Department of

Pharmacology and Toxicology

2000

Annual Report

Department of Pharmacology and Toxicology

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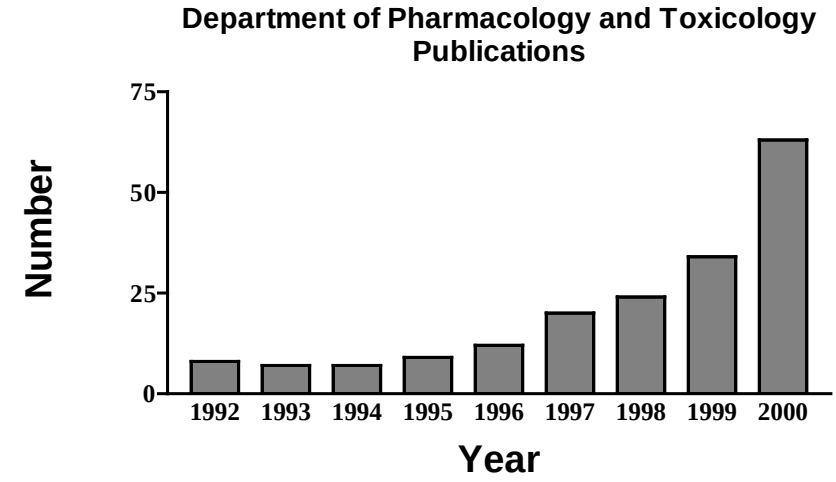
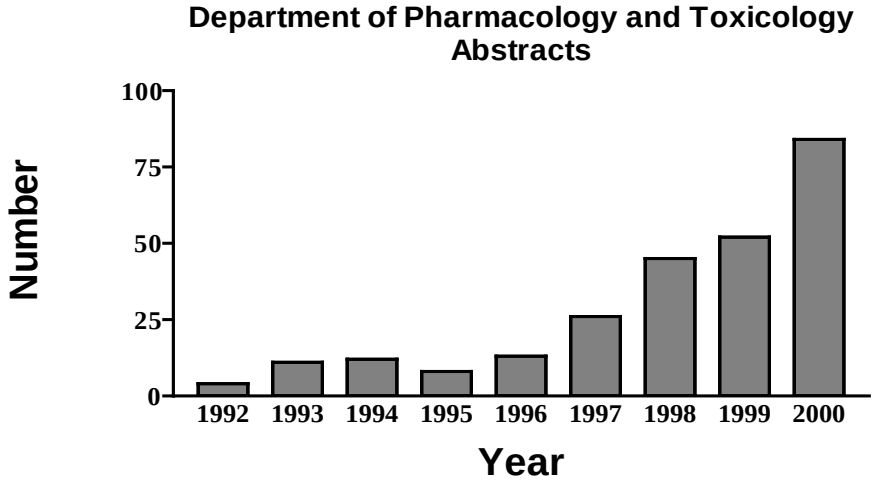
I. Chairman's Summary

The first year of the new millennium will be remembered as a year of substantially increased efforts and development in graduate education, both within the Department and within the University as a whole. A major objective of the University of Louisville's Challenge for Excellence includes a shift in emphasis from high access undergraduate studies to more focussed efforts in research scholarship and graduate education. All graduate programs in the School of Medicine were asked to set ambitious enrollment management plans requiring substantial growth in the number of graduate students. Under the leadership of Dr. William Pierce, the new Director of our graduate program, the Department held a major retreat focusing on graduate education in January. As part of the strategic plans formulated at that retreat, the Department accelerated its efforts to form partnerships with faculty in clinical departments and institutes. The Center for Genetics and Molecular Medicine continues to be administratively located within the Department. Six new faculty with appointments in the James Graham Brown Cancer Center (**John W. Eaton, PhD, W. Glenn McGregor, MD, Donald M. Miller, MD, PhD,** and **Wolfgang Zacharias, PhD**), the Kosair Children's Research Institute (**Paul N. Epstein, PhD**), and the Birth Defects Center (**M. Michele Pisano, PhD**) were added to the Department of Pharmacology and Toxicology over the year. The new faculty brought exceptional research expertise and opportunities for the students in the Department graduate program. Their specific research interests are described in the Faculty/Research Descriptions (pages 3-8).

Other implementations of the strategic plan included curricular revisions in the PhD program, and the identification of two pathways for the MS program; a laboratory research track and an academic research track. Intensified recruitment efforts led to the addition of eight new students into the graduate program. Another important strategy was completion of a Department Conference Room suitable for graduate student seminars and committee meetings. Much of the year was spent in renovation of a new Peter K. Knoefel Conference Room located near the Department office. Thanks to the efforts of many individuals within the Department and Physical Plant, the state-of the art Peter K. Knoefel Conference Room hosted the First Annual William J. Waddell Seminar in January 2001.

The University of Louisville conducted a major reallocation over the year. This strategy benefited the Department through enhanced faculty, staff, and graduate student salaries. The School of Medicine initiated a common recruitment gateway for graduate students, named Integrated Programs in the Biomedical Sciences (IPIBS). In other notable events, Chris States and Glenn McGregor of our Department hosted a successful Midwest DNA Repair Conference in May. One of our most distinguished alumni, Dr. Ray Woosley, Professor and Chairman of the Department of Pharmacology at Georgetown University School of Medicine presented the second annual KC Huang Memorial Seminar in November. Dr. Bruce Temple from Harvard University School of Public Health presented his work as the Burroughs Wellcome Visiting Professor in the Basic Medical Sciences. Dr. Woosley's seminar was in collaboration with the Center for Genetics and Molecular Medicine; Dr. Temple's seminar was in collaboration with the Department of Biochemistry and Molecular Biology.





As this report delineates, faculty, staff, students, publications, and research funding were all increased substantially this year. The Department of Pharmacology and Toxicology continues to grow through implementation of our strategic plan to achieve the University of Louisville's Challenge for Excellence.

Sincerely,

David W. Hein, Ph.D.
Peter K. Knoefel Professor and Chairman

II. Mission Statement

The Department of Pharmacology and Toxicology is committed to academic excellence and to the attainment of regional, national, and international recognition for the quality of its educational, research, and service activities. Guided by the University of Louisville Challenge for Excellence to become a preeminent metropolitan research university, the Department Strategic Plan will focus on accomplishment of five broad objectives:

- Provide instruction in pharmacology and toxicology of the highest quality for the education and preparation of medical, dental, nursing, and other health care professional students. Emphasis will be placed on the fundamental principles necessary for life-long learning and the essential knowledge required for rational, effective, and safe use of drug therapy.

- Advance biomedical knowledge through active contribution to high quality research and other scholarly activities, particularly in pharmacology and toxicology and other areas of focus within the University of Louisville Challenge for Excellence.

- Provide high quality research and educational experiences in pharmacology and toxicology for the education and training of future biomedical scientists who can provide and advance biomedical education, research, and service.

- Provide instruction of the highest quality in pharmacology and toxicology that is appropriate for students at the undergraduate, graduate, and postgraduate levels.

- Provide high quality service to the School of Medicine, the Health Sciences Center, the University, the people of Louisville and the surrounding region, the Commonwealth of Kentucky, professional organizations, the nation, and the world.

III. Faculty/Research Descriptions (Primary and joint appointments)

George R. Aronoff, M.D. (Indiana University)
Professor

Effects of uremia on drug disposition in humans; drug nephrotoxicity and renal drug metabolism, artificial intelligence.

Frederick W. Benz, Ph.D. (University of Iowa)
Professor

Biochemical pharmacology and toxicology; biochemical mechanisms of drug action and toxicity.

Laurence A. Carr, Ph.D. (Michigan State University)
Professor

Biochemical neuropharmacology; functional role of brain biogenic amines; interaction of brain neurotransmitters with peripheral immune system.

Theresa S. Chen, Ph.D. (University of Louisville)
Professor

Biochemical toxicology; role of glutathione in aging toxicology; general and specific toxicity of environmental pollutants.

Nicholas A. Delamere, Ph.D. (University of East Anglia)
Professor

Electrolyte transport mechanisms in epithelia; second messenger regulation of aqueous humor secretion processes; the role of ion transport mechanisms in preserving transparency of the ocular lens.

