Creighton University
Faculty Bibliography
2002–2003
Note

The Faculty Bibliography is produced annually by the Creighton University Graduate School. The following is a compilation of the scholarly accomplishments of Creighton faculty for the 2002–2003 academic year. Included are: a) summary reports showcasing some of the research endeavors taking place in schools, departments, and centers of excellence on the Creighton campus; b) individual faculty publications; c) individual faculty grants; and d) student dissertations and theses, with acknowledgment to faculty advisors.

New this year ... PICTURES! In honor of the University’s 125th anniversary, we are highlighting some of Creighton’s current and former distinguished faculty members with photographs from years gone by. This collection of images is not all-inclusive; it is merely a sampling of the many scholars who have contributed to Creighton’s intellectual life through teaching and research. There are many, many faculty members who deserve our recognition and appreciation but whose pictures do not appear here.

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Creighton University Jesuit Community, circa 1979
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Research Overview

Some examples of the wide variety of research specialties of the faculty are: design and chemical synthesis of analogs of regulatory peptides; the role of peptides in the regulation of gastrointestinal and cardiovascular functions and of bone growth and development; the molecular evolution of peptide hormones; the role of proteolytic enzymes in the biosynthesis of peptide hormones; nucleic acid catalysis and molecular engineering; the molecular biology of collagen synthesis; the regulation of gene expression and molecular diagnostics; the cellular and genetic basis for differentiation of the brain, inner ear, and cardiovascular system; comparative neuroanatomy; cellular mechanics; intracellular electrophysiology and respiratory mechanics and control.

The research is supported by facilities, including cores for bioimaging, structural bioinformatics, proteomics, genomics, and molecular diagnostics. The department encourages collaborative research interaction with faculty in the Departments of Pharmacology, Medicine, and Surgery; the Osteoporosis Research Center; the Boys Town National Research Hospital; and the Veterans Administration Hospital.

Skin Cancer

The largest organ in the body, the skin, functions as a major sensory organ and to protect the body from exogenous insults. Our research is examining the role of a family of receptor tyrosine kinases in the skin during development and in skin carcinogenesis in response to solar radiation. Members of this receptor tyrosine kinase family include the epidermal growth factor receptor and erbB2/neu regulate cell survival, migration and proliferation. We are investigating the mechanisms of non-melanoma skin cancer development by focusing on the role of erbB2 and the epidermal growth factor receptor in this process. Since non-melanoma skin cancer is the most common form of cancer in the United States, with more than one million new cases diagnosed per year nationwide, this research may have important implications for human health.

Faculty: Laura Hansen

Comparative Ion Transport

Research on the ion transport mechanisms that underlie the adaptation of organisms to their environment focuses on the role and regulation of the sodium/hydrogen exchange proteins in yellow fever mosquitoes and the sodium/potassium ATPase in Antarctic fish. Both projects are aimed at identifying the mechanisms of ion transport responsible for the adaptation, including physiological, biochemical, and anatomical measurements, regulation of the ion transport mechanisms by primary and secondary messengers, including analysis of intracellular cAMP, calcium and pH and molecular basis for the regulation
the ion transporter of interest, including cloning and sequencing of cDNA, mRNA, and protein expression studies.
Faculty: David Petzel

AIRWAY HYPERRESPONSIVENESS

Research on mechanisms of airway hyperirritability is focused on whether C-fiber endings in reactive airways become hyperirritable, using single nerve fiber monitoring of sensory receptors in airway and parenchyma of small animals. The involvement of neuropeptides in the response of the hyperirritable airway is examined using whole animal nerve recording in vivo and tracheal smooth muscle strips. The pulmonary research also includes pharmacological evaluation of possible therapeutic agents for asthma using whole-body plethysmograph, isolated airway smooth muscle preparations to measure the protection and reversal of airway mediator induced contraction. Changes in reflex control of ventilation and pulmonary sensory receptors of the airway and lung parenchyma during the progression of disease of the lung are also studied.
Faculty: Dale Bergren

CARDIAC DEVELOPMENT

Congenital heart defects are the most common life-threatening birth defect, and many times are accompanied by craniofacial anomalies. In this department, investigators are studying the role of cell-cell and cell-extracellular matrix interactions during normal craniofacial and cardiac development, particularly in regard to cell-surface and extracellular proteases in neural crest morphogenesis and migration (cells pivotal in the development of both the face and heart).

