Department of

Pharmacology and Toxicology

University of Louisville

School of Medicine

1998

Annual Report

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I. Executive Summary

1998 was a year of continued transition and program development for the Department of Pharmacology and Toxicology. The Department was deeply saddened by the unexpected death of Dr. Kee Chang Huang in November. Dr. Huang served on the Department faculty since 1953, and continued to be an active member of the Department as Professor Emeritus. A resolution in his honor was written and approved by the Department, the Medical Council, and the Faculty Senate. A copy is provided in the appendix. The Department initiated the Kee Chang Huang Outstanding Graduate Student Award and the Kee Chang Huang Memorial Lecture. The 1998 Kee Chang Huang Outstanding Graduate Student Award was awarded to Jian Cai. A second major event was the retirement of Dr. William J. Waddell as Professor on July 1. Dr. Waddell was appointed Professor Emeritus (he was appointed Chairman emeritus upon retirement as chair in 1997) and was honored with a reception and the initiation of a William J. Waddell seminar program. A third major event was the appointment of Joel A. Kaplan, M.D. as Vice President for Health Affairs/Dean for the School of Medicine/Senior Vice Provost for Academic Affairs effective July 1. Dr. Kaplan was previously Senior Vice-President for Clinical Affairs and Horace W. Goldsmith Professor and Chairman of the Department of Anesthesiology at Mount Sinai School of Medicine. Dr. Kaplan brought impressive credentials in research and an aggressive agenda for enhancement of research productivity in the School of Medicine and the Health Science Center.

The primary focus of the year was the recruitment of new faculty. A search committee consisting of Dr. David Hein (Chair), Dr. Fred Benz, Dr. Theresa Chen, Dr. Fred Hendler, Dr. James Kang, and Dr. Peter Rowell screened applications for two tenure track faculty positions. Over 100 applications were received and several candidates were invited for interviews. Three of the top candidates, Dr. Carrie Haskell-Leuvano, (Postdoctoral Fellow, Oregon Health Sciences University), Dr. Paul MacDonald, (Assistant Professor, Saint Louis University School of Medicine) and Dr. Donghai Wu (Assistant Professor, University of Kentucky College of Medicine) were offered a tenure track assistant or associate professor (Dr. MacDonald) position. Each declined, however, in order to accept new faculty positions at the University of Florida, Case-Western Reserve University, and the University of Florida, respectively. In addition to starting salary and lack of institutional research core facilities, a major stumbling block was the requirement for the new faculty to be placed in temporary research and office space prior to completion of the Baxter Biomedical Research Facility in 1999. Rather than continue on down the list of applicants, the Department initiated a new search in 1999 to coincide with the completion of the Baxter Biomedical Research Facility. The Department approved the joint appointment of Janice Sullivan, M.D. as assistant professor. Dr. Sullivan's primary appointment is in the Department of Pediatrics, and, prior to 1998, she had an associate faculty appointment in the Department of Pharmacology and Toxicology. Drs. Scott Gruber and Paul Epstein were appointed as adjunct faculty.

Highlights in program development included revision of the guidelines and curriculum for the graduate program in pharmacology and toxicology, which was approved by unanimous vote of the faculty. In addition, a Strategic Plan focusing on research and training strategies was initiated and approved by unanimous vote of the faculty. The research productivity of the Department increased significantly in 1998, and the Department contributed to the University of Louisville's transition to a premier metropolitan research University.

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. Personnel Listing

A. 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).

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; Ph.D., Pharmacology and Toxicology, University of Louisville (1981).

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

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).

B. 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).

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

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

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).

Tamburro, Carlo H., Professor of Medicine, and Pharmacology and Toxicology, and Chief, Division of Occupational Toxicology; M.D., Seton Hall (1962); M.P.H., Columbia University (1985).

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

Zimmerman, Thom J., Professor and Chairman of Ophthalmology and Visual Sciences, and Pharmacology and Toxicology; Ph.D., Pharmacology, University of Florida (1976); M.D., University of Illinois (1968).

C. Faculty with Associate Appointments

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)

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

Ross, Mitchell P., Assistant Professor of Pediatrics; M.D., Oregon Health Sciences University (1985).

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

D. Faculty with Emeritus Appointments

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

Huang, Kee Chang, Professor Emeritus; M.D. Columbia University (1953).

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

Knoefel, Peter K., Emeritus Professor and Chairman; M.D., Harvard University (1931).

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

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

E. 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).

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).

Woodcock, Thomas M., Adjunct Professor of Pharmacology and Toxicology; M.D., Columbia University (1970).

F. Faculty with Emeritus Adjunct Appointments

Csaky, Tihamer Z., Emeritus Adjunct Professor of Pharmacology and Toxicology; M.D., University of Budapest (1939).

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

Gordon, Helmut A., Emeritus Adjunct Professor of Pharmacology and Toxicology; M.D., University of Budapest (1932).

G. Staff

Carpenter, Sharon; Executive Secretary

Clark, Denny, Lab Tech III; Therapeutics and Toxicology Laboratory

Corbett, Donna; Lab Tech III

Doll, Mark; Research Associate

Duggan, Deborah; Lab Tech III

Emery, Nicole; Lab Tech III
Jamison, Andrea; Lab Tech II

Metaxas, John; Coordinator, Therapeutics and Toxicology Laboratory

Greca, Edie; Business Manager III

Rubin-Teitel, Heddy; Program Assistant III

Smith, Ned; Senior Research Technologist

Srinivasan, Chandrika, Ph.D., Student Assistant

VonderHaar, John, Laboratory Research Technician III

Wenger, Aaron; Student Assistant, Therapeutics and Toxicology Laboratory

H. Graduate Students

Doctoral Program

Alimozhin, Talgat
Brewer, Bradley G.
Cai, Jian
Fretland, Adrian
Fu, Xin
Hartford, April
Hennion, John
Jacobs, Al (Chip)
Lambert, Jason
Leff, Matthew
Li, Junyu
Nangju, Norma
Neale, Jason
Payne, Scot
Spinnato, Joe
Sun, Xichun

Masters Program

Hasselbacher, David
Melo, Nicolas

I. Postdoctoral Fellows

Devanaboyina, Udaya-sankar
Meng, Xianweng
Wang, Guang-wu

Wang, Ju-Feng

Wu, Huiyun

Webb, Stephanie

Xiao, Gong H.

