

Report

THE UNIVERSITY OF MICHIGAN

Department of Pathology

ANNUAL REPORT



July 1, 1980 - June 30, 1981

UNIVERSITY OF MICHIGAN
Department of Pathology

ANNUAL REPORT

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

1980 - 1981

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List of Faculty

LIST OF FACULTY

<u>Name</u>	<u>Rank</u>	<u>Institutional Affiliation</u>
Abell, Murray R.	Emeritus Professor	The University of Michigan
Abrams, Gerald D.	Professor	The University of Michigan
Anver, Miriam*	Assistant Professor	The University of Michigan
Appelman, Henry D.	Professor	The University of Michigan
Barnes, Barbara A.	Assistant Professor	The University of Michigan
Beals, Theodore F.	Assistant Professor	Veterans Administration Hospital
Bloch, Daniel M.	Assistant Professor	The University of Michigan
Bryant, Henry C.	Lecturer	St. Joseph Mercy Hospital
Capps, Rodney D.	Assistant Professor	The University of Michigan
Cossman, Jeffrey	Instructor	National Institutes of Health
Courtney, Richard M.**	Assistant Professor	The University of Michigan
D'Amato, Constance J.	Assistant Professor	The University of Michigan
Dorovini-Zis, Katerina	Instructor	The University of Michigan
England, Barry G.	Assistant Professor	The University of Michigan
Fantone, Joseph C.	Instructor	The University of Michigan
Fine, Gerald***	Professor	Henry Ford Hospital
French, A. James	Professor	The University of Michigan
Friedman, Bruce A.	Professor	The University of Michigan
Gikas, Paul W.	Professor	The University of Michigan
Gluck, Sandra	Instructor	The University of Michigan
Goldman, Robert T.***	Assistant Professor	Wayne County General Hospital
Gronvall, John A.****	Professor	The University of Michigan
Hanks, Carl T.**	Associate Professor	The University of Michigan

<u>Name</u>	<u>Rank</u>	<u>Institutional Affiliation</u>
Hart, William R.	Professor	The University of Michigan
Hartsuff, Florence E.	Assistant 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	The University of Michigan
Hicks, Samuel P.	Professor	The University of Michigan
Hinerman, Dorin L.	Professor	The University of Michigan
Holtz, Fred	Lecturer	St. Joseph Mercy Hospital
Hulett, Ralph M. W.	Lecturer	St. Joseph Mercy Hospital
Johnson, Kent J.	Assistant Professor	The University of Michigan
Judd, W. John	Assistant Professor	The University of Michigan
Karsch, Fred J.	Assistant Professor	The University of Michigan
Keren, David F.	Assistant Professor	The University of Michigan
Keyes, P. Landis	Associate Professor	The University of Michigan
Kumar, Neelam B.	Instructor	The University of Michigan
Kunkel, Steven L.	Instructor	The University of Michigan
Landefeld, Thomas D.	Research Associate	The University of Michigan
Lovett, Edmund J.	Assistant Professor	The University of Michigan
McClatchey, Kenneth D.	Assistant Professor	The University of Michigan
Midgley, A. Rees	Professor	The University of Michigan
Naylor, Bernard	Professor	The University of Michigan
Oberman, Harold A.	Professor	The University of Michigan
Phan, Sem H.	Assistant Professor	The University of Michigan
Pierson, Carl L.	Instructor	The University of Michigan
Rao, K. Murali Krishna	Research Investigator	The University of Michigan

<u>Name</u>	<u>Rank</u>	<u>Institutional Affiliation</u>
Rebuck, John W.****	Professor	Henry Ford Hospital
Regezi, Joseph A.**	Assistant Professor	The University of Michigan
Richards, JoAnne S.	Associate Professor	The University of Michigan
Rowe, Nathaniel H.**	Professor	The University of Michigan
Saeed, Sheikh M.***	Associate Professor	Henry Ford Hospital
Schmidt, Robert W.	Professor	Wayne County General Hospital
Schnitzer, Bertram	Professor	The University of Michigan
Silverman, Eugene M.	Associate Professor	Wayne County General Hospital
Simmons, Jerry L.	Assistant Professor	Veterans Administration Hospital
Solomon, Alvin R.	Lecturer	The University of Michigan
Till, Gerd O.	Associate Professor	The University of Michigan
Varani, James	Assistant Professor	The University of Michigan
Vasiliades, John	Assistant Professor	The University of Michigan
Ward, Peter A.	Professor and Chairman	The University of Michigan
Weatherbee, Lee	Associate Professor	Veterans Administration Hospital
Wolter, J. Reimer	Professor*****	The University of Michigan

- * Joint Appointment, Unit for Laboratory Animal Medicine
- ** Joint Appointment, Dental School
- *** Clinical Appointment
- **** Joint Appointment, Medical School
- ***** Joint Appointment, Department of Ophthalmology

Overview

Overview of the
Department of Pathology
1980-1981

Over the past twelve months evidence of transition in the Department has become apparent. There has been an infusion of approximately twelve new faculty members into the Department. These individuals constitute not only part of the new research program in Immunopathology, they also represent replacements for several slots that have been vacated over the past three years. For instance, two replacements for vacated positions in Surgical Pathology have been filled, as has a replacement for the Ph.D. slot in Clinical Chemistry. If one takes into account faculty resignations over the past three years, slot transfers and projected retirements within the next three years, the Department has barely maintained a balance, with an accumulated loss of eleven faculty members and a gain of twelve new members.

The research program in Immunopathology is vigorous and rapidly expanding. Eight faculty members are primarily and directly involved in the new research program (Drs. Ward, Fantone, Johnson, Kunkel, Lovett, Phan, Till and Varani). It should be noted that five of these individuals are also trained as pathologists. In many cases the thrust of their research efforts reflects an orientation towards mechanisms of disease processes. The general research topics include: the inflammatory process and its regulation, complement biology and biochemistry, prostaglandins as mediators and regulators of the inflammatory process, mechanisms of granuloma formation, role of the immune system in regulation of connective tissue synthesis, cell biology of malignant cells, regulation of the immune response, and chemotaxis.

The research programs are housed in approximately 8,000 sq. ft. of laboratory space, the renovation of which was completed in the Winter of 1980-81, probably a record since construction activities did not get underway until September, 1980. The renovations and the purchase of key items of equipment were made possible by the Development Funds generated over the years by the MSP of the Department. This is a key resource; without this, the recruitment of the new Chairman and new faculty, the construction and renovation, and the continued development and expansion of the new research program would have been impossible. Obviously, tribute is due Dr. French, the Department, and the entire institution for making these events possible through the development nearly five years ago of the MSP.

Individuals involved in the new research activities are not isolated within their research cubicles. There is strong encouragement for them to be come involved, where possible, in relevant diagnostic activities. For instance, Dr. Johnson will share the Renal Diagnostic Service with Dr. Gikas; Dr. Till will become involved in the activities of the Clinical Immunology Laboratory; Dr. Fantone is involved in Surgical Pathology activities related to lung biopsy material. These links are important in order to take advantage of the special expertise of these individuals, but, also, to assure that the research programs do not develop in isolation relative to the rest of the Department. Another central reason for this linkage is to facilitate the development of postdoctoral

programs within the Department and to attract individuals into the Residency Training Program who will then track into experimental pathology, and, thence, into careers in academic pathology.

This latter goal is now greatly facilitated by the acquisition of funding for a Training Program in Lung Immunopathology. This grant, funded by the National Heart, Lung and Blood Institute, provides us with three postdoctoral slots as of July 1, 1981, with expansion to six slots the following year, and then a plateau of nine slots in years 03 through 05. Thus, we now have the funding to get this program underway. As of July 1, 1981, we will have one M.D. pathologist and two Ph.D. immunologists in the Training Program.

In relation to the development of a strong research program in Immunopathology, significant external funding has now been obtained, as shown in Appendix A. Considering that this has all occurred in a 12 month period, the record speaks for itself. It should be pointed out that there are several other important research programs in the Department of Pathology with the benefit of external funding, as outlined in Appendix A.

The Department is in the process of developing a Fluorescent Activated Cell Sorter (FACS) Facility. This activity will have a major impact, not only in research activities within the Department, but also on research programs in Immunology in other Departments. In addition, the FACS Facility should also develop into an important service activity for the Department.

Related to the development of the FACS Facility, the Department is currently negotiating with investigators who are experts in the area of monoclonal antibodies and hybridoma techniques. The outcome of these negotiations cannot be predicted, but the presence of these individuals would have a large impact not only on the FACS Facility but also on Immunology Research Programs within the Department of Pathology as well as in many other Departments.

The comments made above are not intended to detract from other ongoing research programs within the Department. These programs are also very active, productive and important constituents of the research environment in Pathology. Details of individual programs are given in the individual reports.

The long association of Reproductive Endocrinology (REP) with the Department of Pathology has changed as of July 1, 1981, when Dr. Midgley and his research group become officially integrated into the Center for Human Growth and Development. The University has wisely decided to invest substantial activities in order to permit the consolidation of a group of individuals with related scientific interests. The Institute will be headed by Dr. Midgley as its Director.

While major changes of the types described above are occurring within the Department, many other changes have also occurred. There has been the development of a strong divisional structure within the Department with the creation of a Division of Anatomic (Surgical) Pathology and a Division of Clinical Laboratories. Drs. Appelman and Oberman are the respective Directors and have been given considerable latitude and strong support in the running of

these Divisions. In this restructuring, the intent has been to develop a clear structure that naturally follows the daily service activities and, equally important, to develop an accountability within the system. In related moves, Dr. Gikas has been officially placed in charge of the Diagnostic Electron Microscopic Facility. In addition, he plays an important new role as Co-ordinator of the Residency Training Program. As a result, there has been a much smoother and better organized process for resident recruitment. At the same time, Dr. Gikas oversees the evaluation process, both by residents and by faculty, of the Training Program. As there has been a shift towards more research activities within the Department, there has been a noticeable impact on the types of applicants to the Residency Training Program. We are now seeing medical students with interests in experimental and academic pathology. Although the number of applicants to the Residency Program with a desire to pursue academic careers will always be limited, the Department should experience a steady increase in the numbers of applicants from individuals of this type. Already, modifications are being made in the Residency Training Program to facilitate these individuals.

As we are engaged in all of these activities, we are also very much involved in the time-consuming plan for the new Replacement Hospital. The Replacement Hospital will provide sorely needed space for expansion of the Clinical Laboratories.

In summary, the transition over the past year in the Department has been relatively smooth. Events are moving at an increasing pace. It seems likely the Department will flourish in the new environment. Perhaps most exciting are the opportunities that will become available to the new, young faculty members, including those in the diagnostic areas. In addition, the development of the postdoctoral program in the area of Immunopathology and the linkage of this activity, at least in part, to the Residency Training Program will provide the type of cross-over and excitement that the Department has not previously known. The success of all of these new ventures is due to the underlying strength of the Department of Pathology, the strong MSP in Pathology, and the commitment to the University to support all of these efforts and programs.

A P P E N D I X A

I. N E W I M M U N O P A T H O L O G Y P R O G R A M S

<u>Account Number</u>	<u>Project Director</u>	<u>Title of Project</u>	<u>Sponsor</u>	<u>Direct Cost (per year)</u>	<u>Total Direct Costs (all yrs.)</u>
018282	Ward, P.A.	Immunopathology of Complement Mediated Tumor Cell Chemotaxis	NIH 7R01CA29551-01	\$ 48,213	\$198,237 3 yrs.
018282	Ward, P.A.	Immunopathology of Complement Mediated Tumor Cell Chemotaxis	NIH 5R01CA29551-02	\$ 73,011	
018485	Ward, P.A.	Mechanisms of Penetration of RBC by Protozoa	NIH 7R01AI17691-01	\$ 44,984	\$ 44,984 Final Year
018487	Ward, P.A.	Leukocyte Chemotaxis	NIH 7R01AI17690-01	\$ 67,242	\$ 67,242 Renewed
018498	Ward, P.A.	Pathogenesis of Inflammatory Lung Disease	NIH HL23192-02	\$110,633	\$110,633 Renewed
018846	Ward, P.A.	Pathogenesis of Inflammatory Lung Disease	NIH HL23192-03	\$141,940	\$141,940
018832	Ward, P.A.	Thermal Injury, Complement and Leukocyte Dysfunction	NIH IR01GM28499-01	\$ 68,910	\$353,465 5 yrs.
341684	Ward, P.A.	Regulation of Complement-Derived Leukotactic Factors	CFF G111A	\$ 16,666	\$ 16,666 Final Year
	Phan, S.H.		VA Res. Associate	\$ 50,000	\$150,000 3 yrs.
	Phan, S.H.		VA Merit Review Fund	\$ 12,500	\$ 40,000 3 yrs.

<u>Account Number</u>	<u>Project Director</u>	<u>Title of Project</u>	<u>Sponsor</u>	<u>Direct Cost (per year)</u>	<u>Total Direct Costs (all yrs.)</u>
012821	Varani, J.	Tumor Cell with Varying Degrees of Malignancy	NIH 7R01CA29550-01	\$ 21,722	\$ 126,147 3 yrs.
018281	Varani, J.	Tumor Cell With Varying Degrees of Malignancy	NIH 5R01CA29550-02	\$ 50,717	
387688	KunkeI, S.L.		Faculty Research Rackham	\$ 10,000	\$ 10,000 1 yr.
018487	Ward, P.A.	Leukocyte Chemotaxis	NIH AICA17334-01	\$ 64,753	\$ 323,765 5 yrs.
019027	Ward, P.A.	Immune Complex Injury of Lung and Oxygen Metabolites	NIH 1R01HL26809-01A	\$ 77,100	\$ 245,309 3 yrs.
019022	Fantone, J.C.	Lung Immunopathology	NIH HL07517-01	\$ 61,884	\$ 767,888 5 yrs.
019026	Johnson, K.J.	Clinical Investigator Award	NIH HL00905-01	\$ 39,500	\$ 199,500 5 yrs.
		Clinical Investigator Award	NIH 1K08HL00889-01	\$ 39,500	\$ 199,500 5 yrs.
			TOTALS:	\$999,275	\$2,995,276
<u>II. O N G O I N G I M M U N O P A T H O L O G Y P R O G R A M S</u>					
018688	Keren, D.F.	An Investigation of the Memory Response of the Local Immune System to Shigella Antigens	Army		\$ 65,342

<u>Account Number</u>	<u>Project Director</u>	<u>Title of Project</u>	<u>Sponsor</u>	<u>Direct Cost (per year)</u>
341667	Keren, D.F.	Immunopathogenesis of Inflammatory Bowel Disease	Natl. Fdn. for Ileitis & Colitis	\$ 59,201
TOTAL:				<u>\$124,543</u>
<u>III. OTHER RESEARCH PROGRAMS</u>				
387626	Brown, S.	Actin-Membrane Interaction	Rackham	\$ 10,000
017557	Hicks, S.P.	Development of the Corticospinal System	PHS-NIH	\$ 13,211
341541	McClatchey, K.D.	Study of Oral Wound Healing in Oral Cleft	March of Dimes Birth Defects Fdn.	\$ 2,000
362071	McClatchey, K.D.	Jojoba Oil		\$ 35,000*
017561	Friedman, B.A.	A Study of National Trends in Transfusion Practices	PHS-NIH	\$ 50,340
015151	French, A.J.	Intergovernmental Personnel Act	PHS-NIH	\$ 86,985
016021	French, A.J.	Hormone Action in Ovarian Cell Differentiation	PHS-NIH	\$ 38,498
300973	England, B.A.	Ligand Training & Research		\$ 6,800*
411550	England, B.A.	New England Nuclear Corp.		\$ 15,740*
018123	Rao, K.M.	Molecular Mechanism of Immunological Senescence	Biomedical Research	\$ 9,600

IV. REPRODUCTIVE ENDOCRINOLOGY PROGRAM

<u>Account Number</u>	<u>Project Director</u>	<u>Title of Project</u>	<u>Sponsor</u>	<u>Direct Costs (per year)</u>
014069	Midgley, A.R.	Training Program in Reproductive Endocrinology	PHS-NIH	\$ 76,312
016595	Landefeld, T.D.	Gonadotropin Biosynthesis	PHS-NIH	\$ 76,116
018644	Midgley, A.R.	Training Program in Reproductive Endocrinology	PHS-NIH	\$ 75,082
017179	Richards, J.S.	Ovarian Follicular Development and Function	PHS-NIH	\$ 79,837
016059	Keyes, P.L.	Regulation of Ovarian Function During Pregnancy	PHS-NIH	\$ 57,336
017992	Keyes, P.L.	Estradiol Action in the Rabbit Corpus Luteum	PHS-NIH	\$ 60,778
341477	Midgley, A.R.	Endocrine Regulation of Fertility	Ford Fdn.	\$ 92,000
017819	Midgley, A.R.	Gonadotropins in Fertility Regulation	PHS-NIH	\$140,624
			TOTAL:	<u>\$926,259</u>
*Approximate amounts				\$2,050,077
GRAND TOTAL OF CURRENT YEAR SUPPORT				

Faculty Reports

REPORT OF ACTIVITIES
1980 - 1981

Gerald D. Abrams, M.D.

I. Diagnostic Service Activities

August, 1980: Necropsy Service
February, 1981: Surgical Pathology Service
March, 1981: Surgical Pathology Service
April, 1981: Surgical Pathology Service
June, 1981: Necropsy Service

II. Teaching Activities

- A. Freshman Medical Class - 20 contact hours, lectures,
on General Pathology in I.C.S. 500
- B. Sophomore Medical Class - 28 contact hours
- 2 hours - ICS 600 Immunopathology Sequence
- 2 hours - Path 600 Lecture Series
- 24 hours - Path 600 Laboratory
- C. Senior Medical Class - coordinator/mentor for groups of M4 clerks
- D. Inteflex Curriculum
- 15 hours - lectures in Anatomy-Pathology 506 (for I-3)
- 3 hours - lectures in Human Illness (for I-4)
- E. Graduate School
- Pathology 859 (solo) 45 hours - Lecture
- Pathology 860 (solo) 30 hours - Laboratory
- Member of several doctoral dissertation committees
- F. Miscellaneous
- 4 hours - Orientation, Minority Students
- Senior year counselor - six students
- House Officer training - Pathology - 5 months
- Clinical conferences (see below)

III. Research Activities

- A. Projects
- Factors influencing the size of myocardial infarcts, survival
of ischemic myocardium, and the measurement thereof.
Collaborative projects with Dr. B. Lucchesi et al.
- Morphologic aspects of microecological perturbations in the
gastrointestinal tract. Collaborative project with
Dr. R. Fekety et al.
- Analysis and design for interactive instructional system in
Pathology and Histology. Collaborative project with
Drs. R. Kahn and J. Calhoun.
- Evaluation of cold-adapted live influenza vaccines.
Collaborative project with Dr. H. Maasaab et al.
- Miscellaneous collaborative efforts
- Pharmacogenetic factors in hepatotoxicity (W. Weber, V. Zannoni)
- Age-dependent polioencephalitis of mice (W. Murphy)

B. Grant Support

- RR00200-17 NIH, Division of Research Resources
A University Resource in Laboratory Animal Medicine
Bennett J. Cohen, P.I. (GDA 5%) \$180,000.
- R01 HL19782-01 NIH, Heart, Lung, Blood Inst. Pharmacologic
Studies on Ischemic Heart, Benedict R. Lucchesi, P.I.
(GDA 5%) \$15,400 (3 months).
- PHS SC NIH #1 Cold-adapted Live Influenza Virus Vaccine
Candidates. H.F. Maasaab, P.I. (GDA 5%) \$74,000.
- Diabetes Center U of M. Cardiac and Platelet Function in
Experimental Diabetes. Benedict R. Lucchesi, P.I.
(GDA 5%) \$29,000
- U of M CRLT/OER2 Course Analysis and Design for the
Development of an Interactive Instructional System for
Teaching Histology and Pathology (GDA, P.I., with R. Kahn
and J. Calhoun) \$5,000.

C. Publications

- Abrams, G.D., Allo, M., Rifkin, G.D., Fekety, R., and Silva, J.:
Mucosal Damage Mediated by Clostridial Toxin in Experimental
Clindamycin-Associated Colitis. Gut 21: 493-499, 1980.
- Lau, S.S., Abrams, G.D., and Zannoni, V.G.: Metabolic Activation
and Detoxification of Bromobenzene Leading to Cytotoxicity.
J Pharm Exp Ther 214: 703-708, 1980.
- Abrams, G.D.: Morphological Aspects of Gastrointestinal Tract
Colonization. In: Les Anaerobies. Microbiologie - Pathologie.
Masson, 1981, pp. 65-75.
- Doepel, F.M., Glorioso, J.C., Newcomer, C.E., Skinner, M., and
Abrams, G.D.: Enzyme-Linked Immunosorbent Assay of Serum Protein
SAA in Rhesus Monkeys with Secondary Amyloidosis. Lab Invest
(in press).
- Romson, J.L., Haack, D.W., Abrams, G.D., and Lucchesi, B.R.:
The Prevention of Occlusive Coronary Artery Thrombosis by
Prostacyclin (PGI₂) Infusion in the Dog. Circulation (in press).
- Abrams, G.D.: The Right to Privacy When Lives are at Stake.
In: "Ethics, Humanism, and Medicine. Alan R. Liss, Inc. (in press).

IV. Administrative Activities

A. Departmental

- Educational Coordinator/Medical Course Director
- Chairman, Departmental Advisory Committee on Appointments,
Promotions, and Titles
- Medical Service Plan Executive Committee

B. Medical School/Hospital

- Basic Science Phase Committee
- Ad hoc Committee to plan "interphase"
- Basic Science Phase Promotion Board
- Clinical Phase Promotion Board
- Financial Aid Committee
- Ad Hoc Committee to Evaluate Medical Illustration Program
- Physical Therapy Program Advisory Committee
- Ad hoc Search Committee for Director, Program in Health
and Human Values

Administrative Activities cont'd

- Health Related Basic Science Liaison Committee
- Medical School Executive Committee

V. National Activities

Secretary-Treasurer, Gastrointestinal Pathology Club (IAP Affiliate)

VI. Miscellaneous Pertinent Information

A. Consultant Positions

- Deputy Medical Examiner, Washtenaw County
- Consultant Physician, V.A. Hospital
- Consultant Pathologist, Unit for Laboratory Animal Medicine

B. Conferences

- Surgery-GI Pathology Conference (monthly)
- Cardiology-Pathology Conference (monthly)
- Comparative Pathology (ULAM) Conference (weekly)
- Medicine-GI Conference (weekly, fill-in for Dr. H.D. Appelman)

C. Invited Lecture

- Seventh Conference on Ethics, Humanism and Medicine
Ann Arbor, March 21, 1981

D. Veterinary Pathology Service - with Miriam Anver D.V.M.

(A diagnostic service utilized by Washtenaw County veterinary practitioners on a fee-for-service basis.)

ANNUAL REPORT FOR THE ACADEMIC YEAR, 1 JULY 1980 - 30 JUNE 1981
Henry D. Appelman, M.D.

I. Diagnostic Service Activities

- A. Surgical Pathology - 7 months
- B. Gastrointestinal and Hepatic Pathology Consultation Service - 11 months
- C. Director, Division of Anatomic Pathology - full time

II. Teaching Activities

A. Medical Students

- 1. Pathology 600 - 5 full class lectures and 2 days devoted to gross gastrointestinal pathology in the laboratory
- 2. Introduction to Clinical Science - 2 sessions with the gastroenterologist on liver disease, 2 hours each
- 3. Senior Medical Student Elective in Pathology - 7 months instruction in surgical pathology
- 4. Inteflex Students - 3 whole class lectures

B. House Officers

- 1. Surgical Pathology Conference - weekly for 1 hour
- 2. Autopsy Service Tutoring - 5 weekends and gross autopsy conference, approximately 5 months, twice a week
- 3. Surgical Pathology Diagnosing Room - 7 months
- 4. Gastrointestinal and Hepatic Pathology Tutoring - full time

C. Medical Gastrointestinal Pathology Conference - weekly 1 1/2 hours

D. Pediatric Gastrointestinal Pathology Conference - monthly, 1 hour

III. Research Activities

A. Publications

- 1. Eckhauser, F., Strodel, W., Appelman, H. D., and Thompson, N. Mesenteric angiopathy and mid-gut carcinoid, accepted for publication in Surgery.
- 2. Lobert, P., and Appelman, H.D. Inflammatory cloacogenic polyps. Accepted for publication, American Journal of Surgical Pathology.

3. Riddell, R. H., Goldman, H. G., Ahren, C., Appelman, H.D., et al. International cooperative study of epithelial dysplasia and ulcerative colitis (abstract). Gastroenterology 80:1181, 1981 (poster session at Annual Meeting of American Gastroenterological Association, New York, May 18, 1981).

B. Grant Support - None

C. Current Projects

1. Clinical-Pathologic and Epidemiologic Study of Barrett's Esophageal Carcinoma and Gastric Cardiac Carcinoma (with Randy Kalish, M.D.).
2. Clinical Pathologic Analysis of Gastrointestinal Lymphomas (with S. Hirsch, H. D. Appelman, B. Schnitzer, and W. Coon).
3. Methotrexate Hepatotoxicity in Psoriatic Patients (with A. Silenieks and T. Nostrandt)
4. Clinical Pathologic Correlations in Acute Infectious Colitis (with N. Kumar and T. Nostrandt)
5. The significance of granulomas in Crohn's disease in relation to site and duration of disease and risk of recurrence (with N. Kumar and J. A. Wilson)
6. Clinical pathologic study, including ultrastructure, of gastrointestinal manifestations of multiple neurofibromatosis (with J. Sheldenbrandt)
7. Ultrastructural study of an adenoma of lung containing both Clara-type cells and type II pneumocytes (with J. Fantone and K. Geisinger)
8. Hyperalimentation in the infantile liver (with K. P. Heidelberger, A. Coran, and J. Wesley)

IV. Departmental and International Service Activities

- A. Chairman, Anatomic Pathology Search Committee, Department of Pathology
- B. Member, Department Medical Service Plan Committee
- C. Member, Executive Committee for Residency Training Program
- D. Member, Medical School Advisory Committee on Appointments, Promotions and Titles (ACAPT)
- E. Member, Directors Advisory Council, University Hospital

V. National Activities

- A. Member, Inflammatory Bowel Disease-Dysplasia Morphology Study Group
- B. Gastrointestinal Pathology Club: President, Past President, and Past and Present Member of the Executive Committee
- C. Reviewer of Papers For Archives of Pathology and Laboratory Medicine and The American Journal of Surgical Pathology
- D. Reviewer of Grant Requests for Veterans Administration System
- E. Invited Lectures and Seminars
 - 1. Lecture in Surgical Pathology of the Upper Gastrointestinal Tract. Am. Registry of Pathology Course, Pathology for Surgeons. Washington, D.C., 28 May 1981.
 - 2. Seminar in Neoplasms of the Intestines. ASCP Course of GI Pathology. Charleston, S.C., 18 June 1981.

Barbara A. Barnes, MT(ASCP)SBB
Assitant Professor, Department of Pathology

Faculty Report for 7/1/80 - 6/30/81

1. Diagnostic Service Activities

Conducted 48 hours of instruction for each new technical employee of the hospital blood bank.

Participated in various committees responsible for communication and technical advice to the hospital blood bank.

Drafted and implemented a schedule of in-service education for all blood bank employees. Prepared and presented some sessions with emphasis on midnight and weekend staff. Attended and reviewed in-service meetings. Developed some computer assisted instruction to supplement these sessions.

2. Teaching Activties

House Officer Program

Lectured as part of the Brief Blood Bank Introductory Lecture Series.

Planned and presented three times, an eight session blood bank laboratory and seminar course for house officers.

Medical Technology Program

Pathology 408, a lecture and laboratory course involving approximately 70 contact hours, taught twice.

Pathology 409, which involves approximately 60 hours of classroom time as well as supervision of clinical experience in the hospital blood bank, was given for four small groups of students. With the advice and consent of Blood Bank Medical Directors, supervisory and administrative technologists, identified staff technologists willing and able to serve as clinical preceptors, provided objectives and discussed their implementation with clinical preceptors.

3. Research Activities

Publications

Oberman, HA, Barnes, BA, Steiner, EA Role of the Major Crossmatch in Testing for Serologic Incompatibility. Accepted for Publication in Transfusion.

4. Departmental and Internal Service Activities

As a member of the Medical Technology Admissions Committee, make and implement policies, interview and evaluate students, make recommendations for acceptance.

5. National Activities

As an inspector for the Inspection and Accreditation Program of the American Association of Blood Banks, conducted inspections at the following:

W.A. Foote Memorial Hospital
Jackson, October 1980

Saginaw Medical Center
Saginaw, January 1981

Gratiot Community Hospital
Alma, March 1981

In cooperation with the Laboratory Training Program, Michigan Department of Public Health, prepared a second workshop package, Transfusion of the Patient who Displays Serologic Incompatibility. This package is now available nationwide from Centers for Disease Control, U.S. Department of Health and Human Services.

6. Other Pertinent Information

At the request of the Laboratory Training Program, Michigan Department of Public Health, developed and presented for a consortium of laboratory supervisors a workshop, Self Improvement of a Small Transfusion Service; Addison, December 10, 1980 and February 4, 1981.

Presented twice, a one day workshop for employees of small hospital transfusion services at Macomb County Community College, October 17 and 18, 1980.

Presented a one day workshop, Transfusion of the Patient Who Displays Serologic Incompatibility as follows:

Michigan Department of Public Health
Lansing, February 25 and 26, 1981.

North Central Michigan College
Petoskey, March 31, 1981.

Bay De Noc Community College
Escanaba, April 2, 1981

Presented a pre conference workshop, Blood Banking in the Small Hospital Setting, Current Topics in Blood Banking, Towsley Center, Ann Arbor, June 3, 1981.

Annual Departmental Report:

Theodore F. Beals, M.D.

1. Examined 2,300 cytology specimens from the V.A.M.C.
Examined 327 specimens from the V.A.M.C. clinical EM Unit.
Examined approximately 300 surgical specimens.
2. Taught Inteflex; Human Illness-Pathology : 33 contact hours.
Gave lecture in General Pathology for M-2 students: Diagnostic Electron Microscopy
Had one M-4 student on Pathology elective in EM Unit.
Gave regular biweekly one hour " Diagnostic EM Case Conferences" for Pathology House Officers, Staff and Medical Students.
3. Publications during the year:
 - a. Good, A.E., Beals, T.F., Simmons, J.L. and Ibrahim, M.A.H. A Subcutaneous Nodule with Whipple's Disease: Key to Early Diagnosis ? Arth Rheumat.23: 856-859,1980.
 - b. Geisinger, K.R., Naylor, B., Beals, T.F. and Novak, P.M. Cytopathology, Including Transmission and Scanning Electron Microscopy of Pleomorphic Liposarcomas in Pleural Fluids. Acta Cytol 124:435-441,1980
 - c. Markel, S.F., Magielski, J.E. and Beals, T.F. Carcinoid Tumor of Larynx. Arch Otolaryngol 106:777-778,1980.
 - d. Schultz, J.S., DeMott-Friberg, R. and Beals, T.F. Immunogenetic Control of the Response of Female Mice to Male Tissue Grafts. Immunogenetics 12:199-205,1981.
 - e. Beals, T.F. Cytology and Electron Microscopy chapter in Diagnostic Electron Microscopy vol 4, edit Trump, B.F. and Jones, R.T., Wiley & Sons, N.Y. (in press)

Research Projects:

funded (Co-Investigator) Tissue Graft Rejection Model in Immunologically Defined Mice. principle investigator J.S.Schultz.

Ongoing project in Small Cell Carcinoma of Lung; light microscopic, ultra-structural and clinical evaluation.

Hair defects associated with neurogenic disorders; coproject with Department of Pediatric Neurology.

Soft agar Cultures of Human Neoplasms; coproject with clinical oncology

Effect of preparation on Vascular Grafts coproject with vascular surgery

Cilia in patients with triad of Asthma, Asprin sensitivity and Nasal polyps; coproject with Department of Allergy.

Renal Cytotoxicity from selected Chemotherapeutic Drugs; coproject with Department of Internal Medicine.

4. Tissue Committee (Chair) V.A.M.C.
 Quality Assurance Committee V.A.M.C.
 Electron Microscope Committee (Chair) VAMC
 Electron Microscope Committee Department of Pathology
 Medical Records Review Committee V.A.M.C.
 Program Committee, Michigan Society of Pathologists
 Veterans Administration ad hoc Electron Microscopy Review Group
 (national group of 6 electron microscopists who advise VA on matters concerning
 electron microscopy and review annually the 46 VA diagnostic EM Units)
 Task Force on EM Time Study ; C.A.P.
5. Seminar: Practical Electron Microscopy in Surgical Pathology; Michigan
 Society of Pathologists.
- Invited Paper: Cytodiagnosis and Electron Microscopy . Annual Meeting of the
 Michigan Electron Microscopy Forum.
- Paper: Small Cell Carcinoma of the Lung: Histologic, Cytologic and Electron
 Microscopic Coorelations with Chemotherapy. Annual meeting Michigan
 Thoracic Society and American College of Chest Physicians.
- Paper: Clinical Relevance of Ultrastructural Diagnosis of Small Cell Carcinoma
 of the Lung. Fifth Diagnostic Electron Microscopy Conference.
- Panel on Common Administrative Problems with Drs P.LeGolvan, B.Uzman, and M.
 Williams; Fifth Diagnostic Electron Microscopy Conference.
- Paper: Ultrastructure of Lung Neoplams. Department of Pathology Research Conference
- Invited Participant: Symposium on Pulmonary Neoplasm: Review of Current
 Status; West Haven CT.

