ANNUAL REPORT
July 1, 1988 - June 30, 1989
DEPARTMENT OF PHYSIOLOGY
UNIVERSITY OF KANSAS MEDICAL CENTER
COLLEGE OF HEALTH SCIENCES AND HOSPITAL
DEPARTMENT ROSTER

a. Academic Staff

Gilbert S. Greenwald, Ph.D., Distinguished Professor and Chairman
Paul D. Cheney, Ph.D., Professor (Director of Ralph L. Smith Center for Mental Retardation)
Richard L. Clancy, Ph.D., Professor
Sudhansu K. Dey, Ph.D., Professor (Joint appt. Ob-Gyn)
Hugo L. Fernandez, Ph.D., Professor (Director, Neurosciences Research Lab., Kansas City VA Hosp.)
Kenneth L. Goetz, M.D., Ph.D., Adjunct Professor (Director of Research and Head, Div. of Experimental Med., St. Luke's Hosp.)
Norberto C. Gonzalez, M.D., Professor
Donald C. Johnson, Ph.D., Professor (Joint appt., Ob-Gyn)
Theodore Lawwill, M.D., Adjunct Professor (Chairman, Department of Ophthalmology)
Werner K. Noell, M.D., Adjunct Professor (Joint appt., Ophthalmology)
Fred E. Samson, Ph.D., Professor
Travis Solomon, M.D., Ph.D., Professor of Physiology and Medicine (Associate Chief of Staff, Kansas City VA Hospital)
Lawrence P. Sullivan, Ph.D., Professor
Merrill Tarr, Ph.D., Professor
Paul F. Terranova, Ph.D., Professor
John W. Trank, Ph.D., Professor
James L. Voogt, Ph.D., Professor
Daniel J. Welling, Ph.D., Research Professor (Kansas City VA Hospital)
Larry Welling, M.D., Ph.D., Professor of Physiology and Pathology (Kansas City VA Hospital)
Thomas J. Imig, Ph.D., Associate Professor
Peter G. Smith, Ph.D., Associate Professor
Dennis P. Valenzeno, Ph.D., Associate Professor
Bin Ching Wang, Ph.D., Adjunct Associate Professor (St. Luke's Hospital)
Michael J. Soares, Ph.D., Assistant Professor
Shyamal K. Roy, Ph.D., Research Assistant Professor
Michael J. Rutten, Ph.D., Research Assistant Professor (Kansas City VA Hosp.)
Katherine Wynne-Edwards, Ph.D., Research Assistant Professor

b. Postdoctoral Fellows

Lydia Arbogast, Ph.D.
Pascal Barone, Ph.D.
Wendy Campbell, Ph.D.
Janine Clarey, Ph.D.
Santanu Deb, Ph.D.
Klaus Mewes, Ph.D.
Anahita Mistry, Ph.D.
B. C. Paria, Ph.D.
Hemalatha Reddy, M.D.
Kim Ringer, M.D.
Maria Sancho-Tello, Ph.D.
Mitra Sen, Ph.D.
Abiotoma Sokari, M.D., Ph.D.
Hiromichi Tamada, Ph.D.
Preeti Venkataraman, M.D.
Gabriela Vidal, M.D.
Katherine Wynne-Edwards, Ph.D.
<table>
<thead>
<tr>
<th>Graduate Students</th>
<th>Prelims</th>
<th>Candidate for</th>
<th>Degree Requirements Fulfilled</th>
</tr>
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<tbody>
<tr>
<td>John Brannian</td>
<td>8/87</td>
<td>Ph.D.</td>
<td>1/89</td>
</tr>
<tr>
<td>Sandy Elliott</td>
<td></td>
<td>Ph.D.</td>
<td></td>
</tr>
<tr>
<td>Teresa Faria</td>
<td></td>
<td>Ph.D.</td>
<td></td>
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<tr>
<td>Angela Hahn</td>
<td></td>
<td>Ph.D.</td>
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<tr>
<td>Jean Heibert</td>
<td></td>
<td>Ph.D.</td>
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<tr>
<td>Yvette Huet</td>
<td>9/87</td>
<td>Ph.D.</td>
<td>1/89</td>
</tr>
<tr>
<td>Andrew Irons</td>
<td>9/86</td>
<td>Ph.D.</td>
<td></td>
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<tr>
<td>Curtis Kauer</td>
<td>3/84</td>
<td>Ph.D. (M.D.)</td>
<td></td>
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<tr>
<td>Toni Kurz</td>
<td></td>
<td>Ph.D.</td>
<td></td>
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<tr>
<td>Robert Leadley</td>
<td></td>
<td>Ph.D.</td>
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<tr>
<td>Joanne Mathiasen</td>
<td></td>
<td>Ph.D.</td>
<td></td>
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<tr>
<td>Mike McMaster</td>
<td>12/88</td>
<td>Ph.D.</td>
<td></td>
</tr>
<tr>
<td>Klaus Mewes</td>
<td>7/85</td>
<td>Ph.D.</td>
<td>12/88</td>
</tr>
<tr>
<td>Katherine Roby</td>
<td>8/87</td>
<td>Ph.D.</td>
<td>12/88</td>
</tr>
<tr>
<td>Sue Rummel</td>
<td>8/86</td>
<td>Ph.D.</td>
<td>10/88</td>
</tr>
<tr>
<td>Cathleen Sagrillo</td>
<td>1/89</td>
<td>Ph.D.</td>
<td></td>
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<tr>
<td>Frank Samson</td>
<td>7/88</td>
<td>Ph.D.</td>
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<tr>
<td>Mark Saville</td>
<td>7/86</td>
<td>Ph.D.</td>
<td></td>
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<tr>
<td>Joel Stiles</td>
<td>1/86</td>
<td>Ph.D. (M.D.)</td>
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<tr>
<td>Xiao-ning Wang</td>
<td></td>
<td>Ph.D.</td>
<td></td>
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<tr>
<td>Robert Whitman</td>
<td>3/88</td>
<td>Ph.D.</td>
<td></td>
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<tr>
<td>Gail Widener</td>
<td>9/86</td>
<td>Ph.D.</td>
<td></td>
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<tr>
<td>Kris Williams</td>
<td></td>
<td>Ph.D.</td>
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<tr>
<td>Tim Youngblood</td>
<td></td>
<td>Ph.D.</td>
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</tbody>
</table>
Notes concerning graduate students:

Sandy Elliott attended the Society for Neuroscience meeting held in Toronto, Canada in November. She also presented a departmental seminar in November 1988 entitled "Neuromotor and Copulatory Deficits in Rat Offspring Following Prenatal Exercise".