Studies using in situ hybridization, immunocytochemistry, enzyme assays, and time-lapse imaging show that growth factors, proteases, and protease inhibitors are important overseers of neural crest cell migration. Moreover, metabolic derivatives of vitamin A are capable of mediating neural crest cell migration and proteolytic activity. Biomedical Science researchers, in collaboration with investigators at the University of Nebraska Medical Center, are also investigating the effects of elevated homocysteine on neural crest morphogenesis and elucidating the mechanisms responsible for folic acid's protective effect on cardiovascular and craniofacial development. In order to develop preventative strategies for congenital defects, we must understand the mechanisms driving neural crest and cardiac morphogenesis and how nutritional elements are involved. These studies also enhance our understanding of adult diseases because many diseases have etiological elements of embryologic origin.
Faculty: Phillip Brauer

CIRCADIAN RHYTHMS

Our daily rhythms of sleep and wakefulness are driven and regulated by two small nuclei in the hypothalamus, the suprachiasmatic nuclei. In a brain slice preparation, we are now investigating the cellular mechanisms of circadian rhythm regulation and how circadian rhythms are modulated by the brain hormone melatonin.
Faculty: Richard Hallworth

EAR DEVELOPMENT

The inner ear contains two important sensory modalities, the vestibular system for orientation in space and the auditory system for hearing. Progress in recent years has been dramatic regarding the molecular governance of ear development, the pathways of innervation in this organ, and the genetics of
hearing-related disorders. Our research focuses on mouse mutations that cause developmental ear defects and those that affect either the formation or the maintenance of sensory neurons in the hearing or vestibular systems. This research will enable us to understand the molecular machinery that makes and brakes ear formation, especially the innervation. In a parallel avenue, we are investigating the activity-dependent connectional dynamics. For this we make use of micro- and hypergravity exposure as well as several neurotrophin mutant mice with altered connections. This research is conducted in collaboration with Boys Town National Research Hospital, Millennium, Regeneron, and various universities. It is funded by NASA and NIDCD.

Faculty: Laura Bruce, Bernd Fritzsch

Hearing Loss

Hair cells are the essential first step in hearing, and damage to hair cells is the cause of age-related and traumatic hearing loss. In work funded by the National Institutes of Health, the basic science of hair cells and the mechanisms underlying their loss are being studied, with a view to finding rescue and repair methods. This work is being pursued in collaboration with investigators at Boys Town National Research Hospital, Harvard University, Baylor College of Medicine, St. Jude's Hospital in Memphis, University of Colorado at Boulder, University of Texas at Austin, University of Texas Health Science Center at San Antonio, University of Maryland, Oregon Health Sciences University, and Boston University.

Faculty: Bernd Fritzsch, Richard Hallworth

Biophysics of Cochlear Hair Cells

The outer hair cell (OHC) is one of two kinds of receptor cells in the inner ear, and plays a critical role in mammalian hearing. OHCs enhance basilar membrane motion through a local mechanical feedback process within the cochlea, termed the “cochlear amplifier.” It is generally believed that the basis of cochlear amplification is a voltage-dependent somatic length change of OHCs. In this scheme, receptor potentials produced by transducer current in response to acoustic stimulation provide the input to the cell’s motor activity. Consequently, the OHC is thought to perform two transducer functions, a conventional mechanoelectrical or forward transduction in the stereocilia, and a specialized electromechanical or reverse transduction in the basolateral membrane. Funded by the NIDCD, research in the laboratory focuses on the two transduction processes in OHCs. Recordings are made from isolated hair cells, cultured hair cell preparations, and hemicochlea, in conjunction with molecular, morphological, and other novel techniques to investigate properties of these cells and their roles in cochlear function in mammals. The research is conducted in collaboration with Northwestern University, Harvard University, NIDCD, and St. Jude Children’s Research Hospital.

Faculty: David Z. Z. He

Development of Cochlear Hair Cells

One of the central questions in developmental neurobiology of the sensory systems is how the receptor cells develop and whether their development is regulated by innervation. Research in the laboratory focuses on the development of cochlear hair cells. Specifically, we want to determine when somatic motility, membrane conductances, and ACh receptor of outer hair cells develop. Recordings are made from solitary hair cells isolated from developing animals. Tissue culture technique has also been used to address

Faculty: David Z. Z. He
the question of whether the maturation of hair cells is regulated by innervation. The research is funded by the NIDCD.

