Department of Physiology
University of Kansas Medical Center
Annual Report
July 1, 1968 to June 30, 1969

ACADEMIC STAFF
E. B. Brown, Jr., Ph. D., Professor and Chairman
Alan M. Thompson, Ph. D., Professor
Donald Johnson, Ph. D., Associate Professor
G. N. Loofbourrow, Ph. D., Associate Professor
L. P. Sullivan, Ph. D., Associate Professor
Kenneth L. Goetz, Ph. D., Assistant Professor
James Rhodes, M. D., Assistant Professor
John W. Trank, Ph. D., Assistant Professor
A. Stark Wolkoff, M. D. Assistant Professor
Merrill Tarr, Ph. D., Assistant Professor

POSTDOCTORAL FELLOWS
Paul Hensleigh, M. D., supported by Ob-Gyn Training Grant.
James Scherbenske, Ph. D., P. H. S. Postdoctoral Fellow, 9-1-67 to 8-31-68.
Arlo Hermreck, M. D., Postdoctoral Research Fellow, P. H. S. 7-1-67 to 6-30-69.

GRADUATE STUDENTS

<table>
<thead>
<tr>
<th>Graduate</th>
<th>Degree Sought</th>
<th>Preliminary Examinations</th>
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<tr>
<td>Larry Welling, M. D.</td>
<td>Ph. D.</td>
<td>April 1968</td>
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<tr>
<td>Paul Hensleigh, M. D.</td>
<td>Ph. D.</td>
<td>May 1969</td>
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<tr>
<td>Conrad Johanson</td>
<td>Ph. D.</td>
<td>May 1968</td>
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<tr>
<td>Barbara McDougal</td>
<td>Ph. D.</td>
<td>March 1968</td>
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<td>Martin Kramen</td>
<td>Ph. D.</td>
<td>March 1968</td>
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<td>Dennis Waring</td>
<td>Ph. D.</td>
<td>March 1968</td>
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<td>Gary Bond</td>
<td>Ph. D.</td>
<td>May 1968</td>
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<tr>
<td>Sam Steele, M. A., M. D.</td>
<td>Ph. D.</td>
<td>May 1968</td>
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<tr>
<td>Carol Hendley</td>
<td>Ph. D.</td>
<td>Military Serv. 6-6-68.</td>
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<td>Gary Slick, D. O.</td>
<td>Ph. D.</td>
<td>March 1969</td>
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<tr>
<td>Arlo Hermreck, M. D.</td>
<td>Ph. D.</td>
<td>Final Exam May 1969</td>
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<tr>
<td>Lester Wade</td>
<td>Ph. D.</td>
<td>Dec. 1968</td>
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<td>Cleve Howard, M. D.</td>
<td>M. A.</td>
<td>USAF</td>
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<td>Edward Martin</td>
<td>Ph. D.</td>
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<td>Frank Scamman</td>
<td>Ph. D.</td>
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<td>Kyra Riege</td>
<td>Ph. D.</td>
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<tr>
<td>Yih Loong Lai</td>
<td>Ph. D.</td>
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<tr>
<td>Chung-Ning Pang</td>
<td>Ph. D.</td>
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<tr>
<td>Richard Williams</td>
<td>M. A.</td>
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* Ph. D. granted June 1969.
# Will complete work for Ph. D. August 1969.
† Work for M. A. completed June 1969.
KA W VALLEY HEART STUDENTS (Science Talent Search Program - summer 1968.)

Michael Fogg
Carter Hill
Debra Wynn
Susan Vandergriff
William Wilson
Mike Trenbeath
Joan Jarvis

SUMMER RESEARCH FELLOWS (Medical Students)

Mike McGuire
Mike Cann
Charles Paxson
Linda Steel

TEACHING

The Physiology for Medical Students course was again scheduled during the winter and spring quarters with the last two weeks of the year devoted to the combined course in Endocrinology.

GRADUATE COURSES

#325 Biology of Sex, Dr. Johnson - Fall 1968
#327 Physiology Instrumentation - Dr. Trank - Winter 1968
#320 Acid-Base Balance and Electrolyte Metabolism - Dr. Brown - Spring 1969

GRADUATE SEMINARS #351


OUTSIDE SPEAKERS AND VISITORS

July 9, 1968

Dr. Ivor H. Mills, Chairman of Medicine Department, Cambridge University. "Clinical Aspects of Adrenal Function." Dr. Mills is noted for his work on endocrine control of renal function and spoke on some aspect of this subject.