Zhou, Zhan-Xiang

J. Division of Occupational Toxicology

Buchanan, Stephanie, B.S.N.; Clinical Research Coordinator

Canchis, Willie, M.D.; Research Fellow

Cho, Lori; Student Assistant

Crawford, Robert; Student Assistant

Deeb, Lililane, M.D.; Research Fellow

Fortwengler, Philip; Manager, Medical Surveillance

Hall, Carl, Ph.D.; Project Coordinator

Hiser, Melissa; Clerical Specialist III

Jarman, Susanna; Student Assistant

Kapoor, Sandeep, M.D.; Research Fellow

Matthews, Sherri; Executive Secretary

Miller, Barbara L., B.S.N., M.S.; Senior Clinical Research Coordinator

Morgenson, Melissa; Secretary

O'Connell, Kathleen, Ph.D.; Research Facilitator

Quiggins, Patricia, Ph.D.; Research Associate

Redferin, Lauren; Student Assistant

Reynolds, Eva; Receptionist

Reynolds, Lark; Program Assistant III

Richardson, Rita; Secretary II

Sherrill, Mike; Student Assistant

Sterry, Rachel; Student Assistant

Tamburro, Carlo H., M.D, M.P.H.; Division Chief

K. Faculty Appointments

Epstein, Paul N., Ph.D., Adjunct Associate Professor, November 1, 1998

Gruber, Scott A., M.D., Ph.D., Adjunct Associate Professor, October 1, 1998

Sullivan, Janice E., M.D., Assistant Professor (joint appointment), December 1, 1998

Waddell, William J., M.D., Professor Emeritus, July 1, 1998

L. Staff Promotions

Carpenter, Sharon, Promotion to Executive Secretary, effective August, 1998

Greca, Edie, Promotion to Business Manager III, effective August, 1998

M. New Graduate Student Appointments

Hartford, April
Lambert, Jason
Nangju, Norma
Neale, Jason
Sun, Xichun

N. Graduations

David Hasselbacher (M.S. awarded May 1998). Thesis title "The Development of a Dosing Model for the Anticoagulant Heparin Using Neural Networks." Advisor: George R. Aronoff.

IV. Publications

1. Byrd, D.M., Allen, D.O., Beamer, R.L., Besch, H.R., Jr., Bylund, D.B., Doull, J., Fleming, W.W., Fries, A., Guengerich, F.P., Hornbrook, R., Lasagna, L., Lum, B.K., Michaelis, E.K., Morgan, E.T., Poland, A., Rozman, K.K., Smith, J.B., Swanson, H.I., Waddell, W.J., and Wilson, J.D. (1998). Letter to the Editor: The dose-response model for dioxin. *Risk Analysis*, **18**:1-2.

2. Chen, D., Waite, L.C., Pierce, W.M. Jr. (1998). In vitro bone resorption is dependent on physiological concentrations of zinc. *Biological Trace Element Research* **61**:9-18.

3. Deitz, A.C., Fretland, A.J., Leff, M.A., and Hein, D.W. (1998). Homo sapiens N-acetyltransferase-1 (NAT1) gene, NAT1*26A allele, complete cds. *AF071552*.

4. Deitz, A.C., Fretland, A.J., Leff, M.A., Doll, M.A., and Hein, D.W. (1998). Homo sapiens N-acetyltransferase-1 (NAT1) gene, NAT1*26B allele, complete cds. *AF067408*.

5. Delamere, N.A., Pierce, W.M., and Hou, Y. (1998). The influence of ascorbic acid on active sodium transport in cultured rabbit nonpigmented ciliary epithelium. *Investigative Ophthalmology and Visual Science* **39(1)**:143-50.

6. Feng, Y., Rustan, T.D., Fretland, A.J., Cooley, A.M., Lee, K.J., Becker, W.K., and Hein, D.W. (1998). A rapid and sensitive method for detection of urinary bladder tumors in rodents. *Proceedings of the Western Pharmacology Society* **41**:11-13.

7. Fretland, A.J., Leff, M.A., Doll, M.A., and Hein, D.W. (1998). Homo sapiens N-acetyltransferase (NAT2) gene, NAT2*5D allele, complete cds. *AF042740*.

8. Huang, K.C. The Pharmacology of Chinese Herbs, edition 2. (1998). Boca Raton: CRC Press.

9. Kang, Y. J. and Wang, J.-F. (1998). Cardiac protection by metallothionein against ischemia-reperfusion injury and its possible relation to ischemic preconditioning, in *Metallothionein IV* (C. Klaassen, ed), pp511-516, Birkhauser Verlag Basel/Switzerland.

10. Kemper, R.A., Elfarra, A.A., and Myers S.R. (1998). Metabolism of 3-butene-1,2-diol in B6C3F1 mice. Evidence for involvement of alcohol dehydrogenase and cytochrome p450. *Drug Metabolism and Disposition* **26(9)**:914-20.

11. Leff, M.A., Doll, M.A., Feng, Y., Fretland, A.J., and Hein, D.W. (1998). Homo sapiens N-acetyltransferase (NAT2) gene, NAT2*6D, complete cds. *AF055875*.

12. Leff, M.A., Doll, M.A., Fretland, A.J., and Hein, D.W. (1998). Homo sapiens N-acetyltransferase (NAT2) gene, NAT2*14G, complete cds. *AF055874*.

13. Rowell, P.P. and Duggan, D.S. (1998). Long-lasting inactivation of nicotinic receptor function in vitro by treatment with high concentrations of nicotine. *Neuropharmacology* **37**:103-111.

14. Tsueda, K., Mosca, P.J., Heine, M.F., Loyd, G.E., Durkis, D.A.E., Malkani, A.L., and Hurst, H.E. (1998). Mood during continuous epidural infusion of morphine or fentanyl. *Anesthesiology* **88(4)**: 885-891.

15. Uthus, E. O. and Kang, Y. J. (1998). Effect of buthionine sulfoximine on the response to arsenic deprivation in female rats. *Journal of Trace Element and Experimental Medicine* **11**:29-36.

16. Waddell, W.J. "Evidence against environemntal endocrines influencing cancer of the breast, uterus, prostate, and testicle" (1998). In: G.E. Dunaif, S.S. Olin, J.A. Scimeca, and J.A. Thomas (Eds.), *Human Diet and Endocrine Modulation: Estrogenic and Androgenic Effects* (Edition 1); Washington: ILSI Press, pp. 267-276.