John W. Eaton, Ph.D. (University of Michigan)
Professor

Biomaterial-mediated inflammation and fibrosis; sub-endothelial glycochelates, transition metals and diabetic neuropathy; cellular and molecular basis of iron toxicity

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Paul N. Epstein, Ph.D. (Baylor College of Medicine)
Professor
Carol B. McFerran Endowed Chair in Pediatric Diabetes Research

Development of transgenic models for the study of causes and complications of diabetes, and the production of mice that are more resistant to diabetes by introducing genes to protect from oxidative stress.

David Gozal, M.D. (Hebrew University of Jerusalem)
Professor
Children's Hospital Foundation Pediatric Research Chair

Signal transduction mechanisms underlying ventilatory response to hypoxia; neuronal adaptions to intermittent hypoxia: growth factors, intracellular signaling, and genomic implications.

Evelyne Gozal, Ph.D. (University of Southern California)
Assistant Professor

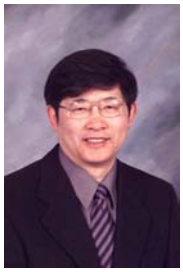
Signal transduction pathways involved in neuronal cell survival and neuronal cell death during hypoxia; cellular mechanisms underlying brain adaptation to chronic and intermittent hypoxia; identification of the kinases and transcription factors activated by hypoxia, leading to gene induction and to adaptation to oxygen deprivation.

David W. Hein, Ph.D. (University of Michigan)
Peter K. Knoefel Professor and Chairman

Molecular pharmacogenetics and epidemiology. Genetic predisposition to cancer and drug toxicity.

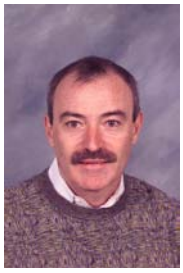
Harrell E. Hurst, Ph.D. (University of Kentucky)
Professor

Analytical toxicology and kinetics with emphasis on qualitative and quantitative techniques, including gas chromatography, high pressure liquid chromatography and GC/mass spectrometry.



Y. James Kang, Ph.D. (Iowa State University)
Associate Professor

Molecular and cardiac toxicology. Transgenic and knock-out animal models to study oxidative injury and antioxident systems in the heart. Biological functions and toxicological significance of metallothionein and glutathione in vivo.



W. Glenn McGregor, M.D. (University of Michigan)
Associate Professor

Molecular biology of DNA damage, repair and mutagenesis; molecular mechanisms of mutagenesis induced by model carcinogens; molecular mechanisms of replication of DNA templates containing well-defined site specific damage.

Donald M. Miller, M.D., Ph.D. (Duke University)
Professor
James Graham Brown Foundation Chair

Molecular and clinical oncology; modulation of oncogene expression; triplex DNA based gene therapy; treatment of melanoma.

Frederick N. Miller, Ph.D. (University of Cincinnati)
Professor

Macromolecular permeability in the microcirculation.

Steven R. Myers, Ph.D. (University of Kentucky)
Associate Professor

Drug metabolism, metabolism of xenobiotics and chemical carcinogens; use of hemoglobin as biomarker in exposure to xenobiotics.

Donald E. Nerland, Ph.D. (University of Kansas)
Professor

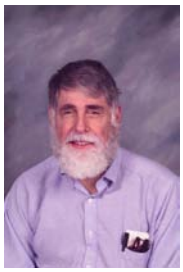
Biochemical toxicology; metabolism of drugs and environmental pollutants.

William M. Pierce, Jr., Ph.D. (University of Louisville)
Professor

Drug design and organ targeting strategies; novel drugs for treatment of osteoporosis; mechanisms of bone formation and resorption; proteomic analysis and study of structure and function of biomolecules and xenobiotics using mass spectrometry.

M. Michele Pisano, Ph.D. (Thomas Jefferson University)
Associate Professor

Molecular development toxicology; gene-environment interactions in normal and abnormal embryonic development; growth factor directed cellular signal transduction in embryonic cell growth and differentiation.



George C. Rodgers, Jr. M.D., Ph.D. (Yale University, Ph.D.; State University of New York, M.D.)
Professor

Toxicokinetics in drug overdoses and pharmacokinetics in pediatric disease states.

Peter P. Rowell, Ph.D. (University of Florida)
Professor

Neuropharmacology; effect of drugs on brain neurotransmitters and receptors.

Zhao-Hui (Joe) Song, Ph.D. (University of Minnesota)
Assistant Professor

Molecular pharmacology; cloning and functional characterization of novel G protein-coupled receptors; molecular mechanisms of action and structure-function relationships of cannabinoid (marijuana) receptors.

J. Christopher States, Ph.D. (Albany Medical College)
Associate Professor

Molecular biology and molecular genetics of DNA damage and repair in humans

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Janice E. Sullivan, M.D. (University of Minnesota)
Assistant Professor

Clinical pharmacology with a focus on developmental pharmacokinetics and pharmacodynamics.

Leonard C. Waite, Ph.D. (University of Missouri)
Professor

Endocrine pharmacology; mechanism of action of hormones; pharmacological modulation of hormone action; mineral homeostasis.

Walter M. Williams, M.D., Ph.D. (University of Louisville(
Professor

Studies of drug elimination (metabolism and excretion).

John L. Wong, Ph.D. (University of California-Berkeley)
Professor

Biological chemistry; molecular dosimetry in environmental health; preparation of monoclonal antibodies in biomarker studies.

Wolfgang Zacharias, Ph.D. (Philipps-University Marburg)
Associate Professor

Ribozymes for gene therapy in rheumatoid arthritis; involvement and roles of cathepsins in oral cancers; gene expression profiling with DNA microarray chip technology

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Thom J. Zimmerman, M.D., Ph.D. (University of Illinois, M.D.; University of Florida, Ph.D.)
Professor

Pharmacology of drugs used to treat glaucoma; carbonic anhydrase inhibitors, cholinergic and adrenergic agents.

IV. Personnel

Faculty with Primary Appointments

Benz, Frederick W., Professor; Ph.D., Pharmacology, University of Iowa (1970).

Carr, Laurence A., Professor; Ph.D., Pharmacology, Michigan State University (1969).

Chen, Theresa S., Professor; Ph.D., Pharmacology, University of Louisville (1971).

Hein, David W., Peter K. Knoefel Professor and Chair; Ph.D., Pharmacology, University of Michigan (1982).

Hurst, Harrell E., Professor; Ph.D., Toxicology, University of Kentucky (1978).

McGregor, W. Glenn, Associate Professor; M.D., University of Michigan (1976).

Myers, Steven R., Associate Professor; Ph.D., Pharmacology, University of Kentucky (1986).

Nerland, Donald E., Professor; Ph.D., Medicinal Chemistry, University of Kansas (1974).

Pierce, William M., Jr., Professor and Graduate Program Director; Ph.D., Pharmacology and Toxicology, University of Louisville (1981).

Rowell, Peter P., Professor; Ph.D., Pharmacology and Therapeutics, University of Florida (1975).

Song, Zhao-Hui (Joe), Assistant Professor; Ph.D., Pharmacology, University of Minnesota (1992).

States, J. Christopher, Associate Professor; Ph.D., Molecular Biology and Pathology, Albany Medical College/Union University (1980).

Waite, Leonard C., Professor and Vice Chairman; Ph.D., Pharmacology, University of Missouri (1969).

Williams, Walter M., Professor; Ph.D., Pharmacology, University of Louisville (1970); M.D., University of Louisville (1974).

Faculty with Joint Appointments

Aronoff, George R., Professor of Medicine, and Pharmacology and Toxicology; M.D., Indiana University (1975).

Delamere, Nicholas A., Professor of Ophthalmology and Visual Sciences, and Pharmacology and Toxicology; Ph.D., Membrane Physiology and Biophysics, University of East Anglia, Norwich, England (1976).

Eaton, John W., James Graham Brown Professor of Cancer Biology, Department of Medicine, and Professor of Pharmacology and Toxicology; Ph.D., Biological Anthropology and Human Genetics, University of Michigan (1969).

Epstein, Paul N.* Carol B. McFerran Chair in Pediatric Diabetes Research and Professor of Pediatrics, and Pharmacology and Toxicology; Ph.D., Pharmacology, Baylor College of Medicine (1981).

Gozal, David* Children's hospital Foundation Pediatric Research Chair, Professor of Pediatrics, and Pharmacology and Toxicology; M.D., Hebrew University of Jerusalem, Hadassah Medical School (1979).