CURRICULUM VITAE

1. Theodore Fairbank Beals
2. Male
3. Born: May 29, 1934; Detroit, Michigan
4. Married: June 13, 1955; Ann Arbor, Michigan
5. Wife: Margaret Catherine Dillinger, R.N.
6. Children: Sandra Kathleen; born April 16, 1956
James Lester Beals; born January 19, 1958
Lynn Elizabeth Beals; born February 28, 1962
John Edward Beals; born March 7, 1963
7. Education:
Rosemead High School, Rosemead, California; 1949-1952
The University of Michigan, College of Literature, Science and the Arts;
1952-1956: B.S. 1956
The University of Michigan, Rackham Graduate School, Department of Botany;
1956-1961: M.S. 1957
The Univeristy of Michigan, Medical School; 1962-1966: M.D. 1966
8. Graduate Training: The University of Michigan Medical Center:
1966-1967 Straight Internship in Pathology (Pardee Fellow)
1967-1971 Residency in Pathology
9. Teaching:
1958-1959 Teaching Fellow, Department of Botany, The University of Michigan
1971-1977 Instructor, Department of Pathology, The University of Michigan
1977- Assistant Professor of Pathology, The University of Michigan
10. Positions:
1957-1958 Research Fellow, The University of Michigan Engineering Research
Institute, Aeroallergen Project.
1959-1962 Research Assistant, The University of Michigan School of Public
Health, Department of Epidemiology, Virology Laboratory
1962-1966 Research Assistant, The University of Michigan Department of
Pathology; Electron Microscopy Laboratory of G.Barry Pierce, M.D.
1971- Assistant Chief of Laboratory Service, Veterans Administration
Medical Center, Ann Arbor, Michigan
1973- Director of the Clinical Electron Microscopy Program, Veterans
Administration Medical Center, Ann Arbor, Michigan
1974- Deputy Medical Examiner, Washtenaw County, Michigan
11. Consulting Positions: none
12. Licensed to practice medicine in the State of Michigan, 1967-
Certified in Anatomic Pathology by the American Board of Pathology, 1971
13. Scientific activities:
The delineation of ultrastructural characteristics of human disease.
The development and utilization of histologic graft/host interactions in
inbred strains of mice to better define the various immunogenetic
parameters. This system uses various tissue grafts to kidney
including neoplastic tissues.
The development of techniques and diagnostic criteria to use both
Transmission and Scanning Electron Micrscopy as an aid in cytopathology
Investigation of the ultrastructural characteristics of pulmonary neoplasms
and the relevance to their biologic behavior and response to therapy
14. Military Service: none

15. Honors and Awards:
 Elected to membership:
 Society of Sigma Xi
 Phi Sigma Society
 Pardee Fellow, Department of Pathology, The University of Michigan; 1966-1967.
 Resident Teaching Award, 1980-81
16. Membership and Offices in Professional Societies:
 Botanical Society of America; 1958-1961
 American Association for the Advancement of Science; 1958-1965, 1978-
 Michigan Electron Microscopy Forum; 1958-
 Founding Member
 President, 1966-1968
 The University of Michigan Science Research Club; 1959-1969
 Electron Microscopy Society of America; 1958-
 International Childbirth Education Association; 1969-
 Co-President, 1974-1976
 Immediate Past Co-President, 1976-1978
 Research Coordinator, 1978-1980
 National Childbirth Trust of Great Britain, Life Member
 Michigan Society of Pathologists; 1971-
 International Society of Psychosomatic Obstetrics and Gynecology; 1972-
 Charter Member
 American Medical Association; 1971-1973
 International Academy of Pathology; 1972-
 American Society of Cytology; 1972-
 Michigan Society of Cytology; 1975-
17. Teaching Activities:
 University of Michigan College of Literature Science and the Arts,
 Teaching Fellow responsible for lecture and labs in introductory
 botany.
 University of Michigan School of Public Health, Departments of Industrial
 Health and Epidemiology
 Lectures on electron microscopy
 University of Michigan Medical School
 Pathology for Dental Students
 Human Illness-Pathology, Inteflex Program
 House Officer Program in Pathology
 Cytotechnology Training Program
 Lectures in Sophmore Pathology
18. Committee and Administrative Services:
 Tissue Committee, Veterans Administration Medical Center, Ann Arbor;
 chair, 1971-
 Transfusion Review Committee, Veterans Administration Medical Center,
 Ann Arbor; 1971-1980
 chair, 1971-1980
 Bicentennial Committee, Veterans Administration Medical Center, Ann
 Arbor; 1976
 Electron Microscopy Committee, Department of Pathology, University of
 Michigan; 1971-
 Departmental Review for Goals and Objectives, subcommittee on Education,
 Department of Pathology, University of Michigan; 1977
 Electron Microscopy Committee, Veterans Administration Medical Center,
 Ann Arbor;
 chair, 1978-
 ad hoc Committee on Membership, American Society of Cytology; 1976-1980
 Program Committee, Michigan Society of Pathologists; 1979-
 Medical Records Review Committee, Veterans Administration Medical Center,
 Ann Arbor; 1980-
 Veterans Administration ad hoc Electron Microscopy Review Group; 1980-
 Quality Assurance Committee, Veterans Administration Medical Center, 1980-

BIBLIOGRAPHY:

a. Publications in Scientific Journals:

1. Wagner, W.H.,JR. and Beals, T.F.: Perennial Ragweeds (Ambrosia) in Michigan with the Description of a New Taxon. *Rhodora* 60:177-204, 1958.
2. Mizutani, H., Beals, T., Hennessy, A.V. and Davenport, F.M.: A Simple Procedure for Purification of Viral Hemmagglutinin. *Virology* 17:210-211,1962.
3. Pierce, G.B.,Jr., and Beals, T.F.: The Ultrastructure of Primordial Germinal Cells of the Fetal Testes and of Embryonal Carcinoma Cells of Mice. *Cancer Res.* 24:1553-1567, 1964.
4. Pierce, G.B., Jr., Midgley, A.R.,Jr. and Beals, T.F.: An Ultrastructural Study of Differentiation and Maturation of Trophoblast of the Monkey: *Lab. Invest.* 13:451-464, 1964.
5. Payne, F.E., Beals, T.F. and Preston, R.E.: Morphology of a Small DNA Virus. *Virology* 23:109-113, 1964.
6. Pierce, G.B.,Jr., Beals, T.F., Ram, J.Sri and Midgley, A.R.,Jr.: Basement Membranes. IV. Epithelial Origin and Immunological Cross Reactions. *Am. J. Path.* 45:929-961, 1964.
7. Beals, T.F., Pierce, G.B.,Jr. and Schroeder, C.F.: The Ultrastructure of Human Testicular Tumors. I. Interstitial Cell Tumors. *J. Urology* 93:64-73,1965.
8. Schultz, J.S., Beals, T.F. and Petraitis, F.P.: Tissue Graft Rejection in Mice. I. Contributions of H-2 and Non-H-2 Genetic Barriers. *Immunogenetics* 3:85-96. 1977.
9. Headington, J.T., Batsakis, J.G., Beals, T.F., Campbell, T.E., Simmons, J.L. and Stone, W.D.: Membranous Basal Cell Adenoma of Parotid Gland, Dermal Cylindromas and Trichoepitheliomas, Comparative Histochemistry and Ultrastructure. *Cancer* 39:2460-2469, 1977.
10. Schultz, J.S., Beals, T.F. and DeMott-Friberg, R.: Tissue Graft Rejection in Mice. II. Graft Survival Across H-2 Regional Barriers. *Immunogenetics* 4:315-325, 1977.
11. Headington, J.T. and Beals, T.F.: Leiomyosarcoma of Skin - Report and a Clinical Appraisal. *J. Cutaneous Path.*, IV, 1977.
12. Kass, L., Leichtman, D.A., Beals, T.F. and Schnitzer, B.: Megakaryocytes in Giant Platelet Syndrome. A Cytochemical and Ultrastructural Study. *Thrombosis*, 3:652-659, 1977.
13. Headington, J.T., Niederhuber, J.E. and Beals, T.F.: Malignant Clear Cell Acrospiroma. *Cancer* 41:641-647, 1978.
14. Schultz, J.S., Beals, T.F. and Demott-Friberg, R.: Tissue Graft Rejection in Mice.V.Survival, Rejection or Proliferation Across Minor Barriers. *Immunogenetics* 6:585-595, 1978.
15. Saunders, D.A., Beals, T.F. and Schultz, J.S.: Qualitative and Quantitative Evaluation of Indirect Immunofluorescent H-2 Stain on Tissue Sections. *Tissue Antigens* 14:73-85,1979.
16. Beals, T.F.: Air Embolism: A Rare but Avoidable Cause of Death During Pregnancy. *ICEA Sharing:VII*, 7-9,1979.
17. DeMott-Friberg, R., Beals, T.F. and Schultz, J.S.: H-2 and Background Influences on Tissue Grafts Across the H-Y Barrier. *Immunogenetics* 9: 369-381, 1979
18. Good, A.E., Beals, T.F., Simmons, J.L., and Ibrahim, M.A.H.: A Subcutaneous Nodule with Whipple's Disease: Key to Early Diagnosis?. *Arth. Rheumat.* 23:856-859,1980.
19. Geisinger, Kim R., Naylor, Bernard, Beals, Theodore F., and Novak, Patricia M.: Cytopathology, Including Transmission and Scanning Electron Microscopy, of Pleomorphic Liposarcomas in Pleural Fluids. *Acta Cytol*24:435-441, 1980
20. Markel, Sheldon F., Magielski, John E. and Beals, Theodore F.; Carcinoid Tumor of Larynx. *Arch. Otolaryngol.* 106:777-778,1980.
21. Schultz, Jane S., DeMott-Friberg, Roberta, and Beals, Theodore F.; Immunogenetic Control of the Response of Female Mice to Male Tissue Grafts. *Immunogenetics* 12:199-205,1981

19. Community Service:

- Ann Arbor City Board of Canvassers; appointed 1970-,
chair, 1976-
- Ann Arbor Ward Boundary Commission, appointed; 1970-
- Ann Arbor Public School System:
 - Family Life and Sex Education Advisory Committee; 1970-1974
 - Wines School PTO, Executive Board; 1970-1971
- Ann Arbor Model Cities Policy Board, elected; 1971-1975,
Executive Committee, 1971-1975
- Ann Arbor City Community Development Citizens Committee, appointed 1975
- Family Life Forum; 1971-
 - Founding member
 - chair, 1971-1975
 - treasurer, 1978-1980
- Ann Arbor City Committee on Punch Card Voting, appointed; 1979-

BIBLIOGRAPHY

b. Publications accepted for publication:

c. Books. none

d. Chapters in Books:

- Beals, T.F. and Bigelow, W.: A Technique for Removing Plastic Backing Films in the Preparation for Electron Microscopy. In: Advances in Electron Metallography and Electron Probe Microanalysis. ASTM Special Technical Publication No. 317, 1962.pp 155-159.
- Beals, T.F., Pierce, G.B., Jr. and Schroeder, D.R.: In : Yearbook of Cancer 1965-1966. eds. R.L.Clark and R.W.Cumley. Chicago, Ill,. Year Book Pub. 1966. pp 211-214.
- Midgley, A.R., Jr. and Beals, T.F.; Analysis of Hormones in Tissues. In Principles of Competitive Protein Binding Assays. J.B. Lippincott Co., 1971. Chapter XIII.
- Beals, T.F.; Cytology and Electron Microscopy. In Diagnostic Electron Microscopy Vol 4; ed. Trump, B.F. and Jones, R.T.; Wiley & Sons, N.Y. (in press)

e. Books or Journals edited: none

f. Abstracts, preliminary communications, panel discussions:

- Pierce, G.B., Jr., Beals, T.F., Ram, J.Sri, and Midgley, A.R., JR. Basement Membranes. IV. Epithelial origin and immunological cross reactions. Fed. Proc. 23:534, 1964.
- Sussman, A.S., Lowrey, R.J. and Beals, T.F.: Ultrastructure of Germinating Neurospora Ascospores. Proc. of Symposium on Germination. 1963.
- Beals, T.F. and Midgely, A.R., Jr.: Uptake of purified gonadotropic hormones by rat ovarian tissues. 2nd Annual Meeting, Soc. for Study of Reproduction, 1969.
- Geisinger, K.R., Naylor, B., Beals, T.F., and Novak, P.M.; Cytopathology of Pleomorphic Liposarcomas in Pleural Fluid. Acta Cytol. 24:68, 1980.
- Beals, T.F.; Electron Microscopy and Cytodiagnosis. Electron Microscopy in Diagnostic Pathology, Special Course by Trump, B. and Jones, R.; Sixty-Ninth Annual Meeting of International Academy of Pathology. 1980.
- Beals, T.F., and Green, R.A.: Small Cell Carcinoma of Lung: Histologic, Cytologic and Electron Microscopic Coorelations with Treatment. Michigan Thoracic Society Annual Meeting, 1980.
- Beals, T.F.: Body Fluids: A Correlation of Cytology, Transmission Electron Microscopy and Scanning Electron Microscopy with Evaluation of Their Contributions to Diagnosis. Fourth Veterans Administration Electron Microscopy Conference, 1979.
- Beals, T.F.: The Practical Application of Electron Microscopy to Surgical Pathology. Michigan Society of Pathologists, Seminar, 1980.
- Beals, T.F., LeGolvan, P.C., Uzman, B.G., and Williams, M.J.: Panel on Common Administrative Problems. Fifth Diagnostic Electron Microscopy Conference, 1981
- Beals, T.F.; Clinical Relevance of Ultrastructural Diagnosis of Small Cell Carcinoma of the Lung. Fifth Diagnostic Electron Microscopy Conference, 1981

Daniel M. Bloch, M.D.
Assistant Professor of Pathology

Faculty Report for 7/1/80 - 6/30/81

I. Diagnostic Service Activities

- A. Implementation of online archive disk drive to handle outpatient calls. Five million test results over ten months.
- B. Design of new Throughput Report with more flexibility and applicable to more laboratories.
- C. Technologist I.D. program.
- D. Analysis programs for TRIP report.
- E. Search programs for tape archive.
- F. Alphabetized department log for Microbiology.
- G. Multiple maintenance programs.
- H. Central distribution handled 9% more test requests than previous years.
- I. Hired senior data processing assistant for preventive maintenance.
- J. New hardware failure tracking system.
- K. Monitoring of test requests by audit trail resulting in 97% reduction of errors.
- L. Hired a second programmer for daily problem solving and applications.
- M. Creation and hiring of a midnight supervisor/training position.
- N. Reduction in number of computer operators from six to four.
- O. Upgrading of accession clerks to laboratory assistants.
- P. Reduction in overtime by one order of magnitude.
- Q. Improved attendance and reliability of personnel.
- R. Establishment of a test system for all new software testing.

II. Teaching Activities:

- A. LDC house officer rotation - four pathology residents rotated through LDC during the year.
- B. Conducted five tours of LDC facilities for pathologists from other hospitals interested in laboratory computerization.
- C. LDC personnel attended Medlab Users Group meeting in Salt Lake City, February 1981.
- D. Establishment of inservice training program for computer operators and supervisors.

III. Research Activities:

A. Turnaround Time Studies

1. Throughput Report: Computer management tool for clinical laboratories.

Proceedings of MEDINFO 80
Lindberg & Kaihara editors
1F18 North-Holland Publishing Co. (1980)
p. 551-555

2. Computer-Generated Management Tools for the Clinical Pathology Laboratory: I Throughput Report.

Journal of Medical Systems
Vol. 4 #3/4, p. 367-380, 1980

3. Study of Overdue Stat Tests by Hour - study in process (collecting data).
4. Prediction of late stat tests by multiple linear regression and autoregression models - working with Department of Industrial and Operations Engineering. Article in Preparation.

B. Phone Call Patterns

1. Computer-Generated Graphic Workflow For a Clinical Laboratory Computer System. Article in press.
2. Effect of Laboratory Computer on Physician Phone Call Patterns for Laboratory Results - rough draft.
3. Correlation of Phone Call Patterns with Ward Rounding Patterns - in preparation.

- C. Nucleated Red Cell Study with Dr. Schnitzer. Determine causes of nucleated RBCs - data being analyzed.

- D. Quality Control of a Clinical Laboratory Computer Database - article being revised.

- E. Pathology Training Program in Laboratory Computerization - Proceedings of the Fourth Annual Symposium on Computer Applications in Medical Care, November 1980.

- F. Invited to write review article for Clinics in Laboratory Medicine on computers and laboratory management.

- G. An Online Archive of Laboratory Results for Ambulatory Care - accepted for presentation at the SAMS/SCM Joint Annual Conference on Computers in Ambulatory Care, Washington, D.C. November 1981.

- H. Test Retest Correlation of Laboratory Tests Working with Dr. Politser in Mathematical Psychology Department.
- I. Study of Throughput of Stat Specimens in Central Distribution - collecting data.
- J. O'Leary, T.J., Bloch, D.M.: Independent Value of Laboratory Tests in Diagnosis of Latent Hemochromatosis, University of Michigan Medical Center Journal - accepted for publication.

IV. Departmental and International Service Activities:

- A. Clinical Pathology Faculty Committee.
- B. Cancer Work Group.
- C. Patient Care Evaluation Work Group.
- D. Medical Records Work Group.
- E. Order Entry/Result Reporting Work Group.
- F. Area VII PSRO Committee on Ancillary Services Review.
- G. University Committee on Computer Policy and Utilization.
- H. Medical School Computer Advisory Committee.

V. National Activities:

- A. Vice President and Treasurer, Medlab Users Group.
- B. Presentation of Throughput paper at the Third World Conference on Medical Informatics, Tokyo, October 1980.
- C. Presentation of TRIP Report paper at 10th Annual Conference of Society for Computer Medicine, San Diego, September 1980.
- D. Presentation of Pathology Training Program in Laboratory Computerization at the 4th Annual Symposium on Computer Applications in Medical Care, Washington, D.C., November 1980.
- E. Presentation of Computer Applications in Clinical Chemistry at Towsley Conference on Current Topics in Clinical Chemistry, March 1981.
- F. Presentation of the Role of Computers in Patient Identification at Towsley Conference on the Phlebotomy Team: Technical and Management Perspectives, May 1981.
- G. Presentation of the Etiology and Pathogenesis of Laboratory Computing Problems at the College of American Pathologists Workshop on Acquiring a Laboratory Computer, Traverse City, June 1981.

VI. Goals for 1981-1982:

- A. Upgrade of laboratory computer with implementation of additional laboratories.
- B. Expansion of Laboratory Data Center, including redesign of Central Distribution for faster throughput of specimens to the laboratories.
- C. Implementation of a portion of HDSC interface enhancement for result reporting to high stat volume areas.
- D. Implement a total procedure for preventive maintenance and progressive replacement of peripheral equipment.
- e. Establishment of inservice training program for LDC and laboratory personnel on use of laboratory computer
- F. Creation of audit trails for computer operations.
- G. Establish a formal procedure for interaction of LDC with laboratories and other departments.
- H. Publication of at least six papers on computers in medicine.

ANNUAL REPORT

Rodney D. Capps
Assistant Professor

I. Diagnostic Service Activities

- A. Direct responsibility to maintain the daily function of all "automated" equipment in the clinical laboratories with, at the present time, the performance of some 1.3 million inpatient and outpatient analyses.
- B. Continuation of design of clinical laboratory redesign and expansion.

II. Teaching Activities

- A. Three hour lecture on "automation in the modern laboratory" by invitation from Biological Chemistry Department, Med. Sci. II, 1981.
- B. Four hour lecture: Medical Technology Department, E.M.U., Inservice Education "Laboratory Operations".
- C. Twenty hours lecture and demonstration. Medical Technology Program, University of Michigan.
- D. Thirty plus hours with resident's group.

III. Research Activities

- A. Redesign of K⁺ Ion specific electrode on Technicon SMAC instrument.
- B. New flow system designs (with Technicon Corporation) for SMAC instrument.
- C. Designed Sweat Cl⁻ device for modification of Beckman 8 instrument.
- D. Developed an alternative Hexokinase system for Technicon SMAC.
- E. Publication - Co-author: Judd, J. and Capps, RD: "Autoagglutinins with apparent Anti-P speciality reactive only by Liss tech". Transfusion, 10-12 months for publication.

Constance J. D'Amato, B.S.
Assistant Professor of Neurobiology, Department of Pathology
Neuropathology Laboratory
Faculty Report for 7/1/80 - 6/30/81

1. Diagnostic Service Activities:

- A. Supervise and assist house officers in gross and microscopic examination and diagnosis of their brain specimens from autopsies, daily and at weekly brain cuttings.
- B. Plan and manage daily activities of Neuropathology Laboratory, supervise technicians in preparation of gross and microscopic autopsy and surgical specimens for diagnosis.
- C. Participate in preparation of Neuropathology diagnostic review conferences (Neuropathology Conference, Brain Cutting Conference).

2. Teaching Activities:

- A. Neural and Behavioral Sciences (NBS) 600. Neuropathology for 2nd year medical students. 18 hours. I am sequence leader for this course.
- B. Neuropathology 858. Organize and teach in this course for house officers, staff, graduate and other students. 18 hours.
- C. Neuropathology for Pathology house officers: brain cutting, review autopsies, neuroanatomy and neurohistology, gross and microscopic neuropathology.
- D. Plan and select material for microscopic slide sets and kodachrome library for NBS 600, Neuropathology 858, and conferences.
- E. Supervise teaching of Neuropathology technicians.
- F. Brain Cutting Conference for students, house officers, staff.
- G. Neuropathology Conference for students, house officers, staff.

3. Research Activities:

- A. Effects of radiation on the developing form and function of the nervous system. Restitution and malformation after radiation and other injuries of the developing nervous system.

Publications:

1. D'Amato, C. J. and S. P. Hicks. Development of the motor system: Effects of radiation on developing corticospinal neurons and locomotor function. *Exper. Neur.* 69, 1-23, 1980.
2. Hicks, S. P. and C. J. D'Amato. Development of the motor system: Hopping rats produced by prenatal irradiation. *Exper. Neur.* 69, 24-39, 1980.
3. Hicks, S. P. and C. J. D'Amato. Effects of radiation on development, especially the nervous system. *Amer. J. Forensic Med. and Path.* 1, 309-317, 1980 (Shields Warren Memorial Issue).
4. D'Amato, C. J. Regeneration and restitution in the fetal nervous system after radiation injury. (Submitted for publication)

Abstracts and Poster Exhibits:

1. D'Amato, C. J. and S. P. Hicks. Restitution of the central nervous system after destructive injury by prenatal irradiation in rats. Proceedings of 10th Annual Meeting, Society for Neuroscience, Cincinnati, OH (Abstract and poster exhibit). *Neurosc. Abst.* 6:824, 1980.
2. D'Amato, C. J. and S. P. Hicks. Genetic and radiation induced developmental hydrocephalus. Proceedings of 12th Annual Meeting, Michigan Chapter: Society for Neuroscience, Warner Lambert-Parke Davis Co., Ann Arbor, MI, May, 1981 (Abstract and poster exhibit).
3. D'Amato, C. J. and S. P. Hicks. Prenatal genetic aqueduct stenosis causing hydrocephalus. American Association of Neuropathologists, Vancouver, B.C., (Abstract and poster exhibit). *J. Neuropath. and Exper. Neur.*, 40:358, 1981.
4. Hicks, S. P. and C. J. D'Amato, and K. Dorovini-Zis. Fetal and infant brain phagocytes after radiation cell-killing. American Association of Neuropathologists, Vancouver, B.C., (Abstract and poster exhibit). *J. Neuropath. and Exper. Neur.*, 40:358, 1981.

B. Grant Support: Coinvestigator, USPHS NS 10531.

4. Departmental and International Service Activities:

- A. Neural and Behavioral Sciences Curriculum Committee (Medical School).
- B. Preprofessional Counselor, premedical and health related students (University).

5. National Activities:

- A. Reviewer for Research Grants, Neurobiology Program, National Science Foundation.
- B. Review manuscripts for Teratology, Experimental Neurology.

ANNUAL REPORT

Katerina Dorovini-Zis, M.D., FRCP(C)

June, 1981

I. Diagnostic Service Activities

Autopsies: Central and peripheral nervous system pathology.
Neurosurgical Pathology
Muscle Pathology consultations
Examination of autopsy brains and neurosurgical pathology consultations from Veterans Administration Hospital, Wayne County General Hospital, and other state institutions and private hospitals.

II. Teaching Activities

Neural and Behavioral Science 600. Neuropathology for 2nd year medical students. 18 hrs. annually.
Neuropathology 858. Course for house officers, staff, graduate and other students. 18 hrs. annually.
Neuropathology for Pathology house officers. This includes brain cutting, review of autopsies, neuroanatomy, neurohistology and histologic neuropathology.
Brain cutting conference for house officers and staff. Weekly.
Neurosurgical Pathology conference for Neurosurgery house officers and staff. Twice monthly.
Graduate Student Committee, Anatomy.

III. Research Activities

A. Publications

1. Dorovini-Zis, K., Anders, J. J. and Brightman, M. W. (1980). Cerebral endothelium, blood-brain barrier and the astrocyte membrane. In: The Blood-Retinal Barriers. (Jose G. Cunha-Vaz Edit.) Plenum Press, pp. 65-79.
2. Anders, J. J., Dorovini-Zis, K. and Brightman, M. W. (1980). Endothelial and astrocytic cell membranes in relation to the composition of cerebral extracellular fluid. In: Advances in Experimental Medicine and Biology, Plenum Press, pp. 193-209.
3. Dorovini-Zis, K., Sato, M., Goping, G., Rapoport, S. I. and Brightman, M. W. Ionic lanthanum passage across cerebral endothelium exposed to hyperosmotic arabinose. Submitted.
4. Mata, M., Dorovini-Zis, K., Wilson, M. and Young, A. A new form of Parkinson-Dementia Syndrome: Clinical and Pathological findings. In preparation.

A. Publications (cont.)

5. Hicks, S. P., D'Amato, C. J. and Dorovini-Zis, K. Fetal and infant brain phagocytes after radiation cell-killing. J. Neuropath. Exp. Neurol. 40:358, 1981 (Abstr.).
6. Mata, M., Dorovini-Zis, K., Wilson, M. and Young, A. . A new form of Parkinson-Dementia Syndrome: Clinical and Pathological findings. Neurology 31:50, 1981 (Abstr.).

- B. Grant Support. Application for Teacher Investigator Development Award (NINCDS) submitted (June 1, 1981).

IV. Departmental and International Service Activities

None.

V. National Activities

None.

Barry G. England, Ph.D.
Assistant Professor, Department of Pathology

Faculty Report for 7-1-80 through 6-30-81

1. DIAGNOSTIC SERVICE ACTIVITIES

Director, Ligand Assay Laboratory: See appended laboratory report.

2. TEACHING ACTIVITIES

- a. Medical Student Biochemistry 500A. Six contact hours for 158 Freshman Medical Students.
- b. Introduction to Radioimmunoassay - Eight contact hours for 35 students. (Pathology residents, medical technology students and nuclear medical technologists students).
- c. Workshop on Radioimmunoassay Techniques, University of Arkansas, Fayetteville, Arkansas, March 23-25, 1981.
- d. Workshop on computerization of the RIA laboratory, University of Michigan, Ann Arbor, Michigan, February 12, 1981.
- e. Workshop on Radioimmunoassay and Related Techniques, Ecuadorian Society of Medical Technologists, Quito, Ecuador, May 18-20, 1981.

3. RESEARCH ACTIVITIES

a. Publications in Scientific Journals

1. Webb, R., England, B.G. and Fitzpatrick, K.E.: Control of the Preovulatory Gonadotropin Surge in the Ewe. *Endocrinology* 108:1178-1185, 1981.
2. Sisson, J.C., Gross, M.D., Freitas, J.E., Jackson, C.E. and England, B.G.: Combining provocative agents of calcitonin to detect medullary carcinoma of the thyroid. *Henry Ford Hospital Journal* (In Press).
3. Merz, E.A., Hauser, E.R. and England, B.G.: Ovarian function in the cycling cow: Relationship between gonadotropin binding to theca and granulosa and steroidogenesis in individual follicles. *J. Animal Sci.* 52:xxx-xxx, 1981.
4. Valk, T.W., England, B.G. and Marshall, J.C.: Effect of cimetidine on pituitary function: alterations in hormone secretory profiles. *J. Clinical Endocrinology* 52:xxx-xxx, 1981.
5. England, B.G., Webb, R. and Dahmer, M.K.: Follicular steroidogenesis and gonadotropin binding to ovine follicles during the estrous cycle. *Endocrinology* 109:xxx-xxx, 1981.

6. England, B.G., Webb, R. and Dahmer, M.K.: Relationship between follicular size and antral fluid steroid concentrations at three stages of the estrous cycle in the ewe. *Biology of Reproduction* 24:xxx-xxx, 1981.
7. Khazaeli, M.B., England, B.G. Dieterle, R.C., Nordblom, G.D. and Beierwaltes, W.H.: Development and characterization of a monoclonal antibody which distinguishes the beta subunit of human chorionic gonadotropin (hCG) in the presence of intact hCG. *Endocrinology* (In Press).
8. Nordblom, G.D., Webb, R., Counsell, R.E. and England, B.G.: A chemical approach to solving bridging phenomena in steroid radioimmunoassays. *Steroids* (In Press).
9. Webb, R. and England, B.G.: Identification of the ovulatory follicle in the ewe: associated changes in follicular size, thecal and granulosa cell LH receptors, antral fluid steroids and circulating hormones during the preovulatory period. *Endocrinology* (In Press).
10. England, B.G.: Follicular development in the cow and sheep. University of Arkansas, Experiment Station Special Report (In Press).
11. Staigmiller, R.B., England, B.G., Webb, R., Short, R.E. and Bellows, R.A.: Estrogen production and gonadotropin binding by individual bovine follicles during estrus. *Endocrinology* (Submitted).
12. Webb, R. and England, B.G.: Relationship between LH receptor concentrations in thecal and granulosa cells and in vivo and in vitro steroid secretion by ovine follicles. *J. Reprod. Fert.* (Submitted).

b. Abstracts of papers presented at scientific meetings.

1. Staigmiller, R.B., England, B.G. and Schappa, L.W.: Regrowth of bovine follicles after cauterization. *Soc. Study of Reprod.* 13th Annual Meeting. Ann Arbor, MI, August 1980, Abs #179.
2. Nordblom, G.D., Webb, R., Counsell, R.E. and England, B.G.: A chemical approach to solving bridging phenomena in hapten radioimmunoassay. *Clinical Chemistry* 26:924. 1980, Abs #252.
3. Nordblom, G.D., Maciak, R.S., Dieterle, R.C., Espinosa, E.A. and England B.G.: Monoclonal antibodies against androstenedione. *Clinical Radioassay Society*, 7th Annual Meeting, Miami, Fla. 1981, Abs #152.
4. Khazaeli, M.B., England, B.G. and Beierwaltes, W.H.: Monoclonal antibodies to the beta subunit of human chorionic gonadotropin (hCG). *Clinical Radioassay Society*, 7th Annual

Meeting, Miami, Fla, 1981, Abs #150.

5. Nordblom, G.D., Schappa, L.W., Dieterle, R.C. and England, B.G.: Towards a better understanding of bridge-binding in steroid radioimmunoassays using monoclonal antibodies. Soc. Study of Reprod. 14th Annual Meeting, 1981, Abs #xxx.
6. Griffin, B.F., Bajpai, P.K., McCully, M.J. and England B.G.: The effect of adriamycin on the reproductive system of the male prepuberal rat. American Soc. Andrology, 6th Annual Meeting, 1981, Abs #xxx.
7. Mukhopadhyay, S.K., England, B.G. and Beierwaltes, W.H.: Effect of salt concentrations on radioiodination by chloramine T. American Soc. of Med. Techs., 43rd Annual Meeting, Anaheim, CA, 1981.
8. Khazaeli, M.B., Kabza, G.A., Dieterle, R.C. and England, B.G.: Utilization of computers in the nuclear medicine laboratory improves patient care. 5th Annual Meeting, Midwest Radioassay Society, Dearborn, MI, May 14, 1981.

c. Grant support for academic year.

1. New England Nuclear Corporation: Research Grant for the study of reproductive endocrinology and ligand assay technology. Principle Investigator. 1975-
2. NIAMDD: Michigan Diabetes Research and Training Center; Director and Principle Investigator of the Ligand Assay Core Facility. 1977-1982.
3. NCI: Cancer Research Training and Nuclear Medicine, Co-Investigator. 1978-1983.
4. Andrew W. Mellon Foundation: Mellon Young Scientist Program in Reproductive Endocrinology, Co-Investigator. 1979-1982.
5. NICHD: Reproductive Endocrinology Program Center; Co-Director of the Standards and Reagents Core Facility. 1979-1984.
6. NICHD: Training Program in Reproductive Endocrinology, Faculty Member, 1980-1985.
7. Ford Foundation: Training Program in Reproductive Endocrinology, Faculty Member, 1981-1984.

4. DEPARTMENTAL AND INTERNATIONAL SERVICE ACTIVITIES.

1. Director of a clinical laboratory (Ligand Assay Lab.) and member of the Clinical Pathology Staff.

2. International Atomic Energy Agency sponsored mission to the Endocrinology Laboratory of the Carlos Andrade Marin Hospital in Quito, Ecuador, May 6-21, 1981.
3. Ecuadorian Society of Medical Technologists, Presented Workshop on Radioimmunoassay and Related Techniques, Quito, Ecuador, May 18-20, 1981.
4. Ecuadorian Society of Medical Technologists, Visiting Scientist Lecture; An examination of the development of the ovulatory follicle in the sheep. Quito, Ecuador, May 20, 1981.

5. NATIONAL ACTIVITIES.

1. Midwest Radioassay Society, President; 1978-1980.
2. Clinical Radioassay Society, Chapter President; 1980.
3. Midwest Radioassay Society, Presented Workshop on Computerization of the RIA Laboratory, Univ. of Mich. Ann Arbor, MI, Feb. 12, 1981.
4. Michigan Society of Medical Technologists, Clinical Chemistry Conference, Lecture on Radioimmunoassay. Univ. of Mich. Ann Arbor, MI, March 12, 1981.
5. University of Arkansas, Carl B. and Florence E.E. King Visiting Scholor Lecture Series, Fayetteville, Ark. March 23-25, 1981.
6. University of Arkansas, Sigma Xi, Visiting Scientist Lecture, Fayetteville, Ark. March 25, 1981.

ANNUAL REPORT 1980-81 LIGAND ASSAY LABORATORY

1. SERVICE ACTIVITIES

- a. The laboratory now offers a total of forty different assays. Eight new tests were made available for diagnostic use during the past year. These include:

1. alpha-fetoprotein
2. prostatic acid phosphatase
3. thyroglobulin
4. vancomycin
5. androstendione
6. hepatitis A antibody (IgM)
7. hepatitis B_e antigen
8. hepatitis B_e antibody
9. insulin C-peptide

The total anticipated volume of clinical specimens analyzed through the period 7/1/80 - 6/30/81 will be 31,000 with a projected revenue of \$887,754.00. There are 9 medical or laboratory technologists assigned to clinical responsibilities in the laboratory. One additional technologist was placed on permanent staff during the year. She was hired to do the first 5 tests in the above list. It should be pointed out that she was hired without increasing the payroll or commodity budgets. We decreased our commodity expenditures by developing "in house" reagents for some of the high volume tests and transferring the savings to the payroll budget. Our commodity budget did increase slightly but that was to pay for the increased supplies utilized in the performance of the additional 9 tests. Thus, the hospital has benefited from additional revenue without an appreciable increase in expenses.

- b. Two additional pieces of equipment have been purchased with hospital funds during the past year. We have received a new Mettler Analytical Balance, Model 35AR. A replacement IEC - CRU Model 5000 refrigerated centrifuge has been ordered but has not arrived. Equipment purchased with funds from other than hospital origin include a DEC-VT-100 CRT Terminal, a Buchler Vortex evaporator, a copy of computer software for a multi-user word processor installed on the laboratory computer, a DEC RL01 (5 mega byte) disk drive and controller for the laboratory computer, and two Eppendorf Model 5412 microfuges.
- c. Laboratory services have been increased to provide 7 day per week coverage from 8:00 A.M. to 5:00 P.M. Analysis of the drug specimens has been improved. Delivery of all drug samples to Ligand from Central Distribution and from the Emergency Room is via "STAT" messenger. Digoxin is set-up twice a day, digitoxin, vancomycin and methotrexate are set-up immediately upon arrival in the laboratory, and all other drugs, except amikacin, are set-up daily.

Turn-around time has been decreased for digoxin, thyroid stimulating hormone, cortisol and hepatitis Bs antigen by improving methodology and increasing the number of set-ups per week.

- d. Laboratory computer services have been improved through the development and implementation of an auto-dial and communications package designed to permit telephone communication with remote computers. This allows access to MTS, a stipulation placed upon us by the University Computer Utilization Committee. Expenses were decreased by the removal of the ITT Data-Speed 40 CRT terminal and printer. This resulted in a savings of > \$6,000./yr. The transfer of LSR data from LDC to LAL was modified to permit the use of data stored on magnetic tape during nightly LSR runs. This has greatly increased efficiency in our computer and allows 7 day storage of data for backup purposes. The data analysis software for radioimmunoassay data has been upgraded to increase user convenience and improved utilization of quality control data.

2. TEACHING ACTIVITIES

- a. Laboratory teaching of Pathology House Officers includes a two week rotation of all residents. Every attempt is made to incorporate the resident into the daily function of the laboratory including quality assessment and management decisions.
- b. Nuclear Medicine Technologist students rotate through the laboratory 10 months of the year. These students are included in the day-to-day operation of the laboratory and provide a vital function.
- c. Laboratory personnel were responsible for offering a one-day workshop on computerization of the RIA laboratory. This workshop was jointly sponsored by the Midwest Radioassay Society and the Department of Pathology. There were 30 paid participants at the course.
- d. Seven papers were presented at national meetings during the year by laboratory personnel. These included one paper at the AACC Meeting in Boston, two papers at The Clinical Radioassay Society Meeting in Miami, two papers at the Society for the Study of Reproduction Annual Meeting in Ann Arbor, one paper at the Midwest radioassay Society Annual Meeting in Dearbor, Michigan, and one paper at the American Society of Andrology Annual Meeting in New Orleans. The titles are listed below:

Staignmiller, R.B., England B.G., and Schappa, L.W.: Regrowth of bovine follicles after cautery. Soc. Study of Reprod. 13th Annual Meeting. Abstract #179, August 1980.

Nordblom, G.D., Webb, R., Counsell, R.E., and England, B.G.: A chemical approach to solving bridging phenomena in hapten radioimmunoassay. Clinical Chemistry 26:924; 1980, Abstract #252.

Nordblom, G.D., Maciak, R.S., Dieterle, R.C., Espinosa, E.A. and England, B.G.: Monoclonal antibodies against androstenedione. Clinical Radioassay Society, 7th Annual Meeting 1981, Abstract #152.

Khazaeli, M.B., England, B.G. and Beierwaltes, W.H.: Monoclonal antibodies to the beta subunit of human chorionic gonadotropin (BhCG). Clinical Radioassay Society, 7th Annual Meeting, 1981, Abstract #150.

Griffin, B.F., Bajpai, P.K., McCully, M.J. and England, B.G.: The effect of adriamycin on the reproductive system of the male prepuberal rat. American Soc. of Andrology, Sixth Annual Mtg. 1981, Abstract #XXX.

Khazaeli, M.B., Kabza, G.A., Dieterle, R.C., and England, B.G.: Utilization of computers in the nuclear medicine laboratory improves patient care. 5th Annual Meeting, Midwest Radioassay Society, Dearborn, MI., May 14, 1981.

Webb, R. and Bellows, R.A.: Relationship between gonadotropin binding and steroidogenesis in individual bovine follicles. 13th Annual Meeting, Soc. Study of Reprod. Ann Arbor, Michigan, 1981.

In addition to the presentation of papers of scientific meetings, Dr. England has presented the following workshops and lectures during the past year:

Carl B. and Florence E.E. King Visiting Scholar Lecture, "Follicular Development in the Cow", University of Arkansas, Fayetteville, Arkansas, March 25, 1981.

Sigma Xi, Visiting Scientist Lecture, "Monoclonal Antibodies and their use in Reproductive Biology, University of Arkansas, Sigma Xi Chapter, Fayetteville, Arkansas.

Ecuadorian Society of Medical Technologists, Visiting Scientist Lecture, "An Examination of the Development of the Ovulatory Follicle in the Sheep", Quito, Ecuador, May 20, 1981.

Clinical Radioassay Society, Workshop on Radioimmunoassay Techniques, Ann Arbor, MI, Feb. 12, 1981.

Ecuadorian Society of Medical Technologists, Workshop on Radioimmunoassay and Related techniques, Quito, Ecuador, May 18-20, 1981.

He has in addition served a two week mission for the International Atomic Energy Agency in Quito, Ecuador with the purpose of establishing radio receptor assay in that country.

