotrophic substnaces. Regressing atypical histiocytosis. XVII World Congress of Dermatology, Berlin, West Germany. May, 1987.

18. The Diagnosis of Hair Loss. Scarring alopecias. Canadian Dermatologic Association. Montreal, Canada. June, 1987.
19. Histologic and immunocytologic changes in psoriasis after seven days of cyclosporin therapy. British Association of Dermatologists. Harrogate, England. June, 1987.

## VI. PUBLICATIONS:

### ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:

1. Milgraum, S.S., Headington, J.T.: Tungiasis. Arch. Dermatol., (in press).
2. Headington, J.T., Roth, R.S., Ginesburg, D., Lichter, A.S., Schnitzer, B.S.: T-cell receptor gene rearrangement in regressing atypical histiocytosis. Arch. Dermatol., (in press).
3. Headington, J.T., Roth, R.S., Schnitzer, B.S.: Regressing atypical histiocytosis. A review and critical appraisal. Sem. Diag. Pathol. 1987;4:28-37.
4. Berger, T.G., Lane, A.T., Headington, J.T., et al. A solitary variant of congenital self-healing reticulohistiocytosis: Solitary Hashimoto Prizker disease. Ped. Dermatol. 1987;3:230-236.
5. Carey, J.A., Headington, J.T.: Cutaneous myxomas. Arch. Dermatol. 1986;122:790-796.
6. Ellis, C.M., Gorsulowsky, D.C., Hamilton, T.A., Billings, J.K., Brown, M.D., Headington, J.T., Cooper, K.C., Baadsgaard, O., Duell, E.A., Annesley, T.M., Turcotte, J.G., Voorhees, J.J.: Cyclosporine Improves Psoriasis in a Double-blind Study. JAMA, 1986;256:3110-3116.
7. Billings, J.K., Milgraum, S.S., Gupta, A.K., Headington, J.T., Rasmussen, J.E.: Lipoatrophic panniculitis: A possible autoimmune inflammation of fat. Arch. Dermatol., (in press).
8. Gupta, A.K., Billings, J.K., Headington, J.T.: Multisystem crystalline deposits. Arch. Dermatol., (in press).
9. Gupta, A.K., Rasmussen, J.E., Headington, J.T.: Extensive Congenital Erosions and Vesicles Healing with Reticulate Scarring. J. Am. Acad. Derm. (in press).
10. Headington, J.T., Astle, N.: Familial Focal Alopecia. Arch. Dermatol. 1987;123:234.
11. Hashimoto, K., Ito, K., Kumakiri, M. and Headington, J.T.: Nylon Brush Macular Amyloidosis. Arch. Dermatol. 1987;123:633.
12. Iacobucci, J.J., Stevenson, T.R., Swanson, N.A., Headington, J.T.: Cutaneous Leiomyosarcoma. Annals of Plastic Surg., (in press).
13. Headington, J.T.: Hair Follicle Biology and Topical Menoxidil: Possible Mechanisms of Action. Dermatologica, (in press).



KATHLEEN P. HEIDELBERGER, M.D.  
PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY

ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987

**I. CLINICAL ACTIVITIES:**

- A. Pediatric Surgical and Placental Pathology, daily, twelve months.
- B. Pediatric Necropsies, daily, twelve months.
- C. Pediatric Consultation Cases, daily, twelve months.
- D. Adult Necropsy Service, 0.5 months.
- E. Continued to organize and maintain the Michigan Cardiac Registry, twelve months.
- F. Continued to direct and interpret the Lung Morphometric Program, twelve months.
- G. Teratology Unit, histology, as necessary, approximately 30 cases per year.
- H. Children's Cancer Study Group, coordinate all pathological material and data necessary for all children registered in national tumor protocols.
- I. Bone Consultation Cases, intermittent backup for Lee Weatherbee.

**II. TEACHING ACTIVITIES:**

- A. M2: Pathology 600, three whole class lectures on Pediatric Pathology.
- B. M4: Pediatric Surgical Pathology, twelve months, while they were on their pathology electives.
- C. Supervised M4s on Pathology elective, one rotation (four weeks).
- D. House Officers in Pathology, daily reading of pediatric surgicals, twelve months.
- E. House Officers in Pathology, gross and microscopic supervision of most pediatric necropsies, twelve months and adult cases 0.5 months plus call weekends.
- F. Surgical Pathology Conference, one hour/week, twelve months.
- G. Lectures on Pediatric Autopsy Pathology in Core Curriculum Series for House Officers in Pathology.
- H. Gross Autopsy Conference, one hour/week, twelve months.
- I. Supervised Pediatric Hematology Fellows (three) for AP elective period.
- J. Conferences:
  - 1. Pediatric Cardiology Death Conference, monthly, all year.
  - 2. Pediatric Tumor Conference, twice monthly, all year.
  - 3. CPC/General Death Conference, approximately quarterly.

**III. RESEARCH ACTIVITIES:**

- A. Multiphased, ongoing study with Pediatric cardiologists and Thoracic surgeons on effects of various congenital heart defects on the pulmonary vasculature.
- B. Studies of regional variations in lung structure.

- C. Compiling data base of morphometric characteristics of normal lungs at various ages.

**PROJECTS UNDER STUDY:**

- A. Continued detailed study of the lethal neonatal chondrodysplasias and their morphologic characterization.
- B. Histologic studies of myocardium in hypoplastic left heart syndrome.
- C. Participant in 14 institution study of associated lethal defects in hypoplastic left heart syndrome. (See Abstracts).
- D. Study of effects of reversible pulmonary artery band in dogs with pediatric cardiologists and thoracic surgeons.
- E. Description of extra-corporeal membrane oxygenator in patients post cardiac transplant with cardiac and general surgeons.
- F. Review of the effects of pulmonary artery banding on the lung biopsy findings in young children with complete atrioventricular septal defect with pediatric cardiologists and thoracic surgeons.

**IV. ADMINISTRATIVE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Departmental ACAPT.

**MEDICAL SCHOOL/HOSPITAL:**

- A. Executive Committee for Mott/Women's/Holden Unit. Chairman, Pediatric Diagnostic Laboratories Review Committee. (Completed charge, Fall 1986).

**REGIONAL AND NATIONAL:**

- A. Member, American Board of Pathology Test Committee for Pediatric Pathology.
- B. Member of the Education Committee of the Society for Pediatric Pathology, Subcommittee I, charged with the documentation and position preparation for subspecialty qualification.

**V. OTHER RELEVANT ACTIVITIES:**

- A. Participating Contributor to Workshop Sessions of Robert Anderson as Visiting Professor of Pediatric Cardiology, Ann Arbor, Michigan, 8-10 January 1987.

**VI. PUBLICATIONS:**

**ARTICLES PULISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

- 1. Polley, T.Z., Coran, A.G., Heidelberger, K.P. and Wesley, J.R.:

- Suction rectal biopsy in the diagnosis of Hirschsprung's disease and chronic constipation. *Pediatric Surgery International*. 1986;1:84-89.
2. Heidelberg, K.P. and DePietro, M.: Fibrodysplasia ossificans progressiva. *Pediatric Pathology*. 1987;7:105-109.
  3. Scott, W.A., Snider, A.R., Dick, M.R., Heidelberg, K.P. Bove, E.L. and Peschiera, A.W.: Congenital aortic arch thrombosis diagnosed by echocardiography. *Am. J. Cardiol*. 1987;59:485-487.
  4. Gilbert, E.F., Yang, S.S., Langer, L., Opitz, J.M., Roskamp, J.O. and Heidelberg, K.P.: Pathologic changes of osteochondrodysplasia in infancy: A Review. Accepted for publication, *Pathology Annual*, 1987 (Part II).

#### **ARTICLES SUBMITTED FOR PUBLICATION:**

1. Rocchini, P., Gundry, S.P., Beckman, R.H., Gallagher, K.P., Heidelberg, K.P., Behrendt, D.M., Dijsko, R.C. and Rosen, I.L.: A Reversible Pulmonary Artery Band: Preliminary Experience.

#### **ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Bernstein, J. and members of the Society for Pediatric Pathology (including K.P. Heidelberg): Renal Cortical and Medullary Necrosis in Infants with the Hypoplastic Left Heart Syndrome: Presented at the Annual Meeting of the Society for Pediatric Research, Anaheim, California, April 1987.

**SAMUEL P. HICKS, M.D.**  
**PROFESSOR EMERITUS OF PATHOLOGY**  
**DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT**  
**1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Neuropathologic examination of brains from autopsies at University of Michigan and those sent to us from elsewhere.

**II. TEACHING ACTIVITIES:**

- A. Lecture and laboratory instruction of medical students and house officers in Pathology and other disciplines. Neural and Behavioral Sciences 600 and Neuropathology 858.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. USPHS NS 19825, "Recovery or malformation after fetal injury", in collaboration with Constance J. D'Amato and K.Sue O'Shea (co-investigators), Thomas M. Annesley, Ricardo V. Lloyd, James Varani, and Kenneth J. Weeks (consultants).

**PROJECTS UNDER STUDY:**

- A. Narrowing of the aqueduct in the fetal rat leading to prenatal hydrocephalus can be brought about in several ways. In one of our models, radiation (approx. 200 rads) destroys large numbers of primitive cells in the early (11th day) cephalic neural tube leading to local overgrowth that obstructs the aqueduct. In the other, a mutant gene, first morphologically expressed around the 11th day, initiates the same outcome, but there is no cell killing. In both there is breakdown of the cephalic neuroepithelial basal lamina. We are exploring this disorder of the extracellular matrix (ECM) common to both models as an important initiating factor that leads to the hydrocephalus. Light microscopy and transmission and scanning electron microscopy, immunocytochemical and culture methods are being used. A goal is to determine why the ECM fails in the mutant and after 200 rads, but is not affected when 150 rads (also very destructive) is given and hydrocephalus does not occur. Preliminary results indicate that there is a lag in collagen IV formation in the mutant neuroepithelial basal lamina, compared with the normal, coincident with the breakdown of the latter. Also, mutant neuroepithelial cells in culture do not adhere to substrate containing collagen IV, which normals do. In related work at other fetal stages, we have found that fetal brain macrophages produce the oxygen radical, superoxide anion. In other organs of adult subjects macrophage-produced oxygen radicals are harmful to normal

tissues. It is not known yet whether the superoxide in fetuses is harmful to normal cells.

- B. Examine neuropathologically the autopsy brains from patients with Alzheimer's, Huntington's and other dementias, which brains are being simultaneously studied biochemically in a project conducted by Anne B. Young and John B. Penney, Department of Neurology.

**IV. SERVICE ACTIVITIES:**

- A. Help plan work in I, II, III.

**MEDICAL SCHOOL/HOSPITAL:**

- A. Neural and Behavioral Sciences Curriculum Committee (Medical School).

**REGIONAL AND NATIONAL:**

- A. Review journal manuscripts.

**V. OTHER RELEVANT ACTIVITIES: None.**

**VI. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. D'Amato, C.J., O'Shea, K.S., Hicks, S.P., Glover, R.A. and Annesley, T.M.: Genetic prenatal aqueduct stenosis with hydrocephalus in rat. J. Neuropath. Exper. Neur. 1986;45:665-682.
2. Rheinheimer, J.S.T., O'Shea, K.S., D'Amato, C.J., and Hicks, S.P.: Early alterations in prenatal hydrocephalus. J. Neuropath. Exper. Neur. (accepted for publication, June 1987).
3. O'Shea, K.S., Rheinheimer, J.S.T., D'Amato, C.J., and Hicks, S.P.: Alterations in the neuroepithelial basal lamina in a neurological mutant with prenatal hydrocephalus. (Submitted for publication, June 1987).

**ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. D'Amato, C.J., O'Shea, K.S., Fligiel, S.E.G., Varani, J., Hicks, S.P.: Oxygen free-radicals in fetal brain macrophages. 16th Annual Meeting, Society for Neuroscience, Washington, D.C. (Abstract and poster exhibit), Soc. Neurosci. Abstr. 1986;12:867.

**JERRY L. HUDSON, PH.D.  
ASSISTANT PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Cytometry Laboratories.

**II. TEACHING ACTIVITIES:**

- A. Lectures: Senior Medical Students: Automated Cytology - Clinical and Research Applications.
- B. Faculty Advisor: Undergraduate Junior/Senior Honors Projects.
- C. Lectures: Medical Technology Students: Cytometry.
- D. Lectures: Pathology Residents: Cytometry.
- E. Faculty Advisor: Biomedical Engineering Program.
- F. Faculty Advisor: Residents' Research Projects (Departments of Surgery and Otolaryngology).
- G. Faculty Advisor: College Work-Study Program.
- H. Faculty Advisor: Postdoctoral Fellows.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Cytometry Research and Development Project, EPICS Division and Diagnostics Division, Coulter Corporation (J.L. Hudson, Ph.D., Principal Investigator, P.A. Ward, M.D., Co-investigator), 1984-present.
- B. Antigenic Phenotype and DNA Content Analysis of Head and Neck Squamous Carcinoma, Veterans Administration Hospital, Ann Arbor, Michigan, (G.T. Wolf, M.D., Principal Investigator, T.E. Carey, Ph.D., K.D. McClatchey, D.D.S., M.D., T.F. Beals, M.D., A. Flint, M.D. and J.L. Hudson, Ph.D., Co-investigators), 1984-1986.
- C. Inflammatory Cells and Lung Injury (Supplement) 5 P01H131963-0352, NHLBI, (P.A. Ward, M.D., Principal Investigator, J.L. Hudson, Ph.D., and J.P. Robinson, Ph.D., Co-investigators-[Cytometry Core]), July 1986 through February 1989, \$659,717 direct costs.
- D. Leukocyte Defects Associated with Thermal Injury (IR29GM38827-01), NIDR, J.P. Robinson, Ph.D., Principal Investigator, J.L. Hudson, Ph.D., Consultant, July 1986 through February 1989, \$659,717, direct costs.
- E. Cytometric Immunostatus Assessment, The Procter and Gamble Company, Miami Valley Laboratories, J.L. Hudson, Ph.D., Project Director, \$30,000 per year research gift grant for post doctoral positions, 1987--.
- F. Clinical Trials of CP-248 in Osteoarthritis, The Pfizer Company, B.C. Richardson, M.D., Ph.D., Principal Investigator, J. Fantone, M.D., S. Kunkel, Ph.D., and J.L. Hudson, Ph.D., Co-investigators, July 1987--.

- G. Cytotoxic Mechanisms of Adenosine Analogs, American Cancer Society. L. Wotring, Ph.D., Consultant. ACS-CH310, July 1, 1986 - June 30, 1988, \$77,174 initial year.
- H. Immunobiology of Head and Neck Cancer, G.T. Wolf, M.D., Principal Investigator; J.L. Hudson, Ph.D., K.A. Kimmel, Ph.D. and T.E. Carey, Ph.D., Co-investigators, Veterans Administration, 1986-1991, \$450,000.
- I. Automated Image Analysis Development Project, Coulter Corporation, J.L. Hudson, Ph.D., Principal Investigator, 1984-present.
- J. Cytometry Core Laboratories, University of Michigan Cancer Center, J.L. Hudson, Ph.D., Core Director, R.F. Todd III, M.D., Ph.D., Laboratory Director-Simpson Memorial Institute Cytometry Laboratory, 1987-present.

#### **PROJECTS UNDER STUDY:**

- A. A series of studies are in progress involving research and development for clinical applications, genetic toxicity, and immunotoxicity assessment using automated cytology (flow cytometry and image analysis), including: Cell surface marker analysis, immune cell function, cell surface receptor analysis, cell cycle analysis, cell membrane electronic potential and activation analysis, cytochemical analysis, neoplastic cell screening, and diagnosis (immune system, breast, cervical, bladder, colon, endocrine and head and neck tissues), monitoring resultants of recombinant DNA/molecular biologic manipulation of cells, prototype instrumentation development, instrumentation/computer networking, and software development for cytometry data analysis and cytometry database systems.

#### **IV. ADMINISTRATIVE ACTIVITIES:**

##### **DEPARTMENTAL:**

- A. Cytometry Laboratory.
- B. M-Laboratories/Pathology Associates.

##### **MEDICAL SCHOOL/HOSPITAL:**

- A. Cell Identification Center.
- B. Faculty Senate Assembly.
- C. Government Relations Committee/Senate Assembly.
- D. Advisory Committee, Medical School Research Computing.
- E. University of Michigan Cancer Center/Director-Cytometry Core.

##### **REGIONAL AND NATIONAL:**

- A. Reviewer:
  - 1. Cytometry, 1983--.
  - 2. CRC Press, 1985--.
  - 3. Brain Research, 1986--.
  - 4. J. Leukocyte Biology, 1986--.
  - 5. J. Histochemistry and Cytochemistry, 1987--.
- B. Member, National Immunotoxicology Discussion Group.

- C. Steering Committee: Clinical Applications of Cytometry, Charleston, South Carolina, September 30 through October 3, 1986, 1987--.
- D. Consultant:
  - 1. Coulter Corporation.
  - 2. The Pfizer Company.
  - 3. Alcohol, Aging and Immunity Center, University of Michigan.
  - 4. FDA/Immunotoxicology Projects, Office of Nutrition.
  - 5. CDC/NIOSH, Clinical Biochemistry Branch, Center for Environmental Health.
  - 6. Lovelace Medical Foundation.

## **V. OTHER RELEVANT ACTIVITIES:**

### **INVITED LECTURES/SEMINARS:**

1. Hudson, J.L.: Cytometric Immunostatus Profile, Department of Immunology/Microbiology, College of Veterinary Sciences, Oregon State University, Corvallis, Oregon, December 7, 1986.
2. Hudson, J.L.: Clinical Cytometric Immune Profile, Department of Pathology, University of Oregon Medical School, Portland, Oregon, December 9, 1986.
3. Hudson, J.L.: Clinical Cytometry, Good Samaritan Hospital, Department of Pathology, Portland, Oregon, December 10, 1987.
4. Hudson, J.L.: Cytometric Immunostatus Profile. Flow Cytometry Workshop, The Cleveland Clinic, Cleveland, Ohio, April 24, 1987.
5. Hudson, J.L.: Flow Cytometric Immunostatus Profiling, The Lovelace Medical Foundation, Albuquerque, New Mexico, June 4, 1987.
6. Hudson, J.L.: Immunoassays: Flow Cytometry Techniques. Midwest Regional Meeting of the Association of Official Analytical Chemists, Fargo, North Dakota, June 16, 1987.

## **VI. PUBLICATIONS:**

### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Richardson, B.C., Kahn, L.E., Lovett, III, E.J., and Hudson, J.L.: Effect of an inhibitor of DNA methylation on T cells. I. 5-azacytidine induces T4 expression on T8<sup>+</sup> T cells. J. Immunology 1986;137:35-39.
2. McKeever, P.E., Fligiel, S.E.G., Varani, J., Hudson, J.L., Smith, D., Castel, R.L., and McCoy, J.P.: Products of cells cultured from gliomas: IV. Extracellular matrix proteins of gliomas. Internat. J. of Cancer, 1986;37:867-874.
3. Wotring, L.L., Roti Roti, J.L., Hudson, J.L., Passiatore, J.E., Borysko, K.Z., Newcomb, R.D., and Townsend, L.B.: Triciribine (TCN), a novel tricyclic adenosine analog with anticancer activity. Nucleosides and Nucleotides. 1987;6:1 and 2:95-109.
4. Wolf, G.T., Hudson, J.L., Peterson, K.A., Miller, H.L. and McClatchey, K.D.: Lymphocyte populations infiltrating squamous carcinomas of the head and neck: Correlation with extent and prognosis. Otolaryngology-Head and Neck Surgery, 1986;95(2):142-152.
5. Snider, M.E., Armstrong, L.A., Hudson, J.L. and Steinmuller, D.: In Vitro and in vivo cytotoxicity of T-cells cloned from rejecting allografts. Transplantation, 1986;42(2):171-177.



6. Robinson, J.P., Hudson, J.L., Duque, R.E., Curnutte, J., Boxer, L. and Ward, P.A.: Measurement of antineutrophil antibody by flow cytometry: Simultaneous measurement of antibodies against monocytes and lymphocytes. *Diagnostic and Clinical Immunology*, (in press).
7. Loesche, W.J., Robinson, J.P., Flynn, M., Hudson, J.L., and Duque, R.E.: Reduced oxidative function in gingival crevicular neutrophils in periodontal disease. *Infection and Immunity*, (in press).
8. Golbus, J., Salata, M., Greenwood, J., Hudson, J.L. and Richardson, B.C.: Increased immunoglobulin response to gamma-Interferon by cultured lymphocytes from subjects with systemic lupus erythematosus. *Clinical Immunology and Immunopathology* (in press).

#### **BOOKS AND CHAPTERS IN BOOKS:**

1. Carey, T.E. and Hudson, J.L.: Potential use of flow cytometry in the diagnosis of metastatic cancer of the head and neck. Larson, D.L., Guilamondegui, O.M., and Ballantyne, A.J., editors. Treatment of Metastatic Cancer of the Head and Neck, MacMillan Publishing Company, New York, New York, (in press).
2. Clinical Applications in Cytometry (M. LaVia, P. Hurtubise, D. Sites, and J. Hudson, editors)., Ala R. Liss, Inc., New York, New York, (in press, 1987).

#### **ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Robinson, J.P., Hudson, J.L., Bruner, L.H., Ward, P.A., and Phan, S.H.: Measurements of intracellular fluorescence of human monocytes indicative of oxidative metabolism. Abstract-Sixth International Congress of Immunology, Toronto, Canada, July 6-July 11, 1986.
2. Baugh, R.F., Hudson, J.L., Wolf, G.T., and Carey, T.E.: Assessment of A9 antigen expression on normal and malignant squamous cells using flow cytometry. American Academy of Otolaryngology-Head and Neck Surgery - Research Forum, San Antonio, Texas, September, 1986.
3. Babyak, J.W., Hudson, J.L., Wolf, G.T., Peterson, K.A., Baugh, R.F., and Carey, T.E.: Further characterization of the A9 monoclonal antibody to squamous carcinoma cells. American Academy of Otolaryngology-Head and Neck Surgery Foundation, Inc., and the Association for Research in Otolaryngology - Research Forum, San Antonio, Texas, September, 1986.
4. Schlegelmilch, J.A., Comment, C., Greenwood, J.H., Williams, M.L., Cohn, R., Slade, H.B., Schwartz, S.A., Hudson, J.L., Stoolman, L.M., and McCoy, J.P.: Phenotyping of lymphocytes from peripheral blood of infants: Ficoll-Hypaque preparation compared to whole blood lysis. Poster presentation - Clinical Applications of Cytometry, OMNI Hotel at Charleston Place, Charleston, South Carolina, September 30 through October 3, 1986.
5. Greenwood, J.H., Cohn, R.J., and Hudson, J.L.: Flow cytometric cell cycle analysis of human proliferative responses. Poster presentation - Clinical Applications of Cytometry, OMNI Hotel, Charleston, South Carolina, September 30 through October 3, 1986.

6. Riedy, M.C., Kueffner, L.A., Greenwood, J.H., Slade, H.B., Schwartz, S.A., Hudson, J.L., Stoolman, L.M., and McCoy, J.P.: Cell cycle analysis of mitogen-stimulated lymphocytes from peripheral blood of infants. Poster presentation - Clinical Applications of Cytometry, OMNI Hotel, Charleston Place, Charleston, South Carolina, September 30 through October 3, 1986.
7. Robinson, J.P., Bruner, L.H., Bassoe, C-F., Greenwood, J.H., Duque, R.E., Ward, P.A., and Hudson, J.L.: Flow Cytometric assessment of leukocyte function: Use in the clinical laboratory. Poster presentation - Clinical Applications of Cytometry, OMNI Hotel - Charleston Place, Charleston, South Carolina, September 30 through October 3, 1986.
8. Hudson, J.L., Armstrong, L.A., Greenwood, J.H., Brede, D., Kleedtke, G., Gaglio, J., Bruner, L.H., Robinson, J.P., McCoy, J.P., and Ward, P.A.: Flow cytometric clinical immune status profile. Poster presentation - Coulter Immunology/Cytometry Conference, San Francisco, California, December 3-5, 1986.
9. Robinson, J.P., Bruner, L.H., Bassoe, C-F., Greenwood, J.H., Duque, R.E., Ward, P.A., and Hudson, J.L.: Leukocyte function assessment using flow cytometry. Poster presentation - Coulter Immunology/Cytometry Conference, San Francisco, California, December 3-5, 1986.
10. Bruner, L.H., Bassoe, C-F., Pierson, C., Robinson, J.P., Ward, P.A., and Hudson, J.L.: Measurement of fluorescence from dichlorofluorescein diacetate-loaded bacteria after phagocytosis by human neutrophils. Poster presentation - Coulter Immunology/Cytometry Conference, San Francisco, California, December 3-5, 1986.
11. Wolf, G.T., Hudson, J.L., Peterson, K.A., and McClatchey, K.D.: Correlations of cytotoxic/suppressor cell (T8) levels with helper/inducer (4B4) and suppressor/inducer (2H4) all levels in patients with head and neck squamous carcinoma. Head and Neck Oncology Research Conference, Arlington, Virginia, September 9-12, 1986.
12. Hudson, J.L.: Immunoassay: Flow cytometric techniques. Abstracts of Midwest Regional Meeting of the Association of Official Analytical Chemists, Fargo, North Dakota, June 15-17, 1987.
13. Hudson, J.L., Armstrong, L.A., Greenwood, J.H., Brede, D.E., Kleedtke, G.E., Gaglio, J.A., Bruner, L.H., Robinson, J.P., Kelley, S.M., and Ward, P.A.: Flow cytometric immunochemical and functional immune cell assays. Abstracts of the Midwest Regional Meeting of the Association of Official Analytical Chemists, Fargo, North Dakota, June 15-17, 1987.
14. Bruner, L.H., Robinson, J.P., Hudson, J.L., and Ward, P.A.: Oxidant production from neutrophils using flow cytometry, scopoletin oxidation, and cytochrome C reduction. Federation Proceedings, 1987;46:989.

**KENT J. JOHNSON, M.D.**  
**ASSOCIATE PROFESSOR OF PATHOLOGY**  
**DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT**  
**1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Renal Pathology Service.
- B. Immunopathological evaluation of skin biopsies.
- C. Director, Electron Microscopy Service.
- D. Autopsy coverage.

**II. TEACHING ACTIVITIES:**

- A. Lecturer Renal Pathology - Second year pathology course.
- B. Lectures on Renal Pathology - Nephrology Fellows.
- C. Lectures on Renal and Skin Immunopathology - Pathology Residents.
- D. Laboratory Instructor: Second year pathology course.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Lung Injury Produced by Oxygen Metabolites. National Institutes of Health, \$507,078 for four years. Co-investigator with Peter A. Ward.
- B. Immune Complex Injury of Lung and Oxygen Metabolites. National Institutes of Health, \$245,304 for three years. Co-Investigator with Peter A. Ward.
- C. Effectors in Pulmonary Hypertension from Monocrotaline. National Institutes of Health, \$246,183 for three years. Co-investigator with Bob Roth.
- D. Mediators in IgA and IgG Lung Injury. National Institutes of Health, \$466,791 for five years.
- E. Pathogenesis of Pancreatitis Induced Pulmonary Injury. National Institutes of Health, \$285,558 for three years. Co-investigator with Karen Guice (Funded - December 1987).
- F. Renal Center Grant. National Institutes of Health. Principal Investigator Section V and Core II. \$444,520 for five years. (Funded August, 1987).

**PROJECTS UNDER STUDY:**

- A. Oxygen Free Radical Mediated Tissue Injury.

**IV. ADMINISTRATIVE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Director, Immunopathology Fellowship Program.
- B. Renal Pathology Conference - Biweekly.
- C. Departmental Appointment and Promotions Committee.

- D. Departmental Residency Evaluation Committee.
- E. Stobbe Funds Committee.

**V. OTHER RELEVANT ACTIVITIES:**

- A. Consultant on Dermatology and Nephrology training grants.

**VI. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Johnson, K.J., Ward, P.A., and Till, G.O.: Oxygen Radicals and Arachidonate Metabolites in Lung Injury. *Ann. N.Y. Acad. Sci.*, 1986;465:26-32.
2. Ward, P.A., Johnson, K.J. and Till, G.O.: Oxygen Radicals and Microvascular Injury of Lungs and Kidneys. *Acta Physiol. Scand.* 1986;548:79-85.
3. Ward, P.A., Johnson, K.J. and Till, G.O.: Complement and experimental respiratory failure. *Intensive Care Med.* 1986;12:17-21.
4. Ward, P.A., Johnson, K.J., and Till, G.O.: Mechanisms of lung injury. *Prax. Klin. Pneumol.* 1986;40:209-210.
5. Warren, J.S., Ward, P.A., and Johnson, K.J.: Oxidative injury to the vascular endothelium. *Am. J. Med. Sci.* 1986;292(2):97-103.
6. Ward, P.A., Johnson, K.J., Till, G.O.: Animals models of oxidant lung injury. *Respir.* 1986;50(suppl)1:5-12.
7. Ward, P.A., and Johnson, K.J.: Adult respiratory distress syndrome and neutrophils. *New Eng. J. of Med.* 1987;316:413.
8. Bruner, L.H., Johnson, K.J., Carpenter, L.J., and Roth, R.A.: Lack of effect of dereoxamine, dimethylsulfoxide and catalase on monocrotaline pyrrole pulmonary injury. *J. Tox. Envir. Health*, 1987;21:205-217.

**ARTICLES ACCEPTED FOR PUBLICATION:**

1. Ward, P.A., and Johnson, K.J.: Lung Inflammatory mechanisms. *J. of human Path.*, (in press).
2. Ward, P.A., Johnson, K.J., and Till, G.O.: Animal models of oxidant lung injury. *Eur. J. Res. Dis.*, (in press).
3. Ward, P.A., Johnson, K.J. and Till, G.O.: Oxygen radicals, neutrophils and acute tissue injury. *Amer. Physiol. Soc. Clin. Monograph*, (in press).
4. Ward, P.A., Johnson, K.J. and Till, G.O.: Mechanisms of lung injury. *Prax. Klin. Pneumol*, (in press).
5. Warren, J.S., Ward, P.A., Johnson, K.J., and Ginsburg, I.: Modulation of acute immune complex mediated tissue injury by presence of polyionic substances. *Amer. J. Path.*, (in press).
6. Warren, J.S., Kunkel, R.G., Johnson, K.J., and Ward, P.A.: Comparative O<sub>2</sub><sup>-</sup> responses of lung and blood phagocytic cells in the rat: Possiblerelevance to IgA immune complex induced lung injury. *Lab. Invest.*, (in press).
7. Oldham, K.T., Guice, K.S., Ward, P.A., Johnson, K.J.: The role of oxygen radical sin immune complex injury.. *Adv. Free Rad. Bio. and Med.*, (in press).
8. Guice, K.S., Oldham, K.T., Johnson, K.J., Ward, P.A.: Mechanisms of capillary endothelial cell injury in acute pancreatitis. *Surgical Forum*, (in press).

9. Cohen, R., Johnson, K. and Humes, H.D.: Potentiation of aminoglycoside nephrotoxicity by vitamin-D induced hypercalcemia. *Amer. J. Nephrol. (Min. and Elec. Metab.)*, (in press).

#### **ARTICLES SUBMITTED FOR PUBLICATION:**

1. Weinburg, J.M., Johnson, K.J., Dela Iglesia, F.A., and Allen, E.D.: Acute alterations of tissue  $\text{Ca}^{++}$  and lethal tubular cell injury during  $\text{HgCl}_2$  nephrotoxicity in the rat. Submitted for publication.
2. Powell, J., Johnson, K.J., and Ward, P.A.: Platelets enhance  $\text{O}_2^-$  production in human neutrophils. Submitted for publication.
3. Warren, J.S., Ward, P.A., Johnson, K.J.: Activation of rat neutrophils and alveolar macrophage with IgA and IgG immune complexes. Differential patterns of enzyme secretion and  $\text{O}_2^-$  generation. Submitted for publication.
4. Bruner, L.H., Johnson, K.J., Till, G.O. and Roth, R.A.: The role of the complement system in monocrotaline pyrrole-induced pulmonary injury. Submitted for publication.
5. Warren, J.S., Elskins, T.E., and Johnson, K.J.: Effects of sodium carboxymethylcellulose and 32% dextran on mediators of the inflammatory response. Submitted for publication.
6. Ward, P.A., Till, G.O., Kunkel, R.G., and Johnson, K.J.: Protection against neutrophil-mediated lung injury by platelet depletion. Submitted for publication.
7. Fligel, S.E.G., Johnson, K.J., Johnson, R.D., Bendilaw, M.J., He, X., and Varani, J.: The effect of oxygen metabolites on elastin degradation by purified enzymes and human neutrophils. Submitted for publication.
8. Warren, J.S., Kunkel, S.L., Johnson, K.J., and Ward, P.A.: Activation of rat alveolar macrophages by immune complexes: Amplification of  $\text{O}_2^-$  responses by C5a and macrophage derived cytokines. Submitted for publication.
9. Ward, P.A., Cunningham, T.W., McCulloch, K.K., and Johnson, K.J.: Regulatory effects of adenosine and adenine nucleotides on oxygen radical responses of rat and human neutrophils. Submitted for publication.
10. Ward, P.A., Macconi, D., Sulavik, M.C., Till, G.O., Warren, J.S., Johnson, K.J., Powell, J., and Kunkel, R.G.: In vitro and in vivo evidence for neutrophil-platelet interactions in oxygen radical-mediated lung injury. Submitted for publication.
11. Ward, P.A., Cunningham, T.W., McCulloch, K.K., Phan, S., Powell, J., and Johnson, K.J.: Platelet enhancement of  $\text{O}_2^-$  responses in stimulated human neutrophils: Identification of platelet factor as adenine nucleotide. Submitted for publication.
12. Warren, J.S., Ward, P.A., and Johnson, K.J.: The respiratory burst and mechanisms of oxygen radical mediated tissue injury. Submitted for publication.
13. Warren, J.S., Kunkel, R.G., Johnson, K.J., and Ward, P.A.: Comparative  $\text{O}_2^-$  responses of lung and blood phagocytic cells in the rat. Possible relevance to IgA immune complex induced lung. Submitted for publication.
14. Warren, J.S., Kunkel, R.G., Johnson, K.J., and Ward, P.A.: Ultrastructural cytochemical demonstration of  $\text{H}_2\text{O}_2$  production by alveolar macrophages in IgA immune complex induced lung injury. Submitted for publication.
15. Carpenter, L.J., Johnson, K.J., Kunkel, R.G., and Roth, R.A.: Phorbol myristate acetate produces injury to isolated rat lung in the presence and absence of perfused neutrophils. Submitted for publication.
16. Warren, J.S., Ward, P.A., and Johnson, K.J.: The respiratory burst and mechanisms of oxygen radical mediated tissue injury.

## **BOOKS AND CHAPTERS IN BOOKS:**

1. Johnson, K.J., and Ward, P.A.: Mechanisms of acute and chronic immune inflammatory response in the lung, in Daniele, R.P. (ed.), Pulmonary Immunology and Immunologic Diseases of the Lung, Blackwell Scientific Publications Publishers, Boston, MA, (in press).
2. Johnson, K.J., and Ward, P.A.: Inflammation and active oxygen species, in Oberley, L.W. (ed), Superoxide Dismutase, Volume III; Pathological Studies. CRC Press, Boca Raton, FL, pp. 129-142, 1985.
3. Fligiel, S.E.G., Johnson, K.J. and Ward, P.A.: The role of complement in immune complex induced tissue injury, in Rother, K. and Till, G. (eds). The Complement, Springer Verlag Publishers, Berlin, (in press).
4. Wiggins, R.C. and Johnson, K.J.: Glomerulonephritis, in Humes, R.D. (ed). Pathophysiology of Electrolyte and Renal Disorders, Churchill Livingston, 1986;359-470.
5. Ward, P.A., Johnson, K.J. and Till, G.O.: Tissue Injury Caused by Toxic Oxygen Products From Phagocytic Cells, Proceedings of the Satellite Symposium, in Cohen, S., Hayashi, H., and Saito, K. (eds). Chemical Mediators of Inflammation, Academic Press, Japan, Inc., Iwata, Japan, 1986;73-83.
6. Ward, P.A., Johnson, K.J. and Till, G.O.: Leukocytic oxygen radicals and acute lung injury, in Karemi, H., Hymord, A.L., and Koelowitz, P.J. (eds). Acute lung injury pathogenesis of adult respiratory distress syndrome. - PSG Publishing Company, Littleton, MA, 1986;107-114.
7. Johnson, K.J.: Neutrophil independent oxygen radical mediated tissue injury, in Taylor, A.E. (ed.) Oxygen Radicals. Clinical Physiology Series, American Physiological Society, 1986;151-162.
8. Ward, P.A., Johnson, K.J. and Till, G.O.: Neutrophil Dependent-oxygen Radical Mediated Tissue Injury, in Taylor, A.E., (ed). Oxygen Radicals, American Physiological Society, 1986;145-150.
9. Ward, P.A., Johnson, K.J. and Till, G.O.: Tissue injury as a consequence of oxygen radicals produced by phagocytic cells. Proceedings of Symposium by Comparative Respiratory Society, (in press).
10. Ward, P.A., Johnson, K.J., and Sulavik, M.: Lung Injury produced by oxygen derived free radical s from leukocytes, in Stein, T.P. and Weinbaum, G. (eds)., Mechanisms of Lung Injury, George F. Stickly Company, Philadelphia, PA, 1986;58-80.
11. Johnson, K.J.: Inflammatory mediators in glomerulonephritis, in Churg, J. and Sinniah, R., (eds). Classification and Atlas of Infectious Diseases of Kidney. WHO Vol. IV, Amer. Soc. Clin. Pathol., (in press).
12. Warren, J.S., Johnson, K.J., Ward, P.A.: Phagocytes and reactive oxygen substances as mediators of acute lung injury, in Hyers, T. (ed)., Diffuse alveolar damage and respiratory failure, Futura Press, (in press).
13. Ward, P.A., Warren, J.S., and Johnson, K.J.: Leukocytic oxygen products and their diverse biological effects, in Macot, H.Z. (ed)., Leukocyte Emigration and its Sequellae: Satellite Symposium of the 6th International Congress of Immunology, Karger, Basel, 1986, (in press).
14. Warren, J.S., Ward, P.A., Johnson, K.J.: Mechanisms of damage to pulmonary endothelium, in Ryan, U.S. (ed)., Endothelial cells, CRC Uniscience. Marcel Dekker, Inc., New York, New York, (in press).

15. Ward, P.A., Johnson, K.J. and Till, G.O.: Leukocytic oxygen radicals and acute lung injury, in Kazemi, H., Hyman, A.L. and Ladowitz, P.J. (eds). Acute Lung Injury: Pathogenesis of Adult Respiratory Distress Syndrome, PSG Publishing Co., Littleton, MA, 1986;107-114.
16. Till, G.O., Johnson, K.J., and Ward, P.A.: Oxygen free radicals in inflammation, in Messmer, K. and Hammersen, F. (eds)., Prog. Appl. Microcirc., Vol. 9, Karber, Basal, (in press).
17. Ward, P.A., Johnson, K.J. and Till, G.O.: Leukocyte oxygen radicals and acute lung injury, in Proceedings of a Symposium on "Acute Lung Injury", PSG Publishing Co., Littleton, MA, (in press).
18. Johnson, K.J., Chensue, S.W., Kunkel, S.L. and Ward, P.A.: Immunopathology, in, Rubin, E. and Farber, J.L. (eds)., Textbook of Pathology, Lippincott Inc., New York, New York, (in press).
19. Ward, P.A., Johnson, K.J., Till, G.P., and Warren, J.S.: Activated phagocytes, oxygen radicals and tissue injury, in Chow, C. (ed)., Cellular Antioxidant Defense Mechanism, CRC press, Marcell Dekker, Inc., New York, NY, (in press).
20. Ward, P.A., Johnson, K.J., and Till, G.O.: Tissue injury as a consequence of oxygen radicals produced by phagocytic cells, in Proceedings of a Symposium by the Comparative Respiratory Society, Anaheim, CA, 1986, (in press).
21. Ward, P.A., Johnson, K.J., and Sulavik, M.D.: Lung injury produced by oxygen derived free radicals from leukocytes, in Mechanisms of Lung Injury Symposium, given at the Graduate Hospital, Philadelphia, PA, 1986, (in press).
22. Johnson, K.J., Rehan, A., Ward, P.A.: Role of oxygen radicals in kidney disease, in Halliwell, B. (ed)., Oxygen Radicals and Tissue Injury, Fed. Proc., 1987, (in press).
23. Ward, P.A., Johnson, K.J., Warren, J.S., Kunkel, R.G.: Immune complexes, oxygen radicals and lung injury, in Halliwell, B. (ed)., Oxygen Radicals and Tissue Injury, Fed. Proc., 1987 (in press).
24. Warren, J.S., Ward, P.A., Johnson, K.J.: Immune complex injury, in Cantor, J.D. (ed)., CRC Handbook of Animal Models of Pulmonary Disease, 1987 (in press).

**ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Guice, K.S., Oldham, K.T., Johnson, K.J., Ward, P.A., Till, G.O. and Coran, A.G.: Acute lung injury in caerulein-induced pancreatitis. American College of Surgeons, Clinical Forum, 1986.
2. Ward, P.A., Johnson, K.J. and Till, G.O.: Tissue injury as a consequence of oxygen radicals produced by phagocytic cells, Proceedings of Symposium by Comparative Respiratory Society, given in anaheim, California, 1986.
3. Ward, P.A., Johnson, K.J., Sulavik, M.D.: Lung injury produced by oxygen-derived free radicals from leukocytes, Mechanisms of Lung Injury Symposium, given at the Graduate Hospital, Philadelphia, PA, 1986.
4. Till, G.O., Johnson, K.J., and Ward, P.A.: Oxygen free radicals in inflammation. International Symposium on Microcirculation and Inflammation, Heidelberg, Federal Republic of Germany, June, 1987.
5. Warren, J.S., Johnson, K.J., Ward, P.A.: Different O<sub>2</sub><sup>-</sup> responses of neutrophils and alveolar macrophages to IgG and IgA immune complexes. Chicago Thoracic Society, 1986.
6. Guice, K.S., Oldham, K.T., Johnson, K.J., Ward, P.A., and Till, G.O.: Caerulein-induced acute pancreatitis: A possible mechanism. Digestive Diseases and Sciences 1986;31(10):1132.