Gozal, Evelyne* Assistant Professor of Pediatrics, and Pharmacology and Toxicology; Ph.D., Toxicology, University of Southern California (1997).

Kang, Y. James* Associate Professor of Medicine, and Pharmacology and Toxicology; Ph.D., Cell Biology and Zoology, Iowa State University (1989).

Miller, Donald M., James Graham Brown Professor of Oncology, and Professor of Pharmacology and Toxicology; M.D., Duke University (1973); Ph.D., Biochemistry, Duke University (1973).

Miller, Frederick N., Professor of Physiology and Biophysics, and Pharmacology and Toxicology; Ph.D., Pharmacology, University of Cincinnati (1971).

Pisano, M. Michele, Associate Professor of Molecular, Cellular and Craniofacial Biology; Ph.D., Anatomy, Thomas Jefferson University (1985).

Rodgers, George C., Jr., Professor of Pediatrics, and Pharmacology and Toxicology; Ph.D., Organic Chemistry, Yale University (1964); M.D., State University of New York (1975).

Sullivan, Janice E., Assistant Professor of Pediatrics, and Pharmacology and Toxicology; M.D., University of Minnesota (1988).

Wong, John L., Professor of Chemistry, and Pharmacology and Toxicology; Ph.D., Chemistry, University of California at Berkeley (1966).

Zacharias, Wolfgang, Associate Professor of Medicine (Oncology), and Pharmacology and Toxicology; Ph.D., Biochemistry, Philipps-University, Marburg, Germany (1980).

* Partial salary from Department of Pharmacology and Toxicology

Zimmerman, Thom J., Professor of Ophthalmology and Visual Sciences, and Pharmacology and Toxicology; Ph.D., Pharmacology, University of Florida (1976); M.D., University of Illinois (1968). [Emeritus appointment January 1, 2001.]

Faculty with Associate Appointments

Bhatnagar, Aruni, Professor of Medicine; Ph.D., Chemistry, University of Kanpur, India (1986).

Brier, Michael E., Associate Professor of Medicine; Ph.D., Industrial and Physical Pharmacy, Purdue University (1986).

Edmonds, Harvey L., Professor of Anesthesiology; Ph.D., Pharmacology, University of California at Davis (1974).

Jumblatt, James E., Professor of Ophthalmology and Visual Sciences; Ph.D., Biological Sciences, Columbia University (1975).

Lang, Calvin A., Professor of Biochemistry and Molecular Biology; Sc.D., Biochemistry and Nutrition, Johns Hopkins University (1954). [Retired June 30, 2000.]

Rigor, Benjamin, Professor of Anesthesiology; M.D., University of the East Ramon Magsaysay Memorial Medical Center (1962).

Ross, Mitchell P., Associate Professor of Pediatrics; M.D., Oregon Health Sciences University (1985). [Resigned May 16, 2000.]

Schurr, Avital, Professor of Anesthesiology; Ph.D., Biochemical Pharmacology, Ben Gurion University, Beer Sheva, Israel (1977).

Faculty with Emeritus Appointments

Dagirmanjian, Rose, Professor Emerita; Ph.D., University of Rochester (1960).

Darby, Thomas D., Adjunct Professor Emeritus; Ph.D., Medical College of South Carolina (1957).

Jarboe, Charles H., Professor Emeritus; Ph.D., University of Louisville (1956).

Scharff, Thomas G., Professor Emeritus; Ph.D., University of Rochester (1956).

Waddell, William J., Professor and Chair Emeritus; M.D., University of North Carolina (1955).

Faculty with Adjunct Appointments

Epstein, Paul N., Adjunct Associate Professor of Pharmacology and Toxicology; Ph.D., Baylor College of Medicine (1981).

Friedman, Marvin A., Adjunct Professor of Pharmacology and Toxicology; Ph.D., Massachusetts Institute of Technology (1967).

Gruber, Scott A., Adjunct Associate Professor of Pharmacology and Toxicology; M.D., SUNY Downstate Medical School (1983); Ph.D., University of Minnesota (1991).

Hayes, A. Wallace, Adjunct Professor of Pharmacology and Toxicology; Ph.D., Auburn University (1967).

Holthouser, Michael G., Adjunct Assistant Professor of Pharmacology and Toxicology; M.D., University of Kentucky (1971).

Horowitz, Stuart, Adjunct Assistant Professor of Pharmacology and Toxicology; Ph.D., University of Rochester (1986).

Lewis, Richard, Adjunct Assistant Professor of Pharmacology and Toxicology; M.D., Case Western Reserve University (1980).

Matyunas, Nancy, Adjunct Instructor of Pharmacology and Toxicology; Pharm.D., University of Utah (1983).

Nicholson, John A., Adjunct Assistant Professor of Pharmacology and Toxicology; D.M.D., University of Louisville (1979); Ph.D., University of Louisville (1968).

Wedlund, Peter A., Adjunct Associate Professor of Pharmacology and Toxicology; Ph.D., Pharmaceutical Sciences, University of Washington (1981).

New Faculty Appointments

Eaton, John W., Ph.D., Professor, effective December 1, 2000.
Epstein, Paul N., Ph.D., Professor, effective December 15, 2000.
McGregor, W Glenn, M.D., Associate Professor, effective February 1, 2000.
Miller, Donald M., M.D., Ph.D., Professor, effective July 1, 2000.
Pisano, M. Michele, Ph.D., Associate Professor, effective August 1, 2000.
Zacharias, Wolfgang, Ph.D., Associate Professor, effective October 1, 2000.

Staff

Beauerle, Brian, Research Technologist I
Burke, Tom, Research Technologist II

Cai, Jian, Technical Director, Mass Spectrometry Lab
Carpenter, Sharon; Executive Secretary
Doll, Mark; Research Associate
Greca, Edie; Business Manager III
Hein, Joshua, Student Assistant
Lewis, Stephanie; Lab Research Technician III
Logsdon, Paula, Student Assistant
McNeely, Sam, Research Technologist II
Nosjean, Jeremy; Student Assistant
Riddell, Amy, Student Assistant
Rutledge, Rachel; Student Assistant
Rubin-Teitel, Heddy; Program Assistant III
Smith, Aaron, Student Assistant
Smith, Leo, Student Assistant
Smith, Ned; Senior Research Technologist
Tucker, Alison, Lab/Research Technician III
Tucker, Lindsay, Lab/Research Technician III
Volk, Kelly; Lab Research Technician III
Xiao, Gong H., Research Associate

Graduate Students

Doctoral Program

Brewer, Bradley G.
Campian, Cristian
Chen, Hainan
Clark, Denise
Elsherif, Laila
Fretland, Adrian
Fu, Xin
Hartford, April
Hou, Yining
Jacobs, Al (Chip)
Lambert, Jason
Li, Jian
Li, Nina
Nangju, Norma
Neale, Jason
Payne, Scot
Porter, Paul
Shen, Clare
Sun, Xichun
Zhu, Yuanqi

Masters Program

Hennion, John
Khaled, Hana
Modi, Tanvi

Postdoctoral Fellows

Cai, Jian
Feng, Wenke
Jiang, Guo-hui
Meng, Xianweng
Stefan, Mihaela
Wang, Guang-wu
Wang, Ju-Feng
Wu, Huiyun
Webster, Rose
Zhou, Zhan-Xiang
Zhao, Shuang
Zhong, Li-Chun
Zhong, Miao
Zhou, Dan

New Graduate Student Appointments

Chen, Hainan
Clark, Denise
Khaled, Hana
Li, Jian
Li, Nina
Modi, Tanvi
Shen, Clare
Zhu, Yuanqi

Graduations

Fretland, Adrian, Ph.D. (awarded May 2000). Advisor: David W. Hein, Ph.D. Dissertation title: Pharmacogenetics of heterocyclic amine carcinogenesis.

Hartford, April, M.S. (awarded December 2000). Advisor: Nicholas Delamere, Ph.D. Thesis title: Calcium signaling in astrocytes of the optic nerve head; Evidence for a role for NA,K-ATPase Alpha-2.

Neale, Jason, M.S. (awarded December 2000). Advisor: William M. Pierce Jr., Ph.D. A novel bone selective estrogen: A candidiate compound for the treatment of osteopenia.

