DEPARTMENT OF PHYSIOLOGY & PHARMACOLOGY

Annual Report

July 1, 2007 - June 30, 2008

1. EXECUTIVE SUMMARY

This annual report is the third for our Department since it was founded on 1/1/06, through the merger of two separate departments of Physiology and Pharmacology of the former MUO. The consolidation of the functions and resources of the parent departments continued during the past year, though most of this had already been accomplished as indicated in last year's report. We are pleased that Dean Gold initiated the search for a new Chair of the Department in May 2008.

The extensive and effective participation of our faculty in the various educational and teaching programs on the HSC continued as before. There was, however, a significant change in the role of this Department and its faculty in the training of Ph.D. and M.S. students. During the past year, a major reorganization of the graduate programs of COM became effective, and one of the four newly constituted graduate tracks, i.e., Cardiovascular and Metabolic Diseases (CVMD) was officially affiliated with our Department. Dr. Andrew Beavis, who is the Education Director of the Department, also assumed the responsibility of directing CVMD. A related new development was the centralization in the Department office of all administrative matters pertaining to the graduate students conducting research in our laboratories. The presence of a specified staff member as "Student Services Coordinator" greatly improved services to the students and their mentors, and facilitated the Departmental oversight of the student affairs.

The research programs of the Department's faculty continued to flourish, as detailed below. Several new grants were awarded during the year, and some were completed or discontinued as expected. We are quite optimistic about the prospects of the faculty's pending applications, and our continued research productivity. Unexpectedly, managing the large number of grant accounts and related research accounts of the Department became a major problem during the past year, because on 7/1/07, the institution substituted a flawed Banner financial system for previous systems that had been used for grants accounting. Not knowing the balance of any account for 5-6 months, and the continued and glaring deficiencies of the new system even after a year, have made the oversight of the grant accounts, and the research programs supported by the accounts, extremely time-consuming, if not impossible. Most of our faculty and staff who have dealt with these problems agree that it is time to put Banner to sleep - at least for the management of grant accounts.

The Center for Diabetes and Endocrine Research (CeDER), under the direction of Dr. Sonia Najjar, continued to grow and advance toward its goals. We were fortunate that we succeeded in attracting an outstanding new faculty, Edith Mensah-Osman, M.D., Ph.D., to join CeDER and the Department.

The associations of several faculty members with the Department were terminated during the year. Dr. Michael Garrett resigned to accept an academic appointment elsewhere. Drs. Ana Maria Oyarce, Soon Jin Lee, and Yasser Saad (all with appointments in the Research Track) left due to lack of need for their services. Dr. Nisar Ahmad resigned his faculty appointment, but remained on the Department staff.

The Department is looking forward to the successful completion of the ongoing search for the new Chair.

2. CHAIR'S SELF ASSESSMENT

A major goal for 2007-2008 was to assist Dean Gold to arrive at a decision on the appropriate time for the start of the search for a new Chair. Now that the search has started, my goals for 2008-2009 are (a) to provide appropriate and accurate information on the present status of the Department to the Search Committee and the candidates who will be visiting our institution; and (b) to do the best I can for the Department until the new Chair is on board.

3. DEPARTMENT HIGHLIGHTS & NOTABLE EVENTS
(As submitted by each faculty member)

Dr. Amir Askari: Was the recipient of the 2008 Distinguished Alumnus Award of the Weill Cornell Graduate School of Medical Sciences, Cornell University. The award, "In recognition of distinguished lifelong contributions to biomedical research and education" was presented to him on May 29, 2008 at the Commencement Exercises of Weill Cornell Medical College and Weill Cornell Graduate School of Medical Sciences, held at Carnegie Hall, New York.

Dr. Andrew Beavis: Appointed Director of CVMD Graduate Track; Chaired search committee for a Director of Laboratory Animal Resources, which is a new identity encompassing the animal care programs of both campuses.

Dr. Joana Chakraborty: Selected to review abstracts submitted to the XVII "International AIDS Conference" in Mexico City, Mexico, which will be held in August 2008. Forty eight abstracts were reviewed; Selected as "Reuters Insight Expert".

Dr. George T. Cicila: Platform presentation at the Rat Genomics and Models meeting, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY. Dec. 6-9, 2007. Soon Jin Lee, Ph.D., gave the oral presentation of "An *Rtel1* allelic variant is associated with telomere length shortening in a rat genetic model"; Sponsored a former student, Dr. Eric E. Morgan, who was selected as a recipient of the Caroline tum Suden/Frances A. Hellebrandt Professional Opportunity Award in conjunction with the Experimental Biology Meeting.

Dr. Bina Joe: One out of the five articles published was featured on the cover of the journal Mammalian Genome; A new RO1 grant from the NHLBI/NIH is anticipated to be awarded; A graduate student was invited to present his research at the International meeting of the Complex Trait Consortium held in Montreal, Canada; Dissertations of two students were accepted for award of the Masters degree in CVMD; Appointed as the President of the Ohio Physiological Society for 2008; Adjudicated two thesis presentations of candidates from Universities overseas (India).

Dr. Ronald Mellgren: Co-Chaired a session on "Biochemistry of Calpains" at the FASEB Summer Research Conference on "BIOLOGY OF CALPAINS IN HEALTH AND DISEASE", July 14-19, 2007; Presented a talk on "Calpains as Mediators of Plasma Membrane Repair; Served as Co-Chairman of the Murachi Award Committee for best graduate student and postdoctoral associate poster presentations at the conference.

Dr. Patricia Metting: Published - Metting, PJ, ed., *Physiology PRETEST*©, 12th Edition, New York: McGraw-Hill Book Co., 2008; Served as Immediate Past Chair, Association of American Medical Colleges (AAMC) Group on Student Affairs (GSA); Received $1500 grant from The Arnold P. Gold Foundation to fund six (6) residents for Humanism and Excellence in Teaching Awards; and $2000 grant from The Arnold P. Gold Foundation to support the Leonard Tow Humanism in Medicine Awards for one graduating student and one faculty member.

Dr. Phillip T. Robinson: Joined the University of Toledo as the Director of the Department of Laboratory Animal Resources on April 23, 2008.

Dr. John W. Turner, Jr.,: Invited speaker (controlled-release contraceptive vaccines) at the 6th International Conference on Fertility Control for Wildlife, September 3-5, 2007, York, United Kingdom; Invited speaker (wild deer contraception) - 34th National Natural Areas Conference, October 12, 2007, Cleveland Ohio; Applied for and awarded a Research Permit from Commonwealth of the Bahamas to perform fish-stress field studies in Bahamas; A formal patent application was submitted (May 2008) by the University of Toledo for an immunoassay developed in my lab to measure fecal cortisol. This assay enables non-invasive stress monitoring of free-roaming terrestrial and aquatic wildlife; a humane and useful tool in light of the environmental comprises presently faced by many species.

Dr. Xiaodong Wang: Invited to give a seminar in the Department of Cell Biology and Physiology at Pittsburgh University this year; Invited to chair one didactic session and give an oral presentation in the same session at this year's Williamsburg Conference sponsored by the Cystic Fibrosis Foundation; Gargi Roy, a graduate student, won first place for poster session for the Pharmacology Research Colloquium held in Ann Arbor, Michigan.

Dr. Zi-Jian Xie: Invited to present seminars at University of Michigan and Yale University; Awarded an international collaboration grant from Chinese Ministry of Science and Technology, January 2008.

4. DETAILS OF EDUCATION, RESEARCH, CLINICAL SERVICES, AND ADMINISTRATIVE & UNIVERSITY SERVICES

4a. Education:

Twenty three of our 27 faculty members contributed a total of 651.5 hours of didactic teaching to various formal courses of the COM, CHS, CGS, and CON. We also devoted 244 contact hours to the PBL course in the COM. The details of these contributions are presented in Table 1. It is appropriate to note that we have not gathered information on "preparation/grading" time, and the faculty time spent advising/instructing individual students.

4b. Research:

Effort/time: Estimate of faculty effort devoted to research is included in Table 2. There were also 19 postdoctoral fellows and technical staff in the Department who devoted 100% effort to research.

Space: All space for Physiology & Pharmacology is accounted for in Table 3.

Funding: The amount of the Department's extramural research funds is summarized in Table 4, provided by our Research and Sponsored Programs Office. Also provided by this office is Table 5 showing comparative research "expenditures" of the various departments of COM.

Description of Research & Results: The nature of the active research programs, and the recent findings of our faculty are described below, as summarized by each member.

Dr. Amir Askari - The laboratory has had a long-standing interest in the mechanism of ion transport across biological membranes, with a major emphasis on the properties and functions of (Na^+,K^+)-ATPase (the sodium pump) of the eucaryotic plasma membrane. Current work of the laboratory is primarily on the digitalis-induced interactions of (Na^+,K^+)-ATPase with non-ATPase proteins, leading to the newly discovered functions of (Na^+,K^+)-ATPase as a signal transducer that regulates growth of the cardiac myocyte. Recent findings include the discovery that digitalis drugs induce cardiac hypertrophy through the activation of PI3K/Akt signaling pathways, and that this drug-induced hypertrophy is akin to physiological rather than pathological cardiac hypertrophy.

Dr. Joana Chakraborty - Currently, I am working on two major projects: a) educational and epidemiological studies on HIV/AIDS and b) biomedical research on HIV/AIDS; development of a mouse model. The goals of the first project are to: develop educational materials, offer courses to medical, nursing, allied health students and practicing physicians, and provide opportunities to interact with people living with AIDS, and also conduct epidemiological studies on HIV infection in developing countries and the impact of AIDS on women and children. The goal of my second project is to develop an animal model to study the transmission of retroviruses and their effects. This model has been developed by using the ts-1 virus in BALB/c mice. We have further established that this model can be useful for the study of AIDS related malignancy, such as lymphoma. We have identified 29 viral genome integration sites (IS). The results have been published in "Virology". We have also established a collaborative project with Dr. Lin Tao at the University of Illinois at Chicago, to study the effect of probiotics to eliminate retrovirus (ts-1) in breast milk. This project has a great potential to block HIV in the breast milk, thus reducing mother-to-child transmission of HIV.