Faculty: David Z. Z. He

**Control of Gene Expression**

This research is centered on the developmental regulation of hemoglobin gene expression with correlative gene therapy approaches. The mechanism by which transcriptional regulatory proteins are involved in switching the various hemoglobin genes on and off at different stages of development is being studied. The results from these investigations will contribute to knowledge of red cell maturation and disease states which result from gene defects. New gene therapy vectors which are erythrocyte specific and use endogenous retrotransposons, which are expressed in red blood cells, are being developed. This is a novel gene therapy approach to genes in target cells, which have long-term expression capabilities as well as tissue specificity.

Faculty: Joseph Knezetic

**Molecular Genetics of Hereditary Cancers**

This research is focused on finding mutations at the DNA sequencing level for various hereditary cancer patient families. Studies so far have shown that each family has unique mutations causing the cancers. The laboratory facilities used for the work have been developed into a Molecular Diagnostic Laboratory which is fully accredited by the Clinical Laboratory Improvement Amendments (CLIA) and certified by the College of American Pathologists (CAP). This laboratory examines patient DNA samples for known mutations in each family and provides reports for subsequent genetic counseling. WAVE-dhplc technology and CHIP instrumentation is being used to assay for new mutations in families where the original causative mutation has yet to be determined.

Faculty: Joseph Knezetic

**Engineering RNA Catalysts**

This research is focused on development of controllable RNA catalysts as genetic regulatory switches and cellular biosensors. These catalysts, termed allosteric ribozymes, require the binding of specific effector molecules to elicit activity and are generated using rational design and in vitro evolution strategies. The ability of allosterically self-cleaving ribozymes and self-splicing introns to regulate gene expression is of particular interest. Toward this goal, model systems for yeast and mammalian cells are presently being developed. Moreover, such catalysts afford a unique opportunity to investigate the structural dynamics of RNA folding and ligand interaction.

Faculty: Garrett Soukup

**Osteoporosis**

Collaboration between Creighton faculty in the Departments of Biomedical Sciences and Internal Medicine focuses on osteoporosis and the cellular basis of how skeletal mass is achieved and maintained: bone mass changes in response to varying loads - disuse reduces and heavy use increases bone density; how loads placed on the skeleton are detected and converted into biological signals that affect the balance between bone formation and resorption is not understood. Studies currently underway use bromodeoxyuridine to characterize the proliferation and differentiation of osteoprogenitor cells in response to biomechanical loading in adult rats. The role of prostaglandin E\(_2\) (PGE\(_2\)) as a local mediator of load-induced bone formation is also being evaluated. Another project is designed to elucidate how smoking
tobacco reduces bone mass and increases the risk for osteoporosis. This project combines an assessment of bone structure, strength, and cell function using in vivo and in vitro models.

Faculty: John Yee

**Cell Mechanics**

It has long been known, but not widely appreciated, that light exerts force on living tissue. Intense laser light can be harnessed to produce a novel method, called the optical stretcher, for the measurement of the mechanical properties of single cells. In a joint project of the Department of Biomedical Sciences, the Osteoporosis Research Center, and Creighton University Physics Department, an optical stretcher facility will be constructed in the Department of Biomedical Sciences in the coming year. Initial studies will address the mechanics of hair cells of the inner ear, the mechanism by which bone density is regulated by osteocytes, and the mechanisms underlying photodynamic therapies. This work is being pursued in collaboration with the University of Texas at Austin and the University of Leipzig, Germany.

Faculty: Richard Hallworth

**Regulatory Peptides**

Structure-activity relationships of selected regulatory peptides are examined using synthetic peptide chemistry, physical, chemical and computerized theoretical analysis of conformation and biological characterization of activity.

- Studies on the interactions of antimicrobial peptides with the chaperone protein DnAK, using MD simulations, revealed the interaction site on the protein and a possible basis for antimicrobial action and design of new peptide-based antibiotics.
  Faculty: Sándor Lovas

- Studies of gastrin and gastrin gene-products are focused on their significance in colonic cancer and on a novel receptor for carboxymethyl gastrin which mediates promotion of growth of the cancer cells.
  Faculty: Sándor Lovas, Richard F. Murphy

- Studies of variants and derivatives of gonadotrophin releasing hormone variant, GnRH III, have lead to development of a conjugate of the peptide with a synthetic polymer. This suppresses growth of cancers, including breast and colonic, which have receptors for the hormone. The technology is being optimized for therapeutic application.
  Faculty: Sándor Lovas, Richard F. Murphy