3. Research Activities

a. The Ligand Assay Laboratory has been actively involved in developing or improving a number of methodologies for inclusion in the repertoire of tests available for diagnostic use at University Hospitals. Research projects that have culminated in the use of "in house" reagents for laboratory tests include:

1. Digoxin radioimmunoassay
2. Cortisol, radioimmunoassay
3. Androstenedione radioimmunoassay
4. Tobramycin radioimmunoassay
5. Thyroglobulin radioimmunoassay

In going projects that will provide additional tests using "in house" reagents within the next 12 - 18 months include:

1. Ferritin
2. Lipoprotein receptor determinations for HDL, LDL, and VLDC.

Evaluation of commercially available radioimmunoassay kits. The following kits have been evaluated and tests implemented within the past year:

1. Alpha-fetoprotein
2. Prostatic acid phosphatase
3. Insulin C-peptide

b. We have developed radioimmunoassays for T_3 , T_4 and T_3 uptake during the past year. Reagents for these tests are being sold to the Nuclear Medicine In Vitro laboratory. In addition to all of the activity listed above we have mounted an extensive program to develop monoclonal antibodies against a number of compounds of diagnostic interest. These compounds include:

1. human chorionic gonadotropin (hCG)
2. beta subunit of hCG
3. alpha subunit of hCG
4. Androstenedione
5. Parathyroid hormone (PTH)
6. N-terminal fragment of PTH
7. C-terminal fragment of PTH
8. Calcitonin
9. N-terminal fragment of calcitonin
10. C-terminal fragment of calcitonin

c. The Ligand Assay Laboratory has a close working relationship with all of the component laboratories of the Ligand Core Facility of the Michigan Diabetes Research and Training Center (MDRTC). Development projects in those laboratories, with which we are involved include, thromboxane B_2 , prostaglandin F_2 , somatostatin, hemoglobin A_{1c} and urinary levels of the c-peptide of insulin. These relationships are extremely close and are being maintained and strengthened.

4. Goals for 1981-82

We expect to maintain our development of new assays for diagnostic use. This will focus on the use of monoclonal antibodies which should lend considerable specificity to the assays. In addition to the use of radioisotopically labelled tracers for clinical assays we will utilize fluorescence and enzyme labeled tracers more extensively in our research and development efforts and also for routine use in the laboratory.

We intend to develop and offer PTH and N-terminal PTH assays during the upcoming year instead of sending the samples to Laboratory Procedures Division of the Upjohn Company.

Joseph C. Fantone III, M.D.
Instructor, Department of Pathology

Faculty Report for 7/1/80 - 6/30/81

1. Diagnostic Service Activities: None
2. Teaching Activities:
 - A. Lecturer to medical student (first and second year) and immunology graduate students.
 - B. Supervise second year medical student pathology labs as backup for other staff.
 - C. Presented at multiple research seminars in various departments. (Rheumatology, Pathology, Ophthalmology, etc.)
3. Research Activities:
 - A. During the previous 12 months, I have focused my efforts in three areas.
 1. Setting up the laboratories after moving from Connecticut.
 2. Examining the role of prostaglandins in modulating acute inflammatory reactions.
 3. Examining the role of oxygen derived metabolites in inflammatory reactions.

These efforts have resulted in the following publications which are either in print, in press, or submitted for publication and abstracts presented at national meetings:

Publications

1. Fantone, J.C., Kunkel, S.L., Ward, P.A. and Zurier, R.B.:
Suppression by prostaglandin E_1 of vascular permeability induced by vasoactive inflammatory mediators. J. Immunol. 125:2591-2596, 1980.
2. Johnson, K.J., Fantone, J.C., Kaplan, J. and Ward, P.A.: In vivo damage of rat lungs by oxygen metabolites. J. Clin. Invest. 67:983-992, 1981.
3. Kunkel, S.L., Fantone, J.C., Ward, P.A. and Zurier, R.B.:
Modulation of inflammatory reactions by prostaglandins. Prog. Lipid Res. (In press.)
4. Fantone, J.C. and Ward, P.A.: Experimental studies of immune complex injury of lung. Amer. Rev. Resp. Dis. (In press.)

5. Ward, P.A., Fantone, J.C. and Johnson, K.J.: Lung injury produced by oxygen metabolites. VIIIth International Symposium on Immunopathology. (In press.)
6. Fantone, J.C., Kunkel, S.L. and Ward, P.A.: Chemotactic mediators in neutrophil dependent lung injury. Annual Rev. Physiology. (In press.)
7. Kunkel, S.L., Fantone, J.C. and Ward, P.A.: Complement mediated inflammatory reactions. Pathol. Annual. (In press.)
8. Fantone, J.C. and Ward, P.A.: Chemotactic mechanisms in the lung. In, "Immunopharmacology of the Lung". H.H. Newball, editor. Marcel Dekker, Inc., New York. (In press.)
9. Johnson, H., Fantone, J.C. and Flye, W.: Thoracotomy and excisional lung biopsy in the treatment of pulmonary metastasis. (Submitted.)
10. Ogawa, H., Kunkel, S.L., Fantone, J.C. and Ward, P.A.: Digestion of the Fifth Component of Complement by Eosinophil Lysosomal Enzymes; Production of Eosinophil Specific Chemotactic Activity. (Submitted.)
11. Ogawa, H., Kunkel, S.L., Fantone, J.C. and Ward, P.A.: Comparative study of eosinophil and neutrophil chemotaxis and enzyme release. (Submitted.)
12. Varani, J., and Fantone, J.C.: Phorbol myristate acetate induced adherence of tumor cells. (Submitted.)
13. Fantone, J.C., Geisinger, K.R., Appleman, H.D.: Papillary adenoma of the lung with lamellar and dense core granules: An ultrastructural study. (Submitted.)

Abstracts

1. Fantone, J.C. and Phan, S.H.: O₂ metabolite detoxifying enzyme levels in bleomycin induced fibrotic lungs. Fed. Proc. 1981.
2. Fantone, J.C., Shrier, D. and Ward, P.A.: Inhibition of vascular permeability changes by captopril. Amer. Thoracic Society. 1981.
3. Johnson, K.J., Fantone, J.C. and Ward, P.A.: Lung injury following exposure to oxygen metabolites. Amer. Thoracic Society. 1981.
4. Kunkel, S.L., Fantone, J.C. and Ward, P.A.: Induction of lymphocytopenia by systemic infusion of chemoattractants. Amer. Thoracic. Society. 1981.
5. Fantone, J.C. and Varani, J.: Dissociation between O₂⁻ production and cell directed mobility (chemotaxis) in Walker ascites tumor cells. Univ. of Mich. Biomedical Research Conf. 1981.

B. During the fiscal year 1980/81, I have been a co-investigator on two NIH-Funded Grants:

1. Leukocyte chemotaxis (Dr. Peter Ward, P.I., NIH-AI 17690-01)
2. Thermal injury (Dr. Peter Ward, P.I., NIH-GHS 28499-01)

As of July 7, 1981, I shall begin activation of a NIH-Clinical Investigator Award (5 years) from the NHLBI (NIH-H6-00905-01).

4. Service Activities:

A. Departmental

1. Interview Resident Applicants (=25)
2. Laboratory Computer Selection Committee
3. Selection of cell sorter for Department.

B. National

1. American Association of Pathologists, Program selection committee for FASEB meeting.

5. National Activities:

1. Wayne State University, Department Pulmonary Medicine Research Seminars.

Annual Report, 1980-81

A. James French, M.D.
Professor of Pathology

Service activities:

Diagnosis of necropsies in Dept. of Pathology, UMMC
Consultant in Pathology, Veterans Administration Hospital
Consultant in Pathology, Wayne County General Hospital

Administrative Activities:

Consultant to the Chairman of the Department of Pathology
Consultant to the Executive Committee of the Medical Service
Plan, Department of Pathology

Teaching:

Resident teaching in the diagnosis of necropsies

Outside Service Activities.

Deputy Medical Examiner, Washtenaw County
Michigan State Medical Society;
Member, Maternal Health Committee
Director, Maternal Tissue Registry
Consultant, American Board of Pathology
Chairman, Program Committee, Collier-Penberthy-Thirlby Medical
Conference, Traverse City, Michigan, July 1980.

Professional Meetings Attended:

July 1980 - Collier-Penberthy-Thirlby Medical Conference, Traverse City
October 1980 - College of American Pathologists and American
Society of Clinical Pathologists, St. Louis, Missouri
November 1980 - Society of Medical Consultants to the Armed
Forces, Washington, D.C.
March 1981 - International Academy of Pathology, Chicago, Illinois
April 1981 - Federation of American Societies for Experimental
Biology, American Association of Pathologists, Atlantic City, Ga.
May 1981 - Michigan State Medical Society, Troy, Michigan

Bruce A. Friedman, M.D.
Professor, Department of Pathology
Faculty Report for 7/1/80 - 6/30/81

Hospital Service Activities

1. Associate Director, Blood Bank.
2. Director, Venipuncture Team.

Teaching Activities

1. Medical students.
 - a. Co-Director, Microscopic Anatomy-General Pathology 506.
2. House Officers in Pathology.
 - a. Educational activities throughout the year in blood banking.
 - b. Director of House Officer Education in Clinical Pathology, University Hospital.
3. Continuing Education activities.
 - a. Chairman, Planning Committee, Current Topics in Blood Banking Symposium, Towsley Center, 3-5 June, 1981.
 - b. Planning Committee, Venipuncture Conference, Towsley Center, 14-15 May, 1981.

Research Activities

1. Contract support.
 - a. A contract for \$50,340 from the National Heart, Lung, and Blood Institute to study national trends in blood utilization in the United States (1979-1980).
2. Publications.
 - a. Friedman, B.A., Burns, T.L., and Schork, M.A.: A study of national trends in transfusion practice (Annual Report for the NHLBI). September, 1980. Available from the National Technical Information Service, Springfield, Virginia.

- b. Friedman, B.A., Burns, T.L., and Schork, M.A.: A description and analysis of current blood transfusion practices in the U.S. with applications for the hospital transfusion committee. In: Clinical Laboratory Annual, Appleton-Century-Crofts (in press).
- c. Friedman, B.A.: The maximum surgical blood order schedule. In: Safety in Blood Transfusion, American College of Pathologists (in press).

Committee Activities

- 1. University Hospital.
 - a. Chairman, Transfusion Committee.
- 2. Medical School.
 - a. Committee on Health Economics Curriculum.
 - b. Inteflex Promotion Board.
- 3. University of Michigan.
 - a. Senate Advisory Committee on University Affairs (SACUA).
 - b. Tenure Committee.
- 4. American Association of Blood Banks.
 - a. Chairman, Transfusion Practices Committee.
 - b. Education Committee.

Lectures and Workshops

- 1. The maximum surgical blood order schedule. Presented at the Aspen Symposium on Safety in Transfusion. Sponsored by the College of American Pathologists, Vail, Colorado. 14 August 1980.
- 2. Current concepts in blood component therapy. Presented to the Medical Staff of Wyandotte General Hospital, Wyandotte, Michigan. 25 September 1980.
- 3. Blood inventory management. Moderator of a panel discussion presented at the Annual Meeting of the Michigan Association of Blood Banks, Troy, Michigan. 26 September 1980.
- 4. Blood utilization by surgeons and their patients. Sponsored by the Department of Surgery, Michael Reese Hospital, Chicago, Illinois. 4 October 1980.
- 5. Blood inventory management and utilization in the 1980's. Presented to the Dallas-Fort Worth Antibody Club, Fort Worth, Texas. 7 October 1980.
- 6. Trends in blood utilization. A lecture sponsored by the Blood Resources and Transplantation Branch, National Heart, Lung, and Blood Institute, Bethesda, Maryland. 13 November 1980.

7. Developing an effective inventory control strategy in your hospital. Sponsored by the Arkansas Society of Medical Technologists, Arkansas State University, Jonesboro, Arkansas. 21 March 1981.
8. Trends in blood utilization in the United States. A lecture sponsored by the Departments of Pathology and Surgery, Methodist Hospital, Memphis, Tennessee. 23 March 1980.
9. A unified inventory management strategy for the 1980's. Presented at the Annual Meeting of the Tennessee Association of Blood Banks, Nashville, Tennessee. 2 May 1981.
10. Blood utilization analysis. Unnecessary transfusion of blood and blood components. A workshop and lecture presented to the Current Topics in Blood Banking Symposium, Ann Arbor, Michigan. 3-5 June 1981.
11. Patterns of blood utilization in the United States with applications for the transfusing physician. How to order blood without undue bloodshed. Delivered while a Visiting Professor in the Department of Anesthesiology, University of Maryland School of Medicine, Baltimore, Maryland. 22-23 June 1981.

Paul W. Gikas, M.D.
Professor - Department of Pathology

Faculty Report - July 1, 1980 - June 30, 1981

1. Diagnostic Service Activities:

My diagnostic service activities during the past academic year consisted of 2½ months on surgical pathology and 1 month on necropsy pathology at the University Hospital. I also was responsible for the interpretation of most of the renal biopsy specimens during that period. One-half day per week is spent in surgical pathology, including diagnostic renal electron microscopy, at the Ann Arbor VA Hospital. I am frequently consulted throughout the year for problems in genitourinary pathology.

2. Teaching Activities:

I taught the Sophomore Pathology Laboratory Section from January to May, 1981 in addition to lecturing on renal disease and testicular disease to the regular sophomore medical class. In addition, I presented 2 lectures on renal disease to the Inteflex medical students in March.

3. Research Activities:

In response to an invitation by the Editorial Board of Michigan Quarterly review, the following article was submitted and published:

Gikas, P.W.: Crashworthiness as a Cultural Ideal.
In: The Automobile and American Culture, edited by David C. Lewis. Michigan Quarterly Review, pp 704-716. The University of Michigan, Ann Arbor, Fall 1980 - Winter 1981.

Also in response to an invitation I submitted a Chapter, "Forensic Aspects of the Highway Crash" to be published in Roadway Trauma, edited by John H. Hughes, M.D.

4. Service Activities:

I have been responsible for the following conferences based in the Department of Pathology:

1. Weekly renal biopsy conference.
2. Monthly arthritis conference (bimonthly devoted to lupus nephropathy).
3. Monthly urologic pathology conference.

My departmental duties also included serving as Director of the Electron Microscopy service and Coordinator of the Residency Training Program in Pathology.

My University Hospital Committee responsibilities included:

1. Executive Committee on Clinical Affairs (term ends June 30, 1981).
2. Joint Conference Committee of University Hospital (term ends June 30, 1981).
3. Search Committee for Associate Chief of Clinical Affairs - May-June, 1981.
4. Disaster Committee (continuing membership)

On the University level I am a member of the Board In Control of Intercollegiate Athletics.

5. National Activities:

1. Member of Panel for Nephropathology Speciality Conference at International Academy Pathology Meeting, Chicago, IL. March 4, 1981.
2. Clinic Pathologist in Lupus Nephritis Colloborative Study Group (Dr. E.J. Lewis, principal investigator, Rush-Presbyterian-St. Luke Medical Center, Chicago).
3. Attended by invitation a Conference on Building a Medical Network to Prevent Motor Vehicle Injuries on January 8-9, 1981 in Alexandria, VA, sponsored by the National Highway Traffic Safety Administration.
4. In March, 1981 I completed a four year term on the Education Committee of the International Academy of Pathology.

Sandra Gluck
Instructor, Department of Pathology
Faculty Report for 7/1/80 - 6/30/81

I. Medical Technology Program Responsibilities

A. Curriculum

Implemented all clinical year activities previously planned for Class of 1981. Planned, organized, and implemented Pathology 410 and Pathology 412 lecture series for fall and winter terms.

Surveyed clinical laboratory and teaching instructor needs and desires, analyzed program, suggested and implemented decisions regarding program directions. Planned and organized new teaching format for Class of 1982. Devised new rotation schedules for students in clinical laboratories.

Reviewed student laboratories for safety features and corrected major deficiencies.

Instituted standardized grading scale and professional evaluation form. Discussed, proposed and wrote system of program policies.

Revised Orientation manual and Admissions application. Planned orientation for Class of 1982. Planned and implemented all M.T. admissions procedures. Planned, organized and implemented senior graduation party.

Encouraged professional development of new faculty to upgrade teaching and technical skills.

Managed all LSA correspondence and paperwork regarding students and curriculum. Handled all program correspondence and inquiries.

Initiated contact with junior year course instructors to begin cooperative dialogues on course content.

Initiated contacts, became familiar with all pertinent LSA, campus, and Medical School offices and personnel.

Planned for the organizing and writing of the NAACLS Self-Study Accreditation Report.

B. Counseling

Responsible for all M.T. undergraduate counseling at LSA. Participated in U of M Summer Orientation counseling.

Counseled seniors individually and in groups.

C. Recruitment and Public Relations

Planned, organized, advertised and implemented mass meeting and lab tours for undergraduates.

Lectured to Residential College Health Careers class.

Participated in University-sponsored Health Careers Education program, SNAAP Health Careers Workshop, and CULS Health Career Education program.

Publicized program to Admissions office, all academic and dormitory counseling offices, LSA Checkpoint Newsletter, and other pertinent campus offices.

Revised and up-dated M.T. program information in all University catalogues, bulletins and brochures.

Publicized program to state and national M.T. organizations.

II. Teaching Activities

Lectured and ran student laboratory sessions for the Coagulation portion of Hematology course.

III. Research

Analyzed data collected from survey on medical technology faculty research.

Submitted paper on results of survey to Laboratory Medicine in June 1981.

IV. Service

Medical Technology Admissions Committee - made and implemented policies, interviewed and evaluated students, made recommendations for acceptance, notified applicants of decisions.

V. Professional Activities

Served as Moderator for scientific session of Region IV ASMT Fall meeting, September 1980.

Served as Moderator for Student Bowl Games at MSMT, April 1981.

Attended meetings of Michigan M.T. program directors and education coordinators.

Presented paper at ASMT national meeting, June 1981.

VI. Continuing Education

Region IV ASMT - September 1980.

Towsley Coagulation Seminar - October 1980.

University Hospital HRD Management programs - October 1980

MSMT - April 1981.

ASMT - June 1981.

John T. Headington, M.D.
Professor, Department of Pathology

Faculty Report for 7/1/80 - 6/30/81

1. Diagnostic Service Activities
 - a. Dermatopathology (daily, 12 mos)
 - b. Muscle and peripheral nerve pathology (daily, 12 mos)
2. Teaching Activities
 - a. Medical Students
 - (1) Dermatopathology lectures
 - (2) Muscle pathology lectures
 - b. Pathology and Dermatology House Officers
 - (1) Dermatopathology
3. Research Activities
 - a. Effects of DNCB on alopecia areata
 - b. Effects of Minoxodil on androgenetic alopecia
 - c. Dendritic cells in keratinous cysts
 - d. Trichoblastic fibroma, a cumulative review
 - e. The dermal glial system

PUBLICATIONS

- a. Swanson, N.A., Keren, D. and Headington, J.T.: Extramedullary plasmacytoma presenting in skin.
- b. Mitchell, A.J., Anderson, T.F., Headington, J.T. and Rasmussen, J.E.: Recurrent granulomatous dermatitis with eosinophilia. Well's syndrome, Arch Dermatol. In press.
- c. Swanson, N.A., Mitchell, A.J., Leahy, M.S., Headington, J.T. and Diaz, L.A.: Topical treatment of alopecia areata: Contact allergen versus primary irritant therapy. Arch Dermatol. In press.
- d. Tricholemmal and epidermoid cysts. Chapter in Clinical Dermatology. ed by Demis.

- e. Headington, J.T.: Tricholemmoma. Am J Dermatopath 2:225-226, 1980.
- f. Allen, R.J., Wong, P., Rothenberg, S., Di Mauro, S. and Headington, J.T.: Neonatal systemic carnitine-folate deficient leukoencephalomyopathy with absent methylenetetrahydrofolate reductase, homocystenuria, hypomethioninemia responsive to dietary carnitine-methonene-folate (C-M-F) supplements. Ann Neurol 8:211, 1980. (Abstract).
- g. Headington, J.T., Mitchell, A.J. and Swanson, N.A.: New histopathologic findings in alopecia areata studied in transverse section. J Invest Dermatol 76: 325, 1981. (Abstract).

4. Departmental and International Service Activities

- a. Departmental
 - (1) Surgical Pathology Search Committee
 - (2) MSP Committees, Dermatology and Pathology
 - (3) Internal Review Committee, Dermatology
 - (4) Acting Chairman, Department of Dermatology (In Dr. Voorhees' absence)
- b. National
 - (1) Intersociety Pathology Council
- c. International
 - (1) International League of Dermatopathology

5. National Activities

- a. Administrative
 - (1) Secretary-Treasurer. The American Society of Dermatopathology
 - (2) Course Director, Advanced Dermatopathology. The American Academy of Dermatology
- b. Presentations at Meetings
 - (1) Guest speaker, Summer Meeting Florida Society of Pathologists, Palm Beach. Florida, 26-27 July 1980.
 - (2) Extramammary Paget's Disease, XIII International Congress, International Academy of Pathology. Paris, France, 15-19 Sept, 1980.
 - (3) Surgical Pathology of Melanoma. Third Annual Clinical Oncology Conference. Ann Arbor, Michigan, 24-25 October 1980.
 - (4) The Myth of Parapsoriasis. Fall Meeting. Michigan Dermatological Society, 5 November 1980.
 - (5) Malignant Tumors of Sweat Glands. Self-Assessment Course. The American Society of Dermatopathology. New York, New York, 4 December 1980.

- (6) Extramammary Paget's Disease. Special Course. The American Society of Dermatopathology. New York, New York, 4 December 1980.
- (7) The Borderland Between Neuropathology and Dermatopathology. Advanced Dermatopathology. The American Academy of Dermatology. Annual Meeting. New York, New York, 7 December 1980.
- (8) Some Proliferative Disorders of Keratinocytes. Winter Skin Seminar. Aspen, Colorado, 10-15 February 1981.
- (9) Course Director and Presenter. Advanced Dermatopathologic Oncology (Short Course). The International Academy of Pathology. Chicago, Illinois, 6 March 1981.
- (10) New Histologic Findings in Alopecia Areata Studied in Transverse Section. The Society for Investigative Dermatology. San Francisco, California, 27-29 April 1981.
- (11) Guest Faculty, Practical Self-Assessment Course in Dermatopathology. New Jersey Medical School. Newark, New Jersey, 9-10 May 1981.

Kathleen P. Heidelberger, M.D.
Professor, Department of Pathology
Annual Report 7/1/80 - 6/30/81

I. Diagnostic Service Activities:

- A. Daily reading of pediatric surgicals; approximately 10% of department total.
- B. Performance and supervision of all pediatric necropsies; approximately 22% of department total.
- C. Histologic evaluation of selected Teratology Unit autopsies; 15-20 per year.
- D. Local coordination of specimens for National Children's Tumor Study protocols; approximately 75 cases per year.

II. Teaching Activities:

- A. Supervision and direction of M-4's on pathology electives; 2 months.
- B. Six regularly scheduled pediatric conferences per month for pediatric senior staff, house staff and students.
- C. Organized and participated in special programs on congenital heart disease for Inteflex and regular curriculum students.

III. Research Activities:

- A. During the past twelve months, I have continued to supervise the laboratory and technical help involved in the morphometric analysis of the lung. This included a move in physical location of space from F2217 to K2010.

Studies in this laboratory include:

- 1. Morphometric analysis of a lung from every pediatric necropsy and from selected Teratology Unit and adult necropsy cases.
 - 2. Morphometric analysis of lung biopsies from children with selected congenital cardiac lesions.
 - 3. A prospective, three phased study of children with endocardial cushion defects and their clinical, hemodynamic, surgical and morphometric lung data has been completed and is in the process of analysis.
 - 4. Data analysis has been started in the morphometric studies of the children with SIDS and the studies of the lung vasculature by regions.
 - 5. A paper on hyaline membrane disease with its morphometric variations is in its first draft.
- B. A retrospective study of children who received prostaglandin infusions to maintain patency of the ductus arteriosus is in progress.
 - C. The pediatric surgeons, Dr. Appelman and I are studying in detail the livers of children who have received total parenteral hyper-alimentation.
 - D. Two case reports are being prepared with pediatric cardiologists and pediatric surgeons with relation to unique lesions and a unique treatment modality.
 - E. No students were assigned to research projects this year.

Research Activities cont'd:

- F. The renewal grant request to The Michigan Heart Association for study of the pulmonary vasculature in congenital heart disease was approved but not funded.
- G. The following publications are noted:
 - 1. Neumann, M.P., Heidelberger, K.P., Dick, M., and Rosenthal, A. Fetal pulmonary vascular changes associated with hypoplastic left ventricle syndrome. Pediatric Cardiology 1:301-306, 1981.
 - 2. Jaffe, M., White, S.J., Silver, T., and Heidelberger, K.P. Wilm's Tumor; ultrasonic features, pathologic correlation and diagnostic pitfalls. (Accepted for publication in Radiology)
 - 3. Dick, M., Heidelberger, K.P., Crowley, D., Rosenthal, A., and Hees, P. Quantitative morphometric analysis of pulmonary arteries in two patients with D-transposition of the great arteries and persistent fetal circulation. (Accepted for publication in Pediatric Research)
 - 4. Rocchini, A.P., Weesner, K.M., Heidelberger, K.P., Keren, D.F., Behrendt, D., and Rosenthal, A. Porcine xenograft valve failure in children: an immunologic response. (Accepted for publication in Circulation)

IV. Departmental and International Service Activities:

- A. The Inteflex Program Admissions Committee
- B. The Committee on Academic Affairs (Curriculum Committee)
- C. The House Officers Selection Committee
- D. The Departmental Committee on Appointments, Promotions and Tenure

I have no international service activities.

V. National Activities:

Chairman, Pediatric Pathology Club (our national society) AP Committee to study appropriateness/feasibility of sub-specialty board in pediatric pathology.

VI. Other Pertinent Information:

A new Chairman of Pediatrics starts July 1, 1981. His objectives for Pediatrics may involve some change in expectations of the Pathology Department and the Pediatric pathologist.

Robert C. Hendrix, M.D.
Professor - Department of Pathology

Faculty Report for July 1, 1980 - June 30, 1981

1. Diagnostic Service Activities:

- a) Surgical:
 - 4 weeks scheduled
 - Unscheduled and unrecorded substitution (4 weeks?)
- b) Autopsy:
 - General supervision
 - 5 months direct responsibility
- c) General:
 - Staff call list
 - Transmittal letters for outgoing surgical slides
 - Autopsy reports to family, referring physicians, lawyers.
 - SNOP code supervision

2. Teaching:

- a) Sophomore lab section - 2nd semester 1981
- b) Lecture sequence coordinator ICS-Sophomore
Medicine and the Law - 1st semester 1980
- c) Teaching and working interdepartmental conferences
 - Thyroid conference
 - Internal Medicine CPC
 - Frequent substitute in others

3. Research:

J. Reimer Wolter and R.C. Hendrix. Osteoblastic Prostate Carcinoma Metastatic to the Orbit. Am. J. Opth. 91:648-651, 1981

4. Departmental and Hospital Activities:

- a) Alternate Member MSP Executive Committee
- b) Surgical Pathology Search Committee
- c) Anatomic Pathology Committee
- d) Interviewed 15 applicants for House Officer positions
- e) Hospital Quality Assurance Committee
- f) Hospital Medico-Legal Committee
- g) Cancer Work Group
- h) Substitute "listener" for chairmen as needed in various committees

5. National Activities:

National Association of Medical Examiners: Board of
Directors, Member Education Committee, Regional Coordinator

6. Other:

- a) Deputy Medical Examiner, Washtenaw County
- b) Lecture: The Pathologist as Witness at Seminar sponsored
by the Institute of Continuing Legal Education

Samuel P. Hicks, M.D.
Professor of Pathology
Neuropathology Laboratory

Annual Departmental Report July 1, 1980 - June 30, 1981

1. Diagnostic Service Activities:

- A. Work with house officers in gross and microscopic examination and diagnosis of their brain specimens from autopsies daily and at weekly brain cuttings.
- B. Examine and prepare reports on autopsy brains sent from state and other institutions.
- C. Examine and prepare reports on neurosurgical material from U of M Hospital and other institutions (consultations).
- D. Neuropathology diagnostic review conferences (Neuropathology Conference, Brain Cutting Conference).
- E. Responsibility for Neuropathology Laboratory.

2. Teaching Activities:

- A. Neural and Behavioral Sciences 600. Neuropathology for 2nd year medical students. 18 hours.
- B. Neuropathology 858. Course for house officers, staff, graduate and other students. 18 hours.
- C. Neuropathology for Pathology house officers: brain cutting, review autopsies, neuroanatomy and neurohistology, histologic neuropathology.
- D. Brain Cutting Conference for students, house officers, staff.
- E. Neuropathology Conference for students, house officers, staff.

3. Research Activities:

- A. Effects of radiation on the developing form and function of the nervous system. Restitution and malformation after radiation and other injuries of the developing nervous system.

Publications:

1. D'Amato, C. J. and S. P. Hicks. Development of the motor system: Effects of radiation on developing corticospinal neurons and locomotor function. *Exper. Neur.* 69, 1-23, 1980.
2. Hicks, S. P. and C. J. D'Amato. Development of the motor system: Hopping rats produced by prenatal irradiation. *Exper. Neur.* 69, 24-39, 1980.
3. Hicks, S. P. and C. J. D'Amato. Effects of radiation on development, especially the nervous system. *Amer. J. Forensic Med. and Path.* 1, 309-317, 1980 (Shields Warren Memorial Issue).

4. DeJong, R. N. and S. P. Hicks. Vascular malformation of the brain stem: Report of a case with long duration and fluctuating course. *Neurology* 30, 995-997, 1980.

Abstracts and Poster Exhibits:

1. D'Amato, C. J. and S. P. Hicks. Restitution of the central nervous system after destructive injury by prenatal irradiation in rats. Proceedings of 10th Annual Meeting, Society for Neuroscience, Cincinnati, OH. (Abstract and poster exhibit). *Neurosc. Abst.* 6, 824, 1980.
2. D'Amato, C. J. and S. P. Hicks. Genetic and radiation induced developmental hydrocephalus. Proceedings of 12th Annual Meeting, Michigan Chapter: Society for Neuroscience, Warner Lambert-Parke Davis Co., Ann Arbor, MI, May, 1981 (Abstract and poster exhibit).
3. D'Amato, C. J. and S. P. Hicks. Prenatal genetic aqueduct stenosis causing hydrocephalus. American Association of Neuro-pathologists, Vancouver, B.C., (Abstract and poster exhibit). *J. Neuropath. and Exper. Neur.*, 40, 358, 1981.
4. Hicks, S. P. and C. J. D'Amato, and K. Dorovini-Zis. Fetal and infant brain phagocytes after radiation cell-killing. American Association of Neuropathologists, Vancouver, B.C., (Abstract and poster exhibit). *J. Neuropath. and Exper. Neur.*, 40, 358, 1981.

B. Grant Support: Principal Investigator, USPHS NS 10531.

4. Departmental and International Service Activities:

- A. Neural and Behavioral Sciences Committee (Medical School).
- B. Subcommittee on Human Use of Radioisotopes and Radioactive Drug Research Committee.

5. National Activities:

- A. Society of Medical Consultants to Armed Forces
- B. Reviewer for National Science Foundation, research grant applications, referee journal articles.

Kent J. Johnson, M.D.
Assistant Professor, Department of Pathology

Faculty Report for 7/1/80 - 6/30/81

1. Diagnostic Service Activities:

- A. Surgical pathology sign out-service, University of Connecticut 7/1/80 - 10/30/80.
- B. Necropsy service, University of Connecticut 7/1/80 - 10/30/80.
- C. Diagnostic Electron Microscopy, University of Connecticut 7/1/80 - 6/30/81.
- D. Renal Biopsy Service, University of Connecticut and University of Michigan 7/1/80 - 6/30/81.

2. Teaching Activities:

- A. In charge of pathology teaching for Renal-Urinary subject committee for second year Medical Students at the University of Connecticut.
- B. Laboratory Instructor and Lecturer, Respiratory Subject committee for second year Medical Students at the University of Connecticut.
- C. Lecturer to second year Medical Students, University of Michigan.

3. Research Activities:

A. Projects

- 1. The Ability of Oxygen Free Radicals to Cause Lung Injury. (In collaboration with Dr. Peter A. Ward).
- 2. The Suppression of Lung Injury Caused by Oxygen Free Radicals (In collaboration with Dr. Peter A. Ward).
- 3. Quantitation of Pulmonary Fibrosis caused by Oxygen Free Radicals (In collaboration with Dr. Sem H. Phan and Dr. Gary Striker).
- 4. Suppression of Immune Complex Induced Lung with Catalase and Superoxide Dismutase (In collaboration with Dr. Peter A. Ward).
- 5. The Generation of Prostaglandins in Lungs Injured by Oxygen Free Radicals (In collaboration with Dr. Steven Kunkel).

6. In-Vitro Inhibition of Leukocytic Proteases with Protease Inhibitors in Solid and Fluid Phases (In collaboration with Dr. James Varani).
7. Ability of Neutral proteases to cause Lung Injury and Emphysema.

B. Grant Support:

1. NHLBI clinical Investigator Grant Program. immunopathology of Lung. \$42,660.

Publications

1. Johnson, K J and Ward, P A: Protective function of C6 in rabbits treated with bacterial endotoxin. J. Immunol. 106:1125-1127, 1971.
2. Johnson, K J and Ward P A: The requirement for serum complement in the detoxification of bacterial endotoxin. J. Immunol. 108:611-616, 1971.
3. Johnson, K J and Ward, P A: Acute immunologic pulmonary alveolitis. J. Clin. Invest. 54:349-357, 1974.
4. Johnson, K J, Ward, P A, Goralnick, S and Osborn, M J: Isolation from human serum of an inactivator of bacterial lipopolysaccharide. Amer. J. Pathol. 88:559-574, 1977.
5. Ward, P A, Johnson, K J and Kreutzer, D L: Regulatory dysfunction in leukotaxis. Amer. J. Pathol. 88:701-710, 1977.
6. Johnson, K J, Anderson, R P and Ward, P A: Suppression of immune complex induced inflammation by the chemotactic factor inactivator. J. Clin. Invest. 59:951-958, 1977.
7. Johnson, K J, Varani, j, Oliver, J and Ward, P A: Immunologic vasculitis in beige mice with deficiency of leukocytic neutral protease. J. Immunol. 122:1807-1811, 1979.
8. Johnson, K J, Chapman, W E and Ward, P A: Immunopathology of the lung: A review. Amer. J. Pathol. 95:793, 1979.
9. Varani, J, Johnson, K J and Kaplan, J.: Development of a solid phase assay for measurement of proteolytic enzyme activity. Analytical Biochemistry.
10. Johnson, K J, Ward, P A, Striker, G and Kunkel, R.: A study of the origin of pulmonary macrophages using the chediak-higashi marker. Amer. J. Path. 101:365, 1980.

11. McCormick, J R, Harkin, N N, Johnson, K J and Ward, P A: Suppression of superoxide Dismutase of immune-complex-induced pulmonary alveolitis and dermal inflammation. Amer. J. Pathol. 102(1):55, 1981.
12. Johnson, K J, Fantone, J C, Kaplan, J and Ward, P A: In vitro damage of rat lungs by oxygen metabolites. J. Clin. Invest. 67:983, 1981.

Articals Submitted for Publication:

1. Johnson, K J, Tennant, R and Giles, C: Ultrastructural evidence of a neural origin for Wilms' tumor. Submitted for publication.
2. Johnson, K J and Kunkel, R.: Interstitial pulmonary fibrosis produced by exposure to oxygen metabolites: A Morphological Study. Submitted for publication.
3. Johnson, K J and Varani, J: Substrate Hydrolysis by Immune-complex activated neutrophils. Effect of physical presentation of complexes and protease inhibitors. Submitted for publication.

Chapters in Books:

1. Ward, P A and Johnson, K J: Effects of endotoxins on serum mediators (complement, kinin and clotting systems), In "Microbiology, 1975", edited by D. Schlessinger, S. Karger, pp. 327-329, 1975.
2. Cale, S, Johnson, K J and Ward, P A: Sarcoidoses, granulomatous disease of the lung. In "Sarcoidoses and other Granulomatous Diseases of the Lung." Edited by B L Fanbury, Marcell Dekkec, 1981.
3. Ward, P A and Johnson, K J: Inflammatory mechanisms in lung injury, In "Immunopathology Symposium". Symposia Specialistes, 1981.
4. Ward, P A and Johnson, K J: Immunologically mediated pulmonary damage. In "The Mucosal Immune System in Health and Disease." Proceedings of the eight first Ross conference on pediatric Research. Ross Laboratories, Columbus 296-306, 1981.

Abstracts, Preliminary Communications, Panel Discussions:

1. Johnson, K J and Ward, P A: Requirement for C4 in detoxification of bacterial endotoxin. Fed. Proc. 30:356, 1971.
2. Johnson, K J, Ward, P A, Osborn, M J and Arroyave, C: C5 as an inactivator of bacterial endotoxin. Fed. Proc. 31:3089 (Abst. No.), 1972.
3. Johnson, K J, Curtis, E S and Ward, P A: Neutrophil-dependent, acute immune complexes disease of lung. Fed. Proc. 32:832, 1973.