17. Waddell, W.J. (1998). Epidemiological studies and effects of environmental estrogens. *International Journal of Toxicology*, **18**:197-215.

18. Wang, G.-W., Schuschke, D. A. and Kang, Y. J. (1998). Metallothionein overexpressing neonatal mouse cardiomyocytes are resistant to hydrogen peroxide toxicity. *American Journal of Physiology* **276**:H167-H175.

19. Wang, G.-W., Wu, H.-Y. and Kang, Y. J. (1998). Metallothionein and its importance relative to glutathione in cardiac protection against doxorubicin toxicity, in *Metallothionein IV* (C. Klaassen, ed), pp517-522, Birkhauser Verlag Basel/Switzerland.

20. Wong, J.L., Zheng, Y.T., Li, J., Tamburro, C.H., and Benz, F.W. (1998). Immunoassay of haemoglobin-acrylonitrile adduct in rat as a biomarker of exposure. *Biomarkers* **3**:317-326.

21. Wrightson, W.R., Myers, S.R., and Galandiuk, S. (1998). HPLC analysis of mitomycin C in tissue and serum with ultraviolet detection. *Biochemical and Biophysical Research Communication* **706(2)**:358-61.

22. Wu, H.-Y. and Kang, Y. J. (1998). Inhibition of buthionine sulfoximine-enhanced doxorubicin toxicity in metallothionein overexpressing transgenic mouse heart. *Journal of Pharmacology and Experimental Therapeutics* **287**:515-520.

23. Wu Q, Pierce, W.M., Jr., and Delamere, N.A. (1998). Cytoplasmic pH responses to carbonic anhydrase inhibitors in cultured rabbit nonpigmented ciliary epithelium. *Journal of Membrane Biology* **162**:31-38.

24. Yin, X., Wu, H.-Y., Chen, Y. and Kang, Y. J. (1998). Induction of antioxidants by adriamycin in mouse heart. *Biochemical Pharmacology* **56**:87-93.

A. Additional Publications of Faculty with Joint Appointments.

1. Aronoff, G.R. (1998). Informatics and end-stage renal disease. *Advances in Renal Replacement Therapy* **5**:292-298.

2. Aronoff, G.R., Erbeck, K.M., and Brier, M.E. (1998). "Prescribing drugs for dialysis patients." In: W. L. Henrich (Ed.), *Principles and Practice of Dialysis*. Williams and Wilkins.

3. Ward, R.A., and Aronoff, G.R. (1998). "Anticoagulation strategies during hemodialysis procedures." In: W. L. Henrich (Ed.), *Principles and Practice of Dialysis*. (Edition 2); Baltimore: Williams & Wilkins, pp. 70-78).

4. Delamere, N.A., Manning, R.E., Jr., Liu, L., Moseley, A.E., and Dean, W.L. (1998). Na, K-ATPase polypeptide upregulation responses in lens epithelium following an episode of cytoplasmic ATP depletion. *Investigative Ophthalmology and Visual Science* **39(5)**:763-768.

5. Kuwahara, S., Chin, S., and Delamere, N.A. (1998). Partial inhibition of Na, K-ATPase activity in cultured rabbit nonpigmented ciliary epithelium following an episode of cytoplasmic ATP depletion. *Acta Physiologica Scandinavica* **164**:13-20.

6. Ehringer, W.D., Edwards, M.J., Wintergerst, K.A., Cox, A., and Miller, F.N. (1998). An increase in endothelial intracellular calcium and F-actin precedes the extravasation of interleukin-2 activated lymphocytes. *Microcirculation* **5**:71-80.

7. Heinzelmann, M., Mercer-Jones, M.A., Flodgaard, H., and Miller, F.N.(1998). Heparin-binding protein (CAP37) is internalized in monocytes and increases LPS-induced monocyte activation. *Journal of Immunology* **160**:5530-5536.

8. Heinzelmann, M., Platz, A., Flodgaard, H., and Miller, F.N. (1998). Heparin binding protein (CAP37) is an opsonin for staphylococcus aureus and increases phagocytosis in monocytes. *Inflammation* **22**:493-507.

9. Heinzelmann, M., Polk, H.C., Jr., and Miller, F.N. (1998). Modulation of lipopolysaccharide-induced monocyte activation by heparin-binding protein and fucoidan. *Infection and Immunity* **66(12)**:5842-5847.

10. Lentsch, A.B., Yoshidome, H., Cheadle, W.G., Miller, F.N., and Edwards, M.J. (1998). Chemokine involvement in hepatic ischemia/reperfusion injury in mice: roles for macrophage inflammatory protein-2 and KC [corrected and republished article originally printed in Hepatology 1998 Feb;27(2):507-12]. *Hepatology* **27(4)**:1172-1177.

11. Lentsch, A.B., Miller, F.N., and Edwards, M.J. (1998). Mechanisms of leukocyte-mediated tissue injury induced by interleukin-2. *Cancer Immunology and Immunotherapy* **47**:243-248.

12. Lentsch, A.B., Edwards, M.J., Sims, D.E., and Miller, F.N. (1998). N-nitro-L-arginine methyl ester inhibits inflammatory liver injury induced by interleukin-2. *Journal of Leukocyte Biology* **63**:22-30.

13. Yoshidome, H., Lentsch, A.B., Cheadle, W.G., Miller, F.N., and Edwards, M.J. (1998). Enhanced pulmonary expression of CXC chemokines during hepatic ischemia/reperfusion-induced lung injury in mice. *Journal of Surgical Research* **81**:33-37.

14. Rodgers, G.C., and Matyunas, N.J. (1998). Hazardous materials guide for first responders. Rodgers, G. C. and Matyunas, N. J. (Ed.), *Federal Emergency Management Agency:United States Fire Administration.*

15. Sullivan, J.E., and Rees, A. (1998). Recurrent bacterial endocarditis in a patient with repaired congenital heart disease. *Intensive Thoughts* 1 Edition; 5-5. Louisville: Kosair Children's Hospital/University of Louisville.

16. Galbreath, K.C., Zygarlicke, C.J., Huggins, F.E., Huffman, G.P., and Wong, J.L. (1998). Chemical Speciation of Nickel in Residual Oil Ash. *Energy and Fuels* **12**:818-822.