Jean Hiebert lectured on voluntary movement in the 398 Neurophysiology course Fall semester 1988.

Andrew Irons attended the Society for Neuroscience meeting held in Toronto in November and presented a poster entitled "Stimulus Bandwidth Effect on Single Units Azimuthal Selectivity in the Cat Auditory Thalamus". He also presented a seminar entitled "Azimuthal Selectivity of Single Units in Cat Auditory Thalamus" at Eaton Peabody Laboratory/Massachusetts General Hospital, Boston. Andrew lectured on Auditory, Vestibular and Oculomotor Systems in the 398 Neurophysiology course Fall semester 1988.


Cathy Sagrillo lectured on Synaptic Transmission in the 398 Neurophysiology course Spring semester 1988.

Frank Samson participated in the Student Research Forum in March with a presentation entitled "Comparison of compound action potential thresholds recorded from the tympanic membrane and the round window in cats". He also lectured on Resting Membrane Potential, Action Potential in the 398 Neurophysiology course Fall semester 1988.
Gail Widener attended the Society for Neuroscience meeting held in Toronto, Canada in November at which she presented a poster entitled "Effects on EMG activity elicited from microstimuli applied to somatosensory cortex in primates". In addition Gail interviewed for postdoctoral positions at Columbia University, Northwestern University and accepted a postdoc position at the University of Wisconsin - Madison. Gail also lectured on Development and Hypothalamus in the 398 Neurophysiology course.

Xiao-ning Wang attended the Society of the Study of Reproduction annual meeting in Seattle, Washington in August, 1988 and was first author of an abstract which was accepted for a poster at the meeting. She also presented a seminar to the Reproductive Endocrinology Group in October, 1988 entitled "Analysis of Mouse Folliculogenesis by Using Isolated Follicles".
COURSES TAUGHT


398 - Neurophysiology. 3 credits. Spring 1988. Taught by physiology graduate students. Enrollment 60. Dr. Imig organizer. Gail Widener coordinator.


<table>
<thead>
<tr>
<th>Date</th>
<th>Speaker</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/12/88</td>
<td>Dr. Kenneth L. Goetz</td>
<td>Cardiovascular, Renal and Endocrine Effects of Endothelin, a Peptide Derived from the Vascular Endothelium</td>
</tr>
<tr>
<td>9/19/88</td>
<td>Dr. Richard L. Clancy</td>
<td>Muscle pH Regulation</td>
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<tr>
<td>9/26/88</td>
<td>Dr. Gerald R. Kerby</td>
<td>Review of Sleep Disordered Breathing</td>
</tr>
<tr>
<td>10/3/88</td>
<td>Dr. Norberto C. Gonzalez</td>
<td>Consequences of Acclimation to Simulated High Altitude on the Regulation of Acid-Base Balance</td>
</tr>
<tr>
<td>10/10/88</td>
<td>Sue Rummel</td>
<td>Aging Skeletal Muscle: Alterations in the Activity and Neural Regulation of Acetylcholine Esterase-Molecular Forms</td>
</tr>
<tr>
<td>10/17/88</td>
<td>Dr. Eberhard Fetz</td>
<td>Causal Coding of Movement Parameters by Populations of Motor Cortex Neurons</td>
</tr>
<tr>
<td>10/24/88</td>
<td>Dr. Dexter Irvine</td>
<td>Plasticity of Frequency Organization in Auditory Cortex of Guinea Pigs with Partial Unilateral Deafness</td>
</tr>
<tr>
<td>10/31/88</td>
<td>Dr. Donald J. Marsh</td>
<td>Toward a Complete Quantitative Description of the Physiological Control System: Tubulo-Glomerular Feedback and Renal Blood Flow Autoregulation</td>
</tr>
<tr>
<td>11/7/88</td>
<td>Sandra K. Elliott</td>
<td>Neuromotor and Copulatory Deficits in Rat Offspring Following Prenatal Exercise</td>
</tr>
<tr>
<td>11/14/88</td>
<td>Dr. Shyamal K. Roy</td>
<td>Follicular Development In Vitro</td>
</tr>
<tr>
<td>11/21/88</td>
<td>Dr. Gilbert S. Greenwald</td>
<td>Variations on the Theme of Follicular Atresia</td>
</tr>
<tr>
<td>11/28/88</td>
<td>Dr. Paul R. Schloerb</td>
<td>Bioimpedance and the Body Cell Mass</td>
</tr>
<tr>
<td>12/5/88</td>
<td>Katherine F. Roby</td>
<td>Evidence for Ovarian Tumor Necrosis Factor</td>
</tr>
<tr>
<td>12/12/88</td>
<td>Dr. Alan Poisner</td>
<td>Short-Term and Long-Term Effects of Angiotensin on Adrenal Medullary Chromaffin Cells</td>
</tr>
</tbody>
</table>
12/19/88 Klaus Mewes  
Department of Physiology, KUMC

Characteristics of Rubromotoneuronal Cells and Their Role in the Control of the Hand in Primates

1/3/89 John Brannian  
Department of Physiology, KUMC

Hormonal Regulation of Ovarian Follicular Prostaglandin Synthesis in the Cyclic Hamster

1/9/89 Yvette Huet-Hudson  
Department of Physiology, KUMC

Role of Progesterone and Estrogen in the Preparation of the Uterus and Induction of Implantation in the Mouse

1/25/89 Dr. Edward J. Masoro  
Department of Physiology  
Univ. of Texas Health Center

Nutritional Mechanisms of Aging: Physiological and Pathological Aspects and Underlying Mechanisms

2/1/89 Dr. Ann McLaren  
MRC Mammalian Development Unit  
University College, London