4. Ward, P A, Johnson, K J, Goralnick, S, Arroyave, C and Osborn, M J: Partial characterization and mechanism of action of the LPS inactivator in human serum. Fed. Proc. 33:648, 1974.
5. Johnson, K J and Varani, J: Immune-complex vasculitis in beige mice. Fed. Proc. 38:4089, 1979.
6. Johnson, K J and Varani, J: In-vitro simulation of acute immune complex injury: Inhibition by anti-proteases. Fed. Proc. 39:2193, 1980.
7. Johnson, K J: Role of oxygen metabolites in immune-complex induced lung injury. Fed. Proc. 40:3055, 1981.
8. Ward, P A and Johnson, K J: Induction of pulmonary fibrosis by oxygen metabolites. Fed. Proc. 40:3200, 1981.
9. Johnson, K J and Ward, P A: Lung injury following exposure to oxygen metabolites. Amer. Thoracic Society, 1981.

4. National Activities:

- A. Member - American Association of Pathologists.
- B. Member - American Association of Immunologists.

W. John Judd
Director, Blood Bank

Faculty Reported For 7/1/80 - 6/30/81

DIAGNOSTIC SERVICE ACTIVITIES

1. Director - Blood Bank Reference Laboratory.
2. Consultant - VA Medical Center.
3. Attended Blood Bank Communication Meetings.

TEACHING ACTIVITIES

1. Presented two lectures to medical technology students (Path. 409).
2. Attended bi-weekly clinical pathology conferences.
3. Trained six pathology house officers in reference laboratory procedures.
4. Presented two lectures for blood bank continuing education program.
5. Directed a series of 17 lectures (presented 3) for four blood bank staff taking the ASCP Specialist in Blood Banking Examination.
6. Presented a three-hour workshop on Special Techniques in Blood Banking at the Current Topics in Blood Banking Program, Department of Postgraduate Medicine.
7. Lectured on Technical Aspects of Pretransfusion Testing at the Current Topics in Blood Banking Program, Department of Postgraduate Medicine.

DEPARTMENTAL AND INTERNATIONAL SERVICE ACTIVITIES

Professional Society Activities:

American Association of Blood Banks:

Technical Workshop Committee
Regional Workshop Committee
Committee on Reference Laboratories and Rare Donor File

Michigan Association of Blood Banks:

Annual Meeting Program Committee
Interim Scientific Committee
Executive Board

Departmental - Blood Bank

Technical Committee - Blood Bank
Technical Committee - Reference Laboratory

Consultant:

National Committee on Clinical Laboratory Standards - member, subcommittee on lectins.

NATIONAL ACTIVITIES

Papers Presented:

Judd WJ, Steiner EA, Cochran RK: A phenol-dependent autoanti-Jk^a. Proceedings of the 18th Congress of the International Society of Hematology and the 16th Congress of the International Society of Blood Transfusion. Montreal, 1980, p 265.

Judd WJ, Steiner EA, Cochran RK: Paraben-associated autoanti-Jk^a: two examples. 33rd Annual Meeting of the American Association of Blood Banks, Washington, D.C., 1980. Transfusion 20:621, 1980.

Judd WJ: The role of exo- β -galactosidases in Tk-activation. 33rd Annual Meeting of the American Association of Blood Banks, Washington, D.C., 1980. Transfusion 20:622, 1980.

Invited Lectures:

Direct antiglobulin testing - how much is enough? Michigan Association of Blood Banks Annual Meeting, Troy, September, 1980.

Lectins. Annual Meeting of the American Red Cross Reference Laboratories. Salt Lake City, March, 1981.

Biochemistry of the MN-system. Annual Meeting of the American Red Cross Reference Laboratories. Salt Lake City, March, 1981

Biochemistry of the MN-system. Irwin Memorial Blood Center. San Francisco, March, 1981.

Four hemagglutinins from *Bandeiraea simplicifolia* seeds. Research Seminars, Lindsay F Kimball Research Institute of the New York Blood Center. New York, April, 1981.

Lectins, polyagglutination and sialic acid deficient red cells. Specialist in Blood Banking Program, Wayne State University. Detroit, April, 1981.

Enzymes in immunohematology. Specialist in Blood Banking Program, Wayne State University. Detroit, April, 1981.

The Lutheran blood group system. Specialist in Blood Banking Program. Wayne State University. Detroit, April, 1981.

The Xg^a blood group system. Specialist in Blood Banking Program. Wayne State University. Detroit, April, 1981.

Polyagglutination - the current status. Michigan Association of Blood Banks Spring Workshop. Lansing, May, 1981.

Special techniques in Blood Banking. Michigan Association of Blood Banks Spring Workshop, Lansing, May, 1981.

Evaluation of the direct antiglobulin test. Grand Valley Area Annual Blood Bank Conference. Grand Rapids, May, 1981.

Pretransfusion testing - how much is enough? Lansing Area Antibody Club. Lansing, May, 1981.

Four hemagglutinins from Bandeiraea simplicifolia seeds. Atlanta Red Cross Specialist in Blood Banking Program. Atlanta, June 1981.

Quality Control in Blood Banking. American Society for Medical Technology - Annual Meeting. Miami, June, 1981.

Polyagglutination - the current status. Canadian Society for Medical Technology - Annual Meeting. London, Ontario, June, 1981.

Microbial-forms of polyagglutination: T, Tk and acquired-B. American Association of Blood Banks Technical Workshop. Washington, D.C., November, 1980.

Preliminary Communications:

Studies on an Mi^V/M^k proposita and her family. Invitational Conference of Investigative Immunohematologists. Wayzata, Minnesota, June, 1981.

Acute and fatal intravascular hemolysis associated with T-activation. Invitational Conference of Investigative Immunohematologists. Wayzata, Minnesota, June, 1981.

Moderator:

Michigan Association of Blood Banks Annual Meeting, September, 1981.

Judge:

Student Bowl, Michigan Society for Medical Technology, April, 1981.

RESEARCH ACTIVITIES

Publications:

Judd WJ: The role of lectins in blood group serology. CRC Critical Reviews in Clinical Laboratory Sciences. 12:171-214, 1980.

Judd WJ: Microbial-associated forms of polyagglutination (T, Tk and acquired-B). In: Polyagglutination, ML Beck and WJ Judd, Eds. American Association of Blood Banks, Washington, D.C., 1980, pp 23-53.

Judd WJ, Kraemer K, Moulds JJ: The rapid identification of Chido and Rodgers antibodies using C4d coated red cells. Transfusion 21:189-192, 1981.

Judd WJ, Walter WJ, Steiner EA: Clinical and laboratory findings on two patients with naturally occurring anti-Kell agglutinins. *Transfusion* 21:184-188, 1981.

Articles Accepted for Publication:

Edwards JM, Moulds WJ, Judd WJ: Chloroquine dissociation of antigen-antibody complexes: a new technique for typing red blood cells with a positive direct antiglobulin test. *Transfusion*.

Daniels GL, Judd WJ, Moore BPL, Neitzer G, Ouellet P, Plantos M, Verrette S: A 'new' high frequency antigen Er^a. *Transfusion*.

Judd WJ, Steiner EA, Cochran RK: Paraben-associated autoanti-Jk^a antibodies: three examples detected using commercially prepared low-ionic strength saline containing parabens. *Transfusion*.

Articles Submitted for Publication:

Judd WJ, Steiner EA, Capps RD: Autoagglutinins with apparent anti-P specificity reactive only by low-ionic strength salt (LISS) techniques. *Transfusion*.

Books Edited:

Beck ML, Judd WJ: Polyagglutination. American Association of Blood Banks, Washington, D.C., 1980.

Articles in Preparation:

Geisland J, Issitt PD, Judd WJ, Wilkinson SM, Anstee DJ, Shin C, Glidden H: Studies on K.M.: an Mi^V/M^K proposita, and her family. (*Transfusion*).

Judd WJ: Handbook of Reference Laboratory Procedures. (Biological Corporation of America).

Judd WJ, Oberman HA, Flynn S: Acute intravascular hemolysis associated with T-activation. (*Transfusion* - Letter to the Editor).

Projects to be Completed:

1. Assessment of the ability of a low-ionic strength saline (LISS) technique at 37 C and by the indirect antiglobulin technique to detect ABO incompatibility (LR Trudeau, WJ Judd, HA Oberman, SH Butch).
2. The effect of 2-aminoethylisothiuronium bromide on red blood cell Kell system antigens (Marsh WL, Judd WJ, et al).
3. The role of exo- β -galactosidases in Tk-activation (Judd WJ).

ANNUAL DEPARTMENTAL REPORT

Fred J. Karsch
1981

- 1) Diagnostic Service Activities: None
- 2) Teaching Activities:
 - a) Inteflex Student's Physiology Course
 - b) Mammalian Reproductive Endocrinology (Path/Physiol/Zoo. 581)
 - c) Physiology 501
- 3) Research Activities:
 - a) Publications:
 - 1) Importance of estradiol and progesterone in regulating LH secretion and estrous behavior during the sheep estrous cycle. F.J. Karsch, S.J. Legan, K.D. Ryan and D.L. Foster, Biology of Reproduction 23:404-413, 1980.
 - 2) Two effects of estradiol that normally contribute to the control of tonic LH secretion in the ewe. R.L. Goodman, S.J. Legan, K.D. Ryan, D.L. Foster and F.J. Karsch. Biology of Reproduction 23:415-422, 1980.
 - 3) Photoperiodic control of seasonal breeding in ewes: modulation of the negative feedback action of estradiol. S.J. Legan and F.J. Karsch, Biology of Reproduction 23:1061-1068, 1980.
 - 4) Pulsatile secretion of luteinizing hormone: differential suppression by ovarian steroids. R.L. Goodman and F.J. Karsch. Endocrinology 107:1286-1290, 1980.
 - 5) The hypothalamic pulse generator: a key determinant of reproductive cycles in sheep. R.L. Goodman and F.J. Karsch. In: B.K. Follett and D. Follett (eds.), Colston Papers No. 32, Biological Clocks in Seasonal Reproductive Cycles, John Wright and Sons, Bristol, 1981.
 - 6) Seasonal breeding: a saga of reversible fertility, F.J. Karsch, The Physiologist, 23, 29-38, 1980.
 - 7) Transition into seasonal anestrus in the ewe: decreased tonic LH secretion or decreased ovarian response to LH? S.J. Legan, R.L. Goodman, K.D. Ryan, D.L. Foster and F.J. Karsch. In: M. Hunzicker-Dunn and N.B. Schwartz (eds.) Dynamics of Ovarian Function, Raven Press.
 - 8) Ovarian feedback control of follicle-stimulating hormone in the ewe: evidence for selective suppression, R.L. Goodman, S.M. Pickover, and F.J. Karsch, Endocrinology 108:772-777, 1980.

- 9) A receptive period for estradiol-induced luteolysis in the rhesus monkey. J.N. Schoonmaker, W. Victory, and F.J. Karsch. Endocrinology 108:1874-1877, 1981.
- b) Grant Support:
 - 1) NIH HD 11311, P50 Specialized Population Research Center Grant. Project 4 in above grant.
- c) Students assigned to laboratory research programs:
 - 1) Postdoctoral Fellows:
 - a) Robert L. Goodman
 - b) Eric L. Bittman
 - 2) Graduate Students:
 - a) Debbie Beasley, Physiology
 - b) Chris Harker, Physiology
 - c) Judith Schoonmaker, Physiology
- 4) Departmental and International Service Activities:
 - a) Local Arrangements Committee, Society for the Study of Reproduction Annual Meeting, January - August, 1980.
- 5) National Activities:
 - a) Papers presented at scientific meetings:
 - 1) Photoperiodic control of seasonal breeding in blind ewes: evidence for extraretinal photoreception. S.J. Legan and F.J. Karsch. Annual Meeting of the Society for the Study of Reproduction. August, 1980.
 - 2) Transition into seasonal anestrus in the ewe: decreased tonic LH secretion or decreased ovarian response to LH? S.J. Legan, R.L. Goodman, K.D. Ryan, D.L. Foster and F.J. Karsch. Ovarian Workshop, August, 1980.
 - 3) Seasonal breeding: a saga of reversible fertility, Fall meeting of the American Physiological Society, Oct., 1980.
 - b) Invited lectures at other institutions:
 - 1) Seasonal breeding: a saga of reversible fertility, Emory University, Nov., 1980
 - 2) Hormonal and environmental control of pulsatile LH secretion, University of Kentucky, May, 1980.
- 6) Other Pertinent Information:
 - a) Honors:
 - 1) 25th Bowditch Lectureship, American Physiological Society, 1980.

David F. Keren, M.D.
Annual Report
July 1, 1980 - June 30, 1981

I. Diagnostic Service Activities:

Director Clinical Immunopathology
Surgical Pathology

II. Teaching:

Medical Students and Graduate Students:

Section Director, Human Illness - Inteflex 630, 640, 650.
Lecture series on gastrointestinal pathology, dermatopathology,
endocrine pathology and salivary gland pathology.

Biology 414 - Lecture on mucosal immunity.

Epidemiology 520 - Lecture series on Infection and
Immunity (4 lectures).

Clinical Studies, Inteflex 410 - Lecture on Clinical
Immunology.

House Officers:

Coordinator - biweekly Clinical Pathology Conference.

Clinical Immunopathology - daily sign-out.

Clinical Immunopathology - lecture series.

Postgraduate Teaching:

Towsley Seminars on Clinical Chemistry - Lecture on
ELISA technology.

Seminars on Current Topics in Allergy and Clinical
Immunology. Lecture on:

Immune Complex Disease

Clinical Immunology Laboratories

Mucosal Immunity.

Invited Lectures:

International Academy of Pathology - Immunopathology of
Inflammatory Bowel Disease.

Henry Ford Hospital - Mucosal Immune Responses.

Michigan Medical Technology Society, ELISA Technology.

III. Research Activities:

Publications

Articles

Nishiyama, RH, Torretti, B, Martin DB, Pek, S and Keren, DF: The
detection of islet-cell antibodies by immunofluorescence in Bouin's-
fixed, paraffin-embedded human pancreas. Lab. Invest. 43: 191-195, 1980.

Hamilton, SR, Keren, DF, Boitnott, JK, Robertson, SM and Yardley, JH:
IgA content of intestinal epithelium and secreted fluid in experimental
cholera: Comparison with net fluid production and goblet cell mucin
content. Gut 21: 365-369, 1980.

Swanson, NA, Keren, DF, and Headington, JT: Extramedullary IgM plasma-
cytoma presenting in skin. Am. J. Dermatopathol. 3: 79-83, 1981.

Research Activities (publications) cont'd:

Keren, DF, Collins, HH, Gemski, P, Holt, PS, Forman, SB: Role of antigen form in development of mucosal immunoglobulin A response to Shigella flexneri antigens. Infect. Immun. 31: 1193-1202, 1981.

Hamilton, SR, Keren, DF, Yardley, JH, and Brown, GD: No impairment of local intestinal immune response to keyhole-limpet hemocyanin in the absence of Peyer's patches. Immunol. 42: 431-435, 1981.

Articles Accepted for Publication:

Keren, DF: Whipple's disease: a review emphasizing immunology and microbiology. (CRC Critical Reviews in Laboratory Medicine)

Atkinson, JP, Gorman, JC, Curd, J, Hyla, JF, Deegan, MJ, Keren, DF, Abdou, NI, and Walker, SE: Cold dependent activation of complement in SLE: a unique cause for discrepancy between clinical and laboratory parameters. (Arthritis and Rheumatism)

Weesner, K, Rocchini, A, Heidelberger, K, Rosenthal, A, and Keren, DF: Immune mechanisms in porcine xenograft failure in children. (Circulation)

Clark, KA and Keren, DF: Demonstration of monoclonal lymphoplasmacytic proliferations by immunofluorescence on routine formalin-fixed, paraffin-embedded tissue. (Cancer)

Mutchnik, MG and Keren, DF: In vitro synthesis of antibody to specific bacterial lipopolysaccharide by peripheral blood mononuclear cells from patients with alcoholic cirrhosis. (Immunology)

Rao, KMK, Bordine, SL, and Keren, DF: Decision making by pathologists: a strategy for curtailing inappropriate tests. (Arch. Pathol Lab. Med.)

Books

Keren, DF: Immunology and Immunopathology of the Gastrointestinal Tract. American Society of Clinical Pathologists. 1980.

Abstracts

Atkinson, JP, Hyla, JF, Deegan, MJ, Keren, DF, and Walker, SE: Cold and coagulation dependent activation of complement in vitro in a patient with systemic lupus erythematosus. Clin. Res. 28: A138, 1980.

Flynn, SD and Keren, DF: An enzyme-linked immunosorbent assay (ELISA) to detect anti-insulin antibodies. Am. J. Clin. Path. (In Press).

Clark, KA and Keren, DF: Diagnostic use of immunofluorescence on formalin-fixed, paraffin-embedded tissue to demonstrate monoclonal lymphoplasmacytic proliferations. Lab. Invest. 44: 10A, 1981.

Mozden, JJ, Jr and Keren, DF: Detection of immunoglobulin antigens in methacrylate-embedded human colon. Lab. Invest. 44: 46A, 1981.

Smith, LF, Collins, HH, Wilson, SR, Forman, SB, Keren, DF, and Lowell, GH: Secretory IgA-dependent mononuclear cell-mediated anti-bacterial activity. Fed. Proc. 40: 1074, 1981.

Keren, DF, Scott, PJ, Bauer, D, and Porter, P: Direct in vivo demonstration in intestinal secretions of a mucosal (IgA) memory response to Shigella flexneri antigens. Fed. Proc. 40: 1124, 1981.

Grant Support

Michigan Diabetes Research Grant. "The detection of islet-cell antibodies". \$29,758. September 1, 1979 - August 31, 1981.

United States Army Research and Development Command. "An investigation of the memory response of the local immune system to shigella antigens". \$65,342. September 1, 1980 - August 31, 1981.

National Foundation for Ileitis and Colitis. "Immunopathogenesis of inflammatory bowel disease". \$59,201. September 1, 1980 - August 31, 1982.

Training Grants

National Institutes of Health. Gastrointestinal Training Grant T32Am07367-01. Dr. Keren is a Trainer in gastrointestinal immunopathology. Funded September 1, 1980 for five years.

Students in Laboratory:

Scott Kern - IgA microelisa paneth cell studies.

Arthur Rosney - Parenteral immunization and local immunity.

Residents in Laboratory:

Ken Clark - Immunofluorescence in plasma cell discrasias.

James Quigley - anti-GBM ELISA.

John Mozdzen - Fluorescence on methacrylate tissue.

Stuart Flynn - anti-insulin ELISA.

IV. Departmental Service:

Departmental Committees

Clinical Pathology

Medical Director, Medical Technology Program

Resident Selection Committee

V. National Activities:

Gut Club, International Academy of Pathology

Mucosal Infections, NIH, September, 1980.

ANNUAL DEPARTMENTAL REPORT

P. Landis Keyes
1981

- 1) Diagnostic Service Activities: None
- 2) Teaching Activities: Six lectures, Physiology 502; Mammalian Reprod.Endo., Path/Physiol./Biol. Sci. 581, Fall.
- 3) Research Activities:
 - a) Publications:
 - 1) Comparison of serum progesterone, 20α -dihydroprogesterone and estradiol- 17β in pregnant and pseudopregnant rabbits: evidence for postimplantation recognition of pregnancy. J.Y. Browning, P.L. Keyes, R.C. Wolf. Biol. of Reprod.
 - 2) Effects of human chorionic gonadotropin in the rabbit corpus luteum: loss of estrogen receptor and decreased steroidogenic response to estradiol. K-C.M. Yuh, and P.L. Keyes. Endocrinology 104:1321-1327, 1981.
 - b) Grant Support:
 - 1) NIH-HD-07127: Regulation of ovarian function during pregnancy. 3/1/81 to 2/28/82, \$44,149 current year, 40% effort.
 - 2) NIH-HD-13645: Estradiol action in the rabbit corpus luteum. 3/1/81 to 2/28/82, current year, 25% effort. \$43,247.
 - c) Students assigned to research programs:
 - 1) John Gadsby, Postdoctoral Fellow
 - 2) Charles Bill, Postdoctoral Fellow
- 4) Departmental and International Service Activities:
 - a) U. of M. Committee on Medical Student Research (resigned as of July 1, 1981).
 - b) Chairman, Local Arrangements Committee, SSR Meeting, 8/80.
- 5) National Activities:
 - a) Clinical C Fellowship Review Committee, NIH (served for 3 years)
 - b) Papers presented at scientific meetings:

b) Papers presented at scientific meetings:

1) 13th Annual Meeting, Society for the Study of Reproduction, Aug. 11-14, 1980.

- a) Luteotrophic action of LH in the pregnant rat: direct effect on the corpus luteum. P.L. Keyes, D.S. White, R.M. Possley.
- b) The rabbit placenta is not directly luteotrophic. J.E. Gadsby
- c) Estradiol maintains luteal function in hypophysectomized pseudopregnant rabbits. C.H. Bill, Jr.
- d) Early corpus luteum development in hypophysectomized rabbits. K.C.M. Yuh.

2) The Endocrine Society, 63rd Annual Meeting, June 17-19, 1981.

- a) Homotransplantation of granulosa cells expressed from Graafian follicles: lack of spontaneous luteinization. P.L. Keyes, C.H. Bill, L.E. Kahn, R. Farookhi.
- b) Dephosphorylation and inactivation of estrogen receptor in the rabbit corpus luteum. K.M. Yuh, and P.L. Keyes

c) Invited Lectures at other institutions:

- a) Some new perspectives on the endocrine regulation of the corpus luteum. Dept. of Physiology and Biophysics, University of Illinois, Chicago, June 2, 1981.

Neelam B. Kumar, M.D.
Instructor in Pathology

ANNUAL REPORT

DEPARTMENTAL ADMINISTRATIVE RESPONSIBILITIES

Administrative responsibilities of the Cytopathology Laboratory
(in Dr. Naylor's absence).

MEDICAL CENTER COMMITTEES

None.

TEACHING ACTIVITIES

- A. Pathology 600 (Medical School, Sophomore year) - Laboratory Section, Instructor.
- B. Cytopathology Conference for the residents (monthly).
- C. Cytopathology teaching of cytotechnologists (sporadic).
- D. Instruction of Pathology House Officers in surgical pathology and cytopathology.

MEDICAL CENTER CONFERENCES

- A. Gynecology/Pathology/Radiation Therapy Conference - twice a week.
- B. Department of Pathology House Officer Histopathology Conference (weekly).
- C. Autopsy Gross Conference (twice a week).

CLINICAL ACTIVITIES

- A. Diagnostic cytopathology.
- B. Diagnostic surgical pathology
- C. Supervision of necropsies.
- D. All gynecologic consultation cases from outside hospitals.
- E. All cytologic consultation cases from outside hospitals in Dr. Naylor's absence.

NATIONAL AND STATE COMMITTEES

Gynecologic Pathology Consultant at the University of Michigan for Gynecologic Oncology Group.

INVITED LECTURES

None.

NATURE OF RESEARCH

- A. Clinicopathologic investigations of the female genital tract & gastrointestinal tract.
- B. Cytopathologic investigations of the serous fluids.

RESEARCH GRANTS

None.

PUBLICATIONS

1. Hart, WR, Kumar, N and Crissman, JD: Ovarian neoplasms resembling sex cord tumors with annular tubules. Cancer 45: 2352-2303, 1980.
2. Kumar, NB, Naylor, B: Megakaryocytes in serous effusions. Acta Cytol 24: 70, 1980. Presented at the Annual Meeting of the American Society of Cytology, October, 1979.
3. Kumar, NB and Naylor, B: Megakaryocytes in pleural and peritoneal fluids: prevalence, significance, morphology and cytohistological correlation. J Clin Pathol 33: 1153-1159, 1980.
4. Kumar, N, Pandit, SK and Detmer, MD: Pulmonary lesions after actacid and cimetidine aspiration. Aneth Analg 59: 547-548, 1980.
5. Burkhardt, RT, Kumar, N and Appelman HD: Relationship of granulomas to clinical parameters in Crohn's disease. Lab Invest 42: 8-9, 1980.
6. Nostrant, TT, Kumar, NB, Raufman, JP, Krasman, M and Appelman HD: Rectal biopsy differentiates acute self-limited colitis from chronic ulcerative colitis. Gastroenterol 78: 1229, 1980.
7. Wilson, JAP, Burkhardt, RT, Kumar, N and Appelman, HD: Relationship of granulomas to clinical parameters in Crohn's disease. Gastroenterol 78: 1292, 1980.
8. Kumar, NB and Hart WR: Metastases to the uterine corpus from extragenital cancers. A clinicopathologic study of 63 cases. (Submitted to Cancer for publication.)

Annual Departmental Report
Steven L. Kunkel, Ph.D.
Instructor of Microbiology and Immunology
Department of Pathology, University of Michigan Medical School
Ann Arbor, Michigan 48109

Diagnostic Service Activities: None

Teaching activities: 1) Participated as a Lecturer in Biology 414 (Immunobiology), 2) Participated in the Inflammation/Immunopathology series, ICS 600, as a lecturer for second year medical students, 3) lectured in Pathology 630 - General Pathology for 2nd year dental student teaching, 4) presented research/teaching seminars in the following departments: Ophthalmology, Hematology/Oncology, Rheumatology, Pharmacology, Pathology, Dermatology.

Research activities: A. publications in press or accepted for publication for the period July 1, 1980-present.

1) Kunkel, S.L., Kreutzer, D.L., Goralnick, S., and Ward, P.A.: Purification of the third and fifth components of human complement: Application of salt mediated hydrophobic chromatography. J. Immunol. Methods. 35:337-351, 1980.

2) Fantone, J.C., Kunkel, S.L., Ward, P.A., and Zurier R.B.: Suppression by Prostaglandin E_1 of vascular permeability induced by vasoactive inflammatory mediators. J. Immunol. 125:2591-2596, 1980.

3) Kunkel, S.L., Fantone, J.C., Ward, P.A., and Zurier, R.B.: Modulation of inflammatory reactions by prostaglandins, Progr. Lipid Res. Vol. 20, 1981.

4) Kunkel, S.L., Ogawa, H., Ward, P.A., and Zurier R.B.: Suppression of chronic inflammation by evening primrose oil. Progr. Lipid Res. Vol. 20, 1981.

5) Elgebaly, S., Varani, J., Kunkel, S.L., and Ward, P.A.: Cyclic AMP levels in subpopulations of tumor cells: correlation with in vitro and in vivo behavior. Oncology, 1981.

6) Fantone, J.C., Kunkel, S.L., Ward, P.A., and Zurier, R.B.: Suppression of Human polymorphonuclear leukocyte function after intravenous infusion of Prostaglandin E_1 . Prostaglandin and Medicine, 1981.

7) Kunkel, S.L., Fantone, J.C., and Ward, P.A.: Complement Mediated Inflammatory Reactions, Pathobiol. Annual. 1981.

8) Fantone, J.C., Kunkel, S.L., and Ward, P.A.: Chemotactic Mediators in Neutrophil Dependent Lung Injury. Annual Review Physiol. 1981.

9) Kunkel, S.L., Ogawa, H., Conran, P., Ward, P.A. and Zurier, R.B.: Anti-inflammatory effects of orally administered prostaglandins. Arthritis and Rheum. 1981.

B. Manuscripts submitted for publication:

1) Ogawa, H., Kunkel, S.L., Fantone, J.C., and Ward, P.A.: Comparative study of eosinophil and neutrophil chemotaxis and enzyme release. Am. J. Pathol. 1981.

2) Ogawa, H., Kunkel, S.L., Fantone, J.C. and Ward, P.A.: Digestion of the fifth component of complement by eosinophil lysosomal enzymes; production of eosinophil specific chemotactic activity. Virchows Archiv. B., 1981.

3) Desai, U., Kruetzer, S.L., Dickey, B., Varani, J., Kunkel, S.L. and Ward, P.A.: Demonstration of a specific C5 cleaving activity present in bronchoalveolar lavage fluids. Am. J. Path. 1981.

4) Sheetz, M., Thimmappaya, R., Ward, P.A. and Kunkel, S.L.: C3 dependence of hepatic clearance of oxidized erythrocytes. J. Clin. Invest. 1981.

C. Grant Support:

1) Rackham School of Graduate Studies Faculty Research Grant - Nutritional Modulation of inflammatory diseases - FRR 387668 Principal Investigator.

2) National Institute of Health - Leukocyte chemotaxis 1R01-Ai-17690-01, Co-investigator.

3) National Institute of Health - Thermal Injury Complement and Leukocyte Dysfunction, 1 R01-GM-28499-01, Co-investigator.

D. Students assigned to research programs:

1) Dr. Steven Chensue, Ph.D. - third year medical student. The immuno-modulatory role of prostaglandins in lung granulomas.

2) Micheal Plewa B.S., first year medical student, Comparative study prostaglandins and superoxide anion production from resident and activated macrophage.

3) Sandy Shekar, B.S., third year medical student, nutritional modulation of inflammatory diseases.

Departmental and International Service Activities:

1) Committee on Medical Student Research University of Michigan Medical School.

2) Interviewed residents for resident training program, Department of Pathology University of Michigan.

National Activities: A) Presentations at National Meetings:

1) Ward, P.A., Ogawa, H., Kunkel, S.L. and Fantone, J.C.: Chemotactic Factors do not cause enzyme release from guinea pig eosinophils. Chemotaxis workshop. Howard Hughes Medical Institute. Coconut Grove, Florida, 1980.

2) Kunkel, S.L., Fantone, J.C. and Ward, P.A.: Lymphocytes Induced by systemic infusion of chemotactic factors. University of Michigan Biomedical Research Council. Ann Arbor, MI 1981.

3) Kunkel, S.L., Ward, P.A. and Zurier, R.B.: Modulation of Inflammatory Responses by Prostaglandins and essential fatty acids. Federation of American Society for Experimental Biology. Atlanta, GA 1981.

4) Glovsky, M.M., Kunkel, S.L., Goers, J. and Gherkiere, L. Pathologic and permeability effects of C4a, C6a, C3 and C5 in Fischer 334 rat lungs Federation of American Society for Experimental Biology Atlanta, GA., 1981.

5) Kunkel, S.L., Fantone, J.C. and Ward, P.A.: Induction of Lymphocytopenia by systemic Infusion of chemoattractants. American Thoracic Society. Detroit, MI.

6) Fantone, J.C., Kunkel, S.L. and Varani, J.: Inhibition of Tumor cell adherence by PGE₁ and PGI₂. International Conference on Prostaglandins and Cancer. 1981.

In 1981, elected to membership in the American Association of Immunologists.

Annual Report 1980 - 1981
Department of Pathology
Thomas D. Landefeld
Assistant Research Scientist

1. Diagnostic services: None
2. Teaching Activities: None.
3. Research Activities:
 - A. Grants
 1. "Gonadotropin Biosynthesis" HD-12016; \$143,758, 8/01/78 - 7/31/81.
 2. "Gonadotropin Biosynthesis" (Renewal) recently approved for \$252,254, 8/01/81 - 7/31/84.
 - B. Publications
 1. Landefeld, T.D., Byrne, M.D., Campbell, K.L. and Midgley, A.R., Jr.: Differential processing of the two subunits of human choriogonadotropin (hCG) by granulosa cells. I. Preparation and characterization of selectively labeled human choriogonadotropin. Submitted to Endocrinology.
 2. Campbell, K.L., Bagavandoss, P., Byrne, M.D., Jonassen, J.A., Landefeld, T.D., Quasney, M.W., Sanders, M.M. and Midgley, A.R., Jr.: Differential processing of the two subunits of human choriogonadotropin (hCG) by granulosa cells. II. In vivo studies. Submitted to Endocrinology.
 - C. Nature of Research

My research deals with the regulation and mechanisms of pituitary gonadotropin biosynthesis. We are currently involved in recombinant DNA technologies for applications in studying this regulatory process.
4. Departmental and Medical School Activities:
 - A. Chairman, Reproductive Endocrinology Selection Committee.
 - B. Assistant Director, Reproductive Endocrinology Program.
 - C. Member, Advisory Committee on Primary Research Appointments, Promotions and Titles in Medical School.
5. Other Activities:
 - A. Invited lecture - Department of Biochemistry, University of Montreal, November 1980.
 - B. Attended Meeting: Endocrine Society Washington, D.C.
Society for the Study of Reproduction Ann Arbor, MI.
 - C. Elected Member: American Society of Biological Chemists.

Edmund J. Lovett III, Ph.D.
Assistant Professor of Immunology

Annual Departmental Report: 1 July 1980 to 30 June 1981

1. Diagnostic Service Activity

Preliminary work toward establishing a Diagnostic Flow Cytofluorometer facility

2. Teaching Activities

Introduction to Clinical Sciences, Inflammation/Immunopathology Section

3. Research Activities

A. Publications

1. Simon, R.H., Lovett, E.J. III, Tomaszek, D and Lundy, J.: Electrical stimulation of the midbrain mediates metastatic tumor growth. *Science* 209:1132-1133, 1980.
2. Shaskan, E.G., and Lovett, E.J., III: Effects of haloperidol, a dopamine receptor antagonists, on a delayed type hypersensitivity reaction to DNCB in mice. *Research Communications in Psychology, Psychiatry and behavior.* 5:241-254, 1980.
3. Lovett, E.J., III, Alderman, J., Munster, E. and Lundy, J.: Suppressive effects of thiopental and halothane on specific arms of the immune response. *J. Surg. Oncology.* 15:327-334, 1980.
4. Varani, J., Lovett, E.J.III, Elgebaly, S., Lundy, J., and Ward, P.A.: In vitro and in vivo adherence of tumor cells correlated with tumor formation. *Amer. J. Pathol.* 101:345-352, 1980.
5. Varani, J., Lovett, E.J. III, Elgebaly, S. and Lundy, J.: Characteristics of tumor cell clones with varying malignant potential, in *Metastases: Clinical and Experimental Aspects* (K. Hellman, ed.), 1980.
6. Lundy, J., Lovett, E.J. III, Roberts, R., Elgebaly, S. and Varani, J.: Therapeutic implications of heterogeneous tumor cell populations, in *Metastases: Clinical and Experimental Aspects* (K. Hellman, ed.), 1980.

B. Abstracts

1. Lundy, J. Hayes, M., and Lovett, E.J. III: Stress and tumor growth- is there a common mediator? *Proceedings of the Society of Surgical Oncology*, 1981.
2. Varani, J. and Lovett, E.J. III: Temporal variability of tumor cell properties in vivo and in vitro: *Proceedings of the American Association for Cancer Research*, 1981.
3. Lovett, E.J. III, Varani, J., and Lundy, J.: Thiopental induced suppression cells and tumor growth. *Federation Proceedings*, 1981.

B. Abstracts (con't)

4. Shaskan, E.F., and Lovett, E.J. III: Effects of Psychotropic Drugs on Delayed-type hypersensitivity reactions in mice: relevant sites of action. Proceedings of the Third World Congress of Biological Psychiatry, Stockholm Sweden, 1981

C. Grant Support

1. Principal Investigator-Immune induced alteration of tumor cell phenotype NCI, 168,177 1 July 1980-30 July 1983, pending
2. Principal Investigator-Rejection of heterologous endothelial lined corneal transplants in the cat: immunological mechanisms. Michigan Eye Bank, 49,900 pending.
3. Principal Investigator-Stress and toxin/pathogen interactions in salmo gairdneri. Michigan Sea Grant 82,451 pending.

4. Departmental and Institutional Service Activities

- A. Departmental- Flow Cytofluorometer Selection Committee
- B. Institutional- Immunology Forum Committee, Vice Presidency of Science Research Club

5. National Activities

Scientific Coordinator and Co-investigator on National Study on Clinical Validity of Makari Intradermal Test for Cancer

6. Other

Elected to membership in the American Association of Pathologists and Sigma Xi.

ANNUAL REPORT

Kenneth D. McClatchey, D.D.S., M.D.
Assistant Professor of Pathology

Diagnostic Service Activities

- I. Surgical Pathology - consultant on all head and neck pathology cases.
- II. Autopsy
 - 1) Head of service for the month of April.
 - 2) Consultant on all forensic odontology cases.
 - 3) Assistant Medical Examiner, Washtenaw County.
- III. Associate Director of Clinical Laboratories, Director of Clinical Microbiology Laboratory, Director of Clinical Biochemistry Laboratory

(see attached outline of individual clinical laboratory reports) and professional staff under my direction).
- IV. Medical Director of Medical Technology Program - Eastern Michigan University.

Teaching Activities

Pathology 630, 631 Course Director

6 hours credit (M, W, F 1-4 P.M.)

- 155 dental students, 20 medical technology and graduate students.

Oral Diagnosis #664 - participant

Clinical Studies #510 (Inteflex) Lecturer

Head and Neck Pathology

Coordinator of resident teaching in the clinical laboratories under my direction.

University Conferences and Programs

- 1) March 1981. "Current Topics in Clinical Chemistry".
Course Coordinator. Towsley Center for Continuing Education.
- 2) March 1981. "Current Topics in Clinical Microbiology".
Course Coordinator. Towsley Center for Continuing Education.
- 3) May 1981. "The Phlebotomy Team: Technical and Management Perspectives". Towsley Center for Continuing Medical Education.
- 4) May 6 and 7, 1981. "Histology of Hemangioma and Histomorphologic Changes of Expanded Skin". Seminar on Hemangioma and Expanded Skin Research, Division of Plastic Surgery, Department of Surgery.