V. Publications (salaried faculty and staff)

Papers

1. Alea OA, Czapla MA, Lasky JA, Simakajornboon N, Gozal E, and Gozal D (2000) PDGF-β receptor expression and ventilatory acclimatization to hypoxia in the rat. *Am.J.Physiol Regul.Integr.Comp Physiol* **279**:R1625-R1633.

2. Bandla HP and Gozal D (2000) Dynamic changes in EEG spectra during obstructive apnea in children. *Pediatr.Pulmonol.* **29**:359-365.

3. Ben Ari J, Gozal D, Dorio RJ, Bowman CM, Reiff A, and Walker SM (2000) Superantigens and cystic fibrosis: resistance of presenting cells to dexamethasone. *Clin.Diagn.Lab Immunol.* **7**:553-556.

4. Cai L, Klein JB, and Kang YJ (2000) Metallothionein inhibits peroxynitrite-induced DNA and lipoprotein damage. *J.Biol.Chem.* **275**:38957-38960.

5. Chen TS, Richie JP, Nagasawa HT, and Lang CA (2000) Glutathione monoethyl ester protects against glutathione deficiencies due to aging and acetaminophen in mice. *Mech.Ageing Dev.* **120**:127-139.

6. Czapla MA, Gozal D, Alea OA, Beckerman RC, and Zadina JE (2000) Differential cardiorespiratory effects of endomorphin 1, endomorphin 2, DAMGO, and morphine. *Am.J.Respir.Crit Care Med.* **162**:994-999.

7. Deitz AC, Zheng W, Leff MA, Gross M, Wen WQ, Doll MA, Xiao GH, Folsom AR, and Hein DW (2000) N-Acetyltransferase-2 genetic polymorphism, well-done meat intake, and breast cancer risk among postmenopausal women. *Cancer Epidemiol.Biomarkers Prev.* **9**:905-910.

8. Donny EC, Caggiula AR, Rowell PP, Gharib MA, Maldovan V, Booth S, Mielke MM, Hoffman A, and McCallum S (2000) Nicotine self-administration in rats: estrous cycle effects, sex differences and nicotinic receptor binding. *Psychopharmacology (Berl)* **151**:392-405.

9. El Mallakh RS, Schurr A, Payne RS, and Li R (2000) Ouabain induction of cycling of multiple spike responses in hippocampal slices is delayed by lithium. *J.Psychiatr.Res.* **34**:115-120.

10. Feltzer RE, Gray RD, Dean WL, and Pierce WM (2000) Alkaline proteinase inhibitor of Pseudomonas aeruginosa. Interaction of native and N-terminally truncated inhibitor proteins with Pseudomonas metalloproteinases. *J.Biol.Chem.* **275**:21002-21009.

11. Ferreira AM, Clemente V, Gozal D, Gomes A, Pissarra C, Cesar H, Coelho I, Silva CF, and Azevedo MH (2000) Snoring in Portuguese primary school children. *Pediatrics* **106**:E64.

12. Gibbs PE, Wang XD, Li Z, McManus TP, McGregor WG, Lawrence CW, and Maher VM (2000) The function of the human homolog of Saccharomyces cerevisiae REV1 is required for mutagenesis induced by UV light. *Proc.Natl.Acad.Sci.U.S.A* **97**:4186-4191.

13. Gozal D and Simakajornboon N (2000) Passive motion of the extremities modifies alveolar ventilation during sleep in patients with congenital central hypoventilation syndrome. *Am.J.Respir.Crit Care Med.* **162**:1747-1751.

14. Gozal D, Gozal E, and Simakajornboon N (2000) Signaling pathways of the acute hypoxic ventilatory response in the nucleus tractus solitarius. *Respir.Physiol* **121**:209-221.

15. Gozal D (2000) Pulmonary manifestations of neuromuscular disease with special reference to Duchenne muscular dystrophy and spinal muscular atrophy. *Pediatr.Pulmonol.* **29**:141-150.

16. Gozal D, Simakajornboon N, Czapla MA, Xue YD, Gozal E, Vlasic V, Lasky JA, and Liu JY (2000) Brainstem activation of platelet-derived growth factor-beta receptor modulates the late phase of the hypoxic ventilatory response. *J.Neurochem.* **74**:310-319.

17. Gozal D, Simakajornboon N, Czapla MA, Xue YD, Gozal E, Vlasic V, Lasky JA, and Liu JY (2000) Platelet-derived growth factor β receptor activation modulates components of the hypoxic ventilatory response. *J.Neurochem.* **74**:310-319.

18. Gozal D (2000) Non-invasive ventilatory support in children. *J.Respir.Dis.for Pediatrician* **2**:47-53.

19. Gozal D (2000) Sleep disorders in children: A new and evolving discipline. *Louisville Med.* **47**:455-456.

20. Gozal D (2000) Obstructive sleep apnea in children.I.Pathophysiology. *Louisville Med.* **47**:457-459.

21. Gozal D (2000) Obstructive sleep apnea in children.II.Clinical diagnosis and associated morbidity. *Louisville Med.* **47**:533-535.

22. Gozal D (2000) Obstructive sleep apnea in children.III.Diagnosis and approach to treatment. *Louisville Med.* **47**:587-591.

23. Gozal D (2000) Obstructive sleep apnea in children. *Minerva Pediatrica* **52**:629-639.

24. Gozal D (2000) New insights into maturation of central components in cardiovascular and respiratory control, in *Sleep and Breathing in Children - A Developmental Approach* (Loughlin GM, Marcus CL, and Carrol JL eds) pp 207-229, Marcel Dekker, Inc., New York.

25. Han S, Rowell PP, and Carr LA (1999) D2 autoreceptors are not involved in the down-regulation of the striatal dopamine transporter caused by alpha-methyl-p-tyrosine. *Res.Commun.Molecul.Pathol.P.* **104**:331-338.

26. Hein DW, McQueen CA, Grant DM, Goodfellow GH, Kadlubar FF, and Weber WW (2000) Pharmacogenetics of the arylamine N-acetyltransferases: A symposium in honor of Wendell W. Weber. *Drug Metab Dispos.* **28**:1425-1432.

27. Hein DW, Grant DM, and Sim E (2000) Update on consensus arylamine N-acetyltransferase gene nomenclature. *Pharmacogenetics* **10**:291-292.

28. Hein DW (2000) N-Acetyltransferase genetics and their role in predisposition to aromatic and heterocyclic amine-induced carcinogenesis. *Toxicol.Lett.* **112-113**:349-356.

29. Hein DW, Doll MA, Fretland AJ, Leff MA, Webb SJ, Xiao GH, Devanaboyina US, Nangju NA, and Feng Y (2000) Molecular genetics and epidemiology of the NAT1 and NAT2 acetylation polymorphisms. *Cancer Epidemiol.Biomarkers Prev.* **9**:29-42.

30. Hou Y and Delamere NA (2000) Studies on H(+)-ATPase in cultured rabbit nonpigmented ciliary epithelium. *J.Membr.Biol.* **173**:67-72.

31. Kang YJ, Zhou ZX, Wu H, Wang GW, Saari JT, and Klein JB (2000) Metallothionein inhibits myocardial apoptosis in copper-deficient mice: role of atrial natriuretic peptide. *Lab Invest* **80**:745-757.

32. Kang YJ, Zhou ZX, Wang GW, Buridi A, and Klein JB (2000) Suppression by metallothionein of doxorubicin-induced cardiomyocyte apoptosis through inhibition of p38 mitogen-activated protein kinases. *J.Biol.Chem.* **275**:13690-13698.

33. Kang YJ, Wu H, and Saari JT (2000) Alterations in hypertrophic gene expression by dietary copper restriction in mouse heart. *Proc.Soc.Exp.Biol.Med.* **223**:282-287.

34. Kirk VG, Morielli A, Gozal D, Marcus CL, Waters KA, D'Andrea LA, Rosen CL, Deray MJ, and Brouillette RT (2000) Treatment of sleep-disordered breathing in children with myelomeningocele. *Pediatr.Pulmonol.* **30**:445-452.

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61. Zhou, Z. Sun, X., and Kang, Y. J. Protection by metallothionein from alcohol liver injury in mice through inhibition of oxidative stress. *Research!Louisville*, 2000.

62. Cai, L., Klein, J. B. and Kang, Y. J. Preventive effect of metallothionein on diabetic cardiomyopathy. *Research!Louisville*, 2000.