Dr. George Cicila - Our laboratory is focused on the study of cardiovascular quantitative traits. The first project involves studying blood pressure (BP) in the Dahl rat model where Dr. Lee and I have used congenic strains and substrains to characterize multiple BP quantitative trait loci (QTLs) at the q-terminus of rat chromosome 3 (RNO3). Dr. Lee and I have bred and tested additional congenic substrains to further delimit the RNO3 BP QTL-containing intervals and are using gene expression profiling of kidneys from these congenic strains (with the parental S strain) to identify superior candidate genes. In collaboration with Dr. Joe, I am examining the interactions of multiple BP QTL-containing congenic intervals introgressed into Dahl S rats. The goal of this project is to examine the interactions of genes responsible for the different BP QTLs and to use such information to identify and define specific pathways through which they influence BP, as well as the responsible gene(s). We are studying mutations in one candidate gene, regulator of telomere length 1 (*Rtel1*) in detail, including the identification of modifier genes. The second project involves study of aerobic running capacity (ARC) and related quantitative traits (cardiac performance, lipid metabolism/obesity, and methylation) using the high performing DA rat strain in conjunction with the low performing Copenhagen (COP) and Buffalo (BUF) rat strains. I am using congenic strains bred from DA and COP rats to examine ARC quantitative trait loci on rat chromosomes 16 and 3, and the effects of these congenic regions on ARC, fat metabolism and depots, and cardiac performance. I am also studying a segregating population of F_2(BUFxDA) rats to identify QTLs for ARC, abdominal fat depots, methylation potential, circulating factors (free fatty acids, triglycerides, etc.), and organ weights. We have identified an association between the DA-rat and BUF-rat mitochondrial DNA and ARC, subcutaneous fat weight, and liver S-adenosyl methionine and S-adenosyl homocysteine levels.

Dr. Bina Joe - The ongoing research in my laboratory is focused on the genetic dissection of inherited hypertension. During the last year, we have published five manuscripts, all of which describe varying resolutions achieved by mapping studies aimed at identifying genetic elements controlling blood pressure. In addition to continuing these projects, a recent large scale association study in humans has identified 6 single nucleotide polymorphisms (SNPs) as linked to the trait of hypertension. The regions of four of these overlap with the regions that we are tracking in our rat models. Notable is the fact that a transcription factor Nr2f2 that we had prioritized as a candidate gene in 2005 was confirmed as being associated in human essential hypertension. This work has caught the attention of several prominent investigators in our field as exemplified

by requests for collaborations for further research into the candidacy of Nr2f2. We will continue to aggressively pursue this research question.

Dr. Beata Lecka-Czernik (Joint Appointment) - Osteoporosis and diabetes are major public health concerns due to their prevalence in our country. The current estimates and future prognosis for the occurrence of these diseases in the United States are alarming and indicate that almost 50% of elderly individuals are osteoporotic, 10% of U.S. population is diabetic, whereas 25% have prediabetes. Our research and other's demonstrated that at the cellular level, osteoporosis and diabetes share several features including a genetic predisposition, molecular controls and a common cell progenitor. New clinical evidence indicates that diabetic patients have increased bone fracture risk as compared to non-diabetics. In addition, a new class of anti-diabetic drugs, thiazolidinediones (TZD), causes bone loss and further increases fracture risk in diabetic individuals. Our research consists of two components. The basic research component is focused on 1) Establishing an animal model to study the effects of diabetes on bone and bone fracture healing; 2) Investigate molecular mechanism of TZD-induced bone loss; 3) Examine biomechanical, biological and biochemical properties of human diabetic bone. The translational research component is focused on: 1) Establishing means for pharmacological prevention of TZD-induced bone loss using either bone anabolic or bone anti-resorptive therapies in animal model; 2) Development of stem cell-based and biomaterial-based technologies to improve bone regeneration during fracture healing using animal models of metabolic diseases.

Dr. Lijun Liu - My major research interest is to investigate cardiac Na/K-ATPase on cardiac hypertrophy. Last year, we developed rat and mouse cardiac hypertrophy model. We are going to detect digitalis drug effects on those model animals. My future plan is to apply for grants to continue to research digitalis drugs on cardiovascular diseases.

Dr. Ronald Mellgren - Over the past 3 years, I have pursued the hypothesis that calpains are required for the calcium-mediated repair of mechanically damaged cell plasma membrane. The studies have established that the typical, ubiquitous calpains are required for the repair of damaged fibroblasts and skeletal myotubes. With my collaborator, Paul McNeil at the Medical College of Georgia, I am now studying factors that may facilitate calpain-mediated membrane repair, and investigating a new hypothesis that NSAID-associated gastrointestinal and myocardial toxicity may be related to inhibition of calpain-mediated repair of intestinal cell or cardiomyocyte membrane, respectively.

Dr. Patricia Metting - One project involves the evaluation of predictors of success on the USMLE Step 1. A regression equation has been determined to predict USMLE Step 1 scores on the basis of students' scores in the Human Structure Block and the Organ Systems Block, as well as the National Board of Medical Examiners Comprehensive Basic Science Examination. A manuscript is currently being revised for resubmission.
A second project evaluates the influence of personality type (as determined by the Myers-Briggs Type Indicator) and learning style (as determined by the Kolb Inventory) on academic performance, including the USMLE Step 1. The plan for FY2009 is to collaborate with researchers in the Department of Medicine (Kleshinski, Shapiro, Khuder) to incorporate these prematriculation variables into their neural network model with other prematriculation variables, such as MCAT, GPA, etc., as predictors of academic and standardized examination performance in medical school.

Dr. Nikolai Modyanov - My current research is focused on functional characterization of the BetaM proteins encoded by ATP1B4 genes, which were discovered in my laboratory. We demonstrated that ATP1B4 genes represent a rare instance of orthologous vertebrate gene co-option that created fundamental changes in the physiological roles and functional properties of the encoded proteins. We determined that BetaM proteins are subunits of Na,K-ATPase in lower vertebrates, whereas in placental mammals BetaM-proteins lost their ancestral functions and acquired new functions as muscle-specific regulators of gene expression and signal transduction specifically during muscle development, growth and regeneration. During the report year we determined that BetaM is involved in regulation of gene expression of major gynogenic regulatory factors such

as MyoD, myogenin and Mef2c. Importantly, we have obtained experimental evidence demonstrating participation of BetaM in adult skeletal muscle regeneration. These studies pave the way towards the characterization of hitherto unknown essential regulatory mechanism of gene expression and signal transduction that is specific to development, growth and regeneration of skeletal and heart muscles, and will lead to understanding of the nature of evolutionary forces that underlie the necessity and physiological importance of ATP1B4 gene co-option in placental mammals.

Dr. Sonia Najjar - I have focused on studying the role of an insulin substrate, termed CEACAM1, in insulin action, clearance, obesity, fatty liver disease and cancer. In this venue, we have established many novel mouse models of obesity and diabetes and advanced many novel findings in the field. Because of the motivation and hard work of my graduate students, I have made substantial impact on the field of metabolism. I have trained my graduate students by working closely with them, conducting weekly data club, and carrying out daily individual scientific discussions, during which we derive and redefine the hypothesis and analyze experimental observations. I believe that this training style helps them develop into reliable independent scientists.

Dr. Sumudra Periyasamy - *Role of TPR proteins in AR Signaling in Normal and Cancerous prostate:* Androgens and androgen receptor (AR) are essential for normal prostate development and prostate cancer (PCa) growth and survival. Androgen ablation is frequently used in the treatment of PCa to reduce the level of androgens and repress AR action. Despite this treatment, PCa will eventually progress to androgen-refractory tumors. The mechanisms by which PCa becomes androgen-refractory are currently unclear. But a majority of androgen-refractory tumors still express the AR suggesting that non-androgenic factors may activate AR and contribute to PCa progression. Few studies, including our own, indicate that the tetratricopeptide repeat proteins (TPRs) namely FKBP52, FKBP51 and Cyp40 interact with AR in prostate cancer cells. Evidence also indicates that the expression of FKBP51 was higher in androgen-refractory tumors than in primary tumors. However, little is known of how TPRs control AR function in normal or cancerous prostate. We now have evidence to support that TPRs not only interact with AR but also regulate AR activity in prostate organogenesis and PCa. We have shown dysgenesis of prostate and dramatically reduced AR activity in FKBP52-knockout (KO) mice model. On the other hand, no such defect was observed in FKBP51-KO and Cyp40-KO mice models. We have also shown that the expression of FKBP52, FKBP51 and Cyp40 was higher in PCa tissues and cell lines than in normal prostate tissues and cells. We have observed that knockdown of Cyp40 reduced AR activity in PCa LNCaP cells. We have also observed that the TPR binding ligands FK506 and CsA attenuated androgen-induced AR-mediated activity in these cells. We, therefore, hypothesize that TPRs might play important roles as positive regulators of AR in prostate. We will use FKBP52, FKBP51, Cyp40 and PP5 wild and knockout animals, animal tumor xenograft model as well as prostate cell model system to test the above hypothesis.

Dr. Sandrine Pierre - *Mechanism of ouabain-induced cardiac preconditioning (PC)*: In 2007, we reported that transient exposure to a low concentration of the digitalis ouabain protects the myocardium against ischemia-reperfusion injury. We also showed that this protective signaling cascade was initiated at the plasma membrane by the Na,K-ATPase receptor complex and relayed to the mitochondria. We have recently obtained physical evidence that ouabain binding to the Na,K-ATPase triggers the formation of a signalosome, where signaling enzymes are coordinated into a caveolar signaling platform that interacts with mitochondria and initiates an intramitochondrial signaling pathway. Although other preconditioning drugs such as G-protein-coupled receptor agonists also trigger the formation of protective signalosomes, ongoing characterization suggest that ouabain signalosomes possess very unique features. *CEACAM1 in Cardiac and Vascular complication of Metabolic Diseases*. We have obtained evidence that cardiac and vascular abnormalities develop in the CEACAM1 knock-out mouse model, including high blood pressure, arterial wall remodeling, and cardiac lipotoxicity. Using the various models available in CeDER, we will determine the role of extra-hepatic CEACAM1 in the progression of these abnormalities.

Dr. Edwin Sanchez - My laboratory investigates the mechanism of steroid hormone action, with an emphasis on the roles played by molecular chaperones in control of steroid receptor function. We study these events at the molecular, cellular and physiological levels. Our recent findings indicate that the TPR molecular chaperone FKBP52 is essential to steroidal control of both male and female fertility, by controlling the actions of androgen and progesterone receptors, respectively. We have begun studies on two related TPR proteins: FKBP51 and PP5. Future studies will investigate all three TPR proteins with respect to molecular and physiological events.

