## Department of Physiology
### Annual Report
**July 1, 1970 - June 30, 1971**

### Academic Staff
- E. B. Brown, Jr., Ph.D., Professor and Chairman
- Alan M. Thompson, Ph.D., Professor
- Donald Johnson, Ph.D., Professor
- L. P. Sullivan, Ph.D., Professor
- G. N. Loofbourrow, Ph.D., Associate Professor
- James Rhodes, M.D., Associate Professor
- John W. Trank, Ph.D., Associate Professor
- C. Merrill Tarr, Ph.D., Assistant Professor
- R. L. Clancy, Ph.D., Assistant Professor
- A. S. Wolkoff, M.D., Professor of Ob-Gyn, Asst. Prof. of Physiol.
- Norberto Gonzalez, M.D., Assistant Professor
- Kenneth L. Goetz, Ph.D., M.D., Lecturer
- Gary Bond, Ph.D., Lecturer

### Postdoctoral Fellows
- Antonio Garcia (Carrillo), M.D., 8/1/69 to 11/24/70
- Paul Hensleigh, M.D., Supported by Ob-Gyn training grant
- Arlo Hermreck, M.D.
- Eugene Luckstead, M.D., 7/1/69 (Pediatrics Dept.)

### Graduate Students

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree Granted</th>
<th>Thesis Defense</th>
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<tbody>
<tr>
<td>Paul Hensleigh, M.D.</td>
<td>Ph.D. Fall 1970</td>
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<td>Conrad Johanson</td>
<td>Ph.D. Fall 1970</td>
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<td>Gary Bond</td>
<td>Ph.D. Fall 1970</td>
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<td>Arlo Hermreck, M.D.</td>
<td>Ph.D. Fall 1970</td>
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<td>Carol (Hendley) Proudfit</td>
<td>Ph.D. Spring 1971</td>
<td>June 4, 1971</td>
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<td>Lester Wade</td>
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<tr>
<td>Yih Loong Lai</td>
<td>11/10/70</td>
<td>Ph.D. Fall 1970</td>
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<tr>
<td>Chung-ning Pang</td>
<td>11/12/70</td>
<td>Ph.D. Fall 1970</td>
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<td>Kyra Riegel</td>
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<td>Pat Jurewicz</td>
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<td>Steve Bredehoft</td>
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<td>Richard Morrison, M.D.</td>
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<td>Larry Welling, M.D.</td>
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<td>Don Deeds</td>
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<td>Ronald Shade (Entering Medical School August 1971)</td>
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<td>Su-Hsin Tung, D.D.S.</td>
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* Medical Student and Graduate Student
* Postdoctoral and Graduate Student for Ph.D.
TEACHING

The Physiology course for medical students, Physiology 270-271, was taught in a single eleven-weeks block of time beginning November 23 and ending February 19. With the exception of Physical Diagnosis which required a short block of time each week for part of the course and with the exception of Wednesday afternoon which was kept free, all of the student's time was available for the physiology course. The decisions of the Physiology and Biochemistry Departments to teach the course in this fashion was influenced by the need to obtain experience with block teaching, looking forward to the new curriculum. After this one experience it was the decision of both departments to return to the previous arrangement in which the physiology and biochemistry courses run concomitantly over a longer period of time. The principal objections to block teaching were:

1) It is difficult to arrange a course in such a fashion that the student's time is efficiently utilized with a single course.

2) The course moves at such a rapid pace that absence from even a short portion of the course can be near fatal to some students.

3) With a short course, adequate time is not available for repetition and re-learning to fix principles and information in the minds of the students.

There are some advantages to the block system, one of which is that there is not competition for the student's time between two courses or among several courses. He can devote his total effort to the one course. Over-all, however, it was the opinion of the staff of this department, which apparently is shared by the Biochemistry staff, that this type of teaching has many drawbacks. This experience with block teaching makes us approach the problem of teaching the physiology course in a still shorter period of time (even though it is reduced to a core) with considerable trepidation.
GRADUATE COURSES
Fall 1970
Course #312 Excitable Membranes - Dr. C. M. Tarr
Course #325 Biology of Sex - Dr. D. C. Johnson

Spring 1971
Course #320 Fluid, Electrolyte, and Acid-Base Metabolism -
Dr. E. B. Brown, Jr.
Course #327 Physiological Instrumentation - Dr. J. W. Trank

GRADUATE SEMINAR COURSE #351
A graduate seminar on "Potassium Metabolism in Skeletal and Cardiac
Muscle" was offered during the Fall Semester by Drs. Brown and Clancy.