- Studies of the EGF-TGF α family of peptides revealed the importance of domain movement by hinge bonding and the discrete biological activity of a B-loop partial structure which may have a novel receptor requirement.
  Faculty: Sándor Lovas, Richard F. Murphy

- Studies of the vasodilatory neuropeptide, calcitonin gene-related peptide (CGRP) have led to the
development of the most potent, peptide-based, CGRP antagonists reported to date. These will be useful for determining the physiological role of CGRP and the design of therapeutics for treatment of hypertension and migraine.
Faculty: D. David Smith

**Structural Bioinformatics and Proteomics**

Eighteen Alpha cpu-based and 80 Athelon cpu-based clusters are used to study conformational properties of peptides proteins and the effect of weakly polar interactions on peptide and protein structures, by Molecular Dynamics simulations, bioinformatics and by high level quantum chemical calculations.
Faculty: Sándor Lovas, Richard F. Murphy

**Protein Processing**

Communication between cells of the nervous, endocrine, and immune systems is frequently conducted through biologically active peptides. Many of these peptides are initially synthesized as larger, inactive propeptides which are subsequently cleaved by extremely specific endoproteases. The structural basis for this specificity is unknown. We are presently examining the processing of proinsulin and proglucagon by the converting enzymes PC1 and PC2, in an attempt to uncover clues to the specificity of substrate recognition. The ultimate goal of this work is to describe, at the molecular level, those interactions for the differential processing of peptide hormones.
Faculty: Robert Mackin

**Bioimaging**

The Center for Advanced Imaging in the Department of Biomedical Sciences this year obtained a Bio-Rad confocal microscope. Investigators in the department and other departments of the Medical School, and from Boys Town National Research Hospital, are using the instrument to extend their knowledge of the inner workings of cells.
Faculty: Bernd Fritzsch, Richard Hallworth

See Biomedical Sciences webpage for additional information about the department’s current research activities: [http://www.biomedsci.creighton.edu/research/areas.html](http://www.biomedsci.creighton.edu/research/areas.html)

**Cancer**

The Creighton University Medical Center – Cancer Center (CUMC-CC) was established in the summer of 2002 with the recruitment of Dr. Brian W. Loggie as Cancer Center Director and Chief of Surgical Oncology after a national search. The main goals of CUMC-CC are: (1) to cover basic cancer services, develop areas of excellence or distinction, and provide specialty niches of care not currently provided in the Omaha metro and region, and (2) to establish premier programs in basic research (where scientists learn about basic cellular events in cancer), translational research (which moves science to the bedside and identifies clinical problems to take back to the laboratory), and clinical research (where new therapies are made available in a system of ongoing study, oversight, and review).
The theme of the basic and translational research at CUMC-CC is signal transduction also known as molecular signaling. In a short period of time, the CUMC-CC has established a state of the art Molecular Biology and Immunohistochemistry laboratories. The research at CUMC-CC is fully supported by funding from NIH, DoD, ACS and Cancer and Smoking Disease Research Programs (LB595 and LB692).

Researchers

The basic science faculty of CUMC-CC consists of Zafar Nawaz, PhD, Zhao-yi Wang, PhD, Venkatesh Govindarajan, PhD and clinical faculty consists of Brian Loggie, MD and Edibaldo Silva, PhD, MD. Currently, the laboratory fully supports six post-doctoral fellows and two laboratory technicians.

Brian Loggie, MD, joined CUMC-CC as a Professor of Surgery, Chief of Surgical Oncology and Director of CUMC-CC. Dr. Loggie has established a center for the treatment of peritoneal neoplastic disease. Patients from over forty states have been evaluated and treated at CUMC-CC for a variety of conditions including pseudomyxoma peritonei (PMP), peritoneal carcinomatosis, appendix cancer, and peritoneal mesothelioma. Translational research at CUMC-CC has already lead to national and international presentations. Dr. Loggie has broad clinical experience in surgical oncology and in clinical and translational research in cancer.

Edibaldo Silva, PhD, MD, joined CUMC-CC as Associate Professor of Surgery, and is the Program Director for the Comprehensive Breast Clinic and the Skin Cancer & Melanoma Clinic. Additional areas of expertise are in gastrointestinal malignancy, pancreatic cancer, sarcoma, thyroid and parotid tumors.

