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
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<tr>
<th>Name</th>
<th>Rank</th>
<th>Institutional Affiliation</th>
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<td>Wolter, J. Reimer****</td>
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</tbody>
</table>

* 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.
## APPENDIX A

### I. NEW IMMUNOPATHOLOGY PROGRAMS

<table>
<thead>
<tr>
<th>Account Number</th>
<th>Project Director</th>
<th>Title of Project</th>
<th>Sponsor</th>
<th>Direct Cost (per year)</th>
<th>Total Direct Costs (all yrs.)</th>
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<td>018282</td>
<td>Ward, P.A.</td>
<td>Immunopathology of Complement Mediated Tumor Cell Chemotaxis</td>
<td>NIH 501CA29551-02</td>
<td>$73,011</td>
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<td>018485</td>
<td>Ward, P.A.</td>
<td>Mechanisms of Penetration of RBC by Protozoa</td>
<td>NIH 701AI17691-01</td>
<td>$44,984</td>
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<td>018487</td>
<td>Ward, P.A.</td>
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<td>018498</td>
<td>Ward, P.A.</td>
<td>Pathogenesis of Inflammatory Lung Disease</td>
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<td>018846</td>
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<td>341684</td>
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<td>Regulation of Complement-Derived Leukotactic Factors</td>
<td>CFF G111A</td>
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<td></td>
<td>Phan, S.H.</td>
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<td>VA Res. Associate</td>
<td>$50,000</td>
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<td>012821</td>
<td>Varani, J.</td>
<td>Tumor Cell with Varying Degrees of Malignancy</td>
<td>NIH</td>
<td>$ 21,722</td>
<td>$126,147 3 yrs.</td>
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<td>018281</td>
<td>Varani, J.</td>
<td>Tumor Cell With Varying Degrees of Malignancy</td>
<td>NIH 7R01CA29550-01</td>
<td>$ 50,717</td>
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<td>387688</td>
<td>Kunkel, S.L.</td>
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<td>Faculty Research Rackham</td>
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<td>Leukocyte Chemotaxis</td>
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<td>$ 64,753</td>
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<td>Ward, P.A.</td>
<td>Immune Complex Injury of Lung and Oxygen Metabolites</td>
<td>NIH 1R01HL26809-01A</td>
<td>$ 77,100</td>
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<td>019027</td>
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<td>019022</td>
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**II. ONGOING IMMUNOPATHOLOGY PROGRAMS**

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<td>018688</td>
<td>Keren, D.F.</td>
<td>An Investigation of the Memory Response of the Local Immune System to Shigella Antigens</td>
<td>Army</td>
<td>$ 65,342</td>
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<td>341667</td>
<td>Keren, D.F.</td>
<td>Immunopathogenesis of Inflammatory Bowel Disease</td>
<td>Natl. Fdn. for Ileitis &amp; Colitis</td>
<td>$ 59,201</td>
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<td>387626</td>
<td>Brown, S.</td>
<td>Actin-Membrane Interaction</td>
<td>Rackham</td>
<td>$ 10,000</td>
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<td>017557</td>
<td>Hicks, S.P.</td>
<td>Development of the Corticospinal System</td>
<td>PHS-NIH</td>
<td>$ 13,211</td>
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<td>341541</td>
<td>McClatchey, K.D.</td>
<td>Study of Oral Wound Healing in Oral Cleft</td>
<td>March of Dimes Birth Defects Fdn.</td>
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<td>McClatchey, K.D.</td>
<td>Jojoba Oil</td>
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<td>017561</td>
<td>Friedman, B.A.</td>
<td>A Study of National Trends in Transfusion Practices</td>
<td>PHS-NIH</td>
<td>$ 50,340</td>
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<td>015151</td>
<td>French, A.J.</td>
<td>Intergovernmental Personnel Act</td>
<td>PHS-NIH</td>
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<td>016021</td>
<td>French, A.J.</td>
<td>Hormone Action in Ovarian Cell Differentiation</td>
<td>PHS-NIH</td>
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<td>300973</td>
<td>England, B.A.</td>
<td>Ligand Training &amp; Research</td>
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<td>New England Nuclear Corp.</td>
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<td>$ 15,740*</td>
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<td>018123</td>
<td>Rao, K.M.</td>
<td>Molecular Mechanism of Immunological Senescence</td>
<td>Biomedical Research</td>
<td>$ 9,600</td>
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III. OTHER RESEARCH PROGRAMS