OUTSIDE SPEAKERS AND VISITORS
July 30, 1970
Professor of Neurology, University of Miami. "Acid-Base
Metabolism of the brain."

Oct. 12, 1970
Dave Quadagno, Ph. D., Asst. Prof. of Physiology and Cell
Biology, University of Kansas, Lawrence, Kansas. "The
Inhibition of Steroid Induced Sexual Behavior by Intra-
hypothalamic Actinomycin-D."

Nov. 13, 1970
Toshio Narahashi, Ph. D., Prof. and Head of Pharmacology
Div., Duke University Medical Center, Durham, North

Jan. 4, 1971
Hugh D. Van Liew, Ph. D., Assoc. Prof. Physiology, State
University of New York at Buffalo. "Diffusion versus per-
fusion in absorption of gas bubbles in the body."

April 5, 1971
Atilla Ertan, M.D., Instructor in Med., Sec. of Gastro-
enterology, Hospital of the University of Pennsylvania,
amino acid perfusion on pancreatic and biliary secretions
and its local neural control."

May 3, 1971
Robert S. Dyer, Ph. D., Postdoctoral Fellow, Department
of Physiology, University of Michigan School of Medicine,
Ann Arbor, Michigan. "Effects of chronic stimulation on
unit activity of undercut cerebral cortex."

May 17, 1971
Charles L. Schauf, Ph.D., Postdoctoral Fellow, University
of Maryland School of Medicine, Baltimore, Maryland.
"Sodium Inactivation in Myxicola Axon."

May 24, 1971
Jackie D. Wood, Ph. D., Williams College, Williamstown,
Massachusetts. "Electrical Activity and Function of Single
Neurons of the Myenteric Plexus."
GENERAL COMMENTS

During the 1970-71 academic year the staff of this department spent a considerable amount of time in planning for the new curriculum and for an increase in the size of the medical school class. Attention was also devoted to new problems imposed by admission of disadvantaged students. Tutoring and special oral examinations were added to the usual procedures during the teaching of the medical school course. This summer (1971) Drs. Sullivan and Clancy are participating in providing remedial work for some of the students who will be entering the class in August of this year.

Dr. Norberto Gonzalez returned to this campus to participate in Dr. Brackett's Head Trauma Research Program, and to join this department as Assistant Professor in September 1970. To the extent that his time commitments permit, Dr. Gonzalez will participate in teaching the cardiovascular portion of the physiology course for medical students. Dr. Jack Wood has accepted our offer of a position as Assistant Professor in the Department and he is expected to join the staff in August of 1971. Dr. Wood will strengthen the department in the area of neurophysiology and gastrointestinal physiology. Dr. Wood obtained his M.S. degree from Pittsburg State College, Pittsburg, Kansas, and his Ph.D. degree from the University of Illinois at Urbana, Illinois. He comes to us after a successful tenure as Assistant Professor in the Biology Department of Williams College, Williamstown, Massachusetts.

Until now, the formal graduate courses offered for our graduate students have been provided by having each senior staff member develop a course in his area of special interest. With increase in size of the staff it is no longer feasible to follow this procedure. A committee of the staff has studied the problem and made a report concerning reorganization of graduate courses. Under the new arrangement courses would be offered in the various areas of Physiology and each senior staff member would participate at any point and in any course where his expertise was appropriate. Each course would be under the supervision of a committee composed of those senior staff members who are involved in the teaching of that course. Descriptions of these courses are now being worked out by the various committees and will be presented to the Graduate Council for approval within the next few months.