Sex Determination in Mice and Men

2/13/89 Dr. Michael Rutten  
V.A. Medical Hospital, KCMO

Sodium Homeostasis and Barrier Function in the Stomach

2/20/89 Dr. Jeffrey Madwed  
St. Luke's Hospital, KCMO

Studies on Secretion and Renal Effects of Atrial Natriuretic Peptide in Experimental Dogs

2/23/89 Dr. Ming-Wei Wang  
Department of Immunology  
AFRC Institute of Animal Physiology and Genetics Research, Babraham, Cambridge, England

Anti-progesterone Antibodies: Idiotypes, Anti-idiotypes and the Control of Reproduction

2/27/89 Dr. Katherine Wynne-Edwards  
Department of Physiology, KUMC

Siberian and Laboratory Evidence Linking Female Reproductive Endocrinology to Ecology and Behavior

3/6/89 Lorraine Rome, M.S.  
Nephrology Division  
Department of Medicine, KUMC

Cell Volume Regulation in Rabbit Proximal Tubules

3/20/89 Dr. Dennis P. Valenzeno  
Dept. of Physiology, KUMC

Photosensitized Modification of Cell Membranes and Cardiac Electrophysiology

3/27/89 Dr. Thomas J. Imig  
Dept. of Physiology, KUMC

Directional Properties of Single Neurons in Cat Auditory Cortex
<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Institution</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>4/3/89</td>
<td>Dr. Robert M. Berne</td>
<td>Dept. of Physiology, Univ. of Virginia, Charlottesville</td>
<td>The Role of Adenosine in the Cardiovascular System</td>
</tr>
<tr>
<td>4/10/89</td>
<td>Dr. Lydia Arbogast</td>
<td>Department of Physiology, KUMC</td>
<td>Dopaminergic Regulation of the Preovulatory Prolactin Surge</td>
</tr>
<tr>
<td>4/17/89</td>
<td>Dr. Gregory F. Erickson</td>
<td>Dept. of Reproductive Medicine, Univ. of California, San Diego</td>
<td>An Analysis of Early Theca - Interstitial Development</td>
</tr>
<tr>
<td>4/24/89</td>
<td>Dr. Peter G. Smith</td>
<td>Department of Physiology, KUMC</td>
<td>Reorganization of Sympathetic Pathways in the Developing Rat</td>
</tr>
<tr>
<td>5/1/89</td>
<td>Dr. Joseph A. Bastian</td>
<td>Department of Zoology, University of Oklahoma</td>
<td>Descending Control of Sensory Processing in Weakly Electric Fish</td>
</tr>
<tr>
<td>5/5/89</td>
<td>Dr. Charles Nicoll</td>
<td>Dept. of Physiology/Anatomy, Univ. of California - Berkeley</td>
<td>Regulation of Rat Embryonic and Fetal Development by Hormones and Growth Factors</td>
</tr>
<tr>
<td>5/8/89</td>
<td>Dr. Thomas F. Luscher</td>
<td>Department of Medicine, University Hospital Basel, Switzerland</td>
<td>Control Interactions between Endothelial Relaxing Factor (EDRF) and Endothelin in Human Blood Vessels</td>
</tr>
<tr>
<td>5/22/89</td>
<td>Dr. Zena Werb</td>
<td>Dept. of Anatomy and Cell Biology, Univ. of California, San Francisco</td>
<td>Expression and Function of Growth Factor and Growth Factor Receptor Genes During Early Mammalian Development</td>
</tr>
<tr>
<td>5/24/89</td>
<td>Dr. John O. Holloszy</td>
<td>Washington University Med. School</td>
<td>Biochemical Adaptations to Exercise and Their Physiological Consequences</td>
</tr>
</tbody>
</table>
PUBLICATIONS

a. Published during year - July 1, 1988 - June 30, 1989


Nakamura, Y., Gangrade, B.K. and Terranova, P.F. Vasoactive intestinal peptide (VIP) has an LH-like action on in vitro follicular steroidogenesis but not on ovulation in the cyclic hamster. Proceedings of the VII Ovarian Workshop.


b. In press


Fetz, E.E., Cheney, P.D., Mewes, K. and Palmer, S. Control of forelimb muscle activity by populations of corticomotoneuronal and rubromotoneuronal cells. Prog. in Brain Res.


Johnson, D.C., Sen, M. Increased activity of ovarian thecal cytochrome P450 17α in the hamster induced by endogenous LH. Acta Endocrinologica

Kim, I. and Greenwald, G.S. Effects of progesterone or luteinizing hormone on folliculogenesis in the immature intact or hypophysectomized hamster. Biol. Reprod.


c. Abstracts


Fetz, E.E., Cheney, P.D., Mewes, K. and Palmer, S. Control of motor units by populations of corticomotoneuronal and rubromotoneuronal cells. European Neuroscience Association Meeting, Sensorimotor Symposium, Sept. 1988, Zurich, Switzerland.


RESEARCH SUPPORT


(Renewal application for above program was approved for funding. October 1, 1989 – October 1, 1992. First year direct costs $107,400. Total $313,600.)


G. S. Greenwald: NICHD - Follicular and Luteal Regulation in the Mammalian Ovary, January 1, 1988 through April 30, 1989. 26th year: Direct costs $93,198; Indirect costs $38,006. May 1-June 30, 1989 Direct costs $18,800; Indirect $8,366.


D. C. Johnson: NIH (NICHD) - Reproductive hormone interactions in the ovary. September 1, 1988 – May 31, 1989. Direct costs $20,000; Indirect costs $8,200.


U.S. Army Medical Research and Development Command. "Basic Research on Neurotoxins". Program project October 1986 - September, 1990. Direct and indirect costs $1,000,000. (This program has 12 investigators at KUMC. Dr. Samson is P.I. Coordinator for KUMC site.)


NSF. Hormonal Regulation of Pregnancy and its Interruption. April 15, 1989 -April 14, 1990. $52,000 (direct + indirect costs).


ACTIVITIES OF STAFF

Paul D. Cheney, Ph.D., Professor

Meetings Attended:
Nov. 13-18, 1988 - attended the annual meeting of the Society for Neuroscience in Toronto and was coauthor on two posters.