Dr. Elizabeth Tietz - We have just begun the 4th year of a 5-year NIDA R01 grant to study the mechanisms underlying withdrawal-anxiety associated with benzodiazepine (BZ) dependence. We have found that excitatory receptor (AMPA and NMDA receptors) in the hippocampal area of the brain are biphasically regulated during BZ withdrawal associated with the appearance/masking of anxiety-like behavior. We requested and received a supplement from NIDA to years 04 and 05, to maintain my subcontract and collaboration with Dr. Francisco Alvarez, Department of Neurosciences, Cell Biology, and Physiology, Wright State University, to carry out EM studies on our aforementioned NIDA grant. Paromita Das recently resubmitted an EM manuscript, based on this collaboration (including studies from my former student Scott Lilly) to the Journal of Comparative Neurology. Though Dr. W. Gunning, III, Department of Pathology, has been very supportive as a collaborator on my current grant, he is not a neuroscientist. Moreover, the existing UT-COM equipment is inadequate to perform cryosubstitution and the EM microscope in the core is nearly inoperable. Recent data by another graduate student, Guofu Shen, show that the mechanisms underlying AMPA receptor trafficking and channel conductance are very similar to the mechanisms underlying the most prominent model of learning and memory (long-term potentiation, LTP) suggesting that the brain uses extraordinarily similar strategies, downstream of CaMKII activation to respond to a variety of activity-dependent events. However, unlike with LTP, my student Kun Xiang has found that calcium flux through voltage-gated calcium (VGCC) channels, rather than NMDA receptors, mediate the calcium signal related to the functional and structural changes in AMPA receptor channels. His recently published paper also links enhanced L-VGCC activity to changes in AMPA-mediated function and anxiety. We are currently investigating whether the effect on L-VGCCs is mediated indirectly through GABA receptor depolarization and/or directly through BZ inhibition of L-VGCCs. The former studies regarding BZ-induced L-VGCC regulation served as the basis for my recent Department of Defense (DoD) grant submission with Dr. D. Giovannucci, Department of Neurosciences, and Dr. L J. Greenfield, Jr., Department of Neurology, as collaborators, and Dr. Alvarez, Dr. Gunning, and Dr. O. Thibault, University of Kentucky, as consultants. To bridge the gap between the earliest possible start dates of the DoD grant funding, a grant similar to the one submitted to the DoD is planned to be submitted to another external funding agency: the American Foundation for Addiction Research, which funds small grants up to $175,000/2 yrs. Damien Earl, who is investigating the aforementioned hypotheses in our *in vivo* model and in recombinant L-VGCCs expressed in HEK-293-T cells, will also submit an NIH National Research Service Award application detailing these planned studies next month. Ryan Michel, a student in the UT-COM SURF program, will carry out similar L-VGCC studies in a neuroblastoma X glioma (NG108-15) cell line. The use of shared tissue culture lab in the Department has greatly facilitated these new cell culture studies. Based on Ryan Michel's application to the UT-COM SURF program, I also submitted a SURF fellowship to ASPET, which was not funded. We now have a core of ASPET members, including Dr. B. Yamamoto, the new Chair of the Department of Neurosciences. I will also submit an institutional application for 5 SURF fellowships/year over 3 years in Fall 2008. Interestingly, a BZ-induced effect on L-VGCCs, may also underlie the delayed regulation of GABA receptor function, which contributes to BZ tolerance, a phenomenon we had studied for years. My postdoctoral fellow, Paromita Das, found profound changes in GABA receptor single-channel function in BZ-treated hippocampal cells. Interestingly, these effects are restored by CAMKII, but not PKC inhibitors. These studies coupled with the studies in hippocampal slices by Kun Xiang, should open an additional avenue for study, thus funding.

John W. Turner, Jr., Ph.D. - Research is environmentally oriented, with 2 major directions: 1) development and testing of a multi-year duration, reversible wildlife immunocontraceptive and 2) assessment of deterioration of marine environments and their inhabitants via cortisol measurement in fishes. The contraceptive studies

currently focus on use of controlled-release bioerodable polymers to sequester booster doses of contraceptive under *in vitro* and *in vivo* field conditions. Future studies are planned to determine contraceptive impact on population growth and its application to wildlife management. The fish studies, both current and planned, involve laboratory and field components. The lab effort is to determine a hierarchy of aquatic stressors and to identify possible impact of these stressors on genes regulating cortisol production. The field effort is directed at use of fish fecal cortisol monitoring as an early-warning indicator of aquatic stress. Initial and continuing monitor studies are in the U.S. Virgin Islands, and in 2007/2008 we began monitoring reefs in the Bahamas under a research permit from the Bahamian Government.

Dr. Guillermo Vazquez - Research in my lab is focused on studying the role of Ca^{2+} signaling, particularly Ca^{2+} influx through TRPC channels, in endothelial dysfunction/inflammation within the context of atherosclerosis and other inflammatory vascular diseases http://hsc.utoledo.edu/depts/physpharm/faculty/vazquez.html). Recent studies in our lab show that TRPC3, a member of the TRPC family of channel forming proteins, plays a critical role in the mechanism underlying VCAM-1 expression and monocyte recruitment to vascular endothelium, two key events in the early steps of atherogenesis. We are currently developing a transgenic mouse model of atherosclerosis to study the in vivo relevance of TRPC3 in atherosclerosis lesion formation.

Dr. Xiaodong Wang - We recently identified key conformational changes in DeltaF508 CFTR, the most prevalent mutants among cystic fibrosis patients. Also, we have characterized the functional roles of the multiple components of folding machinery in CFTR export.

Dr. Zi-Jian Xie - My laboratory has been interested in how Na/K-ATPase functions as signaling receptor and an important cellular scaffolding protein in organization of membrane microdomains and protein complexes. Recent work has identified several protein domains from the a1 subunit of the Na/K-ATPase that play an important role in mediating protein interactions. Specifically, we have identified a Na/K-ATPase-specific peptide Src inhibitor that appears to act as a functional ouabain antagonist. We have filed a PCT application and are in the process of further characterizing the peptide as a potential anti-cancer agent.

Research goals and future plans:

Most of our faculty members who are involved in research are interested in remaining involved and advancing their research programs along the above-indicated lines. Changing directions may be necessary for some in order to keep up with the rapidly changing trends and to increase chances of obtaining the necessary extramural support. The Department's plan is to use its limited available resources to maintain all existing productive programs, but to attempt the expansion of those focused on cardiovascular and metabolic diseases.

4d. Administrative & University Services

The Department faculty, excluding those who have primary administrative assignments (Chairs, Vice Presidents and Deans), estimated that they spend 5,400 hours/year on UT administrative duties and committee work, and about 1,800 hours/year on such service work (grant and manuscript review, etc.) for external organizations.

5. PUBLICATIONS & GRANTS

5a. Publications

Publications printed or in press are attached (Attachment 1). Abstracts and presentations are not listed because these have lost much of their professional value, at least in the "basic science" world.

5b. Grants

Funded and submitted grants are listed in Table 4 and were provided by Research and Sponsored Programs. Table 5 provides comparative research expenditures of the departments provided by Research and Sponsored Programs.

6. FACULTY TIME & EFFORT - SEE TABLE 2

7. 2007/2008 KEY PERFORMANCE METRICS FOR THE AGGREGATE DEPARTMENT ARE PRESENTED IN TABLES 6 AND 7

PUBLICATIONS

Bye, A., Langaas, M., Hoydal, M.A., Kemi, O.J., Heinrich, G., Koch, L.G., Britton, S.L., Najjar, S.M., Ellingsen, O., and Wisloff, U. (2008) Aerobic capacity-dependent differences in cardiac gene expression. Physiol. Genomics 33, 100-109. (Impact Factor: 3.789)

Bye, A., Sørhaug, S., Ceci, M., Høydal, M.A., Stølen, T., Heinrich, G., Tjønna, A.E., Najjar, S.M., Nilsen, O.G., Catalucci, D., Grimaldi, S., Contu, R., Steinshamn, S., Condorelli, G., Smith, G.L., Ellingsen, O., Waldum, H., and Wisløff, U. (2008) Carbon monoxide levels experienced by heavy smokers impair aerobic capacity and cardiac contractility and induce pathological hypertrophy. Inhal. Toxicol. 20, 635-646. (Impact Factor: 2.167)

Cai, H., Wu, L., Qu, W., Malhotra, D., Xie, Z., Shapiro, J.I., and Liu, J. (2008) Regulation of apical NHE3 trafficking by ouabain-induced activation of the basolateral Na^+-K^+-ATPase receptor complex. Am. J. Physiol. Cell. Physiol. 294, C555-C563. (Impact Factor: 4.334)

Chakraborty, J., Okonta, H., Bagalb, H., Lee, S.J., Fink, B., Changanamkandat, R., and Duggan, J. (2008) Retroviral gene insertion in breast milk mediated lymphomagenesis. Virology 377, 100-109. (Impact Factor: 3.525)

Chen, Y., Cai, T., Yang, C., Turner, D.A., Giovannucci, D.R., and Xie, Z. (2008) Regulation of inositol 1,4,5-trisphosphate receptor-mediated calcium release by the Na/K-ATPase in cultured renal epithelial cells. J. Biol. Chem. 283, 1128-1136. (Impact Factor: 5.808)

Costa, A.D., Pierre, S.V., Cohen, M.V., Downey, J.M., and Garlid, K.D. (2008) cGMP signaling in pre- and post-conditioning: the ole of mitochondria. Cardiovasc. Res. 77, 344-352. (Impact Factor: 5.826)

DeAngelis, A.M., Heinrich, G., Dai, T., Bowman, T.A., Patel, P.R., Jun-Lee, S., Hong, E.G., Young Jung, D., Assmann, A., Kulkarni, R.N., Kim, J.K., and Najjar, S.M. (2008) CEACAM1: A link between insulin and lipid metabolism. Diabetes, Epub ahead of print. (Impact Factor: 7.955)

El-Okdi, N., Smaili, S., Raju, V., SHidyak, A., Gupta, S., Fedorova, L., Elkareh, J., Periyasamy, S., Shapiro, A.P., Kahaleh, M.B., Malhotra, D., Xie, Z., Chin, K.V., and Shapiro, J.I. (2008) The effects of cardiotonic steroids on dermal collagen synthesis and wound healing. J. Appl. Physiol. 105, 30-36. (Impact Factor: 3.178)

Heitzer, M.D., Wolf, I.M., Sanchez, E.R., Witchel, S.F., and DeFranco, D.B. (2007) Glucocorticoid receptor physiology. Rev. Endocr. Metab. Disord. 8, 321-330. (Impact Factor: 1.866)

Hinds, T.D., Jr. and Sanchez, E.R. (2008) Protein phosphatase 5. Int. J. Biochem. Cell. Biol. Epub, ahead of print. (Impact Factor: 4.804)

Kennedy, D.J., Elkareh, J., Shidyak, A., Shapiro, A.P., Samili, S., Mutgi, K., Gupta, S., Tian, J., Morgan, E., Khouri, S., Cooper, C.J., Periyasamy, S.M., Xie, Z., Malhotra, D., Fedorova, O.V., Bagrov, A.Y., and Shapiro, J.I. (2008) Partial nephrectomy as a model for uremic cardiomyopathy in the mouse. Am. J. Physiol. Renal Physiol. 294, F450-F454. (Impact Factor: 4.199)

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For the information of the reader, below you will find a complete list of Faculty, Staff and Students who, at the time of this report, were working in Physiology and Pharmacology.