Research Activities

1. Scientific Activities - Investigator - Adjuvant Chemotherapy

- a) Principal Investigator, Jojoba Oil: its percutaneous absorption and anti-inflammatory effects, funded by Detroit Neurosurgical Foundation, 1979.
- b) Investigator with Thomas Carey, Ph.D. of Department of Otorhinolaryngology, Human Squamous Cell Carcinoma: Culture and Serology, NIH, 1979 -
- c) Consultant to "A Self-Inflating Implant for Donor Tissue Augment" grant Henry Ford Hospital, Detroit, Michigan - Principal Investigator, Eric Austad, M.D., funded, 1980.
- d) Principal Investigator, A Prospective Study of Wound Healing in Oral Cleft Repair Patients, funded by March of Dimes Birth Defects Foundation, 1980.
- e) Co-Investigator with George Cherry, Ph.D., and William Grabb, M.D. Effect of the Microcirculation on the Etiology and Treatment of Hemangiomas, funded by Louise Vaughn Memorial Fund UM #361382, 1980 -
- f) Principal Investigator, Jojoba Oil: its percutaneous absorption and anti-inflammatory effects, funded by Jojoba Plantation Products, 1981.
- g) Principal Investigator, Cost Acrylic Gross Pathology Specimen Project, funded by University of Michigan Medical Center for Research on Learning and Teaching, 1981.
- h) Consultant, Light and Electron Microbiology Studies of the Skin and Soft Tissues in Monkey and Man After Controlled Expansion. Dr. Krystyna Pasyk, Plastic Surgery, Educational Foundation.

Publications

1. Publications in Scientific Journals -

- a) Kauffman, C.A., Bergman, A.G., Severance, P.J., McClatchey, K.D.: Detection of Cryptococcal Antigen: Comparison of two Latex Agglutination Tests. Amer. J. Clin. Path., 1980.
- b) Argenta, L.C., McClatchey, K.D., Ferrell, W.J., Newman, N.M.: Benign Symmetrical Lipomatosis (Madelung's Disease). Head and Neck Surgery, 1980.
- c) Bloch, D., Barnes, B., McClatchey, K.D., Hassan, N.: "Throughput Report", J. of Med. Systems, 1980.
- d) Ferrell, W.J., Szuba, M.P., Miluk, P.R., McClatchey, K.D.: Determination of Serum Chloramphenicol by High Performance Liquid Chromatography. Journal of Liquid Chromatography, 1980.
- e) Serous Extravasation Phenomenon. Solomon, A., McClatchey, K.D., Batsakis, J.G. Arch. of Otorhinolaryngology, May 1981.

2. Articles Accepted for Publication -

- a) Ameloblastoma of the Maxilla and Peripheral Ameloblastoma. Batsakis, J.G., McClatchey, K.D., Annals of Otology, Rhinology and Otolaryngology, 1980.
- b) "Retrotympanic Odontoma" McClatchey, K.D., Hakimi, M., Batsakis, J.G., Menge, M. Amer. J. Surg. Path., 1980.
- c) Squamous Cell Carcinoma Arising in an Odontogenic Keratocyst. Areen, R.G., McClatchey, K.D., Baker, H.L. Arch. of Otorhinolaryngology, 1980.

- d) Doxylamine: A Cause for False Positive Chromatographic Assay for Phencyclidine. Schalenbrand, J.D., McClatchey, K.D., Patel, J.A., Muilenberg, M.J. Therapeutic Drug Monitoring, 1981.
- e) In Vitro Antimicrobial Effects of Jojoba Oil. McClatchey, K.D., Pierson, C.L., Ferrell, W.J. Proceedings of the 4th International Conference on Jojoba, 1980, in press.
- f) Percutaneous Absorption of Jojoba Oil. McClatchey, K.D., Ferrell, W.J., Pierson, C.L. Proceedings of the 4th International Conference on Jojoba Oil, 1980, in press.
- g) Carcinoma in Papillary Cystadenoma Lymphomatosum. McClatchey, K.D., Langin, J.L., and Appelblatt, N.H., Laryngoscope, 1981.
- h) "Human Squamous Cell Carcinoma: Establishment and Characterization of New Permanent Cell Lines". Krause, G.J., Carey, T.E., Ott, R., Hurbis, C., and McClatchey, K.D. Archives of Otolaryngology, 1981.

3. Articles Submitted for Publication -

- a) A Histopathologic Study of Expanded Skin. Austad, E.D., McClatchey, K.D., and Grabb, W.C., J. Plast. and Recon. Surg., 1980.
- b) Carcinoma of the Nasopharynx in Childhood. Baker, S.R., McClatchey, K.D., Otolaryngology and Head and Neck Surgery, 1980.
- c) Olfactory Neuroblastomas: A Retrospective Clinicopathologic Study. Appelblatt, N.H. and McClatchey, K.D. Head and Neck Surgery, 1981.

4. Thesis, Chapters in Books -

- a) Regezi, J.A., McClatchey, K.D., and Batsakis, J.G.: Electron Microscopy of the Head and Neck Chapter in "Diagnostic Electron Microscopy" by Trump, B.F. and Jones, R.T. John Wiley and Sons, Inc., accepted for completion, 1981.

5. Books -

- a) Gross and Microscopic General Pathology for Dental Students. McClatchey, K.D., Green, T.G. The University of Michigan Dental Publications, 1980.

6. Abstracts -

- a) Bauer, S.H., Elsasser, P.J., McClatchey, K.D.: Comparison of the Abbott MS-2 Urine Screen with a Standard Culture Method in a Large Hospital. American Society for Microbiology Annual Meeting, 1980.
- b) Elsasser, P.J., McClatchey, K.D., Kloosterman, R.E., Bloch, D.: Computerization of a Clinical Microbiology Laboratory in a Large University Hospital. American Society for Microbiology Annual Meeting, 1980.
- c) Pierson, C.L., Kloosterman, R.E., McClatchey, K.D.: The Effect of Divalent Cations and Human Serum on Antimicrobial Susceptibility Kinetics. American Society for Microbiology Annual Meeting, 1980.

- d) Bloch, D., Barnes, B., McClatchey, K.D., Hassan, N.: Throughput report: Computer Management Tool for Clinical Laboratories. The Third World Conference on Medical Informatics, Tokyo, Japan, Oct. 1980.
- e) Lee, E.K. and McClatchey, K.D.: Rapid Screen for Staphylococcus Aureus in Blood Culture by a Modified Lysostaph Test. 3rd International Symposium on Rapid Methods and Automation in Microbiology, 1981.
- f) Pierson, C.L., Gobetti, S.R., and McClatchey, K.D.: Methicillin Resistant Staphylococcus Aureus Colony Morphology and Growth Kinetics of Heteroresistant Colony Types. Amer. Soc. for Microbiology, Annual Meeting, 1981.
- g) Elsasser, P.J. and McClatchey, K.D.: Evaluation of Agar Supplemented Ampvettes for the MS-2 Urine Screen. Amer. Soc. for Microbiology, Annual Meeting, 1981.
- h) McClatchey, K.D. and Appelblatt, N.H.: Plunging Ranula. American Academy of Oral Pathology, Annual Meeting, May, 1981.
- i) Krause, C.J., Carey, T.E., Ott, R.W., Hurbis, C., McClatchey, K.D., and Regezi, J.A.: Human Squamous Cell Carcinoma, Establishment and Characterization of New Permanent Cell Lines. Transactions of Society for Head and Neck Surgery and the American Society of Head and Neck Surgery, Annual Meeting, March, 1981.

Departmental and International Service Activities

1. Committee Appointments -

- a) Infection Control Committee, University of Michigan Hospital, 1978.
- b) Medical Service Plan Executive Committee, Department of Pathology, University of Michigan, 1979.
- c) Chairman of Search Committee, for Director of Medical Technology Program, University of Michigan, Department of Pathology, 1980.
- d) Scientific Advisory Committee, Dental Research Institute, University of Michigan, School of Dentistry, 1980 -
- e) Laboratory Committee, University of Michigan Hospital, 1978 -
- f) Ambulatory Care Committee, University of Michigan Hospital, 1980 -
- g) Hospital Replacement Project (Pathology Group) Laboratory Planning Committee, 1980 -

National Activities

1. Invited Lectures and Programs Presented -

- a) February 1980. "Maxillary Odontogenic Diagnostic Dilemmas". McClatchey, K.D., Solomon, A. Poster Presentation, International Academy of Pathology 59th Annual Meeting, New Orleans.
- b) Major and Minor Salivary Gland Cysts "Coeles" and Tumors: Classification and Histogenesis, Batsakis, J.G. and McClatchey, K.D. Short course for International Academy of Pathology 70th Annual Meeting, 1981.

- c) Histomorphological and Ultrastructural, Evaluation of Tissue Expansion. Pasyk, C., Austad, E., McClatchey, K.D. and Cherry, G. Plastic, Surgery Research Council Meeting. Springfield, Illinois, 1981.
- d) Rapid Screen for Staphylococcus Aureus in Blood Culture by a Modified Lysostaph Test. Lee, E.K. and McClatchey, K.D. 3rd International Symposium on Rapid Methods and Automation in Microbiology, 1981.
- e) Methicillin Resistant Staphylococcus Aureus Colony Morphology and Growth Kinetics of Heteroresistant Colony Types. Pierson, C.L., Gobetti, S.R., and McClatchey, K.D. Amer. Soc. for Microbiology, Annual Meeting, 1981.
- f) Evaluation of Agar Supplemented Ampvettes for the MS-2 Urine Screen. Elsasser, P.J. and McClatchey, K.D. Amer. Soc. for Microbiology, Annual Meeting, 1981.
- g) Plunging Ranula. McClatchey, K.D. and Appelblatt, N.H. American Academy of Oral Pathology, Annual Meeting, May, 1981.
- h) Human Squamous Cell Carcinoma, Establishment and Characterization of New Permanent Cell Lines. Krause, C.J., Carey, T.E., Ott, R.W., Hurbis, C., McClatchey, K.D., and Regezi, J.A. Society for Head and Neck Surgery and the American Society of Head and Neck Surgery, Annual Meeting, March, 1981.

Bernard Naylor, M.D.
ANNUAL REPORT
July 1, 1980 - June 31, 1981

I. Diagnostic Service Activities

- A. Cytopathology, 9 1/2 months.
- B. Surgical Pathology, 3 weeks.

II. Teaching Activities

- A. Pathology 600 (Medical School, Sophomore year), whole class lectures on pulmonary diseases and cytopathology.
- B. Introduction to Clinical Sciences (Medical School, Sophomore year), whole class lectures on pulmonary pathology.
- C. Supervision and instruction of pathology residents in cytopathology.
- D. Supervision and instruction of pathology residents in surgical pathology.
- E. Cytopathology Conferences for pathology residents (every 2 weeks).
- F. Pulmonary Pathology Conference for pulmonary physicians (monthly).
- G. Gynecology-Pathology-Radiation Therapy Conference (sporadic back-up coverage).

III. Research Activities

- A. Cytopathology with particular reference to serous fluids and non-neoplastic conditions.
- B. Publications
 1. Bower, JS, Dantzker, DR, Naylor, B: Idiopathic pulmonary hypertension associated with nodular pulmonary infiltrates and portal venous thrombosis. Chest 78, 111-113, 1980.
 2. Geisinger, KR, Naylor, B, Beals, TF, and Novak, PM: Cytopathology, including transmission and scanning electron microscopy, of pleomorphic liposarcomas in pleural fluid. Acta Cytologica 24: 435-441, 1980.
 3. Kumar, NB, Naylor, B: Megakaryocytes in pleural and peritoneal fluids: prevalence, significance, morphology and cytohistological correlation. J Clin Pathol 33: 1153-1159, 1980.
 4. Weaver, KM, Novak, PM, Naylor, B: Vegetable cell contaminants in cytologic specimens: Their resemblance to cells associated with various normal and pathologic states. Acta Cytologica 25: 210-214, 1981.

IV. Departmental and National Service Activities

- A. Pathologist in charge of the Cytopathology Laboratory.
- B. Department of Pathology Medical Service Plan Executive Committee.
- C. Department of Pathology Advisory Committee on Promotions and Titles.
- D. Member of Executive Committee, American Society of Cytology.
- E. Chairman, Cytotechnology Programs Review Committee of the American Society of Cytology.
- F. Editorial Advisory Board, Acta Cytologica.
- G. Editorial Board, Journal of Clinical Pathology.
- H. Editorial Board, The Cytotechnologist's Bulletin.
- I. Cytopathology Subcommittee, American Board of Pathology.

V. National Activities

- A. Presentation of papers:
 - 1. Smith, MJ, Kini, SR, and Naylor, B: Squamous carcinoma cells in pleural, peritoneal and pericardial fluids: prevalence, origin and morphology. Meeting of American Society of Cytology, Boston, Massachusetts, 1980.
- B. Invited lectures and workshops:
 - 1. Naylor, B: a) Aspiration cytology of lung, b) Cytology of non-neoplastic entities. Lectures, Course in Clinical Diagnostic Cytology for Clinicians, Pathologists, Radiologists, and Cytotechnologists, Medical College of Ohio, Toledo, Ohio, September, 1980.
 - 2. Naylor, B: Non-neoplastic entities manifested in cytologic specimens. Workshop, Diagnostic Cytology Seminar, Buckeye Society of Cytology, Cincinnati, Ohio, September, 1980.
 - 3. Naylor, B: Non-neoplastic entities in cytologic specimens. Lecture, Course in Basic Clinical Cytology, Armed Forces Institute of Pathology, Washington, D.C., September, 1980.
 - 4. Naylor, B: Non-neoplastic entities manifested in cytologic specimens. Workshop, Annual Scientific Meeting of American Society of Cytology, Boston, Massachusetts, November, 1980.
 - 5. Naylor, B: Non-neoplastic entities manifested in cytologic specimens. Workshop, Interim Meeting of American Society of Cytology, Cleveland, Ohio, March, 1981.
 - 6. Naylor, B: Non-neoplastic entities manifested in cytologic specimens. Workshop, Meeting of Connecticut Society of Cytologists, Windsor Locks, Connecticut, April, 1981.
 - 7. Naylor, B: Rare and uncommon non-neoplastic entities manifested in cytologic specimens. Lecture, Michigan Society of Cytology, Ann Arbor, Michigan, May, 1981.

VI. Other

Elizabeth C. Crosby Award for teaching.

Harold A. Oberman, M.D.
Professor, Department of Pathology

Faculty Report, 7/1/80 - 6/30/81

Diagnostic Service Activities:

1. Director of Clinical Laboratories, University Hospital.
2. Head, Section of Clinical Pathology, Department of Pathology.
3. Director of Blood Bank, University Hospital. Daily participation in management of patient care problems and supervision of assigned resident.
4. Diagnosis of surgical specimens (two assigned weeks).
5. Diagnosis of biopsies submitted for personal consultation from pathologists throughout the United States, primarily related to breast disease.
6. Consultant to Veterans Administration, Ann Arbor.
7. Consultant to Wayne County General Hospital - presentation of lectures on monthly basis.

Teaching Activities:

1. Responsible for laboratory section of sophomore Pathology course. This required six contact hours per week, in addition to preparation time.
2. Lectures to sophomore medical class in Pathology and ICS courses. Lecture topics included Clinical Pathology, Blood Banking and Disease of Breast.
3. Lectures to House Officers in Department of Surgery, Internal Medicine and Pediatrics.
4. Presentation of lectures and seminars to pathology House Officers covering topics in both Clinical Pathology and Anatomical Pathology.
5. Participation in organization of postgraduate course, "Current Topics in Blood Banking".

Research Activities:

Heavy institutional and departmental service obligations prevented desired extent of research involvement. Current interests include evaluation of pretransfusion testing and analysis of variable microscopic expressions of breast diseases. These are reflected in the following publications which appeared during the past year:

1. Oberman, H.A.: Untoward reactions to blood transfusion. In "Current Therapy - 1980". Conn, H.F. ed. Philadelphia, W. B. Saunders Co.

2. Judd, W.J., Butch, S.H., Oberman, H.A. and Steiner, E.A.: The evaluation of a positive direct antiglobulin test in pre-transfusion testing. *Transfusion* 20:17-23, 1980.
3. Oberman, H.A.: Secretory carcinoma of the breast in adults. *Am. J. Surg. Path.* 4:465-470, 1980.
4. Burke, D.P., Gabrielson, T.O., Seeger, J.F. and Oberman, H.A.: Radiology of olfactory neuroblastoma. *Radiology* 137:367-372, 1980.
5. Oberman, H.A., ed.: Standards for Blood Banks and Transfusion Services. Ed. 10. American Association of Blood Banks. Washington, D.C. 1981.

The following have been accepted for publication:

6. Oberman, H.A.: Standard versus abbreviated compatibility tests. In Safety in Transfusion Practices. Polesky, H., ed. *Coll. of Am. Path.*
7. Oberman, H.A.: The crossmatch: a brief historical perspective. *Transfusion.*
8. Walter, W.J. and Oberman, H.A.: Optimal use of blood components and derivatives. *Yearbook of ENT.*
9. Oberman, H.A., Barnes, B.A. and Steiner, E.A.: Role of the crossmatch in testing for serologic incompatibility. *Transfusion.*
10. Oberman, H.A.: The crossmatch: past, present and future. In Seminar on Immune-Mediated Cell Destruction. Bell, C., ed. American Association of Blood Banks.

Departmental and National Service Activities:

Departmental Activities:

1. In charge of Clinical Pathology Faculty, chairing monthly meetings and many interim meetings.
2. Education committee, including frequent meetings related to sophomore Pathology course.
3. Resident selection committee.
4. Medical Service Plan executive committee.
5. Laboratory computer planning committee.

Medical School - Hospital:

1. New Hospital Committee (responsible for planning Replacement Hospital).

Medical School - Hospital: (cont'd.)

2. Replacement Hospital Project Review Group (committee of University Officers and Hospital and Faculty representatives).
3. Interdepartmental Coordinating Council for Medical Service Plans, Vice-Chairman.
4. Professional Fee Policy Committee for Medical Service Plans, Vice-Chairman.
5. Medical Service Plan Executive Board (includes University Officers).
6. Chairman, Laboratories Committee of Medical Staff.
7. Transfusion Committee.
8. Director's Advisory Council.
9. Hospital Information Systems Planning Committee.
10. Hepatitis Prevention Committee.
11. Clinical Chairmen Council (alternate).

Regional and National Activities:

Committees:

1. Detroit Red Cross - member of Blood Operations Committee and of Medical Advisory Committee. The two Committees met 16 times during the year.
2. American Association of Blood Banks
 - Chairman, Committee on Standards. This involves editing of the biannual Standards for Blood Banks and Transfusion Services. This is the cornerstone for the practice of blood banking throughout the world.
 - Hepatitis Testing Advisory Committee (Bureau of Biologics of Food and Drug Administration).
 - Component Therapy Committee.
3. International Academy of Pathology
 - Co-Chairman for 1983 Long Course, "Diseases of Breast".
4. Michigan Society of Pathologists
 - Blood Banking Committee
5. Other Committees
 - Central Review Committee for Pathology, National Breast Cancer Detection Demonstration Project (National Cancer Institute - American Cancer Society).

Editorial Activities:

- Associate Editor, TRANSFUSION.
- Editor, Standards for Blood Banks and Transfusion Services.
- Associate Editor, Critical Reviews in Clinical Laboratory Sciences.

Invited Workshops and Lectures (national):

- Presentation of invited lecture on Quality Control in Blood Banking, biannual meeting of International Society of Hematology. Montreal, Canada. August, 1980.

Invited Workshops and Lectures (national): (cont'd)

- Lecture on Therapeutic Plasmapheresis, Annual meeting of Michigan Association of Blood Banks, September, 1980.
- Presentation of workshops on "Diseases of Breast" and "Decision-Making in Blood Banking", Annual meeting of American Society of Clinical Pathologists, St. Louis, MO, October, 1980.
- Invited lecture on Future Trends in Pretransfusion Testing, Annual meeting of American Association of Blood Banks, Washington, D.C., November, 1980.
- Invited lecture on Pretransfusion Testing, Pennsylvania Association of Blood Banks, Philadelphia, PA, April, 1981.
- Presentation of two lectures in course on Hemotherapy, University of Texas Medical Center at Dallas, May, 1981.
- Presentation of seminar on Diseases of Breast, Ohio Association of Pathologists, Cleveland, OH, May, 1981.
- Presentation of Annual Ellis Fuller Lecture, University of Louisville Medical School and Louisville Red Cross, June, 1981.
- Presentation of six lectures to Annual Northern Michigan Conference, University of Michigan Medical School, Shanty Creek, June, 1981.

Sem H. Phan, Ph.D., M.D.
Assitant Professor in the Department of Pathology

Faculty Report for 1 July 1980 to 30 June 1981

1. Diagnostic Service Activities:

- A. An assay for serum angiotensin converting enzyme was developed, based on the original method of Cushman and Cheung. Its potential clinical usefulness is in confirming diagnosis of sarcoidosis, in monitoring efficacy of steroid treatment (as follow up) and in determining prognosis.
- B. Consultation on the clinical pathology service at the VA Hospital.

2. Teaching Activities:

- A. Participated in the ICS series of lectures for medical students.
- B. Conducted several lectures on biochemical techniques at the VA Hospital.

3. Research Activities:

A. Publications:

- 1. Phan SH, Thrall RS, Williams C. Bleomycin-induced pulmonary fibrosis: Effects of steroid on lung collagen metabolism. Amer. Rev. Resp. Dis. 123: In press, 1981.
- 2. Thrall RS, Phan SH, McCormick JR, Ward PA. The development of bleomycin-induced pulmonary fibrosis in neutrophil-depleted and complement-depleted rats. Amer. J. Pathol. 104: In press, 1981.
- 3. Phan SH, Thrall RS. The role of soluble factors in bleomycin induced pulmonary fibrosis. Submitted for publication in Amer. J. Pathol. (June 2, 1981).
- 4. Schrier DJ, Phan SH. A murine model of intratracheal bleomycin induced pulmonary fibrosis. Submitted for publication in Amer. J. Pathol. (June 19, 1981).
- 5. Phan SH, Varani J, Lovett EJ III, Schrier DJ. Isolation and characterization of fibroblasts from bleomycin-induced fibrotic lungs. Fed. Pro. 40:793,

6. Kunkel RG, Beals TF, Varani J, Phan SH. Morphologic characterization of the effects of bleomycin on rat lung fibroblasts. Fed. Proc. 40:794, 1981.
7. Fantone J, Phan SH. O₂ metabolite detoxifying enzyme levels in bleomycin-induced fibrotic lungs. Fed. Proc. 40:797, 1981.
8. Phan SH, Thrall RS, Schrier DJ. Analysis of bronchoalveolar lavage fluid by HPLC. Abstract submitted for International Symposium on HPLC of Proteins and Peptides. November 16,17, 1981 Washinton, DC.

B. Grant Support:

1. VA Research Associate Award (\$51,000 annually, 7/1/80-6/30/83).
2. VA Merit Review Grant (\$12,500 annually, 1/1/81-12/30/83).
3. Grant proposal (R01) submitted (7/1/81) entitled "Mechanisms and Genetic Regulation of Pulmonary Fibrosis." (requested for 7/1/82-6/30/87 at approximately \$65,000 annually).

C. Students Assigned:

D. Schrier Ph.D. Post doctoral fellow, engaged in evaluating immune system response and genetic regulation in bleomycin induced pulmonary fibrosis.

4. Departmental and International Service Activities: None

5. National Activities:

Attended national meetings of the American Thoracic Society (Detroit, May 11-13, 1981) and the Federation of American Societies for Experimental Biology (Atlanta, April 12-17, 1981).

ANNUAL REPORT

1980-1981

Carl L. Pierson, Ph.D.
Instructor, Department of Pathology

1. Diagnostic Service Activities

- a) Microbial Quantitation in Tissues.
- b) Special Antimicrobial Susceptibility Testing
 - 1. MIC/MBC
 - 2. Synergism
- c) Mycoplasma Screening in Tissue Cultures
- d) Physician consultation

2. Teaching Activities

- 10-09-80 Burn Nurse Specialist Course - "Infection Control".
- 10-13-80 Microbiology Laboratory Inservice - "Toxic Shock Syndrome".
- 10-28-80 Medical Technology #410 - "Bacterial Membranes - Structure and Function".
- 12-03-80 Burn Nurse Specialist Course, National Institute for Burn Medicine, Ann Arbor, MI., "Infection Control".
- 12-11-80 Burn Nurse Specialist Course, National Institute for Burn Medicine, Ann Arbor, MI., "Immunologic Alteration in Severely Burned Patients".
- 01-06-81 Medical Technology #412 - "The Burn Patient, Care and Impact on the Clinical Laboratories".
- 01-07-81 Microbiology Laboratory Inservice - "Care of the Burned Patient, Impact on the Microbiology Laboratory".
- 03-10-81 Burn Nurse Specialist Course - "Infection Control".
- 03-12-81 Burn Nurse Specialist Course - "Immunology".

Post Graduate Medicine Courses

- 12-05-81 Basic Burn Care - "Infection Control".
- 03-27-81 Current Concepts in Clinical Microbiology:
Antibiotic Susceptibility 1981.
"Suboptimal Dosing: Definition and Use"
"Fastidious Organisms: MIC and Other Methods".

3. Research Activities

A. Publications in Scientific Journals

1. Behl, Charanjit, R., G.L. Flynn, T. Karihara, N. Harper, W. Smith, W.I. Higachi, N.F.H. Ho and C.L. Pierson, "Hydration and Percutaneous Absorption: I. Influence of Hydration on Alkanol Permeation through Hairless Mouse Skin", J. Invest. Dermatol. 75 (4): 346-352, 1980.
2. Pierson, Carl L., "Infection Control in Burn Care Facilities", Critical Care Quarterly 3 (4): 81-92, 1981.

B. Articles Accepted for Publication

1. Behl, Charanjit, R., G.L. Flynn, M. Barrett, K.A. Walters, E.E. Linn, Z. Mohamed, T. Kurahara and C.L. Pierson, "Permeability of Thermally Damaged Skin: II. Immediate Influences of Branding at 60°C on Hairless Mouse Skin Permeability", Burns, in press, 1981.
2. Behl, Charanjit, R., E.E. Linn, G.L. Flynn, C.L., C.L. Pierson, W.I. Higuchi, P. N.F.H. Ho, "Permeation of Skin and Eschar by Antiseptics: I. Baseline Studies with Phenol", Burns in press, 1981.
3. Behl, Charanjit, R., E.E. Linn, G.L. Flynn, N.F.H. Ho, W.I. Higuchi and C.L. Pierson, "Permeability of Skin and Eschar to Antiseptics: II. Influence of Controlled Burns on Phenol's Permeation", Burns, in press, 1981.
4. In Vitro Antimicrobial Effects of Jojoba Oil. McClatchey, K.D., Pierson, C.L., Ferrell, W.J. Proceedings of the 4th International Conference on Jojoba, 1980, in press.
5. Percutaneous Absorption of Jojoba Oil. McClatchey, K.D., Ferrell, W.J., Pierson, C.L. Proceedings of the 4th International Conference on Jojoba Oil, 1980, in press.

C. Published Abstracts

1. "Methicillin Resistant Staphylococcus aureus: Colony Morphology and Growth Kinetics of Heteroresistant Colony Types", Abstracts, American Society for Microbiology, (1981), p. 299.
2. "Relative Efficiency of Various Antimicrobial Testing Methods to Detect Methicillin Resistant Staphylococcus aureus", Abstracts, American Society for Microbiology, (1981), p. 300.
3. "Relationship of Nursing Factors in Burn Care Facilities to Burn Survival and Other Outcomes", Abstracts, American Burn Association, (1981), p. 83.

D. Current Research Activities

1. "In Vitro Evaluation of LY-127935, Moxalactam" Co-investigator with F.R. Fekety, Infectious Disease Service, Department of Internal Medicine, University of Michigan, Funded by Eli Lilly and Co.

Work-study student: Tim Houston
Medical Student- 1: Heather McCullough
2. "In Vitro Evaluation of Sch-294 and Ro-13-9904 Against Clinical Bacterial Isolates". Co-investigator with F.R. Fekety, Infectious Disease Service, Dept. of Internal Medicine. Funded by Hoffmann-LaRoche Laboratories.
3. "Permeation of Burn Wounds, Methodology and Mechanism". Co-investigator with G.L. Flynn, College of Pharmacy, University of Michigan. NIH 2 R01 GM 24611-04.
4. "Methicillin-Resistant Staphylococcus aureus: Effect of Test Media on the Minimal Inhibitory Concentration and Growth Kinetics".

House Officer Participation: John Mozdzen, Jr.
William Springstead

5. "Clinical Evaluation of Cefsulodin in Burn Patient Infections Due to Pseudomonas aeruginosa", Co-investigator with I. Feller, Burn Program, Dept. of Surgery, University of Michigan. Funded by Abbott Laboratories.

6. "A Survey of Cefoxitin Resistance in Bacteroides fragilis", participant in study. Principal Investigator: F. Tally, Tufts University School of Medicine, Boston, Mass. Funded by Merck Institute for Therapeutic Research.
 7. "Jojoba Oil: Effects on Microbial Growth". Principal Investigator, K.D. McClatchey, Dept. of Pathology. Funded by Jojoba Plantations, Inc.
 8. "Detection of Circulating Pseudomonas Exotoxin A Using the Micro ELISA Technique".
 9. "The Abbott MS-2 System - Evaluation of the Urine Screen and AST Programs for Clinical Laboratory Use".
 10. "Isolation and Identification of Chemotaxins Produced by Clinical Isolates" with W. Marasco, Department of Pathology.
 11. "Skin Graft Study: Isolation, Quantitation and Characterization of Microorganisms in Graft Beds" with G. Cherry, Plastic Surgery Section, Department of Surgery, University of Michigan.
4. Departmental and Interdepartmental Service Activities
- Member, Executive Faculty Committee of the
Medical School
Member, Clinical Pathology Laboratory Committee
Coordinator, Clinical Microbiology Journal
Club
5. National Activities
- Papers presented at the annual meeting of The American Medical Society for Microbiology - Dallas, TX.
- a) "Methicillin Resistant Staphylococcus aureus: Colony Morphology and Growth Kinetics of Heteroresistant Colony Types".
 - b) "Relative Efficiency of Various Antimicrobial Testing Methods to Detect Methicillin Resistant Staphylococcus aureus".
6. Consulting Activities
- National Institute for Burn Medicine, Ann Arbor, MI.
Infection Control Procedures for Burn Care Facilities.

K. Murali Krishna Rao, M.D.
Research Investigator

ANNUAL REPORT
July 1, 1980 - June 30, 1981

I. Diagnostic Service Activities

The service responsibility of the Clinical Immunology Laboratory is shared with Dr. David F. Keren on a 50-50 basis.

II. Teaching Activities

- A. Practical instruction to the residents rotating through the Clinical Immunology Service.
- B. Regular participation in clinical pathology conferences.

III. Research Activities

- A. Grants were submitted to:
 - 1. Arthritis Foundation
 - 2. National Institute of Health
 - 3. Michigan Cancer Research Committee
 - 4. Proctor and Gamble Basic Research Program
 - 5. Michigan Diabetes Center
 - 6. Dow Chemical Foundation

NIH and Diabetes Center grants were approved but not funded. At present time waiting to hear from Dow Chemical Foundation.

- B. Collaborating with Dr. Brewer, Dept. of Internal Medicine, Dr. Welsh, Dept. of Anatomy, and Drs. John Wass and Jim Varani, Department of Pathology on 3 different projects.

C. Publications:

- 1. Rao, KMK, Bordine, SL, and Keren, DF: Decision making by pathologist: A strategy for curtailing inappropriate tests. Arch. Pathol. Lab. Med. (In press)
- 2. Rao, KMK: Capping and mitogenesis: A model implicating microfilaments in lymphocyte activation. (manuscript submitted)
- 3. Wass, JA, Rao, KMK, Varani, J, and Ward, PA: Effects of chemotactic factors upon the mobility of concanavalin-A receptors in tumor cell membranes. (manuscript submitted)

BERTRAM SCHNITZER, M.D.

ANNUAL REPORT

July 1, 1980 - June 30, 1981

I. Diagnostic Service Activities

1. Clinical Hematology Laboratory, Director (full-time).
2. Diagnostic Surgical Pathology - rotation.
3. Diagnostic Surgical Pathology, V.A. Hospital (weekly).
4. Consultation of Hematopathology Cases (full-time).
5. Electron Microscopy of Lymphoreticular and Hematologic Disorders.
6. University of Michigan Health Service Laboratories, Director.

II. Teaching Activities

1. Pathology - Medical School, Human Illness Inteflex Program, Sophomore year.
 - a) Lecturer
 - b) Laboratory section
2. Pathology 600 - Sophomore Medical Students. Whole class lecture on Hematologic Pathology.
3. House Officer Conferences - Hematopathology - monthly.
4. Affiliated Hospital
 - a) Slide conferences, Wayne County General Hospital; V.A. Hospital; Wayne State University.
5. Lecture on lymphomas to clinical hematologists, Department of Medicine, Simpson Memorial Institute.

III. Research Activities

Ongoing studies of benign and neoplastic lesions of lymphoreticular and hematopoietic systems; morphologic, immunologic, cytochemical and ultrastructural.

Plastic-embedded bone marrow biopsies in diagnostic hematopathology.

Publications:

1. Palutke, M., Schnitzer, B., et al.: T- and B-cell lymphomas look alike. Am. J. Clin. Pathol. 74:360-361, 1980.

Abstracts:

1. Palutke, M., Schnitzer, B. et al.: Monoclonal lymphoid populations in lymph nodes with reactive hyperplasia. Lab. Invest. 44:50A, 1981.
2. Schnitzer, B., Cochran, R.K. et al.: Plastic-embedded bone marrow biopsies. Lab. Invest. 44:60A, 1981.

IV. Departmental Service Activities

1. Director of Sophomore Teaching of Pathology, Human Illness, Inteflex Program.
2. Voting Member, Inteflex Promotion Board.
3. Interdepartmental Lymphoma Staging Committee.
4. Electron Microscopy Committee.

V. National and International Activities

A. National

1. Member, American Board of Pathology, Hematology Test Committee.
2. Member of On-Site Visit Team (Cancer Clinical Investigation Review Committee) Pathology Panel and Repository Center for Lymphoma Clinical Studies. Duarte, California.
3. Member, Southwest Oncology Group.
 - a) Lymphoma subcommittee.
 - b) Leukemia subcommittee.
4. Children's Cancer Study Group. Review of lymphoma cases and occult leukemia relapses in testicular biopsies for Group's study.
5. Founding Committee, National Hematopathology Society.
6. Invited speaker, Hematopathology Course, Armed Forces Institute of Pathology.

7. Invited speaker, Region IV American Society of Medical Technologists Annual Meeting.
8. Invited speaker, Michigan Tumor Registrar's Association Meeting.

B. International

1. Invited speaker. Brazilian National Lymphoma Panel. Three day Tutorial on Non-Hodgkin's Lymphomas given to members of the Brazilian National Lymphoma Panel. Sao Paulo, Brazil.
2. Invited speaker. New Classifications of Malignant Lymphomas, University Hospital, Porto Alegre, Brazil.

Individual faculty member report for Eugene M. Silverman, M.D.

1. Diagnostic service activities for the past 12 months - I have been responsible for reading surgicals, autopsy, and cytological material in rotation with Drs. Goldman and Schmidt at Wayne County General Hospital. In addition, I am responsible for the microbiology and the routine hematology laboratories at Wayne County General Hospital.
2. Teaching activities for the past 12 months. Supervised residents in surgical pathology for four months at Wayne County General Hospital. Supervised residents in hematopathology training at Wayne County General Hospital for six months. Supervised residents in autopsy pathology in rotation with Drs. Schmidt and Goldman. Gave four lectures in hematology, nine in mycology and one in cerebrospinal fluid dynamics as part of the Wayne County General Hospital medical technology internship training program.
3. Research activities - none.
4. Departmental and international service activities - Vice President of Medical Staff at Wayne County General Hospital. Treasurer of County Organized Professionals (Physician's Union) at Wayne County General Hospital. Board of Directors of University Medical Affiliates, P.C. Chairman of Tissue Committee. Also serve on accreditation committee, library committee, infectious disease committee, pharmacy and therapeutics committee, executive committee, and Joint Administration Committee on Affiliation.
5. National activities - none.
6. Other pertinent information - none.

Gerd O. Till, M.D.
Associate Professor, Department of Pathology

Faculty Report for 7/1/80 - 6/30/81

1. Diagnostic Service Activities:

I am involved in the diagnostic service activities of the Immunopathology laboratory. Recently two new tests were established to measure the following:

- A. The functional activity of the C1-inactivator activity in patient serum.
- B. The chemotaxis of patient neutrophils together with complement-derived chemotactic activity, chemotaxis inhibitors and inactivators in serum.

These tests will soon be added to the list of diagnostic assays offered by the Immunopathology Laboratory.

2. Teaching Activities:

- A. Teaching of residents in immunopathology and immunology.
- B. Presentations at research seminars in various units (Arthritis, Allergy, Pathology).

3. Research Activities:

- A. Basic research in thermal injury-related changes in complement activities and leukocyte functions was started with the new research laboratory M4224 being set up early this year. This research is funded by a grant (GM 28499-01) from the National Institute of General Medical Sciences awarded to Dr. Peter A. Ward. I am co-investigator on this grant and currently one student is assigned to this research program.
- B. As can be seen from the publications of the past twelve months, I was also involved in research activities on macrophage tumor cell interactions, effects of drugs on the complement system, and mechanisms of neutrophil chemotaxis in vitro and in vivo.