We should not conclude this report without mentioning the fact that this department and the Department of Physiology and Cell Biology at Lawrence are serving as hosts for the fall meetings of the American Physiological Society, August 16-19, 1971. Much time and effort has already gone into the planning for this conference, and a considerable amount of time is still being devoted and will continue to be devoted to this effort until the conference is completed. At this moment we are arranging 322 abstracts into 31 scientific sessions, obtaining chairmen for each of these sessions, putting together the typescript for printed program to include all of the information relevant to the conference plus the complete listing of all papers
by sessions with room assignments, times for each paper, etc., plus an
alphabetical listing of all participants with an indexing of the papers on
which each participant appears. The first three days of the conference,
August 16, 17, 18, will be held on the campus at Lawrence where the par-
ticipants will be housed in McCollum Hall, then on Thursday, August 19,
participants will be transported to the medical center where three symposia
will be held from 9:30 until noon. We have received excellent cooperation
from the administration on both campuses in preparing for this national
meeting, and we wish to express our appreciation for this much needed help.

ACTIVITIES OF STAFF

E. B. Brown, Jr., Ph.D., Professor and Chairman


Sept. 11, 12, 1970 - Official delegate from Kansas City, Kansas, to the Great
Plains Regional Assembly meeting of the American Heart
Association, Omaha, Nebraska.

Sept. 18-19, 1970 - Attended the Annual Delegates Assembly of Kansas Heart
Association and the Fall Board of Directors meeting which
was held at the site of the Annual Assembly.

Sept. 23 - Lecture to student nurses on "The effects of shock on
respiration."

Oct. 3, 1970 - Association of Chairmen of Departments of Physiology -
Council Meet in Chicago. Dr. Brown is Secretary-Treasurer
of the ACDP society.

Oct. 5, 6, 1970 - Attended the Council of Faculties of Midwest-Great Plains
Region of the Association of American Medical Colleges
in Chicago, Illinois.

Oct. 13-14 - Lecture for nursing education program on "Acid Base Balance
and Respiration Mechanism."

Oct. 23 - AHA in New York. Regional Representative to Subcommittee
on Regional-National Research of the AHA Research Committee.

Oct. 29-Nov. 2, 1970 - Attended the 81st Annual Meet of AAMC (9th Annual
Conference on continuing Medical Education) in Los Angeles,
California.

Nov. 2-5 - Visiting Professor at the Medical School, University of
California, Irvine (9 lectures).
Nov. 14 - Talk at St. Luke's Hospital, Dept. Surgery, on "Clinical application of blood gas physiology."

Nov. 20 - Lecture on "Pitfalls in Blood Gas Analysis." Postgraduate Symposium on Medical Technology at KUMC.


Jan. 26 - Series of 5 lectures to Inhalation Therapy Section, KUMC.

Jan. 29 - AHA Meet in Minneapolis, Minnesota - Regional Research and Review Committee (Dr. Brown is chairman of committee).

Feb. 12 - Council of Faculties Meet, Chicago - Meet in conjunction with AMA Congress on Medical Education (Dr. Brown elected Chairman-Elect of Council of Faculties).

March 11, 12, 13 - Minneapolis, Minnesota, AHA Regional Research Review and Advisory Committee.

March 17 - Lecture on "Blood Gas Values in Clinical Medicine" (Clinical Pathology Course #325 - Dr. Glick).

April 2 - Kansas Heart Association Meeting at Emporia, Kansas. Research Committee (Dr. Brown is Chairman).

April 12-17 - FASEB meetings in Chicago, Illinois.

April 12 - Association of Chairmen of Departments of Physiology Council Meeting. Annual Dinner and Business Meeting. (Dr. Brown elected Chairman-Elect).


April 28, May 12, 26 - Lectures to Staff and House staff at St. Luke's Hosp. on Acid-Base Regulation.

April 30 - Kansas Heart Association - Program Coordinating Committee, Topeka, Kansas.

June 1, 2, 3 - Visiting Professor at Medical College of Ohio, Toledo, Ohio (4 lectures).

June 9-10 - 14th Aspen Conference on Respiration in Emphysema, Aspen, Colorado.
Gary Bond, Ph.D., Lecturer  
Jan. 1, 1971 - Appointed Lecturer in Physiology.