FACULTY

Nisar Ahmad, Ph.D., Assistant Professor
Amir Askari, Ph.D., Professor & Chair
Andrew Beavis, Ph.D., Associate Professor & Education Director
Paul Brand, Ph.D., Associate Professor
Joana Chakraborty, Ph.D., Professor
George T. Cicila, Ph.D., Associate Professor
William E. Jacobus, Ph.D., Professor
Bina Joe, Ph.D., Associate Professor
Soon Jin Lee, Ph.D., Assistant Professor
Lijun Liu, M.D., M.S., Assistant Professor
Ronald Mellgren, Ph.D., Professor
Patricia Metting, Ph.D., Professor & Associate Dean for Student Affairs-COM, and Vice Provost HSC
Nikolai Modyanov, Ph.D., Professor
Sonia Najjar, Ph.D., Professor & Director of CeDER
Ana Maria Oyarce, Ph.D., Assistant Professor
Sumudra Periyasamy, Ph.D., Assistant Professor
Sandrine Pierre, Ph.D., Assistant Professor
Phillip Robinson, D.V.M., Assistant Professor, Director & Attending Veterinarian of Animal Labs
Howard Rosenberg, M.D., Ph.D., Professor
Yasser Saad, Ph.D., Assistant Professor
Edwin Sanchez, Ph.D., Professor
Elizabeth Tietz, Ph.D., Professor & Vice Chair
John W. Turner, Jr., Ph.D., Professor
Guillermo Vazquez, Ph.D., Assistant Professor
Xiaodong Robert Wang, Ph.D., Assistant Professor
R. Douglas Wilkerson, Ph.D., Professor, Vice President for Research Administration, and Associate Dean COM Grad Programs
Zi-Jian Xie, Ph.D., Professor

OFFICE STAFF

Elizabeth Akeman, Administrative Assistant (CeDER)
Anita Easterly, Administrative Secretary 2
Karen Edwards, Department Manager
Martha Heck, Data Systems Coordinator 1
Debra Meyer, Administrative Secretary 2
Marianne Miller Jasper, Administrative Secretary 2
Shirley Wozniak, Research Assistant

VISITING SCIENTISTS

Dr. Xin Li

RESEARCH STAFF

Elaine Chalfin, Research Assistant
Jackie Clark, Temporary Research Technician
Kris Farms, Sr. Research Technician
Mats Fernstrom, Biomedical Research Assistant
Marjorie Gable, Biomedical Research Assistant
Jennifer Kalisz, Biomedical Research Assistant
Megan Metting, Temporary Lab Assistant
Henry Okonta, CQI Coordinator
Krista Pettee, Research Technician
Elisabeth Philbrick, Laboratory Assistant
Manoranjani Tillekeratne, Biomedical Research Assistant
Michael Whitmer, Laboratory Technician
Joseph Xie, Research Assistant
Shane Yerga-Woolwine, Sr. Research Technician

POSTDOCTORAL FELLOWS

Ting Cai, M.D.
Paromita Das, Ph.D.
Eric Morgan, Ph.D.
Kun Xiang, Ph.D.

GRADUATE STUDENTS

Hussein Bagalb (MSBS)
Yeshavanth Banasavadi-Siddegowda (Ph.D.)
Thomas Bowman (Ph.D.)
Yiliang Chen (Ph.D.)
Damien Earl (Ph.D.)
Sumona Ghosh (Ph.D.)
Tanoya Harris (Ph.D.)
Garrett Heinrich (Ph.D.)
Terry Hinds (Ph.D.)
Kelly Ledford (Ph.D.)
Zhichuan Li (Ph.D.)
Jehnan Liu (M.D./Ph.D.)
Samuel Lupica (Ph.D.)
Andrew McSweeney (MSBS)
Payal Patel (Ph.D.)
Carmen Quatman (M.D./Ph.D.)
Rossen Radkov (Ph.D.)
Sima Rahman (Ph.D.)
Sadeesh Ramakrishnan (Ph.D.)
Gargi Roy (Ph.D.)

Anita Saxena (Ph.D.)
Guofu Shen (Ph.D.)
Kathryn Smedlund (Ph.D.)
Faten Smiley (MSBS)
Cory Stebal (Ph.D.)
Jean-Yves Kouame Tano (Ph.D.)
Edward Toland (Ph.D.)
Manya Warrier (Ph.D.)
Qiqi Ye (Ph.D.)
Shadi Zahedi (Ph.D.)

VOLUNTEERS

Benjamin Assenmacher
Shannon Buck
Soundouss El Moubaraki
Noha Elnagar
Matthew Gibson
Kathirvel Gopalakrishnan
Kevin Okapal
Eugene Orlowski
Anish Purohit
Shiuta Regis
Bijan Salari
Chintan Shah
Stephen Sloan
Zack Smiley
Yoann Sottejeau
Gang Wang

				COM	College of Medicine																College of Health S		
Faculty Full Name	Total hr	Other	MD hr	GS hr	OS1	OS2	OS3	OS4	OS5	OS6	USMLE	OS total	CMB	I and I	FCP	PBL		MP	MSBS		PA Pharm	PA Phys	PA Gen
Amir Askari, Ph.D.	0	0	0	0	0							0											
Nisar Ahmad, PhD	0	0	0	0								0											
Andrew D. Beavis, Ph.D.	180	137	33	10	6	4	4	4	7	4		29		4		30					84		
Paul H. Brand, Ph.D.	68	24	40	4	0	11	11	0	0			22				30			18			18	
Joana Chakraborty, Ph.D.	86	36	47	3	0					1		1	16		0			18	12			16	6
George T. Cicila, Ph.D.	30.5	6	12.5	12	0							0	12.5			32							6
Beata Lecka-Czernik	1	0	0	1								0											
Bina Joe, Ph.D.	9	0	2	7	0							0	2			30							
Soon Jin Lee, Ph.D.	2	0	2	0	0							0	2										
William Jacobus, Ph.D.	23	0	23	0		8	6		7			21	2										
Lijun Liu, M.D., M.S.	0	0	0	0	0							0											
Ronald L. Mellgren, Ph.D.	32.5	15.5	13	4	7						2	9		4							11		
Patricia J. Metting, Ph.D.	24	0	24	0	0			22			2	24											
Nikolai Modyanov, Ph.D.	14	0	0	14	0							0				30							
Sonia M. Najjar, Ph.D.	6	0	2	4	0				2			2											
Ana Maria Oyarce, Ph.D.	2	0	0	2	0							0											
Sumudra Periyasamy, Ph.D.	0	0	0	0	0							0				30							
	0	0	0	0								0											
Sandrine Pierre, Ph.D.	8	0	0	8	0							0											
Howard C. Rosenberg, M.D., Ph.D.	50.5	27	23.5	0	2.5	4	0	13		1	3	23.5				62					18		
Yasser Saad, Ph.D.	4.5	0	4.5	0	0							0	4.5										
Edwin R. Sanchez, Ph.D.	27	4	9	14	3				2	2		7	2								4		
Keith K. Schlender, Ph.D.	2	0	2	0	0					2		2											
Elizabeth I. Tietz, Ph.D.	14	0	3	11	0		0	3				3											
John W. Turner Jr., Ph.D.	29	0	26	3	0				14	12		26											
Xiaodong Wang, Ph.D.	8	0	2	6	0				2			2											
	0	0	0	0								0											
Robert D. Wilkerson, Ph.D.	10.5	0	9	1.5	3	4	2					9											
Zi-Jian Xie, Ph.D.	20	9	7	4	0		6		1			7									9		
	0	0	0	0								0											
	0	0	0	0								0											
Total Hours	651.5	258.5	284.5	108.5	22	31	29	42	35	22	7	187.5	41	8	0	244	0	18	30		126	34	12
John Greenfield						2																	
Didactic Hours included in "Total hr" (Excludes small group PBL)																							

Block/Course Director (PP)	ABBR.	Course	Hours	Hr Dir	Blocks Dir	# courses	Course number
Chakraborty (176 hr)	CMB	Cellular and Molecular Biology (COM)	41	176	1		INDI 775
Rosenberg (400 hr)	OS	Organ Systems (COM)	187.5	400	1		INDI 780
	I and I	Immunity and Infection (COM)	8				INDI 783
	FCP	Fundamentals of Clinical Practice	0				INDI 786
	PBL	Integrative Pathophysiology I (COM) - small group	244				INDI 777
Chakraborty (82 hr course director)	MP	Anatomy and Physiology for Medical Physics (CGS)	18	82		1	MPHY 631.001
Chakraborty (30 hr)	MSBS	Advanced Human Physiology - MSBS (COM)	30	30		1	PHYS620
Modyanov (32 hr)	CPRA	CPRA Protein Structure and Catalysis (PhD CGS)	28	34		1	BMSP633
		CPRA Cell Membranes (combined with above)					BMSP636
		CPRA Genes and Genomes					BMSP634

TABLE 1

ciences and HS			COM Graduate Studies									
PT Phys	IDS Pharm	NP Pharm	CPRA	Method	Signal	SP	Bioinf	CMN	Mol Epi	ODS	GW	GWSM
	26	27	8		2							
6						4						
14						3						
			2	2			2		0		6	0
						1						
						2	0				5	0
		4.5			4							
						0						
			14									
						2			0		2	
					2							
						4					4	0
		9										
					8	1					5	0
					0							
			2		0	2				3	4	0
						3						
					0	2					4	0
										1.5		
			2		2							
20	26	40.5	28	2	18	24	2	0	0	4.5	30	0