July 8, 1968

Dr. Jared Grantham, Lab. of Kidney and Electrolyte Metabolism, National Heart Institute, Bethesda, Md. Joint Medicine-Physiology Seminar on "Mechanism of Action of Anti-diuretic hormone in isolated renal collecting tubules."
(Outside Speakers and Visitors - continued)


Sept. 24, 1968  Dr. Alexander Leaf, Chief of Medical Services, Massachusetts General Hospital. "The Action of Aldosterone."

Oct. 7, 1968  Dr. G. W. Kreutzberg, Max-Planck-Institut fuer Psychiatrie, Munich. "Experimental Degeneration and Regeneration in Motor Neurons and Physiological Implications."

Oct. 29, 1968  Dr. Ernst Gellhorn, Emeritus Professor of Neurophysiology, Univ. of Minnesota. "Levels of Homeostatic Adjustment Reactions."

Nov. 18, 1968  Dr. Jean Crabbé, Assoc. Prof. of Medicine and Physiology, Univ. of Louvain, Louvain, Belgium. "Hormonal Stimulation of Sodium Transport."

Dec. 9, 1968  Dr. Arthur B. Lee, Dept. of Surgery, College of Physicians and Surgeons of Columbia University, New York, N.Y. "The Effect of Abdominal Surgery Upon the Control of Breathing."

Feb. 1969  Dr. Dennis Dahl, Res. Assoc., K. U. at Lawrence, "Short Chain Fatty Acid Inhibition of Rat Brain Na-K ATPase."

March 17, 1969  Dr. J. M. Yochim, Assoc. Prof. of Physiol. and Cell Biology, KU at Lawrence, "Metabolism of the Uterus and its Relationship to Implantation."

March 24, 1969  Dr. James O. Davis, Prof. and Chairman of Physiology, University of Missouri School of Medicine, Columbia, Missouri, "Humoral Factors in the Regulation of Renal Sodium Excretion."

April 7, 1969  Dr. Nancy Dahl, Asst. Prof. Dept. of Physiology and Cell Biology, University of Kansas, Lawrence, "Depression of nerve electrical activity by puromycin involving a mechanism other than inhibited protein synthesis."
Outside Speakers and Visitors - continued

April 21, 1969  Dr. Francis J. Haddy, Professor and Chairman, Physiology Department, Michigan State University. "Osmolarity and Vascular Resistance."

April 28, 1969  Dr. Wm. M. Bass, Prof., Physical Anthropology, K. U. at Lawrence. "Your Bones are your I. D."

May 12, 1969  Dr. Wm. G. Kubicek, Prof. Dept. Physical Medicine and Rehabilitation, Univ. of Minnesota, Medical School, Minneapolis, Minnesota. "Impedance Cardiography."

TEACHING

The Physiology course for medical students was taught along the usual lines, however some thought was given to new approaches and some experimentation was carried out in presenting the practical portion of the course, looking forward to the possible requirements of a new curriculum. We substituted demonstrations for several difficult experiments which have been carried out by students in previous years. It appeared that this procedure was quite successful, as judged by faculty and student response, but of course these evaluations as always are subjective. We plan to continue experimenting with some of these ideas during the next academic year.

During the past year we added two new courses to our offerings for graduate students: a course on Gastroenterology by Dr. Rhodes, and a course on Excitable Membranes by Dr. Tarr. Both of these courses have been approved by the Graduate Council.

STAFF

Dr. Alan Thompson was away from the department on a sabbatical leave in Copenhagen from January until June. His duties were shared by several members of the department in his absence. On January 1, Dr. Goetz began an internship at St. Luke's Hospital and his appointment was changed from Assistant Professor to Lecturer. Dr. Richard L. Clancy joined our staff as Assistant Professor on July 1, 1969. He brings added strength to our department in the area of cardiovascular physiology.

GRADUATE STUDENTS

We admitted two new graduate students at the beginning of the academic year; Mr. Yih Loong Lai and Mr. Chung-ning Pang. Both of these students have demonstrated their ability to stand well into the upper part of the class in competition with our medical students, and we expect both of them to
proceed toward the Ph. D. degrees. The calendar year 1969 will be the most productive for Ph. D's in Physiology produced by this department since our move to this campus. Barbara McDougal received the Ph. D. at the June commencement exercises, Martin Kramen and Dennis Waring are completing their thesis work this month, and Dr. Arlo Hermreck expects to complete his work for the Ph. D. before the end of this calendar year.

ACTIVITIES OF STAFF

Dr. E. B. Brown, Jr., Professor and Chairman.