17. Liu, A., and Wong, J.L. (1998). Nickel Speciation of Fly Ash by Combining Phase Separation with Carbon Paste Electrode Direct Analysis. Preprints: *American Chemical Society, Division of Environmental Chemical Symposia* **38(2)**:197-199.

V. Abstracts

1. Benz, F.W., Cai, J., Nerland, D.E., Li, J., Corbett, D., and Hurst, H.E. The nonlinear dose-dependent toxicodynamics of acrylonitrile can be explained by the similar dose-dependence of its toxicokinetics. Toxicological Sciences 42: No. 1-Supplement, 212, 1998.

2. Cai, J. and Hurst, H.E. Use of GC/MS to investigate mechanisms of N-(carboxymethyl)-valine adduct formation in hemoglobin. 46th ASMS Conference on Mass Sectrometry and Allied Topics, Orlando, FL, May 31 – June 4, 1998. Proceedings 46th ASMS Conference on Mass Sectrometry and Allied Topics, p.1138 (1998).

3. Cai, J. and Hurst, H.E. Use of GC/MS to investigate mechanisms of N-(carboxymethyl)-valine adduct formation in hemoglobin. UofL Health Sciences Center 24th Annual Student Research Day, October 27, 1998.

4. Cai, J. and Hurst, H.E. Use of GC/MS to investigate mechanisms of N-(carboxymethyl)-valine adduct formation in hemoglobin. Ohio Valley Society of Toxicology Regional Meeting, Dayton, OH, October 30, 1998.

5. Feng, Y., Finley, J.W., Davis, C.D., Fretland, A.J., Korynta, E., and Hein, D.W.: The protective effect of selenium on the aberrant crypt formation in rats administered 3,2′-dimethyl-4-aminobiphenyl. Proceedings of the American Association for Cancer Research 39:390, 1998.

6. Feng, Y., Finley, J.W., Davis, C.D., Fretland, A.J., Korynta, E., Hein, D.W., and Becker, W.K.: Inhibition of 3,2'-dimethyl-4-aminobiphenyl-induced aberrant crypt formation in the colon of rats by selenium. Proceedings of the Eighteenth Annual Frank Low Research Day, p. 53, 1998.

7. Feng, Y., Fretland, A.J., Rustan, T.D., Becker, A.M., Becker, W.K., and Hein, D.W.: Role of CYP1A2 and NAT2 polymorphism in colon carcinogenesis of Syrian hamsters administered 3,2'-dimethyl-4-aminobiphenyl. Proceedings of the Seventh International Conference of Carcinogenic/Mutagenic N-Substituted Aryl Compounds, Nagoya, Japan, p. 32, 1998.

8. Feng, Y., Fretland, A.J., Rustan, T.D., Becker, A.M., Becker, W.K., and Hein, D.W.: Formation of colonic aberrant crypt foci by 3,2′-dimethyl-4-aminobiphenyl in rapid and slow acetylator congenic hamsters requires metabolic activation by CYP1A2 and NAT2. Proceedings of Research Louisville 1998, November, 1998.

9. Feng, Y., Rustan, T.D., Doll, M.A., Leff, M.A., Cooley, A.M., Fretland, A.J., Grazziotin, M.U., Luthra, G., Becker, W.K., and Hein, D.W.: Human N-acetyltransferase-1 (NAT1) and –2 (NAT2) genotype/phenotype determinations in cytosolic preparations from surgical human colon specimens. Proceedings of the First International Workshop on the Arylamine N-Acetyltransferases**,** Kuranda, Queensland, Australia, p. 23, 1998.

10. Fretland, A.J., Feng, Y., and Hein, D.W.: 2-Amino-1-methyl-6-phenylimidazo[4,5-b]pyridine (PhIP) DNA adduct formation in homozygous rapid and slow acetylator congenic hamsters. Toxicological Sciences 42:Number 1-S:281, 1998.

11. Fretland, A.J., Feng, Y., and Hein, D.W.: Tumor formation of 2-amino-1-methyl-6-phenylimidazo[4,5-6]pyridine (PhIP) in rapid and slow acetylator hamsters congenic at the NAT2 locus. Proceedings of the AACR Workshop on Molecular Biology and Pathology of Neoplasia, p. 16, 1998.

12. Fretland, A.J., Feng, Y., Rustan, T.D., Cooley, A.M., Lee, K.J., Becker, W.K., and Hein, D.W.: A rapid and sensitive method for detection of urinary bladder tumors in rodents. Proceedings of the 41st Annual Meeting of the Western Pharmacology Society and the XXI Congreso Nacional De Farmacologia, Mazatlan, Mexico, M-13, 1998.

13. Fretland, A.J., Feng, Y., Rustan, T.D., Doll, M.A., Leff, M.A., Grazziotin, M.U., Luthra, G., Becker, W.K., and Hein, D.W.: N-Acetyltransferase genotype/phenotype relationships in human colon cytosols. Proceedings of the 24th Annual Student Research Day, University of Louisville Health Science Center, October, 1998.

14. Fretland, A.J., Feng, Y., Rustan, T.D., Doll, M.A., Leff, M.A., Grazziotin, M.U., Luthra, G., Becker, W.K., and Hein, D.W.: N-acetyltransferase genotype/phenotype relationships in human colon cytosols. Proceedings of the Ohio Valley Society of Toxicology, Dayton, Ohio, October, 1998.

15. Fretland, A.J., Purewal, M., Velasco, M., Hein, D.W., and Wargovich, M.J.: 2-amino-1-methyl-6-phenyl imidazo[4,5-6]pyridine induces a higher number of aberrant crypt foci in rapid versus slow acetylator inbred rats. Proceedings of Research Louisville 1998, November 1998.

16. Hein, D.W., Deitz, A.C., Campbell, D.R., Wan-Qing, W., Sellers, T.A., Cerhan, J.R., Folsom, A.R., and Zheng, W.: Role of N-acetyltransferase 1 (NAT1) genetic polymorphisms, cigarette smoking, and well-done meat consumption in breast cancer risk**.** Proceedings of the Ohio Valley Society of Toxicology, Dayton, Ohio, October, 1998.

17. Hein, D.W., Deitz, A.C., Campbell, D.R., Wen, W.-Q., Sellers, T.A., Cerhan, J.R., Folsom, A.R., and Zheng, W.: Role of N-acetyltransferase 1 (NAT1) genetic polymorphisms, cigarette smoking, and well-done meat consumption in breast cancer risk. Proceedings of Research Louisville 1998, November, 1998.