7. Cohen, R.A., Johnson, K.J., and Humes, H.D.: Vitamin D potentiates gentamicin nephrotoxicity. *Amer. Soc. Nephrol.*, 1986.
8. Guice, K.S., Oldham, K.T., Johnson, K.J., Till, G.O., Ward, P.A., and Coran, A.G.: Pancreatitis and acute lung injury: A role for complement. *Soc. Acad. Surg.* 1986.
9. Warren, J.S., Johnson, K.J., Till, G.O., and Ward, P.A.: Mechanisms of oxygen radical mediated acute tissue injury: In-vivo studies. ENZON Conference on modified enzymes in free radical research. Princeton, NJ. 1986 (Panel Discussion).
10. Guice, K.S., Oldham, K.T., Johnson, K.J., Kunkel, R.G., and Ward, P.A.: Pancreatitis induced pulmonary injury: An animal model. *Fed. Proc.* 1987;46:3903.
11. Ward, P.A., Cunningham, T.W., Till, G.O., and Johnson, K.J.: Role of platelets in oxygen radical mediated responses. *Fed. Proc.* 1987;46:739.
12. Kunkel, R.G., Warren, J.S., Johnson, K.J., and Ward, P.A.: Ultrastructural evidence for the role of alveolar macrophages in IgA immune complex induced acute lung injury. *Fed. Proc.* 1987;46:2439.
13. Bates, T.K., Warren, J.S., Kunkel, R.G., Johnson, K.J., and Ward, P.A.: Ability of rat interstitial lung macrophages to produce  $O_2^-$  following activation with immune complexes. *Fed. Proc.* 1987;46:2440.
14. Warren, J.A., Kunkel, R.G., Johnson, K.J., and Ward, P.A.: Selective activation of rat phagocytes by IgA immune complexes: Enhancement of  $O_2^-$  response by C5a and products of activated macrophages. *Fed. Proc.* 1987;46:2438.
15. Cunningham, T.W., Ward, P.A., and Johnson, K.J.: Adenine nucleotide effects on oxygen radical responses of rat and human neutrophils. 1987;46:3902.
16. Gannon, D.E., H, X., Johnson, K.J., and Ward, P.A.: Time dependence of protection by catalase from oxygen radical-mediated acute lung injury. *Fed. Proc.* 1987;46:1448.
17. Johnson, K.J.: Oxygen radicals and tissue injury. Chairman of symposium on mechanisms of cell injury and cell death. *Fed. Proc.* 1987.
18. Guice, K.S., Oldham, K.T., Johnson, K.J., and Ward, P.A.: Mechanisms of pancreatic capillary endothelial injury in acute pancreatitis. *Surgical Forum*, 1987.
19. Warren, J.S., Kunkel, S.L., Johnson, K.J., and Ward, P.A.: Enhanced oxygen radical responses of immune complex stimulated rat alveolar macrophages by cytokines. *Int. Conf. on Cytokines*, Heidelberg, Germany, 1987.
20. Ward, P.A., Johnson, K.J., Warren, J.S., Kunkel, R.G.: Immune complexes, oxygen radicals and lung injury. *Brook Lodge Symposium on Oxygen Radicals and Tissue Injury*, Kalamazoo, Michigan, April, 1987.
21. Johnson, K.J., Rehan, A., Ward, P.A.: The role of oxygen radicals in kidney disease. *Brook Lodge Symposium on Oxygen Radicals and Tissue Injury*, Kalamazoo, Michigan, April, 1987.



**W. JOHN JUDD F.I.M.L.S., M.I.BIOL.  
ASSOCIATE PROFESSOR  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Director, Blood Bank Reference Laboratory.
- B. Consultant, Veteran's Administration Medical Center, Ann Arbor.

**II. TEACHING ACTIVITIES:**

- A. Medical Technology 418.
- B. Attended and participated in CP Grand Rounds Conferences.
- C. Attended and participated in CP Case-Study Conferences.
- D. Trained Pathology, Hematology and Oncology, and Pediatric Hematology Residents in Immunohematology.
- E. Provided instruction to CP Residents during their Blood Bank Rotations.
- F. Developed 1987 Orientation Lecture Series for Residents in Clinical Pathology.
- G. Coordinated 1986-87 Clinical Pathology Grand Rounds Conferences.
- H. Coordinated 1986-87 Anatomic Pathology Conferences.
- I. Co-Director, Current Topics in Blood Banking Conference, Department of Post-Graduate Medicine, June 3-5, 1987:
  - 1. Workshop Director - Blood Group Biochemistry.
  - 2. Speaker - Problems with the Crossmatch.
  - 3. Moderator - Controversial Issues.
- J. Invited Lecturer, Specialist in Blood Banking Program, Wayne State University.
- K. Workshop Director, Serological Methods in Forensic Science. American Association of Blood Banks Annual Meeting, San Francisco.
- L. Workshop Director, Blood Group Biochemistry Update. American Association of Blood Banks Annual Meeting, San Francisco.

**III. RESEARCH ACTIVITIES:**

**PROJECTS UNDER STUDY:**

- A. Butch, S.H., Oberman, H.A., and Judd, W.J.: Should hospitals draw donors? - a cost appraisal (submitted abstract).
- B. Steiner, E.A., and Judd, W.J.: Anti-IgG, dosage and the detection of Kidd-system antibodies.
- C. Annesley, T.M. and Judd, W.J.: Clorox and their admixture: potential hazards.
- D. Solid phase serology.
- E. Judd, W.J., Steiner, E.A., O'Donnell, D.B., and Oberman, H.A.: Reverse ABO typing problems due to prozone: how safe is the immediate-spin crossmatch (submitted abstract).
- F. Judd, W.J., Steiner, E.A., Oberman, H.A., Giacherio, D.: Anomalous Rh typings with chemically modified anti-D (submitted paper).

**IV. SERVICE ACTIVITIES:**

**MEDICAL SCHOOL/HOSPITAL:**

- A. Director, AABB Regional Reference Laboratory, University of Michigan Medical School.

**REGIONAL AND NATIONAL:**

- A. National Committee for Clinical Laboratory Standards:  
1. Chairman, Subcommittee on Lectins.
- B. American Association of Blood Banks:  
1. Committee on Technical Workshops.  
2. Subcommittee on Regional Workshops.  
3. Associate Editor, AABB Technical Manual.  
4. Vice-Chairman, Scientific Section Coordinating Committee.
- C. Michigan Association of Blood Banks:  
1. Past President.  
2. Annual Meeting Program Committee.
- D. Referee of articles submitted to Transfusion, Vox Sanguinis and Laboratory Medicine.

**V. OTHER RELEVANT ACTIVITIES:**

1. The appropriateness of pretransfusion testing. South Central Association of Blood Banks Seminar. United Blood Services Central Laboratory, Scottsdale, AZ, January, 1987.
2. Antibody identification - how much is enough? South Central Association of Blood Banks Seminar. United Blood Services Central Laboratory, Scottsdale, AZ, January, 1987.
3. Biochemistry of the MN Blood groups. South East Association of Blood Banks Annual Meeting, Atlanta, GA, March, 1987.
4. Elution of antibody from red blood cells. South East Association of Blood Banks Annual Meeting, Atlanta, GA, March, 1987.
5. Structure of the red cell membrane. Joint Reference Laboratory Conference of the American Red Cross Blood Services and the American Association of Blood Banks, Arlie, VA, April, 1987.
6. Cases I have known and loved. American Red Cross National Reference Laboratory, Bethesda, MD, June, 1987.

**VI. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Judd, W.J.: On the recognition of N-deficient red blood cells and the selection of blood for transfusion to patients with anti-N (editorial). Immunohematology 1986;2:50-53.
2. Judd, W.J., Wilkinson, S.L., Issitt, P.D., Johnson, T.L., Keren, D.F., and Steiner, E.A.: Donath Landsteiner hemolytic anemia due to an anti-Pr biphasic hemolysin. Transfusion 1986;26:423-425.

3. Steiner, E.A., Judd, W.J. and Oberman, H.A.: Autologous donations from recently transfused patients. *Transfusion*.
4. Smalley, S.L., Thompson, A.L., Spence, M.A., Judd, W.J. and Sparkes, R.S.: Genetic influences on spatial ability: transmission in a five-generation kindred. *Behavior Genetics*.
5. Daniels, G.L., Reid, M.E., Anstee, D.J., Beattie, K.M. and Judd, W.J.: Transient reduction in erythrocyte membrane sialoglycoprotein B associated with the presence of elliptocytosis in a patient with severe anemia. *Blood*.
6. Balm, A.J.M., Kinnel, K.A., Judd, W.J., McClatchey, K.D., Hsu, S., Lloyd, K.O. and Carey, T.E.: H-type 2 blood group antigen in normal and malignant tissues of the head and neck defined by monoclonal antibody G10: comparison with commercial anti-A, B and H-monoclonal antibodies. *Cancer* (submitted).

#### **BOOKS/CHAPTERS IN BOOKS:**

1. Oberman, H.A. and Judd, W.J.: Cost-containment in transfusion medicine. *In*: Cash, J.D., ed., *Progress in Transfusion Medicine*, Vol. III, Churchill-Livingstone, (in press).
2. Judd, W.J.: Antibody elution from red cells. *In*: Greenwalt, T.J., ed., *Methods in Hematology*. Churchill-Livingstone, (in press).
3. Judd, W.J.: Lectins and Polyagglutination. *In*: Petz, L.D., Swisher, S.N., eds., *Clinical Practice of Blood Transfusion*, ed. 2. Churchill-Livingstone, (in press).
4. Judd, W.J. and Vengelen-Tyler, G.: Blood groups biochemistry update. Arlington, VA: American Association of Blood Banks, 1986.
5. Judd, W.J.: *Methods in Immunohematology*. Montgomery Scientific Publications, (in press).

**DAVID F. KEREN, M.D.  
ASSOCIATE PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Head, Biochemistry Section.
- B. Director, Clinical Immunopathology Laboratory.
- C. Surgical Pathology, Consultant on Immunopathology and Gastrointestinal Pathology, MDS signout, on-call duties.
- D. Autopsy Pathology, staff coverage and on-call duties.

**II. TEACHING ACTIVITIES:**

- A. Medical Students and Graduate Students.
  - 1. Biology 414, Lecture on Mucosal Immunity.
  - 2. Pathology Course, Lectures on myeloma and autoimmunity.
- B. House Officers:
  - 1. Coordinator, Weekly Clinical Pathology Rounds.
  - 2. Participant, Clinical Pathology Grand Rounds.
  - 3. Clinical Immunopathology, Daily sign-out.
  - 4. Immunology Journal Club, Weekly.
  - 5. Graduate Student Conference, Weekly.

**III. RESEARCH ACTIVITIES:**

- A. Studies on kinetics of the mucosal immune response to bacterial antigens.
- B. Creation of carcinogen-protein conjugates to study systemic and mucosal immune response to carcinogens.
- C. Cell Differentiation within the liver.

**SPONSORED SUPPORT:**

- A. United States Army Research and Development Command, "An Investigation of the Memory Response of the local Immune System to Shigella Antigens", \$290,628. December 1, 1984-June 30, 1987., Principal Investigator.
- B. Smokeless Tobacco Research Council, Inc. "Significance of Immune Responses to Mucosal Carcinogens", \$162,946. January 1, 1984 - December 31, 1986, Principal Investigator.
- C. National Institutes of Health, "Cell Differentiation Within the Liver Acinus", Jorge Gumucio, Principal Investigator, David F. Keren, Co-investigator, \$316,820, April 1, 1984 - March 31, 1987.

#### **STUDENT AND FELLOW RESEARCH PROJECTS:**

- A. Joseph Wassef - "Uptake of Shigella by M cells in the pathogenesis of dysentery".
- B. Lori Armstrong - "The cellular basis for enhanced mucosal IgA memory responses."
- C. Larry Silbart - "The detection of AAF adducts in rat hepatocytes by RIA".

#### **IV. ADMINISTRATIVE ACTIVITIES:**

##### **DEPARTMENTAL:**

- A. Clinical Pathology Committee.
- B. Biochemistry Section Committee.
- C. Resident Counselor.
- D. Stobbe Fund Committee.
- E. Department Executive Committee.

##### **REGIONAL AND NATIONAL:**

- A. Immunopathology Council (ASCP), (Chairman, 1985-1987).
- B. Editorial Board - Infection and Immunity (ASM), Clinical Chemistry.
- C. Council on Continuing Education, (ASCP).
- D. Chairman, Mucosal Immunity (ASM).
- E. Chairman, Immunopathology Rounds (ASCP).
- F. Member, Strategic Planning Committee.
- G. Chairman, Surface Marker Assay Symposium, College of American Pathologists.

#### **V. OTHER RELEVANT ACTIVITIES:**

##### **INVITED LECTURES/SEMINARS:**

- 1. "Diagnostic Use of Immunofluorescence", American Society of Clinical Pathologists, Immunohistology Workshop, Chicago, October, 1986.
- 2. "High Resolution Electrophoresis and Immunofixation:", Course presented at ASCP, Orlando, FL, October, 1986.
- 3. "Alternative Approaches to Diagnose Monoclonal gammopathies", course presented at ASCP, Orlando, FL, 1October, 1986.
- 4. "Ontogeny of B lymphocytes", Presented as part of the surface marker workshop at ASCP, Orlando, FL, October, 1986.
- 5. "Whipple's disease - An immunologic perspective", Presented as Visiting Professor, The Cleveland Clinic Foundation, Cleveland, Ohio, November, 1986.
- 6. "New Methods in Electrophoresis", Presented as Visiting Professor, The Cleveland Clinic Foundation, Cleveland, OH, November, 1986.
- 7. "Protein Chemistry and the Diagnosis of Monoclonal Gammopathies", Featured Speaker, Michigan Pathology Society, Flint, MI, February, 1987.
- 8. "Immunopathology of the Gastrointestinal Tract", Gastrointestinal Pathology Club Session, Guest Speaker, International Academy of Pathologists, Chicago, IL, March, 1987.

9. "Mucosal Immune Response to Enteropathogens", Mucosal Immunity Symposium, American Society of Microbiology, Atlanta, GA, March, 1987.
10. "High Resolution Electrophoresis and Immunofixation", Course presented at ASCP, San Francisco, CA, April, 1987.
11. "New Concepts in Autoimmune Disease", presented in the Immunopathology Workshop, ASCP, San Francisco, CA, April, 1987.
12. "Hyperviscosity Syndrome with Kappa Chain Disease", presented as part of Immunopathology Rounds, ASCP, San Francisco, CA, April, 1987.
13. "Immunofixation Techniques in Clinical Immunology", presented at the Regional Workshop Program, ASCP, Cincinnati, Ohio, June, 1987.
14. "Surface Markers in Immunodeficiency Disease", CAP, Washington, D.C., June, 1987.

## VI. PUBLICATIONS:

### ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:

1. Judd, W.J., Wilkinson, S.L., Issitt, P.D., Johnson, T.L., Keren, D.F., and Steiner, E.A.: Conath-Landsteiner hemolytic anemia due to anti-Pr. *Transfusion*. 1986;26:423-425.
2. Agha, F.P. and Keren, D.F.: Barrett esophagus complicating achalasia: a clinical, radiologic, and pathologic study of 70 patients with achalasia. *Radiology. J. Clin. Gastroenterol.* 1987;9:232-237.
3. Hirata, I., Berrebi, G., Austin, L.L., Keren, D.F. and Dobbins III, W.O.: Immunohistological characterization of intraepithelial and lamina propria lymphocytes in control ileum and colon and in inflammatory bowel disease. *Digestive Disease Science. Dig. Dis. Sci.* 1986;31:593-603.
4. Keren, D.F., McDonald, R.A. and Formal, S.B.: Secretory immunoglobulin A response following peroral priming and challenge with *Shigella flexneri* lacking the 140-megadalton virulence plasmid. *Infect. Immun.* 1986;54:920-923.
5. Keren, D.F., Silbart, L.K., Lincoln, P.M. and Annesley, T.M.: Significance of immune responses to mucosal carcinogens: a hypothesis and a workable model system. *Pathol. Immunopathol. Res.* 1986;5:265-277.
6. Keren, D.F., McDonald, R.A., Scott, P.J., Rosner, A.J. and Strubel, E.J.: Antigen form and route of administration in the elicitation of mucosal IgA memory responses to *Shigella flexneri* antigens. *Adv. Res. Cholera Related Diarrheas.* (S. Kuwahara, N.F. Pierce, eds). 1986;277-284.
7. Lee, H.H., O'Donnell, D.B., and Keren, D.F.: Characteristics of melanosis duodeni: Incorporation of endoscopy, pathology and etiology. *Endoscopy* 1987;19:107-109.
8. Johnson, T.L., Keren, D.F., and Thomas, L.R.: Indirect immunofluorescence technique to detect monoclonal antinuclear antibody. *Arch. Pathol. Lab. Med.* 1987;111:560-562.
9. Keren, D.F.: Intestinal mucosal immune defense mechanisms. *Am. J. Surg. Pathol.* (in press).
10. Keren, D.F.: Models to follow secretory IgA response to mucosal infections. *Pathol. Immunopathol. Res.* (in press).
11. Kern, S.E., Keren, D.F. and Pierson, C.L.: Bacterial overgrowth and mucosal changes in isolated (Thiry-Vella) ileal loops in rabbits: effect of intraluminal antibiotics. *Lab. Invest.* (in press).
12. Khan, P., Roth, M.S., Keren, D.F. and Foon, K.A.: Light chain disease associated with the hyperviscosity syndrome. *Cancer* (in press).

13. Carey, J. and Keren, D.F.: Correlation of the IgA response in intestinal secretions with cellular events in the development of mucosal immunity. Intern. Cong. Mucosal Immunol. (in press).
14. Kern, S.E., Keren, D.F., Beals, T.F. and Varani, J.: A Model for paneth cell study: tissue culture of the hyperplastic paneth cell population of rabbit Thiry-Vella ileal loops. Intern. Cong. Mucosal Immunol., (in press).

#### **BOOKS AND CHAPTERS IN BOOKS:**

1. Keren, D.F.: High resolution electrophoresis and immunofixation: Technique and interpretation. Butterworth's, Boston, 1987.
2. Keren, D.F.: Chapter I: Introduction-History and Evolution of Surface Marker Assays in Keren, D.F.(Editor). Diagnostic Use of Cell Surface Marker and DNA Analysis. American Society of Clinical Pathologists, Chicago, in preparation.
3. Keren, D.F.: Chapter VII: Surface Marker Assays in the Evaluation of Immune Deficiency Diseases in Keren, D.F. (editor). Diagnostic Use of Cell Surface Marker and DNA Analysis. American Society of Clinical Pathologists, Chicago, in preparation.
4. Keren, D.F. (editor): Diagnostic Use of Cell Surface Marker and DNA Analysis. American Society of Clinical Pathologists, Chicago, in preparation.
5. Keren, D.F.: Chapter V: Structure and function of the immunologic system of the gastrointestinal tract, in, Ming, S. (editor), The Pathology of the Gastrointestinal Tract., W.B. Saunders Co., Publishers, New York, (in press).

#### **ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Keren, D.F., Dobbins, W.O., III: Microorganisms and Whipple's Disease, Gastroenterol., 1986;91:1580-1581.
2. Keren, D.F.: Diagnostic Techniques in Immunohistology: Immunofluorescence. ASCP Workshop, 1986.
3. Lilley, G. and Keren, D.F.: Alpha-1 antitrypsin deficiency. Tech. Sample, American Society of Clinical Pathologists, 1986.
4. Keren, D.F.: Intestinal mucosal defense mechanisms. Gastrointestinal Pathology Club Publication, IAP, 1986.
5. Keren, D.F., Lincoln, P.M., Silbart, L.K., and McDonald, R.M.: Secretory IgA response in intestinal secretions to the carcinogen 2-acetylaminofluorene (2-AAF) following combined intraperitoneal and intraintestinal administration of 2-AAF-carrier protein conjugates. Fed. Proc. 1987;46:746.
6. Keren, D.F.: Use of surface marker assays to diagnose immunodeficiency diseases. XIV World Congress of Anatomic and Clinical Pathology, Abstract Book 5-52, 1987.
7. Keren, D.F.: Immunofluorescence techniques. Immunochemica (in press).
8. Davenport, R.D. and Keren, D.F.: Oligoclonal bands in cerebrospinal fluid: significance of corresponding bands in serum for diagnosis of multiple sclerosis. Am. J. Clin. Pathol., (in press).
9. Levinson, S.S., Keren, D.F., Carey, J.C., and Goldman, J.O.: Identification of circulating immune complexes (CIC) by high resolution electrophoresis. Clin. Chem. 1987;33:904.

**STEVEN L. KUNKEL, PH.D.  
ASSOCIATE PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

- I. CLINICAL ACTIVITIES:** None.
- II. TEACHING ACTIVITIES:**
- A. Inflammation/Immunopathology Series ICS-600.
  - B. Biochemistry 522B.
  - C. Epidemiology 570.
  - D. Core lectures in Immunopathology.
  - E. Teaching/research seminars in various departments.
  - F. Supervised the following students and postdoctoral fellows: Dr. Robert Streiter, Dr. Robert Spengler, Dr. Wendy Scales, and Michael Jarrard.
  - G. Doctoral Committee Member for the following graduate students: Wendy Scales, Marjorie Minkoff, Mohammad Hata, Sandra Reynolds.
- III. RESEARCH ACTIVITIES:**
- SPONSORED SUPPORT:**
- A. NIH - Macrophage/Monocyte Signals in Lung Granuloma Formation; HL-R01-35276; Principal Investigator.
  - B. NIH - Macrophage Function in Pulmonary Inflammation; HL-R01-31237; Principal Investigator.
  - C. NIH - Inflammatory Cells and Lung Injury; Program Project HL-31963; Principal Investigator for Section II and Core II.
  - D. American Heart Association Established Investigator - Regulation of Pulmonary Granuloma Formation by Macrophages; Principal Investigator.
  - E. NIH - Modulation of Immune Complex Lung Injury by Prostaglandins; Co-investigator.
- PROJECTS UNDER STUDY:**
- A. Regulation of macrophage signals that dictate immune responsiveness.
    - 1. Ia antigen expression.
    - 2. Synthesis of arachidonic acid metabolites.
    - 3. Interleukin-1 production.
    - 4. Tumor necrosis factor production.
  - B. Role of macrophages - lymphocyte interactions in the initiation, maintenance, and resolution of chronic immune response.
  - C. Regulation of macrophage gene expression.
  - D. Techniques used to study the above projects:
    - 1. High pressure liquid chromatography.
    - 2. Spectrophotometry.



3. Immunofluorescence.
4. Image analysis.
5. Proliferation assays (IL-1 and IL-2 assays).
6. Cytotoxicity assays.
7. Molecular probe assays.
- E. Collaborative Research Outside of Pathology:
  1. Dr. Gene Higashi.
  2. Dr. Joseph Lynch.
  3. Dr. Roger Wiggins.

#### **IV. ADMINISTRATIVE ACTIVITIES:**

##### **DEPARTMENTAL:**

- A. Space Utilization Committee (Chairman).
- B. Search Committee for Academic Pathologist (Chairman).
- C. Conduct Research Seminar Series.
- D. Interview Candidates for Residency Program.

##### **MEDICAL SCHOOL/HOSPITAL:**

- A. Medical School Financial Aid Committee.
- B. Committee on Medical Student Research.
- C. Committee on Use and Care of Animals.
- D. Reviewer for Biomedical Research Council Grants.
- E. Reviewer for Dental Research Institute Grants.
- F. Reviewer for Diabetes Research and Training Center Grants.
- G. Member, Michigan Cancer Center.

##### **REGIONAL AND NATIONAL:**

- A. Associate Editor, Journal of Immunology, 1987-1990.
- B. Reviewer for the following journals: American Journal of Pathology, American Review of Respiratory Disease, Circulation, Clinical Immunology and Immunopathology, Infection and immunity, Journal of Rheumatology, Journal of Immunology, Laboratory Investigation, Science.
- C. American Heart Association Undergraduate Research Committee.
- D. Research peer review committee of the American Heart Association (Michigan).
- E. Consultant/grant reviewer for Veteran's Administration.
- F. Grant reviewer, United States Department of Agriculture.
- G. Grant reviewer, The Arthritis Society.

#### **V. OTHER RELEVANT ACTIVITIES:**

##### **INVITED LECTURES AND SEMINARS:**

1. University of Pittsburgh, Visiting Professor - Pulmonary Division, 1986.
2. Chicago Eicosanoid Forum, (sponsored by Northwestern, University of Chicago, University of Illinois), 1986.
3. Pittsburgh Cancer Institute, Pittsburgh, Pennsylvania, 1986.

4. Cetus Corporation, Emeryville, California, 1987.
5. Indiana University, Gary, Indiana, 1987.
6. Pfizer Research Forum, Groton, Connecticut, 1987.
7. Invited Speaker, Microvascular Society, Washington, D.C., 1987.
8. Abbott Laboratory Lecture Series, North Chicago, Illinois, 1987.
9. Upjohn Seminar Series, Kalamazoo, Michigan, 1987.
10. Invited Speaker, American Physiology Society Symposium, Washington, D.C., 1987.
11. American Heart Association Established Investigator Symposium, Washington, D.C., 1987.

## **VI. PUBLICATIONS:**

### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Larrick, J.W. and Kunkel, S.L.: Hypothesis: Is Reye's syndrome caused by augmented release of tumor necrosis factor? *Lancet*, 1986;132-133.
2. Phan, S.H., and Kunkel, S.L.: Inhibition of bleomycin-induced pulmonary fibrosis by nordihydroguaiaretic acid: The role of alveolar macrophage activation and mediator production. *Am. J. Pathol.* 1986;124:343-352.
3. Chensue, S.W., Remick, D.G., Higashi, G.I., Boros, D.L. and Kunkel, S.L.: Modulations of murine Schistosomiasis mansoni by exogenously administered prostaglandins. *Am. J. Pathol.* 1986;125:28-34.
4. Jolly, S.R., Kane, W.J., Hook B.G., Abrams, G.D., Kunkel, S.L. and Lucchesi, B.R.: Reduction of myocardial infarct size by neutrophil depletion: Effect of duration of occlusion. *Am. Heart J.* 1986;112:682-690.
5. Remick, D.G., Larrick, J. and Kunkel, S.L.: Tumor necrosis factor-induced alterations in circulating leukocyte populations. *Biochem. Biophys. Res. Comm.* 1986;141:818-824.
6. Kunkel, S.L., Remick, D.G., Spengler, M., and Chensue, S.W.: Modulation of macrophage-derived interleukin-1 and tumor necrosis factor by prostaglandin E<sub>2</sub>. *Adv. Prostaglandin, Thromboxane and Leukotriene Research.* 1987;17:155-158.
7. Bachwich, P.R., Lynch, J.P. III, Larrick, M., Spengler, M. and Kunkel, S.L.: Tumor Necrosis factor production by human sarcoid alveolar macrophages. *Am. J. Pathol.* 1986;125:421-425.
8. Phan, S.H., McGarry, B.M., Loeffler, K.M., and Kunkel, S.L.: Leukotriene C<sub>4</sub> binds to rat lung fibroblasts and stimulates collagen synthesis. *Adv. Prostaglandin, Thromboxane, and Leukotriene Res.* 1987;17:993-995.
9. Bachwich, P.R., Lynch, J.P., III, and Kunkel, S.L.: Arachidonic acid metabolism is altered in sarcoid alveolar macrophages. *Clin. Immunol. Immunopathol.* 1987;42:27-37.
10. Nagata, S., Glovsky, M.M. and Kunkel, S.L.: Anaphylatoxin-induced neutrophil chemotaxis and aggregation. *Int. Arch. Allergy. Appl. Immunol.* 1987;82:4-9.
11. Rao, N.A., Patchett, R., Fernandez, M.A., Sevanian, A., Kunkel, S.L., and Marak, G.E., Jr.: Treatment of experimental granulomatous uveitis by lipoxygenase and cyclo-oxygenase inhibitors. *Arch. Ophthalmol.* 1987;105:413-415.
12. Remick, D.G., Kunkel, R.G., Larrick, S.W. and Kunkel, S.L.: Acute in vivo effects of human recombinant tumor necrosis factor. *Lab. Invest.* 1987;56:583-590.

13. Phan, S.H., McGarry, B.M., Loeffler, K.M., and Kunkel, S.L.: Regulation of macrophage-derived fibroblast growth factor release by arachidonate metabolites. *J. Leukocyte. Biol.*, (in press).
14. Larrick, J.W., Wang, J., Findly, B.M., Chenoweth, D.F., Kunkel, S.L. and Deinhardt, T.L.: Murine monoclonal antibodies recognize neutralizing epitopes on human C5a. *Infect. and Immunity*, (in press).
15. Port, F.K., VanDeKerkov, K.M., Kunkel, S.L., and Kluger, M.J.: The role of dialysate in the stimulation of interleukin-1 production during clinical hemodialysis. *Am. J. Kid. Dis.*, (in press).
16. Warren, J.S., Kunkel, S.L., Johnson, K.J., and Ward, P.A.: In vitro activation of rat neutrophils and alveolar macrophages with IgA and IgG immune complexes: Implication for immune complex induced lung injury. *Am. J. Pathol.*, (in press).

#### **ARTICLES SUBMITTED FOR PUBLICATION:**

1. Remick, D.G., Larrick, J.W., Nguyen, D.T. and Kunkel, S.L.: Stimulation of prostaglandin E<sub>2</sub> and thromboxane B<sub>2</sub> production by human monocytes in response to interleukin-2. (*Biochem. Biophys. Res. Commun.*).
2. Remick, D.G., Kunkel, S.L., Higashi, G.I. and Hiserodt, J.C.: Specific suppression of natural killer cell cytolytic activity in mice undergoing pulmonary granulomatous inflammation. (*J. Immunol.*).
3. Warren, J.S., Kunkel, S.L., Cunningham, T.U., Johnson, K.J., and Ward, P.A.: Macrophage-derived cytokines amplify immune complex-triggered O<sub>2</sub><sup>-</sup> responses by rat alveolar macrophages (*Am. J. Pathol.*).

#### **BOOKS AND CHAPTERS IN BOOKS:**

1. Kunkel, S.L., Chensue, S.W., Ellul, D.A. and Higashi, G.: Macrophage function in granulomatous inflammation: Regulatory role of arachidonic acid metabolites. In, Takada, A. and Cohen, S. (editors). Chemical Mediators of Inflammation and Immunity. Academic Press Japan, Inc., Tokyo, Japan, 1986;pg.311-328.
2. Kunkel, S.L., Spengler, M., Kwon, G., May, M.A., and Remick, D.G.: Production and regulation of tumor necrosis factor alpha: A cellular and molecular analysis. In, Jasmin, G., (editor), Methods and Achievements in Experimental Pathology, Vol. XIV, Kinetic and Patterns of Necrosis, Karger, 1987.
3. Johnson, K.J., Chensue, S.W., Kunkel, S.L., and Ward, P.A.: Immunopathology. In, Rubin, E., and Farber, J. (editors), Textbook of Pathology, Lippincott, Inc., New York, New York, (in press).

#### **ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Lynch, J.P., Bachwich, P.r. and Kunkel, S.L.: Extracellular and intracellular IL-1 production by sarcoid alveolar macrophages. *American College of chest Physicians*, 1986.
2. Remick, D.G., Annesley, T., Chensue, S.W., Higashi, G.I., and Kunkel, S.L.: Cyclosporine modulation of granulomatous inflammation. 6th International Congress of Immunology, 1986.
3. Kunkel, S.L., and chensue, S.W.: Arachidonate metabolites regulate the production of macrophage-derived tumor necrosis factor and interleukin-1. 6th International Conference on Prostaglandins and Related Compounds, 1986.

4. Phan, S.H., McGarry, B.M., Loeffler, K.M. and Kunkel, S.L.: Leukotriene C<sub>4</sub> binds to rat lung fibroblasts and stimulates collagen synthesis. 6th International Conference on Prostaglandins and Related Compounds, 1986.
5. Kunkel, S.L., Chensue, S.W., Bachwich, P.R., Wiggins, R.C. and Larrick, J.W.: Regulation of macrophage tumor necrosis factor (TNF) production by prostaglandins. Twenty-Third National Reticuloendothelial Society Meeting, 1986.
6. Port, F.K., Keelapandal, S., Kluger, J. and Kunkel, S.: Interleukin-1 in clinical hemodialysis: The role of the membrane and of dialysate acetate. Fourth Annual Meeting of the International Society of Blood Purification, 1986.
7. Wiggins, R.C., Eldrege, C., and Kunkel, S.L.: Interleukin-1 production by glomeruli at different stages of crescent formation in the rabbit. FASEB, 1987.
8. Phan, S.H., Ying, J., and Kunkel, S.L.: Kinetics and arachidonate metabolite regulation of lipopolysaccharide-induced lung macrophage growth factor production. American Thoracic Society, 1987.
9. Chensue, S.W., Spengler, M., May, M., Kwon, G., Larrick, J., and Kunkel, S.L.: Down regulation of LPS-induced interleukin-1 (IL-1) gene expression in activated macrophages. FASEB, 1987.
10. May, M., Kunkel, S.L., Spengler, M., Kwon, G., Larrick, J., and Phan, S.H.: Dynamics of LPS-induced tumor necrosis factor (TNF) and interleukin-1 (IL-1) production by LPS-sensitive and resistant mice: An analysis at the molecular and cellular level. FASEB, 1987.
11. Kunkel, S.L., Spengler, M., Kwon, G., May, M., and Remick, D.G.: Regulation of macrophage-derived tumor necrosis factor (TNF) gene expression by prostaglandin E (PGE). FASEB, 1987.
12. Remick, D.G., Kunkel, R.G., Larrick, J.W., and Kunkel, S.L.: In Vivo effects of recombinant tumor necrosis factor. FASEB, 1987.
13. Warren, J.S., Kunkel, S.L., Johnson, K.J., and Ward, P.A.: Selective activation of rat phagocytes by IgA immune complexes: Enhancement of O<sub>2</sub><sup>-</sup> response by C5a and products of activated macrophages. FASEB, 1987.

**RICARDO V. LLOYD, M.D., PH.D.  
ASSOCIATE PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Surgical Pathology - 18 weeks.
- B. Necropsy Pathology - 2 weeks.
- C. Consultant for soft tissue lesions - 12 months.
- D. Consultant for endocrine lesions - 12 months.
- E. Consultant to Veterans Administration Medical Center, Ann Arbor, Michigan.

**II. TEACHING ACTIVITIES:**

- A. Lectures to sophomore medical students - Pathology 600 Course.
- B. Fourth Year medical student rotation in Pathology - 1 month.
- C. Lectures in basic histology and pathology for histotechnologists - 3 lectures.
- D. Lectures to pathology house officers.
- E. Resident elective in endocrine and soft tissue pathology and immunoperoxidase - 2 months.
- F. Thesis Committee for Graduate Student in Dental School.
- G. Immunoperoxidase Rounds - twice monthly - 9 months.
- H. Supervised undergraduate in Student Medical Research Program.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Regulation of Rat Pituitary Hyperplasia and Neoplasia. NIH Grant 1R23 CA 37238, 3/84 - 2/87 and NIH CA 37238, 5/87 - 6/91, (PI - R. Lloyd).
- B. Analysis of Rat Pituitary Neoplasms with Monoclonal Antibodies. CTR Grant 1850, 1/1/86 - 12/31/86 and 1/1/87 - 12/31/87 (PI - R. Lloyd).
- C. Studies of Normal and Neoplastic Human Pituitary Tissues. NIH Grant CA 42951, 7/86 - 6/90 (PI - R. Lloyd).
- D. Member of Immunochemistry Core in the Gastrointestinal Hormone Research Core Center Grant, NIH - NIADDK, 10/84 - 9/89, (PI - T. Yamada).

**PROJECTS UNDER STUDY:**

- A. Dopamine and estrogen receptor analyses in rat and human pituitary tissues.
- B. In situ hybridization as a research and a diagnostic technique.
- C. Development of monoclonal antibodies as diagnostic aids in surgical pathology.
- D. Immunocytochemical techniques for light and electron microscopy.
- E. Development of a reverse hemolytic plaque assay to study hormone secretion.

**IV. ADMINISTRATIVE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Director of Immunoperoxidase Service.
- B. Coordinator of Anatomic Pathology Journal Club.
- C. Resident Selection Committee.
- D. Department of Pathology Internal Review Committee.
- E. Stobbe Fund Committee
- F. Revision of Pathology House Officer Training Program Brochure.

**MEDICAL SCHOOL/HOSPITAL:**

- A. Thyroid Therapy Conference - monthly.
- B. Pituitary Study Group - monthly.
- C. University of Michigan Cancer Center - Director of Immunochemistry/Tissue Procurement Core.
- D. Medical School Admissions Committee - August 1983 to present.

**REGIONAL AND NATIONAL:**

- A. Presentations at the International Academy of Pathology in Chicago, Illinois, March 1987.
- B. Presentation at the Endocrine Society 69th Annual Meeting, Indianapolis, IN, June 10-12, 1987.
- C. Editorial Board - American Journal of Surgical Pathology.
- D. Reviewer of articles for Laboratory Investigation, The American Journal of Pathology, Journal of the American Medical Association, Journal of Histochemistry, and Cytochemistry and the American Journal of Medical Sciences.
- E. Ad Hoc member of Pathology B Study Section, October 20-22, 1986.
- F. Pathology B Study Section, National Cancer Institute, Member, 1987.

**V. OTHER RELEVANT ACTIVITIES:**

**INVITED LECTURES AND SEMINARS:**

- 1. American Society of Clinical Pathology Course: Immunohistology Techniques and Interpretation for Immunoperoxidase and Immunofluorescence. October 23-25, 1986.
- 2. Research Seminar to Reproductive Endocrinology Program - University of Michigan, May 1987.
- 3. International Academy of Pathology Course on Advances in the Application of Immunocytochemistry to Diagnostic Surgical Pathology, March 13, 1987.

## VI. PUBLICATIONS:

### ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:

1. Lloyd, R.V., Coleman, K., Fields, K., Nath, V.: Analysis of prolactin and growth hormone production in hyperplastic and neoplastic rat pituitary tissues by the hemolytic plaque assay. *Cancer Res.*, 1987;47:1087-1092.
2. Lloyd, R.V., Sisson, J.C., Shapiro, B., Verhofstad, J.: Immunohistochemical localization of epinephrine and norepinephrine in normal and neoplastic endocrine tissues. *Am. J. Pathol.*, 1986;125:45-54.
3. Lloyd, R.V., Landefeld, T.D.: Detection of prolactin messenger RNA in rat anterior pituitary by *in situ* hybridization. *Am. J. Pathol.* 1986;125:35-44.
4. Lloyd, R.V., Chandler, W.F., Kovacs, K., Ryan, N.: Ectopic pituitary adenomas with normal anterior pituitary glands. *Am. J. Surg. Pathol.*, 1986;10:546-552.
5. Lloyd, R.V., Chandler, W.F., McKeever, P., Schteingart, D.B.: The spectrum of ACTH-producing pituitary lesions. *Am. J. Surg. Pathol.*, 1986;10:618-626.
6. Khachaturian, H., Sherman, G., Lloyd, R.V., Civelli, O., Douglas, J., Herbert, E.D., Akil, H., Watson, S.J.: Pro-dynorphin is endogenous to the anterior pituitary and is co-localized with LH and FSH in the gonadotroph. *Endocrinology*, 1986;119:1409-1411.
7. Jackson, J.A., Raju, V.B., Janakiraman, N., Faichner, J.D., Mellinger, R.C., Lloyd, R.V., Vinik, A.I.: Metastatic pulmonary somatostatinoma presenting with diabetic ketoacidosis. *Clin. Endocrinol.*, 1987;26:609-621.
8. Eckhauser, F.E., Cheung, P.S., Vinik, A.I., Strodel, W.E., Lloyd, R.V., Thompson, N.W.: Nonfunctioning malignant neuroendocrine tumors of the pancreas. *Surgery* 1986;100:978-988.
9. Baugh, R.F., Wolf, G.T., Lloyd, R.V., McClatchey, K.D., Evans, D.A.: Carcinoid (Neuroendocrine Carcinomas) of the larynx. *Ann. Otorhinolaryngology*, 1987;96:315-321.
10. Dafoe, D.C., Riser, B.C., Lloyd, R.V.: Differences in susceptibility to EMC virus induced diabetes in two Balb/c mice colonies, (in press).
11. Johnson, T.L., Lloyd, R.V., Thor, A.: Expression of rat oncogene p21 antigen in normal and proliferative thyroid tissue. *Am. J. Pathol.*, 1987;127:60-65.
12. Otto, C.A., Marshall, J.C., Lloyd, R.V., Sherman, P.S., Fisher, S.J., Valoppi, V.L., Rogers, W.L., Wieland, D.M.: Use of DES-treated rats as an animal model for assessment of pituitary adenoma imaging agents. *Nucl. Med. Biol.*, 1986;13:539-547.
13. Otto, C.A., Sherman, P.S., Fisher, S.J., Valoppi, V.L., Marshall, J.C., Lloyd, R.V., Rogers, W.L., Wieland, D.M.: Pituitary localization of <sup>3</sup>H-spiroperidol by an uptake/storage mechanism? *Nucl. Med. Biol.*, 1986;13:533-537.
14. Regezi, J.A., Zarbo, R.J., Tomich, C.E., Lloyd, R.V., Courtney, R.M., Crissman, J.D.: Immunoprofile of benign and malignant fibrohistiocytic tumors. *J. Oral Pathol.*, (in press).
15. Schteingart, D.E., Lloyd, R.V., Akil, H., Chandler, W.F., Ibama-Perez, G., Rosen, S.G., Ogletree, R.: Cushing's syndrome secondary to ectopic corticotropin releasing hormone - adenocorticotropin secretion. *J. Clin. Endocrine Metab.*, 1986;63:770-775.
16. Regezi, J.A., Zarbo, R.J., Lloyd, R.V.: HLA-DR antigen detection in giant cell lesions. *J. Oral. Pathol.*, 1986;15:434-438.
17. Johnson, T.L., Lloyd, R.V., Burney, R.E., Thompson, N.W.: Hurthle cell thyroid tumors. An Immunohistochemical study. *Cancer*, 1987;59:107-112.