Publications

1. Rother, U., Till, G., Hansch, M., and Voigtlander, V.: The complement system. In: RAR. Pseudo-Allergic Reactions Involvement of Drugs and Chemicals, Vol. 2, pp. 71-104, Eds.: P. Dukor, P. Dallos, H.D. Schlumberger, G.B. West, S. Karger, Basel, 1980.

2. Till, G., Voigtlander, V. and Rother, U.: Complement and pseudo-allergic reactions to drugs. In: PAR. Pseudo-allergic Reactions Involvement of Drugs and Chemicals. Vol. 2, pp. 105-139, Eds.: P. Dukor, P. Kallos, H.D. Schlumberger, G.B. West., Karger, Basel, 1980.
3. Gerns, D., Kramer, W., Brenner, M., Till, G., Resch, K.: Induction of prostaglandin E release from macrophages by colchicine. J. Immunol. 124:376-380, 1980.
4. Schwarz, J.A., Rother, U., Till, G. and Raschack, M.: Komplementaktivierung durch monovalentes Dextran (Dextran 1) und klinisches Dextran (Macrodex). Allergologie 3:70, 1980.
5. Dierich, M.P., Sablotny, W. and Till, G.; Migration of leukocytes into filters coated homogeneously with immune complexes, antigens, lectins or tripeptides. Immunobiol. 157:47-53, 1980.
6. Gerns, D., Barlin, E., Leser, H., Till, G. and Kownatzki, E.: Lymphozytenaktivierende Faktoren und Arachidonsaurederivate aus Makrophagen: Bedeutung für die Interaktion von Leukozyten. Krankenhausarzt 53:36-40, 1980.
7. Gerns, D., Kramer, W., Napierski, I., Barlin, E., Till, G., Resch, K.: Potentiation of macrophage tumor cytostasis by tumor-induced ascities. J. Immunol. 126:2153-50, 1981.
8. Till, G., Debatin, M., and Gerns, D.: Regulatory mediators in Arthus reactions: Demonstration of chemotactic factor inactivator and cell directed inhibitor activity. pp. 639-45. In: Inflammation. Mechanisms and Treatment. Eds.: D.A. Willoughby and J.P. Giroud. MTP Press, Lancaster, England (1980).
9. Debatin, M., Gerns, D., and Till, G.: Regulatory mediators in Arthus reactions: Lysosomal enzymes in biopsy and serum. pp. 647-53. In: Inflammation. Mechanisms and Treatment. Eds.: D.A. Willoughby and J.P. Giroud. MTP Press, Lancaster, England (1980).
10. Menzel, J., Gerns, D., Till, G.: Die Rolle des Komplement-Systems bei der Opsonisierung, Phagozytose und Abtötung pathogener Keime. pp. 12-21. In: Immunglobulintherapie, Springer Verlag, Heidelberg (1980).
11. Lenhard, V., Till, G., Manke, H-G and drings, P.: Suppressorzell-induzierter Defekt der zellvermittelten Immunreaktivität beim Morbus Hodgkin. Verh. Deutsch. Ges. Inn. Med. 86: (in press).
12. Till, G.: Pathogenese pseudoallergischer Reaktionen. Hautarzt (in press).
13. Till, G. Gerns, D.: Leukocytenchemotaxis: Auslösung und Regulation granulözytärer Gewebsinfiltrationen. Bibliomed-Verlag, Kassell (in press).

14. Till, G.: Bedeutung des Komplements bei Röntgenkontrastmittel-induzierten Nebenwirkungen. Mitteilungen Bundesgesundheitsamt, Berlin (in press)

4. Service Activities:

A. Departmental:

In charge of central utilites (deionizer, sterilizer, etc.)

B. International:

Member of the organizing committee of the First International Conference on Leukocyte Chemotaxis, May 1982 in Switzerland.

James Varani, Ph.D.
Assistant Professor, Department of Pathology

Faculty Report for 7/1/80 - 6/30/81

1. Diagnostic Service Activities: None
2. Teaching Activities: None
3. Research Activities:

Nearly 100% of my professional time is devoted to research activities. I have an ongoing research program in tumor biology funded by two grants from the National Cancer Institute. The research is directed toward identifying properties of tumor cells which contribute to their metastatic ability. During the period 7/1/80 - 6/30/81, 11 research articles as well as 2 review articles were published or accepted for publication. In addition, 8 abstracts were published during this period.

Publications:

1. Varani J., J. Wass, G. Piontek and P.A. Ward, 1981. Chemotactic factor-induced adherence of tumor cells. *Cell Biology International Reports*. 5:525-530.
2. Elgebaly, S., S. Kunkel, E.J. Lovett, J. Lundy and J. Varani, 1981. CAMP differences between clones of high and low malignant fibrosarcoma cells. *Oncology* (in press).
3. Orr, F.W., J. Varani, J. Delikatny, N. Jain and P.A. Ward, 1981. Comparison of the chemotactic responsiveness of two fibrosarcoma subpopulations of differing malignancy. *Am. J. Path.* 102:160-167.
4. Lam, W.C., J. Delikatny, F. Orr, J. Wass, J. Varani and P.A. Ward. The chemotactic response of tumor cells; A model for cancer metastasis. *Am. J. Path.* 104:69-76.
5. Varani, J., K. Johnson and J. Kaplan, 1980. Development of a solid-phase assay for measurement of proteolytic enzyme activity. *Analytical Biochem.* 107:377-384.
6. Gabrielson, D.A., J.J. Kellehen and J. Varani, 1980. Effect of *Corynebacterium granuloseum* immunopotential on the pathogenesis of herpes simplex virus type 2 in BALB/C mice. *Infect. Immun.* 30:791-796.
7. Wass, J.A., J. Varani, G.E. Piontek, D. Goff and P.A. Ward, 1981. Characteristics of the chemotactic factor - mediated cell swelling response of tumor cells. *J. Nat.*

Cancer Inst. 66:927-933.

8. Varani, J., E.J. Lovett, S. Elgebaly, J. Lundy and P.A. Ward, 1980. In vitro and in vivo adherence of tumor cells correlated with tumor formation. Am. J. Path. 101:345-352.
9. Varani, J., E.J. Lovett and J. Lundy, 1980. A model of tumor cell dormancy in mice: Effects of anesthesia and surgery. J. Surg. Oncology (in press).
10. Varani, J. E.J. Lovett, S. Elgebaly and J. Lundy, 1981. Characteristics of tumor cell variants with differing malignant potential. In Cancer Metastasis: Clinical and Experimental Aspects. (K. Hellmann, ed.) Martinus Nijhoff, Publishers, Amsterdam.
11. Lundy, J., S. Elgebaly, E.J. Lovett and J. Varani, 1981. Tumor heterogeneity: Implications for chemotherapy in Cancer Metastasis: Clinical and Experimental Aspects. (K. Hellmann, ed.) Martinus Nijhoff, Publishers, Amsterdam.
12. Varani, J., P.A. Ward and W. Orr, 1981. Immunobiology of chemotaxis and metastases. In The Handbook of Cancer Immunology Volume 7. (H. Waters, ed.) Garland STPM Press. New York.
13. Varani, J. and P.A. Ward, 1981. Tumor cell chemotaxis in The Biological Basis of Metastasis. (I. Hart and L. Laotta, eds.) (in press).
14. Wass, J. A. KMK Rao, J. Varani and P.A. Ward, 1981. Changes in fluorescence capping of tumor cells upon response to a chemotactic peptide. Biophysical J. 33:180.
15. Lovett, E.J., J. Varani and J. Lundy. 1981. Thiopental induction of suppressor cells. Fed. Proc. 40:325.
16. Piontek, G.E., V.G. Vethamany, J. Varani and P.A. Ward, 1981. Modulating the adherence of murine fibrosarcoma cells. Fed. Proc. 40:787.
17. Wass, J.A., J. Varani, P. Axelrod, KMK Rao and P.A. Ward, 1981. Chemotactic correlates in selected normal and tumor lines. Fed. Proc. 40:791.
18. Phan, S.H., J. Varani, E.J. Lovett and d. Schrier, 1981. Isolation and characterization of fibroblasts from bleomycin-induced fibrotic lungs. Fed. Proc. 40:793.
19. Kunkel, R. T.F. Beals, J. Varani and S.H. Phan, 1981. Morphological characterization of the effects of

bloemycin on rat lung fibroblasts. Fed. Proc. 40:794.

20. Varani, J., 1981. Chemotactic factor-induced adherence of tumor cells. Fed. Proc. 40:823.
21. Varani, J. and E.J. Lovett, 1981. Temporal variability of tumor cell properties in vivo and in vitro. Proc. of the AACR 72nd annual meeting, 22:49.

My research activities for the period 7/1/80 - 6/30/81 were supported by two grants from the National Cancer Institute.

- a. Tumor cell subpopulations with varying degrees of malignancy CA 29550, \$170,000 through 12/31/82.
- b. Immunopathology of complement-mediated tumor cell chemotaxis CA 29551, \$270,000 through 12/31/82.

Two postdoctoral students participated in the research program during this past year. Both were supported by the two grants listed above. One of these students has taken a new position as of 7/1/81. It is anticipated that a new person will be hired to replace him. In addition to the postdoctoral fellows, two work-study students participated in the research activities during the past year. Finally, a number of college students in science or pre-med programs have worked in the laboratory during this time.

4. Departmental and international Service Activities: None
5. National Activities:

I participated in a workshop entitled: "Tumor cell Invasion and cell migration" sponsored by the Tumor Biology program of the National Cancer Institute. In addition to participating, I co-authored the cell migration "position paper" for this meeting.

Varani, J. and p.A. Ward. Tumor invasion and metastasis: The role of cell motility. Position paper for the NIH sponsored workshop entitled Tumor Cell Invasion and cell Migration. Novemeber 4-5, 1980, Alexandria, Virginia.

Work which I co-authored was presented at a workshop entitled: Biology of Metastasis sponsored by the National Cancer Institute of Canada. The workshop was held June 8-11 at Saskatoon, Saskatchewan.

6. Other Activities: None

ANNUAL REPORT

John Vasiliades, Ph.D.
Assistant Professor of Pathology

I. Diagnostic Service Activities:

Assistant Director of Biochemistry Laboratory and Coordinator of Research and Special Chemistry. Over the last six months we have introduced new procedures and have implemented new approaches to improve the service function and diagnostic capabilities of the main Biochemistry Laboratory. At the same time, we have set up the laboratory in the Vertebrae Biology Building (Mouse House) for the expansion of our research and special chemistry functions of the Biochemistry Laboratory. In addition to the above we have re-outlined the toxicological screen with the Pharmacy Laboratory to include new tests and a more selective approach to the ordering of drugs (See attached order form).

New Procedures Introduced or Modified

Serum Thiocyanate
Urine Thiocyanate
Serum Quinidine
Urine FPN
Urine Acetaminophen
Urine Forrest Test (imipramine desipramine)
Urine Salicylate
Serum Chloramphenicol (Chloromycetin)
Blood Lead
Urine Lead
Serum Diazepam (Valium)

In the coming months or year we intend to introduce new procedures by Atomic Absorption Spectrophotometry, LC and GC, and upgrade old procedures as needed. Some of the new tests to be offered will include Blood ALA-D, serum gold, urine gold, serum oxazepam, flurazepam, chlordiazepoxide, serum carotene, urine myoglobin, verapamil, bretylium tosylate, disopyramide, sulfa drugs trimethoprim, and selenium.

Administrative Functions

1. Supervision of Quality Control of Special Chemistry and introduction of new controls, Hyland Toxicology controls, for monitoring the quality of the Special Chemistry areas of the Biochemistry Laboratory. We will be joining the CAP Toxicology Survey Program as well as the TDM AACC Quality Assurance program for all drugs monitoring in our laboratories. We intend to join the CDC Toxicology Program for lead analysis.
2. Other.

Consult with VA laboratory on some of their problems in chemistry on a monthly basis.

II. Teaching Activities

Medical Technology Program

1. Gave two lectures, one on Emergency Room Toxicology and one on Therapeutic Monitoring in the Clinical Laboratory.
2. Gave a lecture on our emergency room drug findings to residents.

In the future I intend to offer a series of seminars to residents in Clinical Chemistry and Laboratory Toxicology. In addition residents will rotate through my laboratory and through Clinical Biochemistry.

3. Other.
 - a) Gave Seminar at Towsley Center on HPLC in the Clinical Determination of Drugs. April 30, 1981.
 - b) Judge at Michigan Society of Medical Technology Student Bowl. Spring 1981.
 - c) Take students for independent study in my laboratory.

III. Research Activities

Publications

1. Vasiliades, J. and Sahawneh, T., "Determination of midazolam by high-performance liquid chromatography". J. Chromatogr. 225 (1981) (in press).
2. Vasiliades, J. and Sahawneh, T., "Determination of midazolaam by gas chromatography, liquid chromatography and gas chromatography-mass spectrometry." Clin. Chem. (1981) (Submitted for publication).
3. Vasiliades, J. and Sahawneh, T., "Determination of diazepam in serum by GC, LC and GC-MS." Clin. Chem. (1981) (Submitted for publication).
4. Vasiliades, J., "Identification of misused drugs in the Clinical Laboratory". Clin. Biochem. (1981). (Submitted for publication).

Abstracts

1. Vasiliades, J. and Sahawneh, T., "Determination of midazolam in serum by gas chromatography and liquid chromatography". Abs. 1981 Pitts. Conf. in Anal. Chem. and Spectroscopy. Atlantic City, N.J. March 9-13, 1981.
2. Vasiliades, J., "A comprehensive screen for the determination of misused drugs in the clinical laboratory". Abs. Acad. Clin. Lab. Physicians and Scientists, Annual Meeting, Chapel Hill, S.C., May 21-22, 1981.
3. Vasiliades, J. and Wilkerson, K., "A comprehensive screen for the determination of drugs of misuse in the clinical laboratory. II. Benzodiazepines." Clin. Chem. 27 (1981).
4. Vasiliades, J. et al., "Determination of quinidine by spectrofluorometry and liquid chromatography". Clin. Chem. 27 (1981).

Financial Support

1. J.T. Baker Diagnostic \$1700
CPK-MB protocol.
2. Lancer Inc. Furstin City, CA \$4500
Creatinine methodology research.

Students

I have had two students who have participated in research projects in my laboratory.

1. Marian Anticolli who is a Master's Degree student in Public Health.
2. Rita Sznycer-Laszuk, Medical Technology student from EMU.
3. I intend to have a minimum of 2 students doing research in my laboratory at any one time, on various projects related to clinical chemistry and clinical toxicology.

4. Research Activities

We have completed a protocol in evaluating a new creatinine analyzer and an LC method for the determination of creatinine. This is part of my continued research interest in more selective methods for clinical laboratory analysis. (See attached protocol).

As part of this research effort we hope to work with Lancer in future evaluations of new methods of analysis.

We are actively evaluating a CPK-MB method for Baker Diagnostics which will be of aid in our laboratory approach to CPK-MB analysis. As part of this research effort, we hope to look at a Bioluminescence method for CPK-MB analysis from Upjohn.

Clinical collaborative studies are being conducted for verapamil with Dr. Rochinni in Pediatric Cardiology as well as Dr. Randall in Cardiology.

IV. Departmental and International Services

I am currently on the AACC Reference Committee on Creatinine Methodology. As a member of this Committee I am developing a selective HPLC method which will be adopted by the AACC for the determination of creatinine.

V. National Activities

Presentations at National Meetings

1. Pittsburgh Conf. in Anal. Chem. March 9-13, 1981. "Determination of Midazolam in Serum by Gas Chromatography and Liquid Chromatography".
2. ACLPS meeting Chapel Hill, North Carolina, May 21-22, 1981. "A Comprehensive Screen for the Determination of Misused Drugs in the Clinical Laboratory".
3. AACC National Meeting, Kansas City, Missouri, July 19-24, 1981.
 - a) "Determination of Quinidine in Serum by Spectrofluorometry and Liquid Chromatography".
 - b) "A Comprehensive Screen for the Determination of Drugs of Misuse in the Clinical Laboratory".

VI. Other

V.A. Consultation in chemistry.

Peter A. Ward, M.D.
Professor and Chairman
Department of Pathology

Faculty Report for 7/1/80 - 6/30/81

1. Diagnostic Service Activities:

These have been limited to occasional involvement in surgical pathology biopsy specimens.

2. Teaching Activities:

- A. Undergraduate medical - 7 hours lecture in Sophomore Pathology Course.
- B. Graduates - supervision of post-doctoral fellow, Dr. Wayne Marasco; Director, Lung Immunopathology Training Program (NIH)

3. Research Activities:

Principal Investigator on the following research grants:

- A. NIH, CA 295501, Tumor Cell Chemotaxis, \$73,011/yr
- B. NIH, AI 17651, Penetration of RBC by Protozoa, \$44,984/yr
- C. NIH, AI 17650, Leukocyte Chemotaxis, \$67,242/yr
- D. NIH, HL 23152, Inflammatory Lung Disease, \$141,940/yr
- E. NIH, GM 28499, Thermal Injury, \$68,910/yr
- F. Cystic Fibrosis Foundation, G111A, Regulation of Chemotactic Factors, \$16,600

Publications:

- 1. Varani, J., Orr, W., and Ward, P.A.: Adhesive characteristics of tumor cell variants of high and low malignant potential. J. Nat. Cancer Institute 64: 1173-1178 (1980).
- 2. Ward, P.A.: Inflammatory proteins: Chemical and Biological aspects. Clin. Biochem. 13: 187-190 (1980).
- 3. Jack, R.M. and Ward, P.A.: Mechanisms of entry of Plasmodia and Babesia into red cells. In, "Babesiosis". Edited by M. Ristic and J.P. Kreier. Academic Press, Inc. (New York) publishers, pp. 445-457 (1981).
- 4. Johnson, K.J., Fantone, J.C., III, Kaplan, J. and Ward P.A.: In vivo damage of rat lungs by oxygen metabolites J. Clin. Invest. 67: 983-993 (1981).

5. Johnson, K.J. and Ward, P.A.: Role of oxygen metabolites in immune complex injury of lung. *J. Immunol.* 126: 2365-2369 (1981).
6. Kunkel, S.L., Fantone, J.C., Ward, P.A. and Zurier, R.B.: Modulation of inflammatory reactions by prostaglandins. *Prog. Lipid Res.*, Vol. 20, (1981).
7. Maderazo, E.G. and Ward, P.A. Infections and the Host. In, "Management of Infections of the Oral and Maxillofacial Regions". R.G. Topazian and M.H. Goldberg, editors, W.B. Saunders Company, (Philadelphia) publishers, pp. 1-38 (1981).
8. McCormick, J.R., Harkin, MNM., Johnson, K.J. and Ward, P.A.: Suppression of superoxide dismutase of immune-complex-induced pulmonary alveolitis and dermal inflammation. *Amer. J. pathol.* 102: 55-61 (1981).
9. Orr, F.W., Varani, J., Delikatny, J., Narendra, J. and Ward, P.A.: Comparison of the chemotactic responsiveness of two fibrosarcoma subpopulations of differing malignancy. *Amer. J. Pathol.* 102: 160-167 (1981).
10. Ward, P.A.: Chemotactic mechanisms in thermal injury. In, "The Immune Consequences of Thermal Injury". J.L. Ninnemann, editor, Williams and Wilkins (Baltimore), publishers, pp. 119-126 (1981).
11. Ward, P.A. and Jack. R.M.: The entry process of Babesia merozoites into red cells. *Amer. J. Pathol.* 102: 109-113 (1981).
12. Ward, P.A., Sterzel, R.B., Lucia, H.L., Campbell, G.H. and Jack, R.M.: Complement does not facilitate plasmodial infections. *J. Immunol.* 126: 1826-1928 (1981).
13. Elgebaly, S., Varani, J., Kunkel, S.L. and Ward, P.A.: Cyclic AMP levels in subpopulations of tumor cells: Correlation with in vitro and in vivo behavior. *Oncology.* In Press.
14. Fantone, J.C., Kunkel, S.L., and Ward, P.A.: Chemotactic mediators in neutrophil dependent lung injury. *Annual Rev. Physiology.* In Press.
15. Fantone, J.C., Kunkel, S.L., Ward, P.A. and Zurier, R.B.: Suppression of human polymorphonuclear leukocyte function after intravenous infusion of Prostaglandin E₁. *Prostaglandin and Medicine.* In Press.
16. Fantone, J.C. and Ward, P.A.: Experimental studies of immune complex injury of lung. *Amer. Rev. Resp. Dis.* In Press.
17. Fantone, J.C. and Ward, P.A.: Chemotactic mechanisms in the lung. In, "Immunopharmacology of the Lung". H.H. Newball, Editor. Marcel Dekker, Inc. (New York. In Press.

18. Kunkel, S.L., Fantone, J.C. and Ward, P.A.: Complement mediated inflammatory reactions. Pathology Annual. In Press.
19. Ward, P.A.: The acute inflammatory response and the role of complement. In, "The Surgical Wound". Edited by P. Dineen. Lea & Febiger (Philadelphia). In Press.
20. Ward, P.A.: The chemotaxis system. In, "The Inflammatory Process and Infectious Diseases". Edited by R.S. Cotran and G. Majno. IAP Monograph published by the Williams and Wilkins Company, New York (1981). In Press.
21. Ward, P.A.: Inflammatory proteins: Chemical and biological aspects. Clin. Biochem. In press.
22. Ward, P.A., Fantone, J.C. and Johnson, K.J. Lung injury produced by oxygen metabolites. VIII the International Symposium in Immunopathology. In Press.
23. Wass, J., Varani, J., Ward, P.A., Lam, W.C., Delikatny, J. and Orr, W.: Chemotactic response of tumor cells: A metastatic model. Amer. J. Pathol. In Press.

4. Service Activities:

- A. Departmental - see above.
- B. Institutional
 1. Clinical Chairman's Council
 2. Dean's Advisory Council
 3. VA-Dean's Committee
 4. Chairman, Psychiatry Search Committee

5. National Activities:

- A. Member, Pathology Test Committee, National Board of Medical Examiners.
- B. Chairman, Scientific Advisory Board, AFIP.
- C. Member, Research Review Committee A, National Heart, Lung and Institute, NIH.
- D. Past President, American Association of Pathologists.
- E. Member of the Board, University Association for Research and Education in Pathology, Inc.
- F. Member, Immunopathology Test Committee, American Board of Pathology.
- G. Chairman, Immunology Study Section, Veterans Administration.
- H. Associate Editor, American Journal of Pathology.
- I. Associate Editor, Human Pathology.
- J. Associate Editor, Immunopharmacology and Immunopathology.
- K. Consulting Editor, Journal of Immunology.
- L. Consulting Editor, Journal of Clinical Investigation.
- M. Consulting Editor, Infection and Immunity.

6. Invited Presentations:

- A. Chairman, Minisymposium in Chemotaxis, American Association of Pathology and American Association of Immunology, American FASEB Meetings, Atlanta, Georgia.
- B. Chairman, Symposium on Chemotaxis, First International Congress of Immunopharmacology, Brighton, England, July, 1980.
- C. Invited Lecturer at Medical Schools and National Symposia approximately 20 in number.

Annual Departmental Report:

Lee Weatherbee, M.D.

1. Diagnostic service activities:

Read out surgical cases with resident - one to three days per week. (Approximately 1000 cases)

Reviewed 110 autopsy reports. Read microscopic and dictated final report on 30 autopsies.

Read cytology reports for approximately four weeks in Dr. Beals' absence.

Acted as consultant pathologist in weekly oncology review conference at VAMC.

General administrative and professional direction of Laboratory Service at VA Medical Center.

Consulted at University of Michigan on ten cases of bone and joint pathology.

2. Teaching activities:

General supervision of, and daily participation in, resident training at VAMC-surgical, autopsy and clinical pathology.

Inteflex Laboratory course - GU and musculoskeletal. 21 contact hours.

Two one hour conferences for pathology residents on bone and joint pathology.

One one hour conference on osteogenic sarcoma for the oral surgery department.

One lecture for M-2 students on bone pathology.

3. Research Activities:

Publications

Ultrastructural Appearance of Red Cells Frozen with Glycerol for Clinical Use. E.D. Allen and L. Weatherbee Cryobiology 17, 448-457 (1980)

Areas of Research Interest

Platelet changes during clot formation and retraction. Proposal submitted July, 1981 to VACO Research Service for funding.

Collaboration with Charles Beauchamp in his proposal "Role of Superoxide in the Onset and Propagation of Inflammation" Animal model in polyarthritic rat due to Freund's adjuvant injection.

4. Departmental and International Service Activities:

Committee activities

University of Michigan

- Clinical Pathology Faculty
- Resident Selection Committee
- Resident Evaluation Committee

VAMC

- Clinical Executive Board
- Human and Financial Resources Committee
- Medical Audit Committee
- Radiation Control Committee
- Transfusion Review Committee - Chair
- Pharmacy and Therapeutics Committee
- Library Committee
- Nutrition Committee
- Professional Review Board

CAP

Inspected two outside hospital laboratories for College of American Pathologists

5. National Activities:

Program Specialist in Pathology for Research Service VA Central Office.

Three year appointment to complete fall 1981. Acts as ombudsman and consultant for VA pathologists and VACO research staff in matters of research nationwide.

Serve on Budget Review Group for Cooperatives.

Studies Evaluation Committee for VACO Research Service. Attend all meetings of Evaluation Committee and review cooperative study research proposals to comment on budget matters.

Participated in Ad Hoc Committee for VA.

Graduate Medical Education at VACO 1980.

J. Reimer Wolter, M.D.

Professor, Departments of Ophthalmology and Pathology

Report of those activities between 7-1-80 and 6-3-81 that are related to the program of the Department of Pathology.

1) Diagnostic service activities:

Under the direct supervision of Robert C. Hendrix, M.D., the histopathologic examination, description, diagnosis and preparation of reports was completed in 820 cases. Some of the material comes from ophthalmologists and hospitals outside of this University and this "outside material" has an unusually high percentage of cases with value for teaching and research.

2) Teaching activities:

Teaching of Ophthalmic Pathology to the residents of the Eye Department. Ophthalmic Pathology is essential for an understanding of disease conditions as well as processes and, thus, this field is an important and separate part of the oral and written board examination of the American Board of Ophthalmology.

3) Research activities:

In the period of this report I have passed my 300th publication - and almost all of these are based on observations in Ophthalmic Pathology. Papers that have appeared in this period are:

1. Loveable Synophthalmus?, J. Ped. Ophth. & Strabis. 17:415-416, 1980.
2. Reactions to an Anterior Chamber Lens - Two Years After Implantation, with Croasdale and Bahn, Ophth. Surg. 11:794-800, 1980.

Activities Report

3. Concentric Microwaves of Henle's Fiber Layer: associated with horizontal folding, von Graefes Archiv Klin Ophth., 216:31-39, 1981.
4. The Lens as a Barrier Against Foreign Body Reaction, Ophth. Surg. 12:42-45, 1981.
5. Vertical Folds of Central Retina and Choroid in Sudden Ocular Decompression, Ophth. Surg. 12:190-194, 1981.
6. The Histopathology of Cystoid Macular Edema, Graefes Archiv Klin Ophth. 216:85-101, 1981.
7. Osteoblastic Prostate Carcinoma Metastatic to the Orbit, with Hendrix, Amer. J. Ophth. 91:648-651, 1981.
8. The Message of a Bony Lens, Ophth. Surg. 12:332-335, 1981.

Papers in print:

1. Pathology of Foveal Involvement Following Anterior Segment Injury, Ophth. Surg.
2. Intimo-Intimal Intussusception of the Central Retinal Arteries, with Hansen, Amer. J. Ophth.

Papers submitted:

1. Replacement of the Corneal Endothelium by Melanocytes, von Graefes Archiv Klin Ophth.
2. Cystoid Macula Edema in Vitreo-Retinal Traction, Ophth. Surg.
3. Argon Laser Photocoagulation of a Vitreo-Corneal Lesion After Trauma, with Bahn, Amer. J. Ophth.

Papers ready to be submitted:

1. Involvement of the Foveal Retina in Choroidal Melanomas.
2. Expulsive Hemorrhage: Its Nature and Its Effects on the Retina.
3. Necrosis and Calcification in the Media of the Central Retinal Artery.

4) Departmental and International service activities (committees, etc):

Member Tissue Committee.

Member Committee on Medical Student Research, Medical School.

Director, General Ophthalmology Clinic, U/M Hospital.

Chief, Eye Service, V.A. Hospital.

Editor, Journal of Pediatric Ophthalmology and Strabismus up to March, 1981 - retired from that position after more than ten years of service.

Member Editorial Board, von Graefes Archiv Klin Ophth.

Member Review Board, Amer. J. Ophth.

Listed in Who is Who,

Member Presidents Club, U/M.

~~Member~~ F. Bruce Fraclick Lectureship 1981, with talk on "Mechanisms of Central Retinal Artery Occlusion."

**Program and Section
Reports**

Department of Pathology
Educational Programs
1981

The scope of the Department's educational programs is unique in that we service several schools in the University, in our role as basic science teachers while simultaneously engaging in a broad range of clinical teaching within the Medical Center. These latter activities encompass not only the undergraduate medical curriculum, but also our departmental commitment to the teaching of special pathology and Laboratory Medicine in the context of inter-departmental clinical conferences and in the Postgraduate Medicine arena.

These activities include:

I. Courses in the "Standard" Medical Curriculum

- A. ICS 500: 20 contact hours - introductory lectures on General Pathology.
- B. ICS 600: 21 contact hours - Immunopathology sequence (13 hours) and selected topics in special pathology of various systems.
- C. NBS 600: 18 contact hours - Neuropathology.
- D. Pathology 600: 120 contact hours - 30 hours of whole-class lecture, 90 hours of laboratory (in each of 4 sections).
- E. Pathology Clerkships: Elected by 45 students at University Hospital and 6 additional students elsewhere.

II. Courses in the Inteflex Curriculum

- A. Anatomy-Pathology 506: Microscopic anatomy and General Pathology for I-3's. Total of 108 contact hours; 36 pathology, 18 combined, 54 anatomy.
- B. Pathology/Human Illness: For I-4's 132 contact hours, lecture and laboratory. Equivalent of Pathology 600.

III. Courses in the Dental Curriculum

- A. Pathology 630: General Pathology lectures, 45 contact hours.
- B. Pathology 631: Pathology laboratory, 90 contact hours, each of 3 sections (assisted by Oral Pathology staff).

IV. Courses for Graduate School/Allied Health

- A. Pathology 859: General Pathology for Biological Scientists. Lecture, 42 contact hours.
- B. Pathology 860: General Pathology laboratory, 28 contact hours.
- C. Pathology 858: Neuropathology, 23 contact hours.
- D. M.S. in Pathology: 2 candidates graduated.
- E. Pathology-Physiology 581: Mammalian Reproductive Endocrinology, 45 contact hours.

V. Postgraduate Medicine/Continuing Medical Education

"Current Topics in Blood Banking" - June, 1981.

VI. Clinical Conferences

The department of Pathology provides an important educational service to many other clinical departments through regular participation in interdepartmental working/teaching conferences. The Department is involved in 10 regular weekly conferences and 13 additional conferences at bi-weekly, and monthly intervals. The units served include:

Internal Medicine:

Gastroenterology
Nephrology
Hematology/Oncology
Nuclear Medicine
Pulmonary Medicine
Arthritis
Cardiology
General (Death Conference, CPC)

Pediatrics

Cardiology
Oncology
Gastroenterology
General (Death conference, CPC)

Obstetrics and Gynecology

Oncology

Dermatology

Oral Surgery

Neurosurgery

General Surgery

Otorhinolaryngology

Urology

ANNUAL REPORT FOR ACADEMIC YEAR 1 JULY 1980 - 30 JUNE 1981
DEPARTMENT OF PATHOLOGY - DIVISION OF ANATOMIC PATHOLOGY

I. Professional Staff and Workload

A. Past Year's Activities

The Division of Anatomic Pathology is responsible for the service aspects of the Department of Pathology which include general surgical pathology and the surgical pathology subspecialties, cytopathology, and the autopsy service. During the past year, these activities were handled by seven general anatomic pathologists, all of whom had subspecialty responsibilities as well, one full time pediatric pathologist, two full time neuropathologists, and subspecialty work from four additional faculty members. This cadre of people included:

1. H. D. Appelman, Director - general, gastrointestinal, and hepatic
2. G. D. Abrams - general, gastrointestinal, and hepatic, autopsy
3. R. C. Hendrix - general, forensic, autopsy
4. W. R. Hart - general, gynecologic, soft tissue
5. P. W. Gikas - general, renal, genitourinary
6. B. Naylor - general, cytopathology, pulmonary
7. N. Kumar - general, cytopathology
8. K. P. Heidelberger - pediatric, both surgical and autopsy
9. J. T. Headington - dermal
10. B. Schnitzer - hemato and lymphoreticular
11. K. McClatchey - otorhinolaryngologic
12. H. A. Oberman, mammary
13. S. P. Hicks - neuropathology, both surgical and autopsy
14. K. D. Zis - neuropathology, both surgical and autopsy

During the past year, this group handled over 13,000 surgical resections and biopsy specimens on University Hospital patients, approximately 2,900 consultations submitted for diagnosis by pathologists outside this institution, approximately 380 autopsies, 10,600 gyn and 3,800 non-gyn cytologic specimens.

No new faculty were added during this period so that coverage deficits created by the departure of Drs. Batsakis and Nishiyama were taken over by the existing faculty. Fortunately, Dr. McClatchey was able to handle the otorhinolaryngologic pathology load fully and expertly, since he had trained extensively with Dr. Batsakis. Drs. Hendrix and Appelman covered the endocrine problems, but it was clear that recruitment of a highly sophisticated endocrine pathologist was essential, given the stature of endocrinology in this institution, its impressive expansion over the years, and the fact that subspecialties in other areas, such as gastroenterology, now include endocrinologists and endocrinologically oriented case referral loads.

B. Projections and Plans For 1981-1982

Some staffing problems have been identified. First, Dr. Hart is leaving at the end of June, 1981. His leaving creates a void in gynecologic and soft tissue pathology and a huge void in general surgical pathology. Dr. Naylor will be on sabbatical for six months, thus creating a void in cytology and pulmonary pathology as well as in general surgical diagnosis. Dr. Gikas will also have a sabbatical for six months, which will also create a void in general diagnostic surgical pathology, but especially in renal diagnostic electron microscopy and in genitourinary pathology. The division will be able to handle these problems reasonably well, it is hoped, by certain internal reshuffling and by the addition of some new faculty. First, Dr. Kumar will take over the full consultative capabilities of gynecologic pathology as well as continuing her work in cytology and general surgical diagnosis. Dr. Kent Johnson will handle the renal diagnostic electron microscopic work in the absence of Dr. Gikas. Dr. Andrew Flint, a very highly qualified cytologist, will take over much of the work created by the leaving of Dr. Naylor for six months. Dr. Flint is also extremely qualified in the subspecialties of pulmonary and lymphoreticular diseases and he will be given the assignment as the departmental consultant in soft tissue diseases and tumors. He will also have general surgical diagnostic responsibilities as well. Dr. Flint will begin work in August 1981. Dr. Ricardo Lloyd will begin work in July 1981. He has advanced training in general surgical diagnosis, but, probably most impressively, he will supply the expertise needed in endocrine pathology, an area which we have needed expertise in for the last two years. Therefore, by the end of June 1982, when both Drs. Naylor and Gikas are back full time, we should have outstanding capabilities in virtually all general and subspecialty areas of diagnostic anatomic pathology. It is predicted that the case load, both from hospital cases and from outside consultations will not diminish, but will remain much the same or perhaps even increase.

C. Consultative Service

Charges for consultative cases were instituted in July 1980. Contrary to our expectations, this did not result in a decrease in consultations, but possibly a slight increase. Most of the feedback from pathologists who had contributed material for our consultative voice in the past indicated that they were in favor of the charges. Many stated that they would now send more cases since they felt the department would be compensated for its consultative activities. In general, our contributing pathologists appear to continue to be pleased by the high quality and expertise of our consults and the speed of our responses. I did note that some back-up was needed for Dr. Schnitzer in lymphoreticular and hematopathology consults, because of the large number of cases and their complexity. Dr. Flint will provide that back-up.

II. Histology Laboratory

A. Equipment

There has been continued replacement of outmoded microtomes with new Leitz machines. Continued development of the plastic system resulted in routine use of this technology for all bone marrow biopsies, certain infiltrative skin disease biopsies, all CORB bone biopsies for tumor diagnoses and occasional selected biopsies of other types. We will probably evaluate an attachment to the Leitz microtome which will allow serial sections in plastic (currently serial sections cannot be performed with existing machinery) which will open plastic technology to other types of biopsies, such as gastrointestinal and liver biopsies and more skin biopsies, possibly as a routine.

Four old autotechnicon automatic processors and stainers were either rebuilt or are in the process of being rebuilt now. This was done rather than investing in new machinery because of the predictability of performance of these machines and the fact that rebuilding all four of them was much less expensive than buying one new machine of any type.

B. Space

A special stain room on the fourth floor was completed, approximately doubling the size of the previous space. This allows three technologists to work there at the same time so that one can be assigned to research and development, basically the evaluation and development of new procedures for routine use in the laboratory. The old special stain room on the fifth floor was remodeled and converted into a plastic technology area with a small office at the back for the supervisors.