18. Hein, D.W., Deitz, A.C., Leff, M.A., Xiao, G., Doll, M.A., Wen, W.-Q., Folsom, A.R., and Zheng, W.: Role of N-acetyltransferase 1 (NAT1) and 2 (NAT2) genotypes in breast cancer risk among post-menopausal women related to cigarette smoking and consumption of well-done meat. Proceedings of the Ohio Valley Society of Toxicology. Dayton, Ohio, October, 1998.

19. Hein, D.W., Deitz, A.C., Leff, M.A., Xiao, G., Doll, M.A., Wen, W.-Q., Folsom, A.R., and Zheng, W.: Role of N-acetyltransferase 1 (NAT1) and 2 (NAT2) genotype in breast cancer risk among post-menopausal women related to cigarette smoking and consumption of well-done meat. Proceedings of Research Louisville 1998, November, 1998.

20. Hein, D.W., Doll, M.A., Fretland, A.J., and Leff, M.A.: Metabolic activation of N-hydroxy-2-amino-1-methyl-6-phenylimidazo[4,5-b]pyridine (N-OH-PhIP) by twenty-three recombinant human NAT2 allozymes. Proceedings of the American Association for Cancer Research 39:455, 1998.

21. Hein, D.W.: Role of N-acetyltransferase polymorphisms in genetic predisposition to cancer. Toxicological Sciences 42:Number 1-S:114, 1998.

22. Kang, Y. J. (1998). Metallothionein protects the heart from oxidative injury. Presented at the 8th International Congress of Toxicology, Paris, France, Toxicol. Let. 95 (S1):57.

23. Kang, Y. J. and Wang, G.-W. (1998). Metallothionein inhibits doxorubicin-induced apoptosis in mouse heart. Free Radical Biol. Med., 25(S1):S90.

24. Kang, Y. J. and Wu, H.-Y. (1998). Metallothionein compensates for the loss of glutathione in cardiac protection against doxorubicin toxicity. Toxicol. Sci. (Toxicologist), 42:302.

25. Kemper, R. A., Myers, S.R., and Elfarra, A. A. Plasma clearance of 3-butene-1,2-diol in mice: Evidence for metabolism by alcohol dehydrogenase and cytochrome P-450. Toxicologist, 42:1S, 333, March, 1998

26. Leff, M.A., Doll, M.A., Fretland, A.J., and Hein, D.W.: Pre-translational regulation of recombinant human N-acetyltransferase 2 (NAT2) allelic variants in yeast: Identification and characterization of three novel alleles. Proceedings of Research Louisville 1998, November, 1998.

27. Leff, M.A., Doll, M.A., Fretland, A.J., Devan, U.B., Rustan, T.D., Epstein, P.N., and Hein, D.W.: Prostate-specific human N-acetyltransferase (NAT2) expression in the mouse. Proceedings of the 24th Annual Student Research Day, University of Louisville Health Sciences Center, October, 1998.

28. Leff, M.A., Doll, M.A., Fretland, A.J., Devan, U.B., Rustan, T.D., Epstein, P.N., and Hein, D.W.: Prostate-specific human N-acetyltransferase (NAT2) expression in the mouse. Proceedings of the Ohio Valley Society of Toxicology, Dayton, Ohio, October, 1998.

29. Leff, M.A., Doll, M.A., Fretland, A.J., Rustan, T.D., Epstein, P.N., and Hein, D.W.: Prostate-specific human N-acetyltransferase (NAT2) expression in the mouse. Toxicological Sciences 42:Number 1-S:318, 1998.

30. Leff, M.A., Doll, M.S., Fretland, A.J., and Hein, D.W.: Pre-translational regulation of recombinant human N-acetyltransferase 2 (*NAT2*) allelic variants in yeast: Identification and characterization of three novel alleles. Proceedings of the Ohio Valley Society of Toxicology, Dayton, Ohio, October, 1998.

31. Lewtas, J., Costa, D. J., and Myers, S. R. Influence of metabolic genotypes on urinary PAH metabolites as markers of PAH exposure. Proc. Amer. Assoc. Cancer Res. 39, Abstract #2696, March 1998.

32. Li, J., Benz, F.W., Pierce, W.M., Feldhoff, R.C., and Nerland, D.E. Electrospray mass spectrometry of hemoglobin adducts of acrylonitrile. Abstracts of Ohio Valley Society of Toxicology, 1998.

33. Myers, S.R., Linder, M.W., and Ross, M.P. Pharmacogenetics of maternal and fetal tobacco smoke exposure. Toxicologist, 42:1S, 43, March 1998.

34. Nerland, D.E. and Benz, F.W. Covalent Binding of Acrylonitrile (AN) to Rat Liver Glutathione S-Transferase. Toxicological Sciences 42: No1-Supplement, 314 (1998).

35. Pinorini-Godly, M.T., Myers, S.R., Kemper, R. A., Reddy, T.V., Daniel, F.B., and Reddy, G. Determination of hemoglobin adducts of 1,3-dinitrobenzene and 1,3,5-trinitrobenzene in least shrew (cryptotis parva). Toxicologist 42:1S, 340, March 1998.

36. Rosecrans J.A., Rowell P.P., Covington H.E., James, J.R., and Jordan S.D. Brain area nicotine binding sites and the effects of nicotine on behavior in male Fischer-344 and Sprague-Dawley rats separated for differences in arousal. Intl. Behavioral Neurosci. Soc. Abstracts 7:2, 1998.

37. Ross, M., Hurst, H.E., and Tarantino, M.D. Pharmacokinetics of infused antithrombin concentrate in children with disseminated intravascular coagulation secondary to sepsis. Annual meeting, Society for Pediatric Research, New Orleans, LA, May 1-5, 1998. Pediatr. Res. 43: 138a (1998).

38. Ross, M., Linder, M., Myers, S. R., and Valdes, R., Jr. Fetal exposure to tobacco smoke carcinogens is increased by maternal GST M1 null genotype. Proc. Amer. Assoc. Cancer Res. 39, Abstract #2680, March 1998.

39. Rowell, P.P. Differentiation between receptor desensitization and receptor activation of nicotine-evoked dopamine release in rat striatal synaptosomes. S.E. Pharmacol. Abs. 19:4, 1998.