18. Regezi, J.A., Zarbo, R.J., Lloyd, R.V.: Muramidase, -1 antitrypsin, -1 antichromotrypsin, and S-100 protein immunoreactivity in giant cell lesions. *Cancer*, 1987;59:64-68.
19. Arnstein, N.B., Sisson, J.C., Lloyd, R.V., Thompson, N.W.: Recurrent medullary carcinoma of the thyroid demonstrated by thallium - 201 scintigraphy. *J. Nucl. Med.*, 1986;27:1564-1568.
20. Barkan, A.L., Shenkar, Y., Grekin, R.J., Vale, W.W., Lloyd, R.V., Beals, T.F.: Acromegaly due to ectopic growth hormone (GH)-releasing hormone (GHRH) production: dynamic studies of GH and ectopic GHRH secretion. *J. Clin. Endocrinol., Metab.*, 1986;63:1057-1064.
21. Vinik, A.I., Strodel, W.E., Eckhauser, F.G., Moattani, R., Lloyd, R.: Somatostatinomas, Ppomas and neurotensinomas. *Seminars in Oncol.*, (in press).
22. Lloyd, R.V., Mailloux, J.: Effects of diethylstilbestrol and propylthiouracil on the rat pituitary. An immunohistochemical and ultrastructural study. *J. Natl. Cancer. Inst.* (in press).
23. Lloyd, R.V.: Use of molecular probes in the study of endocrine disease. *Human Pathology*, (in press).
24. Lloyd, R.V., Anagnostou, D., Chandler, W.F.: Dopamine receptors in immunohistochemically characterized normal human pituitary and null cell adenomas. (submitted).
25. Lloyd, R.V., Cano, M., Anagnostou, D., Barkan, A., Chadler, W.F.: Analysis of normal and neoplastic human pituitaries with the reverse hemolytic plaque assay. (submitted).
26. Johnson, T.L., Lloyd, R.V., Thompson, N.W., Beierwaltes, W.H., Sisson, J.C.: Prognostic implications of the tall cell variant of papillary thyroid carcinoma. *J. Surg. Pathol.*, (submitted).
27. Pike, A.M., Lloyd, R.V., Appelman, H.D.: Cell markers in gastrointestinal stromal tumors. *Human Pathology*, (submitted).
28. Flint, A., Davenport, R.D., Lloyd, R.V., Beckwith, A.L., Thompson, N.W.: Cytophotometric measurements of Hurthle cell tumors of the thyroid gland. Correlation with pathologic features and clinical behavior. *Cancer*, (in press).
29. Lloyd, R.V.: Immunohistochemical characterization of S-100 acidic protein and HLA-DR immunoreactivity in normal and neoplastic human pituitaries. *Am. J. Pathol.* (submitted).
30. Lloyd, R.V., Cano, M., Rosa, P., Hille, A., Huttner, W.B.: Widespread distribution of chromogranin A and secretogranin I (Chromogranin B) in neuroendocrine cells and tumors. *Am. J. Pathol.*, (submitted).

#### **BOOKS/CHAPTERS IN BOOKS:**

1. Lloyd, R.V.: Immunohistochemical localization of chromogranin in normal and neoplastic endocrine tissues. *Pathol. Ann.*, (in press).
2. Lloyd, R.V.: Immunohistochemical localization of catecholamine, catecholamine synthesizing enzymes and chromogranins in neuroendocrine cells and tumors in R.A. DeLellis (ed.), *Advances in Immunohistochemistry*, Raven Press, New York, 1987.
3. Lloyd, R.V.: Immunohistochemical localization of chromogranin in polypeptide hormone producing cells and tumors in J. Lechago and T. Kameya (eds.), *Endocrine Pathology Update*. Field and Wood Publishers, PA, 1987 (in press).
4. Lloyd, R.V.: Tumors of the pituitary gland in V.S. Turusov (ed.). *Pathology of Tumors in Laboratory Animals*. International Agency for Research on Cancer. World Health Organization, 1988, (in press).



**ABSTRACTS, BOOK REVIEWS, LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Lloyd, R.V., Fields, K., Mailloux, B.S.: Analysis of folliculo-stellate cells in human and rat pituitary glands. *Lab. Invest.*, 56:45A (No. 264).
2. Lloyd, R.V., Fields, K., Mailloux, J.: Effects of diethylstilbestrol on anterior pituitary cell hyperplasia in hypothyroid rats. *Lab. Invest.* 56:45A (No. 265).
3. Lloyd, R.V., Fields, K., Chandler, W.F.: Dopamine receptors in immunohistochemically characterized human pituitary adenoma and normal pituitaries. *Lab. Invest.* 56:45A (No. 263).
4. Lloyd, R.V., Cano, M., Huttner, W.B.: Analysis of chromogranin and secretogranin I immunoreactivities in human endocrine tumors. *Lab. Invest.*, 56:44A (No. 262).
5. Zarbo, R.J., Regezi, J.A., Lloyd, R.V., Crissman, J.D., Batsakis, J.G.: HLA-DR antigens in normal, inflammatory and neoplastic salivary glands. *Lab. Invest.*, 56:98A (No. 532).
6. Wolber, R., Lloyd, R.V.: Cytomegalovirus detection by in situ DNA hybridization and capsid antigen immunostaining using a 2-color technique. *Lab. Invest.* 56:88A (No. 525).
7. Beierwaltes, W.H., Sisson, J.C., Shapiro, B., Lloyd, R.V., Dmuchowski, C., Rabbani, R.: Malignant potential of pheochromocytoma: Implications for follow-up. *J. Nuclear Med.*, 27:908, 1986.
8. McLeod, M.K., Thompson, N.W., Hudson, J.L., Lloyd, R.V., Gaglio, J.A., Harnes, J.K., Nishiyama, R.H., Cheung, P.S.: Flow cytometric measurements of nuclear DNA and pituitary analysis in Hurthle cell neoplasms of the thyroid. *Surgery*, (abstract).
9. Lloyd, R.V., Cano, M., Anagnostou, D., Nath, V., Chandler, W.F.: Analysis of mammosomatotropic cells in normal and neoplastic human pituitaries. Endocrine Society 69th Annual Meeting. Indianapolis, IN., June 10-12, 1987. (Abstract No. 401).

JOHN B. LOWE, M.D.  
ASSISTANT PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY

ANNUAL DEPARTMENTAL REPORT  
1 NOVEMBER 1986 - 30 JUNE 1987

I. **CLINICAL ACTIVITIES:**

- A. Clinical Immunology Diagnostic Service - sign out of serum and urine protein electrophoresis, immunofixation, and immunoelectrophoresis; terminal transferase immunofluorescence.

II. **TEACHING ACTIVITIES:**

- A. Supervision of two postdoctoral fellows (Robert Larsen, Ph.D., and Jolanta Kukowska-Latallo, Ph.D.) and an undergraduate student (Todd Crissey).

III. **RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Principal Investigator, "The Molecular Biology of Intracellular Lipid Transport", NIH DK-38482 (50% effort), \$63,547/year direct cost (\$317,737/five years), 8/1/86-7/31/91.
- B. Principal Investigator, "The Molecular Biology of the Human A Blood Group Glycosyltransferases", American Association of Blood Banks Foundation Grant (10% effort), \$8,622/year direct cost, 7/1/86-6/30/87.

**PROJECTS UNDER STUDY:**

- A. Structure and function of intracellular lipid transport proteins; liver and enterocyte fatty acid binding proteins. The major emphasis is on the analysis of the physiologic function(s) of these polypeptides. This involves the establishment and characterization of a system in which fatty acid binding protein cDNAs are expressed in a controlled fashion in fibroblasts, using eukaryotic expression vectors.
- B. Structure and regulation of mammalian glycosyltransferase genes. Efforts are focused on the isolation of the gene(s) for the human ABO blood group glycosyltransferases, using mammalian gene transfer techniques.

IV. **ADMINISTRATIVE ACTIVITIES:**

**DEPARTMENTAL:** None.

**MEDICAL SCHOOL/HOSPITAL:** None.

#### **REGIONAL AND NATIONAL:**

- A. Reviewer for the Journal of Histochemistry and Cytochemistry.
- B. Co-organizer, 1988 UAREP/FASEB Conference on the Application of Nucleic Acid Probes in Pathology.
- C. Member, American Board of Pathology Test Committee for Molecular Pathology.

#### **V. OTHER RELEVANT ACTIVITIES:**

- A. Howard Hughes Medical Institute, Assistant Investigator.

#### **VI. PUBLICATIONS:**

##### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

- 1. Sacchettini, J.C., Meininger, T.A., Lowe, J.B., Gordon, J.I., and Banaszak, L.J.: Crystallization of rat intestinal fatty acid binding protein: Preliminary X-ray data obtained from protein expressed in *E. coli*. *J. Biol. Chem.*, 1987;262:5428-5430.
- 2. Lowe, J.B., Sacchettini, J.C., Laposata, M., McQuillan, J.J., and Gordon, J.I.: Expression of rat liver fatty acid binding protein in *E. coli*: Purification and comparison of its ligand binding characteristics with that of *E. coli*-derived rat liver fatty acid binding protein. *J. Biol. Chem.* 1987;262:5931-5937.

##### **ABSTRACTS, BOOK REVIEWS, LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

- 1. Lowe, J.B., McQuillan, J.J., Sacchettini, J.A. and Gordon, J.I.: Rat liver and intestinal fatty acid binding protein synthesized in *E. coli* exhibit differences in ligand affinity and stoichiometry. *Circulation*, 1986;74:II-322.
- 2. Lowe, J.B., Smith, D.: Purification and properties of an  $\alpha$ -N-acetylgalactosaminyl (GalNAc) transferase synthesized by A431 human epidermoid carcinoma cells; probable identity to the human A<sub>1</sub> blood group  $\alpha$ -GalNAc transferase. *J. Cell Biol.*, 1986;103:325a.
- 3. Dixit, V.M., and Lowe, J.B.: Expression of the cDNA for the heparin binding domain of human thrombospondin in *E. coli*. *J. Cell Biol.* 1986;103:93a.

**KENNETH D. MCCLATCHEY, M.D., D.D.S.  
ASSOCIATE PROFESSOR AND ASSOCIATE CHAIRMAN  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Surgical Pathology, consultant on all head and neck pathology cases.
- B. Autopsy:
  - 1. Consultant on forensic odontology cases.
  - 2. Assistant Medical Examiner, Washtenaw County.
- C. Associate Director of Clinical Laboratories.
- D. Director of Clinical Microbiology Laboratory.
- E. Medical Director of Medical Technology Program; Eastern Michigan University.
- F. Ann Arbor Veterans Administration Medical Center - monthly consultant.
- G. Director, M-Labs, Department of Pathology, The University of Michigan.
- H. Scientific Consultant, MDS Laboratories, Toronto, Canada.
- I. Consulting Staff, Central Michigan Community Hospital, Mt. Pleasant, Michigan.
- J. Consultant, Chi Systems, Inc., Ann Arbor, Michigan.
- K. Consultant, The University of Michigan Cancer Center.

**II. TEACHING ACTIVITIES:**

**MEDICAL SCHOOL/HOSPITALS:**

- A. Pathology 630,631; Course Director.
  - 1. Six hours credit (M,W,F 1-4 pm).
  - 2. 155 Dental students, 20 medical technology and graduate students.
- B. Oral Diagnosis 644; participant.
- C. Pathology 600, Lecturer, Head and Neck Pathology.
- D. Coordinator of resident teaching with Dr. Carl Pierson in the clinical laboratory under my direction (Microbiology).

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Consultant, Principal Investigator, Richard L. Wahl, M.D., Department of Internal Medicine, The University of Michigan. Radioimmunodiagnosis of Squamous Cell Carcinoma, Department of Health and Human Services; \$608,579, 7/1/85 - 6/30/88.
- B. Consultant, Principal Investigator, Thomas E. Carey, Ph.D., Department of Otorhinolaryngology, The University of Michigan. Monoclonal Antibodies to Human Squamous Cancer Antigens, NCI Research Grant CA35929, \$69,327/year, \$221,537/project period, 1984-1987.

- C. Consultant, Principal Investigator, Thomas E. Carey, Ph.D., Department of Otorhinolaryngology, The University of Michigan. Human Squamous Cell Carcinoma: Culture and Serology, NIH R01-CA28564-06, \$139,388/year, \$815,326/project period, 1985-1990.
- D. Consultant, Principal Investigator, Thomas E. Carey, Ph.D., Department of Otorhinolaryngology, The University of Michigan. Monoclonal Antibodies to Human Squamous Cell Carcinoma: Culture and Serology, NIH, \$382,843, 1987-1988.

#### **PROJECTS UNDER STUDY:**

- A. Veterans Administration Cooperative Studies Program. G.T. Wolf, T.F. Beals, A.A. Forastiere, T.Carey, K.D. McClatchey, A. Flint, and J.L. Hudson: A new strategy to preserve the voice box in advanced laryngeal cancer. Protocol 582-C, Clinical Research Center, The University of Michigan, 1985-present.
- B. See laboratories under my direction.

#### **IV. ADMINISTRATIVE ACTIVITIES:**

##### **DEPARTMENTAL:**

- A. Medical Service Plan Executive Committee, Department of Pathology, 1979-present.
- B. Director, Residency Program, Department of Pathology, 1982-present.
- C. Chairman, Resident Selection Committee, Department of Pathology, 1982-present.
- D. Director, M-Labs, Department of Pathology, 1986-present.

##### **MEDICAL SCHOOL/HOSPITAL:**

- A. Ambulatory Care Committee, The University of Michigan Hospitals, 1980-present.
- B. Multi-Organ Transplant Program: Planning Group, Alternate, The University of Michigan Hospitals, 1985-present.
- C. Advisor, Medical and Biological Illustration Program, The University of Michigan Medical School, 1986-1989.
- D. Infection Control Committee, The University of Michigan Hospitals, 1978-present.

##### **REGIONAL AND NATIONAL:**

- A. College of American Pathologists, Fellow, 1975-.
  - 1. Board of Governors, 1986-.
  - 2. Budget Planning and Review Committee, 1986-.
  - 3. Credentials Committee, 1986-.
  - 4. Liaison, Standards Committee, 1986-.
  - 5. Liaison, Commission on Anatomic Pathology, 1986-.
  - 6. Micro-Fellowship Committee, 1987-.
  - 7. Building Committee, 1987-.
  - 8. Subcommittee on National Institute of Drug Abuse (NIDA), 1987-.

- B. National Committee for Clinical Laboratory Standards - Corresponding Membership, 1987.
  - 1. Council of the National Reference System for the Clinical Laboratory, 1983, 1984-1985, 1986-1987.
  - 2. Subcommittee on Cost Accounting, 1986-.
  - 3. Chairman, Area Committee on General Laboratory Practice, 1986-1987.
  - 4. Subcommittee on Cost-Effective Quality Control, 1986-.
  - 5. Flow Cytometry Committee, member, 1987.
- C. American Society of Clinical Pathologists, 1975.
  - 1. ASCP Advisory Council, 1984.
  - 2. ASCP Advisory Council, State Councilor, 1987.
- D. Michigan Society of Pathologists, 1982.
  - 1. Secretary/Treasurer, 1984-1986.
  - 2. President Elect, 1987-1988.
- E. Technical Advisory Committee, State of Michigan Department of Health, Bureau of Laboratory and Epidemiological Services, 1987-.
- F. Transition Committee, The University of Michigan School of Dentistry, 1987-.
  - 1. Chairman, Operational Analysis Task Force.
  - 2. Chairman, Computer Committee.

**V. OTHER RELEVANT ACTIVITIES:**

**INVITED LECTURES/SEMINARS:**

- 1. Poster Presentation: "Comparison of the Brite, Culturette 10-minute Group A Strep ID and Directigen Group A Test Kits for Detection of Group A beta-hemolytic Streptococcus (GABS) from Throat Swabs". J. Lobato, C. Young, and K.D. McClatchey. 1987 ASM Annual Meeting, Atlanta, GA, March, 1987.

**ARTICLES SUBMITTED FOR PUBLICATION:**

- 1. McClatchey, K.D., Stewart, J.C.B., and Patterson, B.D.: Dentinogenic ghost cell tumor presenting as a gingival mass. Ann. Dent., 1987.
- 2. Niparko, J.K., Rubinstein, M.I., and McClatchey, K.D.: Invasive squamous cell carcinoma within verrucous carcinoma. J. Otolaryngol., 1987.
- 3. Lampe, H.B., Flint, A., Wolf, G.T., and McClatchey, K.D.: Flow cytometry - DNA analysis of squamous cell carcinoma of the upper aerodigestive tract. J. Otolaryngol., 1987.

**VI. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

- 1. Amendola, B.E., McClatchey, K.D., Amendola, M.A. and Gebarski, S.S.: Primary large cell lymphoma of the central nervous system. Am. J. Clin. Oncol., 1986;9(3):204-208.
- 2. Wolf, G.T., Hudson, J.L., Peterson, K.A., Miller, H.L., and McClatchey, K.D.: Lymphocyte subpopulations infiltrating squamous carcinomas of the head and neck: Correlations with extent of tumor and prognosis. J. Otolaryngol. Head and Neck Surg., 1986;95:142-152.

3. Carey, T.E., Wolf, G.T., Hsu, S., Poore, J., Peterson, K., and McClatchey, K.D.: Expression of A9 antigen and loss of blood group antigens as determinants of survival in patients with head and neck squamous carcinoma. *Otolaryngol. Head and Neck Surg.* 1987;96:221-230.
4. McClatchey, K.D., Jenkins, B.T., Bogdasarian, R.S., and Merrell, D.M.: "Hairy polyp": A cause of neonatal upper airway obstruction. *J. Oral Med.* 1987;42:89-91.
5. Baugh, R.F., McClatchey, K.D., Sprik, S.A., and Jones, B.S.: Laryngeal paraganglioma. *J. Otolaryngol.* 1987;16:3, 167-168.
6. Baugh, R.F., Wolf, G.T., Lloyd, R.V., McClatchey, K.D., and Evans, D.A.: Carcinoid (neuroendocrine carcinoma) of the larynx. *Ann. of Otorhinolaryngol.*, 1987;96:315-321.
7. Sullivan, M.J., McClatchey, K.D., and Passamani, P.P.: Airway growth following cricotracheal resection in puppies. *Arch. Otolaryng., Head and Neck Surg.*, 1987;113:606-611.
8. Schweitzer, V.G., Thompson, N.W. and McClatchey, K.D.: Sphenoid sinus Brown tumor, hypercalcemia and blindness: an unusual presentation of primary hyperparathyroidism. Accepted for publication, *Annals of Otology*, 1986.
9. Oneal, R.M., Dodenhoff, R.J., and McClatchey, K.D.: The role of perichondrium in modifying curved cartilage: an experimental study. Accepted for publication, *Ann. Plast. Surg.*, 1986.
10. Regezi, J.A., Zarbo, R.J., McClatchey, K.D., Courtney, R.M., Crissman, J.D.: Osteosarcomas and chondrosarcomas of the jaws: immunohistochemical correlations. Accepted for publication, *Oral Surg., Oral Med., Oral Pathol.*, 1986.
11. McClatchey, K.D.: Tumors of the dental lamina: a selective review. *Seminars in Diagnostic Pathology* (in press, publication August, 1987).
12. Argenta, L.C., Thornton, J.W., McClatchey, K.D., and Mark, Malcolm, W.: Studies on the endogenous flora on the human breast. Accepted for publication, *Ann. Plast. Surg.*, 1987.

#### **BOOKS AND CHAPTERS IN BOOKS:**

1. McClatchey, K.D., and Schnitzer, B.: Lymphoreticular disorders of head and neck tumors, Chapt. 71. In *Comprehensive Management of Head and Neck Tumors*, S.E. Thawley and W.R. Panje, editors. W.B. Saunders Company, Philadelphia, PA., pp. 1826-1840, 1986.

#### **ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Carey, T.E., Wolf, G.T., Hsu, S., and McClatchey, K.D.: Patterns of expression of an orientation-restricted epithelial antigen (A9) in head and neck squamous cell carcinoma (HNSCC): correlations with clinical and histologic characteristics. (Abstract), *Amer. Acad. of Otolaryng-Head and Neck Surg. Fdn., Inc. and the Assoc. for Res. in Otolaryng.*, April, 1986.
2. Wolf, G.T., Schmaltz, M.P.H., Hudson, J., Robson, H., Stackhouse, T., Peterson, K.A., Poore, J., and McClatchey, K.D.: Alterations in T lymphocyte subpopulations in patients with head and neck squamous cell carcinoma: correlations with prognosis. (Abstract), presented at the 29th Annual Meeting, American Society for Head and Neck Surgery, Denver, April, 1987.

3. Poster presentation: "Comparison of the Brite, Culturette 10-minute Group A Strep ID and Directigen Group A Test Kits for Detection of Group A beta-hemolytic Streptococcus (GABS) from Throat Swabs". J. Lobato, C. Young, and K.D. McClatchey. 1987 ASM Annual Meeting, Atlanta, GA, March, 1987.
4. Skendzel, L.P., Nakamura, R.M., McClatchey, K.D., and Tholen, D.: College of American Pathologists' Reference Preparation for Rubella Serology: Results of a Collaborative Study. CAP Pathologist, April, 1986, pp. 9-13.
5. McClatchey, K.D.: SI Units in Summing Up, CAP Newsletter, Part I, Spring Issue, 1986; Part II, Summer Issue, 1986.
6. Nakamura, R.M., Tholen, D., Trainer, T.D., Schap, D., and McClatchey, K.D.: The CAP Develops Reference Preparation for Alpha-Fetoprotein. CAP Pathologist, November, 1986, pp. 13-16.



**PAUL E. MCKEEVER, M.D., PH.D.  
ASSOCIATE PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Gross and microscopic examination of autopsy neuropathologic material with house officers and faculty. The cases shared with other faculty members were from University Hospital, University Associated Hospitals, and State Institutions. Medical Examiner Cases.
- B. Daily supervision of House Officer or Staff participation in diagnostic neuropathology and electron microscopic neuropathology. Responsible for final report and diagnosis in each category.
- C. Consultations on diagnostic neuropathology from other hospitals and medical centers.
- D. Ceroid Service, buffy coat division.
- E. Primary substitute for nerve and muscle biopsy diagnostician.

**II. TEACHING ACTIVITIES:**

**MEDICAL SCHOOL/HOSPITAL:**

- A. Neural and Behavioral Sciences 600, Neuropathology for second year medical students. Lectures and laboratories. Twenty hours shared with other faculty.
- B. Neuropathology 858. Intensive laboratory-lecture course for all beginning House Officers in Pathology, and in several clinical services concerned with the nervous system, graduate students and faculty. Annual, 16 hours shared with other faculty. One credit hour elective.
- C. House Officers:
  - 1. Review of microscopic neuropathological postmortem material with Pathology House Officers, shared with other faculty members.
  - 2. Weekly brain cutting with pathology house officers.
  - 3. Review all neurosurgically removed material in this hospital in CME-approved conference for Pathology, Neurology and Neurosurgery house officers and staff.
  - 4. Shared consultations with Pathology house officers.
  - 5. Invited presentations of neuropathologic observations at joint Pathology-Neurology-Neurosurgery and clinical conferences.
  - 6. Directs teaching of Neurology house officers who take elective in Neuropathology. One month or longer rotation with teaching shared with other Pathology faculty and with neurohistologists.
  - 7. Bi-weekly adult Brain Tumor Board Review of Neurosurgery, Nuclear Medicine, Neuroradiology, and Neuropathology in clinical research setting of brain tumor cases by staff. Responsible for neuropathology segment of tumor review.
- C. Teach laboratory techniques to our laboratory technologists.

### III. RESEARCH ACTIVITIES:

#### SPONSORED SUPPORT:

- A. Consultant on USPHS grant, #NS 19825 application, "Recovery or Malformation After Fetal Injury:, Dr. Samuel Hicks, Principal Investigator, 7/1/84 - 6/30/87.
- B. National Institutes of Health Grant #1R01 CA33768-01A3, "Intra-arterial BUdR Radiosensitization of Malignant Gliomas", Co-investigator, 5/1/86 - 4/30/89.
- C. National Institutes of Health Grant #R29, "Antigenic Instabilities and Clonal Heterogeneity in Human Gliomas", Principal Investigator. Changes in malignancy and resistance to treatment of human gliomas, the most common and devastating group of brain tumors, are thought to be related in part to antigenic instabilities of these cells. Antigenic instabilities will be followed upon explantation of human glioma cells *in vitro* and correlated with studies designed to determine the mechanism of these instabilities. The extent of changes in antigens will be studied. Antigenic changes will be correlated with changes in cellular DNA over time intervals and correlated with changes in clones of cells from the gliomas of individual patients. Action pending.
- D. American Cancer Society, Grant #PDT-44699, "Antigenic Instabilities and Clonal Heterogeneity in Human Gliomas", Principal Investigator. Action pending.
- E. National Institutes of Health, "Brain Tumor Imaging with Benzodiazepine Analogs", Co-investigator. 1/1/87 - 1/1/90.
- F. Infuse-Aid Corporation, "Treatment of an MPTP Primate Model of Parkinson's Disease with Intraventricular Infused Dopamine", Co-investigator.
- G. National Institutes of Health Program Project "Alzheimer's Disease Patient Registry", Co-principal Investigator of Pathology Core Grant. Action pending.
- H. National Institutes of Health Program Project PO CA, "Regional Advantage of Biochemical Response Modulators", Co-principal Investigator of Pathology Core Grant. Action pending.

### III. RESEARCH ACTIVITIES:

#### PROJECTS UNDER STUDY:

- A. Growth, spread and antigenicity of ENU-induced gliomas in rats, with Constance D'Amato and Terry Hood. Submitted to Neurooncology.
- B. Quantitative analysis of DNA in fresh and cultured cells of brain tumors, with Drs. Robertson Davenport, James Varani, and John Feldenzer, submitted to Clin. Neuropath.
- C. Production of monoclonal antibodies to human brain tumors for diagnosis and therapy, with Drs. James A. Taren, Julian T. Hoff, and Richard L. Wahl.
- D. Extracellular matrix products of gliomas with Drs. James Varani and Suzanne Fligiel.

#### **IV. SERVICE ACTIVITIES:**

##### **DEPARTMENTAL:**

- A. Chief, Section of Neuropathology.

##### **MEDICAL SCHOOL/HOSPITAL:**

- A. Organization and scheduling of Pathology, Neurology and Neurosurgery house officer Neuropathology teaching conferences, individual instruction and consultation review.
- B. Organization of call logistics of specimen handling, and schedules for complete coverage of diagnostic and postmortem neuropathology by staff.
- C. Supervision of neurohistologists and neuropathology laboratories, and quality control of histologic preparations.
- D. Interaction with Chiefs and appointed staff of other clinical services, particularly Neurosurgery, Neurology, Nuclear medicine and Neuroradiology.
- E. Quality control of ultrastructural neuropathology.

##### **REGIONAL AND NATIONAL:**

- A. Reviewer for Pathology, Neuropathology, Oncology and Neurooncology journals or texts.
- B. Invited Contributor to ASCP Anatomic Pathology II Series: Rapid Lectin-DNA Staining of Pituitary Biopsies.
- C. M-Lab Neuropathology services.

#### **V. OTHER RELEVANT ACTIVITIES:**

- A. Faculty Advisory Committee for graduate student James Hopkins, Dr. Bernard Agranoff, Chairman.

#### **VI. PUBLICATIONS:**

##### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. McKeever, P.E., Fligiel, S.E.G., Varani, J., Hudson, J.L., Smith, D., Castle, R.L. and McCoy, J.P.: Products of cell cultured from gliomas. IV. Extra-cellular matrix proteins of gliomas. Int. J. Cancer. 1986;37:867-874.
2. Lloyd, R.V., Chandler, W.F., McKeever, P.E., and Scheingart, D.E.: The spectrum of ACTH-producing pituitary lesions. Am. J. Surg. Path. 1986;10:618-626.
3. Miyagami, M., Smith, B.H., McKeever, P.E., Chronwall, B.M., Greenwood, M.A. and Kornblith, P.L.: Immunocytochemical localization of factor VIII-related antigen in tumors of the human central nervous system. J. Neuro-Oncology 1987;4:269-285.
4. Chandler, W.F., Gebarski, S.S., and McKeever, P.E.: Multiple progressive familial thrombosed arteriovenous malformations. Neurosurgery 1986;19:401-404.
5. Varani, J., Dixit, V.M., Fligiel, S.E.G., McKeever, P.E. and Carey, T.: Thrombospondin-induced attachment and spreading of human squamous cells. Exp. Cell Res., (in press).

6. McKeever, P.E., Hood, T.W., Varani, J., Taren, J.A., Beierwaltes, W.H., Wahl, R., Liebert, M. and Nguyen, P.K.: Products of cells cultured from gliomas: VI. Cytology and morphometry of two cell types cultured from gliomas. *J. Natl. Cancer Inst.* 1987;78:75-84.
7. Chandler, W.F., Schteingart, D.E., Lloyd, R.V., McKeever, P.E. and Ibarra-Perez, G.: Surgical treatment of Cushing's disease. *J. Neurosurg.* 1987;66:204-212.
8. Hood, T.W., Venes, J.L., and McKeever, P.E.: Stereotactic biopsy of pediatric brain stem tumors. *J. Pediatric Neurosciences* 1986;2:79-88.
9. Hood, T.W., Gebarski, S.S., McKeever, P.E., and Venes, J.L.: Stereotaxic biopsy of intrinsic lesions of the brain stem. *J. Neurosurg.* 1986;65:172-176.
10. Davenport, R.D. and McKeever, P.E.: Ploidy of endothelium in high grade astrocytomas. *Analyt. and Quant. Cytol. Histol.* 1987;9:25-29.
11. Feldenzer, J.A. and McKeever, P.E.: Gamma-enolase in cerebellar hemangioblastomas. *Acta. Neuropathol. (Berl.)* 1987;72:281-285.
12. Schroeder, K.A., McKeever, P.E., Schaberg, D.R. and Hoff, J.T.: Dexamethasone in experimental brain abcess. *J. Neurosurg.* 1986;66:264-269.
13. Starosta-Rubinstein, S., Ciliax, B.J., Penny, J.B., McKeever, P. and Young, A.B.: Imaging of a glioma using peripheral benzodiaepine receptor ligands. *Proc. Natl. Acad. Sci.* 1987;84:891-895.
14. Levine, S.A., McKeever, P.E., and Greenberg, H.S.: Primary cerebellar glioblastoma multiforme. *J. Neuro-Oncology* (in press).
15. Feldenzer, J.A., McKeever, P.E., Schaberg, D.R., Campbell, J.A., and Hoff, J.T.: Experimental spinal epidural abcess: A pathophysiological model in the rabbit. *Neurosurgery* (in press).
16. McKeever, P.E., Smith, B.H., Taren, J.A., Wahl, R.L., Kornblith, P.L. and Chronwall, B.M.: Products of cells cultured from gliomas: VI. Immunofluorescent, morphometric and ultrastructural characterization of two different cell types growing from explants of human gliomas. *Am. J. Pathol.* 1987;127:358-372..
17. Davenport, R.D., and McKeever, P.E.: DNA content and marker expression in human gliomas explants. *Acta Neuropathol. (Berl.)*, (in press).
18. Mountz, J.M., Stafford-Schuck, K., McKeever, P.E., Taren, J.A. and Beierwaltes, W.H.: The tumor/cardiac ratio: A new method to estimate residual high grade astrycytoma using thallium-201 radionuclide imaging. *J. Neurosurg.*, (in press).
19. Stafford-Schuck, K., Mountz, J.M., McKeever, P.E., Taren, J.A. and Beierwaltes, W.H.: Thallium-201 imaging and estimation of residual high grade astrocytome. *J. Nuc. Med. Tech.*, (in press).

#### **BOOKS AND CHAPTERS IN BOOKS:**

1. McKeever, P.E., and Spicer, S.S.: Pituitary histochemistry, in, Spicer, S.S., (editor), *Histochemistry in Pathologic Diagnosis*", Marcel-Dekker, New York, New York, 1987, pp. 603-645.
2. McKeever, P.E., and Balentine, J.D.: Histochemistry of the nervous system, in, Spicer, S.S., (editor), *Histochemistry to Pathologic Diagnosis*, Marcel-Dekker, New York, New York. 1987, pp. 871-957.
3. McKeever, P.E., Lloyd, R.V., and Chandler, W.F.: ACTH-secreting pituitary adenoma. *American Society of Clinical Pathologists, Check Sample #AP II 86-6 (AP II 114).* ASCP, Chicago, 1986, pp. 1-4.

**ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR,  
MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Davenport, R.D. and McKeever, P.E.: Ploidy of endothelium in high grade astrocytomas. Presented at AFIP International Conference on Advances in Morphometry and Ploidy Determination.
2. Liebert, M., Biesman, B.S., McKeever, P.E., Taren, J.A., Wahl, R.: Monoclonal antibodies to brain tumors. Departments of Surgery and Internal Medicine, The University of Michigan, Ann Arbor, Michigan. A.A.C.R., 1986.
3. Stafford-Schuck, K., Mountz, J., McKeever, P. and Taren, J.: Thallium-201 localization for estimation of residual brain tumor. Society of Nuclear Medicine 33rd Annual Meeting Washington, D.C., 1986.
4. Taasan, V.C., Taren, J.A., Beierwaltes, W.H., McKeever, P., Hood, T.W, Shapiro, B., Wahl, R.C., Dmuchowski, C. and Rabbani, R.: Response to stereotactic treatment of 14 patients with brain tumors with NaCr PO-4 - P-32. Society of Nuclear Medicine 33rd Annual Meeting, Washington, D.C., 1986.
5. Feldenzer, J.A., McKeever, P.E., Schaberg, D.R. and Hoff, J.T.: the pathogenesis of spinal epidural abscess. Congress of Neurological Surgeons, New Orleans, Louisiana, September, 1986.
6. Mountz, J.M., Stafford-Schuck, K., McKeever, P.E., Liebert, M., Raymond, P., Taren, J.A., Beierwaltes, W.H.: The tumor/cardiac ratio: A new method to estimate residual high grade astrocytoma using Thallium-201. Society of Nuclear Medicine 34th Annual Meeting, Toronto, June, 1987.
7. Davenport, R., McKeever, P.: DNA content and marker expression in cultured glioma explants. Lab. Invest., 1987;56:17A.
8. Fligel, S., Varani, J., and McKeever, P.: Human neoplasms and extra-cellular matrix components: Production and responsiveness. Lab. Invest. 1987;56:24A.

**A REES MIDGLEY, M.D.  
PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:** None.

**II. TEACHING ACTIVITIES:**

- A. Taught major portion of Physiology 581, "Mammalian Reproductive Endocrinology", plus occasional other lectures.
- B. Supervision of one postdoctoral fellow: Eleanor Sims.
- C. Primary Supervision of 6 graduate students:
  - 1. Emilie Bell, CMB.
  - 2. Jane Wiesen, CMB.
  - 3. Hal Cantor, Bioengineering.
  - 4. Craig Halberstadt, Bioengineering.
  - 5. Rhonda Brand, Bioengineering.
  - 6. Mahmoud Ghazzi, Bioengineering.
  - 7. (also serving on several other dissertation committees).
- D. Supervision of 2 undergraduate students.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. NIH-P30-HD 18258-01. "Center for the Study of Reproduction", \$1,822,419, 3/1/84-2/28/89. (direct), Principal Investigator.
- B. Mellon Foundation Grant, 1985-88, \$300,000 (total).
- C. NIH-HD-18018-01. "Gonadotropin control of the ovary", 1985-88, \$331,663 (direct), Principal Investigator.
- D. NIH-T32-HD-07048-12. "Training program in reproductive endocrinology" (6 predoc; 4 postdoc), 1985-90, \$972,975 (direct cost), Principal Investigator.
- E. NIH-R44-GM34169-02, Phase II SBIR via KMS Fusion, Inc., John Widman, P.I., Subcontract to UM. "Pulse signals to cells using a unique perfusion system", 1986-88, \$81,453 (total to UM, 1986-87).
- F. NSF-BNS-8608024. "Hormones and Psychosocial Development in Early Adolescence", a multidepartmental, interdisciplinary project, 7/15/86-7/14/87, \$146,949 (total), Jacquelyn Eccles, P.I., (Co-investigator).
- G. Presidential Initiatives Fund. "Cellular bioengineering: Positioning The University of Michigan for the 1990's and beyond", 1987-1990, \$270,000 (total), Michael Savageau, P.I., (Co-investigator).
- H. NSF. "Efficient monoclonal antibody production", 9/1/87-8/31/90, \$560,292 (total, amount pending final approval), Bernhard Palsson, P.I., (co-investigator).

#### **SUBMITTED:**

- A. Submitted: HD-22675-01. "Early adolescence: A biomedical and psychosocial approach", W. Holmes (Psychology), P.I., (Co-investigator).
- B. Submitted: NSF. Cluster research proposal for molecular biosensing, H.Wang, P.I., (Co-investigator).
- C. Submitted: P30-HD18258-03. Molecular biology core facility: supplement to Center for the Study of Reproduction.
- D. Submitted: Pfizer Corporation. "Development of an artificial bone marrow", Stephen Emerson, PI, (Co-investigator).

#### **PROJECTS UNDER STUDY:**

- A. Development of a computer-controlled perfusion system for on-line analysis of cellular responses to pulsatile and other controlled signalling.
- B. Analysis of dynamic control of ovarian function by gonadotropins.
- C. Non-invasive assessment of the normality and development of single pre-gastrula mouse embryos.
- D. Development of a computer-based system for collection and analysis of data from scientific instruments.
- E. Localization and regulation of mRNAs in rat granulosa cells.
- F. Application of principles of cellular bioengineering to the growth and function of mammalian cells.
- G. Articles submitted:  
Bagavandoss, P. and Midgley, A.R. Jr., Contrary to in vivo evidence retinoic acid can substitute for retinol in rat ovarian cells in vitro. Mol. Cell. Endocrinology (submitted).

#### **IV. ADMINISTRATIVE ACTIVITIES:**

##### **MEDICAL SCHOOL/HOSPITAL:**

- A. Director, Consortium for Research in Developmental and Reproductive Biology.
- B. Director, Reproductive Endocrinology Program.
- C. Member, Review and Search Committee for Department of Anatomy and Cell Biology.
- D. Member, Ad Hoc Committee on Classified Research.

##### **REGIONAL AND NATIONAL:**

- A. Member, NICHD Population Research Committee, 1986-.
- B. Ad Hoc Member, NIDDK Endocrinology Research Program Advisory Committee, 1986-.
- C. Ad Hoc Member, NIDDK Hormone Distribution Program Subcommittee, 1986-.

#### **V. OTHER RELEVANT ACTIVITIES:**

##### **INVITED LECTURES/SEMINARS:**

- 1. July 15-17, 1986, 19th Annual Meeting of the Society for the Study of Reproduction, Cornell University.

2. September 11-12, 1986, 1st International Symposium on Morphological Basis of Human Reproductive Function, Rome, "Functional and morphological responses of ovarian tissues to defined gonadotropic stimuli in a computer-controlled perfusion system".
3. October 15-17, 1986, Site Visit, Boston.
4. October 22-24, 1986, Site Visit, New York City.
5. November 6-7, 1986, Population Research Committee meeting, Bethesda.
6. December 8, 1986, Project Site Visit at UM for NIH project entitled "Early Adolescence: A Biomedical And Psychosocial Approach."
7. December 10, 1986, Wayne State University, Lecture entitled, "Ovarian Intercellular Communication".
8. January 7-9, 1987, Site Visit, Chapel Hill, NC.
9. March 4-6, 1987, Population Research committee meeting, Bethesda.
10. March 17, 1987, University of Wyoming, Laramie, Lectures entitled "Scholarship and Entrepreneurship: The Reality of Biological Research " and "Intercellular Communication".
11. April 14, 1987, Sixth Annual Conference on Federal, State and Industry research and Development Opportunities, Novi, MI, participated in Biotechnology/Biomedical Technology Panel Discussion/presentation.
12. April 22-24, 1987, Site Visit, Wistar Institute, Philadelphia.
13. May 13-15, 1987, Site Visit, La Jolla, CA.
14. May 18-19, 1987, Symposium on Cellular Bioengineering: Cellular Sensing, Modeling and Control, The University of Michigan, Lecture entitled "Issues in Optimizing Cellular Growth and Productivity".
15. June 18-19, 1987, Population Research Committee meeting, Bethesda.

## **VI. PUBLICATIONS:**

### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Bagavandoss, P., and Midgley, A.R. Jr.: Lack of difference between retinoic acid and retinol in stimulating progesterone production by luteinizing granulosa cells in vitro. *Endocrinology*, July 1987 (in press).
2. Schramm, W., Yang, T. and Midgley, A.R. Jr.: Surface modification with protein A for uniform binding of monoclonal antibodies. *Clin. Chem.* 33, 1987, (in press).
3. Schramm, W., Yang, T. and Midgley, A.R. Jr.: Monoclonal antibodies in solid phase and liquid phase assays. *Clin. Chem.* 33, 1987 (in press).
4. Schramm, W., Yang, T. and Midgley, A.R. Jr.: The promise of immunosensors in diagnostic systems. *Med. Dev. Diagn. Ind.*, 1987 (in press).
5. Schramm, W., Yang, T. and Midgley, A.R. Jr.: Continuous monitoring with immunosensors. *Proceeding of the Symposium on Sensor Science and Technology*, April 6-9, 1987, Cleveland.