Beavis (32 hr)	SP	Systems Pathophysiology, II (CVMD Unit)	24	32		1	CVMD601
Sanchez (32 hr)	Signals	CPRA Cell Biology and Signaling (PhD, CGS)	18	32		1	BMSP635
	Methods	Methods in Biomedical Sciences (PhD, CGS)	2				BMSP638
	Bioinf	Fundamentals of Bioinformatics, Proteomic and Gemomics (PhD, COM)	2				BIPG 510
Joe (24 hr)		Grant Writing Workshop (PhD, COM)	30	24		1	BMSP625
	OBS	On Being a Scientist (PhD, COM)	4.5				INDI 602
Wang	Seminar	Seminars in CVMD	0			1	CVMD630
Beavis (68 hr)	PA Pharm	Fundamentals of Pharmacology I, spring (PA Program) (CHS)	126			1	PHYA 551
Beavis (46 hr)	PA Pharm	Fundamentals of Pharmacology II, summer (PA Program) (CHS)				1	PHYA 552
Beavis (32 hr)	PA Pharm	Fundamentals of Pharmacology III, fall (PA Program) (CHS)				1	PHYA 553
Chakraborty (38 hr)	PA Phys	Human Physiology (PA program) (CHS)	34			1	PHYS 505.001
Chakraborty (56 hr)	PT Phys	Clinical Pathophysiology (Physical Therapy Program) (HSHS)	20			1	PT511
Chakraborty (12 hr)	PA Gen	Basic Genetics (HSHS)	12			1	PHYA601
Beavis (25 hr unit director)	HDS Pharm	Scientific and Clinical Foundations for Human Organ Donation and Transplantation (Human Donation Science Certificate program) (CHS)	26				HDSC 521
	Mol epi	Molecular and Genomic Epidemiology (CHS?)	0				PUBH613
Beavis (47 hr)	NP Pharm	Advanced Pharmacotherapeutics (MSN, CON)	40.5			1	NURS 569.01
		Total	895.5	810	2	14	
		Total minus Small Gp	651.5				

FACULTY TIME & EFFORT

NAME	RESEARCH	TEACHING	SERVICE	TOTAL
Amir Askari, Ph.D.	40%	0%	60%	100%
Andrew Beavis, Ph.D.	0%	51%	49%	100%
Paul Brand, Ph.D.	0%	100%	0%	100%
Joana Chakraborty, Ph.D.	25%	65%	10%	100%
George Cicila, Ph.D.	70%	27%	3%	100%
William Jacobus, Ph.D.	0%	90%	10%	100%
Bina Joe, Ph.D.	70%	10%	20%	100%
Lijun Liu, M.D., M.S.	90%	5%	5%	100%
Ronald Mellgren, Ph.D.	45%	35%	20%	100%
Patricia Metting, Ph.D.	0%	10%	90%	100%
Nikolai Modyanov, Ph.D.	50%	25%	25%	100%
Sonia Najjar, Ph.D.	25%	45%	30%	100%
Sumudra Periyasamy, Ph.D.	80%	0%	20%	100%
Sandrine Pierre, Ph.D.	70%	15%	15%	100%
Phillip Robinson, D.V.M.	0%	5%	95%	100%
Howard Rosenberg, M.D., Ph.D.	0%	95%	5%	100%
Edwin Sanchez, Ph.D.	40%	30%	30%	100%
Elizabeth Tietz, Ph.D.	60%	15%	25%	100%
John W. Turner, Jr., Ph.D.	60%	30%	10%	100%
Guillermo Vazquez, Ph.D.	80%	10%	10%	100%
Xiaodong Wang, Ph.D.	60%	30%	10%	100%
Zi-Jian Xie, Ph.D.	45%	30%	25%	100%

DEPARTMENT OF PHYSIOLOGY & PHARMACOLOGY

FY08 SPACE

Please note: The indicated size of space has been provided by Facilities. We are certain that some of these are inaccurate. These inaccuracies have been pointed out.

1st FLOOR BHS - CeDER		
ROOM NUMBER	ROOM USE	SQUARE FEET
141	Lab	1,623
142	Lab	1,575
142A	Office	138
142B	Office	162
144	Lab	323
145	Lab	205
146	Lab	234
147	Lab	189
2nd FLOOR BHS		
ROOM NUMBER	ROOM USE	SQUARE FEET
202	Lab	653
203	Lab	648
204	Lab	642
206	Office	153
209	Office	534
213	Office	154
214	Office	153
217	Dark Room	78
222	Lab	504
223	File Room	92
224	Common Area	396
226	Lab	120
226A	Lab	100
227	Lab	255
228	Office	157
231	Lab	268
233	Lab	635
233A	Lab	219
234	Lab	130
234A	Lab	188
235	Lab	234
235A	Lab	106
235B	Lab	515
237	Conference Room	647
238	Lab	355

238A	Lab	502
239	Lab	320
239B	Lab	431
240	Lab	422
242	Office	154
244	Office	154
246	Office	156
247	Office	159
248	Office	156
249	Office	202
251	Lab	180
253	Lab	50
254	Lab	143
255	Lab	267
255A	Lab	213
255B	Lab	119
255C	Lab	138
256	Lab	153
257	Lab	184
259	Lab	259
262	Lab	264
263	Lab	253
265	Lab	643
266	Lab	648
267	Lab	652
268	Office	182
269	Office	110
270	Office	105
271	Office	106
3rd FLOOR BHS		
ROOM NUMBER	ROOM USE	SQUARE FEET
301A	Office	184
301D	Office	104
301E	Office	108
307	Office	132
310	Office	154
312	Office	157
313	Office	157
314	Office	155
315	Shared Room	112
317	Shared Room	78
319	Office	103
320	Office	99
321	Xerox Room	77
325	Lab	451
327	Office	131
329	Lab	160
331	Shared Room	255

332	Office	156
334	Lab	270
336	Lab	859
337	Lab	319
338	Lab	867
339	Conference Room	647
341	Lab	593
341A	Office	121
341B	Lab	142
342	Shared Room	121
343	Lab	767
343A	Lab	90
343B	Office	192
346	Office	208
348	Office	101
349	Office	156
351	Microscope Room	107
351A	Office	206
354	Lab	641
364	Lab	210
366	Lab	158
368	Lab	154
368A	Lab	184
369	Lab	641

The University of Toledo
Research & Sponsored Programs
Phys Pharm Met/Cardio Science, Department of Awards Detail, Fiscal Year 08
07/01/2007 to 06/30/2008 ***

Appointment Type Key
AY - Academic Year
CY - Calendar Year
ST - Summer Term

Proposal # / Activity Type	Public Title	Agency Name(s) / Key Personnel	Proj Period Begin to Funding Cycle End	Current Year Award: Direct Cost	F&A Cost**	Total Cost
College of Medicine			Continued			
Department of Phys Pharm Met/Cardio Science			Continued			
N-120217-01 Research	Retroviral Genome Integration Causing Lymphoma	F.M. Douglass Foundation	01/01/2008 to 12/31/2008	**29,950**	**0**	**$29,950**
		Chakraborty, Joana — PI/PD — Phys-Pharm — 1.20 CY				
N-101626-01 Research	Rtel1 Allelic Differences Associated with Telomere Length Differences in a Rat Genetic Model	American Cancer Society - Ohio Division	09/01/2007 to 08/31/2008	**25,000**	**2,500**	**$27,500**
		Cicila, George — PI/PD — Phys-Pharm — 3.00 CY				
N-101393-01-A1 Research Training	A Novel Molecular Link Between Vascular and Metabolic Diseases	American Heart Association - Great Rivers Affiliate	07/01/2006 to 06/30/2009	**21,000**	**0**	**$21,000**
		Heinrich, Garrett — PI/PD — Phys-Pharm — 12.00 CY				
C-010310-31 Research	Biochemistry and Genetics of Hypertension	National Heart, Lung & Blood Institute	06/01/1986 to 11/30/2008	**425,651**	**200,056**	**$625,707**
		Joe, Bina — PI/PD — Phys-Pharm — 3.60 CY				
N-101576-01 Research	CEACAM2: A Novel Mechanism of Diabetes and Complications	American Diabetes Association-National	07/01/2007 to 06/30/2010	**30,000**	**0**	**$30,000**
		Liu, Jehnan — PI/PD — Phys-Pharm — 12.00 CY				
C-010991-08 Research	CEACAM and Insulin Action	National Institute of Diabetes, Digestive & Kidney Diseases	03/01/2008 to 02/28/2009	**204,428**	**98,739**	**$303,167**
		Najjar, Sonia — PI/PD — Phys-Pharm — 3.60 CY				

* Reported by Cash Received
** Facilities and Administrative Cost
***Beginning in FY07, awards are reported in the fiscal year when the funds are available.