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67. K. Grant Taylor, Jason R. Neale, Sujan Singh, Xiaoping Tang, Peter C. Kulakosky, Valentyn V. Tyulmenkov, Leonard C. Waite, Carolyn M. Klinge, and William M. Pierce, Jr. Bone selective estrogens: Estrogen receptor alpha selectivity is a predictor of *in vivo* efficacy. Presented at the annual meeting of the *American Chemical Society - Southeast / Southwest Regions*.

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73. Rowell P.P and Volk K.A. Characterization of nicotine-stimulated 86Rb+ efflux from rat ventral tegmental slices. Neuronal Nicotinic Receptors, *10th Neuropharmacology Conference*, Nov. 2-4, 2000.

74. Z. H. Song and Shuang Zhao. Absence of a conserved proline in the CB2 cannabinoid receptor is crucial for receptor activation. *American Society of Pharmacology and Experimental Therapeutics 2000 meeting*.

75. Shuang Zhao, Patricia H. Reggio, and Z. H. Song. Molecular basis for the CB2 selectivity of a novel C-1 ether of classical cannabinoid. *International Cannabinoid Research Society 2000 Symposium on the Cannabinoids*.

76. Dan Zhou and Z. H. Song. CB1 cannabinoid receptor mediates neurite remodeling in mouse neuroblastoma cell N1E-115. *Research!Louisville 2000*.

77. States, JC and Kaplan, DJ. Induction of XPA by cisplatin in cisplatin resistant ovarian carcinoma cells. *Toxicological Sciences* 54(1):1004, 2000.

78. Porter, PC, Mellon, I and States, JC. Candidate polymorphism in the DNA binding domain of XPA. *Second Annual Midwest DNA Repair Symposium*, Louisville, KY (2000)

79. Jones, JK and States, JC. DNA repair gene expression in ovarian cancer cells. *Research!Louisville*, Louisville, KY, 2000.

80. Porter, PC, Mellon, I and States, JC. Single nucleotide polymorphisms in exons 4, 5 and 6 of the essential nucleotide excision repair gene *XPA*. *Research!Louisville*, Louisville, KY, 2000.

81. Jiang, GH, Skorvaga, M, van Houten, B and States, JC. Specific incision BPDE-DNA adducts with thermal-resistant UVRABC excision nuclease from *B. Caldotenax*. *Research!Louisville*, Louisville, KY, 2000.

82. Reid, K.H., Li, G.Y., Payne, R.S., Schurr, A., Cooper, N.G.F. Early glucose preloading normalizers KCC2 mRNA in the inferior colliculus of the post-ischemic audiogenic seizure-prone rat. *Soc. Neurosci. Abst.* 26:739, 2000.

83. Schurr, A., Payne, R.S., Miller, J.J., Schechter, Y., Rigor, B.M. Vangdate abolishes preischemic hyperglycemia-enhanced neuronal damage in vivo. *Soc. Neurosci. Abst.* 26:764, 2000.

84. Payne, R.S., Schechter, Y., Rigor, B.M., Schurr, A. Vangdate antagonizes corticosterone-enhanced ischemic neuronal damage in vitro. *Soc. Neurosci. Abst.* 26:764, 2000.

VII. Invited Scientific Presentations and Seminars (salaried faculty)

Dr. David Gozal

The Brainstem: MRI/PET Evidence. Keynote Speaker, 18th Annenberg Annual Conference on Sleep Disorders in Infants and Children, 20-22 January 2000, Rancho Mirage CA.

Central Chemoreception: Developmental Aspects. Invited Speaker, C.I.P.P. IV (Congres International Pneumologie Pediatrique), 21-24 February 2000, Nice, France.

Home ventilation. Invited Speaker, C.I.P.P. IV (Congres International Pneumologie Pediatrique), 21-24 February 2000, Nice, France.

Developmental Aspects of Signal Transduction Pathways Underlying Hypoxic Ventilatory Responses. Invited Speaker, 6th World Congress on Sleep Apnea, 12-15 March, 2000, Darling Hatbour Convention Center, Sydney, Australia.

Signal Transduction During Hypoxia in the Nucleus Tractus Solitarii. Invited Speaker, 7th International Symposium on Sleep and Breathing, 16-17 March, 2000, Manly Pacific Parkroyal Hotel, Manly, Australia.

Infantile Apnea: Cardiovascular Interactions. Invited Speaker, 7th International Symposium on Sleep and Breathing, 16-17 March, 2000, Manly Pacific Parkroyal Hotel, Manly, Australia.

Neurocognitive Sequelae of Obstructive Sleep Apnea in Children. Invited Speaker, Pediatric Academic Societies Meeting, May 12-16, 2000, Boston, MA.

Snoring in Children: Is It Really Benign? Grand Rounds, Department of Family and Community Medicine, University of Louisville, 19 May 2000, Louisville, KY.

*Growth Factor Modulation of Hypoxic Ventilatory Response.*Research Seminar, Respiratory Research Group, University of Calgari, 23 June 2000, Calgari, Alberta, Canada.

*Growth Factor Modulation of Hypoxic Ventilatory Response: Implications for Development, Adaptation and Survival.*Research Seminar, Division of Neuroscience and Perinatal Research Group, University of Alberta, 6 June 2000, Edmonton, Alberta, Canada.

Pediatric Sleep Medicine - An Overview. Pediatric/Adult Sleep Medicine for the Technologist, Kentucky Sleep Society, Kramner Auditorium, Norton Healthcare Pavillion, 3 August 2000, Louisville, KY.

P*otential Roles for Growth Factor Receptors within Brainstem Neurons.*Research Seminar, Section of Pediatric Respiratory Medicine, Yale University School of Medicine, 8 September 2000, New Haven, CT.

Pediatric Obstructive Sleep Apnea and its Consequences. Yale University Symposium on Sleep Medicine: An Update for Primary Care Providers, Pediatricians, and Family Physicians, Foxwood Resort and Conference Center, 9 September 2000, Mashantucket, CT.

*Non-Invasive Ventilation in Children.*2nd Pediatric Fellows Conference, American College of Chest Physicians Annual Meeting, 21 October 2000, San Francisco, CA.

NIH Funding and the Clinician-Scientist: The Promised Land. A Panel Discussion on Grant Writing and Review, Jewish Hospital, Bottigheimer Auditorium, November 3, 2000, Louisville, KY.

Apnea in the NICU Graduate: Is the Alarming Trend of Events Justified? Eighth Newborn and Pediatric Symposium, Hyatt Regency, November 10, 2000, Louisville, KY.

Obstructive Sleep Apnea in Children Kentucky Sleep Society 2nd Annual Conference, Keeneland Health Education Center at St. Joseph Hospital, November 18, 2000, Lexington, KY.

Multidisciplinary Approaches to Thematic Research: Interface and Implementation. University of Lyon 1, Departments of Biology and Exercise Sciences, 7 December, 2000, Lyon, France.

Intermittent and Chronic Hypoxia: Differences and Similarities. University of Lyon 1, Departments of Biology and Exercise Sciences, 7 December, 2000, Lyon, France.

The Snoring Child: A Good Reason to Learn your A, B, Zzzz's. Grand Rounds, Dricoll Children's Hospital, 15 December 2000, Corpus Christi, TX.

Dr. Evelyne Gozal

Kinase systems and the Hypoxic Response. Research Conference. Kidney Disease Program. University of Louisville, March 24, 2000.

Neuronal Susceptibility in Intermittent Hypoxia: Yes, No, Maybe? Departmental Seminar. Department of Pharmacology and Toxicology, University of Louisville. October 12, 2000.

Dr. David W. Hein

Post-Tenure Review. Association for Medical School Pharmacology, Sea Island, Georgia, February 2000.

Molecular Genetic Investigations of Prostate Cancer Susceptibility. Center for Environmental and Occupational Health Sciences, University of Louisville, Louisville, Kentucky, April 2000.

The Role of Arylamine N-Acetyltransferases in Genetic Predisposition to Breast Cancer. Symposium on Pharmacogenetics of the Arylamine *N*-Acetyltransferases: A Symposium in Honor of Wendell W. Weber, Annual Meeting of the American Society for Pharmacology and Experimental Therapeutics and the American Society of Biochemistry and Molecular Biology, Boston, Massachussetts, June 2000.

Genetic Predisposition to Breast Cancer-Relationship of N-acetyltransferase Genotypes, Diet, and Smoking. Center for Genetics and Molecular Medicine, University of Louisville, Louisville, Kentucky, September 2000.