### **ABSTRACTS, BOOK REVIEWS, LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEED JOURNALS:**

1. Ghazzi, M.N., Cantor, H.C., Valiquett, T.R., Prochaske, O.J. and Midgley, A.R. Jr.: Dynamic oscillatory and other non-linear intraovarian activities revealed in the anesthetized rat by implanted microsensor. 20th Annual Meeting, Society for the Study of Reproduction, 1987.



2. Rolfes-Curl, A., Valiquett, T.R., and Midgley, A.R. Jr.: Dynamics of gonadotropin-stimulated release of progesterone from unprimed, immature rat granulosa cells during perfusion. 20th Annual Meeting, Society for the Study of Reproduction, 1987.
3. Ozturk, S.S., Halberstadt, C.R., Midgley, A.R. and Palsson, B.O.: Transtubular bioreactor: characterization and potential use for mammalian cell cultivation. Annual AIChE Meeting, "Science and Engineering of Mammalian-Cell Cultures", 1987.
4. Halberstadt, C.R., Ozturk, S.S., Smith, R.H., Palsson, B.O. and Midgley, A.R. Jr.: A novel mammalian bioreactor with transtubular, convective flow. American Chemical Society, 1987.

**BERNARD NAYLOR, M.D.  
PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Cytopathology - 26 weeks.
- B. Director, Cytopathology Laboratory - full time.
- C. Consultation Service, Department of Pathology: Cytopathology, pulmonary pathology and gynecologic pathology - 12 months.
- D. Necropsy service - on call coverage.
- E. Consultant, Breast Care Center - 12 months.

**II. TEACHING ACTIVITIES:**

- A. Pathology 600 - Sophomore Medical Students, class lectures - 5 contact hours.
- B. Pathology 600 - Sophomore Medical Students, laboratory instructor - 39 contact hours.
- C. Pathology residents - supervision and teaching during cytopathology rotations and when covering necropsies.
- D. Pathology residents - biweekly cytopathology conferences.
- E. Gynecology - Pathology - Radiation Oncology Conference-backup coverage.

**III. RESEARCH ACTIVITIES:**

- A. Cytopathology, with particular reference to serous fluids and aspiration cytology.

**PROJECTS UNDER STUDY:**

- A. Aspiration cytology with particular reference to pulmonary, mammary and adrenal lesions.
- B. Cross contamination in the cytologic staining circuit.
- C. Curschmann's spirals in serous fluids.
- D. Cytologic manifestation of rheumatoid disease in serous fluids.

**IV. ADMINISTRATIVE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Director, Cytopathology Laboratory.
- B. Department of Pathology Review Committee, 1980-87.
- C. Department of Pathology Medical Service Plan Executive Committee.

## **REGIONAL AND NATIONAL:**

- A. Secretary-Treasurer, American Society of Cytology.
- B. Editorial Advisory Board and American Review Board, Acta Cytologica.
- C. Editorial Board, The Cytotechnologist's Bulletin.
- D. Chairman, Editorial and Publications Committee, International Academy of Cytology.
- E. Membership Committee, International Academy of Cytology.

## **V. OTHER RELEVANT ACTIVITIES:**

### **INVITED LECTURES AND SEMINARS:**

- 1. Naylor, B.: On the presentation of papers at scientific meetings. A critique. Lecture, Henry Ford Hospital, Detroit, Michigan, September, 1986.
- 2. Naylor, B.: Non-neoplastic entities manifested in non-gynecologic cytologic specimens. Lecture, Department of Pathology, Henry Ford Hospital, Detroit, Michigan, September, 1986.
- 3. Naylor, B., Beals, T.F. and Flint, A.: Transthoracic fine needle aspiration cytology: Light microscopic and ultrastructural appearances. Workshop, Annual Scientific Meeting of the American Society of Cytology, Detroit, Michigan, November, 1986.
- 4. Naylor, B.: The mesothelium, mesothelial reactive changes and mesothelial neoplasia. Panel moderator, Annual Scientific Meeting of the American Society of Cytology, Detroit, Michigan, 1986.
- 5. Naylor, B.: Development of workload limits for cytotechnologists. Panel moderator, Annual Scientific Meeting of the American Society of Cytology, Detroit, Michigan, November, 1986.
- 6. Naylor, B.: Aspiration cytology of the breast. Lecture, Arthur Purdy Stout Society of Surgical Pathologists, Chicago, Illinois, March, 1987.
- 7. Naylor, B.: Cytology of serous fluids, Workshop, Brooke Army Medical Center, Fort Sam Houston, Texas, April, 1987.
- 8. Naylor, B.: Non-neoplastic entities in routine cytologic specimens. Workshop, Delaware Valley Society of Cytology, Trevese, Pennsylvania, April, 1987.
- 9. Naylor, B.: Non-neoplastic entities in routine cytologic specimens. Workshop, Canadian Society of Laboratory Technologists, Hamilton, Ontario, June 1987.

## **VI. PUBLICATIONS:**

### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

- 1. Kim, K., Naylor, B. and Han, I.H.: fineneedle aspiration cytology of sarcomas metastatic to lung. Act Cytol. 1986;30:688-694.
- 2. Flint, A., Beckwith, A.L. and Naylor, B.: Pneumocystis carinii pneumonia: Cytologic manifestations and rapid diagnosis in routinely prepared Papanicolaou-stained preparations. Am. J. Med. 1986;81:1009-1011.

3. McDonald, T.W., Shepherd, J.H., Morley, G.W., Naylor, B., Ruffolo, E.H., and Cavanaugh, D.: Role of needle biopsy in the investigation of gynecologic malignancy. *J. Reprod. Med.* 1987;32:287-292.
4. Flint, A., Kumar, N.B. and Naylor, B.: Pulmonary Hodgkin's disease: Diagnosis by fine needle aspiration. *Acta Cytol.*, (in press).

### **HONORS**

1. Award in recognition of excellence in teaching, University of Michigan Medical School Class of 1989, April, 1987.

**BRIAN J. NICKOLOFF, M.D., PH.D.**  
**ASSISTANT PROFESSOR OF PATHOLOGY AND DERMATOLOGY**  
**DEPARTMENT OF DERMATOLOGY**  
**DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT**  
**1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Dermatopathology, University of Michigan Hospitals.
- B. Dermatopathology, M-Labs.
- C. Dermatopathology, Private Consultations.
- D. Dermatology, Melanoma Clinic.

**II. TEACHING ACTIVITIES:**

- A. Pathology and Dermatology House Officers Lecture Series.
- B. Clinical Pathology Orientation Lecture and Laboratory.
- C. 5 Week Medical Student (Year 2) Research Elective.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. NIH - New Investigator Research Award (50% effort: \$35,000 Direct Costs; Aug 1985 through Aug 1987). Interaction of Gamma Interferon with Keratinocytes.
- B. NIH First Award (60% effort: \$90,000 Direct Costs; Aug 1987 - Aug 1989): Interaction of Gamma Interferon with Keratinocytes.
- C. Consultant - NIH Mycosis Fungoides Epidemiology Study - Stanford University.

**PROJECTS UNDER STUDY:**

- A. Role of Gamma Interferon in Modulating Adherence Reactions Between Resting and Activated Mononuclear Leukocytes and Keratinocytes.
- B. Characterization of Gamma Interferon Receptor on Normal and Psoriatic Keratinocytes.
- C. Gamma Interferon Activation of Protein Kinase C in benign and malignant keratinocytes.
- D. Binding of lymphocytes to epidermis and vessels of frozen sections of psoriatic skin and other dermatoses.
- E. Characterization of type of Beta Interferon produced by virally infected keratinocytes.
- F. Interrelationship between gamma interferon, and Tumor necrosis factor and PGE<sub>2</sub> and IL-1 production by keratinocytes and monocytes.
- G. Characterization and biological significance of Thrombospondin production by keratinocytes and melanocytes.
- H. Role of Extracellular matrix in adherence reactions involving resting and activated mononuclear leukocytes.

- I. Characterization of effect of Cyclosporin A on Phorbol ester induced cutaneous inflammation and hyperplasia.
- J. Immunophenotypic analysis of response of psoriasis and 22 other dermatological conditions to Cyclosporin A.

#### **IV. ADMINISTRATIVE ACTIVITIES:**

##### **REGIONAL AND NATIONAL:**

- A. Editorial Board - American Journal of Dermatopathology.
- B. Reviewer of articles for: Journal of Investigative Dermatology, Journal of Cutaneous Pathology, Journal of Cutaneous Pathology, American Journal of Dermatopathology, Archives of Dermatology, Journal of American Academy of Dermatology, American Journal of Plastic Surgery.

#### **V. OTHER RELEVANT ACTIVITIES:**

##### **INVITED LECTURES/SEMINARS:**

- 1. Interferon Symposium Workshop Co-Chairman, Joint SID-ESDR Meeting, 22 June 1986, Geneva, Switzerland.
- 2. Insulin-like Growth Factor I/SM-C Stimulates Human Keratinocyte Proliferation, IV International Symposium on Psoriasis, 7 July 1986, Stanford, California.
- 3. Recent Observations Regarding Interferon, Keratinocytes and lymphocytes, Invited Speaker, XIth Japanese Society of Investigative Dermatology, 24 July 1986, Kobe, Japan.
- 4. Immunobiological Significance of Interferon in Dermatology, Invited Speaker, Japanese Society of Investigative Dermatology, 25 July, 1986, Kobe Japan.
- 5. Self Assessment Course Faculty Participant, American Society of Dermatopathology, 4 December 1986, New Orleans, Louisiana.
- 6. Recent Advances in Dermatopathology From Stanford University, Grand Rounds, Department of Dermatology, University of California at San Francisco, 17 December, 1986, San Francisco, California.
- 7. Immunologic Cytokines I, Presiding Co-Chairman, National Meeting-Society of Investigative Dermatology, 3 May 1987, San Diego, California.

#### **VI. PUBLICATIONS:**

##### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

- 1. Nickoloff, B.J., Mahrle, G., Morhenn, V.B.: The Ultrastructural effect of recombinant gamma interferon on cultured human keratinocytes. J. Ultrast. Res. 1986;10:17-21.
- 2. Mohle, J., Nickoloff, B.J.: Fatal cutaneous squamous cell carcinoma in a young patient. J. Dermatol. Surg. Oncol. 1986;12:276-279.
- 3. Nickoloff, B.J., Fleischmann, H.E., Carmel, H., Wood, C., Roth, R.J.: Microcystic adnexal carcinoma: Immunohistological observations suggesting dual (Pilar and eccrine) differentiation. Arch. Dermatol., 1986;122:290-294.
- 4. Nickoloff, B.J., Basham, T.Y., Torseth, J., Merigan, T.C., Morhenn, V.B.: Human keratinocyte-lymphocyte reactions in-vitro. J. Invest. Dermatol., 1986;87:11-18.

5. Nickoloff, B.J.: Epidermal mucinosis in mycosis fungoides. *J. Am. Acad. Dermatol.*, 1986;15:83-86.
6. Wood, C., Miller, A.C., Jacobs, A.H., Hart, R., Hill, J.R., Nickoloff, B.J.: Well's syndrome: Eosinophil infiltration with flame figures. *Am. J. Dermatopathol.* 1986;8:186-193.
7. Misra, P., Nickoloff, B.J., Morhenn, V.B., Hintz, R.L., Rosenfeld, R.G.: Characterization of insulin like growth factor I on human keratinocytes. *J. Invest. Dermatol.* 1986;87:264-267.
8. Nickoloff, B.J.: New strategies for psoriasis therapy. *Cutis* 1986;37:421-423.
9. Abel, E.A., Nickoloff, B.J., Shelby, D., Watson, W., Wood, G.S.: Tumor stage mycosis fungoides in a patient treated with long-term corticosteroids for asthma and atopic-like dermatitis. *J. Dermatol. Surg. Oncol.* 1986;12:1089-1093.
10. Nickoloff, B.J., Walton, R., Pregerson-Rodan, K., Jacobs, A.H., Cox, A.J.: Immunohistological patterns of small congenital nevi. *Arch. Dermatol.* 1986;122:1263-1269.
11. Nickoloff, B.J., Misra, P., Morhenn, V.B., Hintz, R., Rosenfeld, R.: Plasma somatomedin-C levels in psoriasis. *Br. J. Dermatol.* 1987;116:15-20.
12. O'Connell, B.M., Nickoloff, B.J.: Solitary labial papular acantholytic dyskeratoma in an immunosuppressed patient. *Am. J. Dermatopath.* (in press).
13. Pregerson-Rodan, K., Hu, C-H, Nickoloff, B.J.: Malodorous intertriginous pustules and plaques: Pempfigus vegetans of Hallopeau. *Arch. Dermatol.* 1987;123:393-394.
14. Torseth, J., Nickoloff, B.J., Basham, T.Y., Merigan, T.C.: Beta interferon produced by keratinocytes in human cutaneous herpes simplex infection. *J. Infect. Dis.* 1987;155:641-648.
15. Wood, G.S., Volterra, A.S., Abel, E.A., Nickoloff, B.J., Adams, R.M.: Allergic contact dermatitis: Novel immunohistological features. *J. Invest. Dermatol.* 1986;87:688-693.
16. O'Connell, B.M., Abel, E.A., Nickoloff, B.J., Bell, B., Hunt, S., Theodore, J., Shumway, N.E., Jacobs, P.H.: Dermatologic complications in heart transplant recipients. A prospective pilot study. *J. Heart Transplant* (in press).
17. Pregerson-Rodan, K., Fleischmann, H., Egbert, B., Nickoloff, B.J.: Generalized blistering eruption aggravated by heat; Pempfigus Foliaceus. *Arch. Dermatol.* 1987;123:395-396.
18. Mansbridge, J., Nickoloff, B.J., Morhenn, V.B.: Induction of new proteins by gamma interferon in cultured human keratinocytes. *J. Invest. Dermatol.* 1987;88:602-610.
19. Recht, M., Nickoloff, B.J., Wood, G.S.: Bullous Kaposi' Sarcoma. *J. Dermatol. Surg. Oncol.* 1986;12:1192-1197.
20. Nickoloff, B.J., Binding of <sup>125</sup>I-Gamma Interferon to cultured human keratinocytes. *J. Invest. Dermatol.*, 1987;89:513-516.
21. Lindae, M.L., Hu, C-H, Nickoloff, B.J.: Pruritic erythematous linear plaques on neck and back: Bleomycin induced flagellate hyperpigmentation. *Arch. Dermatol.*, 1987;123:397-398.
22. Morhenn, V.B., Nickoloff, B.J.: Interleukin-2 stimulated resting T lymphocyte response to allogeneic keratinocytes. *J. Invest. Dermatol.* (in press).
23. Nickoloff, B.J.: Interferons and Psoriasis-1987 Perspective. *Dermatologica* 1987;174:1-4.
24. Nickoloff, B.J., Lewinsohn, D., Butcher, E.: Allogeneic Peripheral mononuclear leukocytes prominently adhere to gamma interferon treated cultured keratinocytes. *Am J. Dermatopath.* (in press).
25. Nickoloff, B.J., Lewinsohn, D., Butcher, E., Krensky, A.M., Clayberger, C.: Recombinant gamma interferon increased binding of peripheral blood mononuclear leukocytes and a Leu 3 + lymphocyte cell clone to cultured keratinocytes and a

- malignant cutaneous squamous carcinoma cell line which is blocked by antibody against the LFA-1 Molecule. J. Invest. Derm. (in press).
26. O'Connell, B.M., Nickoloff, B.J., Jacobs, A.H.: Axillary Pigmented papular variant of urticaria pigmentosa in a 3 month old boy. Arch. Dermatol. (in press).
  27. Luy, J.T., Jacobs, A.H., Nickoloff, B.J.: a Child with Erythematous and hyperkeratotic patches, Erythrokeratoderma variabilis. Arch. Dermatol. (in press).
  28. Nickoloff, B.J., Misra, P., Morhenn, V.B., Hintz, R., Rosenfeld, R.: Insulin-like growth factor-I/somatomedin C stimulates human keratinocyte proliferation . Submitted, J. Invest. Dermatol.
  29. Lindae, I.L., Nickoloff, B.J., Greene, I.: Merkel Cell Carcinoma of the thigh. Submitted, J. Dermatol. Surg. Oncol.
  30. Morhenn, V.B., Pregerson-Rodan, K., Mullen, R.H., Wood, G.S., Nickoloff, B.J., Farber, E.M.: The effectiveness of recombinant gamma interferon administered intramuscularly for the treatment of Psoriasis. Submitted, Arch. Dermatol.
  31. Nickoloff, B.J., Jacobs, A.H.: Partially regressed congenital nevus with some histological features of a dysplastic nevus but without cytological atypia. Submitted, J. Cut. Path.
  32. Nickoloff, B.J., Reusch, M.K., Karasek, M.A.: Preferential binding by Leu 2 + T lymphocytes and monocytes to interferon-gamma treated cultured skin endothelial cells and keratinocytes. Submitted, J. Invest. Derm.
  33. Gould, W.M., Higgins, G.A., Dorion, D.R., Loebner, E., Nickoloff, B.J.: Superficial ablation by hematoporphyrin laser treatment of perianal Paget's Disease. Submitted, J. Amer. Acad. Derm.
  34. Wastek, G.J., Reusch, M.K., Karasek, M.A., Nickoloff, B.J.: Characterization of <sup>3</sup>H-Substance P Binding to a mouse mast cell line (MC/9). Submitted, J. Invest. Dermatol.
  35. Varani, J., Nickoloff, B.J., Riser, B., Mitra, R.S., Dixit, V.M.: Thrombospondin Induced Adhesion of Human Keratinocytes. Submitted, J. Clin. Invest.
  36. Gupta, A., Fisher, G., Nickoloff, B.J., Elder, J.T., Voorhees, J.J.: Sphingosine inhibits TPA induced epidermal Protein Kinase C Activation. Submitted, J. Invest. Dermatol.
  37. Nickoloff, B.J., Mitra, R.S.: Phorbol Ester Treatment Enhances Binding of Mononuclear leukocytes to autologous and allogeneic gamma interferon treated keratinocytes which is blocked by anti-LFA-1 monoclonal antibody. Submitted, J. Invest. Dermatol.

#### **BOOKS/CHAPTERS IN BOOKS:**

1. Nickoloff, B.J.: Recent observations regarding interferon, keratinocytes and lymphocytes in vivo. Proc. XI Japanese Society for Investigative Dermatology. Y. Mishima, ed., Kobe, Japan.
2. Farber, E.M., Reusch, M.K., Glinski, W., Karasek, M., Recht, B., Nickoloff, B.J.: Psychoneural Pathogenesis of Psoriasis. IV International Symposium on Psoriasis, Elsevier Publishing Co., 1986.
3. Kaplan, E., Nickoloff, B.J.: The Clinical and Pathological Features of Nevi with Emphasis on Treatment Approaches. In: Clinics in Plastic Surgery, W.B. Saunders Co., Philadelphia, Pennsylvania, 1987;14:2;277-300.

#### **ABSTRACTS, BOOK REVIEWS, LETTERS TO THE EDITOR, ARTICLES PUBLISHED IN UNREFEREED JOURNALS:**

1. Nickoloff, B.J., Walton, R., Pregerson-Rodan, K., Jacobs, A.H., Cox, A.J.: Immunohistological patterns of small congenital nevi. J. Cut. Path. 1986;13:76.



2. Morhenn, V.B., Nickoloff, B.J.: The effect of short exposure of gamma interferon on HLA-DR expression by human keratinocytes. *Clin. Res.* 1986;34:162.
3. Misra, P., Nickoloff, B.J., Morhenn, V.B., Hintz, R.L., Rosenfeld, R.G.: Characterization of insulin-like growth factor-I receptor on human keratinocytes. *Clin. Res.* 1986;34:162.
4. O'Connell, B.M., Abel, E.A., Nickoloff, B.J., Bell, B., Hunt, S., Theodore, J., Shumway, N.E., Jacobs, P.H.: Dermatologic complications in heart transplant recipients: A prospective pilot study. *Int. Soc. Heart Transplant. J. Heart Transplant.*
5. Morhenn, V.B., Rodan, K., Mullen, R., Wood, G.S., Nickoloff, B.J.: HLA-DR expression by keratinocytes in patients with psoriasis treated with intramuscular recombinant gamma interferon. *J. Invest. Dermatol.*
6. Morhenn, V.B., Nickoloff, B.J.: The effect of gamma interferon on "Psoriatic" keratinocytes. *Proceeding IV International Symposium, Stanford, California, Elsevier Publishing Co.*
7. Nickoloff, B.J., Misra, P., Morhenn, V.B., Hintz, R., Rosenfeld, R.: Somatomedin C Stimulates Human keratinocyte Proliferation. *Proceeding IV International Symposium on Psoriasis, Stanford, California, Elsevier Publishing Co.*
8. Nickoloff, B.J.: Characterization of the Gamma Interferon Receptor on cultured human keratinocytes. *Lab. Invest.*, 1987;56:55A.
9. Nickoloff, B.J., Lewinshon, D.M., Butcher, E.C.: Peripheral blood mononuclear leukocytes bind to gamma interferon treated keratinocytes. *Lab. Invest.* 1987;56:55A.
10. Reusch, M.K., Wastek, G., Smullen, M.A., Karasek, M.A., Nickoloff, B.J.: Binding of substance P to mouse mast cell line (MC/9) with release of histamine. *Clin. Res.* 1987;35:252A.
11. Reusch, M.A., Karasek, M.A., Nickoloff, B.J.: The influence of neuropeptides on proliferation of mononuclear leukocytes. *Clin. Res.* 1987;35:118A.
12. Reusch, M.A., Nickoloff, B.J., Karasek, M.A.: Trophic effects of interferon-gamma on human skin microvascular endothelial cells. *Clin. Res.* 1987;35:712A.
13. Nickoloff, B.J., Lewinshon, D.M., Butcher, E.C., Krensky, A.M., Clayberger, C: Characterization of gamma interferon induced binding between monocytes, lymphocytes, neutrophils, Leu 3 + T cells and normal and malignant keratinocytes. *J. Invest. Derm.* 1987;88:509.
14. Nickoloff, B.J., Reusch, M.A., Karasek, M.A.: Characterization of adherent mononuclear leukocytes to interferon-gamma treated skin endothelial cells and keratinocytes. *Clin. Res.* 1987;35:389A.
15. Morhenn, V.B., Nickoloff, B.J.: Gamma Interferon treated human keratinocytes can stimulate allogeneic, resting T lymphocytes in the presence of interleukin-2. *J. Invest. Derm.* 1987;88:508A.
16. Nickoloff, B.J., Morhenn, V.B.: Keratinocyte derived soluble factors which influence lymphocyte proliferation. *J. Invest. Dermatol.*

**HAROLD A. OBERMAN, M.D.  
PROFESSOR OF PATHOLOGY  
CO-DIRECTOR, CLINICAL PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Head, Section of Clinical Pathology, University Hospitals.
- B. Director, Blood Bank, University Hospitals.
- C. Diagnosis of surgical specimens from University Hospitals patients.
- D. Diagnosis of surgical specimens from M-Labs.
- E. Diagnosis of consultation cases on surgical pathology of breast.
- F. Medical coverage of Transfusion Service.
- G. Medical coverage of Necropsy Service.
- H. Member, University of Michigan Breast Care Center.

**II. TEACHING ACTIVITIES:**

**MEDICAL SCHOOL/HOSPITALS:**

- A. Lectures on breast pathology (two) and transfusion medicine (four) to sophomore class.
- B. Presentation on breast cancer to Interphase Programs.
- C. Presentation of monthly Conference on Surgical Pathology to Section of General Surgery (Aug-Dec, 1986).
- D. Postgraduate Course, "Current Topics in Blood Banking", Planning Committee.
- E. Course on Transfusion Medicine presented to Pathology and Hematology/Oncology House Officers.
- F. Seminars and lectures on Pathology of Breast to Pathology House Officers.
- G. Lecture on Posttransfusion AIDS to Department of Surgery, Grand Rounds.
- H. Lecture on blood component therapy to Department of Anesthesiology.
- I. Postgraduate Course, "The Collaborative Management of the Patient with Breast Cancer", Planning Committee.
- J. Lecture on Posttransfusion AIDS to Section of Pediatric Cardiology.

**III. RESEARCH ACTIVITIES:**

**PROJECTS UNDER STUDY:**

- A. Treatment of acute Guillain-Barre Syndrom with plasma exchange (in cooperation with Department of Neurology - Dr. J. Albers).
- B. The pathology of mammary hamartomas.
- C. Prognostic significance of intraductal carcinoma of breast.
- D. Clinicopathologic study of multiple papillomas of breast.
- E. Impact of prozone effect on ABO compatibility testing.

#### **IV. ADMINISTRATIVE ACTIVITIES:**

##### **DEPARTMENTAL:**

- A. Head, Section of Clinical Pathology.
- B. Executive Committee, Departmental Medical Service Plan.
- C. Medical Director, Medical Technology Program.
- D. Laboratory Communication Committee.
- E. M-Labs Operations Committee.

##### **MEDICAL SCHOOL/HOSPITAL:**

- A. Executive Committee, Medical School.
- B. Faculty Committee on Search for President of University of Michigan.
- C. Medical Center Clinical Priorities Committee.
- D. Laboratories Committee, Chairman.
- E. Transfusion Committee, Chairman.
- F. Breast Care Center.
- G. Multi-Organ Transplantation Committee (liver homotransplantation).
- H. Ad Hoc Committee on HTLV-III testing in University Hospitals.
- I. Bone Marrow Transplantation task force.

##### **REGIONAL AND NATIONAL:**

- A. American Association of Blood Banks:
  - 1. Transfusion Transmitted Diseases (AIDS) Task Force, Vice Chairman.
  - 2. Nominations Committee.
  - 3. Liaison Committee on Circular of Information for Use With Human Blood and Components.
  - 4. Awards Committee.
  - 5. Scientific Program Committee.
- B. American National Red Cross:
  - 1. National Blood Operations Committee.
- C. American Society of Clinical Pathologists:
  - 1. Council on Anatomical Pathology.
  - 2. Director, Check Sample Program, Anatomical Pathology.
  - 3. Prelector, 1987 Annual Slide Seminar.
  - 4. Nominating committee.
- D. Michigan Society of Pathologists:
  - 1. Medical Care Insurance Committee.
  - 2. Medical Legislation Committee.
- E. American Medical Association:
  - 1. Advisory Panel on AIDS.
- F. Arthur Purdy Stout Society of Surgical Pathologists:
  - 1. Program Chairman.
- G. Detroit Red Cross:
  - 1. Medical Advisory Committee.
  - 2. Blood Operations Committee.
- H. Consultant, Veterans Administration Hospital, Ann Arbor.
- I. Test Committee on Blood Banking, American Board of Pathology.

**V. OTHER RELEVANT ACTIVITIES:**

- A. Associate Editor, Transfusion.
- B. Editorial Board, American Journal of Surgical Pathology.
- C. Associate Editor, Critical Reviews in Clinical Laboratory Sciences.
- D. Editor, General Principles of Blood Transfusion (AMA).
- E. Editorial Board, Archives of Pathology (AMA).
- F. Editor, Arthur Purdy Stout Society of Surgical Pathologists Annual Symposium.
- G. Editor, Anatomical Pathology Check Sample Program, American Society of Clinical Pathologists.
- H. Reviewer, Cancer.
- I. Reviewer, Journal of the American Medical Association.

**INVITED LECTURES/SEMINARS:**

- 1. Lecture, "Post-transfusion AIDS and Hepatitis", Central Blood Bank of Caracas, Caracas, Venezuela, August, 1986.
- 2. National Teleconference, "Impact of AIDS Testing on Hospitals", July, 1986.
- 3. Lecture, "Ethical and legal Problems in Blood Banking", Southwest Florida Blood Bank Association. Tampa, Florida, September, 1986.
- 4. Lecture, "Diagnosis and Significance of Non-palpable Breast Cancer", Florida Association of Pathologists, Tampa, Florida, September, 1986.
- 5. Microscopic tutorial, "Disease of Breast", Annual Meeting of American Society of Clinical Pathologists, Orlando, Florida, October, 1986.
- 6. Presentation of course, "Surgical Pathology of the Breast", Annual Meeting of American Society of Clinical Pathologists, Orlando, Florida, October, 1986.
- 7. Presentation of course, "Diagnostic Problems in Surgical Pathology", Annual Meeting of American Society of Clinical Pathologists, Orlando, Florida, October, 1986.
- 8. Lecture, "Diagnosis and Significance of Non-palpable Breast Cancer", Philadelphia Pathology Society, Philadelphia, Pennsylvania, October, 1986.
- 9. Lecture, "Controversies in Breast Pathology", Annual Meeting, Michigan State Medical Society, November, 1986.
- 10. Lecture, "Effective Utilization of Blood Components", annual Meeting, Michigan State Medical Society, Dearborn, Michigan, November, 1986.
- 11. Course (three days), "Diagnosis and Management of Breast Cancer", Annual Meeting, Michigan State Medical Society, Dearborn, Michigan, November, 1986.
- 12. Moderator, Annual Scientific Meeting, Arthur Purdy Stout Society of Surgical Pathologists, Chicago, Illinois, March, 1987.
- 13. Lecture, "The changing Role of the Pathologist in the Diagnosis of Breast Cancer", postgraduate course: The Collaborative Management of the Patient with Breast Cancer. University of Michigan Medical School, May, 1987.
- 14. Workshop, "Problem-solving in the Blood Bank", Annual Symposium: Current topics in Blood Banking, University of Michigan Medical School, June, 1987.
- 15. Lecture, "Post-transfusion AIDS and CMV". Annual Symposium: Current Topics in Blood Banking, University of Michigan Medical School, June 1987.
- 16. Lecture, "Legal and Ethical Problems in Blood Transfusion", Annual Symposium: Current Topics in Blood Banking, University of Michigan Medical School, June, 1987.
- 17. Lecture, "Blood Component Therapy", St. Joseph Mercy Hospital, Pontiac, Michigan, June, 1987.
- 18. Lecture, "Update on AIDS", Northern Michigan Summer Conference, University of Michigan Medical School, June, 1987.

19. Lecture, "What's New in Breast Cancer?", Northern Michigan Summer Conference, University of Michigan Medical School, June 1987.
20. Clinico-pathologic conferences (three), Northern Michigan Summer Conference, University of Michigan Medical School, June, 1987.

## **VI. PUBLICATIONS:**

### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Oberman, H.A.: Indications and monitoring of use of fresh frozen plasma as a hemostatic agent. *Curr. Stud. Hematol. Blood Trans.* 1986;53:125-132.
2. Wolber, R.A., Duque, R.E. Robinson, J.P., Oberman, H.A.: Oxidative product formation in irradiated neutrophils: A flow cytometric analysis. 1987;27:167-170.
3. Oberman, H.A.: Introduction to Symposium on Infectious Diseases. *Am. J. Surg. Path.* 1986;suppl. 1:1-2.
4. Oberman, H.A.: Invasive carcinoma of the breast with granulomatous response. *Am. J. Clin. Path.*, (in press).

### **BOOKS/CHAPTERS IN BOOKS:**

1. Oberman, H.A.: Impact of AIDS testing on the transfusion service. *In: The Current Status of HTLV-III Testing.* American association of Blood Banks. Arlington, VA., 1986, pp. 3-8.
2. Oberman, H.A. and Judd, W.J.: Cost containment in blood banking, *In: Cash, J., (editor), Progress in Transfusion Medicine,* Churchill-Livingstone, Edinburgh, Scotland.
3. Oberman, H.A.: The changing role of the pathologist in the diagnosis of breast cancer. *In: Harness, J.K., Adler, D.D., Lichter, A.S. Oberman, H.A. and Wicha, M., eds. Breast Cancer: The Collaborative Management.*
4. Oberman, H.A., and Rosen, P.P.: Diseases of the Breast. American Society of Clinical Pathologists. Chicago, IL., (in press).
5. Oberman, H.A.: Complications of blood transfusion. *In: Greenfield, L., (editor), Complications in Surgery and Trauma.* J.B. Lippincott, Philadelphia, PA, (in press).
6. Oberman, H.A.: (co-editor) *Diagnosis in Surgical Pathology.* Raven Press, New York, New York, (in preparation).
7. Oberman, H.A.: (editor) *Annual Symposium of Arthur Purdy Stout Society of Surgical Pathologists.* American Journal of Surgical Pathology Supplement (in press).
8. Oberman, H.A.: Use of fresh frozen plasma. *In: Contemporary Transfusion Practice.* Kolins, J. (editor). American Association of Blood Banks, Arlington, VA, (in press).

### **ABSTRACTS, BOOK REVIEWS, LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Book review: *Progress in Clinical and Biological Research*, vol. 211: *Transfusion Medicine: Recent technological advances* (Murawski and Peetoom). *Arch. Pathol. Lab. med.* 1987;111:102.
2. Book review: *Biopsy Pathology of the Breast* (Sloane). *Arch. Pathol. Lab. Med.* 1986;110:861.
3. Steiner, E.A., Judd, W.J., Oberman, H.A.: Autologous donations from recently transfused patients. Letter to the editor. 1987;27:291-292.

**SEM H. PHAN, PH.D., M.D.  
ASSISTANT PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Autopsy Service.
- B. Serum Angiotensin Converting Enzyme Assay.

**II. TEACHING ACTIVITIES:**

- A. Pathology Residents - Autopsy.
- B. Jean Ying - Undergraduate Honor Student.
- C. Gregg Downer, M.D. - Postdoctoral Fellow.
- D. Elizabeth Denholm, Ph.D. - Postdoctoral Fellow.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Mechanisms and Genetic Regulation of Pulmonary fibrosis, R01-HL28737-04. Principal Investigator, S.H. Phan, Ph.D., M.D. 20% effort, \$100,978.
- B. Macrophage Function in Lung Injury and Fibrosis. P01-HL31963, Scetion IV. Principal Investigator, S.H. Pha, Ph.D., M.D., 35% effort, \$75,490 current annual direct cost (NIH).
- C. Fibroblast Regulatory Factors in Pulmonary Fibrosis 84-136. Established Investigator Award (American Heart Association), \$32,000 current annual direct cost.
- D. Fibroblast Regulatory Factors. 84-1165. Grant-in-Aid (American Heart Association), Principal Investigator, S.H. Phan, Ph.D., M.D., \$30,000 current annual direct cost.

**PROJECTS UNDER STUDY:**

- A. Lung macrophage/monocyte and T-cell/T-cell subset kinetics, recruitment and activation during lung injury and fibrosis.
- B. Fibroblast function - in terms of chemotaxis, collagen metabolism and proliferation during lung injury, and their regulation by inflammatory and immune cell-derived mediators.
- C. The state of macrophage activation as determined by Ia antigen expression and its relationship to production of arachidonate metabolites active in fibroblast activation.
- D. Fibroblast arachidonate metabolism in reponse to macrophage-derived mediators and their effects on fibroblast collagen synthesis and proliferation.
- E. The effects of 5-lipoxygenase inhibitors on murine pulmonary fibrosis.
- F. Regulation of macrophage and T-cell fibroblast growth factor production by arachidonate metabolites in normal and diseased states.

- G. Leukotriene and tumor necrosis factor regulation of fibroblast collagen synthesis, and expression of receptors for these molecules.
- H. Analysis of bleomycin receptors on alveolar macrophages and fibroblasts.
- I. Comparative analysis of bleomycin hydrolase activities in murine strains and their relationship to resistance to bleomycin-induced pulmonary fibrosis.

#### **IV. ADMINISTRATIVE ACTIVITIES:**

##### **DEPARTMENTAL:**

- A. Member, Research and Space Advisory Committee.

##### **MEDICAL SCHOOL/HOSPITAL:**

- A. Reviewer, Biomedical Research Council Research Grant Application.

##### **REGIONAL AND NATIONAL:**

- A. Member, Pathology A Study Section (Review research grant applications for National Institutes of Health) Public Health Service, NIH.
- B. Reviewer for the following journals: Journal of Immunology, Laboratory Investigation, Journal of Clinical Investigation, American Review of Respiratory Diseases, Experimental Lung Research, Infection and Immunity, American Journal of Pathology, and Chest.

#### **V. OTHER RELEVANT ACTIVITIES:**

##### **INVITED LECTURES AND SEMINARS:**

- 1. Invited Speaker, Workshop on Structure and Metabolism of Connective Tissue Proteins in the Lung, Federation of European Connective Tissue Societies, London, England, July 28 - August 1, 1986.

#### **VI. PUBLICATIONS:**

##### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

- 1. Phan, S.H., and Kunkel, S.L.: Inhibition of bleomycin-induced pulmonary fibrosis by nordihydroguaiaretic acid: The role of alveolar macrophage activation and mediator production. *Am. J. Pathol.* 1986;124:343-351.
- 2. Werns, S.W., Shea, M.J., Vaporciyan, A., Phan, S.H., Abrams, G.D., Buda, A.J., Pitt, B., and Lucchesi, B.: Superoxide dismutase does not cause scar thinning after myocardial infarction. *J. Am. Coll. Cardiol.* 1987;9:898-902.
- 3. Phan, S.H., McGarry, B.M., Loeffler, K.M., and Kunkel, S.L.: Regulation of macrophage-derived fibroblast growth factor release by arachidonate metabolites. *J. Leuk. Biol.* 1987 (in press).
- 4. Gannon, D.E., Varani, J., Phan, S.H., Ward, J.H., Kaplan, J., Till, G.O., Simon, R.H., Ryan, U.S., and Ward, P.A.: Source of iron in neutrophil-mediated killing of endothelial cells. *Lab. Invest.* 1987 (in press).

**ABSTRACTS, BOOK REVIEWS, LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Phan, S.H., McGarry, B.M., Loeffler, K.M. and Kunkel, S.L.: Leukotriene C<sub>4</sub> binds to rat lung fibroblasts and stimulates collagen synthesis. *Adv. Prostaglandin, Thromboxane, and Leukotriene Research*. 1987;17:993-995.
2. Fantone, J., Vissers, M., Jester, S., Clark, S., and PHan, S.: Heme protein-dependent lipid oxidation and tissue injury: Effects of pH. *Fed. Proc.* 1987;46:1390.
3. May, M., Kunkel, S.L., Spengler, M., Kwon, G., Larrick, J., and Phan, S.H.: Dynamics of LPS-induced tumor necrosis factor (TNF) and interleukin-1 (IL-1) production of LPS-sensitive and resistant mice: An analysis at the molecular and cellular level. *Fed. Proc.* 1987;46:512.
4. Phan, S.H., Ying, J., and Kunkel, S.L.: Kinetics and arachidonate metabolite regulation of lipopolysaccharide-induced lung macrophage growth factor production. *Am. Rev. Respir. Dis.* 1987;135:A65.
5. Gannon, D.E., Varani, J., Phan, S.H., Ward, J.H, Simon, R.H., Ryan, U.S., and Ward, P.A.: Action of deroxamine mesylate in protecting endothelial cells from neutrophil-mediated cytotoxicity. *Am. Rev. Respir. Dis.* 1987;135:A102.
6. Tamura, Y., Driscoll, E.M., Senyshyn, J.C., Phan, S.H., and Lucchesi, B.R.: Effects of polyethylene glycol-superoxide dismutase on myocardial infarct size and scar formation in the canine heart. 60th Scientific Session of the American Heart Association, 1987.



**CARL L. PIERSON, PH.D.**  
**ASSISTANT PROFESSOR OF PATHOLOGY**  
**DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT**  
**1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Associate Director, Clinical Microbiology Laboratory.
- B. Coordinator, Infectious Disease Laboratory Rounds.

**II. TEACHING ACTIVITIES:**

- A. Pathology 411, sexually transmitted diseases, antimicrobial susceptibility testing.
- B. Microbiology 505, clinical microbiology for graduate students.
- C. Coordinator, Pathology house officer Microbiology Laboratory rotation.
- D. Lecturer, Clinical Pathology Grand Rounds.
- E. Lecturer, Clinical Pathology Core Lecture Series.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Antimicrobial susceptibility of Bacteriodes fragilis in the United States, Merck, Sharpe and Dohme; \$4,000/yr.
- B. Clinical evaluation of the "Candidate-Super" latex kit for Candida Vaginitis, Difco Labs, \$500/3 months.
- C. In vitro susceptibility of anaerobes to ceftizoxime and other selected B-lactam antibiotics, Smith, Kline and French; \$1000/6 months.

**PROJECTS UNDER STUDY:**

- A. Ofloxacin for the treatment of urinary tract infections - with Urology (Dr. Sonda).
- B. Microtiter methods for group IV AFB susceptibility testing - with Sinai Hospital (Dr. Denys) and MDPH (Dr. Robinson).
- C. Alternative methods for direct Chlamydia testing.
- D. DNA probes for direct antigen detection in specimens.
- E. Frequency and sequelae of contaminated vascular procedures - with Surgery (Drs. Wakefield and Stanley)
- F. Application of gas-liquid chromatography for bacterial identification.

**IV. SERVICE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Clinical Pathology Laboratory Director's Committee.
- B. M-Labs Technical Advisory Committee.
- C. Coordinator, Clinical Microbiology Senior Staff Meeting.

D. Coordinator, Clinical Microbiology Inservice Education Program.

**MEDICAL SCHOOL/HOSPITAL:**

A. Alternate, Hospital Infection Control Committee.

**REGIONAL/NATIONAL:**

A. Program committee, Tricounty Clinical Microbiology meeting (biannual).

B. Alternate, Technical Advisory Committee, Bureau of Laboratory and Epidemiological Services, Michigan Department of Public Health.

**V. OTHER RELEVANT ACTIVITIES:**

A. Reviewer, Journal of Clinical Microbiology (2nd year).

B. Editorial consultant, Bozell, Jacobs, Kenyon and Eckhardt Healthcare, Inc., New York, New York.

**INVITED LECTURES/SEMINARS:**

1. Oral Surgery Seminar: Efficient use of the Clinical Microbiology Laboratory.
2. Infectious Disease Seminar: Current blood culturing techniques.