Committees:
Chairman, Transition Team Committee for the MRRC
Chairman, MRRC Advisory Committee
Chairman, MRRC Search Committee
Chairman, MRRC Space Review Committee
Member, KUMC Research Building Committee
Member, KUMC Curriculum Committee
Member, KUMC Dean's Advisory Committee on Education (DACOE)
Member, KUMC Curriculum repository subcommittee of the DACOE
Member, KUMC Outcomes measures Subcommittee of the DACOE
Member, KUMC Biological Lecture Series Committee
Member, KUMC Neurology Department Research Committee
Member, KUMC Physiology Departmental Search Committee
Member, KUMC Dissertation Committee, Klaus Mewes
Member, KUMC Occupational Therapy Comprehensive Exam Committee, Erica Stern
Member, KUMC Speech & Hearing Comprehensive Exam Committee, Roxanne Ferguson

Editorial and Grant Reviews:
ad hoc reviewer - Journal of Neurophysiology
NIH Neurology A Study Section (Oct. 19-22, 1988)

Seminars Presented:
December 7, 1988 presented seminar entitled "Brain Control of Movement: Muscles Versus Movements Revisited" to the Anatomy Department, KUMC.

Honors:
Invited speaker for symposium on "Control of Movement" at the 1989 International Physiology Congress in Helsinki, Finland.
Invited reviewer for the October, 1989 meeting of Neurology A Study Section.

Teaching activities:
Neuroscience
  10 hours lecture
  8 hours lab. - gross brain dissection
  1 demonstration
Medical Physiology
  12 conferences
  5 laboratories
Physiology 388
  8 hours lecture
National Board Reviews for second year Med Students
  1 hour lecture

Trainees:
Klaus Mewes - Graduate Student/Research Associate
Gail Widener - Thesis advisor, Ph.D. Candidate
Gregory Botteron - Medical Student, Academic Track Program
Erica Stern - Doctoral Student, KUMC Advisor
David Anthony - Summer medical student
Steve Goerz - Summer student from Drury College
Richard L. Clancy, Ph.D., Professor

Meetings attended:
March, 1989 - Attended meetings of the Federation of American Societies for Experimental Biology held in New Orleans, LA

Committees:
Departmental:
Chairman, Physiology Department Graduate Student Affairs Committee
Co-ordinator of departmental seminars
Local:
Member, KUMC Graduate School Council
Member, Graduate Student Special Studies Committee
Member, Graduate Student Honors Fellowship Committee
Member, Dietetics & Nutrition Ph.D. Program Proposal Committee
Chairman, Facilities & Resources Planning Committee
Member, Faculty Assembly Council
Member, KUMC School Elections Committee

Journals refereed:
ad hoc reviewer for Circulation Research

Seminars presented:
September 19, 1988 - Presented a departmental seminar entitled "Muscle pH Regulation"

Teaching Activities:
Medical Physiology 770-771
14 hours lecture - Cardiovascular
27 hours laboratory
24 hours conferences
Physiology 705, Advanced Human Physiology
10 hours lecture - Cardiovascular
Physiology 996 - Geriatric Medicine
4 hours lecture/conference
National Board Review
2 hours lecture
Prematriculation Course (Minority Students)
6 hours lecture

Trainees:
Robert Whitman - Graduate Student
John Allan - Summer student (June - August 1988)
Mark Milne - Summer student (June - August 1989)

Sudhansu K. Dey, Ph.D., Professor

Meetings attended:
July 14-16, 1988 - Attended symposium (invited speaker) on "Development of Preimplantation Embryos and their Environment" (Satellite Symposium of the 8th International Congress of Endocrinology) Kyoto, Japan.
Feb. 27 - March 3, 1989 - Attended symposium (invited speaker) on "Early Embryo Loss as a Factor in Reproductive Failure", Society of Toxicology, Atlanta, Georgia.
Committees:

Departmental
Member, Faculty Search Committee
KUMC
Member, Advisory Committee for MRRC
National:
Ad hoc study section member - RFA on implantation, NIH 1988
Member, Editorial Board, Biology of Reproduction

Journals refereed:
Biology of Reproduction
Journal Reproduction and Fertility
Prostaglandins

Honors:
Senior Investigator Award, KUMC, 1988

Teaching Activities:
Medical Physiology
15 hours laboratory
26 hours conference
Physiology 808 & 809 - (Graduate Courses)
6 hours lecture

Trainees:
O.W. Tawfik, Ph.D. - Post Doctoral Fellow
Chandan Chakraborthy, Ph.D. - Post Doctoral Fellow
Hiromichi Tamada, Ph.D. - Post Doctoral Fellow
B.C. Paria, Ph.D. - Postdoctoral Fellow
Yvette Huet - Graduate Student
Archana Gupta - Summer Student
Amy Evans - Summer Student
Susan Strong - Summer Student
Chris McPherson - Summer Student
Maruti Dey - Summer Student

Hugo L. Fernandez, Ph.D., Professor

Meetings Attended:
March 5-10, 1989 - Attended the annual meeting of the American Society for Neurochemistry, Chicago, Illinois
April 19-22, 1989 - Attended the satellite meeting of the International Society for Neurochemistry, "Cell Biology of Presynapse", held in Lisbon, Portugal
April 23-28, 1989 - Attended the biannual meeting of the International Society for Neurochemistry held in Algarve, Portugal

Committees:
Local:
Chairman, Animal Studies Committee, VA Medical Center
Member, Space Committee, VA Medical Center
Member, Research & Development Committee, VA Medical Center
Member, Sarah Morrison Bequest Review Committee, Univ. of Missouri-K.C.
Member, Advisory Committee, Center on Aging, KUMC

National:
Member, NIH Behavioral and Neurosciences Study Section
Editorial and Grant Reviews:

- Reviewer - NIH, Behavioral and Neurosciences Study Section
- UMKC, Sarah Morrison Bequest Study Section
- KUMC, Center on Aging
- Ad hoc reviewer - V.A. Merit Review Programs
  - J. Neurochemistry
  - J. Neurosciences
  - NSF
  - J. Neurotoxicology
  - CRC Press
  - NIH, National Inst. Aging

Academic Honors:

- Appointed Chairman of NIH Behavioral & Neurosciences Study Section
- Invited speaker for Satellite meeting of the International Society for Neurochemistry, "Cell Biology of Presynapse", Lisbon, Portugal
- Visiting Scientist, Molecular Biology Institute, Autonoma University of Madrid, Madrid, Spain, April 28 – May 19, 1989

Seminars presented:

- May 3, 1989 – Presented a seminar entitled "Nerve-Muscle Cell Trophic Communication" to the Department of Neurobiology, Molecular Biology Institute, Autonoma University of Madrid, Spain

Teaching Activities:

- Medical Neuroscience
  - 6 hours lecture, Neurophysiology

Trainees:

- Cynthia Nyquist-Battie, Ph.D., Assistant Professor, UMKC, Visiting Scientist in my laboratory, 1984–present.
- Cheryl Hodges-Savola, Ph.D. Research Physiologist, V.A. Medical Center, 1988–present
- Xavier Busquets, Ph.D., Postdoctoral Fellow, Autonoma Univ. of Madrid, 1987–1989
- Sue A. Rummel, Ph.D. Graduate Student, Physiology
- Joel Stiles, B.A., M.D.-Ph.D. Student, Physiology

Norberto C. Gonzalez, M.D., Professor

Meetings Attended:

- October 9-13, 1988 – Attended the American Physiological Society meetings in Montreal, Quebec, Canada
- February 21-25, 1989 – Attended the Sixth International Hypoxia Symposium, Lake Louise, Alberta, Canada

Committees:

- KUMC
  - Member, Curriculum Development Committee
  - Member, Dean's Advisory Committee on Education

Extramural

- Associate Chairman, Peer Review Research Committee, AHA-Kansas Affiliate

Editorial and Grant Reviews:

- Reviewed grant applications for National Science Foundation
Seminars presented:

October 3, 1988 - Presented a departmental seminar entitled "Consequences of acclimation to simulated high altitude on the regulation of acid-base balance

June 15, 1989 - Presented a seminar entitled "Relative contribution of renal and respiratory mechanisms to the correction of acid-base changes in hypoxia" at the Max Planck Institute for Experimental Medicine, Gottingen, West Germany.

June 19, 1989 - Presented a seminar entitled "Acid-base effects of exercise in rats acclimated to simulated altitude" to the Department of Physiology, Ruhr University, Bochum, West Germany.

June 26, 1989 - Presented a seminar entitled "Possible contribution of acid-base balance to maximal oxygen uptake in rats acclimated to altitude" to the Institute of Exercise Physiology, Medical School of Hanover, West Germany.

Honors:

Visiting Scientist, Max Planck Institute for Experimental Medicine, Gottingen, West Germany, June 1-July 31, 1989.

Teaching activities:

Medical Physiology
12 hours lecture - Respiratory Physiology
2 two-hour review sessions
2 two-hour respiratory physiology demonstration
12 conferences
4 laboratory sessions

Physiology 705
8 hours lecture - Physiology of Respiration

Physiology 940 - Gas Exchange, Transport and Acid-Base Physiology
42 hours lecture

Trainees:

A. Sokari, M.D., Ph.D. - Post-doctoral fellow
Kris Williams, M.S. - Graduate student

Gilbert S. Greenwald, Ph.D., Distinguished Professor and Chairman

Meetings Attended:


June, 1989 - Attended meetings on "Humane Care and Use of Laboratory Animals" held in Memphis, Tennessee

Committees:

KUMC:
Member, Guidelines for Promotion of Non-Tenured Research and Clinical Tracks
Member, Editorial Advisory Board, Explore (Univ. Kansas Research Magazine)

Local:
Chairman of the Board, Midwest Biomedical Research Foundation, V.A. Hospital, Kansas City.
Editorial and Grant Reviews:

ad hoc reviewer - Biology of Reproduction
- Endocrinology
- J. Reproduction and Fertility
- Gamete Research
- J. Experimental Zoology
- J. Neuroendocrinology
- Science
- NSF
- USDA Competitive Reproduction Program

Seminars presented:
November 21, 1988 - Presented a departmental seminar entitled "Variations on the Theme of Follicular Atresia"
June 8, 1989 - Presented a seminar entitled "Current Status of Alternatives" to the Office for Protection from Research Risks in Memphis, TN.

Academic Honors:
Distinguished Service Award - Society for the Study of Reproduction

Teaching activities:
Medical Physiology (Co-coordinator)
  10 hours lecture - G.I. Physiology
Physiology 705
  8 hours lecture
Physiology 808/809 - Graduate Course on Reproductive Physiology
  12 hours lecture

Trainees:
Sandy Wood - Summer Student
Xiao-ning Wang, M.D. - Graduate Student

Thomas J. Imig, Ph.D., Associate Professor

Meetings Attended:
November 13-18, 1988 - Attended the Society for Neuroscience meeting held in Toronto, Ontario, Canada

Committees:
Departmental Librarian
Member, Graduate Affairs Committee
KUMC
Member, Academic Committee
Member, Graduate Travel Committee

Editorial and Grant Reviews:
ad hoc reviewer - Journal of Neurophysiology
- Journal of Comparative Neurology
- Journal of Neuroscience
- Hearing Research
- Neuroscience Letters
- NSF

Academic Honors
Teaching Activities:

**Medical Neuroscience**
- 6 hours lecture
- 3 laboratory sessions of 3 hour duration
- 1 handout with directed readings

**Medical Physiology**
- 10 conference sessions

**Physiology 398 - Neurophysiology for O.T. Students**
- Course Organizer (taught by Graduate Students)

**National Board Review**
- 1 hour lecture

Trainees and Associates:
- Janine Clarey, Ph.D. - Postdoctoral Fellow
- Pascal Barone, Ph.D. - Postdoctoral Fellow
- Andrew Irons - Graduate Student
- Frank Samson - Graduate Student

**Donald C. Johnson, Ph.D., Professor**

Meetings Attended:
- August 1-4, 1988 - Attended the Society for the Study of Reproduction meeting held in Seattle, WA.