Richard L. Clancy, Ph.D., Assistant Professor  
November 10-14, 1970 - Attended meeting of American Heart Association  
   Atlantic City, New Jersey.


Kenneth L. Goetz, Ph.D., M.D., Lecturer  
November 10-14, 1970 - Attended American Heart Association meetings  
   in Atlantic City, New Jersey.

April 12, 1971 - American Physiological Society Meetings in Chicago.

August 1970 - Attended American Physiological Society Meetings in  
   Bloomington, Indiana.

Norberto C. Gonzalez, M.D., Assistant Professor  
   Joined the staff of the Department of Physiology in September 1970.
   Collaboration in teaching of Physiology course for medical students.
   Carrying out a research project in the Head Trauma Unit.

Donald C. Johnson, Ph.D., Professor  
August 30, 1970 - Attended the American Physiological Society Meetings at  
   Indiana University in Bloomington, Indiana.

August 1, 1971 - Attended the meeting of Soc. Gynecologic Invest., Phoenix,  
   Arizona.

Students:  
   Carol Proudfit  
   C. N. Pang  
   R. L. Morrison - February 1971  
   Paul Hensleigh

G. N. Loofbourrow, Ph.D., Associate Professor  
   Attended Fall Meeting of American Physiological Society in Bloomington,  
   Indiana. (August 1970)

   Writing Neurophysiology Textbook.
James Rhodes, M.D., Associate Professor

July 1, 1970 - From Assistant Professor to rank of Associate Professor in Physiology.


November - Participant in Post-Grad course in Medicine.

November and April - Participant in Post-Grad Med course on the Circuit.


March 10, 1971 - Moderated panel discussion at Menorah Medical Center on Gastrin and Gastric surgery.


Lawrence P. Sullivan, Ph.D., Professor

August 1, 1970 - Returned after a year working in Dr. Gerhard Giebisch's laboratory at Yale University.

Nov. 22-25, 1970 - Attended American Society of Nephrology Meetings and presented a paper on "Relationship between Net Na Absorption and Peritubular K Uptake in Perfused Kidneys."

April 1971 - FASEB Meetings.


C. Merrill Tarr, Ph.D., Assistant Professor


Co-author on the paper "Effect of dl-propranolol (Inderal\textsuperscript{R}), d-propranolol, and l-propranolol on cardiac ionic currents" for which Dr. Luckstead won the Young Investigators Award at the 39th annual meeting of the American Academy of Pediatrics, October 17-18, 1970, in San Francisco, California.
Alan M. Thompson, Ph. D., Professor

July 1, 1970 - Became Associate Dean of Graduate School.


Graduate advisor for Conrad Johanson and Lester Wade.

Refereed papers for SCIENCE.

October 1970 - Attended meeting of Graduate Deans of Kansas at Ft. Hays.


March 21, 23, 1971 - Attended Midwest Conference of Graduate Deans on Graduate Study in New Orleans, Louisiana.

April 1971 - Attended meeting of Graduate Deans of Kansas at Emporia.

April 12-16, 1971 - Attended spring meeting of the Federation of American Society for Experimental Biology.

John W. Trank, Ph. D., Associate Professor

July 1, 1970 - Appointed Associate Professor of Physiology.

September 19, 1970 - Attended the annual assembly of the Kansas Heart Association in Wichita, Kansas.

September 23, 1970 - Spoke to Electrical Engineering students on Bio-engineering approach to cardiovascular control in Lawrence, Kansas.

Graduate advisor to Gary Bond - Degree granted Fall 1970.

April 1971 - Federation meetings in Atlantic City, New Jersey.

April 19-20, 1971 - Review panel AIBS - ONR, Washington, D. C.

May 24, 1971 - Consultant to AIBS - ONR, Washington, D. C.

RESEARCH GRANTS ACTIVE DURING THE YEAR

PHS #1R01 HE 12231. "Intracellular Compensation for Chronic P<sub>CO<sub>2</sub> Changes." 10/1/69 to 9/30/71. Dr. E. B. Brown, Jr.