40. Spatola, A.F., Romanovskis, P.J., and Pierce, W.M., Jr. Cyclic Pseudopeptides. Presented at International Peptide Symposium, Vienna, Austria, Fall, 1998.

41. Spinnato, J.A., and Myers, S.R. Enzyme kinetics and metabolite identification using a rat microsomal assay following tetry administration. Toxicologist, 42:1S, 336, March 1998.

42. Srinivasan, C, Chen, T.S., and Williams, W.M. Prevention of acetaminophen-induced renal sulfhydryl depletion in the mouse by *n*-propylthiazolidine carboxylic acid. The Toxicologist 42: 278, 1998.

43. Wang, G.-W. and Kang, Y. J. (1998). Inhibition by metallothionein of doxorubicin toxicity in cultured mouse cardiomyocytes. Free Radical Biol. Med., 25(S1):S41.

44. Wong, J.L., Zheng, Y.T., Tamburro, C.H., Quiggins, P., and Benz, F.W. Immunoassay of hemoglobin-acrylonitrile adducts as biomarkers of exposure in animals and humans. Toxicological Sciences 42: No1-Supplement, 340, 1998.

45. Wu, H.-Y., Saari, J. T. and Kang, Y. J. (1998). Inhibition of copper deficiency-induced heart hypertrophy by metallothionein in mouse. Free Radical Biol. Med., 25(S1):S41.

VI. Invited Scientific Presentations and Seminars

1. Benz, Frederick W. Presentation to Chemistry Class at Jefferson Community College, at the invitation of Mr. Steve Pruett, Chemistry Instructor, 4/20/98.

2. Hein, David W. Molecular Pharmacogenetics of Acetylation: Its Possible Role in Genetic Predisposition to Cancer from Aromatic and Heterocyclic Amine Carcinogens. Department of Pharmacology and Graduate Center for Toxicology, University of Kentucky, Lexington, Kentucky, February 1998.

3. Hein, David W. Role of N-Acetyltransferase Polymorphisms in Genetic Predisposition to Cancer. Symposium on the Role of Genetic Polymorphisms and Repair Deficiencies in Environmental Disease, 37th Annual Meeting of the Society of Toxicology, Seattle, Washington, March 1998.

4. Hein, David W. Metabolic Activation of N-Hydroxy-2-Amino-1-Methyl-6-Phenylimidazo-[4,5-b]Pyridine (N-OH-PhIP) by Twenty-Three Recombinant Human NAT2 Allozymes. Genetics of Cancer and Exposure Susceptibility Mini-symposium, Eighty-Ninth Annual Meeting of the American Association for Cancer Research, New Orleans, Louisiana, March 1998.

5. Hein, David W. Structure/Function Studies on Metabolic Activation of Aromatic Amine Carcinogens by Recombinant Human N-Acetyltransferases. Student Research Opportunity Program, University of Louisville, Louisville, Kentucky, July 1998.

6. Hein, David W. Human N-Acetyltransferase-1 (NAT1) and –2 (NAT2) Genotype/Phenotype Determinations in Cytosolic Preparations from Surgical Human Colon Specimens. First International Workshop on the Arylamine N-Acetyltransferases, Kuranda, Queensland, Australia, October 1998.

7. Kang, Y.J. London Regional Cancer Center, Univ. Western Ontario, London, Canada, "Metallothionein and adriamycin cardiotoxicity," Nov. 17, 1998

8. Kang, Y.J. Depts. Pathology, and Pharmacology and Toxicology, Univ. Western Ontario, London, Canada, "Metallothionein in myocardial ischemic preconditioning," Nov. 16, 1998.

9. Kang, Y.J. Institute of Toxicology, National Taiwan University, Taiwan, "Transgenic approach to antioxidant function of catalase in the heart," Apr. 24, 1998.

10. Kang, Y.J. Drug Development Division, Development Center for Biotechnology, Taiwan, "Catalase provides protection against oxidative cardiotoxicity," Apr. 24, 1998

11. Kang, Y.J. Institute of Biomedical Sciences, Academia Sinica, Taiwan, "Catalase in cardiac protection against oxidative injury," Apr. 23, 1998.

12. Kang, Y.J. Department of Cardiology, Veterans General Hospital in Taipei, Taiwan, "Metallothionein provides cardiac protection against ischemia-reperfusion injury," Apr. 23, 1998.

13. Kang, Y.J. Department of Cardiology, Veterans General Hospital in Taichung, Taiwan, "Cardiac catalase and oxidative injury," Apr. 20, 1998.

14. Kang, Y.J. The Keynote Speaker of the Toxicology Society of Taiwan, The Thirteenth Joint Annual Conference of Biomedical Sciences, National Taiwan University, Taipei, "Transgenic approaches to cardiac protection against oxidative injury," Apr. 19, 1998.

15. Kang, Y.J. Department of Human Nutrition and Food Management, Ohio State University, Columbus, OH. "Cardiac specific overexpression of metallothionein protects against oxidative injury," Mar. 11, 1998.

16. Myers, S.R. Biomarkers of Nitroaromatic Munitions. National Exposure Research Laboratory, Cincinnati, Ohio, April, 1998.

17. Pierce, William M. Jr. Bone Targeted Estrogens. Presentation at Kowa Research Institute, San Jose, CA, November 9, 1998.

18. Rowell, Peter P. Annual Nicotine Research Conference, Duke University, Nov. 4, 1998.

VII. Research Grants and Contracts

A. Research Grant and Contract Proposals Submitted

	Agency	Budget Requested
Dr. Frederick W. Benz		
Vinyl Monomers: Detoxified by Glutathione S-Transferases (Co-I); D.E. Nerland (PI) 02/01/00 – 01/31/04	NIH	$510,287
Dr. Laurence A. Carr		
Tobacco Use and Attention Deficit Disorder (Co-I); C. Mitchell (PI) 10/01/98 – 09/30/02)	NIH	$1,717,523
Dr. David W. Hein		
Pharmacogenetics of Drug and Carcinogen Metabolism (cont.) (P.I.) 07/01/98 – 06/30/99	NIH-NCI	$361,947
Molecular Epidemiology of Colon and Stomach Cancers (PI) 09/01/98 – 06/30/00	NIH-NCI	$177,550
Center for Children's Environmental Health (Co-I); S.R. Myers (PI) 08/01/98 – 06/31/02	NIH/NIEHS	$3,368,844
Pharmacogenetics of Fetal Tobacco Smoke Exposure (Co-I); S.R. Myers (PI) 12/01/98 – 11/30/03	NIH	$1,840.554
Role of Genetic Polymorphism In Liver Toxicity (Co-I); T.S. Chen (PI) 09/01/98 – 08/31/99	UofL (CGeMM)	$24,325
Pharmacogenetics of Fetal Tobacco Smoke Exposure (Co-I); S.R. Myers (PI) 07/01/99 – 06/30/04	NIH/NIEHS	$2,330,585
Analysis of Environmental Carcinogens in Urine of Exposed Children and Adults (Co-I); S.R. Myers (PI) 10/01/99 – 09/30/02	USEPA	$750,986
Pediatric Pharmacology Research Unit (Co-I); J.E. Sullivan (PI) 01/01/99 – 12/31/03	NIH/NICHD	$1,579,652