Committees:
- KUMC:
  - Member, Radiation Safety Committee
  - Member,Animal Use and Care Committee
  - Member, Faculty Research Day Committee

Editorial and Grant Reviews:
- ad hoc reviewer - Biology of Reproduction
  - Journal of Reproduction and Fertility
  - Proceedings Society for Experimental Biology & Medicine

Seminars presented:
- July 14, 1988 - Presented a seminar at the Tokyo College of Pharmacy in Tokyo, Japan
- December 3, 1988 - Presented a seminar at the MO-KAN meeting of Reproductive Physiology

Teaching Activities:
- Medical Physiology
  - 8 hours lecture
  - 12 conferences
  - 4 laboratory sessions

Trainees:
- Mitra Sen, Ph.D. - Postdoctoral Fellow

**Fred E. Samson, Ph.D., Professor**

Meetings Attended:
- September 23-24, 1988 - Heart of America Vision Group, University of Kansas Medical Center.
October 10, 1988 - Attended the NICHD meeting of MRRC Staff and Directors held in Denver, Colorado.

November 13-16, 1988 - Attended the Society for Neuroscience meeting held in Toronto, Canada.

March 7-9, 1989 - Attended the American Society of Neurochemistry Annual Meeting, held in Chicago, Illinois.

April 25-29, 1989 - Attended the International Society for Neurochemistry meeting held in Algarve, Portugal.

Committees:
KUMC:
- Director, Ralph L. Smith Research Center (July 1, 1988 - Jan. 22, 1989)
- Coordinator, Neurotoxin Research Group
- Member, International Cell Biology Program (KU-Valencia) Committee
- Scrivener-Scribe, Department of Physiology

National:
- Reviewer, Research Application for Alberta Heritage Foundation for Medical Research, Canada.
- Member, Scientific Advisory Board, Eunice Shriver Center, Waltham, MA
- Scientists' Institute for Public Information (Media Resource Service, New York, NY)
- Member, Advisory Committee for Professor F.O. Schmitt autobiography (M.I.T.)
- Ad hoc research application reviewer, National Science Foundation

Editorial and Grant Reviews:
- Member, Scientific Advisory Boards of the Encyclopedia of Neuroscience and the Encyclopedia of Neuroscience Year Book, published by Birkhauser Verlag.
- Ad hoc reviewer for Bioelectromagnetics

Seminars Presented:
- September 14, 1988 - Presented a seminar entitled "Brain Regional Metabolic Activity Associated with Seizures" to the Department of Physiology and Cell Biology, University of Kansas, Lawrence.
- September 23, 1988 - Presented a seminar entitled "Retina is a Target Tissue for Organo-phosphorus" to the Heart of American Vision Group at the University of Kansas Medical Center.
- April 17, 1989 - Presented a seminar entitled "Brain Regional Metabolism Associated with Chemically Induced Seizures" at the University of Murcia in Murcia, Spain.
- April 19, 1989 - Presented a seminar entitled "Brain Regional Metabolism Associated with Chemically Induced Seizures" at the University of Alicante in Alicante, Spain.
- April 24, 1989 - Presented a seminar entitled "Brain Regional Metabolism Associated with Chemically Induced Seizures" at the Autonoma University of Madrid in Madrid, Spain.

Academic Honors:
- Elevated to Professor of Physiology Emeritus, July 1, 1988
- Invitation to be consultant on neuroscience, M.I.T., July 1989
- Invitation to present paper at Medical Defense Bioscience Review, Johns Hopkins University.
Teaching activities:
  Physiology 388
    3 hours lecture - Muscle Physiology
  Medical Physiology - Physiology 800
    12 - 2 hour Conferences
  Ph.D. Thesis Committees
  Joel Stiles, Department of Physiology

Trainees:
  Lance Saville - Medical Student (Dr. Nelson supervisor)
  Bryan Sippy - Medical Student (Dr. Pazdernik supervisor)
  Michael Har'dt - Summer Research Student (Simpson College, Iowa)
  Rachel Spratt - Summer Research Student (Swarthmore College)
  Elizabeth Simons - Summer Research Student (Drury College)
  Nickolaus McFarland - Summer Research Student (Univ. of Chicago)

Peter G. Smith, Ph.D., Associate Professor

Meetings Attended:
  September 28 - October 1, 1988 - Attended and presented a paper at the 42nd
  Annual Fall Conference and Scientific Sessions of the Council for High
  Blood Pressure Research of the American Heart Association held in San
  Francisco, CA.

Committees:
  Member, MRRC Neurobiology Search Committee

Editorial and Grant Reviews:
  Ad hoc consultant to NIH Neurology B study section, June 12-14, 1989

Seminars presented:
  April 24, 1989 - Presented a departmental seminar entitled "Reorganization of
  sympathetic pathways in the developing rat".

Teaching activities:
  Medical Physiology
    2 hours lecture - Neural Control of Circulation
    8 conferences
    6 laboratory sessions
  Medical Neuroscience
    2 hours lecture - Autonomic Nervous System
    3 laboratory sessions
    1 review session
  Physiology 388
    5 hours lecture - Respiratory Physiology

Trainees:
  Preeti Venkataraman, M.D., Postdoctoral Fellow
  Hemalatha Reddy, M.D., Postdoctoral Fellow
  Terri Hoffman, Summer student, Drury College
  Chad Sharp, Summer medical student
Meetings Attended:
July, 1988 - Attended the Reproductive Tract Biology Gordon conference held in Wolfeboro, New Hampshire
June, 1989 - Attended the 71st Annual Meeting of the Endocrine Society held in Seattle, Washington

Committees:
Departmental:
Member, Graduate Student Advisory Committee
Member, Molecular Biologist Search Committee

Local:
Member, KUMC Medical School Research Committee
Member, Dissertation Committee for Carla Green (Biochemistry)
Member, Dissertation Committee for Sandy Elliott (Physiology)
Member, Dissertation Committee for Cathy Sagrillo (Physiology)

National:
Member, Program Committee for a symposium in honor of Dr. Howard A. Bern entitled "Cellular signals controlling uterine function", Wichita, KS

Editorial Reviews:
ad hoc reviewer for - Endocrinology
- Biology of Reproduction
- Journal of Reproduction and Fertility
- Molecular Endocrinology
- Developmental Biology

Seminars presented:
February, 1989 - Presented a seminar entitled "Placental prolactins: tools for monitoring placental morphogenesis" to the Department of Biochemistry, KUMC.