**IV. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Cochran, R.K., Pierson, C.L., Se., T.L., and Palella, T.: Protothecal olecranon bursitis: treatment with intrabursal amphotericin. B. Rev. of Infect. Dis. 1986;8:952-954.
2. Wakefield, T., Schaberg, D.R., Pierson, C.L., Bufford, J.A., Petry, N.A., Nolan, K.D., Spaulding, S.A., Whitehouse, W.M., Jr., Stanley, J.C.: Treatment of established prosthetic vascular graft infection with antibiotics preferentially concentrated in leukocytes. Surgery, 1987;102:8-14.
3. Isenberg, H.D., Tilton, R.C., Barry, A.L., Beskid, G., Cleeland, R., Fallat, V., Murray, P.R., Pierson, C.L., Squires, E.: Collaborative clinical laboratory study of a broth-disk test for determination of bacterial susceptibility to B-lactams in combination with amdinocillin. J. of Clinical Microbiol. 1987;25:1195-1200.
4. Gupta, A.K., Pierson, C.L., Rasmussen, J.E., Weiss, J.: The bacteriology of pustules occurring during the treatment of psoriasis. Arch. of Dermatology, 1987;87:206-210.
5. Kern, S., Keren, D., Pierson, C.L.: Bacterial overgrowth and mucosal changes in isolated ileal loops in rabbits: effects of intraluminal antibiotics. Lab. Invest. 1987, (in press).
6. Pierson, C.L., Purifoy, G., and Siddiqui, J.: Rapid identification of Corynebacterium JK using gas liquid chromatography. Submitted to Journal of Clinical Microbiology.
7. Shireman, P.K., Pierson, C.L., and Lee, E.: Evaluation of the Cand-Tec Candida detection system: A clinical correlation. Submitted to American Journal of Clinical Pathology.

**ABSTRACTS, BOOK REVIEWS, LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Siddiqui, J., Pierson, C.L.: Evaluation of the Rapid Detect E coli Test for the presumptive identification of Escherichia coli. Abstracts, American Society for Microbiology, 1987;C295, pg. 372.
2. Pierson, C.L., Lee, E., Shireman, P.: Evaluation of the Cand-Tec Candida Detection System: a clinical correlation. Abstracts, American Society for Microbiology, 1987;C341, pp. 380.

**JOSEPH A. REGEZI, D.D.S.  
ASSOCIATE PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Oral Pathology biopsy service: four months/year (5,000 biopsies /year.).
- B. Patient consultations: Oral Pathology/Dermatology Referral Service--Friday mornings.

**II. TEACHING ACTIVITIES:**

- A. Course Director and Lecturer in Senior Oral Pathology 816 and 818.
- B. Course Director, Lecturer and Laboratory Instructor in Sophomore Oral Pathology 626 and 627.
- C. Lecturer, Graduate Oral Pathology and Diagnosis 695.
- D. Contributor, Graduate Seminars in Oral Pathology 698 and 699.
- E. Revision of Clinical Oral Pathology for Dental Students.

**III. RESEARCH ACTIVITIES:**

**PROJECTS UNDER STUDY:**

- A. Langerhans cells and "aberrant" HLA-DR expression in normal and inflamed gingiva.
- B. Immunocytochemistry of gingival crevicular smears.
- C. Immunoelectron microscopy (immunogold) of gingival differentiation antigens.

**IV. ADMINISTRATIVE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Thesis Committee Chairman for Dr. D.E. Turunen, Department of Periodontics.

**DENTAL SCHOOL:**

- A. Member of Transition Committee, 1987-1989.
- B. Chairman, Dental School Financial Task Force.

**REGIONAL AND NATIONAL:**

- A. Member, Committee to Encourage Scholarly Activity, American Academy of Oral Pathology, 1985-1986.
- B. Member of Editorial Board for Oral Surgery, oral Medicine and Oral Pathology, C.V. Mosby, publisher.

## V. PUBLICATIONS:

### ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATIONS IN REFEREED JOURNALS:

1. Stewart, J.C.B., Regezi, J.A., Lloyd, R.V., and McClatchey, K.D.: Immunohistochemical Study of Idiopathic Histocytosis of the Jaws. *Oral Surg., Oral Med., Oral Pathol.* 1986;61:48-53.
2. Zarbo, R.J., Regezi, J., and Batsakis, J.G.: S-100 Protein in Salivary Gland Tumors: An Immunohistochemical Study of 129 Cases. *Head and Neck Surg.*, 1986;8:268-275.
3. Regezi, J.A., Ellis, C., Stewart, J., Giustina: Histologic Changes Associated with the Topical Use of Isotretinoin on Oral Lichen Planus. *Oral Surg., Oral Med., Oral Pathol.* 1986;61:479-484.
4. Giustina, T., Stewart, J., Ellis, C., Regezi, J., Annesley, T., Woo, T., and Voorhees, J. Topical Application of Isotretinoin Improves Lichen Planus: A Double Blind Clinical Study. *Arch. Dermatol.*, 1986;122:534-536.
5. Bye, F., Krause, M., Regezi, J.A., Carressee, R.: Histologic Evaluation of Periodontal Implants in a Biologically "Closed" Model. *J. Perio.* 1987;58:110-114.
6. Regezi, J., Zarbo, R., and Lloyd, R.: HLA-DR Immunoreactivity in Giant Cell Lesions. *J Oral Pathol.* 1986;15:434-438.
7. Contos, J., Corcoran, J., Laturno, S., Chiego, D., Regezi, J.: Langerhans Cells in Apical Periodontal Cysts: An Immunohistochemical Study. *J. Endo.* 1987;13:52-55.
8. Regezi, J., Zarbo, R., and Lloyd, R.V.: Muramidase, -1 antitrypsin, -1 antichymotrypsin, and S-100 Immunoreactivity in Giant Cell Lesions. *Cancer* 1987;59:64-68.
9. Zarbo, R., Regezi, J., Batsakis, J., Lloyd, R.V.: HLA-DR Immunoreactivity in Salivary Gland Lesions. *Oral Surg., Oral Med., Oral Pathol.*, (in press).
10. Zarbo, R., Regezi, J., Hatfield, J., Maisel, H., Trojanowski, J., Batsakis, J., Crissman, J. Immunoreactive Glial Fibrillary Acidic Protein in Normal and Neoplastic Salivary Gland A Combined Immunohistochemical and Immunoblot Study. *Surg. Pathol.*, (in press).
11. Regezi, J., Zarbo, R., Tomich, C., Lloyd, R., Courtney, R., Crissman, J.: Immunoprofile of Benign and Malignant Fibrohistiocytic Tumors. *J. O. Pathol.*, (in press).
12. Regezi, J., Zarbo, R., McClatchey, K., Courtney, R., Crissman, J.: Osteosarcomas and Chondrosarcomas of the Jaws: Immunohistochemical Correlation. *Oral Surg., Oral Med., Oral Pathol.*, (in press).

**NATHANIEL H. ROWE, D.D.S., M.S.D.  
PROFESSOR OF PATHOLOGY, DENTISTRY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Responsible for biopsy service four months/year.
- B. Responsible for clinical patient diagnostic problems, both in house and statewide referral, and management thereof on an as needed basis eleven months per year.

**II. TEACHING ACTIVITIES:**

- A. Oral Pathology to Freshman Dental Students, Course 516 (course director).
- B. Oral Pathology to Sophomore Dental Students, Course 624 and 625.
- C. Oral Pathology seminar to Graduate Students in Restorative Dentistry, Course 691.
- D. Oral Pathology Seminar to Graduate Students in Periodontics, Course 781 (course director).
- E. Dental Hygiene, Sophomore Students, Course 220.
- F. Dental Hygiene, Course 313 Senior Seminar and preventive Dentistry, Course 362 to Senior Dental Hygiene Students.

**III. RESEARCH ACTIVITIES:**

**SPONSORED RESEARCH:**

- A. Tolerance and efficacy study comparing 15% 5-iodo-2'-deoxyuridine (IDU) in 80% dimethyl sulfoxide (DMSO) and 5% H<sub>2</sub>O to control groups of 80% DMSO and 2% DMSO for the treatment of herpes simplex labialis. Principal Investigator. Sponsor: Research Medical, Inc.
- B. Efficacy and safety of topical acyclovir cream versus placebo cream for the prevention of herpes simplex labialis experimentally induced with ultraviolet light. Principal Investigator. Sponsor: Burroughs Wellcome Co.

**IV. ADMINISTRATIVE ACTIVITIES:**

- A. Associate Director of the Dental Research Institute. Activities include:
  - 1. Chairman, Symposium on Insights into Dentofacial Pain: Overview, Diagnosis and Treatment, March 25, 1987. Edit and publish proceedings.
  - 2. Participant in deliberation of various other committees such as the Scientific Advisory Committee and the Policy committee of the Institute.

### **REGIONAL AND NATIONAL:**

- A. Medical Director, National Board of Directors, American Cancer Society.
- B. Member, Executive Committee, Michigan Division, American Cancer Society.
- C. Member-at-Large, Board of Directors, Michigan Division, American Cancer Society.
- D. Chairman, Public Issues Committee, American Cancer Society, Michigan Division.
- E. Consultant, Committee on Cancer Control, Hospital and Institutional Dental Service, Michigan Dental Association.
- F. Member, Science Information Committee, American Association for Dental Research.
- G. Member, Board of Appeals, Commission on Accreditation, Graduate Specialty Education Programs, American Dental Association.
- H. Consultant, Committee on Hospital and Institutional Dentistry, American Dental Association.
- I. Consultant, Council on Dental Education, American Dental Association.
- J. Consultant, Council on Dental Therapeutics, American Dental Association.
- K. Civilian Professor and Consultant, Office of the Surgeon General, United States Army.
- L. Consultant, Research Screening Committee, Delta Dental Fund.
- M. Manuscript Consultant and Reviewer:
  - 1. Journal of the American Medical Association.
  - 2. Journal of Oral Pathology.
  - 3. Journal of the American Dental Association.
  - 4. Cancer.
  - 5. Journal of the Academy of General Dentistry.

### **V. OTHER RELEVANT ACTIVITIES:**

- A. Vice President and Program Chairman, The Science Research Club of The University of Michigan.

### **INVITED LECTURES AND SEMINARS:**

- 1. Testimony, Smokeless Tobacco Hearings in Grand Rapids, Traverse City and Detroit.
- 2. Trident Seminar, Cancun, Mexico.
- 3. Dallas Mid-winter meeting, Dallas, Texas.
- 4. International Association for Dental Research, Viral Diseases Symposium, Chairman, Chicago, Illinois.
- 5. Dental Research Institute-School of Dentistry Symposium on Dentofacial Pain, Chairman.
- 6. Genesee County Health Department, AIDS Conference, Flint.
- 7. National Health Service Corps Region V Clinical Conference on Transitions in Medicine, Lansing, Michigan.
- 8. Michigan Dental Hygiene Association Meeting, Detroit, Michigan.
- 9. Michigan Dental Association, Cancer Symposium and Essays, Detroit, Michigan.
- 10. Henry Ford Hospital, Dearborn, Michigan.
- 11. V.A. Hospital, Ann Arbor.
- 12. Miscellaneous component societies, civic clubs and study clubs.

**VI. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Spruance, S.L., Rowe, N.H., Stewart, J.C.B., Wenerstrom, G., Freeman, D.J., and Davis, L.G.: Treatment of Herpes Simplex Labialis with Oral Acyclovir. Twenty-sixth Interscience Conference of Antimicrobial Agents and Chemotherapy, Sept., 1986. Amer. Soc. for Microb. News, 1986;52:38.
2. Rowe, N.H., and Stewart, J.C.B.: Antiviral Chemotherapy of Herpes Labialis. Mich. Postgrad. Rev. 1986;3(4):249-250.

**BOOKS AND CHAPTERS IN BOOKS:**

1. Rowe, N.H. (editor): Proceedings of Symposium: Insights Into Dentofacial Pain: Overview, Diagnosis and Treatment. The University of Michigan Press, Ann Arbor, (in press).



**ROBERT W. SCHMIDT, M.D.  
PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Fine needle aspiration of superficial tumors, bedside or in clinic, full time (26 weeks) and backup (22 weeks).
- B. Gynecologic pathology consultation service, 12 months.
- C. Surgical Pathology - backup coverage.
- D. Cytopathology, full time (26 weeks) and backup coverage (22 weeks).

**II. TEACHING ACTIVITIES:**

- A. Gynecologic tumor conference, twice weekly.
- B. Sophomore pathology lectures (four): Diseases of: Cervix, Vagina, and Vulva; Uterus and Endometrium; Ovaries; Placenta and Trophoblastic Disease.
- C. Pathology residents, supervision and teaching during cytopathology rotation, for gynecologic surgical pathology cases, and when covering necropsies.
- D. Pathology Residents, gynecologic pathology (4) and parasitology lectures (2).

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Radioimmunodiagnosis and Radiotherapy of Ovarian Carcinoma, Richard L. Wahl, M.D., Principal Investigator. NIH-sponsored.

**PROJECTS UNDER STUDY:**

- A. Carcinosarcoma and malignant mixed mesodermal tumors of the ovary. Submitted for publication.
- B. Cervical adenocarcinoma in situ (study based on 18 cases). Presented at Western Association of Gynecologists Meeting - 1986. Submitted and being revised for publication.
- C. Malignant nerve sheath tumor of the vulva. Submitted for publication.
- D. Adenocarcinoma and adenosquamous carcinomas of the uterine cervix.
- E. Coexistent endocervical adenocarcinoma and mucinous adenocarcinoma of the ovary: A clinicopathologic study of two cases.
- F. Endometrial adenocarcinoma and endometrioid adenocarcinoma of ovaries in a 27-year-old.
- G. Glassy cell carcinoma of the cervix.

**BERTRAM SCHNITZER, M.D.  
PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Director, Clinical Hematology Laboratory.
- B. Director, University of Michigan Health Services Laboratories.
- C. Diagnostic Surgical Pathology, Hematopathology.
- D. Diagnostic Hematopathology Consultant, Veterans Administration Hospital.
- E. Diagnostic Clinical Flow Cytometry.
- F. Consultant for Hematopathology cases.
- G. Review of Southwest Oncology Group (SWOG) cases (circa 200/year).
- H. Diagnostic electron microscopy of lymphoreticular and hematopathology cases.

**II. TEACHING ACTIVITIES:**

**MEDICAL SCHOOL/HOSPITALS:**

- A. Daily sign-out of bone marrow biopsies and aspirates.
- B. Daily review of blood smears and body fluids in Hematology Laboratory.
- C. Daily review of in-house and consultation hematopathology cases and correlation with flow cytometry data and immunoperoxidase studies.
- D. House Officer Conferences in Hematopathology.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Southwest Oncology Group (SWOG). Combination chemotherapy of unfavorable histology non-Hodgkin's lymphomas with CHOPP and CBV, with Dr. L. Dabich.
- B. Southwest Oncology Group (SWOG). Combination chemotherapy of unfavorable histology non-Hodgkin's lymphomas with alternating regimens of CHOPP and CVB, with Dr. L. Dabich.

**SERVICE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Diagnostic Surgical Pathology, Hematopathology.
- B. Diagnostic Clinical Flow Cytometry.

## **MEDICAL SCHOOL/HOSPITALS:**

### **A. Hematology Laboratory.**

1. During the first full year of consolidation of the Pediatric and Adult Hematology Laboratories with the Hematology Laboratory of the Department of Pathology, the Laboratory carried out a total of 454,604 tests which represents an increase of 15% over the previous year. The percentage of labor-intensive differential white blood cell counts increased by 14%. The labor-intensive phase platelet counts decreased because instrument counts down to  $30 \times 10^9/L$  are now being reported. Microscopic examinations of urines has increased by 10%. The number of body fluids requiring review by the Hematopathologist has increased by 17% over last year when the increase was 22%.

The satellite laboratory is located in the clinic area in the Taubman Outpatient Building services both Pediatric and Adult Hematology/Oncology Clinics as well as other clinics requiring hematologic studies. This arrangement has worked well for providing rapid patient care.

2. A formal daily bone marrow sign-out has been initiated.
3. Automated platelet count. The number of intensive manual phase-contrast platelet counts has been reduced by an automated method. This automation has resulted in a more rapid turnaround time in the Laboratory and in a faster reporting of results to the clinician without compromising patient safety.
4. Revised and improved some of the cytochemistry procedures.
5. Stopped carrying out bone marrow differential counts of pediatric bone marrows.

### **B. University of Michigan Health Service Laboratories.**

## **REGIONAL AND NATIONAL:**

### **A. Society of Hematopathology, Executive Committee.**

### **B. Southwest Oncology Group:**

1. Lymphoma Subcommittee.
2. Leukemia Subcommittee.

### **C. Regional Center Review Pathologist, Southwest Oncology Group.**

### **D. Member, Executive Committee, National Panel for Lymphoma Clinical Studies.**

### **E. Children's Cancer Study Group: Review pathologist of lymphoma cases.**

**V. OTHER RELEVANT ACTIVITIES:**

**EDITORIAL BOARD:**

- A. American Journal of Clinical Pathology.
- B. Diagnostic Immunology.
- C. Hematologic Pathology.

**SITE VISITS:**

- A. Member, Cancer Site Visit Team, Allegheny-Singer Research Institute, Pittsburgh, Pennsylvania, March, 1987.

**INVITED LECTURES/SEMINARS:**

- 1. "A Practical Approach to Diagnostic Hematological Problems", ASCP Educational Course, Williamsburg, Virginia, November, 1986. Course included: a) Non-Hodgkin's Lymphomas; b) Hodgkin's disease; c) A practical approach to the diagnosis and Classification of Lymphomas and Leukemias by Electron Microscopy and Flow Cytometry; d) Extranodal lymphomas; e) Immunologic Classification of Acute Lymphoblastic Leukemias.
- 2. Flow Cytometry and Electron Microscopy in the Diagnosis of Hematologic Disorders. Loyola University, Chicago, Illinois, April 1987.
- 3. B and T Lymphocytes. Saginaw Valley and Flint Societies of Medical Technology. Frankenmuth, Michigan, April 1987.
- 4. Classifications of Non-Hodgkin's Disease. Mercy Hospital, Port Huron, Michigan, May 1987.

**VI. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

- 1. Duque, R., Lloyd, R.V., Headington, J.T. and Schnitzer, B.: Site-dependent phenotypic heterogeneity in peripheral T-cell lymphoma. Hum. Pathol. 1986;17:967-970.
- 2. Headington, J.T., Roth, M.S., and Schnitzer, B.: Regressing atypical histiocytosis: a review and critical approach. Sem. Diag. 1987;4:28-37.

**BOOKS AND CHAPTERS IN BOOKS:**

- 1. McClatchey, K.D., and Schnitzer, B.: Lymphoreticular disorders of the head and neck: Comprehensive management of head and neck tumors, Thawley, S.H. and Panje, W.R. (Editor), W.B. Saunders, 1987.

**ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR,  
MISCELLANEOUS PUBLICATIONS IN UNREFERREED JOURNALS:**

1. Roth, M., Schnitzer, B., Hyder, D., Harnden, C.E. and Ginsburg, D.: Immunoglobulin (Ig) and T-cell receptor (TCR) genes in Hodgkin's disease. Blood 1986;68:251a.
2. Schnitzer, B., Roth, M.S., and Hyder, D.: Ki-1 lymphomas in children. Lab. Invest. 1987;56:70A.
3. Schnitzer, B.: Diagnosis of lymphomas in body fluids by flow cytometry. Abstracts, Third International Conference on Malignant Lymphomas, Lugano, Switzerland, 1987, p. 85.
4. Dabich, L., Ensminger, W.D., Schnitzer, B., Zuckerman, K.S., Wheeler, R.G. and LoBuglio: Long term followup of patients with unfavorable histology lymphoma treated with high dose adriamycin combination chemotherapy. Abstracts, Third International Conference on Malignant Lymphomas, Lugano, Switzerland, 1987, p. 102.

**EUGENE M. SILVERMAN, M.D.  
CLINICAL ASSOCIATE PROFESSOR  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Surgical Pathology Coverage of M-Labs cases including all cases from:
  - 1. Albion Community Hospital, Albion, Michigan.
  - 2. Newman Laboratories, Dearborn, Michigan.
  - 3. University of Michigan Health Service, Ann Arbor, Michigan.
  - 4. Ann Arbor Podiatrists, Ann Arbor, Michigan.
  - 5. Other various institutions.
- B. Autopsy Coverage for Albion Community Hospital, Albion, Michigan.
- C. On-site coverage at Central Michigan Community Hospital, Mount Pleasant, Michigan, for two months.
- D. Clinical consultations and Hematology review at Chelsea Community Hospital, Chelsea, Michigan and Metric Medical Laboratories, Ann Arbor.
- E. Rotation with other staff pathologists.
  - 1. Four weeks coverage at the University Hospital of evening frozen sections.
  - 2. Weekend autopsy call.

**II. TEACHING ACTIVITIES:**

- A. Supervise residents in gross cutting of M-Labs cases and review microscopic material with residents in all interesting cases.
- B. Read out all M-Labs autopsies with residents.

**III. RESEARCH ACTIVITIES: None.**

**IV. ADMINISTRATIVE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Associate Director, M-Labs.
  - 1. Participate in planning, marketing, and implementation of M-Labs programs.
- B. Director, Laboratory at Albion Community Hospital, Albion, Michigan.
- C. Chairman, Tissue/Transfusion Committee, Albion Community Hospital, Albion, Michigan.
- D. Chairman, Infection Control Committee, Albion Community Hospital, Albion, Michigan.
- E. Director of Laboratories, Chelsea Hospital, Chelsea, Michigan.
- F. Tissue Committee, Chelsea Hospital, Chelsea, Michigan.
- G. Laboratory Committee, Chelsea Hospital, Chelsea, Michigan.

H. Associate Laboratory Director, Metric Medical Laboratories, Ann Arbor, Michigan.

V. **OTHER RELEVANT ACTIVITIES:** None.

VI. **PUBLICATIONS:** None.

**LLOYD M. STOOLMAN, M.D.  
ASSISTANT PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Hematopathology Diagnostic Service - interpretation of peripheral smears, body fluid cytologies, bone marrow aspirates and biopsies, cytochemical stains.
- B. Flow Cytometry Diagnostic Service - interpretation of cell surface marker studies and cellular DNA analyses in the evaluation of hematologic disorders, primary and secondary immune deficiencies and autoimmune processes.

**II. TEACHING ACTIVITIES:**

- A. Daily sign-out of cases in flow cytometry and hematopathology with pathology residents.
- B. Monthly seminars on the clinical applications of flow cytometry for the residents and fellows on the Hematology/Oncology Services.
- C. Lecturer, Hematopathology, Medical School.
- D. Laboratory seminar leader, General and organ Systems Pathology, Medical School.
- E. Lecturer, Clinical Applications of Flow Cytometry, Pathology Residents Core Lecture Series.
- F. Pediatric/Adult Leukemia Conferences.
- G. Adult Lymphoma Conferences.

**III. RESEARCH ACTIVITIES:**

**SPONSORED RESEARCH:**

- A. NIH, NCI Physician Investigator Award, (\$170,000; 3.5 years; 1 July 1984 through 31 December 1987): Lymphocyte migration and the metastatic process.
- B. American Cancer Society Research Award (\$109,000; 4 years; 1 July 1984 through 30 June 1988): Lymphocyte migration and the metastatic process.
- C. Michigan Arthritis Foundation Research Award (\$8,000; 1 year; 1 January through 31 December 1987): The role of lymphocyte migration in chronic inflammatory arthritis.
- D. University of Michigan Cancer Center Grant (\$15,000; 1 year; 1 February 1987 through 31 January 1988): The role of lymphocytic phosphomannosyl receptors in mediating the attachment of lymphocytes to high endothelial venules (HEV).



#### **PENDING:**

- A. NIH, NCI Physician Investigator Award, Competitive Renewal (\$116,000; 2 years; 1 January 1988 through 31 December 1989): Lymphocyte Adhesion and the metastatic process.
- B. American Cancer Society Research Grant, Competitive Renewal (\$119,525; 2 years; 1 July 1988 through 30 July 1990): Human lymphocyte migration and the metastatic process.
- C. NIH, Multipurpose Arthritis Center, Development and Feasibility Grant (\$143,469; 3 years; 1 January 1988 through 31 December 1990): The role of lymphocyte migration in chronic inflammatory arthritis.

#### **PROJECTS UNDER STUDY:**

- A. Trans-membrane signalling and the control of lymphocyte-endothelial adhesion during transvenular migration.
- B. The role of the basement membrane and extracellular matrix in the modulation of lymphoid cell migration into tissues.

#### **IV. ADMINISTRATIVE ACTIVITIES:**

##### **DEPARTMENTAL:**

- A. Medical Coordinator, Flow Cytometry Laboratory.
- B. Associate Director, Hematopathology Laboratory.
- C. Member, Microcomputer Steering Committee.
- D. Member, Quality Assurance Committee.
- E. Member, Resident Training Program Committee.

##### **MEDICAL SCHOOL HOSPITAL:**

- A. Coordinator, Pathology Services (clinical) in UM Cancer Center.
- B. Member, UM Cancer Center Clinical and Basic Research Implementation Committees.
- C. Primary Reviewer, UM Cancer Center Grant Program.

#### **V. OTHER RELEVANT ACTIVITIES:**

##### **INVITED LECTURES AND SEMINARS:**

- 1. The human lymphocytic phosphomannosyl receptor (PMR) involved in binding to high endothelial venules (HEV) is functionally distinct from the 215kD PMR mediating lysosomal sequestration of acid hydrolases. April 1987, Federation of American Societies for Experimental Biology, minisymposium.

##### **MANUSCRIPT/GRANT REVIEWS:**

- 1. National Science Foundation.
- 2. Journal of Clinical Investigation.
- 3. Journal of Laboratory Investigation.
- 4. American Journal of Pathology.

## **VI. PUBLICATIONS:**

### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Stoolman, L.M., Yednock, T.A., and Rosen, S.D.: Homing Receptors on human and rodent lymphocytes: Evidence for a conserved carbohydrate-binding specificity. *Blood*, 1987, (in press).
2. Yednock, T.A., Stoolman, L.M., and Rosen, S.D.: Phosphomannosyl-derivatized beads detect a receptor involved in lymphocyte homing. *J. Cell. Biol.*, 1987;104:713.
3. Yednock, T.A., Butcher, E.C., Stoolman, L.M., and Rosen, S.D.: Receptors involved in lymphocytic homing: relationship between the Mel-14 antigen and a carbohydrate-binding receptor. *J. Cell. Bio.*, 1987;104:725.
4. Hanash, S.M., Kuick, R., Nichols, D., and Stoolman, L.M.: Analysis of cellular polypeptides reveals a new marker for common acute lymphoblastic leukemia. Submitted to *New England J. Med.*, 1987.

### **BOOKS AND CHAPTERS IN BOOKS:**

1. Stoolman, L.M.: The monitoring of lymphocyte subsets in the management of organ-transplant recipients. In: *Use of Surface Markers and DNA Studies in Diagnostic Pathology.*, D. Keren, (editor), Submitted for publication.

### **ABSTRACTS, BOOK REVIEWS, LETTERS TO THE EDITOR MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Ward, P.A., and Stoolman, L.M.: The limited predictive value of T-cell phenotypic analysis in humans. In: *Environmental and Chemical Exposures and Immune System Integrity*. 1987, (in press).
2. Stoolman, L.M., Fox, D.A., Bole, D. and Jourdain, G.W.: The human lymphocytic phosphomannosyl receptor (PMR) involved in binding to high endothelial venules (HEV) is functionally distinct from the 215kD PMR mediating lysosomal sequestration of acid hydrolases. *Fed. Proc.*, 1987;46(3):405.

**GERD O. TILL, M.D.  
ASSOCIATE PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Clinical Immunopathology Laboratory: Neutrophil Functions Assays.

**II. TEACHING ACTIVITIES:**

- A. Resident training in immunology and immunopathology.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Thermal Injury, Complement and Leukocyte Dysfunction (GM-28499). Co-investigator with Dr. Peter A. Ward.
- B. Lung Injury Produced by Oxygen Metabolites (GM-29507). Co-investigator with Dr. Peter A. Ward.
- C. Immune Responses to Burns. Co-investigator with Dr. F. Whitehouse.
- D. Thermal Injury, ATP Depletion and Oxygen Radicals (GM-39397, pending).

**PROJECTS UNDER STUDY:**

- A. Experimental thermal injury, complement and leukocyte dysfunctions.
- B. Pathomechanisms of acute tissue injury following activation of complement and neutrophils in vivo.
- C. Protection from oxygen radical-induced tissue damage.
- D. Pathomechanism of thermal skin burns.

**IV. ADMINISTRATIVE ACTIVITIES:**

**DEPARTMENTAL:** None.

**MEDICAL SCHOOL/HOSPITAL:**

- A. Interviewed candidates for faculty positions.
- B. Interviewed candidates for Medical Scientist Training Program.
- C. Consultant, clinical research program.

**REGIONAL AND NATIONAL:**

- A. Co-organizer, International Meeting on Leukocyte Locomotion and Chemotaxis. La Voisine, France, March, 1987.

- B. Reviewer for the following journals: American Review of Respiratory Disease, Blood, Clinical Immunology and Immunopathology, Journal of Applied Physiology, Journal of Clinical Investigation.

**V. OTHER RELEVANT ACTIVITIES:**

- A. Member, Editorial Advisory Board, Immunobiology.
- B. Co-Editor, The Complement System, Springer Verlag, Berlin, 1987.

**INVITED LECTURES/SEMINARS:**

- A. Third Biennial Meeting of the Society for Free Radical Research. University of Dusseldorf, West Germany, July 20-23, 1986.
- B. Markfield Symposium on Interstitial Lung Disease: Pulmonary Fibrosis. Chicago, October 20-21, 1986.
- C. Second International Conference of Leukocyte Locomotion and Chemotaxis. La Voisine, France, March 25-27, 1987.

**VI. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Annesley, T.M., Till, G.O., Ward, P.A.: Cutaneous thermal burn and oxidant-mediated acute lung injury: Appearance in serum of lung-related LDH isoenzyme. J. Free Radic. Biol. Med. 1986;1:409-414.
2. Hatherill, J.R., Till, G.O., Bruner, L.H., Ward, P.A.: Thermal injury, intravascular hemolysis, and toxic oxygen products. J. Clin. Invest. 1986;78:629-636.
3. Rao, N.A., Fernandez, M.A.S., Sevanian, A., Till, G.O., Marak, G.E.: Antiphlogistic effect of catalase on experimental phacoanaphylactic endophthalmitis. Ophthalmic Res. 1986;18:185-191.
4. Anhalt, G.J., Till, G.O., Diaz, L.A., Labib, R.S., Patel, H.P., Eaglstein, N.F.: Defining the role of complement in experimental pemphigus vulgaris in mice. J. Immunol. 1986;137:2835-2840.
5. Rao, N.A., Bowe, B.E., Sevanian, A., Till, G.O., Marak, G.E.: Modulation of lens-induced uveitis by dimethyl sulfoxide. Ophthalmic. Res. 1986;18:193-198.
6. Ward, P.A., Johnson, K.J., Till, G.O.: Animal models of oxidant lung injury. Respiration 50 (Suppl 1) 1986;50:5-12.
7. Ward, P.A., Johnson, K.J., Till, G.O.: Oxygen radicals and arachidonate metabolites in lung injury. Ann. NY Acad. Sci. 1986;465:26-32.
8. Rao, N.A., Sevanian, A., Fernandez, M.A.S., Romero, J.L., Faure, J.P., Kozak, Y., Till, G.O., Marak, G.E.: Role of oxygen radicals in experimental allergic uveitis. Invest. Ophthalmol. Vis. Sci. 1987;28:886-892.
9. Marak, G.E., Rao, N.A., Sevanian, A., Zdravkovich, V., Till, G.O., Ward, P.A.: Modulation of experimental phacoanaphylactic endophthalmitis with the antioxidants sodium benzoate, and 2,3-dihydroxybenzoic acid. Ophthalmic Res. 1987;19:120-128.
10. Fudman, E.J., Till, G.O., Fox, I.H.: Deferoxamine-induced decreases of lipid peroxides in rheumatoid arthritis. J. Rheumatol. (in press).
11. Bruner, L.H., Johnson, K.J., Till, G.O., Roth, R.A.: The role of the complement system in monocrotaline pyrrole-induced pulmonary injury. J. Toxicol., (in press).

12. Tsai, E., Till, G.O., Marak, G.E.: Effect of cyclopentolate on neutrophil migration. *Arch. Ophthalmol.* (in press).
13. Till, G.O., Lutz, M.J., Ward, P.A.: Hydroxyl radical as autotoxin in chemotactically activated neutrophils. *Biomed. Pharmacother.* (in press).
14. Till, G.O., Morganroth, M.L., Kunkel, R.G., Ward, P.A.: Activation of C5 by cobra venom factor is required in neutrophil-mediate lung injury in the rat. *Amer. J. Pathol.* (in press).
15. Gannon, D.E, Varani, J., Phan, S.H., Ward, J.H., Kaplan, J., Till, G.O., Simon, R.H., Ryan, U.S., Ward, P.A.: Source of iron in neutrophil-mediated killing of endothelial cells. *Lab. Invest.*, (in press).
16. Wolter, J.R., Till, G.O.: Leukocyte accumulation and deposision of protein on intraocular lens implants following exposure to whole blood in vitro. *Implants Ophthalmol.*, (in press).
17. Oldham, K.T., Guice, K.S., Till, G.O., Ward, P.A.: Evidence of local complement activation in cutaneous thermal injury in rats. *Adv. Shock Res.*, (in press).
18. Duque, R.E., Robinson, J.P., Hudson, J.L., Till, G.O., and Ward, P.A.: Differences in oxidative metabolism between blood and peritoneal rat neutrophils established by flow cytometry. *J. Lecukocyte Biol.*, (in press).
19. Ward, P.A., Johnson, K.J., and Till, G.O.: Mechanisms of lung injury. *Prax. Klin. Pneumonol.* 40, (in press).
20. Till, G.O., and Ward, P.A.: Immunologic and phagocytic cell defects in thermally injured patients. *J. Crit. Care Med.* (in press).
21. Winn, W.C., Davis, G.S., Durda, J.P. and Till, G.O.: The effect of neutropenia on experimental legionella pneumonia. Submitted to *Infect Immun.*
22. Wakefield, T.W., Till, G.O., Lindblad, B., Saenz, N. and Stanley, J.C.: Failure of complement depletion to attenuate hemodynamic and hematologic responses induced by heparin-protamine reactions. Submitted to *Surgery*.
23. Morganroth, M.L., Schoeneich, S.O., Till, G.O., Pickett, W. and Ward, P.A.: Complement and neutrophil-mediated lung injury is attenuated in rats raised on an essential fatty acid deficient diet. Submitted to *Amer. J. Physiol.*
24. Brothers, T.E., Graham, L.M., and Till, G.O.: Activation of complement by prosthetic vascular grafts in rabbits. Submitted to *J. Surg. Res.*
25. Ward, P.A., Macconi, D., Sulavik, M.C., Till, G.O., Warren, J.S., Johnson, K.J., Powell, J., Kunkel, R.G.: In vitro and in vivo evidence for neutrophil-platelet interactions in oxygen radical-mediated lung injury. Submitted to *Lab. Invest.*
26. Jesmok, G.J., Chenoweth, D.E., Till, G.O., Hauck, W.M., Viray, R.E., Borgia, J.F.: Cardiopulmonary manifestations of cobra venom factor infusion in the conscious sheep: The acute pathophysiology of intravascular complement activation. Submitted to *J. Appl. Physiol.*
27. Rao, N.A., Calandra, A.J., Sevanian, A., Till, G.O., Ward, P.A., Marak, G.E.: Antiphlogistic effect of dimethylthiourea in experimental lens-induced uveitis. Submitted.
28. Rao, N.A., Calandra, A.J., Sevanian, A., Till, G.O., Ward, P.A., Marak, G.E.: The antiphlogistic effect of glutathione peroxidase in experimental lens-induced uveitis. Submitted.

#### **BOOKS AND CHAPTERS IN BOOKS:**

1. Till, G.O., Hatherill, J.R., Ward, P.A.: Lipid peroxidation products in experimental thermal injury, in Novelli, G.P., Ursini, F. (eds.), *Oxygen Free Radicals in Shock*, Karger, Basel, pp. 34-41, 1986.

2. Till, G.O., Ward, P.A., Oxygen radicals and lipid peroxidation in experimental shock, in First Vienna Shock Forum, Part A: Pathophysiological Role of Mediators and Mediator Inhibitors in Shock, pp. 235-243, Alan R. Liss Inc, New York, 1987.
3. Ward, P.A., Johnson, K.J., Till, G.O.: Oxygen radicals, neutrophils and acute tissue injury, in Taylor, A.E., Matalon, S., Ward, P.A. (eds.), Physiology of Oxygen Radicals, American Physiology Society, Bethesda, Maryland, Chapter 10, pp. 145-159, 1986.
4. Ward, P.A., Johnson, K.J., Till, G.O.: Tissue injury caused by oxygen products from phagocytic cells, Cohen, S., Hayashi, H., Saito, K., Takada, A., (eds.), Chemical Mediators of Inflammation and Immunity, Academic Press, Japan, Inc., Tokyo, pp. 73-83, 1986.
5. Till, G.O., Johnson, K.J., Ward, P.A.: Oxygen free radicals in inflammation in Messmer, K. and Hammersen, F. (eds.), Progr. Appl. Microcirc., Vol. 9, Karger, Basel, (in press).
6. Till, G.O., Ward, P.A.: Thermal injury and lung tissue damage. In: Critical Topics in Pulmonary Pharmacology and Toxicology (in press).
7. Marak, G.E., Tao, N.A., Gannon, D.E., Varani, J., Ward, P.A., Till, G.O.: Antiphlogistic mechanisms of benzoic derivatives in experimental uveitis. In Proceedings Intl. Ophthalmology Meeting, Padua, Ital, May, 1986, (in press).
8. Ward, P.A., Johnson, K.J. and Till, G.O.: Leukocyte oxygen radicals and acute lung injury. Proceeding of Symposium on "Acute Lung Injury". PSG Publishing Co., Littleton, MA, (in press).
9. Ward, P.A., Johnson, K.J., Till, G.O., Warren, J.S.: Activated phagocytes, oxygen radicals, and tissue injury. CRC (in press).
10. Warren, J.S., Johnson, K.J., Till, G.O., Ward, P.A.: Mechanisms of oxygen radical-mediated acute tissue injury: in vivo studies. Proceedings of Enzon Meeting, July 1986 (in press).
11. Till, G.O., and Ward, P.A.: The lung and rheumatic disease: Role of complement, in, Butterworth's International Medical Reviews. Rheumatology 3, (in press).
12. Till, G.O.: Chemotactic factors, in Rother, K.O., Till, G.O., (eds.), The Complement System, Springer Verlag, Heidelberg, (in press).

#### **ABSTRACTS, BOOK REVIEWS, LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Till, G.O., Ward, P.A.: Complement activation and neutrophil derived oxygen radicals in experimental shock lung. Society for Free Radical Research. Third Biennial Meeting. University of Dusseldorf, July, 1986 (abstr).
2. Shea, M.J., Werns, S.W., Till, G.O., Hoff, P.T., O'Neill, W.W., Pitt, B.: Transcardia angiotension converting enzyme levels following pacing-induced angina and angioplasty. Clin. Res. 1987;35:327A.
3. Wakefield, T.W., Kresowik, T.F., Bouffard, J.A., Till, G.O., Spaulding, S.A., Petry, N.A., O'Donnell, J.L., Attraian, J.H., Stanley, J.C.: Leukocyte mediated cardiopulmonary responses secondary to heparin-protamine interaction. J. Vasc. Surg., (in press).
4. Guice, K.S., Oldham, K.T., Johnson, K.J., Ward, P.A., Till, G.O.: Caerulein-induced acute pancreatitis: A possible mechanism. Ingest. Dis. Sci. 1986;31:1132.
5. Hatherill, J.R., Till, G.O., Ward, P.A.: Polymorphonuclear leukocyte-mediated lipid peroxidation and lung injury. Toxicologist 7:25, (abstr.).
6. Ward, P.A., Till, G.O., McCulloch, K.D., Johnson, K.J.: Peptides and complement in lung microvascular injury. Paris Inflammation Meeting, 1986 (abstr.).
7. Mentyka, R.A., Mathews, K.P., Wagner, J.L., Till, G.O., Hugli, T.E.: studies of cold dependent activation of complement. Amer. Acad. Allergy Immunol. Meeting, Washington, DC, 1987.

8. Guice, K.S., Oldham, K.T., Johnson, K.J., Till, G.O., Ward, P.A., Coran, A.G.: Pancreatitis and acute lung injury: A role for complement. Soc. Univ. Surgeons (abstr).
9. Oldham, K.T. Guice, K.S., Till, G.O., Ward, P.A.: Evidence for local complement activation in cutaneous thermal injury in rats. Circ. Shock, 1987;21:325 (abstr.).
10. Oldham, K.T., Guice, K.S., Till, G.O., Ward, P.A.: Evidence for xanthine oxidase-dependent generation of C5a chemotactic peptide in thermally injured rats. Crit. Care (in press).
11. Till, G.O., Ward, P.A.: Evidence for a role of xanthine oxidase in thermal skin edema in the rat. Fed. Proc. 1987;46:1151 (abstr.).
12. Ward, P.A., Cunningham, T.W., Till, G.O., Johnson, K.J.: Role of platelets in oxygen radical-mediated responses. Fed. Proc. 1897;46:444 (abstr.).
13. Jesmok, G., Chenoweth, D., Till, G., Viray, R., Borgia, J.: Cardiopulmonary manifestations of rapid cobra venom factor (*Naja naja*) infusion in the conscious sheep with lung lymph fistula. Fed. Proc. 1987;46:984 (abstr.).
14. Morganroth, M., Till, G., Pickett, W., Schoenick, S., Ward, P.A.: Essential fatty acid deficiency in neutrophils is protective against complement-mediated acute lung injury. Fed. Proc. 1987;46:1040 (abstr.).
15. Tsai, E., Till, G.O.: Role of hydroxyl radical in neutrophil lipid-peroxidation and red-cell lysis. Clin. Res. 1986;34:1010 (abstr.).
16. Wakefield, T.W, Till, G.O., Lindblad, B., Saenz, N., Stanley, J.C.: Heparin-protamine interactions and the complement system: Failure of cobra venom factor pretreatment to attenuate adverse hemodynamic and hematologic responses. J. Surg. Res. (abstr.).
17. Ward, P.A., Till, G.O., McCulloch, K.D., Johnson, K.J.: Peptides and complement in lung microvascular injury (abstr.).