Dr. Brown was on sabbatical leave working in the Physiology laboratories at Oxford University, England, with Drs. Cunningham, Lloyd, and Michel, from 9/1/67 through 8/31/68.


August 1968 - Presented invited paper on "Whole Body CO₂ Exchange" before XXIV International Physiological Congress, Washington, D. C.

October 1968 - Attended Workshop on "Role of the University in Graduate Medical Education" and chaired a discussion group. Workshop was sponsored by Council of Academic Societies of AMA and held in Washington, D. C.

October 1968 - Presented invited paper on "Fundamentals of Acid-Base Balance" before American Society of Anesthesiologists, Washington, D. C.

October 1968 - Accompanied Drs. Scarpelli, Cuppage, and Holder on two-day visit to Case Western Reserve Medical School to learn about their curriculum.

Dec. 1968 - Gave seminar in Physiology Department on Lawrence Campus.

Jan. 1969 - Presented eight lectures for medical students at Univ. of Calif., California Medical College, Los Angeles.

Jan. 1969 - Board Member of the Kansas Heart Association.

Feb. 1969 - Serving on Great Plains Area Heart Assn. Res. Comm. meeting in Omaha, Nebraska. Elected Vice-Chairman of the Comm. at this meeting.

9/1/67-3/31/69 - Secretary-Treasurer, Association of Chairmen of Departments of Physiology.
Dr. Alan M. Thompson, Professor

Two Kaw Valley Fellows, Carter Hill and Deborah Wynn, and a medical student, Steve Brunner, worked in my laboratory during the summer of 1968.


Interim Secretary-Treasurer of Association of Chairmen of Departments of Physiology until Dr. Brown's return from sabbatical.

On Sabbatical Jan. 1 to May 31, 1969, working with Dr. Christian Crone on brain permeability studies at the University of Copenhagen.

In Copenhagen, Denmark, presented work at a joint Institute seminar and at the spring meeting of the Scandinavian Physiological Society.

Presented work on May 10 at the annual conference on Transport at the University of Aarhus, Denmark.

Presented work at an invited symposium on Capillary Transport (to be published by Munksgaard) on June 22-26, 1969, in Copenhagen.

Graduate advisor for Conrad Johanson and Lester Wade.

Dr. Kenneth L. Goetz, Assistant Professor


FASEB meetings, Atlantic City, New Jersey, April 1969.


Received teaching award from Medical School Class of 1971.

Presented eight series of lectures on cardiovascular physiology to coronary care nursing class of Regional Medical Programs.

Acted as advisor for Arlo S. Hermreck, M.D., Postdoctoral Fellow.

Served as consultant to Midwest Research Institute.

Gave series of lectures in Physiology to staff, St. Luke's Hospital.

Supervised work of Gary Slick for M.S. in Physiology. Requirements completed in June, 1969.
Dr. Donald C. Johnson, Associate Professor


American Association Advancement of Science. Dallas, Texas, Dec. 26-31, 1968. Presented paper: Effect of Cyproterone acetate on pituitary LH in immature rats. This was with the American Society of Zoologist, Div. of Comparative Endocrinology.

Federation Meetings: Atlantic City, April 1969. Presented paper: Cyclic changes in FSH induced by a single injection of testosterone propionate.

Dr. G. N. Loofbourrow, Associate Professor

Writing Neurophysiology Textbook.

Consultant, VA Hospital, Kansas City, Missouri

Participated in postgraduate symposium on The Sociobiology of Aging at KUMC Nov. 1968. Gave lecture on the Physiology of Aging.

April 1969 attended 11th Annual Meeting of Council on Medical Television, in K. C.

Recruitment trip for Graduate School candidates to St. Benedict's College, Atchison, Kansas.

In charge of Department Seminar 1968-69.

Department Librarian 1968-69.
Dr. James B. Rhodes, Assistant Professor

American College of Physicians meeting, Kansas branch, November 1968.


American Federation of the Societies of Experimental Biology, Atlantic City, New Jersey, Spring 1969.


Addressed the St. Joseph Academy of General Practice in Association with Doctor Rising’s Postgraduate Program in September 1968.

Participated in the postgraduate program with a talk on Peptic Acid Distress in November 1968.

Grand Rounds on Carbohydrate and Protein Digestion and Absorption in October, 1968.

Lecture on Cell Pharmacology of the GI Tract for the Department of Pharmacology graduate students in February 1969.

Addressed the graduate students at Southwest Missouri State College in Springfield on current concepts of carbohydrate digestion at a biology seminar in March 1969.

Seminar, Department of Physiology, on current status of protein digestion, May 1969.