Molecular Genetics of the Acetyltransferases: A Role in Genetic Predisposition to Breast Cancer. University of Kentucky College of Pharmacy, Lexington, Kentucky, September 2000.

Role of Acetylation Polymorphisms in Breast Cancer Risk. University of Cincinnati College of Pharmacy, Cincinnati, Ohio, October 2000.

Effect of Nucleotide Substitutions in N-Acetyltransferase-1 (NAT1) on Metabolic Deactivation (N-Acetylation) and Activation (O-Acetylation) of Arylamine Carcinogens: Implications for Cancer Predisposition. Symposium entitled Genetic Predisposition. Presented at Fifth International Symposium on Predictive Oncology and Therapy, Impact of Biotechnology on Cancer, Geneva, Switzerland, October 2000.

Dr. Y. J. Kang

Dec 6, 2000, University of Kentucky, Graduate Center for Nutritional Sciences, Lexington, Kentucky, "Suppression of Copper Deficiency-induced Cardiomyopathy in Metallothionein-overexpressing Transgenic Mice."

July 11, 2000, The Institute of Hygiene and Preventive Medicine of Shenyang, China, **"**Alcoholic liver disease."

June 30, 2000, The 27th Annual Meeting of Japanese Society of Toxicology, Yokohama, Japan, "Novel insights into the antioxidant action of metallothionein in the heart."

June 29, 2000, The 11th Annual Meeting of the Japan Society for Biomedical Research on Trace Elements, Nagoya, Japan, "The role of oxidative stress in copper deficiency-induced cardiomyopathy."

June 27, 2000, National Institute for Environmental Studies, Tsukuba, Japan, "The antioxidant function of metallothionein."

Apr 26, 2000, The 8th Annual Pre-Derby Gastroenterology Conference, Louisville, Kentucky. **"**Alcoholic liver injury: Experimental approaches and clinical implications."

Apr 14, 2000, Invited Lecture, Department of Toxicology, West China University of Medical Sciences, Chengdu, China. "Alcoholic liver diseases and preventive medicine."

Apr 14, 2000, West China University of Medical Sciences, Chengdu, China. "Antioxidant function of metallothionein."

Mar 23, 2000, "*Metallothionein Subcellular Localization and Regulation of Cell Cycle and Apoptosis*" (Chaired by Y. J. Kang and M. P. Waalkes) at the 39th Annual Meeting of Society of Toxicology, Philadelphia, PA. **"**Inhibition by metallothionein of oxidative stress-induced apoptosis."

Mar 19, 2000, Continuing Education Course "*Molecular Approaches to a Comprehensive Understanding of cardiotoxicity*" (Chaired by Y. J. Kang) at the 39th Annual Meeting of Society of Toxicology, Philadelphia, PA. **"**Molecular Approaches to Cardiac Toxicology Research."

Feb 17, 2000, Preventive Medical College of Norman Bethune University of Medical Sciences, Changchun, China. "Molecular medicine research and clinical applications."

Feb 16, 2000, Department of Infectious Diseases, the First Facilitated Hospital, Norman Bethune University of Medical Sciences, Changchun, China. "Alcoholic liver diseases and alternative medicine."

Feb 15, 2000, Department of Hematopointic Disorders, the First Facilitated Hospital, Norman Bethune University of Medical Sciences, Changchun, China. "The antioxidant function of metallothionein: Experimental approaches and clinical implications."

Dr. W. Glenn McGregor

"*Mechanisms of mutation avoidance and induction in human cells*," Graduate Center for Toxicology, University of Kentucky, February 21, 2000.

Dr. Steven R. Myers

"Molecular biomarkers in toxicology and epidemiology," Center for Birth Defects, University of Louisville, December 19, 2000

Dr. William M. Pierce, Jr.

"Bone Targeting - Drug Design and Development". Presented to Department of Biochemistry and Molecular Biology, January 21, 2000.

"Bone Targeted Estrogens". Presented to Institute for Molecular Diversity and Drug Design, University of Louisville, March 13, 2000.

"What can biomolecular mass spectrometry do for me?" Presented to the Department of Ophthalmology and Visual Sciences, University of Louisville, October 4, 2000.

Dr. Peter P. Rowell

"Functional activity of nicotinic receptors in the brain." Va. Commonwealth University Medical Center - Richmond, VA, February 17, 2000.

Dr. Zhao-Hui Song

Molecular pharmacology of cannabinoids, Department of Ophthalmology and Visual Sciences, University of Louisville, February, 2000.

Dr. J. Christopher States

"Genetics of XPA", Center for Genetics and Molecular Medicine, University of Louisville School of Medicine, Louisville, KY, May 9, 2000.

VIII. Research Grants and Contracts (salaried faculty)

Research Grant and Contract Proposals Submitted

	Agency	Budget Requested
Dr. Laurence Carr		
From myths to evidence-based geriatrics: A comprehensive curriculum for medical students, residents, and practicing physicians (project participant) 07/01/01 -–06/30/04	John A. Hartford Foundation	$300,193
Dr. Theresa Chen		
Nutritional modulation of glutathione status and longevity (PI) 06/01/01 - 05/31/02	NIA Pilot Research Grant Program, NIH	$50,000
Dr. David Gozal		
Episodic hypoxia, REM sleep deprivation, and hippocampal function (PI) 06/00 – 06/04	NHLBI	$900,000
PDGF in development of hypoxic ventilatory response (PI) 06/00 – 06/04	NICHD	$969,529
Dr. Evelyne Gozal		
PDGF in development of hypoxic ventilatory response (Co-I); D. Gozal (PI) 06/00 – 06/04	NICHD	$969,529
Dr. David W. Hein		
Pharmacogenetics of drug and carcinogen metabolism (continuation) (PI) 07/01/00 – 06/30/01	NCI	$381,010
Genetic polymorphisms and bladder cell mutagenesis (collaborator); Kent Mitchell (PI) 12/01/00 – 11/30/05	NIH	$1,354, 394

	Agency	Budget Requested
Dr. David W. Hein (cont.)		
Shared instrumentation grant (Co-I); Donald Miller (PI)	NSF	$2;000,000
Shared instrumentation grant (Co-I); James Christensen (PI)	NIH	$146,063
Pharmacogenetics of drug and carcinogen metabolism (supplement) (PI) 07/01/00 – 06/30/02	NCI	$20,442
Biomarkers of maternal and fetal tobacco exposure (Co-I); Steven R. Myers (PI) 04/01/01 – 03/31/04	Philip Morris External Research Program	$2,537,659
Genetic susceptibility to vinyl chloride-induced liver cancer (Co-I); Roland Valdes (PI) 04/01/01 – 03/31/06	NIH	$1,613,840
Molecular basis of cardiac dysfunction in organ donors (Co-I); Thomas Yeh (PI) 04/01/01 – 03/31/06	NIH	$1,784,600
Cancer education grant program (Co-I); Norbert Burzynski (PI) 05/01/01 – 04/30/06	NIH	$356,665
Genetic polymorphisms and bladder cell mutagenesis (Collaborator); Kent Mitchell (PI) 07/01/01 – 06/30/06	NIH	$1,353, 861
The effect of N-acetyltransferase phenotype on nuclear and mitochondrial DNA damage in heterocyclic amine cardiotoxicity (Collaborator); Stephanie J. Webb (PI) 07/01/01 – 06/30/03	AHA Ohio Valley Affiliate	$88,000
Dr. Harrell E. Hurst		
N-(carboxymethyl)valine Hemoglobin Adduct: Marker for Advanced Glycosylation End Product Formation in Diabetes (PI) 04/28/00	Intramural Research Incentive Grant, UofL	$15,000