Proposal # / Activity Type	Public Title	Agency Name(s) / Key Personnel	Proj Period Begin to Funding Cycle End	Current Year Award: Direct Cost	F&A Cost**	Total Cost
Department of Phys Pharm Met/Cardio Science			Continued			
C-100917-12 Research	Physiological Significance of Na,K-pump Diversity	National Center for Research Resources through Texas Tech University	07/01/2004 to 06/30/2008	**32,739**	**15,813**	**$48,552**
		Pierre, Sandrine — PI/PD — Phys-Pharm — 1.56 CY				
		Sottejeau, Yoann — RA/Post-Doc — Phys-Pharm — 12.00 CY				
C-100995-03 Research	TPR Proteins in Steroid Receptor Signaling and Physiology	National Institute of Diabetes, Digestive & Kidney Diseases	08/01/2005 to 06/30/2010	**185,695**	**55,021**	**$240,716**
		Sanchez, Edwin — PI/PD — Phys-Pharm — 3.00 CY				
		Periyasamy, Sumudra — Co-I — Phys-Pharm — 8.40 CY				
C-101192-03 Research	Role of FKBP52 in Androgen Signaling and Hypospadias	National Institute of Diabetes, Digestive & Kidney Diseases through Indiana University	02/01/2006 to 12/31/2008	**53,945**	**26,055**	**$80,000**
		Sanchez, Edwin — PI/PD — Phys-Pharm — 1.80 CY				
C-100889-04 Research	Benzodiazepine-induced Glutamate Receptor Plasticity	National Institute on Drug Abuse	04/01/2005 to 03/31/2010	**226,906**	**86,328**	**$313,234**
		Tietz, Elizabeth — PI/PD — Phys-Pharm — 3.00 CY				
S-100902-01-S4 Research	PZP Immunocontraception in Free-roaming Feral Horses	Bureau of Land Management	05/26/2004 to 09/30/2009	**91,304**	**13,696**	**$105,000**
		Turner, John — PI/PD — Phys-Pharm — 0.00 CY				
N-120280-01 Research	PZP Contraceptive Vaccine Pellet-related Studies	Annenberg Foundation through Humane Society of U.S.	12/21/2007 to 12/20/2010	**32,000**	**0**	**$32,000**
		Turner, John — PI/PD — Phys-Pharm — 1.20 CY				
S-100902-01-S5 Research	PZP Immunocontraception in Free-roaming Feral Horses	Bureau of Land Management	05/26/2004 to 09/30/2009	**126,538**	**18,981**	**$145,519**
		Turner, John — PI/PD — Phys-Pharm — 0.00 CY				
C-101555-02 Research	Receptor Dependent Regulation of Calcium Permeable TRPC1 and TRPC3 Cation Channels in Human Coronary Artery Endothelium	American Heart Association - National	04/01/2007 to 03/31/2011	**59,091**	**5,909**	**$65,000**
		Vazquez, Guillermo — PI/PD — Phys-Pharm — 6.60 CY				

* Reported by Cash Received
** Facilities and Administrative Cost
***Beginning in FY07, awards are reported in the fiscal year when the funds are available.

Proposal # / Activity Type	Public Title	Agency Name(s) / Key Personnel: (Name, Project Role, Department/Institution, Committed Person-Months, Appt.Typ	Proj Period Begin to Funding Cycle End	Current Year Award: Direct Cost	F&A Cost**	Total Cost
Department of Phys Pharm Met/Cardio Science			Continued			
C-101479-02 Research	Immunophillins Regulate the Export of Ion Channels from the Endoplasmic Reticulum	American Heart Association - National	01/01/2007 to 12/31/2010	**59,091**	**5,909**	**$65,000**
		Wang, Xiaodong PI/PD Phys-Pharm 1.80 CY				
R-101321-03 Research	Mechanism Of Temperature-dependent Export of DeltaF508 CFTR	Cystic Fibrosis Foundation	04/01/2006 to 03/31/2009	**90,000**	**7,200**	**$97,200**
		Wang, Xiaodong PI/PD Phys-Pharm 2.40 CY				
N-101353-01-A1 Research	Na,K-ATPase as an Integrator of the Calcium Signaling Machinery	National Institute of General Medical Sciences	07/01/2006 to 06/30/2011	**185,000**	**89,355**	**$274,355**
		Xie, Zi-Jian PI/PD Phys-Pharm 3.00 CY				
S-101353-01-S1 Research	Na,K-ATPase as an Integrator of the Calcium Signaling Machinery	National Institute of General Medical Sciences	07/01/2006 to 11/30/2009	**35,329**	**7,214**	**$42,543**
		Xie, Zi-Jian PI/PD Phys-Pharm 0.00 CY				
Totals for Department of Phys Pharm Met/Cardio Science			**18**	**1,913,667**	**632,776**	**$2,546,443**
Totals for College of Medicine			**18**	**1,913,667**	**632,776**	**$2,546,443**
Grand Totals for Fiscal Year			**18**	**1,913,667**	**632,776**	**$2,546,443**

* Reported by Cash Received
** Facilities and Administrative Cost
***Beginning in FY07, awards are reported in the fiscal year when the funds are available.

THE UNIVERSITY OF TOLEDO

Research and Sponsored Programs

Report for University of Toledo Provost

Phys Pharm Met/Cardio Science, Department of Submissions for Fiscal Year 08

07-01-2007 to 06-30-2008

Proposal #/Status	Public Title	Agency Name(s)/ through Prime Grantee	Agency Type/Agency Account #	Proposed Project Period	Total Direct Cost	F&A Cost	Total Cost
College of Medicine							
Department of Phys Pharm Met/Cardio Science							
Ahmad, Nisar N-119950-01/ Dead	Functional Analysis of Beta-M in Neonatal Skeletal Muscle	Muscular Dystrophy Association - National	Non-Profit	01/01/2008 to 12/31/2010	$40,500	$4,500	$45,000
Ahmad, Nisar N-119950-01-A1/ Dead	Functional Analysis of Beta-M in Neonatal Skeletal Muscle	Muscular Dystrophy Association - National	Non-Profit	07/01/2008 to 06/30/2011	$54,549	$5,451	$60,000
Ahmad, Nisar N-120319-01/ Dead	Role of BetaM in Cardiac Muscle	American Heart Association - National	Non-Profit	07/01/2008 to 06/30/2012	$70,000	$7,000	$77,000
Ahmad, Nisar N-120320-01/ Dead	Role of BetaM in Cardiac Muscle	American Heart Association - Great Rivers Affiliate	Non-Profit	07/01/2008 to 06/30/2010	$55,000	$5,500	$60,500
Askari, Amir R-010087-21/ Dead	Digitalis-induced Signaling by Cardiac Na*/K+ -ATPase	National Heart, Lung & Blood Institute	Federal/ 2 - P01 - HL - 036573 - 21	07/01/1986 to 06/30/2013	$1,015,561	$366,437	$1,381,998
Askari, Amir R-010087-21-A1/ Pending	The New Biology of Na+/K+ -ATPase: Mechanisms of Cardiac Actions of Digitals	National Heart, Lung & Blood Institute	Federal/ 2 - P01 - HL - 036573 - 21 - A 1	07/01/1986 to 03/31/2014	$1,015,561	$366,437	$1,381,998
Askari, Amir R-010147-21/ Dead	Functions of Na+/K+-ATPase in Cardiac Cavoelae - Proj. I	National Heart, Lung & Blood Institute	Federal/ 2 - P01 - HL - 036573 - 21	07/01/1986 to 06/30/2013	$171,486	$82,828	$254,314
Askari, Amir R-010147-21-A1/ Pending	Functions of Na+/K+-ATPase in Cardiac Cavoelae - Proj. I	National Heart, Lung & Blood Institute	Federal/ P01 - HL - 036573	07/01/1986 to 06/30/2013	$171,486	$0	$171,486

Proposal #/Status	Public Title	Agency Name(s)/ through Prime Grantee	Agency Type/Agency Account #	Proposed Project Period	Total Direct Cost	F&A Cost	Total Cost
Department of Phys Pharm Met/Cardio Science - Continued -							
Askari, Amir R-010151-21/ Dead	Core A: Administration	National Heart, Lung & Blood Institute	Federal/ 2 - P01 - HL - 036573 - 21	07/01/1986 to 06/30/2013	$49,027	$23,680	$72,707
Askari, Amir R-010151-21-A1/ Pending	Core A: Administration	National Heart, Lung & Blood Institute	Federal/ P01 - HL - 036573	07/01/1986 to 06/30/2013	$49,027	$23,680	$72,707
Askari, Amir N-120317-01/ Pending	Cardiac Na+/K+-ATPase: Digitalis-induced Signaling through PI3K/Akt Pathway	National Institutes of Health	Federal/ 1 - R01 - 01	12/01/2008 to 11/30/2013	$250,000	$120,750	$370,750
Chakraborty, Joana N-120217-01/ Funded	Retroviral Genome Integration Causing Lymphoma	F.M. Douglass Foundation	Non-Profit	01/01/2008 to 12/31/2008	$29,950	$0	$29,950
Cicila, George L-120120-01/ Pending	Mitochondrial Inheritance and Mitochondrial-Nuclear Genome Cross-talk in a Rat Model of Endurance Running, Cardiac Performance, Lipid Metabolism and Fat Content	United Mitochondrial Disease Foundation	Non-Profit	07/01/2008 to 06/30/2011	$33,715	$16,285	$50,000
Heinrich, Garrett C-101393-02/ Funded-AR	A Novel Molecular Link Between Vascular and Metabolic Diseases	American Heart Association - Great Rivers Affiliate	Non-Profit	07/01/2006 to 06/30/2009	$21,000	$0	$21,000
Hinds, Terry D N-120262-01/ Dead	Fatty Acid and Glucocorticoid Regulation of Lipid Storage and Obesity via PP5	National Institutes of Health	Federal/ 1 - F31 - 01	07/01/2008 to 06/30/2010	$16,500	$0	$16,500
Hinds, Terry D N-120332-01/ Dead	Fatty Acid and Glucocorticoid Regulation of Lipid Storage and Obesity via Protein Phosphatase 5	American Heart Association - Great Rivers Affiliate	Non-Profit	07/01/2008 to 06/30/2010	$21,000	$0	$21,000
Hinds, Terry D N-120462-01/ Pending	Fatty Acids Control Obesity and the Metabolic Syndrome via TPR Proteins	National Center for Complementary & Alternative Medicine	Federal/ 1 - F31 - AT - 01	09/01/2008 to 08/31/2010	$16,500	$0	$16,500
Joe, Bina C-010310-31/ Funded	Biochemistry and Genetics of Hypertension	National Heart, Lung & Blood Institute	Federal/ 5 - R01 - HL - 020176 - 31	06/01/1986 to 11/30/2008	$347,470	$163,311	$510,781