Teaching activities:
Medical Physiology
8 hours lecture
13 conferences
4 laboratory sessions
Physiology 705
10 hours lecture - Endocrinology
Physiology 808 - Graduate Course
4 hours lecture
Physiology 809 - Graduate Course
6 hours lecture
Anatomy 854
1 hour lecture
National Board Review
1 hour lecture - Endocrinology

Trainees:
Dr. Santanu Deb - Postdoctoral Fellow
Dr. Wendy Jo Campbell - Postdoctoral Fellow
Dr. Kazuyoshi Hashizume - Postdoctoral Fellow
Teresa Faria - Graduate Student (Special Studies)
Timothy Youngblood - Graduate Student (Physiology)
Phillip Owens - Summer Undergraduate Student
Jason Robinson - Summer Undergraduate Students
Lawrence P. Sullivan, Ph.D., Professor

Meetings Attended:
- December, 1988 - Attended American Society of Nephrology meeting held in San Antonio, Texas and presented a poster
- March, 1989 - Attended the Federation of American Societies for Experimental Biology meetings held in New Orleans, LA and presented a poster

Committees:
Departmental:
- Member, Graduate Committee
- Member, Dissertation Committee, Robert Leadley

Local:
- Vice-President, Kidney and Urology Research Center
- Chairman, Grad. School M.D.-Ph.D. Scholarship Committee (1/1/88-1/1/89)
- Member, Faculty Assembly Steering Committee
- Member, Smoke-Free Task Force
- Chairman, Renal Journal Club

National:
- Member, Nominating Committee, Renal Section, American Physiological Soc.

Editorial and Grant Reviews:
- Ad hoc reviewer - American Journal of Physiology
- Toxicology and Applied Pharmacology

Teaching Activities:
Medical Physiology
- 10 hours lecture - Renal Physiology
- 12 hours problem sessions
- 12 conferences
- 5 laboratory sessions

Physiology 705
- 8 hours lecture

Physiology 820
- 32 hours lecture and discussion

Merrill Tarr, Ph.D., Professor

Committees:
- Peer Research Review Committee of the American Heart Association, Kansas Affiliate

Editorial and Grant Reviews:
- Ad hoc reviewer for American Journal of Physiology

Seminars presented:
- April 10, 1989 - Presented a seminar entitled "Advances in Cardiovascular Medicine" to the Atchison Soroptimists Club

Teaching Activities:
Medical Physiology
- 10 hours lecture
- 4 review sessions approx. 2 hours each
- 12 conference sessions approx. 2 hours each
- 5 laboratories

Physiology 705 - Course Director
- 8 hours lecture
- 1 hour review

National Board Review
- 1 hour lecture
Paul F. Terranova, Ph.D., Professor

Meetings Attended:
July 30-August 1, 1988 - Attended the VII Ovarian Workshop held at the University of Puget Sound in Tacoma, Washington
August 1-4, 1988 - Attended the 21st annual meeting of the Society for the Study of Reproduction held in Seattle, Washington
June 21-24, 1989 - Attended the 71st annual meeting of The Endocrine Society held in Seattle, Washington

Committees:
Local:
Chairman, Faculty-Student Relations Committee
Member, AOA Outstanding Teacher Selection Committee
Member, Transition Team, MRRC
Member, R & D Committee, V.A. Medical Center, KCMO
Member, Search Committee, MRRC-Neurobiology Faculty Position

National:
Member, Reproductive Biology Study Section NICHD (ad hoc)
Member, Physiological Processes Panel of NSF
Member, Board of Directors (1987-90), Soc. for the Study of Reproduction
Member, Planning Committee, Society for the Study of Reproduction
Member, Editorial Board, Endocrinology

Editorial and Grant Reviews:
Journal of Reproduction and Fertility
Endocrinology
Biology of Reproduction
Medical Journal of Jordan
American Journal of Physiology

Honors:
Invited as regular member to Reproductive Biology Study Section, 1989-1993.
Invited to speak at Serono Symposium on Growth Factors in the Reproductive Tract, April 1990, Savannah, Georgia.
Invited to speak at Mid-Atlantic Reproduction and Toxicology Association, Summit, New Jersey, October 1989.

Teaching Activities:
Medical Physiology
12 conferences approx. 2 hours each
4 laboratories, 2-4 hours each
Physiology 808-809 - Course Coordinator
10 hours lecture

Trainees:
Postdoctoral:
Maria Sancho-Tello, M.D., Ph.D.
Katherine Roby, Ph.D.
Kim Ringer, M.D.

Graduate Students:
John Brannian - Graduated May '89
Katherine Roby - Graduated May '89
Toni Clinton

Undergraduate students:
David Horst, summer 1988
Susan Hoffman, summer 1989

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John W. Trank, Ph.D., Professor

Committees:
Departmental:
Electronic shop supervisory committee

KUMC:
Acting Chairman, Faculty Assembly Intercampus Liaison Committee
Member, Faculty Assembly Steering Committee Council
Member, Information Resources Committee

Local:
Member, Biomedical Engineering Technician Advisory Committee, Johnson County Community College
Member, Board of Directors Greater Kansas City Div., American Heart Association
Member, Board of Directors, American Heart Association, Kansas Affiliate
Chairman, AHA Kansas Affiliate Land Selling Committee

National:
Representative to Great Plains Regional Heart Committee, American Heart Association

Honors:
Consultant to Interex Div. of Merck Industries, Lawrence, Kansas

Teaching Activities:
Medical Physiology
7 hours lecture - Electrocardiography, Hemodynamics, Blood Pressure Regulation
12 conferences (24 hours)
4 lab sessions (24 hours)
Laboratory management for all Medical Physiology Laboratories

Medical Neuroscience
2 hours lecture - Optics
4 hours lab session

Physiology 388
8 hours lecture - Cardiovascular Physiology

Physiology 828 - Instrumentation II
15 contact hours

Trainees:
Robert Johnson, M.D. (12/1/88-3/1/89)

Dennis P. Valenzeno, Ph.D., Associate Professor

Meetings Attended:
November 19-20, 1988 - Attended the 46th Council Meeting of the American Society for Photobiology, Chicago, IL.