TOTAL: $124,543
### IV. Reproductive Endocrinology Program

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

*Approximate amounts

**GRAND TOTAL OF CURRENT YEAR SUPPORT** $2,050,077
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
- RRO0200-17 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/IER2 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
  Mucosal Damage Mediated by Clostridial Toxin in Experimental
  and Detoxification of Bromobenzene Leading to Cytotoxicity.
- Abrams, G.D.: Morphological Aspects of Gastrointestinal Tract
- 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).
  Prevention of Occlusive Coronary Artery Thrombosis by
- Abrams, G.D.: The Right to Privacy When Lives are at Stake.

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.)
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


2. Lobert, P., and Appelman, H.D. Inflammatory cloacocigenic polyps. Accepted for publication, American Journal of Surgical Pathology.

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.).


3. Methotrexate Hepatoxicity in Psoriatic Patients (with A. Sileniek's 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 (ACAPPT)

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. 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 Activities

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 Cetners 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
   c. Markel, S.F., Magielski, J.E. and Beals, T.F. Carcinoid Tumor of
   d. Schultz, J.S., DeMott-Friberg, R. and Beals, T.F. Immunogenetic
      Control of the Response of Female Mice to Male Tissue Grafs. Immunogenetics
   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

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

Panel on Common Administrative Problems with Drs P.LeGolvan, B.Uzman, and M.
   Williams; Fifth Diagnostic Electron Microscopy Conference.

Paper: Ultrastructure of Lung Neoplasms. 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 University 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 Microscopy 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
   Bicentenail 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:


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 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:


e. Books or Journals edited: none

f. Abstracts, preliminary communications, panel discussions:


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


   Proceedings of MEDINFO 80
   Lindberg & Kaihara editors
   p. 551-555


   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


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.

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.
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.
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.
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:


4. D'Amato, C. J. Regeneration and restitution in the fetal nervous system after radiation injury. (Submitted for publication)

Abstracts and Poster Exhibits:


B. Grant Support: Co-investigator, 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.
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


A. Publications (cont.)


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
   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

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).

   in the cycling cow: Relationship between gonadotropin
   binding to theca and granulosa and steroidogenesis in

   cimetidine on pituitary function: alterations in hormone
   secretory profiles. J. Clinical Endocrinology 52:xxx-xxx,
   1981.

   steroidogenesis and gonadotropin binding to ovine follicles


b. Abstracts of papers presented at scientific meetings.


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


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-


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.


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.


5. NATIONAL ACTIVITIES.


2. Clinical Radioassay Society, Chapter President; 1980.


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 antigen
8. hepatitis B 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 B 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:


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


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


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\textsubscript{3}, T\textsubscript{4}, and T\textsubscript{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 choronic 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\textsubscript{2}, prostaglandin F\textsubscript{2}, somatostatin, hemoglobin A\textsubscript{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, Opthamology, 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


Abstracts


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, Coller-Penberthy-Thirlby Medical
   Conference, Traverse City, Michigan, July 1980.

Professional Meetings Attended:
   July 1980 - Coller-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
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.

Research Activities

1. Contract support.
2. Publications.


Committee Activities
1. University Hospital.
   a. Chairman, Transfusion Committee.
2. Medical School.
   a. Committee on Health Economics Curriculum.
   b. Inteflex Promotion Board.
   a. Senate Advisory Committee on University Affairs (SACUA).
   b. Tenure Committee.
   a. Chairman, Transfusion Practices Committee.
   b. Education Committee.

Lectures and Workshops
2. Current concepts in blood component therapy. Presented to the Medical Staff of Wyandotte General Hospital, Wyandotte, Michigan. 25 September 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.


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:


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:

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:

2. Joint Conference Committee of University Hospital (term ends June 30, 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 Collaborative Study Group (Dr. E.J. Lewis, principal investigator, Rush-Presbyterian-St. Luke Medical Center, Chicago).
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.