	Agency	Budget Requested
Dr. Harrell E. Hurst (cont.)		
Metabolic activation of chemical carcinogens (Co-I); Steven R. Myers (PI) 04/01/01 - 03/31/04	NIH	$525,000
β-glucan dendrimers that target the lectin domain of CR3 (Co-I); Gordon D. Ross (PI) 04/01/01 - 03/31/05	NIH	$1,864,152
West Louisville partnership for environmental justice (Co-I); Steven R. Myers (PI) 04/01/01 - 03/31/03	NIH	$400,000
Design of oligosaccharide dendrimers for tumor therapy (Co-I); Gordon D. Ross (PI) 05/01/01 - 04/30/06	NIH	$2,011,164
Biomarkers of maternal and fetal tobacco smoke exposure (Co-I); Steven R. Myers (PI) 04/01/01 – 03/31/04	Philip Morris External Research Program	$2,537,671
Determination of suitability and sensitivity of hemoglobin adducts for quantification of butadiene air pollutant exposure (PI) 11/01/00	Kentucky EPA EPSCoR Committee	$298,367
Dr. Y. James Kang		
Oxidative stress and heart failure by copper deficiency (PI) 04/01/01 – 03/31/06	NHLBI	$1,645,000
Prevention by metallothionein of adriamycin chronic cardiotoxicity (PI) 07/01/01 – 06/30/06	NCI	$1,800,000
Cardiomyopathy induced by marginal copper deficiency (PI) 07/91/91 – 06/30/04	USDA	$300,000
Dr. Glenn McGregor		
DNA replication proteins as potential therapeutic targets (PI) 03/01/01 – 02/28/02	Intramural	$15,000

	Agency	Budget Requested
Dr. Steven R. Myers		
Metabolic activation of chemical carcinogens (PI) 04/01/01 – 03/31/04	NIH	$525,000
Biomarkers of maternal and fetal tobacco smoke exposure (PI) 04/01/00 - 03/31/03	Philip Morris External Research Program	$2,537,671
West Louisville partnership for environmental justice (PI) 04/01/01 - 03/31/03	NIH	$400,000
Epidemiological study of the Paducah, Kentucky gaseous diffusion plant workers (PI) 06/01/01 – 05/31/02 (Preproposal)	NIOSH	$1,750,000
Dr. William M. Pierce, Jr.		
Molecular mechanisms of bone targeted estrogens (PI) 07/01/01 – 06/30/06	NIH	$1,800,000
Bone proteomic analysis (PI) 2001 - 2002 *(Pre-proposal approved - Full proposal invited for Jan 31, 2001 deaadline)*	National Osteopososis Foundation	$57,000
Renal sodium phosphate transporter (Co-I); Eleanor Lederer (PI) 2000 - 2005	NIH	$1,281,260
Cardioprotective effects of ethanol (Co-I); Aruni Bhatnagar (PI) 2001-2004	NIH	$432,000
Analysis of PTH and dopamine receptor signaling in proximal tubules (Co-I); Eleanor Lederer (PI) 2001 - 2005	Veterans Administration	$665,500
Resveratrol responsiveness in mammary and endothelial cells (Co-I); Carolyn M. Klinge (PI) 2001-2002	AICR	$165,000
Tyrosine phosphorylation of platelet plasma membrane Ca^{2+}-ATPase: Role in hypertension (Collaborator); William Dean (PI) 2001-2003	AHA	$171,324

	Agency	Budget Requested
Dr. William M. Pierce, Jr.		
Tempo and mode in pheromone evolution (Co-I); Lynn Houck (PI) 2001-2005	NSF	$663,821
Computer assisted tomography scanner (Co-I); William Hnat / Michael Voor (PIs) 2000-2002	NSF	$500,000
Nutraceuticals and breast cancer (Co-I); A. F. Spatola (PI) 2001-2005	Congressional Priority Research	$1,135,000
Structrual roles of sphingolipids in human lens membranes (Co-I); M. C. Yappert (PI) 2001 - 2005	NIH	$1,692,000
Mechanisms of SNAG dependent Transcriptional Repression (Co-I); H. Leighton Grimes (PI) 2001 - 2006	ACS	$1,072,000
Mechanisms of SNAG dependent transcriptional repression (Co-I); H. Leighton Grimes (PI) 2001 - 2006	NIH	$1,075,000
Molecular adaptation of the skeletal muscle calcium pump in the Wood Frog (Co-I); William Dean (PI) 1999 – 2003	NSF	$959,383
Mechanisms of neutrophil activation (Co-I); Kenneth R. McLeish (PI) 2000-2005	NIH	$1,620,000
Aldose reductase in vascular smooth muscle growth (Co-I); Si-Qi Liu (PI) 2000-2005	NIH	$1,440,000
Institute for Molecular Diversity and Drug Design: Infrastructural Enhancement (Co-I); A. F. Spatola (PI) 2001 - 2003	NSF EPSCoR	$1,000,000
Dr. Zhao-Hui (Joe) Song		
Structure and function of CB2 cannabinoid receptor, DA11551 (PI) 09/30/98 – 09/30/03	NIH	$507,304
Cannabinoid receptors-potential targets for novel antiglaucoma drugs (PI) 06/01/01 – 06/30/06	NIH	$1,260,000

	Agency	Budget Requested
Dr. J. Christopher States		
DNA repair gene induction and genotoxicity of mixtures (PI) 12/00 – 11/05	NIEHS	$875,000
Biomarkers of maternal and fetal tobacco smoke exposure (Co-I); Steven R. Myers (PI) 04/01/01 – 03/31/04	Phillip Morris External Research Program	$2,537,671
Dr. Leonard C. Waite		
Molecular mechanisms of bone targeted estrogens (Co-I); William M. Pierce, Jr. (PI) 07/01/01 – 06/30/06	NIH	$1,800,000

Research Grants and Contracts in Force (salaried faculty)

	Agency	Project Award
Dr. Frederick W. Benz		
Acute acrylonitrile intoxication: Antidotal assessment (PI) 09/01/99 – 08/31/00	NIEHS	$35,483
Dr. Laurence A. Carr		
An immunological role for brain dopamine systems (PI) 09/01/98-03/01/00	SOM Research Committee	$7,920
Dr. Theresa S. Chen		
Acute acrylonitrile intoxication: Antidotal assessment (Co-I); F.W. Benz (PI) 09/01/98 – 08/31/00	NIEHS	$35,483
Dr. Paul N. Epstein		
Antioxidant transgenes in diabetic cardiomyopathy (PI) 08/01/99 – 07/30/02	NIH	$692,139
Acetaldehyde transgenes alter alcoholic cardiomyopathy (PI) 07/01/99 – 06/30/02	AHA	$164,000
β-cell antioxidant transgenes in diabetes and transplantation (PI) 09/01/00 – 08/31/04	NIH	$706,000
Reducing diabetic cardiomyopathy by increasing glycolysis (PI) 09/30/00 – 09/29/04	NHLBI	$847,800
Dr. David Gozal		
Neurocognitive function in snoring children (PI) 10/01/99 – 09/30/03	NHLBI	$1,000,000
Sleep episodic hypoxia and memory deficit in aging rats: Protection by platelet-activating factor antagonists (PI) 01/00 – 12/02	AHA	$214,500
Episodic hypoxia, Rem sleep deprivation, and hippocampal function (PI) 10/01/00 – 09/30/04	NHLBI	$900,000

	Agency	Project Award
Dr. David Gozal (cont.)		
Proteomic analysis of hipoccampal hypoxic vulnerability (Co-I); Jon B. Klein (PI) 10/01/00 – 09/30/04	NHLBI	$700,000
Project on sleep disorders in children at risk for developmental problems (PI) 01/01/01 – 12/31/01	Department of Education	$921,000
Dr. Evelyne Gozal		
Signaling pathways in neuronal susceptibility to hypoxia (PI) 10/01/00 – 09/30/04	Project 1, COBRE NIH	$895,786
Proteomic analysis of hippocampal hypoxic vulnerability (Co-I); Jon B. Klein (PI) 10/01/00 – 09/30/04	NHLBI	$700,000
Dr. David W. Hein		
Pharmacogenetics of drug and carcinogen metabolism (PI) 09/01/97 – 06/30/02	NCI	$1,859,936
Metabolic Basis of Sulfonamide Toxicity in AIDS patients (P.I. on subproject) 09/01/97 – 05/31/01	NIH-Subcontract from Wayne State	$768,169
Pharmacogenetics of drug and carcinogen metabolism (minority supplement) (PI) 12/01/00 – 06/30/02	NCI	$16,183
Dr. Harrell E. Hurst		
N-(carboxymethyl)valine hemoglobin adduct: A marker for advanced glycosylation end product formation in diabetes (PI) 06/05/00 – 08/11/00	SOM 2000 Summer Res. Scholarship Program	$3,256
Ethyl carbamate analysis in sugar cane distillate (PI) 07/07/98 – 06/30/01	Industrias Muller De Bebidas LTDA, Brazil	$10,675