Elected treasurer of the local Society of Sigma Xi this spring.

Member of the Temporary Faculty Planning Committee during the year and current member of the steering committee of the permanent medical faculty organization.

Throughout the school year, a Saturday elective program and correlated gastroenterology is offered. This meets weekly for an hour on Saturday mornings.
Dr. Lawrence P. Sullivan, Associate Professor

Sept. 1968 - International Physiological Congress.

American Society of Nephrology - Nov. 1968.


IV International Congress of Nephrology - June 1969.

Presented two lectures to House Staff at St. Luke's Hospital K. C., Mo.

Local Committees:
  Research
  Curriculum
  Renal Dialysis and Transplant

Graduate advisor for Barbara McDougal who completed Ph. D. requirements in Spring of 1969, and Dennis Waring who will complete Ph. D. requirements in fall of 1969.

Lectures on Diuretics in Medical Pharmacology Course.

Dr. Merrill Tarr, Assistant Professor


Attended Spring Meetings of the APS in Atlantic City, New Jersey, in April 1969.
Dr. John W. Trank, Assistant Professor

Lectured on "Biomedical Engineering--present and future" at Midwest Research Institute in April 1969.

Consultant in Biomedical Engineering to Midwest Research Institute.

Served on Council for Human Response to Vibration.


Presented a series of lectures on medical electronics instrumentation to E. E. 128 course at Lawrence.

Served as expert witness and consultant on Electrical Interference with medical instrumentation for Baptist Memorial Hospital.

Recruitment trip to Springfield, Missouri, Pittsburg, Kansas, for Graduate Student Procurement.

Supervised departmental shop maintenance and design function.

Presented invited lecture on careers in Physiology and Bioengineering at St. Anns School, May 1969.

Presented preliminary proposal for KUMC Bioengineering program to the medical center administration.

Acted as academic advisor to Mr. Gary Bond.

Dr. A. Stark Wolkoff, Assistant Professor

Attended APS meeting.
RESEARCH GRANTS ACTIVE DURING THE YEAR

IR01 HE 12231 Intracellular Compensation for Chronic $\text{PCO}_2$ Changes.  
-01 year (AFy) (1722) from 10-1-68 to 9-30-69. $24,063.  
PHS Heart Institute Grant.

Kaw Valley Heart #9725 from 1-1-69 to 12-31-69 for $2,700, "Respiratory Control." Dr. E. B. Brown, Jr.


PHS Training Grant. Program Director: E. B. Brown, Jr. (1226)  
#5T1GM1137-05 from July 1, 1968 to June 30, 1969, $33,334.


#5-K3-GM, 11,898-04 from 7-1-68 to 6-30-69, $19,342 Career Development Award - "Renal tubular potassium transport." Dr. L. P. Sullivan.

#1 R01 AM 10227, USPHS from 1-1-68 to Dec. 31, 1968, $13,949. 1-1-69 to 12-31-69 $21,401 - 2 R01-AM 10227-04, "Diuretic agents and ion transport in the toad bladder." Dr. L. P. Sullivan.

Kansas Heart Association $2,500, July 1, 1968 to June 30, 1969, to Dr. K. L. Goetz, principal investigator for "Coronary blood flow as related to right heart pressure."


Alan M. Thompson - Co-Investigator on USPHS #NB HE 06907-02, June 1, 1967 to August 31, 1968. $60,000. Interdepartmental project grant on "Prognosis and Theory in Cerebrovascular Disease."


NSF #GB 8067 - 9-1-68 to 8-31-70 $19,700. "Hypophyseal Gonadotropin Patterns. Dr. D. C. Johnson.

Dr. C. M. Tarr, PHS #1 Rol HE 12426-01 2-1-69 to 1-31-72. 1st year from 2-1-69 to 1-31-70 - $14,216, "Voltage Clamp of Cardiac Muscle."

68R1892, Ks. Heart, 7-1-68 to 6-30-69 for $2,750, "Voltage Clamp of Cardiac Muscle." Dr. C. M. Tarr.


James B. Rhodes, M. D. 
#5 Rol AM 12329-02 PHS 6-1-68 to 5-31-71 - 3 year period $37,928. 6-1-68 to 5-31-69 1st year $15,540 "Intestinal peptidases and peptides hydrolysis." (Arthritis / Metab. Dis.)

PUBLICATIONS:


Naqvi, R. H. and D. C. Johnson, Increased production of follicle stimulating hormone in immature female rats by a single injection of androgen or oestrogen. J. Endocrinology 45:1-8, 1969.