#9221. Kansas Heart award $8,000. "Acid base disturbances and cardiac glycoside activity." 7/1/70 to 6/30/71. Dr. R. L. Clancy.

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


#5 R01 AM 12329 PHS - 6/1/68 to 5/31/71. "Intestinal Peptidases and Peptides Hydrolysis." Dr. James B. Rhodes (3 year period on $37,928).

#1124 AM 10227, USPHS. "Diuretic agents and ion transport in the toad bladder." 1/1/69 to 12/31/71. Dr. L. P. Sullivan.

#1725 HE 12426. "Voltage clamp of cardiac muscle." 2/1/69 to 1/31/72. Dr. C. M. Tarr.

#9214 Kansas Heart. "Inotropic Agents and Ca++-current in cardiac muscle." 7/1/70 to 6/30/71. Dr. C. M. Tarr.

USPHS NB 07059. 1/1/69 to 12/31/71. "Nonelectrolyte transport alteration in perfused brain." Dr. A. M. Thompson (#1920).

#9215 - Kansas Heart - 7/1/69 to 6/30/71. "Stimulus pattern and cardiovascular function." Dr. J. W. Trank.

#9722 - Kaw Valley Heart - 7/1/69 to 6/30/71. "Cardiovascular Control in Reptiles." Dr. J. W. Trank.

#1723 - HE 11560. "A study of Atrial Receptors." 8/1/69 to 7/1/70. Dr. K. L. Goetz.

PUBLICATIONS


With the current publicity concerning difficulties encountered by young Ph.D. scientists in finding suitable positions, we have reviewed the positions obtained by the recipients of our seven most recently awarded Ph.D. degrees. These seven degrees have been awarded over a period of the last 12 months. The list follows:

Four of the seven have received postdoctoral fellowships to continue their training with a prominent scientist in their field of interest. Dr. Hensleigh has begun his military service in the medical corps of the U.S. Army. Dr. Gary Bond has accepted a position working with Dr. Kenneth Goetz as a research physiologist in the Department of Experimental Medicine at St. Luke's Hospital in Kansas City, Missouri, and Dr. Arlo Hermreck will begin a joint appointment as Assistant Professor in the Departments of Surgery and Physiology at this institution on July 1, 1971. Since moving from graduate training to postdoctoral training simply delays the time at which the young scientist must seek a permanent position, it may be more instructive to review the experience of our candidates in finding suitable employment over the next two or three years. We plan to review and report the current status of all of the candidates granted the Ph.D. by this department since its beginning at this institution in 1962 in a subsequent report.

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<tr>
<th>Name</th>
<th>Position/Institution</th>
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<tr>
<td>Lester Wade</td>
<td>Postdoctoral Fellowship with Dr. Robert Katzman, Department of Neurology, Albert</td>
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<td>Einstein College of Medicine, Bronx, New York</td>
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<tr>
<td>Gary Bond</td>
<td>Research Physiologist under Dr. Kenneth L. Goetz, Department of Experimental Medicine,</td>
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<td>St. Luke's Hospital, Kansas City, Missouri</td>
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<tr>
<td>Dennis Waring</td>
<td>Postdoctoral Fellowship with Dr. Orloff, Kidney and Electrolyte Metabolism Lab.,</td>
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<td>National Heart Institute, N.I.H., Bethesda, Maryland 20014</td>
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<tr>
<td>Arlo Hermreck</td>
<td>Joint appointment as Assistant Professor in Departments of Surgery and Physiology,</td>
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<td>University of Kansas Medical Center, Kansas City, Kansas</td>
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<tr>
<td>Conrad Johanson</td>
<td>Postdoctoral Fellowship with Dr. D. M. Woodbury, University of Utah, Pharmacology</td>
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<td>Department, Salt Lake City, Utah</td>
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<tr>
<td>Paul Hensleigh</td>
<td>Military Service (9/1/70), Madigan Hospital, Ft. Louis, Washington</td>
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<tr>
<td>Carol Proudfit</td>
<td>Postdoctoral Fellowship with Dr. Neena B. Schwartz, Department of Psychiatry,</td>
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<td>University of Illinois at the Medical Center, Chicago, Illinois 60680</td>
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