	Agency	Budget Requested
Dr. Harrell E. Hurst		
The Effect of Ozone on the Production of Insect Repellant Compounds in Plants (Co-I); A. senGupta (PI) 08/01/98 – 07/31/01	US EPA	$250,756
Pharmacogenetics of Fetal Tobacco Smoke Exposure (Co-I); S.R. Myers (PI) 12/01/98 – 11/30/03	NIH	$1,840,554
Pediatric Pharmacology Research Unit (Co-I); J.E. Sullivan (PI) 01/01/99 – 12/31/03	NIH/NICHD	$1,579,652
Analysis of Environmental Carcinogens in Urine of Exposed Children and Adults (Co-I); S.R. Myers (PI) 10/01/99 – 09/30/02	US EPA	$750,986
Dr. Y. James Kang		
Butylated hydroxyanisole-mediated hypercholesterolemia (PI), submitted 02/01/98	NIH-NIDDK	$650,000
Metallothionein and adriamycin cardiotoxicity, submitted 07/01/98	NIH-NHLBI	$623,000
Metallothionein and adriamycin cardiomyopathy, submitted 07/15/98	Jewish Hospital Foundation	$50,000
Dr. Steven R. Myers		
Pediatric Pharmacology Research Unit (Co-I); J.E. Sullivan (PI) 01/01/99 – 12/31/03	NIH-NICHHD	$1,579,652
Children's Health Center for Children's Environmental Health and Disease Prevention (PI) 08/01/98 – 07/31/02	NIH	$3,368,844
Analysis of Environmental Carcinogens in Urine of Exposed Children and Adults (PI) 10/01/99-09/30/02	USEPA	$750,986
Pharmacogenetics of Fetal Tobacco Smoke Exposure (PI) 12/1/98 – 11/30/03	NIH	$1,840,554

	Agency	Budget Requested
Dr. Steven R. Myers (cont.)		
Pharmacogenetics of Fetal Tobacco Smoke Exposure (P.I.) 7/1/99 – 6/30/04	NIH	$2,330,585
Dr. Donald E. Nerland		
Vinyl Monomers: Detoxified by Glutathione S-Transferases (PI) 02/01/00 – 01/31/04	NIH	$722,647
Dr. William M. Pierce, Jr.		
Neutrophil Respiratory Burst in Azotemia (Co-I); R.Ward (PI) 1999 - 2002	NIH	$300,000
Estrogens: Bone Blood Flow and Bone Mechanical Properties (Co-I); J. Fleming (PI) 1999 - 2000	NIH	$50,000
Regulation of Neutrophil Activation (Co-I); K. McLeish (PI) 1999-2002	VA RAGS	$300,000
Tyrosine Phosphorylation of Platelet Ca^{2+}-ATPase (Co-I); W. Dean (PI) 1998 – 2001	American Heart	$200,000
Aging Induced Renal Dysfunction: G Protein Activity (Co-I); J.C. Passmore (PI) February 1, 1999 – January 31, 2001	NIH	$268,731
Glycosphingolipid Metabolism and Trafficking (Co-I); W.W. Young (PI) 1999-2002	NIH	$300,000
CYP Isoforms and Cardiovascular Function (Co-I); A. Adeagbo (PI) 02/01/99-01/31/2001	NIH	$70,000
Undergraduate Research Training (Mentor); R. Wittebort (PI) 1998-2001	Howard Hughes Medical Institute	
Riverine Food Webs and their Roles in Contaminant Transport (Co-I); P. Bukaveckas (PI) 1998-1999	EPA-EPSCoR	$168,500

	Agency	Budget Requested
Dr. Peter P. Rowell		
Functional Activity of Mesolimbic Nicotinic Receptors (PI) 07/01/99 – 06/30/99	NIH	$207,991
Dr. Walter M. Williams		
Role of Genetic Polymorphism in Liver Toxicity (Collaborator); T.S. Chen (PI) 09/01/98 – 08/31/99	IDEA Pilot Proposal	$24,325

B. Research Grants and Contracts in Force

	Agency	Project Award
Dr. Frederick W. Benz		
Acute Acrylonitrile Intoxication: Antidotal Assessment (PI) 09/01/98 – 08/31/99	NIH-NIEHS	$108,088
Acute Acrylonitrile Intoxication: Antidotal Assessment (PI) 09/01/97 – 08/31/98	NIH-NIEHS	$103,930
Dr. Laurence A. Carr		
An Immunomodulatory Role for Brain Dopamine Systems (PI) 09/01/98-09/01/99	SOM Research Committee	$7,920
Dr. Theresa S. Chen		
Acute Acrylonitrile Intoxication: Antidotal Assessment (Co-I); F.W. Benz (PI) 09/01/97 – 08/31/98	NIH-NIEHS	$105,432
Acute Acrylonitrile Intoxication: Antidotal Assessment (Co-I); F.W. Benz (PI) 09/01/98 – 08/31/99	NIH-NIEHS	$108,088
Glutathione Status and Lipid Peroxidation in Chronic Toxicity (P.I.) 06/01/96 – 03/31/98	ULCHES-NIEHS	$16,000
Role of Genetic Polymorphism in Liver Toxicity (P.I.) 09/01/98 – 08/31/99	IDEA Pilot Proposal	$8,077
Dr. David W. Hein		
Pharmacogenetics of Drug and Carcinogen Metabolism (P.I.) 09/01/97 – 06/30/02	NIH-NCI	$1,859,936
Metabolic Basis of Sulfonamide Toxicity in AIDS patients (P.I. on subproject) 09/01/97 – 05/31/00	NIH-Subcontract from Wayne State	$80,349