C. Staff

The laboratory was fully staffed with fourteen technologists, three of whom were still at the laboratory assistant grade, pending completion of their registry examinations. Unfortunately, it appears that two highly trained technologists will be leaving for other jobs in other cities, and they must be replaced.

D. Projections

1. Possibly during the next year, total remodeling of the large tissue laboratory will be undertaken. The room is currently overcrowded with equipment, supplies, and people, and the space is inefficiently used, making the work environment for the technologists rather unpleasant. This remodeling must be done with an eye to the late 1980s and the needs of the surgical and

biopsy services as they will exist in the new replacement hospital. The Director and Supervisors will undoubtedly have to make a number of trips to other institutions of comparable type to carefully examine their activities and the design of their tissue laboratories.

2. Another new development is the assignment of a technologist from the tissue laboratory to immunopathology to assist in the diagnostic tissue work in antibody staining for problems such as endocrine disease, lymphoreticular disease and so fourth. This area will probably be expanded by Dr. Lloyd who is experienced in the use of a variety of tumor marker techniques, most of which require immunopathologic capabilities.

III. Summary

In general, the Division of Anatomic Pathology was able to continue its excellence in diagnostics in the face of some continued staffing deficiencies. During the next year, most of these deficiencies will be removed, due both to the hiring of two new young surgical pathologists, one of whom is also a cytologist and the other an endocrine pathologist, and to some internal reshuffling of subspecialty responsibilities. New capabilities and use of tumor markers will be developed. Continued gradual modernization of the laboratory, slow as it appears to be going, will progress with the expectation that the laboratory will be ready to handle the needs generated by the building of the replacement hospital.

Henry D. Appelman, M.D.
Professor of Pathology; Director
of Anatomic Pathology

SUBJECT: Annual Report for Clinical Laboratories

Attached is a series of reports from the various Clinical Laboratories, prepared by the respective laboratory directors. To supplement these reports the following general additional items, which are of an interlaboratory nature, are highlighted.

Replacement Hospital Project: The Clinical Pathology Faculty has spent considerable time participating in plans for the Clinical Laboratories in the RHP. This has involved preparation of preliminary drawings leading to schematics. All levels of laboratory administration have been involved in this project, including technologists, administrative personnel and faculty. It is anticipated that this "team effort" will be required during the ensuing months as the plans become reality.

Renovation of Current Laboratories: Dr. McClatchey and Mr. Capps have taken a leadership role in planning for the renovation of the second level of the "Old Main". This relates to the 1200 NSF added to the laboratory space allocation at the time of the change in chairmanship. This renovation activity will occupy considerable time for all concerned personnel during the coming year.

Even with this added space there continues to be a constraint on optimal laboratory performance because of spatial inadequacy. For example, the Ligand Assay and Clinical Immunology laboratories, as well as the administrative offices for the Clinical Laboratories, are in the Pathology Building at a considerable distance from the other laboratories. In addition, only modest space was provided for expansion of the Laboratory Data Center. The upgrading of the laboratory computer mandates modification of these plans and additional space provision.

Computer Upgrade: A major activity during the coming year will be replacement of our current MedLab Version 1.0 Computer. Current issues which must be resolved within the next two months relate to interface with the Hospital computer, adequacy of Microbiology laboratory software and policies for addition of new laboratories to the system. Replacement of this Computer is essential.

Capital Equipment: The manner in which capital equipment is provided for the Clinical Laboratories continues to be of concern. There is no specific budgetary allocation for either replacement of obsolete equipment or addition of new equipment to permit programmatic expansion. Competition with "Limited Special Function" laboratories often results in disparate allocation of funds to the Central Laboratories. It seems essential that we proceed toward a more predictable method for management of this problem.

Clinical Pathology Teaching Program: Under the leadership of Dr. Keren the twice-weekly Clinical Pathology Conferences have been exceptionally successful. The discussions have been of both practical and scientific merit, and there is general support of this program by the House Officers. The Evaluation Program introduced in Clinical Pathology last year, combining evaluation of House Officers and of the respective rotations, has also been successful and has enabled a more objective approach to scheduling and House Officer counseling. For example, this evaluation mechanism has permitted elimination of a rotation at one of the satellite hospitals and rescheduling of the rotation at a more suitable site.


Student Health Service: An affiliation agreement was concluded between the Clinical Laboratories and the Student Health Service. After considerable correspondence and negotiation with the MDPH, licensing was provided under our aegis. Senior residents in Clinical Pathology provide coverage of the laboratory under the direction of Dr. Schnitzer, with support of Clinical Pathology faculty.

Recruitment: An extensive recruitment effort to fill the position of Director of the Chemical Pathology laboratory has, as yet, been unsuccessful. It was virtually impossible to locate a suitable candidate from an external source for this position, primarily because of the rather small pool of candidates available. Dr. John Vasiliades, of the University of Alabama at Birmingham, joined the Clinical Chemistry group at the beginning of the current academic year, while Dr. Thomas Annesley, of the Mayo Clinic, was successfully recruited for the Clinical Chemistry laboratory and will join the Department in August, 1981. Recruitment will continue for designation of a medical faculty member with interest in clinical chemistry. Furthermore, we should move in the direction of having at least two Clinical Pathologists with capabilities in each of the Clinical Laboratories.

Administrative Support: Preliminary discussions have resulted in agreement that an assigned staff support position be created for the Clinical Laboratories. This individual will have a variety of duties related to the administration of the Laboratories, serving, in essence, as "Laboratory Manager". Assigned duties will include such significant projects as preparation for inspections, preparation of workload figures, maintenance of quality control and proficiency testing information, preparation and maintenance of procedure manuals, general support of the Laboratory administration and improvement of communication between the various Clinical Laboratories.

UNIVERSITY HOSPITAL BLOOD BANK

Annual Report


Harold A. Oberman, M.D.
Professor of Pathology

While the number of units of blood and blood products transfused did not change significantly during the 1981 academic year, the proportion of Red Blood Cells (packed cells) continued to increase, approaching 70 per cent of total red cell products transfused. Recent programmatic augmentation is especially noteworthy in two areas. The recently modified antibody screening procedure and crossmatch (low ionic strength saline-37C-antiglobulin test) continued to expedite issuance of blood for transfusion, with a corresponding significant positive impact on management of operative patients. The new plasma exchange and therapeutic plasmapheresis program continued to grow. During the past year there was an increase of this therapeutic modality for neurologic patients.

Teaching Activities: The laboratory's instructional program included the following:

- Two-week didactic course in Blood Banking for Pathology House Officers.
- Two week introductory individualized instruction in techniques of Blood Banking for first year House Officers (Ms. Barnes).
- Monthly Conferences with nursing staff on various patient units (Ms. Butch and Mrs. Forshew). The participation of both a technologist (Ms. Butch) and a nurse (Mrs. Forshew) from the Blood Bank greatly enhanced the in-service programs conducted for the nursing staff in the Hospital.
- Weekly Clinical Pathology conferences. Invited lectures for Clinical Departments (Surgery, Hematology-Oncology and Anesthesiology).
- Postgraduate course, "Current Topics in Blood Banking", Towsley Center, June, 1981. This course continues to be one of the most successful courses offered at Towsley. Over 350 medical technologists and pathologists attended this year's program, coming from 33 states.
- Instruction in practical Blood Banking for Medical Technology students.
- Members of the laboratory presented workshops, invited lectures or proffered scientific papers at meetings of the International Society of Blood Transfusion, American Society of Clinical Pathologists, American Association of Blood Banks and at meetings of various State medical and Blood Banking organizations. These are documented in the individual reports submitted by the respective faculty members.

- The laboratory's position as the leading focus of hospital Blood Banking in the State of Michigan was enhanced by the initiation of a state-wide Blood Banking newsletter by Dr. Friedman and Ms. Barnes.

Research Activities: As indicated above, several members of the Blood Bank staff presented research papers at regional and national meetings. These are further described in the individual annual reports submitted by Mr. John Judd, Dr. Friedman, Ms. Barnes and myself. Worthy of emphasis are the following:

- Mr. Judd's investigation of the polyagglutinability phenomenon and its clinical significance continues to draw national attention. Furthermore, he has related this to his previous work on lectins.
- Dr. Friedman's work on blood utilization continues to be the sole source of this information in the United States. He has received widespread recognition for this work, and continued funding for the project.
- Evaluation of pretransfusion testing by members of the laboratory, focusing on the usefulness of the crossmatch, has also received national attention, resulting in an invitation for presentation of this material at the preconvention seminar of the 1981 meeting of the American Association of Blood Banks.
- Evaluation of the usefulness of plasma exchange in management of such neurologic disorders as Guillan-Barré syndrome and amyotrophic lateral sclerosis is being conducted in cooperation with the Department of Neurology (Dr. James Albers).
- Current investigational projects include assessment of optimum detection of ABO incompatibility, and the usefulness of enzyme techniques in antibody screening and crossmatching.
- The laboratory also has cooperated with Dr. Alan Beer, of the Department of Obstetrics and Gynecology, in assessing the usefulness of oral administration of Rh-positive red cell stroma for pregnant patients sensitized to the D antigen.
- In another interdepartmental project, the laboratory is participating with Dr. Darrell Campbell, Jr., of the Department of Surgery, in assessing the need for transfusion of donor blood immediately before transplantation of the donor's kidney.

Goals for 1981-82: There should be no foreseeable modification in basic provision of service during the coming year. Therefore, there should be no need for an increment in personnel.

The primary requirement of the laboratory is continued upgrading of existing equipment, as heavy use causes considerable wear. The program of constant phased replacement of serofuges continues. The major acquisition during the coming year will be a new cell separator (IBM 2997). This, together with the existing Heamonetics 30 machine should permit greater flexibility in provision of plasma exchange therapy for patients in our Hospital.

A major project during the coming year will be the anticipated computerization of the laboratory. Members of the staff already have visited Long Beach Memorial Hospital to examine the MedLab system, and believe that it will be a definite asset for our own program.

A potential problem relates to the plasma exchange program. This program is conducted by three FTE, two of whom are medical technologists and one is a registered nurse. One of the technologists and the nurse are pregnant, and it is planned that both will return following their deliveries. However, should the situation be otherwise, curtailment of service may result until recruitment efforts are successful. This will cause a serious disruption in one of the tertiary care programs of the Hospital.

ANNUAL REPORT

Chemistry

Service Activities

The thrust of the service activities in the last year have been aimed at expanding the special chemistry area including the rapid turnaround of drug assays. With the addition of Dr. John Vasiliades to the clinical staff we have introduced the following new tests:

- Serum Thiocyanate
- Urine Thiocyanate
- Serum Quinidine
- Urine FPN
- Urine Acetaminophen
- Urine Forrest Test (imipramine desipramine)
- Urine Salicylate
- Serum Chloramphenicol (Chloromycetin)
- Blood Lead
- Urine Lead
- Serum Diazepam (Valium)

In addition we have added high density lipoproteins and an assay for cholesterol in fluids.

New equipment designated to the Vertebrate Biology Building Laboratory of Pathology because of space constraints in the Main Clinical Biochemistry include atomic absorption instrument, High performance, liquid chromatography, and a gas chromatograph. These instruments are performing many of the new assays recently introduced. The money source for the above instruments was departmental funds.

The test volume for the laboratory continues to rise at about 10% a year with the laboratory processing specimens at the present time at about 135,000 per month. Certainly the need for additional personnel is imminent to support the increased workload and the addition of professional staff (Dr. Thomas Annesley, Ph.D., arrives August 1, 1981). Also upgrade of existing equipment just to maintain the existing quality must be met in the coming year.

Teaching

The Clinical Biochemistry Laboratory maintains a monthly in-service teaching program coordinated by the "teaching" technologist and the chief technologist. In addition, the laboratory maintains an active role in the training of medical technology students throughout the year.

The house officer training includes a rotation in the laboratory as well as discussions with Mr. Capps on instrumentation, Ms. Thiessen on quality control and Dr. Vasiliades on toxicology methods. The entire resident teaching program will be upgraded in the coming year.

The laboratory also maintains a yearly course on Clinical Biochemistry in the Towsley Center for Continuing Education focusing on new instrumentation and quality assurance programs.

Participation in regional and national meetings on topics relevant to clinical chemistry have been carried out by Mr. Capps and Dr. Vasiliades and are listed below:

Rod Capps

- 1) Three hour lecture on "automation in the modern laboratory" by invitation from Biological Chemistry Department, Med. Sci. I., 1981.
- 2) Four hour lecture: Medical Technology Department, Eastern Michigan University, Inservice Education "Laboratory Operations".
- 3) Twenty hour lecture and demonstration. Medical Technology Program, The University of Michigan.
- 4) Thirty hours plus with resident's group.

John Vasiliades, Ph.D.

- 1) Pittsburgh Conference in Anal. Chem. March 9-13, 1981. "Determination of Midazolam in Serum by Gas Chromatography and Liquid Chromatography".
- 2) ACLPS meeting Chapel Hill, North Carolina, May 21-22, 1981. "A Comprehensive Screen for the Determination of Misused Drugs in the Clinical Laboratory".
- 3) AACC National Meeting, Kansas City, Missouri, July 19-24, 1981.
 - a) "Determination of Quinidine in Serum by Spectrofluorometry and Liquid Chromatography".

- b) "A Comprehensive Screen for the Determination of Drugs of Misuse in the Clinical Laboratory".

Research

Rod Capps

1. Redesign of K+ Ion Specific Electrode on Technicon SMAC instrument.
2. New flow system designs (with Technicon Corporation) for SMAC instrument.
3. Designed Sweat Cl-device for modification of Beckman 8 instrument.
4. Developed an alternative Hexokinase system for Technicon SMAC.
5. Publication - Co-author: Judd, J. and Capps, R.D.: "Autoagglutinins with apparent Anti-P speciality reactive only by Liss Tech." Transfusion, 10-12 months for publication.

John Vasiliades, Ph.D.

1. Completed a protocol in evaluating a new creatinine analyzer and an LC method for the determination of creatinine). Part of continued research interest in more selective methods for clinical laboratory analysis. Work with Lancer in future evaluations of new methods.
2. Actively evaluating a CPK-MB method for Baker Diagnostics which will be of aid in our laboratory approach to CPK-MB analysis. As part of this, look at a bioluminescence method for CPK-MB analysis from Upjohn.
3. Clinical collaborative studies are being conducted for verapamil with Dr. Rochinni in Pediatric Cardiology as well as Dr. Randall in Cardiology. Other studies will include a cadmium toxicity study with the School of Public Health and jojoba GC analysis with Dr. McClatchey's group.

Goals for 1981-1982

Briefly stated, the goals for 1981-1982 include:

1. Expand the special chemistry functions under the leadership of Drs. Annesley and Vasiliades (Additional technologists may be needed to carry such a function).
2. Upgrade existing equipment to maintain the high standards necessary to provide rapid turn-around of results in the laboratory. Specifically the upgrade of SMAC (Technicon) to SMAC II should be in the plans for the coming year.
3. Continue to work on the renovation project for the 2nd floor Main Hospital Laboratories while maintaining the flexibility to transfer such an operation to the "new" hospital when needed in the future. Such a project requires input from everyone in the laboratory.

ANNUAL REPORT 1980-1981

CLINICAL IMMUNOPATHOLOGY LABORATORY

1. New Tests

Twenty four hour urine light chain quantitation
ASO
By nephelometry: Cl esterase inhibitor
CRP

TDT
Endocrine Neoplasm Assessment
C3 Activation Analysis

In Progress:

Immune complexes - PEG and ELISA (currently sending out
20/month)
AGBM
Immunofixation
Oligoclonal Banding (25/month)

2. New Equipment:

GLC-2B Centrifuge - T & B area
37° Incubator - replacement FTA's (Not here yet)
Dual Chamber water bath - replacement CH50 and serologic and
cryoglobulins.
Centre 7R cold centrifuge - replacement CH50
Automated ICS - IgG, A, M, C3, C4, AIAT, CSF G/Alb, HPT, CIEI, CRP -
(Rental Reagent Plan - Not Capital Equipment)

3. Significant Volume Changes:

Nephelometer	1400 to 3200
T & B cells	100 to 200
Immunoperoxidase	0 to 60
24° Urine Quants	0 to 27

4. Equipment Needed:

Hood
Replacement for old spectrophotometer.
Update Leitz microscope with HBO 100 bulb.

Teaching

In-Service Laboratory

Lecture Series on Clinical Immunopathology for technologists
and house officers
Clinical Immunopathology Journal Club - held twice monthly.
Meetings attended by technologists:

Continuing Education
July 1980 to June 1981

Date	Topic	Hours	Attended By Supervisor	06	05	Lab. Ass't.
08-20-80	SMI pipette workshop - R & B	1	1	2	Au1	-
10-13-14-80	Immuno Workshop - Helena Electrophoresis	12	-	(Kris) 1	-	-
03-17-81 to 06-16-81	Motivational Dynamics (UM)	@ 20	1	-	-	-
04-03-81	Current Concepts of C1 Immuno (Children's Hospital)	8	1	-	-	-
04-07-81	Immunofluorescence (Kallestad)	8	-	-	2	-
04-22-81 to 04-28-81	Effective Listening (UM)	4	-	-	-	1
04-27-81 to 04-28-81	Diagnostic Immunology (Cleveland Clinic)	16	1	(Nita) 1	-	-
05-06-81	Immunofluorescence (Electro- nucleonics)	8	-	-	2	-
05-15-81	High Resolution Electrophoresis	4	1	-	-	-
05-15-81	High Resolution Electrophoresis (Worthington)	8	-	-	2	-
06-11-81 & 06-18-81	Attendance Control and Disciplinary Counseling (UM)	4	1	-	-	-
06-18-81	Performance Planning and Problem Solving I (UM)	2	1	-	-	-
06-22-81 to 06-23-81	Competency Based Instruction - Curriculum Development	16	-	(Kris) 1	-	-

House Officer Training-

Daily sign-out with senior staff,
Immunoelectrophoresis, protein electrophoresis,
column studies, T and B cell surface marker
studies, immunohistology, cryoglobulins, laboratory
management.
Clinical Pathology Conference Presentation

Postgraduate Courses -

Participant in Towsley Seminar on Clinical Chemistry. Lecture on
ELISA techniques.
Participant in Current Topics in Allergy and Clinical Immunology
Lectures on Immune Complex Disease, Use of Clinical Immunology
Laboratory, Mucosal Immunity.

Participation in Regional and National Meetings

Residents

Stuart Flynn - Microelisa for insulin antibodies, ASCP, Fall, 1980.
John Mozdzen - Immunofluorescence in Methacrylate-embedded Tissue,
IAP, 1981.
Kenneth Clark - Detection of Monoclonal Lymphoplasmacytic Pro-
liferations by Immunofluorescence in Paraffin-embedded Tissue,
IAP, 1981.

Staff

David Keren - Local IgA Memory Response, Federation (in absentia),
1981.
David Keren - Immunopathology of Inflammatory Bowel Disease, IAP,
1981.
David Keren - ELISA in the Clinical Laboratory. Michigan Society
of Medical Technology, 1981.
David Keren - Mucosal Immunocyte Seminar (in absentia) AGA, 1981.
K.M.K. Rao - Actin Polymerization, Deoxyribonuclease and Capping.
Federation, 1981.

Research

Completed Projects -

1. Swanson, N A, Keren, D F, and Headington, J T: Extramedullary
IgM plasmacytoma presenting in skin. AM. J. Dermatopathol. 3:
79-83, 1981.
2. Keren, D F, Collins, H H, Gemski, P, Holt P S, Formal, S B: Role of
antigen form in development of mucosal immunoglobulin A response to
Shigella flexneri antigens. Infect. Immun. 31: 1193-1202, 1981.

3. Hamilton, S R, Keren, D F, Yardley, J H, and Brown, G D: No impairment of local intestinal immune response to keyhole-limpet hemocyanin in the absence of Peyer's patches. *Immunol.* 42:431-435, 1981.
4. Keren, D F: Whipple's disease: a review emphasizing immunology and microbiology. (CRC Critical Review Reviews in Laboratory Medicine).
5. Atkinson, J P, Gorman, J C, Curd, J, Hyla, J F, Deegan, M J, Keren, D F, Abdou, N I, and Walker S E: Cold dependent activation of complement in SLE: a unique cause for discrepancy between clinical and laboratory parameters. (Arthritis and Rheumatism).
6. Weesner, K, Rocchini, A, Heidelberger, K, Rosenthal, A, and Keren, D F: Immune mechanisms in porcine xenograft failure in children. (Circulation).
7. Clark, K A and Keren, D F: Demonstration of monoclonal lymphoplasmacytic proliferations by immunofluorescence on routine formalin-fixed, paraffin-embedded tissue. (Cancer).
8. Mutchnik, M G and Keren, D F: In vitro synthesis of antibody to specific bacterial lipopolysaccharide by peripheral blood mononuclear cells from patients with alcoholic cirrhosis. (Immunology).
9. Rao, K M K, Bordine, S L, and Keren, D F: Decision making by pathologist: a strategy for curtailing inappropriate tests. (Arch. Pathol. Lab. Med.).

Articles Submitted for Publication:

1. Keren, D F: Immunological response to oral immunization.
2. Hamilton, S R, Keren, D F, Yardley, J H, and Brown, G D: Effects of subcutaneous administration of isoantigen or cholera toxin upon local intestinal and systemic immune responses to keyhole-limpet hemocyanin in rabbits with chronically isolated ileal loops.
3. Flynn, S D, Keren, D F, Torrett, B, Dieterle, R C, and Grauds, S.: An enzyme-linked immunosorbent assay (ELISA) to detect insulin antibodies.
4. Keren, D F, and Kujada, F: Immunohistology in the diagnosis of Whipple's disease.
5. Kern, S E and Keren, D F: Parameters affecting a micro-enzyme-linked immunosorbent assay to measure IgA in intestinal secretions.

Ongoing Projects

1. Anti-GBM ELISA with Dr. Quigley
2. Immune Complex ELISA
3. Immunoperoxidase on Endocrine Tumors

Projects for Coming Year

Cl_q immune complex assay (Dr. Till)

J chain in lymphomas

Use of FACS to do surface markers on T and B cells

Study hybridoma anti-melanoma antigens of Soldano Ferrone
for clinical use

Calcitonin in squamous tumor cell lines (with Dr. Carey).

Rheumatoid factor by nephelometry

Extractable nuclear antigen

ANNUAL REPORT
CLINICAL MICROBIOLOGY LABORATORY

The thrust of activity in the Clinical Microbiology Laboratory in the last year has included the continued expansion of the drug susceptibility area including the ability to test new drugs rapidly but also to establish more sophisticated assays such as: minimal bacterioid concentration tolerance studies, and drug synergy studies. Much of the work done on the above procedures was accomplished in Dr. Carl Pierson's section of the laboratory using the Abbott MS2 and Dynatech MIC 2000 instruments.

In addition, the technical staff has been engaged in numerous projects to keep the laboratory in step with the rapidly changing methodology in clinical microbiology. Such procedures include:

- Evaluate MS-2 clinical susceptibility bacterial identification and capabilities.
- Establish procedure to isolate and identify *Campylobacter*
- Establish procedure to isolate and identify *Legionella*.
- Begin filtration of blood to improve yeast isolation.
- New identification procedure for *Nocardia*.
- Cefoxitin and Cephmandole susceptibility initiated, evaluated, and added to reported antibiotics
- Improved acid fast bacilli susceptibility method evaluated and instituted.
- Effectiveness of UV meter in AFB hood area evaluated.
- Bacteroides* fluorescent antibody procedure instituted.
- Capnocytophaga procedure instituted.
- CDC, KV plates for anaerobes evaluated and adopted.
- Daily infectious Disease Rounds established.
- Training checklists for all lab areas completed.
- "Drug of choice" and quarterly summary added to susceptibility quarterly report.

All of the above service accomplishments were completed in a terribly crowded laboratory suffering under the burden of a laboratory computer system overburdened and rapidly "wearing out". As the expansion of the serology area of the laboratory expands the need for a full time technologist becomes more and more important. In addition, the area of "susceptibility" and "special methodologies" in the laboratory require full time dedicated technologists. Such dedication requires an upgrade in the rank of technologists in those specialty areas. The volume in the susceptibility area alone now exceeds 60 specimen isolates per day.

Teaching

The Clinical Biochemistry Laboratory maintains a monthly in service teaching program coordinated by the "teaching" technologist and the chief technologist as well as an active participation in regional and national education programs (see below). In addition, the laboratory maintains an active role in the teaching of medical technologists, as well as residents and fellows from other services.

Microbiology Continuing Education
June 1980 - June 1981

Forensic Autopsy Procedures	Pathology - UMMC
Toxic Shock	Infectious Disease - UMMC
Pulmonary TB	Pulmonary Service - UMMC
Pulmonary TB	Pulmonary Service - UMMC
Aminoglycoside Update	Wayne State University
Aminoglycoside Update	Wayne State University
Compylobacter Studies	VA Hospital - SCACM*
Compylobacter Studies	VA Hospital - SCACM
Compylobacter Studies	VA Hospital - SCACM
Compylobacter Studies	VA Hospital - SCACM
Guided Teaching Design Program	CRLT Center - UMMC
"One-on-one Teaching"	CRLT Center - UMMC
Fungal Pulmonary Disease	Pulmonary Service - UMMC
Fungal Pulmonary Disease	Pulmonary Service - UMMC
Mucormycosis	Internal Medicine - UMMC
Fungal Diseases	Pulmonary Service - UMMC
Stress Management	HRD - UMMC
Stress Management	HRD - UMMC
Problem Solving/Comprehension	CRLT Center
Amebiasis/Candidemia	Internal Medicine - UMMC
Update-Yeast ID	API
Update-Yeast ID	API
Supervision Assessment	HRD - UMMC
Motivational Dynamics	HRD - UMMC
Fall Regional SCACM	SCACM
Fall Regional SCACM	SCACM
Fall Regional SCACM	SCACM
Special Medical Bact.	SCACM
Clin. Lab. Manager's Association	CDC - Atlanta
Imported Parasitology	CRMA - UMMC
Anaerobe Techniques	CDC - Atlanta
Transactional Analysis	Ford Hospital
Transactional Analysis	HRD - UMMC
Spring SCACM	HRD - UMMC
Spring SCACM	SCACM - Indianapolis, Indiana
Legionella	SCACM - Indianapolis, Indiana
Legionella	Infectious Disease - UMMC
Legionella	Infectious Disease - UMMC
Legionella	Infectious Disease - UMMC
Cutaneous Mycosis	Infectious Disease - UMMC
International Rapid Methods	University of Kentucky
Antifungal Therapy	ASM - Washington D.C.
Fungal Pneumonia	Infectious Disease - UMMC
Management of Managers	Infectious Disease - UMMC
	HRD - UMMC

*SCACM - South Central Association of Clinical Microbiologists

The house officer training includes rotations through the main laboratory including stops in such specialty areas as susceptibility, anaerobes, mycobacteria and mycology. In addition, the person in training may spend selected time with Dr. Pierson in the research and development area.

The laboratory also maintains a yearly course on Clinical Microbiology in Towsley Center for Continuing Education focusing on new methods in the Clinical Microbiology Laboratory.

Participation in regional and national meetings on topics relevant to clinical microbiology have been carried out by technologists, Dr. Pierson and Dr. McClatchey are listed below:

Carl L. Pierson, Ph.D.

Publications in Scientific Journals -

1. Behl, Charanjit, R., G.L. Flynn, T. Karihara, N. Harper, W. Smith, W.I. Higuchi, N.F.H. Ho and C.L. Pierson, "Hydration and Percutaneous Absorption: I. Influence of Hydration on Alkanol Permeation through Hairless Mouse Skin", J. Invest. Dermatol. 75 (4): 346-352, 1980.
2. Pierson, Carl L., "Infection Control in Burn Care Facilities", Critical Care Quarterly 3 (4): 81-92, 1981.

Articles Accepted for Publication -

1. Behl, Charanjit, R., G.L. Flynn, M. Barrett, K.A. Walters, E.E. Linn, Z. Mohamed, T. Kurahara and C.L. Pierson, "Permeability of Thermally Damaged Skin: II. Immediate Influences of Branding at 60°C on Hairless Mouse Skin Permeability", Burns, in press, 1981.
2. Behl, Charanjit, R., E.E. Linn, G.L. Flynn, C.L., C.L. Pierson, W.I. Higuchi, P. N.F.H. Ho, "Permeation of Skin and Eschar by Antiseptics: I. Baseline Studies with Phenol", Burns in press, 1981.
3. Behl, Charanjit, R., E.E. Linn, G.L. Flynn, N.F.H. Ho, W.I. Higuchi and C.L. Pierson, "Permeability of Skin and Eschar to Antiseptics: II. Influence of Controlled Burns on Phenol's Permeation", Burns, in press, 1981.
4. In Vitro Antimicrobial Effects of Jojoba Oil. McClatchey, K.D., Pierson, C.L., Ferrell, W.J. Proceedings of the 4th International Conference on Jojoba, 1980, in press.

5. Percutaneous Absorption of Jojoba Oil. McClatchey, K.D., Ferrell, W.J., Pierson, C.L. Proceedings of the 4th International Conference on Jojoba Oil, 1980, in press.

Published Abstracts

1. "Methicillin Resistant Staphylococcus aureus: Colony Morphology and Growth Kinetics of Heteroresistant Colony Types", Abstracts, American Society for Microbiology, (1981), p. 299.
2. "Relative Efficiency of Various Antimicrobial Testing Methods to Detect Methicillin Resistant Staphylococcus aureus", Abstracts, American Society for Microbiology, (1981), p. 300.
3. "Relationship of Nursing Factors in Burn Care Facilities to Burn Survival and Other Outcomes", Abstracts, American Burn Association, (1981), p. 83.

Kenneth D. McClatchey, D.D.S., M.D.

Publications in Scientific Journals -

1. Kauffman, C.A., Bergman, A.G., Severance, P.J., McClatchey, K.D.: Detection of Cryptococcal Antigen: Comparison of two Latex Agglutination Tests. Amer. J. Clin. Path., 1980.

Articles Accepted for Publication -

1. Percutaneous Absorption of Jojoba Oil. McClatchey, K.D., Ferrell, W.J., Pierson, C.L. Proceedings of the 4th International Conference on Jojoba Oil, 1980, in press.

Abstracts -

1. Bauer, S.H., Elsasser, P.J., McClatchey, K.D.: Comparison of the Abbott MS-2 Urine Screen with a Standard Culture Method in a Large Hospital. American Society for Microbiology Annual Meeting, 1980.
2. Elsasser, P.J., McClatchey, K.D., Kloosterman, R.E., Bloch, D.: Computerization of a Clinical Microbiology Laboratory in a Large University Hospital. American Society for Microbiology Annual Meeting, 1980.

3. Pierson, C.L., Kloosterman, R.E., McClatchey, K.D.:
The Effect of Divalent Cations and Human Serum on
Antimicrobial Susceptibility Kinetics. American Society
for Microbiology Annual Meeting, 1980.
4. Rapid Screen for Staphylococcus Aureus in Blood Culture by a
Modified Lyostaph Test. Lee, E.K. and McClatchey, K.D. 3rd
International Symposium on Rapid Methods and Automation in
Microbiology, 1981.
5. Methicillin Resistant Staphylococcus Aureus Colony Morphology and
Growth Kinetics of Heteroresistant Colony Types.
Pierson, C.L., Gobetti, S.R., and McClatchey, K.D. Amer. Soc.
for Microbiology, Annual Meeting, 1981.
6. Evaluation of Agar Supplemented Ampvettes for the MS-2 Urine
Screen. Elsasser, P.J. and McClatchey, K.D. Amer. Soc. for
Microbiology, Annual Meeting, 1981.

Research Activities

Carl L. Pierson, Ph.D.

1. "In Vitro Evaluation of LY-127935, Moxalactam" Co-investigator
with F.R. Fekety, Infectious Disease Service, Department of
Internal Medicine, University of Michigan, Funded by Eli Lilly
and Co.

Work-study student: Tim Houston
Medical Student- 1: Heather McCullough

2. "In Vitro Evaluation of Sch-294 and Ro-13-9904 Against Clinical
Bacterial Isolates". Co-investigator with F.R. Fekety,
Infectious Disease Service, Dept. of Internal Medicine. Funded
by Hoffmann-LaRoche Laboratories.
3. "Permeation of Burn Wounds, Methodology and Mechanism". Co-
investigator with G.L. Flynn, College of Pharmacy, University
of Michigan. NIH 2 R01 GM 24611-04.
4. "Methicillin-Resistant Staphylococcus aureus: Effect of Test
Media on the Minimal Inhibitory Concentration and Growth Kinetics".

House Officer Participation: John Mozdzen, Jr.
William Springstead

5. "Clinical Evaluation of Cefsulodin in Burn Patient Infections
Due to Pseudomonas aeruginosa", Co-investigator with I. Feller,
Burn Program, Dept. of Surgery, University of Michigan. Funded by
Abbott Laboratories.

6. "A Survey of Cefoxitin Resistance in Bacteroides fragilis", participant in study. Principal Investigator: F. Tally, Tufts University School of Medicine, Boston, Mass. Funded by Merck Institute for Therapeutic Research.
7. "Jojoba Oil: Effects on Microbial Growth". Principal Investigator, K.D. McClatchey, Dept. of Pathology. Funded by Jojoba Plantations, Inc.
8. "Detection of Circulating Pseudomonas Exotoxin A Using the Micro ELISA Technique".
9. "The Abbott MS-2 System - Evaluation of the Urine Screen and AST Programs for Clinical Laboratory Use".
10. "Isolation and Identification of Chemotaxins Produced by Clinical Isolates" with W. Marasco, Department of Pathology.
11. "Skin Graft Study: Isolation, Quantitation and Characterization of Microorganisms in Graft Beds" with G. Cherry, Plastic Surgery Section, Department of Surgery, University of Michigan.

Kenneth D. McClatchey, D.D.S., M.D.

1. Principal Investigator, Jojoba Oil: its percutaneous absorption and anti-inflammatory effects, funded by Detroit Neurosurgical Foundation, 1979.
2. Principal Investigator, A Prospective Study of Wound Healing in Oral Cleft Repair Patients, funded by March of Dimes Birth Defects Foundation, 1980.
3. Principal Investigator, Jojoba Oil: its precutaneous absorption and anti-inflammatory effects, funded by Jojoba Plantation Products, 1981.

Goals for 1981 - 1982

Briefly stated the goals for 81-82 are:

1. Expand the serology area of the laboratory to keep abreast of the increasing number of rapid test procedures in the area.
2. Continue to update the antimicrobial susceptibility area. In addition with the half time support of Dr. Elizabeth Forbes we will begin to evaluate mechanisms of drug resistance and its affect on testing methods in the laboratory.
3. Work to develop infection control programs using the computer as a tool-in the clinical laboratory setting.

4. Continue to maintain our high quality function in the face of severe space constraints.

SUBJECT: LDC Portion of Annual Report

Enclosed is the LDC report for the comprehensive Annual Report for the Department of Pathology.

Service Activities:

1. Implementation of online archive disk drive to handle out-patient calls. Five million test results over ten months.
2. Design of new Throughput Report with more flexibility and applicable to more laboratories.
3. Technologist I.D. program.
4. Analysis programs for TRIP report.
5. Search programs for tape archive.
6. Alphabetized department log for Microbiology.
7. Multiple maintenance programs.
8. Central distribution handled 9% more test requests than previous year.
9. Hired senior data processing assistant for preventive maintenance.
10. New hardware failure tracking system.
11. Monitoring of test requests by audit trail resulting in 97% reduction of errors.
12. Hired a second programmer for daily problem solving and applications.
13. Creation and hiring of a midnight supervisor/training position.
14. Reduction in number of computer operators from six to four.
15. Upgrading of accession clerks to laboratory assistants.
16. Reduction in overtime by one order of magnitude.
17. Improved attendance and reliability of personnel.
18. Establishment of a test system for all new software testing.

Teaching:

1. LDC house officer rotation - four pathology residents rotated through LDC during the year.
2. Conducted five tours of LDC facilities for pathologists from other hospitals interested in laboratory computerization.
3. LDC personnel attended Medlab Users Group meeting in Salt Lake City, February 1981.
4. Establishment of inservice training program for computer operators and supervisors.
5. Presentation of Throughput paper at the Third World Conference on Medical Informatics, Tokyo, October 1980.
6. Presentation of TRIP Report paper at 10th Annual Conference of Society for Computer Medicine, San Diego, September 1980.
7. Presentation of Pathology Training Program in Laboratory Computerization at the 4th Annual Symposium on Computer Applications in Medical Care, Washington, D.C., November 1980.
8. Presentation of Computer Applications in Clinical Chemistry at Towsley Conference on Current Topics in Clinical Chemistry, March 1981.
9. Presentation of the Role of Computers in Patient Identification at Towsley conference on The Phlebotomy Team: Technical and Management Perspectives, May 1981.
10. Presentation of the Etiology and Pathogenesis of Laboratory Computing Problems at the College of American Pathologists Workshop on Acquiring a Laboratory Computer, Traverse City, June 1981.