**JAMES VARANI, PH.D.**  
**ASSOCIATE PROFESSOR OF MICROBIOLOGY AND IMMUNOLOGY**  
**DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT**  
**1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Clinical Virology Laboratory - Isolation of herpes simplex virus specimens obtained from MDS Laboratories.

**II. TEACHING ACTIVITIES:**

- A. Two postdoctoral scholars, two visiting scientists, one graduate student and several undergraduate students work in my laboratory.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Endogenous Laminin Expression and Metastasis. CA35132, Principal Investigator, 30% effort, \$70,161 current annual direct costs, NIH.
- B. Growth and Biological Properties of Fibroblasts and Epithelia Cells on Various Substrates. CA36656, Principal Investigator, 10% effort, \$90,000 current annual direct costs, NIH.
- C. Inhibition of Tumor Cell Chemotactic Responses by Prostaglandins. BC-512, Principal Investigator, \$55,512 current annual direct cost, American Cancer Society.
- D. Laminin/Laminin Receptors in NK/NC Cell Function. IM-432. Principal Investigator, \$72,000 current direct cost, American Cancer Society.
- E. Thrombospondin and Squamous Carcinoma Cell Behavior. PDT-324, Co-Principal Investigator, 25% effort, \$70,000 current annual direct costs, American Cancer Society.

**PROJECTS UNDER STUDY:**

- A. The involvement of laminin and laminin receptors in mediating tumor cell behavior as it relates to metastatic activity.
- B. Regulation of chemotactic responses in tumor cells by prostaglandins produced by the tumor cells and by other cells.
- C. The development of substrates for optimum growth of cells in large-scale culture.
- D. The role of laminin and laminin receptors in mediating NK/NC-tumor cell interactions.
- E. The role of thrombospondin in the biology of human squamous carcinoma cells.



**IV. SERVICE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Member, Departmental Advisory Committee on Appointments, Promotion and Tenure.
- B. Member, Departmental Review Committee.
- C. Member, Departmental Advisory Committee on Space Allocation.

**MEDICAL SCHOOL/HOSPITAL:**

- A. Director, Cancer Center Program on Tumor Cell Metastasis and the Extracellular Matrix.
- B. Co-chairman of Katherine A. Laybourn's Doctoral Dissertation Committee.
- C. Member, Kellogg Research Internship Program.

**REGIONAL AND NATIONAL:**

- A. Editorial Board of Invasion and Metastasis.
- B. Manuscript reviewer for: Cancer Research, Journal of the National Cancer Institute, International Journal of Cancer, American Journal of Pathology, Laboratory Investigation, Experimental Cell Research, Clinical and Experimental Metastasis, Invasion and Metastasis, Science, Proceedings of the National Academy of Sciences.
- C. Grant reviewer for the Medical Research Council of Canada and for the Veterans Administration.

**V. OTHER RELEVANT ACTIVITIES:**

**INVITED LECTURES/SEMINARS:**

- 1. Invited Speaker, Lake Ontario Metastasis Society Meeting; London, Ontario, May 1, 1987.
- 2. Invited Speaker, Organ System Coordinating Committee Workshop entitled: "Biology of Tumor Growth and Progression", Bethesda, MD, March 12, 1987.
- 3. Invited Speaker, FASEB Conference on "Biology of Tumor Metastasis", Saxon River, VT, July 26-31, 1987.
- 4. Invited Speaker, Second International Conference on Squamous Carcinoma, Alexandria, VA, September 9-13, 1987.
- 5. Session Moderator, Second International Conference on Squamous Carcinoma, Alexandria, VA, September 9-13, 1987.
- 6. Invited Speaker, Pathology Seminar Series VAMC-Wayne State University, Allen Park, MI, May 9, 1987.
- 7. Invited Participant, Second Annual Recent Advances in Biotechnology Symposium, Lansing, MI, June 17-18, 1987.

## VI. PUBLICATIONS:

### ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:

1. Laybourn, K.A., Hiserodt, J.C., Abruzzo, L.V., and Varani, J.: *In vitro* and *in vivo* interaction between murine fibrosarcoma cells and natural killer cells. *Cancer Res.*, 1986;46:3407-3412.
2. Varani, J., Hasday, J.D., Sitrin, R.G., Brubaker, P.G., and Hillegas, W.A.: Proteolytic enzymes and arachidonic acid metabolites produced by MRC-5 cells on various microcarrier substrates.
3. Varani, J., Bendelow, M.J., Chun, J.H., and Hillegas, W.A.: Cell growth on microcarriers: Comparison of proliferation and recovery from various substrates. *J. Biol. Stand.*, 1986;14:331-336.
4. Varani, J., Dixit, V.M., Fligiel, S.E.G., McKeever, P.E. and Carey, T.E.: Thrombospondin-induced attachment and spreading of human squamous carcinoma cells. *Exp. Cells Res.* 1986;167:376-390.
5. McKeever, P.E., Fligiel, S.E.G., Varani, J., Hudson, J.L., Smith, D., Castle, R.L. and McCoy, J.P.: Products of cells cultured from gliomas: IV. Extracellular matrix proteins of gliomas. *Int. J. Cancer* 1986;37:867-874.
6. Varani, J., Fligiel, S.E.G., and Wilson, B.: Motility of ras<sup>H</sup> oncogene-transformed NIH-3T3 cells. *Invasion and Metastasis*, 1986;6:335-346.
7. McKeever, P.E., Hood, T.W., Varani, J., Taren, J.A., Beierwaltes, W.H., Wahl, R., Liebert, M. and Nguyen, P.K.: Products of cells cultured from gliomas: IV. Cytology and morphometry of two cell types cultured from gliomas. *J. Nat. Cancer Inst.* (in press).
8. He, X., Fligiel, S.E.G. and Varani, J.: Modulation of tumor cell motility by prostaglandins and inhibitors of prostaglandin synthesis. *Exp. Cell Biol.* 1986;54:128-137.
9. Fligiel, W.E.G., Laybourn, K.A., Peters, B.P., Ruddon, R.W., Hiserodt, J.C., Varani, J.: Laminin production by murine melanoma cells: Possible involvement in cell motility. *Clin. Exp. Metastasis* 1986;4:259-272.
10. Varani, J., Carey, T.E., Fligiel, S.E.G., McKeever, P.E., Dixit, V.: Tumor type-specific differences in cell-substrate adhesion. *Int. J. Cancer* 1987;39:397-403.
11. Varani, J., McKeever, P.E., Fligiel, S.E.G., Sitrin, R.G.: Plasminogen activator production by human tumor cells: Effect on tumor cell - extracellular matrix interactions. *Int. J. Cancer*, (in press).
12. Riser, B.L., Varani, J., O'Rourke, K., Dixit, V.M.: Thrombospondin binding by human squamous carcinoma and melanoma cells. *Exp. Cell Res.*, (in press).
13. Gannon, D.E., Varani, J., Phan, S.H., Ward, J.H., Kaplan, J., Till, G.O., Simon, R.G., Ryan, U.S., Ward, P.A.: Source of iron in neutrophil-mediated killing of endothelial cells. *Lab. Invest.* (in press).
14. Chakrabarty, S., Brattain, M.G., Ochi, R.L., Varani, J.: Modulation of fibronectin, laminin and cell adhesion in the transformation and differentiation of murine AKR fibroblasts. *J. Cell Physiol.*, (in press).

### **BOOKS AND CHAPTERS IN BOOKS:**

1. Gannon, D., Varani, J., Ward, P.A.: Leukocyte-mediated endothelial cell killing. In: Endothelial Cell Growth and Biology. U.S. Ryan, ed., 1987 (in press).
2. Varani, J., McCoy, J.P., Ward, P.A.: Attraction of wandering metastatic tumor cells. In: Progressive Stages of Malignant Neoplastic Growth, Volume II. Clinical Aspects of Neoplastic Progression: Host-tumor interactions and Its Modification by Therapy. H.E. Kaiser, ed., Martinus Nijhoff, Publishers, Norwell, MA, 1987.
3. Kern, S.E., Keren, D.R., Beals, T.F., Varani, J.: A model for paneth cell study: tissue culture of the hyperplastic paneth cell population of rabbit Thiry-Vella ileal loops. Proc. of the Conference on Gastric Mucosal Epithelial Function. 1987 (in press).
4. Varani, J.: Interaction of Tumor Cells with the Extracellular Matrix. Revisions Score Biologia Celular. E. Barbera-Guillem (ed.) Leioa-Viscaya, Spain, 1987 (in press).
5. Varani, J.: Laminin synthesis, laminin receptors and tumor cell-extracellular matrix interactions. Biochem. Biophys. Acta: Reviews on cancer, 1987 (in press).
6. Varani, J.: Arachidonic acid metabolism in malignant tumor cells: Relationship to adhesion, motility and invasion. In: Carcinogenesis and Dietary Fat. S. Abraham (ed.). Martinus Nijhoff Publishing; Boston, MA, 1987 (in press).
7. Varani, J., Riser, B.R., Dixit, V.: Squamous carcinoma cells synthesize thrombospondin and use it as an adhesion factor. In: Proceed. International Head and Neck Oncology Research Conference. G.T. Wolf (ed.), Martinus Nijhoff Publishing; Boston, MA, 1987 (in press).

### **ABSTRACTS, BOOK REVIEWS, LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Chakrabarty, S., Ochs, R., Varani, J. and Brattain, M.G.: Normalization of cellular fibronectin and laminin is associated with induction of redifferentiation of malignant murine AKR-MCA fibroblasts. J. Cell Biol. 103:252A.
2. Varani, J., Dixit, V., Fligiel, S.E.G.: Epidermal growth factor alters cell response to thrombospondin. J. Cell. Biochem. Suppl. 11A:46.
3. Hutchinson, R.J., Fligiel, S., Appleyard, J., Varani, J. and Wicha, M.: Attachment of neuroblastoma cells to extracellular matrix: correlation with metastatic capacity. Clin. Res., (in press).
4. Fligiel, S.E.G., Laybourn, K.A., Varani, J.: Laminin production by melanoma cells. Lab. Invest., (in press).
5. Fligiel, S.E.G., Varani, J.: Human melanomas and squamous cell carcinomas: Characterization of responsiveness to laminin and thrombospondin. J. Cutaneous Path., (in press).
6. Fligiel, S.E.G., Varani, J., Kunkel, R.G., Ginsburg, I.: Cationic polyelectrolytes, tumor phagocytosis and malignant tumor behavior. Fed. Proc. 1987;46:433.
7. Varani, J., Fligiel, S.E.G., Hatfield, J.S., Gissman, J.D., Dixit, V.: Epidermal growth factor alters squamous carcinoma cell interactions with extracellular matrix components. Fed. Proc. 1987;46:1316.
8. Varani, J., Fligiel, S.E.G., Hatfield, J.S., Grissman, J.D., Dixit, V.M.: Epidermal growth factor alters squamous carcinoma cell interactions with extracellular matrix components. Fed. Proc. 1987;46:1316.
9. Chakrabarty, S., Tobon, A., Brattain, M.G., Varani, J.: Transforming growth factor-B stimulates fibronectin and laminin synthesis in human colon carcinoma cells.

10. Gannon, D.E., Varani, J., Till, G.O., Ryan, U.S., Simon, R.H., Ward, P.A.: Source of iron in neutrophil-mediated killing of endothelial cells. *Am. Rev. Respir. Dis.* 1986;133(4):A262.
11. Gannon, D.E., Varani, J., Till, G.O., Simon, R.H., Ryan, U.S., Ward, P.A.: Aspirin protects endothelial cells from neutrophil-mediated cytotoxicity. *Chest* 1986;89(6 suppl.):489S.
12. Gannon, D.E., Varani, J., Phan, S.H., Ward, J.H., Simon, R.H., Ryan, U.S., Ward, P.A.: Action of deferoxamine mesylate in protecting endothelial cells from neutrophil-mediated cytotoxicity. *Am. Rev. Respir. Dis.* 1987;135(4):A102.

**PETER A WARD, M.D.  
PROFESSOR AND CHAIRMAN  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. These have been limited to occasional involvement in immunopathology specimens.

**II. TEACHING ACTIVITIES:**

- A. Medical Students:
1. Clinical Immunology - Two one hour sessions directed to medical students, house staff, and clinical faculty interested in Clinical Immunology.
  2. ICS 600 - One one hour session to Sophomore Medical Students.
  3. Lecture in the Sophomore Pathology Course.
  4. Lecture annually to medical students at the Medical College of Pennsylvania and Hospital (two four hour sessions).
- B. Graduate students:
1. Indirect supervision of six postdoctoral students.
  2. Indirect supervision of four Research Scientists.
  3. Lecture to faculty and students at the Hospital of the University of Pennsylvania.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Principal Investigator, "Thermal Injury, Complement, and Leukocyte Dysfunction", NIH GM-28499 (10%), \$105,256/year (\$577,063/five years), 1/1/86-12/31/90.
- B. Principal Investigator, "Lung Immunopathology", NHLBI HL-07517 (5%), \$257,122/year (\$1,291,531/five years), 7/1/86-6/30/91.
- C. Principal Investigator, "Leukocyte Chemotaxis", NIH HL-28442 (10%), \$93,512/year (\$505,936/five years), 7/1/86-6/30/91.
- D. Principal Investigator, "Lung Injury Produced by Oxygen Metabolites", NIH GM-29507 (20%), \$111,222/year (\$507,078/five years), 7/1/82-6/30/87
- E. Principal Investigator, "Inflammatory Cells and Lung Injury", NHLBI HL-31963 (25%), \$583,326/year (\$2,149,597/five years), 3/1/84-2/28/89.

## **PROJECTS UNDER STUDY:**

## **ARTICLES SUBMITTED FOR PUBLICATION:**

1. Becker, K.M., Marasco, W.A., Ward, P.A. and Nairn, R.: Demonstration of a formyl peptide receptor on murine macrophages.
2. Duque, R.E., Stoolman, L.M., Hudson, J.L., and Ward, P.A.: Multiparameter analysis of immunohematological disorders by flow cytometry.
3. Gannon, D.E., Varani, J., Till, G.O., Ryan, U.S., Simon, R.H. and Ward, P.A.: Source of iron in neutrophil-mediated killing of endothelial cells.
4. Grimstad, I.A., Thorsrud, A.K., Varani, J., Ward, P.A. and Jellum, E.: Marker polypeptide differences between spontaneous highly metastatic and low metastatic cancer cells identified by two-dimensional gel electrophoresis. Submitted to International Journal of Cancer.
5. Marasco, W.A., Feltner, D.E., Nairn, R. and Ward, P.A.: Evidence of negative cooperative interactions of formyl peptide chemotaxis receptors on the rat neutrophil.
6. Marasco, W.A., Laybourn, K.A., Ward, P.A. and Niederhuber, J.E.: Genetic control of the immune response in mice to an NH<sub>2</sub>-formylated chemotactic peptide: I. More than one gene in H-2 controls the antibody response.
7. Marasco, W.A., Niederhuber, J.E. and Ward, P.A.: Murine neutrophil formyl peptide receptors: Effects of the major histocompatibility complex on receptor number, affinity and biological response.
8. Marasco, W.A., Ward, P.A. and Nairn, R.: Purification of endogenously radiolabeled rabbit neutrophil formyl peptide chemotaxis receptors.
9. Morganroth, M.L., Schoeneich, S.O., Till, G.O., Pickett, W. and Ward, P.A.: Complement and neutrophil-mediated lung injury is attenuated in rats raised on an essential fatty acid deficient diet.
10. Plewa, M.C., Higashi, G.I., Chensue, S.W., Marasco, W.A., Ward, P.A. and Kunkel, S.L.: Regulation of Ia antigen expression on granulomatous macrophages by prostaglandins.
11. Powell, J.S., Ward, P.A. and Johnson, K.J.: Activation of rat neutrophils and alveolar macrophages with IgA and IgG immune complexes: Differential patterns of enzyme secretion and O<sub>2</sub> generation.
12. Rao, N.A., Calandra, A.J., Sevanian, A., Till, G.O., Ward, P.A. and Marak, G.E.: Antiphlogistic effect of dimethylthiourea in experimental lens-induced uveitis.
13. Rao, N.A., Calancra, A.J., Sevanian, A., Till, G.O., Ward, P.A. and Marak, G.E.: The antiphlogistic effect of glutathione peroxidase in experimental lens-induced uveitis.
14. Rao, M.A., Patchett, R., Kunkel, S.L., Ward, P.A. and Marak, G.E., Jr.: Modulation of granulomatous uveitis by lipoxygenase inhibitors.
15. Ward, P.A., Cunningham, T.W., McCulloch, K.D. and Johnson, K.J.: Regulatory effects of adenosine and adenine nucleotides on oxygen radical responses of rat and human neutrophils. Submitted to Lab. Invest.
16. Ward, P.A., Macconi, D., Sulavik, M.C., Till, G.O., Warren, J.S., Johnson, K.J., Powell, J. and Kunkel, R.G.: In vitro and in vivo evidence for neutrophil-platelet interactions in oxygen radical-mediated lung injury. Submitted to Lab. Invest.
17. Ward, P.A., Till, G.O., Kunkel, R.G. and Johnson, K.J.: Protection against neutrophil-mediated lung injury by platelet depletion.
18. Warren, J.S., Kunkel, S.L., Cunningham, T.W., Johnson, K.J. and Ward, P.A.: Macrophage-derived cytokines amplify immune complex-triggered O<sub>2</sub> responses by rat alveolar macrophages. Submitted to Amer. J. Pathol.

19. Warren, J.S., Kunkel, S.L., Johnson, K.J. and Ward, P.A.: Ultrastructural cytochemical demonstration of H<sub>2</sub>O<sub>2</sub> production by alveolar macrophages in IgA immune complex induced injury.
20. Warren, J.S., Kunkel, R.G., Johnson, K.J. and Ward, P.A.: Ultrastructural cytochemical demonstration of H<sub>2</sub>O<sub>2</sub> production by alveolar macrophages in IgA immune complex induced injury.
21. Warren, J.S., Ward, P.A., and Johnson, K.J.: Activation of rat neutrophils and alveolar macrophages with IgA and IgG immune complexes: Differential patterns of enzyme secretion and O<sub>2</sub> generation. Submitted to J. Immunol.
22. Warren, J.S., Ward, P.A. and Johnson, K.J.: The respiratory burst and mechanisms of oxygen radical mediated tissue injury.
23. Rao, N.A., Romero, J.L., Sevanian, A., Fernandez, M.A., Wong, C., Ward, P.A. and Marak, G.E., Jr.: Anti-inflammatory effect of glutathione peroxidase on experimental lens-induced uveitis.

#### **IV. ADMINISTRATIVE ACTIVITIES:**

##### **DEPARTMENTAL:**

- A. Chief, Section of General Pathology.
- B. MSP Executive Committee.
- C. Pathology Associates.

##### **MEDICAL SCHOOL/HOSPITAL:**

- A. Dean's Council of Clinical Chairmen, 1985--.
- B. Director, Feasibility Study for Multifloor Medical Research Facility Attached to Medical Science II Committee.
- C. Chairman, Medical Sciences Research Building (MSRB) Task Force.
- D. Michigan Eye Bank Research Review Committee, 1980--.
- E. Michigan Diabetes Research and Training Center Policy Committee, 1981--.
- F. Main Hospitals Operations Committee, 1985--.
- G. University Hospitals Executive Committee, 1985-1986.
- H. National Task Force on Organ Transplantation, 1985--.
- I. Professional Fee Policy Committee, 1984--.
- J. Interdepartmental Coordinating Committee, 1984--.
- K. Search Committee for the Chairmanship in Environmental and Industrial Health, April, 1985--.
- L. Department of Surgery Review and Search Committee, The University of Michigan Medical School, 1985-1987.
- M. Dean's Advisory Council, 1985--.
- N. Dean's Advisory Committee on Clinical Affairs, May, 1985--.
- O. Advisory Committee for the Howard Hughes Medical Institute, 1984--.
- P. Pulmonary and Critical Medicine Division Chief Search, 1984--.
- Q. Nuclear Medicine Division Chief Search, 1985--.
- R. Internal Advisory Board Committee of the Michigan Gastrointestinal Peptide Research Center, 1985--.
- S. Council of Operations and Quality Assurance, 1986--.
- T. Board of Directors, M-Care, 1986--.
- U. Member, Neuromuscular Program Policy Committee, The University of Michigan Medical School, 1987--.

- V. Member, Center Advisory Committee for The University of Michigan Multipurpose Arthritis Center, 1987--.
- W. Member, Medical Service Plan Executive Committee, 1987--.
- X. Member, Gilford Upjohn Endowed Chair in Internal Medicine and Oncology, Department of Internal Medicine, Hematology and Oncology Unit, The University of Michigan, February, 1987--.
- Y. Member, Presidential Initiatives Fund, The University of Michigan, March, 1987--.

#### **REGIONAL AND NATIONAL:**

- A. American Society for Clinical Investigation.
- B. American Association of Pathologists
  - 1. Member, Nominating Committee, 1985-present.
  - 2. Executive Committee, Intersociety Pathology Council and Universities Associated for Research and Education in Pathology, Inc.
- C. American Board of Pathology
- D. Member, American Association for Advancement of Science.
- E. Member, American Association of Immunologists.
- F. Member, American Pathology Foundation.
- G. Member, Association of Pathology Chairmen.
- H. Member, Michigan Society of Pathologists.
- I. Member, Center for Alternatives to Animal Testing, Johns Hopkins University.
- J. Member, International Academy of Pathology.
  - 1. Council Member, April 1, 1986-1989.
  - 2. Member, Finance Committee, April 1, 1986-1990.
- K. Member, The New York Academy of Sciences.
- L. Member, Society of Medical Consultants to the Armed Forces.
- M. Ann Arbor Veterans Administration Medical Center, Consultant, 1980--.
- N. Board of Directors, Universities Associated for Research and Education in Pathology, Inc.
- O. Consultant, Evaluate Ph.D. Program in Pathobiology at Columbia University, February, 1987.
- P. Schering Corporation, 1981--.
- Q. The Upjohn Company, 1981--.
- R. Cytogen, 1983--.
- S. Mallinckrodt, Inc., Advisory Board, 1984--.

#### **V. OTHER RELEVANT ACTIVITIES:**

##### **EDITORIAL BOARDS:**

- A. American Journal of Pathology, Editorial Board, 1982--.
- B. American Review of Respiratory Diseases, Consulting Editor, 1977--.
- C. Archives of Pathology and Laboratory Medicine, Reviewer, 1973--.
- D. Arthritis and Rheumatism, Consulting Editor, 1975--.
- E. Cancer Research, Associate Editor, 1987--.
- F. Clinical Immunology and Immunopathology, Consulting Editor, 1977--.
- G. CRC Critical Reviews in Free Radical Research, Advisory Board, 1986--.
- H. CRC Critical Reviews in Toxicology, Advisory Board, 1986--.
- I. Experimental Cell Research, Consulting Editor, 1980--.



- J. Experimental Lung Research, Consulting Editor, 1980--.
- K. Human Pathology, Consulting Editor, 1980--.
- L. Infection and Immunity, Editorial Board, 1978--.
- M. Journal of Clinical Investigation, 1982--.
- N. Journal of Experimental Cell Research, Consulting Editor.
- O. Journal of Experimental Lung Research, Consulting Editor.
- P. Journal of Experimental Pathology, 1986--.
- Q. Journal of the Reticuloendothelial Society, Consulting Editor.
- R. Journal of Clinical Investigation, Consulting Editor.
- S. Laboratory Investigation, Editorial Board, 1981--.
- T. Nature, Consulting Editor, 1980--.
- U. New England Journal of Medicine, Consulting Editor, 1980--.
- V. Journal of Critical Care, Editorial Board.
- W. Review Committee for new Editor-in-Chief, for Human Pathology, April 1987--.

#### **INVITED LECTURES/SEMINARS:**

1. Lecturer, "Leukocytic Oxygen Products and Their Diverse Biological Effects", Satellite Symposia in conjunction with the 6th International Congress of Immunology, L'Hotel, Toronto, Ontario, Canada, July 5-6, 1986.
2. Lecturer and Discussion Leader, "Control of Secretion in Neutrophils", Gordon Conference, "Pulmonary Biology: Lung Inflammation", Colby college, New Hampshire, July 27-August 1, 1986.
3. Lecturer, "Inflammation and Repairs: Parts I, II, III and IV, Medical College of Pennsylvania, Philadelphia, Pennsylvania, August 21-22, 1986.
4. Speaker, Joint Meeting of the European Society of Pneumonology and the European Society for Clinical Respiratory Physiology, Paris, France, September 3-6, 1986.
5. Lecturer, "The Inflammatory Response", "Biology of Phagocytic Cells" and "Biology of Leukocyte-Derived Oxygen Radicals", at the Annual Midwest Seminar of Dental Medicine, Maxwellton Braes Resort and Golf Club, Bailey's Harbor, Wisconsin, September 7-10, 1986.
6. Speaker, American College of Emergency Physicians Scientific Assembly, "Emergency Medicine 1986", Atlanta, Georgia, September 16-17, 1986.
7. Speaker, Conference on Oxygen Free Radicals and Tissue Injury, "In Vivo Models of Phagocytic Cell Injury", Rackham Graduate School, The University of Michigan, Ann Arbor, Michigan, September 12, 1986.
8. Visiting Professor, "Pathophysiology of Leukocytes", McGill University, Department of Surgery, Montreal, P.Q., Canada, November 5-6, 1986.
9. Speaker, "Pathophysiology of A.R.D.S. and Acute Lung Injury", in the Symposium, "Current Concepts of Shock and Respiratory Failure", The Towsley Center, The University of Michigan, Ann Arbor, Michigan, November 15, 1986.
10. Distinguished Scientist Lecturer, "Oxygen Radicals and Acute and Progressive Lung Injury", Department of Biochemistry, University of South Alabama, College of Medicine, Mobile, Alabama, November 20, 1986.
11. Surgery Grand Rounds Lecturer, "Neutrophil Mediated Pulmonary Injury", Department of Surgery, University of South Alabama, College of medicine, Mobile, Alabama, November 21, 1986.
12. Site Visitor, Medical Research Council of Canada, Dr. Henry Movat, University of Toronto, Toronto, Ontario, Canada, "Career Investigator Renewal", November 30-December 1, 1986.

13. Speaker, "Hydroxyl Radicals and Lung Injury", NHLBI Symposium on Oxygen Free Radicals, Clinical Center, Bethesda, Maryland, December 10-12, 1986.
14. Invited Speaker, "Pathophysiology of ARDS and Acute Lung Injury", Community Hospital, Battle Creek, Michigan, January 5, 1987.
15. "State of the Art" Lecture to Medical Faculty in Nijmegen, Netherlands, Thursday, January 8, 1987.
16. Invited Lecturer, "The Role of Free Radicals in Health and Disease" and "Therapeutic Modalities Involving Free Radicals", Benelux Introductory Workshop on Free Radicals in Medicine, Veldhoven, Netherlands, January 9-10, 1987.
17. Scientific Consultant, Program Project Grant, "Biology of Normal and Abnormal Pulmonary Endothelial Cell Function", Francois M. Booyse, Ph.D., Program Director, University of Alabama at Birmingham, January 20-21, 1987.
18. Consultant, Northwest Memorial Hospital, Chicago, Illinois, for Pitts Management Associates, Development of Laboratory Strategic Plan, January 22, 1987.
19. Invited Speaker, "Oxygen Derived Free Radicals and Tissues Injury", in Conference on Biology of Cell and Membrane Damage Repair, sponsored by the National Digestive Diseases Advisory Board, Searle Pharmaceuticals, Inc., and Marion Laboratories, Longboat Key, Florida, February 1-4, 1987.
20. Site Visit Reviewer for the New York State Regents Doctoral Evaluation Project on the Graduate Program in Pathology Biology in the Department of Pathology at the College of Physicians and Surgeons, Columbia University, New York, New York, February 26-27, 1987.
21. Research Triangle Visiting Professor, "Lung Damaging Effects of Complement Activation Products", and "Recent Studies of the Role of Iron in Oxygen Radical Produced Lung Injury", Division of Allergy, Critical Care and Respiratory Medicine, Duke University Medical Center, Durham, North Carolina, April 7-9, 1987.
22. Planning Committee and Participant, Brook Lodge Symposium on Oxygen Radicals and Tissue Injury Symposium, "Mechanisms of Lung Injury Produced by Immune Complexes", Augusta, Michigan, April 27-29, 1987.
23. Visiting Professor, "Oxygen Radicals and Tissue Injury", Barbara Davis Center for Childhood Diabetes, University of Colorado Hospital, Denver, Colorado, May 31-June 1, 1987.

## **VI. PUBLICATIONS:**

### **ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Hatherill, J.R. Till, G.O., Bruner, L.H. and Ward, P.A.: Thermal injury, intravascular hemolysis, and toxic oxygen products. J. Clin. Invest. 1986;78:629-636.
2. Johnson, K.J., Ward, P.A., Kunkel, R.G. and Wilson, B.S.: Mediation of IgA induced lung injury in the rat: Role of macrophages and reactive oxygen products. Lab. Invest. 1986;54:499-506.
3. Morganroth, M.L., Till, G.O., Kunkel, R.G. and Ward, P.A.: Complement and neutrophil-mediated injury of perfused rat lungs. Lab. Invest. 1986;54:507-514.
4. Till, G.O. and Ward, P.A.: Systemic complement activation and acute lung injury. Fed. Proc. 1986;45:13-18.
5. Ward, P.A.: Host-defense mechanisms responsible for lung injury (John M. Sheldon Lecture). J. Allerg. Clin. Immunol. 1986;78:373-378.
6. Ward, P.A., Johnson, K.J. and Till, G.O.: Complement and experimental respiratory failure. Intensive Care Med. 1986;12:17-21.

7. Ward, P.A., Johnson, K.J. and Till, G.O.: Oxygen radicals and microvascular injury o lungs and kidney. *Acta Physiol. Scan.* 1986;548:79-85.
8. Ward, P.A., Johnson, K.J. and Till, G.O.: Oxygen radicals and arachidonate metabolites in lung injury. *Ann. N.Y. Acad. Sci.* 1986;465:26-32.
9. Ward, P.A., Johnson, K.J. and Till, G.O.: Mechanisms of lung injury. *Prax. Klin Pneumol.* 1986;40:209-210.
10. Ward, P.A., Johnson, K.J. and Till, G.O.: Oxygen radicals, neutrophils, and acute tissue injury. *J. Appl. Physiol.* 1985;145-150.
11. Ward, P.A., Johnson, K.J., and Till, G.O.: Animal models of oxidant lung injury *Respiration* 1986;50:5-12.
12. Warren, J.S., Ward, P.A. and Johnson, K.J.: Oxidative injury to the vascular endothelium. *Am. J. Med. Sci.* 1986;292:97-103.
13. Duque, R.E., and Ward, P.A.: Quantitative assessment of neutrophil function by flow cytometry. *Anal. Quant. Cytol. Histol.* 1987;9:42-48.
14. Fantone, J.C., Feltner, D.E., Brieland, J.K. and Ward, P.A.: Phagocytic cell-derived inflammatory mediators and lung disease. (State-of-the-Art). *Chest* 1987;91:428-435.
15. Gannon, D.E., Varani, J., Phan, S.H., Ward, J.H., Kaplan, J., Till, G.O., Simon, R.H., Ryan, U.S. and Ward, P.A.: Source of iron in neutrophil-mediated killing of endothelial cells. *Lab. Invest.* 1987;57:37-44.
16. Ward, P.A., and Johnson, K.J.: Adult respiratory distress syndrome and neutrophils. *New Eng. J. Med.* 1987;316:413.
17. Marak, G.E., Rao, N.A., Sevanian, A., Zdravkovich, V., Till, G.O. and Ward, P.A.: Modulation of experimental phagoanaphylactic endophthalmitis with the antioxidants sodium benzoate and 2,3-dihydroxybenzoic acid. *Ophthalmic Res.* 1987;19:120-128.
18. Warren, J.S., Ward, P.A., Johnson, K.J. and Ginsburg, I.: Modulation of acute immune complex mediated tissue injury by presence of polyionic substances. *Amer. J. Pathol.* 1987;128:67-77.
19. Guice, K.S., Oldham, K.T., Johnson, K.J., and Ward, P.A.: Mechanisms of capillary endothelial cell injury in acute pancreatitis. *Surg. Forum*, In press.
20. Oldham, K.T., Guice, K.S., Till, G.O. and Ward, P.A.: Evidence of local complement activation in cutaneous thermal injury in rats. *Adv. Shock Res.*, In press.
21. Oldham, K.T., Guice, K.S., Ward, P.A. and Johnson, K.J.: The role of oxygen radicals in immune complex injury. *Adv. Free Rad. Bio. Med.*, In press.
22. Rao, N.A., Sevanian, A., Faure, J.P., Kozak, Y., Ward, P.A., Till, G.O. and Marak, G.E.: The participation of reactive oxygen metabolites in the pathogenesis of experimental allergic uveitis. *Invest. Ophthalmol. Vis. Sci.*, In press.
23. Rao, N.A., Zdravkovich, V., Sevanian, A., Till, G.O., Ward, P.A. and Marak, G.E.: Modulation of experimental phacoanaphylactic endophthalmitis with the antioxidants sodium benzoate and 2,3-dihydroxybenzoic acid. *Invest. Ophthalmol. Vis. Sci.*, In press.
24. Till, G.O., Annesley, T., and Ward, P.A.: Lung Injury following thermal trauma to skin: Role of hydroxyl radical and lipid peroxidation. *Amer. J. Pathol.*, In press.
25. Till, G.O., Lutz, M.J. and Ward, P.A.: Hydroxyl radical as autotoxin in chemotactically activated neutrophils. *Biomed. Pharmacother.*, In press.
26. Till, G.O., Morganroth, M.L., Kunkel, R.G. and Ward, P.A.: Activation of C5 by cobra venom factor is required in neutrophil-mediated lung injury in the rat. *Amer. J. Pathol.*, In press.
27. Till, G.O. and Ward, P.A.: Immunologic and phagocytic cell defects in thermally injured patients. *J. Crit. Care Med*, In press.
28. Till, G.O. and Ward, P.A.: Oxygen free radicals, the toxic mediators. *Int. Arch. Allerg. Appl. Immunol*, In press.

29. Varani, J., Bendelow, M.J., Sealey, D.E., Kunkel, S.L., Gannon, D.E., Ryan, U.S. and Ward, P.A.: Tumor necrosis factor and interleukin-1 enhance susceptibility of vascular endothelial cells to neutrophil-mediated killing. *Lab. Invest.*, Submitted.
30. Ward, P.A.: The wound environment - Local and systemic perturbations: Inflammation and the burn wound. *J. Burn Care & Rehab.*, In press.
31. Ward, P.A., Cunningham, T.W., McCulloch, K.K., Phan, S.H., Powell, J. and Johnson, K.J.: Platelet enhancement of O<sub>2</sub> responses in stimulated human neutrophils: Identification of platelet factor as adenosine nucleotide. *Lab. Invest.*, In press.
32. Ward, P.A., Johnson, K.J., and Till, G.O.: Animal models of oxidant lung injury. *Eur. J. Res. Dis.*, In press.
33. Ward, P.A., Johnson, K.J. and Till, G.O.: Oxygen radicals, neutrophils and acute tissue injury. *Amer. Physiol. Soc. Clin. Monograph*, In press.
34. Ward, P.A., Johnson, K.J. and Till, G.O.: Mechanisms of lung injury. *Prax. Klin. Pneumol*, In press.
35. Ward, P.A. and Stoolman, L.M.: The limited predictive value of T-cell phenotypic analysis in humans. *Environ. Chem. Exposures and Immune System Integrity*, In press.
36. Ward, P.A. and Till, G.O.: The autodestructive consequences of thermal injury. *J. Burn Care and Rehab.*, In press.
37. Warren, J.S., Kunkel, R.G., Johnson, K.J. and Ward, P.A.: Comparative O<sub>2</sub> responses of lung and blood phagocytic cells in the rat: Possible relevance to IgA immune complex induced lung injury. *Lab. Invest.*, In press.
38. Warren, J.S., Kunkel, S.L., Johnson, K.J. and Ward, P.A.: In vitro activation of rat neutrophils and alveolar macrophages with IgA and IgG immune complexes: Implications for immune complex induced lung injury. *Amer. J. Pathol*, In press.
39. Warren, J. and Ward, P.A.: Review: Oxidative injury to the vascular endothelium *A.J.M.S.*, August, 1986, In press.

#### **BOOKS/CHAPTERS IN BOOKS:**

1. Ward, P.A., Johnson, K.J., and Till, G.O.: Tissue injury caused by toxic oxygen products from phagocytic cells, in, Cohen, S., Hayashi, H., Saito, K. and Takada, A. (eds) Chemical Mediators of Inflammation, Academic Press Inc., Orlando, Florida, pp. 73-83, 1986.
2. Ward, P.A., Johnson, K.J. and Till, G.O.: Oxygen radicals, neutrophils and acute tissue injury, in Taylor, A.E., Matalon, S. and Ward, P.A. (eds), Physiology of Oxygen Radicals, American Physiology Society, Bethesda, Maryland, Chapter 10, pp. 145-159, 1986.
3. Ward, P.A., Warren, J.S. and Johnson, K.J.: Leukocytic oxygen products and their diverse biological effects, in, Movat, H.Z. (ed) Leukocyte Emigration and Its Sequellae: Satellite Symposium on the Sixth International Congress of Immunology Toronto, Ontario, July 5-6, 1986, Karger Press, Basel, Switzerland, pp. 161-168, 1986.
4. Till, G.O. and Ward, P.A.: Oxygen radicals and lipid peroxidation in experimental shock, in First Vienna Shock Forum, Part A: Pathophysiological role of mediators and mediator inhibitors in shock, Alan R. Liss, Inc., New York, New York, pp. 235-243, 1987.
5. Till, G.O., Johnson, K.J. and Ward, P.A.: Inflammation and oxygen radical - Role of complement and neutrophils, in, Messmer, K. and Hammersen, F. (eds), Progress in Applied Microcirculation, Vol. 12, Karger, Basel, Switzerland, pp. 132-142.
6. Warren, J.S., Ward, P.A. and Johnson, K.J.: Mechanisms of damage to pulmonary endothelium, in Ryan, U.S. (ed) Pulmonary Endothelium in Health Disease, Marcell Dekker, Inc., New York, Basel, 107-120, 1987.

7. Fantone, J.C., and Ward, P.A.: Mechanisms of inflammation, in Cohen, A.S. (ed), Rheumatology and Immunology, Grune and Stratton, 1986, In press.
8. Fantone, J.C., and Ward, P.A.: Inflammation, in Rubin, E. and Farber, J.L. (eds) Textbook of Inflammation, Lippincott, Inc., New York, In press.
9. Fligiel, S.E.G., Johnson, K.J., and Ward, P.A.: The role of complement in immune complex induced tissue injury, in, Rother, K., and Till, G.O., (eds) The Complement System, Springer-Verlag, Publishers, Berlin, In press.
10. Johnson, K.J., and Ward, P.A.: Mechanisms of acute and chronic immune inflammatory response in the lung, Chapt. 10, in, Daniele, R.P. (ed) Pulmonary Immunology and Immunologic Diseases of the Lung, Blackwell Scientific Publications, Inc., Boston, Massachusetts, In press.
11. Johnson, K.J., Chensue, S.W., Kunkel, S.L. and Ward, P.A.: Immunopathology, in, Rubin, E. and Farber, J.L. (eds) Textbook of Pathology, Lippincott Publishers, In press.
12. Johnson, K.J., Regan, A. and Ward, P.A.: Role of oxygen radicals in kidney disease, in, Halliwell, B. (ed) Oxygen Radicals and Tissue Injury, Federation Proceedings, In press.
13. Kunkel, S.L., and Ward, P.A.: The complement system, in Bellanti, J.A. (ed), Immunology, 3rd ed, In press.
14. Maderazo, E.G. and Ward, P.A.: Leukocyte chemotaxis, in, Manual of Clinical Laboratory Immunology, 3rd Ed., American Society for Microbiology, Washington, DC, In press.
15. Maderazo, E.G., Woronick, C.L. and Ward, P.A.: Inhibitors of chemotaxis, in, Methods in Enzymology, Academic Press, Orlando, Florida, In press.
16. Marak, G.E., Rao, N.A., Gannon, D.E., Varani, J., Ward, P.A. and Till, G.O.: Antiphlogistic mechanisms of benzoic derivatives in experimental uveitis, in, Proceedings of the International Ophthalmology Meeting, Padua, Italy, In press.
17. Simon, R.H. and Ward, P.A.: Adult respiratory distress syndrome, in Gallin, J.I. Goldstein, I.M. and Snyderman, R. (eds) Inflammation: Basic Principles and Clinical Correlates, Raven Press, New York, New York, In press.
18. Till, G.O., and Ward, P.A.: Role of complement and neutrophils in experimental acute lung injury, Nuki, G. and Zvaifler, N. (eds). The Lungs and Rheumatic Disease, Butterworths International Medical Reviews, Rheumatology 3, Butterworth and Co., England, In press.
19. Till, G.O., and Ward, P.A.: Oxygen radicals in complement and neutrophil-mediated acute lung injury, In press.
20. Till, G.O. and Ward, P.A.: The lung and rheumatic disease: Role of complement. Butterworth's International Medical Reviews, Rheumatology 3, In press.
21. Till, G.O. and Ward, P.A.: Thermal injury and lung tissue damage, in, Critical Topics in Pulmonary Pharmacology and Toxicology, In press.
22. Till, G.O., and Ward, P.A.: The lung and rheumatic disease: Role of complement, In, Butterworth's International Medical Reviews, Rheumatology 3, In press.
23. Varani, J., McCoy, J.P. and Ward, P.A.: The attraction of wandering metastatic cells, Kaiser, H. (ed.), Progressive Stages of Neoplastic Growth, In press.
24. Varani, J. and Ward, P.A.: The immunobiology of tumor cell chemotaxis, in, Waters, H. (ed.) Handbook of Cancer Immunology, Garland STPM Press, In press.
25. Ward, P.A.: Inflammation, Chapter 12, in Bellanti, J.A. (ed.) Immunology in Medicine, W.B. Saunders Company, Philadelphia, Pennsylvania, In press.
26. Ward, P.A., Johnson, K.J. and Till, G.O.: Tissue injury as a consequence of oxygen radicals produced by phagocytic cells, In Proceedings of Symposium by Comparative Respiratory Society, Anaheim, California, In press.