	Agency	Project Award
Dr. Y. James Kang		
Effect of catalase on adriamycin cardiotoxicity (PI) 08/01/95-09/30/00	NCI	$507,500
Suppression of cardiac ischemia-reperfusion injury by overexpression of metallothionein (PI) 01/01/97-12/31/00	AHA	$300,000
Metallothionein and adriamycin cardiotoxicity (PI) 04/01/99 – 03/31/02	NHLBI	$623,000
Metallothionein and adriamycin cardiomyopathy (PI) 04/01/99 – 03/31/01	Jewish Hospital Foundation	$50,000
Dr. Glenn McGregor		
Mechanisms of mutagenic processing of DNA damage, CA 73984 (PI) 08/01/97 – 07/31/02	NCI	$350,000
Dr. Steven R. Myers		
In utero and neonatal exposure to environmental tobacco smoke and its effects on pulmonary development, lung function, and respiratory illness in the first year of life (Co-I); George Rodgers (PI) 1/1/95 – 12/31/00	Alliant Community Trust	$203,980
Hewlett-Packard capillary electrophoresis/mass spectrometer (PI) 08/01/99 – 07/31/00	WHAS Crusade for Children	$100,000
Dr. Donald E. Nerland		
Acute acrylonitrile intoxication: Antidotal assessment (Co-I); F.W. Benz (PI) 09/01/99-08/31/00	NIEHS	$35,483
Dr. William M. Pierce, Jr.		
Proteomic analysis of hippocampal hypoxic vulnerability (Co-I); Jon B. Klein (PI) 2000-2004	NIH	$1,000,800

	Agency	Project Award
Dr. William M. Pierce, Jr. (cont.)		
Central nervous system injury and repair (Co-I); (Program Director: Scott Whittemore, Project Director: E. Gozal) 2000-2004	NIH/COBRE	$895,796
Regulation of neutrophil activation (Collaborator); Kenneth McLeish (PI) 1999-2002	VA Merit Review	$407,000
Blood Lead Monitoring (Lab Director) 01/01/00 – 12/31/00	Analytical chemistry service for local and regional medical practitioners	$32,837
Estrogens: Bone blood flow and bone Mechanical properties (Collaborator); John Fleming (PI) 1999 – 2001	NIH	$50,000
P450 Metabolites of Arachidonic acid and DOCA salt hypertension (Co-I); Ayotunde Adeagbo (PI) 1999-2000	AHA Ohio Valley	$75,000
Regulatory kinase signal transduction pathways in human neutrophils (Co-I); Kenneth R. McLeish (PI) 2000-2002	AHA – Ohio Valley	$89,300
Toxicity and detoxification of 4-hydroxyalkenals in heart (Co-I); Aruni Bhatnagar (PI) 2000-2004	NIH	$1,220,000
Transcriptional and posttranscriptional regulation of zfhep activity (Co-I); Douglas Darling (PI) 2000-2001	UofL School of Medicine	$14,250
P450 metabolites of arachidonic acid and DOCA salt hypertension (Co-I); Ayotunde Adeagbo (PI) 1999-2000	UofL School of Medicine	$15,000
Dr. Peter P. Rowell		
Functional activity of mesolimbic nicotinic receptors (PI) 9/1/99 – 6/30/02	NIH	$299,508

	Agency	Project Award
Dr. Peter P. Rowell (cont.)		
Effect of nicotine on mesolimbic nicotinic receptor activation and desensitizaion (PI) 07/01/99 – 06/30/00	Kentucky Tobacco and Health Research Institute	$77,943
Cholinergic influences on corticothalamic transmission (Co-I); A.R. Caggiula (PI) 10/01/00 – 09/30/05	NIH	$875,000
Dr. Zhao-Hui (Joe) Song		
Structure and function of CB2 cannabinoid receptor (PI) 09/30/98 – 09/30/03	NIH	$507,304
Dr. J. Christopher States		
DNA damage by bioactivated xenobiotics (PI) 03/97 – 07/01	NIEHS	$862,845

IX. Teaching

School of Medicine

The Department team-taught the Medical Pharmacology course to second year medical students. Dr. Mike Williams served as course director. In addition, Dr. Laurence Carr served as co-director of the interdisciplinary Clinical Neuroscience course. Individual faculty contributions are identified in the Appendix.

School of Dentistry

The Department team-taught the Dental Pharmacology and Therapeutics course to second year dental students. Dr. Leonard Waite served as course director. Individual faculty contributions are identified in the Appendix.

The Department team-taught a Pharmacology course to second year students in the Dental Hygiene Program. Dr. Leonard Waite served as course director. Individual faculty contributions are identified in the Appendix.

School of Nursing

The Department team-taught a Basic Pharmacology for Nursing course to second year nursing students. The course is also cross-listed as Biology 390 and is taken by other undergraduate students. Dr. William Pierce served as course director. Individual faculty contributions are identified in the Appendix.

The Department team-taught an Advanced Pharmacology course to graduate nursing students. Dr. Leonard Waite served as course director. Individual faculty contributions are identified in the Appendix.

Graduate School

The Department team-taught several courses for graduate students. The individual courses and course directors were as follows:

Principles of Drug Action (Dr. Frederick Benz)
Research Methods (Dr. Chris States and Dr. Joe Song)
Pharmacology Seminar (Dr. Donald Nerland)
Introduction to Environmental Health (Dr. Steve Myers)
Frameworks in Environmental Science and Technology (Dr. Steve Myers)

Individual faculty contributions to these courses are identified in the Appendix.

X. Service

Faculty provided service to the Department, the School of Medicine, the University of Louisville, the profession, the nation, and the community in many ways. Individual faculty service activities are identified in the Appendix.

XI. Honors and Awards

Graduate Students

Laila El-Sherif received the first place award in graduate student competition at the annual meeting of the American Society for Pharmacology and Experimental Therapeutics-Division of Toxicology.

Scot Payne received the 2000 KC Huang Outstanding Graduate Student Award in the Department of Pharmacology and Toxicology and received a first place award for his presentation at Louisville Neuroscience Day.

Norma Nangju received the second place award for her research presentations at the annual meeting of the Ohio Valley Society of Toxicology.

Xin Fu received the third place award for her research presentation at the annual meeting of the Ohio Valley Society of Toxicology, and honorable mention for her research presentation at Research!Louisville and received a travel award to attend the annual meeting of the American Society for Pharmacology and Experimental Therapeutics.

Faculty

Glenn McGregor and **James Kang** received second place awards and **David Hein** received a third place award for research presentations at the annual Research!Louisville meeting.

Evelyne Gozal was promoted to a tenure track.

Calvin Lang and **Thom Zimmerman** retired and were appointed professor emeritus.

James Kang was reappointed as University Scholar.

Paul Epstein was appointed as Carol B. McFerran Endowed Chair in Pediatric Diabetes Research.

David Gozal was a Heritage Foundation Visiting Scholar at the University of Calgary and the University of Alberta.

Fred Benz received a Certificate of Appreciation for Community Service from the University of Louisville.

Peter Rowell was the School of Medicine's nominee for the 2001 President's Distinguished Faculty Award for Outstanding Scholarship, Research, and Creative Activity.

David Hein was elected Councilor for the American Association for Medical School Pharmacology.

XII. Standing Committees

Graduate Program Committee

Dr. William Pierce (Chair)
Dr. Chris States (2002)
Dr. Len Waite (2001)
Dr. Peter Rowell (2000)
Scot Payne (student representative)

PBSI/Grievance Committee

Dr. Peter Rowell (Chair)
Dr. Don Nerland (2002)
Dr. Harrell Hurst (2001)
Dr. Mike Williams (2000)

Teaching Evaluation Committee

Dr. Larry Carr (Chair)
Dr. Len Waite (2002)
Dr. Fred Benz (2001)
Dr. Mike Williams (2000)

Seminar Committee

Dr. Don Nerland (Chair)
Dr. Fred Benz (2002)
Dr. Steve Myers (2001)
Dr. Theresa Chen (2000)

Core Laboratories/Research Development Committee

Dr. William Pierce (Chair)
Dr. Chris States (2002)
Dr. Theresa Chen (2001)
Dr. Steve Myers (2000)

Ad hoc Technology Committee

Dr. Harrell Hurst (Chair)
Dr. Fred Benz