L ectured 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

L ectured 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.
University Hospital HRD Management programs – October 1980
MSMT – April 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 Minoxidil on androgenetic alopecia
   c. Dendritic cells in keratinous cysts
   d. Trichoblastic fibroma, a cumulative review
   e. The dermal glial system

PUBLICATIONS

   d. Trichoemmal and epidermoid cysts. Chapter in Clinical Dermatology. ed by Demis.


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


(9) Course Director and Presenter. Advanced Dermatopathologic Oncology (Short Course). The International Academy of Pathology. Chicago, Illinois, 6 March 1981.


I. Diagnostic Service Activities:
A. Daily reading of pediatric surgical; 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 hyperalimentation.
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:


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)


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) Surgicalls:
      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 - lst semester 1980
   c) Teaching and working interdepartmental conferences
      Thyroid conference
      Internal Medicine CPC
      Frequent substitute in others

3. Research:


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

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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
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

   2. Hicks, S. P. and C. J. D'Amato. Development of the motor system:
Hopping rats produced by prenatal irradiation. Exper. Neur. 69,

   3. Hicks, S. P. and C. J. D'Amato. Effects of radiation on deve-
lopment, especially the nervous system. Amer. J. Forensic Med.

Abstracts and Poster Exhibits:


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


Articles Submitted for Publication:


Chapters in Books:


Abstracts, Preliminary Communications, Panel Discussions:


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.  

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.

DEPARMENTAL 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:


Invited Lectures:


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<sup>a</sup> blood group system. Specialist in Blood Banking Program. Wayne State University. Detroit, April, 1981.


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


Preliminary Communications:

Studies on an Mi<sup>V</sup>/Mi<sup>K</sup> proposita and her family. Invitational Conference of Investigative Immunohematologists. Wayzata, Minnesota, June, 1981.


Moderator:


Judge:

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

RESEARCH ACTIVITIES

Publications:


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.


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:


Articles in Preparation:


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


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).


3. The role of exo-β-galactosidases in Tk-activation (Judd WJ).
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:


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:


5) National Activities:

   a) Papers presented at scientific meetings:


   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:

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


Research Activities (publications) cont'd:


Articles Accepted for Publication:

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


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

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


Books


Abstracts


Grant Support


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.
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:
   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:

   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.

   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

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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 and gastrointestinal tract.
B. Cytopathologic investigations of the serous fluids.
RESEARCH GRANTS

None.

PUBLICATIONS


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.)
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.


B. Manuscripts submitted for publication:


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:


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


   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.


   C. Elected Member: American Society of Biological Chemists.
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**


   **B. Abstracts**


B. Abstracts (con't)


C. Grant Support

1. Principal Investigator-Immune induced alteration of tumor cell phenotype NCI, 168,177 1 July 1980-30 July 1983, pending


3. Principal Investigator-Stress and toxin/pathogen interactions in salmon gaindneri. 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 prof-
sorial 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

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 -


2. Articles Accepted for Publication -


3. Articles Submitted for Publication -


4. Thesis, Chapters in Books -


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 -


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 -


Bernard Naylor, M.D.

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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
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.
I. Cytopathology Subcommittee, American Board of Pathology.

V. National Activities

A. Presentation of papers:

B. Invited lectures and workshops:
VI. Other

Elizabeth C. Crosby Award for teaching.
Diagnosis 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:


The following have been accepted for publication:


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.
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)


- 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.  
Assistant 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:


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 (RO1) 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:

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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


B. Articles Accepted for Publication


C. Published Abstracts


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


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.


   House Officer Participation: John Mozdzen, Jr.
   William Springstead


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.
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:
   2. Rao, KMK: Capping and mitogenesis: A model implicating microfilaments in lymphocyte activation. (manuscript submitted)
BERTRAM SCHNITZER, M.D.

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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:


Abstracts:


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.


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.


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.


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 Cl-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


4. Service Activities:

   A. Departmental:
      In charge of central utilities (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:


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.


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
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,uine 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.


c) Take students for independent study in my laboratory.
III. Research Activities

Publications


Abstracts


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 toxico-
cology.