27. Ward, P.A., Johnson, K.J. and Till, G.O.: Animal models of oxidant lung injury, in Proceedings of Stressa Symposium, Zambon, Italy, In press.
28. Ward, P.A., Johnson, K.J., Till, G.O., and Warren, J.S.: Activated phagocytes, oxygen radicals and tissue injury, in, Chow, C.K. (ed.) Cellular Antioxidant Defense Mechanism, CRC Press, Marcell Dekker, Inc., New York, New York, In press.
29. Ward, P.A., Johnson, K.J., Warren, J.S. and Kunkel, R.G.: Immune complexes, oxygen radicals and lung injury, in, Halliwell, B. (ed.) Oxygen Radicals and Tissue Injury, Federation Proceedings, In press.
30. Ward, P.A. and Till, G.O.: The autodestructive consequences of thermal injury, in Ninnemann, J. (ed.) The Immune Consequences of Thermal and Traumatic Injuries, In press.
31. Ward, P.A. and Remick, D.G.: The role of immune mechanisms in lung injury, in, Fishman, A.P. (ed.) Pulmonary Diseases and Disorders, McGraw-Hill Book Company, New York, New York, In press.
32. Warren, J.S., Johnson, K.J. and Ward, P.A.: Phagocytes and reactive oxygen substances as mediators of acute lung injury, in Hyerst (ed.) Diffuse Alveolar Damage and Respiratory Failure, Futura Press, New York, In press.
33. Warren, J.S., Johnson, K.J., Till, G.O. and Ward, P.A.: Mechanisms of oxygen radical-mediated acute tissue injury: In vivo studies. Proceedings of Enzyme Meeting, July, 1986, In press.
34. Warren, J.S., Ward, P.A. and Johnson, K.J.: Immune complex injury, in, Cantor, J.D. (ed.) CRC Handbook of Animal Models of Pulmonary Disease, In press.

**ABSTRACTS, BOOK REVIEWS, PUBLISHED LETTERS TO THE EDITOR, MISCELLANEOUS PUBLICATIONS IN UNREFEREED JOURNALS:**

1. Hatherill, J.R., Till, G.O., and Ward, P.A.: Polymorphonuclear leukocyte-mediated lipid peroxidation and lung injury. *Toxicologist* 7:25, 1986.
2. Ward, P.A., Johnson, K.J. and Sulavik, M.D.: Lung injury produced by oxygen-derived free radicals from leukocytes. Mechanisms of Lung Injury Symposium, Graduate Hospital, Philadelphia, Pennsylvania, 1986.
3. Ward, P.A., Johnson, K.J. and Till, G.O.: Tissue injury as a consequence of oxygen radicals produced by phagocytic cells. Proceedings of Symposium by Comparative Respiratory Society, Anaheim, California, 1986.
4. Ward, P.A., Till, G.O., McCulloch, K.D. and Johnson, K.J.: Peptides and complement in lung microvascular injury. Paris Inflammation Meeting, 1986.
5. Warren, J.S., Johnson, K.J. and Ward, P.A.: Different O<sub>2</sub> responses of neutrophils and alveolar macrophages to IgG and IgA immune complexes. Chicago Thoracic Society, 1986.
6. Warren, J.S., Johnson, K.J., Till, G.O. and Ward, P.A.: Mechanisms of oxygen radical mediated acute tissue injury: In-vivo studies. ENZON Conference on Modified Enzymes in Free Radical Research, Princeton, New Jersey, 1986.
7. Bates, T.K., Warren, J.S., Kunkel, R.G., Johnson, K.J. and Ward, P.A.: Ability of rat interstitial macrophages to produce O<sub>2</sub> following activation with immune complexes. *Fed. Proc.* 1987;46:2440.
8. Cunningham, T.W., Ward, P.A. and Johnson, K.J.: Adenine nucleotide effects on oxygen radical responses of rat and human neutrophils. *Fed. Proc.* 1987;46:3902.
9. Gannon, D.E., He, X., Johnson, K.J. and Ward, P.A.: Time dependence of protection by catalase from oxygen radical-mediated acute lung injury. *Fed. Proc.* 1987;46:1448.
10. Guice, K.S., Oldham, K.T., Johnson, K.J., Kunkel, R.G. and Ward, P.A.: Pancreatitis induced pulmonary injury: An animal model. *Fed. Proc.* 1987;46:3903.

11. Guice, K.S., Oldham, K.T., Johnson, K.J. and Ward, P.A.: Mechanisms of pancreatic capillary endothelial injury in acute pancreatitis. *Surg. Forum*, 1987.
12. Guice, K.S., Oldham, K.T., Johnson, K.J., Till, G.O., Ward, P.A. and Coran, A.G.: Pancreatitis and acute lung injury: A role for complement. *Soc. Univ. Surgeons*, 1987.
13. Johnson, K.J., Rehan, A. and Ward, P.A.: The role of oxygen radicals in tissue disease. *Brook Lodge Symposium on Oxygen Radicals and Tissue Injury*, Kalamazoo Michigan, April, 1987.
14. Kunkel, R.G., Warren, J.S., Johnson, K.J. and Ward, P.A.: Ultrastructural evidence for the role of alveolar macrophages in IgA immune complex induced acute lung injury. *Fed. Proc.* 1987;46:2439.
15. Morganroth, M., Till, G.O., Pickett, W., Schoenick, S. and Ward, P.A.: Essential fatty acid deficiency in neutrophils is protective against complement-mediated acute lung injury. *Fed. Proc.* 1987;46:1040.
16. Oldham, K.T., Guice, K.S., Till, G.O. and Ward, P.A.: Evidence for local complement activation of cutaneous thermal injury in rats. *Circ. Shock* 1987;21:325.
17. Till, G.O., Johnson, K.J., and Ward, P.A.: Oxygen free radicals in inflammation. *International Symposium on Microcirculation and Inflammation*, Heidelberg, Federal Republic of Germany, June, 1987.
18. Till, G.O. and Ward, P.A.: Evidence for role of xanthine oxidase in thermal skin edema in the rat. *Fed. Proc.* 1987;46:1151.
19. Ward, P.A., Cunningham, T.W., Till, G.O. and Johnson, K.J.: Role of platelets in oxygen radical-mediated responses. *Fed. Proc.* 1987;46:739.
20. Ward, P.A., Johnson, K.J., Warren, J.S., and Kunkel, R.G.: Immune complexes, oxygen radicals and lung injury. *Brook Lodge Symposium on Oxygen Radicals and Tissue Injury*, Kalamazoo, Michigan, April, 1987.
21. Warren, J.S., Kunkel, R.G., Johnson, K.J. and Ward, P.A.: Selective activation of rat phagocytes by IgA immune complexes: Enhancement of  $O_2$  response by C5a and products of activated macrophages. *Fed. Proc.* 1987;46:2438.
22. Warren, J.S., Kunkel, S.L., Johnson, K.J. and Ward, P.A.: Enhanced oxygen radical responses of immune complex stimulated rat alveolar macrophages by cytokines. *Int. Conf. on Cytokines*, Heidelberg, Federal Republic of Germany, 1987.
23. Manning, P.B., Morgan, R.A., Coran, A.G., Drongowski, R., Till, G.O., Ward, P.A., Oldham, K.T. and Wesley, J.R.: Oxygen free radical activity during live *E. coli* septic shock in the puppy: The role of tissue ischemia, In press.
24. Oldham, K.T., Guice, K.S., Till, G.O. and Ward, P.A.: Evidence for xanthine oxidase-dependent generation of C5a chemotactic peptide in thermally injured rats. *Crit. Care*, In press.
25. Ward, P.A., Till, G.O., McCulloch, K.D. and Johnson, K.J.: Peptides and complement in lung microvascular injury, In press.
26. Ward, P.A.: The Lung Watch (Conference Summary). *Chest* 1986;89:196S-198S.
27. Ward, P.A.: Chaos and the New Order (Editorial). *Human Pathol.* 1986;17:539-542.
28. Ward, P.A.: Those nasty radicals. (Editorial). *West. J. Med.* 1986;144:458-460.
29. Warren, J., and Ward, P.A.: Oxyradical mediated tissue injury. *Clin. Immunol. Newsletter* 1986;7:113-128.



**LEE WEATHERBEE, M.D.  
ASSOCIATE PROFESSOR OF PATHOLOGY  
DEPARTMENT OF PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Chief, Laboratory Service, Ann Arbor Veterans Administration Medical Center and Veterans Administration Outpatient Clinic, Toledo, Ohio.
- B. Consultant for referred orthopedic cases at University of Michigan.
- C. Primary activities in anatomic pathology - surgical and autopsy.
- D. General overview of clinical pathology at VA Medical Center.

**II. TEACHING ACTIVITIES:**

- A. One to three days per week read out surgical cases with resident on one to one basis.
- B. Review and oversee review of all autopsies with residents.
- C. Supervise autopsy conferences with residents.
- D. Oversee surgical diagnosis teaching activities by staff and consultant pathologists.
- E. Participate in monthly Medicine-Pathology and Surgical Morbidity and Mortality conference at the Veterans Administration Medical Center.
- F. Lecture, Bone and Joint, Second Year Medical Students, three lectures.
- G. Journal Club, Bone and Joint Pathology, Pathology Residents.
- H. Participate in bi-weekly Oncology Review Board at VA Medical Center.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:** None.

**PROJECTS UNDER STUDY:**

- A. Well-differentiated osteosarcoma.

**IV. ADMINISTRATIVE ACTIVITIES:**

- A. Resident Selection Committee.

**MEDICAL SCHOOL/VA MEDICAL CENTER:**

- A. General administrative responsibility for Laboratory Service at the Ann Arbor Veterans Administration Medical Center and the Veterans Administration Outpatient Clinic, Toledo, Ohio (FTE 56.025 and 3.0 residents in training).
- B. Executive Faculty, The University of Michigan Medical School.
- C. Professional Standards Board (VAMC). Major decision-making board advising Chief of Staff.



- D. Clinical Executive Board. Review activities consisting of all service chiefs (VAMC).
- E. Transfusion Committee, Chair, (VAMC).
- F. Medical Audit Committee, (VAMC).
- G. Radiation Safety Committee (VAMC).
- H. Pharmacy and Therapeutics Committee (VAMC).
- I. General responsibility for participation of VA Pathology staff in other medical center committees.
- J. Quality Assurance Board, Chair (VAMC).
- K. Dean's Committee VA Representative.

**REGIONAL AND NATIONAL:**

- A. Red Cross Medical Advisory Board, Southeastern Michigan Region.

**V. OTHER RELEVANT ACTIVITIES:**

- A. Inspector for College of American Pathologists, Inspection and Accreditation Program.
- B. Deputy Medical Examiner, Washtenaw County.

**VI. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

1. Shenker, Y., Lloyd, R.V., Weatherbee, L., Port, F.K., Grekin, R.J. and Barkan, A.L.: Ectopic Prolactinoma in a Patient with Hyperparathyroidism and Abnormal Sellar Radiography. J.C.E. and M. , 1986;62(5):1065-1069.
2. Lee, H.H., Agha, F.P., Weatherbee, L. and Boland, C.R.: Pseudomyxoma Peritonei J.Clin. Gastroenterol., 1986;8(3):312-316.
3. Kang, H.K., Weatherbee, L., Breslin, P.P., Lee, Y., Shepard, B.M.: Soft Tissue Sarcomas and Military Service in Vietnam: A Case Comparison Group Analysis of Hospital Patients. J. Occupational Med. 1986;28(12):1215-1218.
4. Guice, K., Weatherbee, L., et al: Invasive Aspergillosis: An Unusual Case of Hemorrhagic Pancreatitis. Accepted by the American J. of Gastroenterology.

**J. REIMER WOLTER, M.D.  
PROFESSOR OF OPHTHALMOLOGY  
DEPARTMENTS OF OPHTHALMOLOGY AND PATHOLOGY**

**ANNUAL DEPARTMENTAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**I. CLINICAL ACTIVITIES:**

- A. Director, General Ophthalmology Service, Kellogg eye Center, University of Michigan Medical Center, including direct patient care and surgery.
- B. Associate Director, Veterans Administration Ophthalmology Service, Veterans Administration Medical Center, Ann Arbor, Michigan.
- C. In charge of Ophthalmic Pathology Service, Departments of Ophthalmology and Pathology, University of Michigan Medical Center.

**II. TEACHING ACTIVITIES:**

- A. Taking part in the regular teaching efforts for students, residents and fellows as well as the postgraduate programs in Ophthalmology and Ophthalmic Surgery.
- B. In charge of teaching and representation of Ophthalmic Pathology in the Departments of Ophthalmology and Pathology as well as at national and international Meetings. Ophthalmic Pathology is one of the basic subspecialties of Ophthalmology - and it is an important part of the written and oral examination of the American Board of Ophthalmology.

**III. RESEARCH ACTIVITIES:**

**SPONSORED SUPPORT:**

- A. Research in Ophthalmic Pathology has had continuous support from the Research to Prevent Blindness, Inc., New York, New York for more than ten years.
- B. Experts in both, the Ophthalmology and Pathology Departments, have continuously contributed the most valuable support and advice in the general research effort as well as in specific research projects in Ophthalmic Pathology. As a result of progressing integration of the Ophthalmic Pathology Service, the most modern technical facilities in both Departments have been available and have been utilized continuously with much success.

**PROJECTS UNDER STUDY:**

- A. The place of cells of macrophage origin in ocular pathology.
- B. The nature and significance of proteinaceous depositions on intraocular lens implants and similar devices.
- C. The role of white clots in the control of massive arterial intraocular bleeding.
- D. Pathology of intraocular lens implantation.
- E. Stages in the development of malignant uveal melanomas.
- F. Pathology of radial keratotomy.

**IV. ADMINISTRATIVE ACTIVITIES:**

**DEPARTMENTAL:**

- A. Planning and organization of daily routine, teaching and research in Ophthalmic Pathology - including continuous publication and presentation of results on an international level.
- B. Usual administrative function of a Professor in the Departments of Pathology and Ophthalmology.
- C. Some administrative aspects of the Ophthalmology Service in the Ann Arbor Veterans Administration Medical Center.

**MEDICAL SCHOOL/HOSPITAL:**

- A. Member, Medical Student Research Committee.
- B. Member, Tissue Committee.
- C. VA Hospital Surgery Committee.
- D. Member, Medical Staff of University Hospital.
- E. Member, Medical Staff of Ann Arbor VA Medical Center.
- F. Director, General Ophthalmology Clinic, Kellogg Eye Center.

**REGIONAL AND NATIONAL:**

- A. Member, AMA.
- B. Member, American Ophthalmological Society.
- C. Member, American Academy of Ophthalmology.
- D. Member, German Ophthalmological Society.
- E. Member, Association for Research in Ophthalmology.
- F. Member, Detroit Ophthalmology Club.
- G. Member, University of Michigan Ophthalmology Alumni Association.
- H. Member, Contact Lens Association of America.
- I. Member, Association of American Ophthalmic Pathologists.
- J. Member, Theobald Society of Ophthalmic Pathology.
- K. Member, Michigan Ophthalmological Society.
- L. Honorary Member, Association of Pediatric Ophthalmology.

**V. OTHER RELEVANT ACTIVITIES:**

- A. Seven presentations at meetings.

**VI. PUBLICATIONS:**

**ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATION IN REFEREED JOURNALS:**

- 1. Wolter, J.R.: Macrophage Reaction on the Corneal Endothelium in Pseudophakic Keratopathy. CLAO Journal, 1987;13:59-66.
- 2. Wolter, J.R.: The Nutritional Sources of Intraocular Retinoblastoma Growth. Ophthalmic Pediatrics and Genetics 1987;8:35-42.

3. Wolter, J.R.: Corneal Insect Bite: Cuasing Central Retinal Necrosis. Pakistan J. of Ophthalm. 1987;3:50-53.
4. Wolter, J.R. Pathology Of Corneal Endothelium in Pseudophakic Keratopathy. Fortschr. Ophthalmol. 1987;84:109-114.
5. Wolter, J.R., Retinoblastome Extension into the Choroid. Ophthalmic Pediatrics and Genetics, (in press).
6. Wolter, J.R. and Sugar, A.: Vertical Rupture in Posterior Corneal Layers After Cataract Extraction. Ophthalm. Surg. (in press).
7. Wolter, J.R.: The Corneal Endothelium in Eyes with Lens Implants. Proceedings XXV Intl. Cong. Ophthalmol., Rome 1986, (in press).
8. Wolter, J.R.: Ten Years without Orbital Optic Nerve: Late Clinical Results after Removal of Retrobulbar Gliomas with Preservation of Blind Eyes. J. Ped. Ophthalmol., (in press).
9. Wolter, J.R., and Till, G.O.: Protein Depositon and Leukocyte Accumulation on Lens Implants: Following Exposure to Whole Blood in vitro. Implants in Ophthalmol., Singapore, (in press).
10. Wolter, J.R.: Poterior Chamber IOL's Inside or Outside the Capsular Bag: A Cytopathological Comparison in Two Eyes of One Patient, Ophthalm. Surg., (in press).
11. 5 papers submitted for publication.



## **PROGRAM AND SECTION REPORTS**

## **ADMINISTRATIVE/FINANCIAL AFFAIRS SECTION**

### **DEPARTMENT OF PATHOLOGY ANNUAL REPORT 1 JULY 1986 - 30 JUNE 1987**

The Administrative and Financial Affairs Section, which is under the auspices of the Office of the Chairman and his designee, includes five subsections which are organized as follows:

- A. Administrative Support Center - Pathology Laboratories:
  - 1. Thomas D. Morrow, Assistant Clinical Administrator.
  - 2. Nancy A. Coray, Administrative Associate.
  - 3. Anita Liberman-Lampear, Administrative Coordinator.
    - a. Edith M. Gilchrist-Brayton, Office Manager, Surgical Pathology Clerical Unit.
    - b. June Possley, Supervisor, Surgical Pathology Clerical Unit.
- B. Intramural and Extramural Clinical Pathology Billing and Special Projects:
  - 1. Laura D. Blythe, Administrative Assistant.
- C. Clinical Faculty Offices, University Hospitals:
  - 1. Marjorie Owens, Office Supervisor.
- D. Medical Service Plan; Billing Office and Fiscal Affairs:
  - 1. Douglas M. Kennedy, Billing Manager.
  - 2. Douglas E. Harris, Financial Analyst.
- E. Office of Grants and Contract Administration:
  - 1. Maria A. Ceo, Grants and Contract Administrator.
- F. Office of the Chairman:
  - 1. Beverly J. Smith, Academic Secretary IV.
  - 2. Mary Anne Tishma, Medical Center Staff Assistant.

In addition to the management of daily activities, each of the units accomplished major projects. They are as follows:

#### **ADMINISTRATIVE SUPPORT CENTER-PATHOLOGY LABORATORIES**

- 1. The M-Labs programs experienced rapid growth in FY 1987. We currently have contracts with Albion Community Hospital, Central Michigan Community Hospital, Metric Medical Laboratories and Newman Clinical Laboratories, and serve as a reference laboratory to 30 physician/clinic clients. A new extramural billing system and price book was developed in May 1987.
- 2. The Pathology Laboratories Handbook and "Mini-Book" were published and distributed. A major change in these handbooks included the alphabetizing of all laboratory tests.
- 3. The Unified Requisition System (second edition) was completed in January 1987. This resulted in a decreased number of requisitions required by the Hospital, Clinics, and Laboratories.

4. The Pathology Laboratories have occupied space in the New University Hospitals for over 16 months. During this period we have submitted 10 minor alteration and renovation requests. As of 1 July 1987, four of these requests have been completed.
5. Spectrum has replaced the Clinical Pathology Consult as the publication informing the Hospital community regarding information and changes in the Department of Pathology.
6. The College of American Pathologists inspected our laboratories on 13 May 1987. Despite some minor deficiencies, we are confident that our accreditation will be renewed for the next two years.
7. The Surgical Transcription area was reorganized to enhance service, including scheduling of certain staff to provide service later in the day.

#### **BILLING (INTRAMURAL AND EXTRAMURAL) AND SPECIAL PROJECTS**

1. Assisted with the development of the new M-Labs Billing System.
2. Prepared the Departmental Space Inventory using a minicomputer and database software.
3. Served as Chairperson of Telephone Committee. Established an automated database for departmental telephones. Reviewed and revised telephone options reducing costs for the Hospitals and Department.

#### **CLINICAL FACULTY OFFICES**

1. Provided staff support for registration of M-Labs trademark in the counties of Livingston, Oakland, Washtenaw, and Wayne as well as the States of Ohio and Michigan and with the Federal Government.
2. Coordinated the conversion of an employee lounge to an office for House Officer staff.
3. Catalogued the AGH Library using automated records and reports.
4. Accepted the responsibility for the administrative affairs of the Department's Residency Training Program.

#### **MEDICAL SERVICE PLAN: BILLING OFFICE AND FISCAL AFFAIRS**

1. Increased the financial position of our Medical Service Plan through increased collection, primarily Blue Shield and reduction of the number of days in receivables.
2. Developed and implemented procedures to process M-Lab related volume.
3. Separated Pathology Medicaid billings and payments from the University of Michigan Dermatology Associates to facilitate the implementation of tape to tape charges and payments with Medicaid.
4. Converted all Billing Office financial reports and supporting documents to software programs in compliance with departmental standards.
5. In addition to processing various forms of media to typed copy, the increased availability and use of PC word processing software has prompted the Word Processing Center staff to learn various software programs in order to accomodate all departmental word processing requirements.



## **OFFICE OF GRANTS AND CONTRACT ADMINISTRATION**

1. Coordinated the transfer of four research grants from other universities including applications for the transfer of these grants, acting as liaison between sponsors, DRDA, and faculty members.
2. Processed 50 grant and contract applications to various sponsors and funding agencies.
3. Coordinated the procurement and installation of equipment for three research laboratories.
4. As Chairperson of a committee, developed the Pathology Telephone Directory, which includes the names and addresses of every employee in the Department of Pathology. Established procedures for updating this directory using a minicomputer and database software.
5. Coordinated the Flow Cytometry Research Billing which included processing transfer vouchers, obtaining account numbers from investigators, following up on delinquent accounts and monitoring the MSP Flow Cytometry account.
6. Initiated the development of procedure manuals for research secretarial staff.

## **GENERAL**

1. Successfully negotiated a Medical Service Plan service agreement with University Hospitals through June 1990.
2. Enhanced computer facilities of the Department through the implementation of Personal Computers (PCs) and acquisition of new hardware (DEC) and software (Cerner) for the Pathology Laboratory System.
3. Completed the renovation and remodeling project which included rooms M5242, M4227, M3218, M2210, M4214, and M4233 at a cost of approximately \$565,000.
4. Served as a member of a committee to review the Medical Service Plan Office and participated as a member of the Search Committee for a Director of the Medical Service Plan Office.
5. Participated with Medical Center faculty and staff in the development of proposals for M-Care HMO.
6. Coordinated administrative details for the discontinuation of the Medical Technology Teaching Program.
7. Assisted in the development of the A. James French Society of Pathologists. This non-profit organization in the State of Michigan, was founded in memory of A. James French, M.D.
8. Reorganized the structure of the administrative and fiscal affairs section to accommodate to the departmental reorganization.
9. Initiated Pathology Newsletter by using electronic mail system to improve intradepartmental communication.

## **SUMMARY OF FINANCIAL DATA**

### **A. Grants and Contracts**

42 Active grants and contracts  
(Government and Non-Government sponsored)

Total Direct Expenditures \$2,315,908

Total Indirect Expenditures \$ 860,477

TOTAL \$3,176,385

### **B. Medical Service Plan**

Average Number of Accounts 9,154

Total Number of Charge Entries 49,708

Gross Billings \$5,220,822

Net Collections \$2,853,968

### **C. Pathology Laboratories**

Number of Fee Code Procedures 2,556,056

Number of Laboratory Test Results 10,000,000  
(Estimate)

Gross Revenue \$54,464,555

Direct Expenses \$20,620,283

Details regarding the financial data are available in the Office of the Chairman.

Respectfully Submitted,

Eugene J. Napolitan  
Administrator

## **DIVISION OF ANATOMIC PATHOLOGY**

### **DEPARTMENT OF PATHOLOGY ANNUAL REPORT**

**1 JULY 1986 - 30 JUNE 1987**

For the Division of Anatomic Pathology, the 1986-1987 fiscal year has been marked by the evolution of an effective modus operandi within the new University Hospital. The staff have accommodated to the new facilities and have developed the modes of communication required by the continued presence of some of our laboratories and colleagues in buildings outside of the Hospital. The consensus within the Division is that the move from Medical Science I has led to a significant improvement in the interaction between members of our diagnostic team and colleagues from other clinical services. Our physical presence within the patient care milieu has promoted a frequency and intensity of communication which is of direct benefit both to patient care and House Officer education.

The increase in interaction between the Division and other clinical services inevitably carries with it certain demands in terms of staffing and facilities, e.g., for group consultation. Such demands in concert with the continuing increase in sheer volume of diagnostic work associated with the level of activity in the Hospital, will require careful monitoring and likely adjustments in staffing and space utilization in the near future.

The activities of several services of the Division are outlined below.

Gerald D. Abrams, M.D.  
Director, Anatomic Pathology

## **CLINICAL BIOCHEMISTRY SECTION**

### **DEPARTMENT OF PATHOLOGY ANNUAL REPORT**

**1 JULY 1986 - 30 JUNE 1987**

#### **SECTION OVERVIEW:**

During the past year, the Clinical Biochemistry Section has been affected by several major events. All laboratories experienced an increase in test volume and requests for new procedures. By using newer methodologies, the laboratories in the Biochemistry Section have been able to handle this increase in volume while maintaining regional expertise in Clinical Biochemistry. Further, by developing newer, more efficient procedures, the section was able to respond to these needs with no increase in personnel. In addition, several limited special function laboratories have been incorporated into the Section. These have been accomplished with no increase in turn-around-time for testing, improved logistics of test availability, and, in general, with the good cooperation of the clinical staff. The incorporation has been accomplished with minimal incremental personnel resulting in a net savings of personnel for the institution.

While providing the basic services for the institution, the faculty in this section have been active in their respective areas of expertise. Their academic achievements are evident by the publication of several key manuscripts appended to this review. Lastly, the section has entered into a strategic planning initiative which will allow us to logically anticipate needs for the next five-seven years. Such planning will allow a more effective approach to laboratory utilization.

#### **GENERAL CHEMISTRY LABORATORY - Donald Giacherio, Ph.D., Laboratory Director.**

The Clinical Chemistry Laboratory has experienced an overall increase of 12% in test volume over the previous year. While the laboratory now performs 2 million analyte determinations, there has been no accompanying change in the overall laboratory operating budget.

Consolidation of the hypertension-plasma catecholamine laboratory resulted in both personnel (1.0 FTE) and commodity savings due to several major changes in assay methodologies. Both plasma and urine catecholamine and urine metanephrine assays are now performed by the HPLC-EC methodology. This has the advantage of greater precision, less technologist time and fewer interferences than the older colorimetric assays previously employed.

Urine assays for oxalate and citrate, previously performed in the nephrology laboratory, are now performed in General Chemistry with no increase in personnel. Further, through modifications developed in the laboratory, plasma oxalate determinations are now available for monitoring the management of patients with primary hyperoxalosis.

The most significant growth in the laboratory has been in the area of blood lipid analysis for the assessment of risk for coronary heart disease. The CHD profile offered by the lab (cholesterol, triglycerides, HDL-cholesterol and LDL-cholesterol) has been utilized at a constantly increasing rate by both inpatient and outpatient services. Current volume of this test is approximately 1,200 samples per month. In addition, the laboratory has developed assays for apolipoproteins A1 and B as a means to assess CHD risk. We are currently a participant in a Centers for Disease Control Project aimed at standardizing apolipoprotein determinations across the country.

To respond to requests for more rapid information about critical electrolytes during resuscitation efforts, we have initiated a "CODE STAT". This has significantly streamlined the workload for these critically ill patients.

For the large number of adult diabetic patients served by our institution, the laboratory has switched to an affinity column method for determining glycosylated hemoglobin. This assay more clearly distinguishes control of diet in diabetic patients than the former assay. A study is in progress to determine if this test will also be useful for the Pediatric patients.

In the coming year, the laboratory plans to broaden services in several areas: homovanillic acid for neuroblastoma patients, spot urine samples rather than 24 hour collections for HVA in pediatric patients, examination of newly regarded risk factors for coronary heart diseases including HDL subfractions HDL-2 and HDL-3, and the development of further assays for diabetic patients including those of glycosylated albumin and serum fructosamine levels. The latter will be of particular use in the gestational diabetic and the pediatric diabetic patients. Lastly, during the coming year this laboratory will review new instruments for a major instrumentation update for the laboratory. This is of key importance as the laboratory's ability to continue to meet significant increases in workload without significant increases in operating budget will hinge upon appropriate choices for chemistry analyzers.

#### **DRUG ANALYSIS AND TOXICOLOGY LABORATORY** - Thomas Annesley, Ph.D., Laboratory Director

Fee code statistics have revealed an increase of over 30% in the overall demand for services from this laboratory. Not surprisingly, the volume of cyclosporine analyses has risen over 53% as the organ transplant program within the Medical Center continues to expand. This increased workload has been successfully incorporated without any deterioration in laboratory service, or any increase in the number of personnel within the laboratory. A key element has been the ability of the technical staff to develop alternative analytic methodologies for existing assays, as well as the introduction of new clinical assays that can be successfully performed on existing laboratory equipment.

The laboratory continues to serve as a reference laboratory for specimens received from outside of the Medical Center. We now perform therapeutic drug monitoring, drug screening, and emergency toxicology for other centers such as Bronson Hospital, St. Joseph Mercy Hospital, Burns Clinic, and Metric Medical Laboratories. Additionally, Drs. Annesley and Patel have become actively involved at the regional and national levels in the NCAA Drug Testing Programs. The laboratory has also taken an aggressive and positive role in addressing community concerns related to drug testing programs. These activities have included scientific consultation as well as several lectures on drug abuse and drug detection.

Within the last year efforts have begun to expand laboratory services to include testing for heavy metals and trace element analysis. At the present time the laboratory is proceeding with the purchase of appropriate instrumentation and is setting the necessary framework for the introduction of these services within the Medical Center.

This report should not pass without noting the awarding of the 12th American Association for Clinical Chemistry Award for Outstanding Scientific Achievement by Young Investigator to Dr. Thomas M. Annesley. Dr. Annesley was cited for his research interests in several areas in therapeutic drug monitoring.

LIGAND ASSAY LABORATORY - Barry England, Ph.D., Laboratory Director.

Recent technical advancements have made possible the use of non-isotopic tracers which rival the sensitivity of methods that use radioactive tracers. This laboratory expended considerable effort evaluating and utilizing enzymes, fluorescent and chemiluminescent tracers for the analysis of proteins and viruses. Notably, we are currently evaluating a rapid and extremely sensitive chemiluminescent assay for thyrotropin (TSH) that provides an increase of sensitivity of approximately one order of magnitude over current methods. Because of this increase in sensitivity, the method promises to replace not only the current TSH assay but will also provide a better means of evaluating T3 and T4. Other advantages of the methods are the increase of speed and the ease with which the analysis can be performed.

Analysis of maternal serum and amniotic fluid levels of Alpha-Fetoprotein has proven to be the method of choice to screen for fetal well-being. The screening procedure permits the rapid detection of open neural tube defects and Down's syndrome between 15 and 20 weeks of gestation. In cooperation with the Department of Pediatrics and Obstetrics and Gynecology our laboratory has initiated a testing program with the intent of establishing a multi-departmental program for the evaluation of these disorders early in gestation.

As part of the ongoing program of laboratory consolidation, we have assumed the analysis of androstenedione, dehydroepiandrosterone (DHEA), DHEA sulfate, and urinary free cortisol. These tests were formerly performed by the Endocrine Diagnostic Laboratory in the Department of Internal Medicine. Only 0.3 technical positions were assumed in performing this transfer. Other changes in the laboratory repertoire includes the analysis of Hepatitis B Core Antibody on a daily basis, analysis of C-Terminal/Midmolecule portion of Parathormone (PTH) by the Cambridge Nuclear radioimmunoassay kit, and analysis of PTH will obviate the necessity of sending these specimens outside of our institution.

Our annual volume of samples increased from 57,941 last year to 80,820 for the same period this year. This is an increase of 39%. This increase was accomplished with the addition of only 0.3 technical transfer positions.

CLINICAL IMMUNOPATHOLOGY LABORATORY - David F. Keren, M.D., Laboratory Director.

Major personnel changes have occurred in this laboratory during the past year. Dr. John Carey has left the institution to accept a position at the Henry Ford Hospital. He has been replaced by part-time help from both Drs. Jeffrey Warren and John Lowe. They will help with signout, test development and clinician interaction. This arrangement has worked out extremely well.

There have been several changes in the laboratory during the past year. We have replaced the outdated Beckman ICS nephelometer with the new Beckman Array System. This system is faster, has a broader assay range, provides two cuvettes with a wide range of standardized tests which retain their curves for two weeks. The result is a more efficient use of technologist time and elimination of redundant sampling. This instrument is used to quantify IgG, IgA, IgM, K, L, C-reactive protein, alpha-1 antitrypsin, haptoglobin, C3, C4, and properdin factor B.

With the new monoclonal antibodies available this past year, we have developed immunoglobulin subclass analysis by ELISA. This assay is critically important in workup of immunodeficient patients who have normal total IgG values, and in patients with IgA deficiency. Another major assay established in the past year is that of microalbuminuria by ELISA. This procedure is strongly advocated to follow diabetic patients for evidence of early proteinuria. Another major advance is the development of our first autoantibody screen by microELISA methodology. We are now one of the major centers offering the microELISA test for anticardiolipin antibodies. As such, we are part of an international study on the reproducibility of these assay systems. These antibodies are found in patients with SLE and are key prognostic features for fetal survival in pregnant SLE patients. We have also established an indirect immunofluorescent test for Wegner's granulomatosis. The long range strategy initiated last year for curtaining inappropriate ordering of immunofixation testing has been successful. By combining high resolution electrophoresis with quantification of immunoglobulins, we have been able to reduce performance of immunofixation by 90%.

Planning for next year includes expansion of microalbuminuria testing, establishing the prealbumin test on the Beckman Array, and improving efficiency of rheumatoid factor screening.

#### Published Manuscripts

1. Annesley, T.M., Matz, K., Balogh, L., Clayton, L., and Giacherio, D.: Liquid-Chromatographic analysis for cyclosporine with use of microbore column and small sample volume. *Clin. Chem.* 1986;32:1407.
2. Rocher, L.L., Giacherio, D.A., and Annesley, T.M.: Refinement in HPLC analysis for cyclosporine. *Transplant. Proc.* 1986;18:652.
3. Buzynski, M.E., Rubarth, L.B., Patel, J.A.: Lidocaine toxicity following maternal pudendal anesthesia in a term infant with fetal distress. *Am. J. Perinatol.* 1987;4:164.
4. Ellis, C.M., Borsulowsky, D.C., Hamilton, T.A., Headington, J.T., Cooper, K.D., Baadsgaard, O., Duell, E.A., Annesley, T.M., Turcotte, J.G., and Vorhees, J.J.: Cyclosporine A improves psoriasis in a double blind study. *J. Amer. Med. Assoc.* 1986;256:3110.
5. DiCarlo, L.A., Morady, F., de Buitelir, M., Baerman, J.M., Schurig, L., and Annesley, T.M.: Effects of chronic amiodarone therapy on ventricular tachycardia induced by programmed ventricular stimulation. *Am. Heart J.* 1987;113:57.
6. Annesley, T.M., Matz, K. and Giacherio, D.A.: Concomitant effect of hematocrit, concentration, and temperature on the distribution of cyclosporine in blood. *Proc. Second AACC Mich. Section Res. Exposition, Livonia, Michigan, 1987.*
7. Johnson, R. and Annesley, T.M.: Evaluation of the Microgenics CEDIA immunoassay for digoxin in serum. *Proc. Second AACC Mich. Section Res. Exposition, Livonia, Michigan, 1987.*

8. Duell, E.A., Fisher, G.J., Annesley, T.M., Kowalski, J., Billings, J.K., Brown, M.B., Ellis, C.N., and Voorhees, J.J.: Levels of Cyclosporine in epidermis of treated psoriasis patients do not inhibit growth of cultured keratinocytes. *Clin. Res.* 1987;35:680A.
9. Michniewicz, B.M., Hodges, J.C., England, B.G., Chang, T., Glankley, C.J. and Nordblom, G.D.: A radioimmunoassay for the diacid metabolite of C1-906, a potent angiotensin-1 Converting Enzyme inhibitor. *J. Clin. Immunoassay.* 1987;10:111.
10. Coon, M.J., England, B.G., Annesley, T.M. and Giacherio, D.A.: Interference by goat-derived anti-lymphocyte globulin in a double-antibody radioimmunoassay of digoxin. *Clin. Chem.* 1987;33:619.
11. Coon, M.J., Smart, J.B., Annesley, T.M., Giacherio, D.A. and England, B.G.: A comparison study of serum digoxin levels in four immunoassay methods. 54th National Conference for The Society of Medical Technologists, June, 1986, New Orleans, LA.
12. Coon, M.J., Smart, J.B., England, B.G., Annesley, T.M. and Giacherio, D.A.: A comparative study of the KinetiCount-48 digoxin assay with three immunoassay methods. 10th Annual Michigan Clinical Ligand Assay Society Meeting, October, 1986, Dearborn, MI.
13. Khazaeli, M.B., Beierwaltes, W.H. and England, B.G.: Monoclonal antibodies specific for the unbound B-subunit of human chronic gonadotropin. U.S. Patent US 4,565,687 issued January 21, 1986.
14. Giacherio, D.A., Matz, K. and Annesley, T.M.: Quantitation of HDL-subclasses in a normal donor population by a two-step dextran sulfate-Mg<sup>++</sup> precipitation technique. *Proc. Mich. Section AACC Res. Expo.* 1987.
15. Johnson, T.L., Keren, D.F., and Thomas, L.R.: Indirect immunofluorescence technique to detect monoclonal antinuclear antibody. *Arch. Pathol. Lab. Med.* 1987;111:560.
16. Keren, D.F.: High resolution electrophoresis and immunofixation: Technique and interpretation. Butterworth's, 1987, Boston, MA.
17. Keren, D.F. (editor): Diagnostic use of cell surface marker and DNA analysis. American Society of Clinical Pathologists, Chicago, Illinois, in preparation.
18. Lilley, G. and Keren, D.F.: Alpha-1 antitrypsin deficiency. Tech. Sample, American Society of Clinical Pathologists, 1986.
19. Keren, D.F.: Immunofluorescence techniques. *Immunochemica* (in press).
20. Davenport, R.D. and Keren, D.F.: Oligoclonal bands in cerebrospinal fluid: significance of corresponding bands in serum for diagnosis of multiple sclerosis. *Am. J. Clin. Pathol.* (in press).
21. Levinson, S.S., Keren, D.F., Carey, J.C., and Goldman, J.O.: Identification of circulating immune complexes (CIC) by high resolution electrophoresis. *Clin. Chem.* 1987;33:904.

David F. Keren, M.D.  
Head  
Clinical Biochemistry Section



## **UNIVERSITY HOSPITALS BLOOD BANK**

### **DEPARTMENT OF PATHOLOGY ANNUAL REPORT**

**1 JULY 1986 - 30 JUNE 1987**

#### **PATIENT CARE:**

In spite of extensive national publicity regarding the need to reduce transfusions, as well as intensive local efforts to monitor blood usage, blood utilization continued to increase during the past year. Twenty-five per cent of all blood components provided to patients in University Hospitals related to cardiovascular procedures. This reflected an increase in activity in cardiac surgery. In addition, expansion of liver homotransplantation required considerable Blood Bank support. Finally, both Pediatric and Adult Hematology/Oncology services were responsible for considerable platelet utilization.

The autologous transfusion program manifested a striking increase during the past year, reflecting public concern regarding post-transfusion disease. In response to public pressure, plans for a directed donation program were initiated, with approval by the Executive Committee on Clinical Affairs and implementation to occur in the third quarter of 1987.

Therapeutic plasma exchange and outpatient transfusion activity continued to increase. As an extension of the outpatient transfusion program, provisions for home transfusion of patients were completed.

Brochures relating to home transfusion, autologous transfusion and an information document advising patients of the risks of blood transfusion were completed during the past year, as was a revised edition of Blood Transfusion Policies and Standard Practices. The latter is a compendium of all of the transfusion-related practices and procedures in University Hospitals. This booklet has served as a prototype for other hospitals throughout the country.

#### **TEACHING ACTIVITIES (University of Michigan):**

The annual core lecture series for Pathology and Hematology House Officers was held in July, 1986. Planning was completed for integration of these lectures into the revised House officer training program, beginning in July, 1987. During the rotation through the Blood Bank, House Officers continue to receive a two-week introductory course under the direction of Ms. Barnes. Hematology and Pediatric Fellows also participated in this program through rotations in the Laboratory. The 14th Annual Postgraduate Course, "Current Topics in Blood Banking" was held on June 3-5, 1987, and over 200 technologists and physicians from throughout the United States attended. Suzanne Butch, Chief Technologist of the Laboratory, was Program Director, assisted by Dr. Oberman and Mr. Judd. In addition, the medical, technical and nursing staff of the Laboratory provided a number of lectures to departments and services in the University Hospitals, including an ongoing inservice training program for nursing personnel. Such Continuing Education activities enhance patient care in the institution.