Proposal #/Status	Public Title	Agency Name(s)/ through Prime Grantee	Agency Type/Agency Account #	Proposed Project Period	Total Direct Cost	F&A Cost	Total Cost
Department of Phys Pharm Met/Cardio Science		- Continued -					
Joe, Bina R-010310-32/ Pending	Genetic Elements Controlling Blood Pressure	National Heart, Lung & Blood Institute	Federal/ 2 - R01 - HL - 020176 - 32	06/01/1986 to 11/30/2013	$454,746	$184,932	$639,678
Joe, Bina R-100722-05/ Dead	Functional Genomic Dissection of Rat Blood Pressure QTL	National Heart, Lung & Blood Institute	Federal/ 2 - R01 - HL - 075414 - 05	07/01/2004 to 06/30/2013	$342,665	$87,454	$430,119
Joe, Bina N-100836-01-A2/ Pending	Genetics of Hypertension	National Heart, Lung & Blood Institute	Federal/ 1 - R01 - HL - 076709 - 01 - A 2	07/01/2008 to 06/30/2013	$381,860	$129,064	$510,924
Liu, Jehnan C-101576-02/ Pending/Rec	CEACAM2: A Novel Mechanism of Diabetes and Complications	American Diabetes Association-National	Non-Profit/ 7-07-PST-06	07/01/2007 to 06/30/2010	$30,000	$0	$30,000
Liu, Lijun N-120305-01/ Dead	Role of Phosphoinositide 3-kinase/Akt in Digitalis-induced Cardiac Hypertrophy	American Heart Association - Great Rivers Affiliate	Non-Profit	07/01/2008 to 06/30/2010	$55,000	$5,500	$60,500
Liu, Lijun L-120516-01/ Preproposal	Regulation of Breast Cancer Cell Growth by Na/K-ATPase Signaling	U. S. Army Medical Research and Materiel Command	Federal/ BC 084937	09/30/2008 to 09/29/2009	$375,000	$181,125	$556,125
Liu, Lijun N-120516-01/ Withdrawn	Regulation of Breast Cancer Cell Growth by Na/K-ATPase Signaling	U. S. Army Medical Research and Materiel Command	Federal/ BC 084937	09/30/2008 to 09/29/2009	$375,000	$181,125	$556,125
Mellgren, Ronald N-101406-01-A2/ Pending	Role of Calpains in Plasma Membrane Repair	National Institute of Arthritis & Musculoskeletal & Skin Diseases National Institute of Neurological Disorders and Stroke	Federal/ 1 - R21 - AR/NS - 054427 - 01 - A 2	07/01/2008 to 06/30/2010	$162,681	$65,369	$228,050
Mellgren, Ronald L-120327-01/ Preproposal	Calpain-mediated Membrane Repair in Breast Cancer Cell Migration	U. S. Army Medical Research and Materiel Command	Federal/ BC075973	09/30/2008 to 09/29/2009	$0	$0	$0
Mellgren, Ronald N-120327-01/ Dead	Calpain-mediated Membrane Repair in Breast Cancer Cell Migration	U. S. Army Medical Research and Materiel Command	Federal/ BC075973	09/30/2008 to 09/29/2009	$75,000	$36,255	$111,255

Proposal #/Status	Public Title	Agency Name(s)/ through Prime Grantee	Agency Type/Agency Account #	Proposed Project Period	Total Direct Cost	F&A Cost	Total Cost
Department of Phys Pharm Met/Cardio Science - Continued -							
Modyanov, Nikolai N-119906-01-A1/ Pending	BetaM: A Mammalian Muscle-Specific Transcriptional Co-Regulator	National Institute of Arthritis & Musculoskeletal & Skin Diseases	Federal/ 1 - R21 - AR - 056011 - 01 - A 1	12/01/2008 to 11/30/2010	$150,000	$72,450	$222,450
Modyanov, Nikolai N-120150-01/ Pending	Role of BetaM in Regulation of Skeletal Muscle Gene Expression and Signaling	National Institute of Arthritis & Musculoskeletal & Skin Diseases National Institute of Child Health & Human Development	Federal/ 1 - R01 - AR/CH - 056253 - 01	07/01/2008 to 06/30/2013	$250,000	$120,750	$370,750
Najjar, Sonia C-010991-08/ Funded	CEACAM and Insulin Action	National Institute of Diabetes, Digestive & Kidney Diseases	Federal/ 5 - R01 - DK - 054254 - 08	03/01/2008 to 02/28/2009	$220,000	$106,260	$326,260
Najjar, Sonia N-101352-01-A2/ Pending	Novel Mechanisms of Diet-induced Insulin Resistance	National Institute of Diabetes, Digestive & Kidney Diseases	Federal/ 1 - R01 - DK - 075903 - 01 - A 2	04/01/2008 to 03/31/2013	$250,000	$120,750	$370,750
Najjar, Sonia N-120333-01/ Pending	A Role for Insulin Clearance in the Regulation of Insulin Action by Dietary Fat	American Diabetes Association-National	Non-Profit/ 7-08-RA-107	07/01/2008 to 06/30/2011	$86,956	$13,043	$99,999
Periyasamy, Sumudra N-120358-01/ Pending	Role of TPR Proteins in AR Signaling in Normal and Cancerous Prostate	National Institutes of Health	Federal/ 1 - R01 - CA - 137208 - 01	12/01/2008 to 11/30/2012	$200,000	$96,600	$296,600
Pierre, Sandrine R-010152-21/ Dead	Core B: Preparative Core	National Heart, Lung & Blood Institute	Federal/ 2 - P01 - HL - 036573 - 21	07/01/1986 to 06/30/2013	$198,590	$95,919	$294,509
Pierre, Sandrine R-010152-21-A1/ Pending	Core B: Preparative Core	National Heart, Lung & Blood Institute	Federal/ P01 - HL - 036573	07/01/1986 to 06/30/2013	$198,590	$95,919	$294,509
Pierre, Sandrine R-100522-21/ Dead	Interaction of Na+/K+-ATPase with its Signaling Partners - Project III	National Heart, Lung & Blood Institute	Federal/ 2 - P01 - HL - 036573 - 21	03/01/2003 to 06/30/2013	$396,585	$67,471	$464,056
Pierre, Sandrine R-100522-21-A1/ Pending	Interaction of Na+/K+-ATPase with its Signaling Partners - Project III	National Heart, Lung & Blood Institute	Federal/ P01 - HL - 036573	03/01/2003 to 03/31/2014	$396,585	$67,471	$464,056

Proposal #/Status	Public Title	Agency Name(s)/ through Prime Grantee	Agency Type/Agency Account #	Proposed Project Period	Total Direct Cost	F&A Cost	Total Cost
Department of Phys Pharm Met/Cardio Science		- Continued -					
Pierre, Sandrine C-100917-13/ Funded-AR	Physiological Significance of Na,K-pump Diversity	National Center for Research Resources through Texas Tech University	Federal/ 5 - R01 - RR - 010799 - 13	07/01/2004 to 04/30/2009	$33,048	$17,224	$50,272
Pierre, Sandrine N-120329-01/ Dead	CEACAM1 and Regulation of Cardiac Substrate Metabolism: Role in the Pathogenesis of Hypertrophy in Metabolic Diseases	American Diabetes Association-National	Non-Profit/ 7-08-IN-16	07/01/2008 to 06/30/2009	$47,952	$0	$47,952
Pierre, Sandrine N-120392-01/ Pending	CEACAM1 in the Regulation of Cardiac Fatty Acid Metabolism and Myocardial Lipotoxicity	National Institutes of Health	Federal/ 1 - R21 - HL - 095007 - 01	12/01/2008 to 11/30/2010	$125,000	$60,375	$185,375
Saad, Yasser N-119947-01/ Dead	Modifier Genes of Angiotensin II (Type 1) Receptor Induced Cardiac Hypertrophy and Heart Failure	American Heart Association - National	Non-Profit	01/01/2008 to 12/31/2012	$70,000	$7,000	$77,000
Sanchez, Edwin C-100995-04/ Funded	TPR Proteins in Steroid Receptor Signaling and Physiology	National Institute of Diabetes, Digestive & Kidney Diseases	Federal/ 5 - R01 - DK - 070127 - 04	08/01/2005 to 06/30/2010	$190,000	$40,425	$230,425
Sanchez, Edwin C-101192-03/ Funded	Role of FKBP52 in Androgen Signaling and Hypospadias	National Institute of Diabetes, Digestive & Kidney Diseases through Indiana University	Federal/ 5 - R01 - DK - 073402 - 03	02/01/2006 to 12/31/2008	$53,945	$26,055	$80,000
Tietz, Elizabeth R-010018-16-A1/ Dead	Synaptic Mechanisms of Hippocampal Benzodiazepine Tolerance	National Institute on Drug Abuse	Federal/ 2 - R01 - DA - 004075 - 16 - A 1	04/01/2008 to 03/31/2013	$250,000	$120,750	$370,750
Tietz, Elizabeth C-100889-04/ Funded	Benzodiazepine-induced Glutamate Receptor Plasticity	National Institute on Drug Abuse	Federal/ 5 - R01 - DA - 018342 - 04	04/01/2005 to 03/31/2010	$195,300	$80,317	$275,617
Tietz, Elizabeth S-100889-04-S1/ Dead	Benzodiazepine-induced Glutamate Receptor Plasticity	National Institute on Drug Abuse	Federal/ 3 - R01 - DA - 018342 - 04 - S 1	04/01/2005 to 03/31/2010	$41,063	$0	$41,063
Tietz, Elizabeth N-120410-01/ Dead	Individual SURF Fellowship	American Society for Pharmacology and Experimental Therapeutics	Non-Profit	06/01/2008 to 08/31/2008	$2,800	$0	$2,800

Proposal #/Status	Public Title	Agency Name(s)/ through Prime Grantee	Agency Type/Agency Account #	Proposed Project Period	Total Direct Cost	F&A Cost	Total Cost
Department of Phys Pharm Met/Cardio Science		- Continued -					
Tietz, Elizabeth L-120538-01/ Preproposal	Benzodiazepine Dependence: Role of Brain L-Type Voltage-Gated Calcium Channels	U. S. Army Medical Research and Materiel Command	Federal	01/01/2009 to 12/31/2010	$0	$0	$0
Turner, John S-100902-01-S5/ Funded	PZP Immunocontraception in Free-roaming Feral Horses	Bureau of Land Management	Federal/ FAA040011	05/26/2004 to 09/30/2009	$126,538	$18,981	$145,519
Turner, John N-120280-01/ Funded	PZP Contraceptive Vaccine Pellet-related Studies	Annenberg Foundation through Humane Society of U.S.	Non-Profit	12/21/2007 to 12/20/2010	$32,000	$0	$32,000
Vazquez, Guillermo C-101555-02/ Funded	Receptor Dependent Regulation of Calcium Permeable TRPC1 and TRPC3 Cation Channels in Human Coronary Artery Endothelium	American Heart Association - National	Non-Profit/ 0635250N	04/01/2007 to 03/31/2011	$59,091	$5,909	$65,000
Vazquez, Guillermo N-119939-01/ Dead	Inflammatory Signaling in Human Umbilical Vein Endotheliu	March of Dimes Birth Defects Foundation - National	Non-Profit	08/01/2007 to 07/31/2008	$136,364	$13,636	$150,000
Vazquez, Guillermo N-120527-01/ Pending	Role of TRPC3 Channels in Atherosclerosis	National Institutes of Health	Federal/ 1 - R01 - 01	04/01/2009 to 03/31/2010	$250,000	$120,750	$370,750
Wang, Xiaodong R-101321-03/ Funded	Mechanism Of Temperature-dependent Export of DeltaF508 CFTR	Cystic Fibrosis Foundation	Non-Profit/ WANG08G0	04/01/2006 to 03/31/2009	$90,000	$7,200	$97,200
Wang, Xiaodong C-101479-02/ Funded	Immunophillins Regulate the Export of Ion Channels from the Endoplasmic Reticulum	American Heart Association - National	Non-Profit/ 0730019N	01/01/2007 to 12/31/2010	$59,091	$5,909	$65,000
Wang, Xiaodong N-101507-01-A1/ Dead	Mechanism Underlying the Defective ER-to-Golgi Trafficking of Delta F508 CFTR	National Heart, Lung & Blood Institute	Federal/ 1 - R01 - HL - 089339 - 01 - A 1	04/01/2008 to 03/31/2013	$200,000	$96,600	$296,600
Wang, Xiaodong N-120449-01/ Pending	Hsp70-Hsp90 Machinery in the Maturation of Cargo Proteins	National Institutes of Health	Federal/ 1 - DP2 - OD - 004360 - 01	09/30/2008 to 08/31/2013	$225,000	$75,000	$300,000