	Agency	Project Award
Dr. David W. Hein (cont.)		
Role of genetic polymorphism in liver toxicity (Co-I); T.S. Chen (PI)	IDEA Pilot Proposal	$8,077
Dr. Harrell E. Hurst		
The Center for the Study of Environmental Hazards to Reproductive Health (Co-I); F.J. Hendler (PI) 01/01/97 - 12/31/99	Department of Veterans Affairs	$949,100
Acute Acrylonitrile Intoxication – Antidotal Assessment (Co-I); F.W. Benz (PI) 09/01/98 - 08/31/99	NIEHS	$108,088
HPLC Electrospray Mass Spectrometer (Co-I); W.M. Pierce (PI) 06/01/97 – 05/31/98	NIH/NCRR	$307,954
Contract for Drug Screening, (Director) 07/01/97 – 06/30/98	UofL Athletics Association	$37,500
Freshness Phase I: Odor & Ethylene Removal (Co-I); C. Staff (PI) 08/17/98 – 11/30/98	General Electric Company	$60,177
Dr. Y. James Kang		
Effect of Catalase on Adriamycin Cardiotoxicity (PI) 08/01/95-07/31/00	NIH-NCI	$507,500
Suppression of Cardiac Ischemia-Reperfusion Injury by Overexpression of metallothionein (PI) 01/01/97-12/31/00	American Heart Association	$300,000
The role of Catalase in Protection Against Copper Deficiency-Induced Heart Damage in Transgenic Mice (PI) 09/01/95-10/31/98	USDA	$140,000
Metallothionein and Alcoholic Liver Injury (PI) 12/01/98-10/31/99	UofL Medical School	$15,000

	Agency	Project Award
Dr. Donald E. Nerland		
Acute Acrylonitrile Intoxication: Antidotal Assessment (Co-I); F.W. Benz (PI) 09/01/97-08/31/98	NIH-NIEHS	$103,930
Acute Acrylonitrile Intoxication: Antidotal Assessment (Co-I); F.W. Benz (PI) 09/01/98-08/31/99	NIH-NIEHS	$108,088
Dr. William M. Pierce, Jr.		
Bone Targeting of Pharmaceutical Agents for Osteoporosis – Phase 2 (P.I.) 09/1/97 – 07/31/98	KOWA	$255,148
Bone Targeting of Pharmaceutical Agents for Osteoporosis – Phase 3 (P.I.) 08/01/98 – 09/30/98	KOWA	$32,692
Bone Targeting of Estrogens for Osteoporosis (P.I.) 10/1/98 – 9/30/00	KOWA	$316,708
HPLC Electrospray Mass Spectrometer (P.I.) 6/1/97 – 05/31/98	NIH SIG	$307,954
Blood Lead Monitoring (P.I.) 01/01/98 – 12/31/98	Service to Regional Practitioners	$20,113
Atomic Absorption Spectrophotometer (P.I.) 08/01/98 – 07/31/99	WHAS Crusade for Children	$50,000
Dr. Peter P. Rowell		
Functional Activity of Presynaptic Nicotinic Receptors (PI) 06/01/95-05/31/99	NIH	$185,070
Dr. Leonard C. Waite		
Bone Targeting of Pharmaceutical Agents for Osteoporosis – Phase 2 (Co-I); W.M. Pierce (PI) 09/01/97 – 07/31/98	KOWA	$255,148

	Agency	Project Award
Dr. Leonard C. Waite (cont.)		
Bone Targeting of Pharmaceutical Agents for Osteoporosis – Phase 3 (Co-I); W.M. Pierce (PI) 08/01/98 – 09/30/98	KOWA	$32,692
Bone Targeting of Estrogens for Osteoporosis (Co-I); W.M. Pierce (PI) 10/01/98 – 09/30/00	KOWA	$316,708

VIII. Summary of Teaching Activities

A. 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.

B. 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.

C. School of Nursing

The Department team-taught a Basic Pharmacology for Nursing course to second year nursing 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.

D. School of Allied Health

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.

E. 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. William Pierce)
Pharmacology Seminar (Dr. Donald Nerland)

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

Individual faculty served on a number of graduate student committees as identified in the Appendix.

IX. Summary of Service Activities

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.

X. Honors and Awards

Jian Cai received the Dr. Kee Chang Huang outstanding graduate student award, and received the Second Place Research Poster Award at the annual meeting of the Ohio Valley Society of Toxicology.

Adrian Fretland received a Travel Award to present his research at the annual meeting of the Society of Toxicology.

David Hein received the Second Place Research Award "Potential for Major Clinical Applications" from the Jewish Hospital Foundation at Research!Louisville.

James Kang was the keynote speaker of the Toxicology Society of Taiwan.

Matthew Leff received the First Place Research Poster Award, at the annual meeting of the Ohio Valley Society of Toxicology, received a Travel Award to present his research at the annual meeting of the Society of Toxicology, and received an Honorable Mention Research Poster Award at the University of Louisville Health Sciences Center Student Research Day

William J. Waddell was appointed Professor and Chair Emeritus.

Mike Williams received the University of Louisville School of Medicine-Gender Equity Award from the American Medical Women's Association and received the Golden Apple Award for Teaching from the University of Louisville School of Medicine Class of 2000.

XI. Standing Committee Membership

Graduate Program Committee

Dr. Len Waite (Chair)
Dr. Peter Rowell (2000)
Dr. Fred Benz (1999)
Dr. William Pierce (1998)

PBSI/Grievance Committee

Dr. Peter Rowell (Chair)
Dr. Mike Williams (2000)
Dr. Don Nerland (1999)
Dr. Harrell Hurst (1998)

Teaching Evaluation Committee

Dr. Larry Carr (Chair)
Dr. Mike Williams (2000)
Dr. Len Waite (1999)
Dr. Fred Benz (1998)

Seminar Committee

Dr. Don Nerland (Chair)
Dr. Theresa Chen (2000)
Dr. Harrell Hurst (1999)
Dr. Steve Myers (1998)

Core Laboratories/Research Development Committee

Dr. William Pierce (Chair)
Dr. Steve Myers (2000)
Dr. Larry Carr (1999)
Dr. Theresa Chen (1998)