Committees:
Departmental:
Member, Graduate Committee

Local:
Member, Medical Faculty Steering Committee
Member, Health Careers Pathways Program Advisory Committee
Departmental Representative to the Information Resources Committee

National:
Member, Education Committee American Society for Photobiology
Member, Publications Committee, American Society for Photobiology
Member, Public Affairs Committee, American Society for Photobiology
Member, Governing Council, American Society for Photobiology

Editorial Reviews:
  ad hoc reviewer - Photochemistry and Photobiology
  ad hoc reviewer - Journal of Photochemistry and Photobiology
  ad hoc reviewer - National Science Foundation

Seminars Presented:
  March 20, 1989 - Presented a departmental seminar entitled "Photosensitized Modification of Cell Membranes and Cardiac Electrophysiology"

Honors:
  Director of the Organizing Committee for 1990 International Training Course in Photobiology
  Invited to write a chapter on Membrane Photomodification in CRC Focus on Photochemistry
  Editor of the American Society for Photobiology Newsletter.

Teaching Activities:
  Medical Physiology
    6 hours lecture
    13 conferences
    4 laboratories
  Physiology 388
    8 hours lecture
    National Board Review
    45 minute lecture
  Health Careers Pathways Program
    6 hours lecture
    3 hours other class time
  Meet the Mentor Day - Johnson County Community College
    2 hours advising, Grades 4-12

James L. Voogt, Ph.D., Professor

Meetings Attended:
  November 13-18, 1988 - Attended Meeting of the Society for Neuroscience held in Toronto, Canada
  June 21-24, 1989 - Attended the Annual Endocrine Society Meeting held in Seattle, Washington

Committees:
  Departmental:
    Member, Graduate Affairs Committee
  Local:
    Chairman, Steering Committee, School of Medicine, KUMC
    Member, Assembly Steering Committee, Institutional Member, Search Committee for Director of MRRC
    Member, IACUC, Institutional Member, Health Career Pathways Program Advisory Committee
    Member, Dean's Advisory Committee
    Member, M.D./Ph.D. Advisory Committee and Curriculum Subcommittee
    Member, MRRC Advisory Committee and Space Subcommittee
    President elect, KUMC Sigma Xi Chapter
    Member, Doctoral Committees for 10 graduate students
Editorial and Grant Reviews:
  Editorial Board - Endocrinology
  ad hoc reviewer - PSEBM
  - Neuroendocrinology
  - Journal of Neuroendocrinology

Teaching Activities:
  Medical Physiology
    12 conferences
    4 laboratories
  Physiology 388 (Course director)
    8 hours lecture
  Physiology 808 - Graduate Endocrinology Course
    12 hours lecture
  Physiology 809 - Graduate Endocrinology Course
    9 hours lecture

Trainees:
  Sandy Elliott - graduate student
  Cathy Sagrillo - graduate student
  Joanne Mathiasen - graduate student
  Lydia Arbogast, Ph.D. - Postdoctoral Fellow
  Anahita Mistry, Ph.D. - Postdoctoral Fellow
  Gabriela Vidal, M.D. - Postdoctoral Fellow
Chairman's Report

This has been an especially auspicious year for the Department of Physiology. The results can be summarized in several categories.

Teaching. The department is proud that five students completed their Ph.D. degrees in Physiology in the past year: a bumper crop with all going on to post-doctoral fellowships. In the next few months at least two more graduate students will depart, depleting the number of students in the department to the lowest figure in years. Several surveys indicate that the number of faculty retirements will increase exponentially in the mid 1990s, thus breaking the log jam that has existed over the past decade. This relieves the pressure on the job market but the bleak funding situation at NIH will still act as a deterrent to recruiting graduate students. Hence, over the years, a stable population of 15-20 physiology students will still keep us on course.

We are all dismayed by the number of medical students failing Part I of the Boards and the disconcerting number who failed the physiology portion (and other first year courses). This is perplexing because the percentage score in the medical physiology course has remained unchanged over the past 13 years at 74 ± 2%. Is the faculty "overloading" students with too much extraneous material? Has there been a shift in student attitudes and priorities compared to a generation ago? Are we accepting sub par students? I wish I knew the answer but it is a troublesome situation.

I have rarely mentioned Physiology's teaching responsibilities to students in Allied Health and Nursing. For one thing, Dr. Tom Imig has been in charge the past two years of a Neurophysiology course taught to 60 Occupational Therapy students. The course is actually taught by our graduate students and this has provided an excellent opportunity to critique their lecture presentations. Response of the O.T. students has been uniformly positive. Another team taught course (also in the fall) is an advanced human physiology course that was coordinated for several years by Dr. Merrill Tarr. Enrollment consists of nursing, dietetic, nurse anesthetists, and P.T. students; it is a graduate level course. The course is now a requirement for the Masters degree in P.T. and consequently as this program expands enrollment will continue to increase.

Faculty & Research. Dr. Fred Samson was "promoted" to emeritus status but can confidently be expected to continue to contribute to the department's welfare. A search is now in progress for Fred's replacement and I am sure that by the next report we will have on board a cell/molecular physiologist whose research emphasizes reproductive or developmental biology. Congratulations to Paul Cheney who has taken Fred's place as Director of the MRRC and retains his department affiliation in Physiology.

The past year the total research dollars in the department has passed the million dollar mark (direct and indirect). The disquieting feature is the increasingly difficult funding situation at NIH. This is of great concern and an area that has not received adequate attention by the administration.
Other indications of the vigor of the department's research efforts are the number of papers published or in press in top notch peer reviewed journals. I am especially pleased that all faculty are coauthors on at least one paper. Our seminar series continues to flourish as evidenced by the diversity of disciplines represented and the number of foreign speakers.

Service. It is gratifying to note the number of Physiology faculty participating in the governance of KUMC. An important faculty responsibility is to act as a good citizen by serving on important committees; Physiology is more than contributing to this vital function. During the past year, six faculty members served on NIH or NSF study sections, either as appointed or ad hoc participants. This is indeed a record to be proud of.

All in all, this has been a year of continued growth and development. It's nice to know that we haven't stagnated and I'm confident that the next year will turn out as well.