Proposal #/Status	Public Title	Agency Name(s)/ through Prime Grantee	Agency Type/Agency Account #	Proposed Project Period	Total Direct Cost	F&A Cost	Total Cost
Department of Phys Pharm Met/Cardio Science		- Continued -					
Xie, Zi-Jian R-010852-21/ Dead	Structure and Function of X,K-ATPase Family Members, Project II	National Heart, Lung & Blood Institute	Federal/ 2 - P01 - HL - 036573 - 21	03/01/1998 to 06/30/2013	$199,873	$96,539	$296,412
Xie, Zi-Jian R-010852-21-A1/ Pending	Structure and Function of X,K-ATPase Family Members, Project II	National Heart, Lung & Blood Institute	Federal/ P01 - HL - 036573	03/01/1998 to 03/31/2014	$199,873	$96,539	$296,412
Xie, Zi-Jian C-101353-02/ Funded	Na,K-ATPase as an Integrator of the Calcium Signaling Machinery	National Institute of General Medical Sciences	Federal/ 5 - R01 - GM - 078565 - 02	07/01/2008 to 06/30/2011	$185,000	$89,355	$274,355
*# of submissions for **Department of Phys Pharm Met/Cardio Science = 61***					**$10,799,528**	**$3,891,880**	**$14,691,408**
# of submissions for College of Medicine = 61					**$10,799,528**	**$3,891,880**	**$14,691,408**
		Total Number of Submissions:	61 **61**		**$10,799,528**	**$3,891,880**	**$14,691,408**

{crystalProposal.Responsible Unit (Proposal)} = {?department}
and {?due_date} = {crystalProposal.Due Date (Proposal)} and
{crystalProposal.Proposal # Class (Proposal)} startswith ["a", "l", "c", "n", "r", "s", "t"]//removed preproposals
//and master agreements because we didn't show them before. Carol's CR_BOT_a1 shows P's and M's
//which will account for the difference between the two reports.

COLLEGE OF MEDICINE TOTAL EXPENDITURES BY FISCAL YEAR

Data Date: 8/5/2008

Department	Fiscal Year 2005	2006	2007	2008
Biochemistry & Cancer Biology, Department of	$ 4,506,471	$ 3,625,828	$ 2,878,240	$ 2,117,904
Family Medicine, Department of	$ 305,124	$ 285,927	$ 107,949	$ 29,295
Med Microbiology & Immunology, Department of	$ 1,963,525	$ 2,180,673	$ 2,098,672	$ 2,274,814
Medicine, Department of	$ 3,874,077	$ 4,047,607	$ 4,915,562	$ 5,122,630
Neurology, Department of	$ 509,808	$ 668,780	$ 987,679	$ 1,031,080
Neurosciences, Department of	$ 1,406,887	$ 1,288,110	$ 1,431,697	$ 1,784,634
Obstetrics & Gynecology, Department of	$ 203,194	$ 92,484	$ 94,597	$ 85,581
Orthopaedic Surgery, Department of	$ 8,508	$ 14,272	$ 46,111	$ 331,307
Pediatrics, Department of	$ 390,992	$ 305,264	$ 394,077	$ 425,208
Phys Pharm Met/Cardio Science, Department of	$ 4,875,226	$ 4,852,312	$ 4,605,629	$ 3,591,457
Psychiatry, Department of	$ 301,870	$ 123,399	$ 120,927	$ 95,183
Public Hlth/Homeland Security, Department of	$ 279,898	$ 383,325	$ 344,831	$ 409,309
Radiation Oncology, Department of	$ 211	$ 263	$ 3,024	$ 436
Radiology, Department of	$ 1,000	$ 4,000	$ -	$ -
Surgery, Department of	$ 730,069	$ 609,645	$ 818,141	$ 483,285
Urology, Department of	$ 590,210	$ 611,959	$ 447,092	$ 363,193
AHEC	$ 918,317	$ 793,885	$ 601,928	$ 623,303
Center for Clinical Research	$ -	$ 638,343	$ -	$ 304,173
ANNUAL TOTALS	**$ 20,865,388**	**$ 20,526,077**	**$ 19,896,154**	**$ 19,072,791**

* All Figures are Total Cost

College of Medicine
Educational Value Units

Department: Physiology and Pharmacology

Academic Year: 2007-2008

	Reported		Value Units	Total
College of Medicine - Undergraduate Medical Education				
1. Number of hours undergrad medical education - lecture (Years 1 & 2)	285	X	10.0	2,845.0
2. Number of hours undergrad medical education - lecture (Year 3)	0	X	10.0	-
3. Number of hours undergrad medical education - labs (Years 1 & 2)	0	X	3.0	-
4. Number of hours undergrad medical education - small group teaching (Years 1 & 2)	244	X	5.0	1,220.0
5. Number of hours undergrad medical education - small group teaching (Year 3)	0	X	5.0	-
6. Total number of 1/2 days precepted by attending faculty - Required Clerkships	0	X	3.0	-
7. Total number of 1/2 days precepted by attending faculty - Elective Clerkships	0	X	3.0	-
8. Block and Clerkship Directors				
(a) Number of faculty that are block directors	2	X	200.0	400.0
(b) Number of contact hours scheduled in block of director(s)	576	X	1.0	576.0
(c) Number of faculty that are required clerkship directors	0	X	900.0	-
9. Curriculum and Admission Committee participation				
(a) Number of faculty on the Executive, Clinical & Preclinical Curriculum Committees (attendance >75%)	3	X	30.0	90.0
(b) Number of faculty on the Admission Committee (attendance >75%)	2	X	125.0	250.0
(c) Number of medical student candidate interviews conducted by department faculty	139	X	3.0	417.0
10. Educational scholarship and publications				
(a) Number of peer-reviewed articles published	0	X	50.0	-
(b) Books published (edited)	0	X	75.0	-
(c) Books published (authored)	0	X	150.0	-
(d) Number of education presentations (keynote, plenary, abstract-based) - regional & national meeting	0	X	15.0	-
College of Medicine - Graduate Education				
11. Number of hours of graduate education - lecture	109	X	10.0	1,085.0
12. Number of hours of graduate education - small group	0	X	5.0	-
13. Number of hours of graduate education - lab courses	0	X	3.0	-
14. Number of Student Mentorships - PhD and MSBS	41	X	250.0	10,250.0
15. Number of faculty serving as core course directors	6	X	50.0	300.0
16. Number of faculty serving as Program Directors	2	X	400.0	800.0
College of Medicine - Graduate Medical Education				
17. Number of resident FTEs in department program(s)	0	X	25.0	-
Non-College of Medicine - Graduate Education				
18. Number of hours education other University programs - lecture	259	X	10.0	2,585.0
19. Number of hours education other University programs - labs	0	X	5.0	-
20. Number of hours education other University programs - small groups	0	X	3.0	-
Total Educational Value Units				**20,818.0**

College of Medicine
Research Value Units

Department: Physiology

Academic Year: 2007-2008

	Data		Value Units	Total
1. Total sponsored programs research expenditures / $1,000	3,591	X	1.0	3,591.0
2. Total sponsored programs F & A cost recovery / $1,000	633	X	1.0	633.0
3. Total royalties and licensing fees / $1,000	10	X	0.3	2.5
4. Total number of patents and copyrights				
(a) Number of invention disclosures heard by the Patent Committee	4	X	10.0	40.0
(b) Number of full patent applications submitted	3	X	15.0	45.0
5. Number of investigator-initiated grants/contracts submissions (new & competing)	61	X	25.0	1,525.0
6. Peer-reviewed research publications (including original and review articles)				
(a) Number in journals with impact factor 10.0 +	2	X	100.0	200.0
(b) Number in journals with impact factor 3.0 - 9.9	19	X	75.0	1,425.0
(c) Number in journals with impact factor < 3.0	11	X	20.0	220.0
7. University research committee participation				
(a) Number of faculty on the IRB Committee (attendance >75%)	0	X	17.5	-
(b) Number of faculty on the IACUC Committee (attendance >75%)	2	X	17.5	35.0
8. Research presentations				
(a) Invited extramural research seminar at another institution	18	X	10.0	180.0
(b) Invited platform presentation at national/international meeting/conference	9	X	12.5	112.5
(c) Other oral or poster presentation at national/international meeting/conference	28	X	5.0	140.0
9. Research service activities				
(a) Number of NIH study sections attended	10	X	25.0	250.0
(b) Number of faculty that are members of journal editorial boards	6	X	15.0	90.0
(c) Number of journal manuscript reviews performed	79	X	3.5	276.5
(d) Number of non-NIH extramural review panel meetings attended	10	X	10.0	100.0
10. Research books, monographs authored or edited	1	X	25.0	25.0
11. Research book chapters authored	1	X	10.0	10.0
12. Number of postdoctoral fellows funded by extramural & department sources	4	X	75.0	300.0
13. Number of graduate students fully funded by extramural & department sources	7	X	75.0	525.0
Total Research Value Units				**9,725.5**

Other data not listed above, but included in previous research RVU's:
Total UT Foundation funds available for research/$1,000 = * 53

* Total of 6 accounts: Two for use by the Department, and others for use by specified faculty members.