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
Bioluminesance 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


   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.
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, GILL1A, Regulation of Chemotactic Factors, $16,600

Publications:


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.
   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.


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.
Interflex 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
Areas of Research Interest
Collaboration with Charles Beauchamp in his proposal "Role of Superoxide in the Onset and Propagation of Inflammation" Animal model in polyarthritisic 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 re-
   search 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:


   2. Reactions to an Anterior Chamber Lens - Two Years After Implantation, with Croasdale and Bahn, Ophth. Surg. 11:794-800, 1980.
Activities Report


Papers in print:


2. Intimo-Intimal Intussusception of the Central Retinal Arteries, with Hansen, Amer, J. Ophth.

Papers submitted:


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.


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 Fralick Lectureship 1981, with talk on "Mechanisms of Central Retinal Artery Occlusion."
Program and Section

Reports
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
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. Heidelberg - 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. F. 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 hemopathology 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 forth. 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 percent 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. Forshaw). The participation of both a technologist (Ms. Butch) and a nurse (Mrs. Forshaw) 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 preferred 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 Heamontetics 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.**


   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.


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 bioluminesance 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.
1. **New Tests**

   Twenty four hour urine light chain quantitation
   ASO
   By nephelometry: C1 esterase inhibitor
   CRP

   TDT
   Endocrine Neoplasm Assessment
   C3 Activation Analysis

2. **In Progress:**

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

3. **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)

4. **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

<table>
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<th>Date</th>
<th>Topic</th>
<th>Hours</th>
<th>Attended By</th>
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<td>SMI pipette workshop - R &amp; B</td>
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<td>(Kris)</td>
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House Officer Training -

Daily sign-out with senior staff, Immunelectrophoresis, 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.

Staff

David Keren - Local IgA Memory Response, Federation (in absentia), 1981.
David Keren - Immunopathology of Inflammatory Bowel Disease, IAP, 1981.

Research

Completed Projects -


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).


**Articles Submitted for Publication:**


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.


Ongoing Projects

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

Projects for Coming Year

Cl 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 bacterioidal 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 Cephamandole 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 flourescent 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.
Forensic Autopsy Procedures
Toxic Shock
Pulmonary TB
Pulmonary TB
Aminoglycoside Update
Aminoglycoside Update
Compylobacter Studies
Compylobacter Studies
Compylobacter Studies
Compylobacter Studies
Guided Teaching Design Program
"One-on-one Teaching"
Fungal Pulmonary Disease
Fungal Pulmonary Disease
Mucormycosis
Fungal Diseases
Stress Management
Stress Management
Problem Solving/Comprehension
Amebiasis/Candidemia
Update-Yeast ID
Update-Yeast ID
Supervision Assessment
Motivational Dynamics
Fall Regional SCACM
Fall Regional SCACM
Fall Regional SCACM
Special Medical Bact.
Clin. Lab. Manager's Association
Imported Parasitology
Anaerobe Techniques
Transactional Analysis
Transactional Analysis
Spring SCACM
Spring SCACM
Legionella
Legionella
Legionella
Legionella
Cutaneous Mycosis
International Rapid Methods
Antifungal Therapy
Fungal Pneumonia
Management of Managers

Pathology - UMMC
Infectious Disease - UMMC
Pulmonary Service - UMMC
Pulmonary Service - UMMC
Wayne State University
Wayne State University
VA Hospital - SCACM*
VA Hospital - SCACM
VA Hospital - SCACM
VA Hospital - SCACM
CRLT Center - UMMC
CRLT Center - UMMC
Pulmonary Service - UMMC
Pulmonary Service - UMMC
Internal Medicine - UMMC
Pulmonary Service - UMMC
HRD - UMMC
HRD - UMMC
CRLT Center
Internal Medicine - UMMC
API
API
HRD - UMMC
HRD - UMMC
SCACM
SCACM
SCACM
CDC - Atlanta
CRMA - UMMC
CDC - Atlanta
Ford Hospital
HRD - UMMC
HRD - UMMC
SCACM - Indianapolis, Indiana
SCACM - Indianapolis, Indiana
Infectious Disease - UMMC
Infectious Disease - UMMC
Infectious Disease - UMMC
Infectious Disease - UMMC
University of Kentucky
ASM - Washington D.C.
Infectious Disease - UMMC
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 are listed below:

**Carl L. Pierson, Ph.D.**

Publications in Scientific Journals -


Articles Accepted for Publication -


Published Abstracts


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

Publications in Scientific Journals -


Articles Accepted for Publication -


Abstracts -


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


3. "Permeation of Burn Wounds, Methodology and Mechanism". Co-investigator with G.L. Flynn, College of Pharmacy, University of Michigan. NIH 2 RO1 GM 24611-04.


   House Officer Participation: John Mozdzen, Jr.
   William Springstead


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.


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.


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.


Research:

A. Turnaround Time Studies

   
   *Proceedings of MEDINFO 80*
   Lindberg & Kaihara editors
   p. 551-555

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


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


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
cytotuge 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
lymphoid populations in lymph nodes with reactive
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 hematology. 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.


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.
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 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 Dearborn, Michigan, and one paper at the American Society of Andrology Annual Meeting in New Orleans. The titles are listed below:


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


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


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 VLDL.

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 F₂α, somatostatin, hemoglobin A₁c 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 Mott, Monday – Friday, 6:30 a.m. – 2:30 p.m.

*4. Expansion of services to research laboratories.

*5. Expansion of services for "timed draws" (GTI'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.

-170-
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.


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.

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.


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.


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.
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
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 - lymphoreticular 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 has 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

<table>
<thead>
<tr>
<th>FALL TERM</th>
<th>WINTER TERM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Freshman</strong></td>
<td><strong>Biology</strong></td>
</tr>
<tr>
<td>English composition</td>
<td>General Inorganic Chemistry</td>
</tr>
<tr>
<td>General Inorganic Chemistry</td>
<td>Humanities or Social Studies</td>
</tr>
<tr>
<td>Math (Calculus)</td>
<td>Language</td>
</tr>
<tr>
<td>Language</td>
<td></td>
</tr>
<tr>
<td><strong>Sophomore</strong></td>
<td><strong>Organic Chemistry (lecture)</strong></td>
</tr>
<tr>
<td>Organic Chemistry (lecture)</td>
<td>Organic Chemistry (lab)</td>
</tr>
<tr>
<td>Quantitative Analysis (lecture and lab)</td>
<td>Physiology</td>
</tr>
<tr>
<td>Humanities or Social Studies</td>
<td>Humanities or Social Studies</td>
</tr>
<tr>
<td>Language</td>
<td>Language</td>
</tr>
</tbody>
</table>

admitted to program here

<table>
<thead>
<tr>
<th>Junior</th>
<th><strong>Pathogenic Microbiology (lecture)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry (lecture)</td>
<td>Pathogenic Microbiology (lab)</td>
</tr>
<tr>
<td>Biochemistry (lab)</td>
<td>Immunology (lecture)</td>
</tr>
<tr>
<td>Introductory Microbiology (lecture)</td>
<td>Immunology (lab)</td>
</tr>
<tr>
<td>Introductory Microbiology (lab)</td>
<td>Parasitology (lecture)</td>
</tr>
<tr>
<td>Pathology</td>
<td>Parasitology (lab)</td>
</tr>
<tr>
<td>Humanities or Social Studies</td>
<td>Humanities or Social Studies</td>
</tr>
<tr>
<td>Junior-Senior writing course</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX B

Present senior year Medical Technology curriculum

<table>
<thead>
<tr>
<th>Course</th>
<th>Lecture and Student Lab Time</th>
<th>Clinical Rotation Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry</td>
<td>5 weeks twice a year</td>
<td>8 weeks *</td>
</tr>
<tr>
<td>Blood Bank</td>
<td>3 weeks twice a year</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Microbiology</td>
<td>11 weeks twice a year</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Hematology</td>
<td>7 weeks twice a year</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Immunology</td>
<td>12 days twice a year</td>
<td>none</td>
</tr>
</tbody>
</table>

* includes some lectures and work back in the student lab

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

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

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.