Research:

A. Turnaround Time Studies

1. Throughput Report: Computer management tool for clinical laboratories.

Proceedings of MEDINFO 80
Lindberg & Kaihara editors
1F18 North-Holland Publishing Co. (1980)
p. 551-555

2. Computer-Generated Management Tools for the Clinical Pathology Laboratory: I Throughput Report.

Journal of Medical Systems
Vol. 4 #3/4, P. 367-380, 1980

3. Study of Overdue Stat Tests by Hour - study in process (collecting data).
4. Prediction of late stat tests by multiple linear regression and autoregression models - working with Department of Industrial and Operations Engineering. Article in preparation.

B. Phone Call Patterns

1. Computer-Generated Graphic Workflow For a Clinical Laboratory Computer System. Article in press.
2. Effect of Laboratory Computer on Physician Phone Call Patterns for Laboratory Results - rough draft.
3. Correlation of Phone Call Patterns with Ward Rounding Patterns - in preparation.

- C. Nucleated Red Cell Study with Dr. Schnitzer. Determine causes of nucleated RBCs - data being analyzed.

- D. Quality Control of a Clinical Laboratory Computer Database - article being revised.

- E. Pathology Training Program in Laboratory Computerization - Proceedings of the Fourth Annual Symposium on Computer Applications in Medical Care, November 1980.

- F. Invited to write review article for Clinics in Laboratory Medicine on computers and laboratory management.

- G. An Online Archive of Laboratory Results for Ambulatory Care - accepted for presentation at the SAMS/SCM Joint Annual Conference on Computers in Ambulatory Care, Washington, D.C. November 1981.

- H. Test Retest Correlation of Laboratory Tests working with Dr. Politser in Mathematical Psychology Department.
- I. Study of Throughput of Stat Specimens in Central Distribution - collecting data.

Goals for LDC for 1981-1982:

1. Upgrade of Laboratory Computer with implementation of additional laboratories.
2. Expansion of Laboratory Data Center including redesign of Central Distribution for faster throughput of specimens to the laboratories.
3. Implementation of a portion of HDSC interface enhancement for result reporting to high stat volume areas.
4. Implement a total procedure for preventive maintenance and progressive replacement of peripheral equipment.
5. Establishment of inservice training program for LDC and laboratory personnel on use of laboratory computer.
6. Creation of audit trails for computer operations.
7. Establish a formal procedure for interaction of LDC with laboratories and other departments.

SUBJECT: Annual Report for Clinical Laboratories, Hematology Laboratory

1. Service Activities

New tests - none

New equipment - none

Volume changes - 11 percent increase over 1979 - 1980
- almost 25 percent increase in two years

2. Teaching

I. House Officers

- A. Daily examination of abnormal blood smears and cytofuge preparations of body fluids with the House Officer. If bone marrow aspirate or biopsy or lymph node biopsy has been carried out on a patient whose material we have seen in the Hematology Laboratory, these sections are reviewed.
- B. Examination of cytochemical stains on acute leukemias.
- C. Examination of electron micrographs of hematologic cases.
- D. Discussion of problems that arise in the laboratory.
- E. Monthly hematopathology conferences often in conjunction with Dr. Meadows from St. Joseph's Mercy Hospital.

II. National

- A. AFIP Hematopathology Course
- B. IAP, March 1981 - Papers presented
 - 1. Palutke, M., Schnitzer, B., et al. Monoclonal lymphoid populations in lymph nodes with reactive hyperplasia. Lab. Invest. 44: 50A, 1981.
 - 2. Schnitzer, B., Cochrane, R.K., et al. Plastic embedded bone marrow biopsies. Lab. Invest. 44: 60A, 1981.
 - 3. Invited speaker. Region IV. American Society of Medical Technology.

III. International

- 1. Invited to give three day tutorial on Non-Hodgkin's lymphoma. Brazilian National Lymphoma Panel, Sao Paulo, Brazil.
- 2. Invited speaker. New Classifications of Malignant Lymphomas. University Hospital, Porto Alegre, Brazil.

IV. Postgraduate

Participation in Michigan Tumor Registrar's Association Meeting

V. Local

Department of Internal Medicine, Simpson Memorial Institute, University of Michigan. Lectures on lymphomas.

Wayne County General Hospital. Lectures on lymphomas.

Veterans' Administration Hospital. Lectures on lymphomas and electron microscopy.

3. Research

A. Plastic-embedded bone marrow biopsies in diagnostic hemato-pathology. We are the first to demonstrate the presence of Auer rods in undecalcified bone marrow biopsies stained with hematoxylin and eosin or with the chloroacetate esterase reaction.

B. Until I lost my technician who was not replaced, we were investigating the possibility of carrying out the non-specific esterase reaction in plastic-embedded bone marrow biopsies. We were also working out the problems of carrying out immunoperoxidase in such material. With adequate technical help, we will pursue these studies.

C. Application of cytochemistry to leukemias is essential to the correct diagnosis of every case of acute leukemia. We carry out these reactions in acute leukemias and in selected cases of imprints of lymphomas and other lymphoproliferative disorders. The implications of these tests to patient care are obvious.

D. Electron microscopy in selected hematologic disorders (with Dr. D. Rucknagel), and leukemias and lymphomas. Correlation with light microscopy, cytochemistry and immunology.

4. Goals for 1981 - 1982

New personnel. Two additional positions to be filled; one for the afternoon shift and one for the midnight shift. The acquisition of two individuals will also allow us to rotate technologists for weekend coverage as we will have fewer medical technology students for weekend work.

New equipment. Automated Differential Counter.

ANNUAL REPORT 1980-81 LIGAND ASSAY LABORATORY

1. SERVICE ACTIVITIES

- a. The laboratory now offers a total of forty different assays. Eight new tests were made available for diagnostic use during the past year. These include:

1. alpha-fetoprotein
2. prostatic acid phosphatase
3. thyroglobulin
4. vancomycin
5. androstendione
6. hepatitis A antibody (IgM)
7. hepatitis B_e antigen
8. hepatitis B_e antibody
9. insulin C-peptide

The total anticipated volume of clinical specimens analyzed through the period 7/1/80 - 6/30/81 will be 31,000 with a projected revenue of \$887,754.00. There are 9 medical or laboratory technologists assigned to clinical responsibilities in the laboratory. One additional technologist was placed on permanent staff during the year. She was hired to do the first 5 tests in the above list. It should be pointed out that she was hired without increasing the payroll or commodity budgets. We decreased our commodity expenditures by developing "in house" reagents for some of the high volume tests and transferring the savings to the payroll budget. Our commodity budget did increase slightly but that was to pay for the increased supplies utilized in the performance of the additional 9 tests. Thus, the hospital has benefited from additional revenue without an appreciable increase in expenses.

- b. Two additional pieces of equipment have been purchased with hospital funds during the past year. We have received a new Mettler Analytical Balance, Model 35AR. A replacement IEC - CRU Model 5000 refrigerated centrifuge has been ordered but has not arrived. Equipment purchased with funds from other than hospital origin include a DEC-VT-100 CRT Terminal, a Buchler Vortex evaporator, a copy of computer software for a multi-user word processor installed on the laboratory computer, a DEC RL01 (5 mega byte) disk drive and controller for the laboratory computer, and two Eppendorf Model 5412 microfuges.
- c. Laboratory services have been increased to provide 7 day per week coverage from 8:00 A.M. to 5:00 P.M. Analysis of the drug specimens has been improved. Delivery of all drug samples to Ligand from Central Distribution and from the Emergency Room is via "STAT" messenger. Digoxin is set-up twice a day, digitoxin, vancomycin and methotrexate are set-up immediately upon arrival in the laboratory, and all other drugs, except amikacin, are set-up daily.

Turn-around time has been decreased for digoxin, thyroid stimulating hormone, cortisol and hepatitis Bs antigen by improving methodology and increasing the number of set-ups per week.

- d. Laboratory computer services have been improved through the development and implementation of an auto-dial and communications package designed to permit telephone communication with remote computers. This allows access to MTS, a stipulation placed upon us by the University Computer Utilization Committee. Expenses were decreased by the removal of the ITT Data-Speed 40 CRT terminal and printer. This resulted in a savings of > \$6,000./yr. The transfer of LSR data from LDC to LAL was modified to permit the use of data stored on magnetic tape during nightly LSR runs. This has greatly increased efficiency in our computer and allows 7 day storage of data for backup purposes. The data analysis software for radioimmunoassay data has been upgraded to increase user convenience and improved utilization of quality control data.

2. TEACHING ACTIVITIES

- a. Laboratory teaching of Pathology House Officers includes a two week rotation of all residents. Every attempt is made to incorporate the resident into the daily function of the laboratory including quality assessment and management decisions.
- b. Nuclear Medicine Technologist students rotate through the laboratory 10 months of the year. These students are included in the day-to-day operation of the laboratory and provide a vital function.
- c. Laboratory personnel were responsible for offering a one-day workshop on computerization of the RIA laboratory. This workshop was jointly sponsored by the Midwest Radioassay Society and the Department of Pathology. There were 30 paid participants at the course.
- d. Seven papers were presented at national meetings during the year by laboratory personnel. These included one paper at the AACC Meeting in Boston, two papers at The Clinical Radioassay Society Meeting in Miami, two papers at the Society for the Study of Reproduction Annual Meeting in Ann Arbor, one paper at the Midwest radioassay Society Annual Meeting in Dearbor, Michigan, and one paper at the American Society of Andrology Annual Meeting in New Orleans. The titles are listed below:

Staigmiller, R.B., England B.G., and Schappa, L.W.: Regrowth of bovine follicles after cautery. Soc. Study of Reprod. 13th Annual Meeting. Abstract #179, August 1980.

Nordblom, G.D., Webb, R., Counsell, R.E., and England, B.G.: A chemical approach to solving bridging phenomena in hapten radioimmunoassay. Clinical Chemistry 26:924; 1980, Abstract #252.

Nordblom, G.D., Maciak, R.S., Dieterle, R.C., Espinosa, E.A. and England, B.G.: Monoclonal antibodies against androstenedione. Clinical Radioassay Society, 7th Annual Meeting 1981, Abstract #152.

Khazaeli, M.B., England, B.G. and Beierwaltes, W.H.: Monoclonal antibodies to the beta subunit of human chorionic gonadotropin (hCG). Clinical Radioassay Society, 7th Annual Meeting, 1981, Abstract #150.

Griffin, B.F., Bajpai, P.K., McCully, M.J. and England, B.G.: The effect of adriamycin on the reproductive system of the male prepuberal rat. American Soc. of Andrology, Sixth Annual Mtg. 1981, Abstract #XXX.

Khazaeli, M.B., Kabza, G.A., Dieterle, R.C., and England, B.G.: Utilization of computers in the nuclear medicine laboratory improves patient care. 5th Annual Meeting, Midwest Radioassay Society, Dearborn, MI., May 14, 1981.

Webb, R. and Bellows, R.A.: Relationship between gonadotropin binding and steroidogenesis in individual bovine follicles. 13th Annual Meeting, Soc. Study of Reprod. Ann Arbor, Michigan, 1981.

In addition to the presentation of papers of scientific meetings, Dr. England has presented the following workshops and lectures during the past year:

Carl B. and Florence E.E. King Visiting Scholar Lecture, "Follicular Development in the Cow", University of Arkansas, Fayetteville, Arkansas, March 25, 1981.

Sigma Xi, Visiting Scientist Lecture, "Monoclonal Antibodies and their use in Reproductive Biology, University of Arkansas, Sigma Xi Chapter, Fayetteville, Arkansas.

Ecuadorian Society of Medical Technologists, Visiting Scientist Lecture, "An Examination of the Development of the Ovulatory Follicle in the Sheep", Quito, Ecuador, May 20, 1981.

Staignmiller, R.B., Webb, R., England, B.G., Bellows, R.A., and Short, R.E.: Steroidogenic function of individual bovine follicles during estrus. Program, 71st Meeting, American Society of Animal Science, July, 1979. Abstract #485.

Webb, R. and England, B.G.: In vitro estradiol production and hCG binding to theca and granulosa cells in individual ovine follicles. Program, 12th Meeting, Soc. Study of Reprod. August, 1979. Abstract #74.

He has in addition served a two week mission for the International Atomic Energy Agency in Quito, Ecuador with the purpose of establishing radio receptor assay in that country.

3. Research Activities

- a. The Ligand Assay Laboratory has been actively involved in developing or improving a number of methodologies for inclusion in the repertoire of tests available for diagnostic use at University Hospitals. Research projects that have culminated in the use of "in house" reagents for laboratory tests include:

1. Digoxin radioimmunoassay
2. Cortisol, radioimmunoassay
3. Androstenedione radioimmunoassay
4. Tobramycin radioimmunoassay
5. Thyroglobulin radioimmunoassay

In going projects that will provide additional tests using "in house" reagents within the next 12 - 18 months include:

1. Ferritin
2. Lipoprotein receptor determinations for HDL, LDL, and VLDC.

Evaluation of commercially available radioimmunoassay kits. The following kits have been evaluated and tests implemented within the past year:

1. Alpha-fetoprotein
2. Prostatic acid phosphatase
3. Insulin C-peptide

- b. We have developed radioimmunoassays for T_3 , T_4 and T_3 uptake during the past year. Reagents for these tests are being sold to the Nuclear Medicine In Vitro laboratory. In addition to all of the activity listed above we have mounted an extensive program to develop monoclonal antibodies against a number of compounds of diagnostic interest. These compounds include:

1. human chorionic gonadotropin (hCG)
2. beta subunit of hCG
3. alpha subunit of hCG
4. Androstenedione
5. Parathyroid hormone (PTH)
6. N-terminal fragment of PTH
7. C-terminal fragment of PTH
8. Calcitonin
9. N-terminal fragment of calcitonin
10. C-terminal fragment of calcitonin

c. The Ligand Assay Laboratory has a close working relationship with all of the component laboratories of the Ligand Core Facility of the Michigan Diabetes Research and Training Center (MDRTC). Development projects in those laboratories, with which we are involved include, thromboxane B₂, prostaglandin F₂, somatostatin, hemoglobin A_{1c} and urinary levels of the c-peptide of insulin. These relationships are extremely close and are being maintained and strengthened.

4. Goals for 1981-82

We expect to maintain our development of new assays for diagnostic use. This will focus on the use of monoclonal antibodies which should lend considerable specificity to the assays. In addition to the use of radioisotopically labelled tracers for clinical assays we will utilize fluorescence and enzyme labeled tracers more extensively in our research and development efforts and also for routine use in the laboratory.

We intend to develop and offer PTH and N-terminal PTH assays during the upcoming year instead of sending the samples to Laboratory Procedures Division of the Upjohn Company.

Specimen Procurement

Annual Report

Fiscal Year 1980-81

I. INTRODUCTION

Phlebotomy Services serve the University Hospital Complex in response to physician's requests for blood samples to be used in laboratory testing. Phlebotomists obtain blood samples from patients on a daily basis as part of the overall laboratory system.

II. Review of Projects and Major Events for 1980-81.

A. Inpatient venipuncture Team.

- *1. Adjustment and addition of "sweeps" Monday - Friday. The 11:00 a.m. sweep was moved back to 10:30 a.m. and a 12:00 noon sweep was added. The addition of the noon sweep was intended to lower the number of specimens being drawn by the medical staff at that hour. Data obtained from Daniel Bloch, M.D., has shown the additional sweep to be worthwhile.
- *2. Expansion of services to the Clinical Research Center (CRC). The previous service was scheduled for 6:30 a.m. and 9:30 a.m. sweeps, seven days a week. The coverage was expanded to 6:30 a.m., 9:30 a.m., 10:30 a.m., 12:00 noon, 1:30 p.m., Monday - Friday.
- *3. Expansion of services to 4East and 4ICU Mot., Monday - Friday, 6:30 a.m. - 2:30 p.m.
- *4. Expansion of services to research laboratories.
- *5. Expansion of services for "timed draws" (GTT's and 2Hr. PP's) to Mott and Women's Hospitals.
- *6. Established a "Transport System" of routine specimens from Outpatient Blood Draw Clinic to the main Biochemistry and Hematology Laboratories at 30 minute intervals from 8:30 a.m. - 2:30 p.m., Monday - Friday.
7. Restructured training program for new Phlebotomists.
8. Established ongoing Inserve program for existing Phlebotomists. (Including guest lecturers from all Pathology labs).
9. Established a complete quality control program for existing equipment (venipuncture and skin puncture equipment) and for evaluation of new equipment.

*Note: All expansions were implemented at no incremental cost.

10. Restructured and redefined responsibilities of Training Supervisor to include functional supervisory duties on a daily basis.
11. Initiated training and established guidelines for involvement in the Hospital Disaster Program.
12. Defined and restructured policy in event of a fire or tornado.
13. Defined and restructured policy for "Injury Reporting" and established guidelines with Employee Health Service for follow-up measures if necessary.
14. Incorporated assistance of Environmental Health and Infection Control departments in the event of phlebotomist exposure to non-isolated contagious patients.
15. Established ongoing reporting system of "test request" errors to the Laboratory Data Center.
16. Established Policy and Procedure Manual for Inpatient Venipuncture Team.
17. Conducted Phlebotomy Conference, May 14-15, 1981, through the Towsley Center for Continuing Education. There were 144 participants in attendance from medical facilities from across the nation.

B. Outpatient Blood Draw Clinic

1. Established error reporting system for "test request" errors that originate in that area.
2. Established routine "Transport System" from Outpatient Blood Draw Clinic to the main Biochemistry and Hematology laboratories at 30 minute intervals. (7:30 a.m., 8:00 a.m., and between 2:30 p.m. and 5:15 p.m.)
3. Defined and restructured training responsibilities for new phlebotomists
4. Rescheduled phlebotomists work schedules for more efficient coverage during peak hours in the clinic.
5. Established regular "drills" for personnel in event of fire or tornado (patient evacuation procedure, etc.)
6. Established protocol for care of ambulatory patients in event of medical emergency (fainting, convulsions, etc.).
7. Restructured duties of Clinical Supervisor.
8. Established role of "chief technologist" in supervisors absence.
9. Established Policy and Procedure Manual for Outpatient Blood Draw Clinic.

C. Admitting Lounge Blood Draw Area

The Admitting Lounge Blood Draw Area is a new development and has been operating for just over one year. Since the organization of the area, the following modifications have taken place:

1. Redesign of Physicians Admitting Slip.
2. Redesign of the area for easy patient access to the bathrooms for collection of urine specimens.
3. Established Policy and Procedure Manual for area.
4. Established protocol for ambulatory care procedures for phlebotomist as well as other Admitting Lounge personnel in event of fire, tornado or patient emergency.
5. Established reporting system for errors in patient identification bracelets and hospital registration cards.

III. Proposed Projects and Major Events for 1981-82.

A. Inpatient Venipuncture Team

1. Use of butterfly (scalp-vein) needle for specimen procurement on those patients that are considered a "difficult" draw.
2. Expansion of services to Mott (4th, 5th, 6th levels) and Women's Hospitals at 3:30 p.m. and 6:30 p.m., Monday-Friday.
3. Expansion of services to the Blood Bank Laboratory.
4. Expansion of services to the Turner Laboratory.
5. Expansion of services to Parkview, Level II.
6. Increased enrollment in management courses through HRD for Training Supervisor and Laboratory Supervisor.
7. Organize and conduct a Phlebotomy Conference, May, 1982.
8. Refine personnel policy for Phlebotomists in the event of specimen mis-identification.

B. Outpatient Blood Draw Clinic

1. Use of butterfly (scalp-vein) needle for specimen procurement on those patients that are considered a "difficult" draw.
2. Reduce number of "test request" errors.
3. Increased enrollment of Clinical Supervisor in management courses through HRD.

C. Admitting Lounge Blood Draw Area

1. Use of butterfly (scalp-vein) needle for specimen procurement on those patients that are considered a "difficult" draw.
2. Further improvement on Identification bracelet and hospital registration card errors.
3. Established more rapid specimen pick-up from Admitting Lounge area to Central Distribution area via Messenger Service.

ANNUAL REPORT FOR ACADEMIC YEAR 1 JULY 1980 - 30 JUNE 1981
DEPARTMENT OF PATHOLOGY - RESIDENCY TRAINING PROGRAM

During the 1980-81 academic year we had 22 physicians in training in our residency program. At the first and third year levels there were five house officers at each level and there were six house officers each at the second and fourth levels. Of the six house officers completing their program June 30, 1981, five of them will enter the practice of pathology in the private sector and one will continue in a fellowship in cytology at New York Memorial Hospital - Sloan Kettering. Two first year house officers will be leaving the program June 30. One of these is continuing training at another academic institution for personal reasons unrelated to our department and the other resident will continue training at another academic institution where there is a training program in computer medicine.

Fifty-nine completed applications were submitted for positions as house officers for the academic year of 1981-82. Forty of these applicants were interviewed and a total of nine were ultimately appointed. Four of these were matched in the NRMP and the remaining were appointed outside of the match program. There will be a total of 23 house officers in training for the academic year 1981-82 with the distribution as follows:

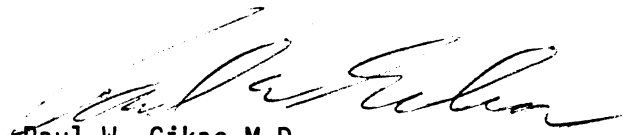
HO-I - 7
HO-II - 3
HO-III - 6
HO-IV - 5
Straight anatomic pathology HO-II - 1
Straight clinical pathology HO-V - 1

After the matching process, questionnaires were sent to 14 applicants who chose not to rank our department as their first choice. Eight of these responded and these responses were generally favorable to the department.

From our assessment of the house officer evaluations, it appears that the rotation to Wayne County General Hospital has improved considerably with the assignment in surgical pathology receiving considerable praise by the house officers. Likewise, the rotation in surgical pathology at the VA Hospital has been applauded. The affiliation in hematology at St. Joseph Mercy Hospital in Ann Arbor continues to be well received. Rotations through cytology and surgical pathology at the University Hospital continue to be highly rated. The need for recruitment of a clinical pathologist with special interest in clinical chemistry remains. A program in laboratory management skills will be initiated in academic year 1981-82 and a rotation to St. Joseph Mercy Hospital for the purpose of obtaining practical experience in laboratory management is being developed for the academic year 1982-83. A formal system for evaluating the performance and progress of house

officers was introduced this academic year and a report of the Evaluation Committee will be made to the staff.

In summary, our House Officer Training Program continues to attract quality physicians. Progress is being made in correcting previously identified weaknesses, particularly in the affiliated hospital programs. With the addition of new faculty in surgical pathology and cytology these areas should remain strong and improvement will occur in our clinical pathology program if a clinical pathologist section head can be recruited for chemistry.



Paul W. Gikas, M.D.
Professor of Pathology
Coordinator of Residency Program

ANNUAL REPORT FOR THE ACADEMIC YEAR 1 JULY 1980 - 30 JUNE 1981
DEPARTMENT OF PATHOLOGY - ELECTRON MICROSCOPY UNIT

During the twelve month period June 1, 1980, to May 31, 1981 a total of 526 specimens were received in the Electron Microscopy Unit. These were processed as follows:

Blocked only -	176
Thick sectioned only -	110
Thin sectioned -	240

Of the 526 specimens submitted 506 of these were from humans with the following distribution:

Renal biopsies -	109
Neoplasms -	121
Miscellaneous - other than neoplasm or renal	69
Hematologic - lympho- reticular lesions (Dr. B. Schnitzer) -	207

Twenty animal specimens were processed for research purposes only.

Charges were submitted at the rate of \$300.00 per specimen for 119 specimens. Of the 207 hematologic-lymphoreticular specimens submitted to Dr. Schnitzer, 12 were thick sectioned only and 28 were thin sectioned with 4 charges submitted.

An EM project involving negative staining was performed for the Department of Radiology for which a charge of \$1150.00 was submitted.

The Electron Microscopy Unit provides diagnostic service on renal biopsy specimens for the following hospitals:

St. Joseph Mercy Hospital, Ann Arbor
Wayne County General Hospital
Borgess Hospital, Kalamazoo
Bronson Hospital, Kalamazoo
Munson Hospital, Traverse City
St. Marys Hospital, Livonia
Port Huron Hospital, Port Huron

A total of 43 specimens were received from these hospitals and are included in the total figure stated above.

There are currently four full-time electron microscopy technologists in the unit. This technical staff consistently produces high quality end products. The Zeiss EM 9 continues to be the main diagnostic instrument and the new Zeiss EM 109 is being utilized for

investigative work and as a backup diagnostic scope. The new Zeiss EM 109 was a source of many problems during its first year in operation. I am happy to report that after considerable complaining on our part and commendable diligence on the part of the Zeiss technical staff, these problems have been solved and the instrument is capable of producing high quality electron micrographs with proper use. The technical staff is being trained in its proper use. On June 10, 1981 authorization was made for payment of this Zeiss electron microscope.

The new darkroom facility adjacent to the electron microscopy suite was completed this spring and is in full operation. This facility has increased the efficiency of the electron microscopy staff considerably.

Paul W. Gikas, M.D.
Professor of Pathology
Director, Electron Microscopy Unit

MEDICAL TECHNOLOGY PROGRAM ANALYSIS

by Sandy Gluck

PROGRAM DESCRIPTION

The Medical Technology program has been a cooperative venture between LSA and Medical School since its inception in 1942. The BS degree is awarded by LSA with a special concentration in Medical Technology. Students are also awarded a Certificate in Medical Technology upon completion of the Medical Center's nationally-accredited MT program under the sponsorship of the Pathology Department.

During the first three years students must fulfill all LSA requirements in addition to the MT prerequisite courses. The final year of clinical training in the Pathology Department consists of lectures, student lab practice, and rotations through the clinical laboratories for 46 hours of credit in 12 months. Subject areas are Hematology, Immunology, Blood-Banking, Chemistry, and Microbiology. In addition there is a lecture series covering various topics such as clinical correlations, laboratory management, career options, general health care delivery concerns, and other subjects pertinent to the health care field (Appendix A and B).

The present program is a rigorous program of 136 credit hours, 16 more than required for a degree. The courses fulfill and go beyond the minimum requirements of the accreditation agency. However, the last site-survey in 1975 cited a deficiency in the actual amount and quality of rotation time for seniors in the clinical laboratories. This deficiency was never corrected; therefore this has been the primary goal of the new program director.

The structure of the training year has been reviewed for changes to be implemented in July, 1981. It has been proposed and accepted by laboratory supervisors that the didactic portion of the year be consolidated to the first 23 weeks, a shortening of 5 weeks from the present schedule. The second half of the year will be increased to 26 weeks of clinical rotations (Appendix C). For 1982-83, we propose to shift at least two of the basic MT Pathology Department courses back into the spring term of the junior year in order to gain even more time for clinical rotations.

The advantages to lengthening the rotation times are:

1. increased development of student clinical practice skills resulting in each student equaling 1/2 FTE by end of rotation
2. upgrading of laboratory staff's knowledge and skills through more teaching involvement on the bench

3. freeing of MT teaching supervisors from major teaching responsibilities for longer unbroken portions of time, resulting in increased service and/or research productivity
4. lightening of student load on laboratories with fewer students in a lab at any one time

The revised format and credit hour changes for senior year courses also provide more time for a lecture series which can be used to cover areas which presently are not covered well or have not been included. Topics such as quality control, use of computer, clinical correlation, statistics and research skills, ethics, human relations, and others are planned for inclusion in this series.

The pre-professional curriculum cannot be changed because of LSA requirements. Students who have already fulfilled language requirements in high school and who have extra time are counseled into other courses, such as statistics or computer communication, which are relevant to the practice of medical technology.

PUBLIC RELATIONS AND RECRUITMENT

MT applicants at the University of Michigan have decreased and will most likely not increase for at least the next two years. There are a number of reasons for this, both national and local. The overall pool of college-age young people has diminished, and at the same time there has been a great increase in other options for the science-oriented female students who once gravitated to Allied Health courses. For many years Medical technology programs were highly competitive, and this notion had been perpetuated at the U. of M. through July, 1980 even though this situation no longer existed. Finally, rumors of the program's demise for the past 5-6 years resulted in keeping interest down. Unfortunately, this rumor persisted until quite recently. The discontinuance recommendation for the PT program may, for a while, affect the image of the MT program because of the similar Allied Health and LSA-Medical School relationship of the two programs.

At the present time, there appears to be department, school, and institutional support for the MT program. However, communication of that support has been deficient. It has been apparent that increased efforts are needed to apprise the university, local, and state communities that the program is viable.

Progress has been made in many areas to publicize the program. Admissions, college, and dormitory counselors have been notified. The director has participated in three Health Careers Education Programs, two of which were directed towards minority students, both high school and college age. A talk has been given to a Residential College class in Health Careers, and a talk is planned for a Pioneer High School Health Careers class. A successful tour

of the laboratories was held for interested undergraduates. Finally both the American Society for Medical Technology and the Michigan Society have published notices regarding the availability of the program here.

With more visibility and guaranteed commitment to the program, enrollment should reach capacity again within a few years. Numerous newspaper articles have recently described students' trend toward practical education that results in jobs; the MT program is one of very few that can offer this type of education to students in an undergraduate program.

FACULTY

The medical technology instructors are very capable people with a strong commitment to the program and to teaching. Three of them have been with the program for many years, while two new instructors have joined the program recently as replacements for two who left.

A major problem is defining the role of the MT "faculty". Are they teachers or clinical laboratory personnel, or both separately, or both at the same time? Teaching personnel are required to be responsible not only to the MT program director but also to clinical laboratory supervisors and medical directors. The problem of which role has priority, instructor of MT students or clinical technologist, has yet to be clearly defined and standardized for all laboratories, and it is not clear who has the power to define that priority.

The new teaching format should enable instructors to spend more time in their respective laboratories, either in research or service capacities, thus enhancing their roles as clinical personnel. In general, laboratory cooperation, understanding, and communication in this change-over year has been excellent, allowing instructors as much time as possible to make the necessary adjustments in course structures.

One problem remaining, however, is the lack of back-up support in case of instructor illness. There should be an understanding that laboratories need to provide that type of support in an emergency situation. A future solution to this would be an agreement by all concerned that one position in each lab is funded totally for teaching. This would free instructors to learn each other's specialties so they could substitute for one another when necessary.

LABORATORY SUPPORT

Laboratory support for the teaching program in the past has been minimal in terms of staff-wide commitment to the education and teaching of students. This has developed over a long period as more and more of the teaching took place in the student laboratories. To reverse this trend, more communication and cooperation

with the laboratories has been established, and the new format was developed with input from lab staff.

Teaching instructors will be devising manuals, outlines, etc. for lab personnel to use when working with students, and they have had meetings with lab staff who will be involved in clinical rotation teaching. The ultimate goal is to develop a more formal educational program for laboratories to follow with students.

RESOURCES

The student laboratories function reasonably well for teaching ten students each. The new format will have both labs in constant use all day long from July-December. From January-June, usage will be for occasional experiments by students, practical exams, mock labs, and the teaching of Blood Bank employees and House Officers by Barbara Barnes. There is also the potential for technical research use by instructors during this period of the year, once the major teaching schedule alterations are completed.

The recent department proposal for space changes can be accommodated with a few compromises and some remodeling as discussed with and noted in memorandums to Mr. Napolitan.

Supplies ordered since July, 1980, other than reagents for students' use, have probably exceeded that of previous years. Deficiencies were found in the student labs in the area of safety items; therefore a fire blanket was installed and a better grade of safety pipette bulbs was purchased to replace old bulbs which no longer worked properly. Because many books from the MT library have been taken and not returned, locks were purchased for sliding door cabinets. A new viewing screen was purchased for one lab to replace one that disappeared. Bookshelves have been installed in both offices because of the wealth of teaching and program materials that were removed from space occupied by the program prior to last summer.

Although many complimentary texts are received by the instructors, some new volumes and a urinalysis self-study for students have been purchased also. The self-study will eliminate a portion of one course, and the reference books are necessary for an updated library which is mandated by the accreditation agency.

Since each instructor will be teaching daily from 8-5, there is a lack of time for preparation of student laboratory experiments. Microbiology is the subject area which has the most acute need for assistance since the course will be 18 weeks long. Therefore, a graduate student has been hired as a lab assistant for the Microbiology course since the Microbiology lab is unable to provide assistance as it had prior to this past year. The lab assistant position will be for approximately 2 hours a day for 18 weeks. It is anticipated that this assistant will also aid in a general laboratory clean-up in preparation for the coming accreditation site visit.

The deficiencies in, and finally the lack of, telephone secretarial service, necessitated the purchase of a phone answering device for the director's office. However, the telephone system between offices and student labs is still very inefficient and wasteful of the director's time.

The booking and keeping of lecture room space in the Pathology Department had been a problem for many years. Since Dr. Abrams has proposed a more formal structure for securing lecture space and is willing to be in charge of assignments, this problem should no longer exist. The new teaching format has changed the lecture hour times for the program so that we will not be in as much conflict with other usage of lecture rooms.

PROGRAM EVALUATION

The national certification exam is the yearly primary means of evaluation. Unfortunately the decrease in enrollment in the last few years had led to a drop in the average GPA of admitted students. This has resulted in a highly unusual rate of failures on the exam taken by graduates of June, 1980. In the entire history of the program there had been only a handful of failures prior to the four failures in last year's class.

Beginning with the class of 1982, students will meet with instructors one day a week at lunch time to review and study questions for the MT Student Bowl Games. This should reinforce learning. The new format, with all lectures and student labs completed by December, followed then by clinical rotations, should also reinforce learning so that students will be better prepared for the national exam.

All instructors ask students to evaluate courses and instruction, and the Program Director also will ask for evaluations of the program and the director. Regular program evaluation by graduates will also be instituted. As clinical laboratory employees, most of the instructors will also be included in the hospital's new Performance Planning and Evaluation program.

The NAACLS Self-Study for accreditation is due in December, 1981 and will be followed by a site survey within 6 months. In this self-evaluation study we need to demonstrate that our curriculum, program officials, and faculty meet the requirements, that the program is supported administratively and financially by the university, school, department, and hospital, that students rights are upheld, and that proper records are kept of student performance and evaluation. With the prestige of the University, Medical School, and Department of Pathology backing the MT program, there should be no difficulty in maintaining our accreditation with the current curriculum, faculty, and support, provided that we continue to demonstrate that our students are learning to be competent Medical Technologists.

FUTURE OBJECTIVES

The University of Michigan Medical Technology training program should strive to become unique by offering training and education that is not available elsewhere. Potential directions for the future are:

1. a Masters Degree program with several tracks, including research
2. categorical certification for undergraduates who wish to specialize in one area only
3. development of a "clinical laboratory practitioner" level of technologist, one who is highly skilled in the interpretation of laboratory tests.

Unfortunately the original proposal of the faculty for the development of the undergraduate program does not appear to be feasible at this time. The economic difficulties facing The University preclude the administrative and organizational changes which might enhance the present curriculum.

We continue to see a need for Medical Technologists, and the national reports predict a potential shortage of technologists in the future. Therefore, we feel that the program should continue with whatever efficiencies can be instituted within the present LSA-Medical School structure. We have made a beginning for July of 1981, and for spring of 1983 plan on gaining more time in the curriculum by the addition of spring term courses. When this takes place, we would hope to be able to make use of Medical School large laboratories which are unused in the spring term so that all students can be taught at once.

The next six months will be spent on compiling the Self-Study Report for accreditation review, and preparing for the site survey. After January 1, 1982 we will begin to develop a proposal for a Master's Degree Program and a categorical certification program.

APPENDIX A

Present Medical Technology curriculum for first three years

	FALL TERM	WINTER TERM
Freshman	English composition General Inorganic Chemistry Math (Calculus) Language	Biology General Inorganic Chemistry Humanities or Social Studies Language
Sophomore	Organic Chemistry (lecture) Quantitative Analysis (lecture and lab) Humanities or Social Studies Language	Organic Chemistry (lecture) Organic Chemistry (lab) Physiology Humanities or Social Studies Language
	admitted to program here	
Junior	Biochemistry (lecture) Biochemistry (lab) Introductory Microbiology (lecture) Introductory Microbiology (lab) Pathology Humanities or Social Studies Junior-Senior writing course	Pathogenic Microbiology (lecture) Pathogenic Microbiology (lab) Immunology (lecture) Immunology (lab) Parasitology (lecture) Parasitology (lab) Humanities or Social Studies

APPENDIX B

Present senior year Medical Technology curriculum

<u>Course</u>	<u>Lecture and Student Lab Time</u>	<u>Clinical Rotation Time</u>
Chemistry	5 weeks twice a year	8 weeks *
		* includes some lectures and work back in the student lab
Blood Bank	3 weeks twice a year	4 weeks
Microbiology	11 weeks twice a year	4 weeks
Hematology	7 weeks twice a year	4 weeks
Immunology	12 days twice a year	none

Twenty students are divided into 2 groups of ten each. Each group goes through lecture, student lab, and rotation sequence for each area. Faculty members teach each subject area twice in a year.

APPENDIX C

Revised senior year curriculum in effect for July, 1981

<u>Course</u>	<u>Lecture and Student Lab Time</u>	<u>Clinical Rotation Time</u>
Chemistry	one 10 week course	8 weeks
Blood Bank	one 5 week course	4 weeks
Microbiology	one 18 week course	6 weeks
Hematology	one 8 week course	6 weeks
Immunology	one 5 week course	2 weeks

All lectures will be given to entire group at once. Group divided in half for lab sessions. Two courses will be taught at the same time, each with two lab sections/day.

Majority of lectures and all student labs will be given during the first half of the year. All clinical rotations will take place in the second half of the year, and extra lecture series will take place in the late afternoons after rotations.