### **PROFESSIONAL ACTIVITIES:**

Suzanne Butch, Chief Technologist of the Laboratory, served on the Board of directors of the American Association of Blood Banks, while John Judd, Associate Professor, served as a member of the Scientific Section of that organization. Ronald Salisbury, supervisory technologist, chaired the MedLab Blood User's computer group, and participated extensively in implementation of the Cerner laboratory computer program. Louann Trudeau continued to serve as Editor of the Michigan Association of Blood Banks newsletter. Dallas Forshew, R.M., served on the board of Directors of the Society of Hemapheresis Specialists.

Other professional activities in the Laboratory are included in the annual reports of individual faculty and in the attached Appendix.

### **RESEARCH ACTIVITIES AND PUBLICATIONS:**

The Laboratory implemented testing of blood products for Hepatitis core antibody and for alanine aminotransferase, procedures intended to reduce the incidence of NANB Hepatitis. In addition, two abstracts were accepted for presentation at the Annual Meeting of the American Association of Blood Banks in November, 1987, relating to blood group serology and cost containment in laboratory practice. The Laboratory has initiated a study of the safety of autologous donation for obstetrical patients.

Harold A. Oberman, M.D.  
Director, Blood Bank

**APPENDIX**  
**INDIVIDUAL REPORTS**

**SUZANNE H. BUTCH, MT(ASCP)SBB**

**Presentations/Posters:**

- A. Transfusion hardware, Michigan Association of Blood Banks Annual Meeting, Detroit, MI, September 12, 1986.
- B. ABO Grouping Inservice, Tissue Typing Laboratory, March 19, 1987.
- C. Transfusion Techniques, Antibody Club, Kansas City, May 19, 1987.
- D. Perinatal Blood Banking Workshop, Current Topics in Blood Banking, Towsley Center, June 3, 1987.
- E. Options in preventing febrile transfusion reactions, Current Topics in Blood Banking, Towsley Center, June 5, 1987.

**Publications:**

- A. McMican, A., et. al.: Practical aspects of blood irradiation, Laboratory Medicine, 1987, Vol. 18, No. 5, pp. 299-303.

**Hospital Committees:**

- A. Transfusion Committee.
- B. Disaster Committee.
- C. Quality Assurance Committee.

**Professional Organization Activities:**

- A. American Association of Blood Banks.
  - 1. Board of Directors.
  - 2. Committee on Pediatric Hemotherapy.
  - 3. Committee on Regional Education Alternatives.
  - 4. Inspector, I & A Program.
- B. Michigan Association of Blood Banks.
  - 1. Program Committee.
  - 2. Seminar, Co-chair.
- C. American Society for Medical Technology.
  - 1. Audit and Budget Committee.
- D. ASMT Education and Research Fund, Inc.
  - 1. Trustee.
- E. Planned Parenthood of Mid-Michigan.
  - 1. Consultant.
  - 2. Completed term on Board of Directors in Fall of 1986.
- F. National Certifying Agency for Medical Laboratory Personnel.
  - 1. Question Reviewer.
- G. Alpha Mu Tau.
  - 1. Scholarship Committee.

- H. Hospital and Health Services Credit Union.
  - 1. Credit Committee.

**JUDITH DOUVILLE, MT(ASCP)SSB**

Presentations/Posters:

- A. Changing role of the Hospital Donor Room. Current Topics in Blood Banking, Towsley Center, June 5, 1987.

Professional Organization Activities:

- A. Michigan Association of Blood Banks.
  - 1. Co-chair, Technical Workshop, May 7-8, Lansing, Michigan.

**DALLAS FORSHEW, RN:**

Presentations/Posters:

- A. Poster: Vascular access in therapeutic hemopheresis, 9th Annual Meeting of the society of Hemopheresis Specialists, St. Louis, MO, March 19-21, 1987.
- B. The Registered Nurse and the Medical Technologist lecture to Medical Technology Class of 1987.

Professional Activities:

- A. Society of Hemopheresis Specialists.
  - 1. Board of Directors.
  - 2. Chairperson, Certification Committee.
- B. American Association of Blood Banks.
  - 1. Committee on Nursing and Donor Room Personnel.

**RON SALISBURY, CLS:**

Professional Organization Activity:

- A. Chairman, Blood Bank Section - MedLab User's Group.

Lectures:

- A. Computers in the Blood Bank, Current Topics in Blood Banking, Towsley Center, June 6, 1987.
- B. Autologous Transfusion, Or Nursing Inservice, U of M Hospitals, May, 1987.
- C. Transfusion Reactions, Albion Hospital, June 10, 1987.

Hospital Committee:

- A. Liver Transplant Committee.

**E. ANN STEINER, MT(ASCP)SBB:**

**Professional Organization Activities:**

- A. Inspector, American Association of Blood Banks Inspection and Accreditation Program.

**Publications:**

- A. Pretransfusion testing of blood samples for neonatal patients (letter), Newsbriefs, AABB, Arlington, VA, May, 1987.

**LOUANN TRUDEAU, MT(ASCP)SBB:**

**Professional Organization Activity:**

- A. Michigan Association of Blood Banks, Newsletter Committee.

**DEBORAH A. WILLIAMS, MT(ASCP)SBB:**

**Professional Organization Activities:**

- A. Michigan Association of Blood Banks.
  - 1. Co-chair, Technical Workshop, May 7-8, 1987, Lansing, Michigan.

## **CLINICAL PATHOLOGY LABORATORIES**

### **DEPARTMENT OF PATHOLOGY ANNUAL REPORT**

**1 JULY 1986 - 30 JUNE 1987**

The specific activities of the various Clinical Pathology Laboratories are detailed on the following pages. However, several additional comments are in order.

The Laboratories were inspected by the Joint Commission on Accreditation of Hospitals and by the College of American Pathologists. The comments of the JCAH focused upon several Limited Special Function Laboratories, and members of the Department of Pathology are working with the respective departments to rectify these problems. The CAP Inspection revealed very few deficits, and there should be no problem with attainment of accreditation.

Many members of the Department participated in the activities related to implementation of the new Cerner System for data management in the Clinical Laboratories. Full implementation of this system will occur during the fourth quarter of 1987. This should greatly enhance the flexibility of laboratory test result reporting to the various patient care services.

The Clinical Laboratories were faced with a multitude of problems related to the spread of AIDS. Testing for anti-HIV resulted in modification of specimen receipt in the Laboratories and in issuance of test results. Recognition of spread of HIV infection to health care workers resulted in reinforcement of guidelines for all laboratory personnel. Members of the Department participated in Hospital committee activities related to varying questions regarding AIDS, especially maintenance of confidentiality of test results.

The Clinical Pathology Residency Program was studied during the past year, and proposals for block rotations should enhance training. Proposed rotations in cytogenetics, coagulation and histocompatibility testing have enhanced the scope of the Program.

Finally, the extramural activities of the Laboratories increased, particularly in the area of Drug Analysis and Toxicology. Continued growth of this activity is anticipated during the coming year.

Harold A. Oberman, M.D.  
Head, Section of Clinical Pathology

## **CYTOPATHOLOGY LABORATORY**

### **DEPARTMENT OF PATHOLOGY ANNUAL REPORT**

**1 JULY 1986 - 30 JUNE 1987**

The trend, begun eight years ago, for non-gynecologic cytology specimens to increase in number every year has leveled off, with the number of such specimens received during the last year being virtually the same as in the previous year. However, gynecologic cytology specimens have increased by 18 percent with most of the increase coming from University Hospitals. The total number of cytologic specimens processed by the department during the last year was 20,710, an increase of 17 percent.

During the last year we had a Fifth Year Resident whose duties were divided between surgical pathology and cytopathology, mainly the latter. This was an innovation for the department and we consider it to have been an outstanding success. Apart from the resident's gaining useful experience in cytopathology, her presence made it possible for the staff members to pursue other duties. It is an arrangement we would like to see continued. Such fifth year residency or, possibly, fellowship positions are highly sought after and will become even more sought after if the American Board of Pathology introduces a Certificate of Additional Qualification in Cytopathology, which it intends to do.

Bernard Naylor, M.D.  
Director  
Cytopathology Laboratory

**EDUCATIONAL ACTIVITIES\***  
**DEPARTMENT OF PATHOLOGY**  
**ANNUAL REPORT**  
**1 JULY 1986 - 30 JUNE 1987**

The Department of Pathology has continued to offer a number of diverse programs within the Medical School Dental School, School of Public Health, College of Literature, Science and the Arts, and the Rackham School of Graduate Studies. These include courses requiring formal lecture and laboratory exercises, as well as providing for senior medical student pathology elective clerkships. Many faculty continue to serve on graduate student thesis committees and supervise medical student research experiences. Within the Medical Center context, Departmental teaching activities extend not only to medical students, but also house officers and the staff of many clinical departments in the form of regularly scheduled formal conferences. Departmental teaching also extends to practitioners in the region and nation through courses given through Continuing Medical Education Programs of the University of Michigan and the International Association of Pathologists (IAP).

This represent the third year in which the Sophomore Pathology Course (Path 600) has been taught under a "revised" teaching format. The structure of the course is predicated on the students' acceptance of a significant responsibility for their own education, under faculty guidance. This is achieved through the use of focused faculty lectures, directed laboratory sessions, and more emphasis placed on student home study requiring text reading utilization of microscopes, slide sets and descriptive syllabi. Formal course evaluation indicated that the revised course format continued to function smoothly and was well accepted by the students. In addition, efforts to closely correlate the Introduction to Clinical Sciences Course (ICS-601) with the Sophomore Pathology Course functioned to enhance the students' educational experience and reinforce "core material".

The relevance of the content of the combined Dental/Graduate Student Course to the diverse needs of graduate students from multiple disciplines was reviewed. Subsequently, a separate graduate student section was formulated as an alternative to the teaching of systemic pathology during the second half of the course. The content of the graduate student section focuses on the study of the cellular and molecular basis of the inflammatory response and the role of the extracellular matrix in disease. It is anticipated that this will allow more indepth discussion of these topic areas in a small group seminar format.

\*House Officer training, postdoctoral research training, and the Medical Technology program are discussed elsewhere.



Formal courses given within the Department include:

I. COURSES IN THE "STANDARD" MEDICAL CURRICULUM

- A. ICS 500:
  - 1. Introductory Lectures on General Pathology (20 contact hours).
- B. ICS 600/601:
  - 1. Immunopathology Sequence (15 contact hours).
  - 2. Clinicopathologic Conferences (10 contact hours).
  - 3. Selected Topics in Surgical Pathology.
- C. NBS 600:
  - 1. Neuropathology (18 contact hours).
- D. Pathology 600:
  - 1. 67 hours of whole-class lecture, 37 hours of laboratory (in each of four sections) (104 contact hours).
- E. Pathology Clerkships:
  - 1. Elected by 35 students at University Hospitals.

II. COURSES IN THE DENTAL CURRICULUM GRADUATE SCHOOL LS&A ALLIED HEALTH/SCHOOL OF PUBLIC HEALTH:

- A. Pathology 630:
  - 1. General Pathology Lectures (45 contact hours).
- B. Pathology 631:
  - 1. Pathology Laboratory (90 contact hours) each of three sections (assisted by Oral Pathology staff).
  - 2. Graduate Student Section.
- C. Pathology 858:
  - 1. Neuropathology (23 contact hours).

III. POSTGRADUATE MEDICINE/CONTINUING MEDICAL EDUCATION:

- A. Current Topics in Blood Banking, June 3-5, 1987.
- B. Clinical Laboratory Computers, June 10-12.

IV. CLINICAL CONFERENCES:

The Department of Pathology provides an important educational service to many other clinical departments through regular participation in interdepartmental working/teaching conference. The Department is involved in many such conferences on a weekly, bi-weekly, and monthly basis. The units served include:

Internal Medicine

- Gastroenterology
- Nephrology
- Hematology/Oncology
- Nuclear Medicine
- Pulmonary Medicine
- Arthritis
- Cardiology
- General (Necropsy Review, CPC)

Dermatology

Thoracic Surgery

Urology

Pediatrics

- Cardiology
- Oncology
- Gastroenterology
- General (Death Conference, CPC)

Obstetrics and Gynecology

- Oncology

Oral Surgery

General Surgery (Breast, GI)

Otorhinolaryngology

Joseph C. Fantone, M.D.  
Director  
Educational Activities

## **ELECTRON MICROSCOPY SERVICE**

### **DEPARTMENT OF PATHOLOGY ANNUAL REPORT**

**1 JULY 1986 - 30 JUNE 1987**

During the period of 1 July 1986 - 30 June 1987, the Electron Microscopy Service in the Department of Pathology processed a total of 741 biopsies. Of this total, 330 biopsies were diagnostic clinical cases with the remainder being research. This number of cases is roughly the same as the previous 12 months when 722 specimens were processed.

The Electron Microscopy Service is now at a stable level in terms of number of personnel with two individuals assigned primarily to the diagnostic service and one individual assigned to the research service. Mr. Joseph Mailloux is supervisor of the clinical service and Ms. Robin Kunkel of the research service. This current level of staffing represents a decrease of two slots over the last two years and it is a tribute to the electron microscopy staff that the work is performed in a timely fashion with the same fast turnover time as before when the service had the additional staffing.

I would especially like to recognize the achievements of Mr. Joseph Mailloux, the supervisor of the clinical Electron Microscopy Service. This past year, Mr. Mailloux successfully completed the certification testing by the Electron Microscopy Society of America. I would like to commend Mr. Mailloux on this fine achievement which reflects well not only on him but also on the department as a whole.

We continue to work closely with the clinicians and researchers to provide greater and faster service. Virtually every department in the Medical School is represented by individuals using the Electron Microscopy Service for diagnosis and/or research.

Kent J. Johnson, M.D.  
Director  
Electron Microscopy Service

## CLINICAL FLOW CYTOMETRY LABORATORY

### DEPARTMENT OF PATHOLOGY ANNUAL REPORT

1 JULY 1986 - 30 JUNE 1987

FY 86/87 has been a transitional year for the laboratory. Dr. Phillip McCoy, the laboratory director, and Dr. John Carey, an integral member of the physician staff, moved on to faculty posts at the University of Pittsburgh Cancer Center and Henry Ford Hospital, respectively. These two individuals made significant and enduring contributions to the laboratory - they will be missed.

Dr. Curtis Hanson, a product of the University of Minnesota's Hematopathology Fellowship Program, succeeds Dr. McCoy as the director of the laboratory. Dr. Hanson was selected as the outstanding candidate after a national search. Under his guidance an administratively distinct Clinical Flow Cytometry Laboratory will be established in the Clinical Pathology Division. In addition, a new generation of table-top flow cytometers will be evaluated in an effort to reduce costs and enhance productivity. Finally, new diagnostic procedures, utilizing DNA hybridization techniques, will be implemented in the area of hematopathology. These new directions reflect the pathology department's strong commitment to the development of cost-effective, state-of-the-art diagnostic methodologies.

Despite the turnover in senior personnel, the laboratory has continued its active diagnostic service. A total of 1052 specimens were handled by the laboratory during the past year. 750 specimens were processed for cell surface markers or cellular DNA content studies. Hematopathology specimens (bone marrows, peripheral bloods, body fluids, lymph nodes, needle aspirates submitted for diagnosis of leukemia or lymphoma) constituted ~50% of the specimens while evaluation of transplant patients and individuals with primary or acquired immune deficiencies comprised the remainder. An additional 300 specimens were studied for neutrophil-specific autoantibodies and platelet-associated immunoglobulins. Each specimen requires from 10 to 30 individual staining, quantitation and analytic procedures. Quality control and calibration procedures further add to the specimen load. Thus the laboratory staff conducted ~22,000 individual marker studies in FY 86/87. The laboratory continues to provide 6-12 hour turnaround for studies on acute leukemia and selected organ transplant patients. The cost of maintaining staff sufficient to handle the demands of such STAT services are offset by cost savings resulting from shorter hospital stays. Finally, the laboratory was recertified by the College of American Pathologists thus making it one of a limited number of facilities with sufficiently rigorous quality control procedures to be so recognized. These accomplishments stand as a testament to the professionalism and dedication of the laboratory staff, both past and present.

Lloyd M. Stoolman, M.D.

Curtis Hanson, M.D.

## CLINICAL HEMATOLOGY LABORATORY

### DEPARTMENT OF PATHOLOGY ANNUAL REPORT

1 JULY 1986 - 30 JUNE 1987

#### LABORATORY ACTIVITIES:

1. During the first full year of consolidation of the Pediatric and Adult Hematology Laboratories with the Hematology Laboratory of the Department of Pathology, the Laboratory carried out a total of 454,604 tests which represents an increase of 15% over the previous year. The percentage of labor-intensive manual differential white blood cell counts increased by 14%. The labor-intensive phase platelet counts decreased because instrument counts down to  $30 \times 10^9$  are now being reported. Microscopic examinations of urines has increased by 10%. The number of body fluids requiring review by the Hematopathologist has increased by 17% over last year when the increase was 22% over the previous year. The number of bone marrow aspirates prepared and stained was 1173.

The satellite laboratory which is located in the clinic area in the Taubman Outpatient Building, services both Pediatric and Adult Hematology/Oncology Clinics as well as other clinics requiring hematologic studies. This arrangement has worked well for providing rapid patient care.

2. A formal daily bone marrow sign-out has been initiated.
3. Automated platelet count. The number of manual phase-contrast platelet counts has been reduced by an automated method. This automation has resulted in a more rapid turnaround time in the Laboratory and in a faster reporting of results to the clinician without compromising patient safety.
4. Revision and improvement of some of the cytochemistry procedures.
5. Ceased carrying out bone marrow differential counts of pediatric marrows for the pediatric staff.

#### TEACHING ACTIVITIES:

- A. Pathology House Officers participated in the following activities:
  1. Daily review of abnormal blood smears, body fluids, bone marrow aspirates, bone marrow biopsies, and lymph node biopsies.
  2. Review of consultation cases in hematopathology (lymph node biopsies, bone marrow biopsies, aspirates and splenectomy specimens).
  3. Correlation of morphology with special studies (cytochemistry, flow cytometry, immunoperoxidase and electron microscopy).
  4. Daily review of cases submitted to the Flow Cytometry Laboratory (hematopathology, transplant immunology, and the evaluation of primary and secondary immune deficiencies).
- B. Medical Technology students participated in all laboratory activities during 6-week rotations in their internship year.

**FY 87/88 GOALS:**

- A. Investigate the possibility of introducing the automated 5-part differential white blood cell count with the hope of further decreasing the number of manual white blood cell count differentials.
- B. Developing an improved and more formal teaching program for the House Officers.
- C. Instituting a Journal Club in Hematopathology.

Bertram Schnitzer, M.D.  
Director  
Clinical Hematology Laboratory

## **MEDICAL TECHNOLOGY PROGRAM**

### **DEPARTMENT OF PATHOLOGY ANNUAL REPORT**

**1 JULY 1986 - 30 JUNE 1987**

The final class of sixteen students in the Medical Technology program completed its clinical training on June 26, 1987. On June 17, the Department gave a Farewell Reception in Towsley Center to honor the program and all of those who have participated in the education of Medical Technology students over the years. Also, on June 26 the program staff, 1987 graduates, and some alumni working in UMMC laboratories enjoyed a final picnic at Gallup Park.

The program curriculum was maintained throughout its final year by our excellent teaching staff, all of whom remained with the program. Ten of the graduates have already found positions at University Hospital and elsewhere, with two of them also entering graduate school. Most of the remaining students have not yet begun to search for jobs in earnest. However, the job market is very good now, and all students should have no difficulty in finding positions.

The graduates recently participated in the Wayne State Comprehensive Examination for all MT graduates in the state. The mean score of our students was third highest and only four-tenths of a point lower than the second-ranked school. The mean score of the highest ranked school was 2.9 points higher than our score.

The Class of 1986 had ten students who took the ASCP Board of Registry Exam in August, 1986. Nine students passed, and the mean score (including the failing score) was a full 10% higher than the national mean. One student who, because of an accident, did not complete the program until December 1986, passed the Registry Exam in February 1987 with a mean score of 94%, compared to the national mean of 70%.

Provisions have been made to microfiche all student records and to notify alumni of this fact. Pertinent historical documents and Self-Study material will also be stored as suggested by NAACLS, our accreditation agency.

The staff and I wish to thank the Department of Pathology for the many years of support given to the Medical Technology degree-certificate program. Our graduates have served the profession well and are fine examples of the high quality education consistently offered by the Department, the Medical School, and the University.

Sandra C. Gluck, M.S., MT(ASCP)CLS  
Director  
Medical Technology Program

## CLINICAL MICROBIOLOGY LABORATORY

### DEPARTMENT OF PATHOLOGY ANNUAL REPORT

1 JULY 1986 - 30 JUNE 1987

#### LABORATORY ACTIVITIES:

During this period 118,884 tests were done in the Clinical Microbiology Laboratory, representing an increase of 6.2% over the 1985-1986 test volume. M-Labs testing in the Clinical Microbiology Laboratory included 2,927 tests representing a 54.2% increase over the volume of the previous year. The M-Labs volume represents 2.5% of the total lab volume.

Laboratory tests showing an increase of greater than 10%, in order of largest to smallest, include: Neisseria Screen, Chlamydia Test, Ureaplasma Culture, Routine Sterile Culture, Rapid Antigen Test, Urine Culture and Strep Screen.

Other major Laboratory activities included a successfully completed College of American Pathologist inspection as well as JCAH and MDPH inspections. In addition, the Laboratory implemented new tests including Campylobacter Screen, Direct Antigen Panel, Fecal Leukocyte Smear, Staphylococcus Screen and Adult Torch Screen.

Specific rapid methods were evaluated and implemented in the Laboratory. The implementation of the Isolator for blood cultures which produced colony identification in 1-2 days versus 2-4 days using older methods was a relatively major undertaking. Direct antigen tests on supernatants of positive blood/CSF broth allows 1 hour detection versus 24 hours using older methods. An ALA test for identification of Hemophilus produces identification in 1-4 hours versus 24 hours by older methods. Tween hydrolysis for presumptive identification of Mycobacteria terrae in 1-2 weeks versus 6-8 weeks identification using older methods was implemented. In addition to these new procedures, the Laboratory evaluated 18 other tests and procedures that were not implemented for various technical or operational reasons.

M-Lab activities, because of the increase in volume, have produced changes in the work of certain personnel within the Laboratory. One of the Supervisors has become the M-Labs technical representative and coordinator for all of the off-site laboratories and is the microbiology reference person for M-Labs activities in the M-Care sites. The M-Labs Technical Group, of which Microbiology staff are members, has been instrumental in standardization of all laboratory procedures and kits in the M-Care sites as well as developing specific requisitions and marketing information for the M-Labs program in the M-Care sites.

The Clinical Microbiology Laboratory with the Chief Technologist as the lead has been active in the computer evaluation and successful contract with the new vendor Cerner Corporation. The new system should be in the Microbiology Laboratory late Fall or early Winter of this year.



## **TEACHING AND EDUCATION:**

- A. Continuing Education Activities:
  - 1. Daily adult and pediatric infectious disease rounds in the Laboratory including demonstration and mini-lectures.
  - 2. Periodic microbiology journal reports.
  - 3. Monthly Infectious Disease case reports.
  - 4. Periodic Pathology Resident reports.
  - 5. Introductory Pathology resident lectures.
  - 6. Med Tech Student lecture series.
  - 7. Training of 16 new employees and 26 current employees into new or expanded laboratory work areas.
- B. Meetings and Workshops Attended:
  - 1. Tri-County Clinical Microbiology Meeting.
  - 2. National ICAAC Meeting.
  - 3. American Society for Microbiology Meeting.
  - 4. American Society of Clinical Pathologists Advanced Anaerobes Workshop.
- C. Papers given:
  - 1. Siddiqui, J., and Pierson, C.L.: "Evaluation of the Rapid Detect E. coli Test for the Presumptive Identification of Escherichia coli." 1987. ASM
  - 2. Lee, E., Pierson, C.L., and Shireman, P.: "Evaluation of the Cand-Tec Candida Detection System: A Clinical Correlation." 1987. ASM
  - 3. Lobato, J., Young, C. and McClatchey, K.D.: "Comparison of the Brite, Culturette 10-minute Group A Strep ID and Directigen Group A Test Kits for Detection of Group A beta-hemolytic Streptococcus (TABS) from Throat Swabs." 1987. SCACM
  - 4. Young, C., and Gilsdorf, J.R., "Recovery of Hemophilus influenza from Blood Cultures Obscured by Coagulase Negative Staphylococcus." 1987. SCACM.

Kenneth D. McClatchey, M.D., D.D.S.  
Director, Clinical Microbiology Laboratory

**NEUROPATHOLOGY SERVICE**  
**DEPARTMENT OF PATHOLOGY**  
**ANNUAL REPORT**  
**1 JULY 1986 - 30 JUNE 1987**

The Laboratory of Neuropathology continues to have three interrelated functions: Laboratory diagnostic service, teaching, and research in experimental animal work and human disease.

Full time faculty continuing this year were Constance J. D'Amato, B.S., Assistant Professor, and Paul E. McKeever, M.D., Ph.D., Associate Professor. Dr. Samuel P. Hicks was on Active Emeritus status. Dr. Mila Blaivas spent 40% of her time in Neuropathology teaching and service programs.

**CLINICAL ACTIVITIES:**

Clinical services are the examination and diagnosis of disease conditions, and their correlation with the clinical findings, in nervous system tissues, muscle, and other tissues and body components.

1. Four hundred and fifty-two Neurosurgical cases were examined this year from Main, Mott and outside hospitals in consultation. Fifty-two cases were referrals from other institutions, a portion of which were part of the NIH funded study of BUDR radio-sensitization of gliomas 1R01CA33768-01A2.
2. Three hundred and ten brains were examined from 81% of all autopsies at this Medical Center, and fourteen from other institutions and hospitals. The latter represented a 156% increase over the previous year.
3. Nerve and muscle pathology service has increased over the year. There were 132 muscle biopsies, nearly all with histochemistry, some with electron microscopy. There were 52 peripheral nerve biopsies. This represents a 131% increase in muscle and 173% increase in nerve biopsies over the previous year. Teased fiber preparations and electron microscopy was performed on many nerve biopsies. Forty-one cases were referrals from other institutions.

Dr. Mila Blaivas, who was elected a full member of the American Association of Neuropathologists this year, provides quality diagnoses and consultations. The combination of nerve teasing, muscle histochemistry, electron microscopy and morphometry make the service regionally competitive for diagnostic consultation.

4. Ultrastructural neuropathology examined, interpreted and reported 66 cases in semithin section and electron micrographs of 39 cases.

### **TEACHING ACTIVITIES:**

1. Medical Students: This year the faculty taught the regular Neuropathology sequence to our medical students (20 hours) in the Neural and Behavioral Sciences 600 curriculum. NBS Neuropathology consists of microscopic sections, handouts, posters, lectures and laboratories for all second year medical students. In response to her substantial contributions to NBS, Ms. Constance J. D'Amato has been appointed Director of the NBS program.
2. House Officers, Graduate students, Postgraduate and other students and faculty: All of the service activities are integrated appropriately into teaching. Specific exercises include a conference every other month where microscopic neuropathology is reviewed; twice monthly conferences where all biopsies are presented and interpreted; a brain cutting conference where all abnormal brains are examined with all clinicians invited weekly; two monthly nerve and muscle biopsy conferences; individual instruction on autopsies and biopsy material; Neuropathology 858, a 16-18 hour laboratory-lecture course; and elective periods for Neurology House Officers. Continuing Medical Education accreditation has been received for the biopsy conference.

### **RESEARCH ACTIVITIES:**

1. The research of Dr. Hicks and Ms. D'Amato (see their respective personal reports for details) concerns: 1) the study of the basal lamina and fetus cephalic neural tube and their relation to malformation and recovery of the fetus in genetic and radiation induced injury; 2) development of the capacity of astrocytes to undergo gliosis and the role of astrocytes in development of neurons; and 3) a collaborative biochemical study of the autopsy brains of patients with Alzheimer's disease and other dementias with Drs. Anne Young and John Penney, in which Dr. Hicks and Ms. D'Amato examine the brains morphologically.
2. Dr. McKeever is interested in determining the extent and cause of differences in antigens in brain tumor tissue versus cells in culture. These differences may result from a separate population of cells within brain tumors or from instability of antigen expression by neoplastic cells
3. The Brain Tumor Study Group, faculty and staff with clinical research interests in brain tumors, met and generated a number of project considerations from Neurosurgery, Nuclear Medicine, Neuropathology, Neurology and Neuroradiology collaborations.
4. Collaboration with Neurology, Epidemiology Departments, and Henry Ford Hospital proposes to establish a registry for dementias and Alzheimer's disease.
5. Collaboration with the Upjohn Center and Unit for Laboratory Animal Medicine proposes to measure BUdR labeling indices in brain tumor specimens.

Paul E. McKeever, M.D., Ph.D.  
Director  
Neuropathology Service

## **PATHOLOGY DATA SYSTEMS**

### **DEPARTMENT OF PATHOLOGY ANNUAL REPORT**

**1 JULY 1986 - 30 JUNE 1987**

- I. Search for a Laboratory Information System to replace the current Medlab system concluded by the successful negotiation and execution of a contract with the Cerner Corporation.
  - A. Initiation of training and data base development for the new Cerner PathNet system.
  - B. Cutover to the new system is anticipated during November, 1987.
- II. Active participation by PDS personnel in the growth and development of the Local Area Network (LAN) in the hospital, culminating in an extremely heavy volume of patient inquiries entered directly into the laboratory data base via this route.
  - A. Current mean weekday volume of patient inquiries is estimated to exceed 3,000.
  - B. Easy and rapid access to laboratory results by physician end-users has greatly enhanced the efficiency of the patient care process in the hospital.
- III. Changes in the hardcopy laboratory result reporting options.
  - A. Elimination of the morning edition of the interim report (ward summary report).
  - B. Conversion of the current green laboratory reports for ambulatory care patients to a throwaway physician copy (gray report) with the permanent report sent directly to the Medical Information Department.
- IV. Rapid expansion of the use of All-in-One office systems, particularly electronic mail, running on the VAX 785.
  - A. Electronic mail has been accepted as an important communication tool and means for expediting the management process within the Department.
  - B. E-mail is also being used to distribute "copies" of the Pathology Electronic News (PEN).
- V. Increasing use of Ingres, a data base manager running in the VMS environment for ad hoc reporting and the analysis of resource utilization within the Department.
  - A. Blood utilization by DRG now being analyzed.
  - B. "Overdue" (turnaround time reports) are also being generated using Ingres on a regular basis for Hematology and Immunology.

- VI. Computer support of the Departmental research effort.
  - A. Statistical and graphics package (RS/1) running on the VAX.
- VII. Microcomputer hardware and software support.
- VIII. Strategic planning for the word processing and other office support functions within the department.
- IX. Added services to M-Care satellite sites and M-Labs clients with installation of remote terminals and printers for expediting laboratory reports.

Bruce A. Friedman, M.D.  
Director  
Pathology Data Systems

## **PEDIATRIC PATHOLOGY SERVICE**

### **DEPARTMENT OF PATHOLOGY ANNUAL REPORT 1 JULY 1986 - 30 JUNE 1987**

The activities of this service were carried out as in the past, primarily by Kathleen P. Heidelberger, M.D., and Mason Barr Jr., M.D.

Necropsy figures are as follows:

Pediatric deaths (22 weeks gestation or any liveborn, to 18 years)	= 208
Necropsies on above	= 138
Necropsy %	= 66.3

Of the 138 posts, 65 patients' bodies were released to Anatomy for study and disposal. These posts were performed by Mason Barr Jr., M.D. Seventy-three patients were posted by the residents and senior staff in pathology, primarily Dr. Heidelberger.

A total of 447 necropsies for UMMC hospitals patients were performed: 65 by Dr. Barr in the Teratology Unit and 382 by the Pathology Department Staff. Thus, 31% of the total posts at the UMMC were pediatric posts.

The Quarterly Pediatric Death List was restructured this year by Dr. Barr to be a better teaching instrument in correlating primary clinical and autopsy diagnoses. The list is distributed to all service chiefs and lists all deaths by service with their appropriate diagnoses.

The total number of pediatric surgical specimens (including placentas) examined is approximately 1,670. This represents an increase of approximately 10% from the previous academic year.

Kathleen P. Heidelberger, M.D.  
Director  
Pediatric Pathology Service

## PHLEBOTOMY SERVICES/CENTRAL DISTRIBUTION

### DEPARTMENT OF PATHOLOGY ANNUAL REPORT

1 JULY 1986 - 30 JUNE 1987

#### I. Phlebotomy Services:

- A. Added phlebotomy services to the Geriatric Inpatient Unit and Kellogg/Turner Hospital on weekends and holidays at no incremental cost.
- B. Added full-service phlebotomy services (6:30 am - 7:00 pm seven days per week) to the Burn Unit Rehabilitation Unit at no incremental cost.
- C. All inpatient Phlebotomy Team members were certified in new methods for cardio-pulmonary resuscitation.
- D. Initiation of a new program to teach the anatomy of limb vessels to Phlebotomy Team members with successful course completion by all current Team members.
- E. Initiation of a phlebotomy services training program for personnel at M-Care sites.

#### II. Central Distribution:

- A. Staff has been decreased in Central Distribution by 5.5 FTE's by a process of attrition, despite an increase in specimen volume of about 55%.
- B. Initiation of specimen processing and distribution activities for M-Lab clients and M-Care satellite sites.
- C. Initiation of a program for distribution of supplies to M-Lab clients and M-Care satellite sites and microbiology supplies to inpatient units and clinics.
- D. Implementation of new policies and procedures for handling send-out specimens.
  - 1. Experienced a 30% increase in the volume of such specimens.
- E. Assumed responsibility for receiving, processing, and distributing urine and anatomic pathology specimens.

Bruce A. Friedman, M.D.  
Director  
Phlebotomy Services and Central  
Distribution

## RESIDENT TRAINING PROGRAM

### DEPARTMENT OF PATHOLOGY ANNUAL REPORT 1 JULY 1986 - 30 JUNE 1987

The Residency Training Program, in the last year, recruited seven excellent candidates:

1. Michael J. Caplan, M.D., University of Connecticut, School of Medicine, Farmington, Connecticut.
2. Elizabeth Ann Del Buono, M.D., University of Kentucky, School of Medicine, Lexington, Kentucky.
3. Cynthia Anne Hegg, M.D., University of Missouri, School of Medicine, Kansas City, Missouri.
4. Steven Howard Mandell, M.D., University of Michigan, School of Medicine, Ann Arbor, Michigan.
5. Paul Frank Mazzara, M.D., Wayne State University, School of Medicine, Detroit, Michigan.
6. Randall J. Shannon, M.D., Indiana University, School of Medicine, Indianapolis, Indiana.
7. Denise Ellul Sulavik, M.D., University of Michigan, School of Medicine, Ann Arbor, Michigan.

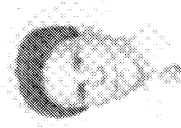
The Residency Training Program has recently been reviewed and certain modifications recommended. The training program and suggestions for modification were widely discussed at recent departmental meetings. Changes have been implemented and subsequent proposals are under consideration. Briefly, there will be more clear-cut responsibilities for residents in the Anatomical and Clinical Pathology areas. Service rotations in the Clinical Pathology area are organized into larger blocks of time. A rotation in coagulation has been established and a rotation in cytogenetics will begin this coming winter.

The Anatomic Pathology and Clinical Pathology core lectures continue as do special seminars and Grand Rounds.

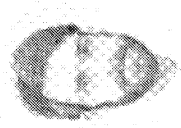
The joint program with Beaumont Hospital remains unchanged, although there will be fewer residents available to participate in the exchange program.

Andrew Flint, M.D.  
Coordinator  
Residency Training Program





Robert A. Weber, M.D.  
House Officer IV  
(4th Year)



Robertson D. Davenport, M.D.  
Chief Resident  
House Officer IV  
(4th Year)

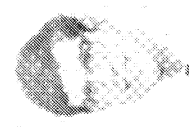
THE UNIVERSITY OF MICHIGAN MEDICAL SCHOOL  
DEPARTMENT OF PATHOLOGY  
HOUSE OFFICERS  
1987 - 1988



Anne C. McQuillan, M.D.  
Assistant Chief Resident  
House Officer III  
(3rd Year)



Charles W. Ross, M.D.  
House Officer V  
(3rd Year)



David E. O'Connell, M.D.  
House Officer IV  
(3rd Year)



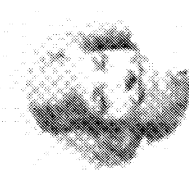
David M. Grossman, M.D.  
House Officer IV  
(2nd Year)



Lynne V. Abruzzo, Ph.D., M.D.  
House Officer II  
(2nd Year)



David M. Graham, M.D.  
House Officer II  
(2nd Year)



Cynthia A. Hagg, M.D.  
House Officer II  
(1st Year)



Tim Paul, M.D.  
House Officer I  
(3rd Year)



Elizabeth A. Del Buono, M.D.  
House Officer I  
(1st Year)



Steven F. Mandel, M.D.  
House Officer I  
(1st Year)



Paul F. Mazzara, M.D.  
House Officer I  
(1st Year)



Randall J. Shannon, M.D.  
House Officer I  
(1st Year)



Denise E. Sulavik, M.D.  
House Officer I  
(1st Year)

## **SURGICAL PATHOLOGY SERVICE**

### **DEPARTMENT OF PATHOLOGY ANNUAL REPORT**

**1 JULY 1986 - 30 JUNE 1987**

During the 1986-1987 fiscal year, the activities of the Surgical Pathology Service have continued to grow in volume and to increase in complexity. The total number of surgical specimens accessioned in University Hospital increased almost 15% over the prior year's total; and the increment in number of specimens referred in consultation by pathologists in other institutions showed a parallel increase. This increase in volume of specimens accessioned reflects not only the high volume of patient care activity in our hospital, but also the continuous growth in activities, such as organ transplantation, which require the close collaboration between Medical and Surgical units and the Surgical Pathology service in monitoring patients by means of serial biopsy.

In parallel with the increase in diagnostic case load, there has been an increasing need for exchange of information with clinical colleagues. In part this demand is being met by encouraging the Medical Staff to access our reports through the laboratory computer system. In addition, however, the amount of needed direct interaction with clinical colleagues seems to be increasing. Consultation with attending physicians and house staff from many services is a significant part of each day's activities for our surgical pathologists. In recognition of this need we have established a group viewing facility within the area.

During this fiscal year, the diagnostic and consultative activities have grown to such an extent that it has become necessary to add another diagnostic team to the existing ones. Henceforth, in addition to the existing services (operating room/frozen section, biopsy, pediatric, dermatologic) a separate service will handle the surgical specimens accompanying the patients referred to University Hospital from elsewhere.

Gerald D. Abrams, M.D.  
Director  
Surgical Pathology Service

**VETERANS ADMINISTRATION MEDICAL CENTER  
LABORATORY SERVICE**

**DEPARTMENT OF PATHOLOGY - UNIVERSITY OF MICHIGAN  
ANNUAL REPORT  
1 JULY 1986 - 30 JUNE 1987**

**INTRODUCTION:**

The VA Medical Center Laboratory Service maintains a strong and close relationship with the University of Michigan Medical Center Department of Pathology. Pathology residents receive part of their training in surgical and autopsy pathology at the VA. Electives in electron microscopy are available at the VA. There are frequent mutual consultation activities and educational seminars are attended by both staffs. The VA staff members participate in teaching of medical students and residents. Research activities are frequently cooperative in nature.

**ANATOMIC PATHOLOGY:**

- A. Surgical Pathology: 4,231 cases have been completed and nearly all were processed by a resident with close supervision of a staff pathologist. The resident acts as coordinator of the surgical pathology section and is particularly active in discussing cases with clinicians. The teaching activities are intense and involve all the staff. Interesting surgical cases are reviewed in a weekly conference with all staff in attendance.
- B. Autopsy Pathology: 137 autopsies were done during this time, the majority dissected by a resident and completed microscopically by the resident with staff supervision. The autopsy rate of nearly 50% speaks to the clinical interest in the autopsy. A monthly autopsy conference reviews in depth a selection of cases with the internal medicine department.
- C. Cytology: 2,453 cases were reported during this time. Although the resident does not directly serve in this section, this material is available to correlate with surgical and autopsy cases and is used for resident teaching on an ad hoc basis.
- D. Electron Microscopy: An elective rotation is available in electron microscopy taught by Dr. Beals. In addition, the resident is instructed in the use of electron microscopy along with surgical pathology, autopsy and cytology.

**CLINICAL PATHOLOGY:**

A wide range of clinical pathology procedures is available in this laboratory. Over 1.5 million unweighted tests were done during this period in Chemistry, Microbiology, Hematology and Blood Bank. Although resident are not directly involved in these areas of the laboratory, they are free to observe procedures, obtain and use data and participate in activities that may relate to their official rotation schedules. Dr. Chensue has assumed the duties of clinical pathologist with particular emphasis in hematology and chemistry.

**EDUCATION AND TEACHING:**

All staff members devote a considerable amount of time in "on-the-job" teaching of residents. In addition, Dr. Beals has conducted bi-weekly conferences in electron microscopy for residents, Dr. Weatherbee gave lectures to medical students, Dr. Burkholder taught one of the dental student laboratories.

**RESEARCH:**

Dr. Beals continues as a member of the VA Research and Development Committee. Dr. Weatherbee serves on the Human Studies Committee. Dr. Beals continues his sponsored research and Dr. Chensue has received funding for his research from both the RAG system and VA Merit Review. All staff members have participated with other investigators in a number of studies usually clinically oriented.

**SUMMARY:**

The pathology staff at the VA are highly committed to the practice of high quality medicine in this Medical Center. Close cooperation with the University of Michigan is considered necessary to accomplish this goal. Every effort is made to improve and strengthen the professional interchange between the two institutions. Our aim is to assure that there are mutual benefits in this interaction.

Lee Weatherbee, M.D.  
Chief, Laboratory Service  
Ann Arbor VA Medical Center