Zafar Nawaz, PhD, joined CUMC-CC as an Associate Professor of Surgery and Director of CUMC-CC Molecular and Cancer Biology Laboratory. He is a renowned expert in estrogen receptor function. Dr. Nawaz is studying signal transduction and cell processes of tumor growth in breast, prostate, lung and colon cancer.

Zhao-yi (Charlie) Wang, PhD joined CUMC-CC as Associate Professor of Surgery. Dr. Wang is studying the molecular and cellular mechanisms underlying estrogen-stimulated mammary tumorigenesis and breast cancer progression. Dr. Wang has been studying the roles of tumor suppressors such as BRCA1 and WT1, and RbAp46, a novel gene he identified, in early development of human breast cancer using an a xenograft model.

Venkatesh Govindarajan, PhD joins CUMC-CC as an Assistant Professor of Surgery in February 2004. Dr. Govindarajan is a developmental biologist who will bring knowledge of fundamental developmental pathways to problems in cancer biology.
The Hereditary Cancer Institute, under the direction of Henry Lynch, MD, leads Creighton University into cancer genetics. This research has lead to the identification of several hereditary cancer syndromes, including hereditary colorectal nonpolyposis cancer (HNPCC), also know as the Lynch syndrome.

James A. Mailliard, MD directs Creighton’s efforts in clinical trials in collaboration with Peter Silberstein, MD as part of a Nebraska/Iowa consortium (the Missouri Valley Cancer Consortium, or MVCC), through a grant supported by the U.S. Department of Health and Human Services’ Community Clinical Oncology Program (CCOP).

FAMILY MEDICINE

The Department of Family Medicine seeks to promote research and publication in the vital areas of primary care, population based-medicine, and holistic health. In addition, Department members are frequently requested to perform academic book reviews on topics of importance to community primary care physicians. Despite an intensive clinical and teaching load, our faculty continues the Department’s proud tradition of research and publication, with our work receiving citations throughout the country.

FINE & PERFORMING ARTS

Members of the Department of Fine and Performing Arts extend the concept of teacher-scholar to incorporate the role of artist. Faculty members pursue activity in each of these areas, with regional, national, and international recognition.

Notable artistic achievement within the visual arts is witnessed by invited participation at regional and national exhibitions as well as the inclusion of work in various museum and gallery acquisitions. Current faculty projects include the presentation of visual images associated with Wounded Knee, development of a metaphysical/environmental approach to landscape painting, as well as numerous significant commissions of two- and three-dimensional pieces. Additionally, faculty are engaged in three-dimensional portrayals of the human figure in metal, photographic imaging in 19th century historical techniques (e.g. platinum, palladium, iron and silver salts), glass-casting, print making, ceramics, and visual imaging made possible through emerging technologies. Faculty routinely supervise student exhibitions throughout the area and encourage student participation in local, regional, and national professional artistic organizations.

Performing artists are active in dance, theatre, and music. Among recent faculty achievements are dramatic appearances at a variety of venues, including award-winning roles on Omaha stages in the areas of musical theatre, comedy, and drama. Work
associated with costuming, make-up design, and technical theatre has been critically acclaimed in productions throughout the region. During the past year, music faculty have appeared with numerous organizations, including Opera Omaha, the Omaha Symphony (in both solo and ensemble roles), and Mannheim Steamroller. Music faculty have appeared internationally, enjoying concert venues from Europe to South America. Additionally, most performing artists annually direct, conduct, and supervise student productions, concerts, and recitals. Adding to the department’s complete collection of Javanese court gamelan instruments, unique within the state of Nebraska, will soon be the first set of Surinamese gamelan instruments found in the United States.

Scholarly work includes traditional academic research as well as arts-specific activity. Music faculty annually prepare articles for professional journals and conferences, with recent work involving the first scholarly study of Surinamese gamelan. Additionally, music faculty are engaged in the production of pedagogical texts as well as the production of music appropriate to graded dance curricula. Dance faculty are not just highly sought performers but choreographers and pedagogues as well, with countless appearances and works evidenced throughout the nation. Theatre faculty projects include direction, video production, and the development of a large-scale stage work based on the travels of Lewis and Clark. This latter project is a collaborative effort, involving both theatre and music faculty. Art historians are engaged in ongoing research with the Jesuit Church of Quito (Ecuador), large format photography, and the preparation of a book exploring the career and classic work of photographer Brett Weston. Additionally, research associated with the University Gallery has resulted in the selection and presentation of exhibits routinely reviewed by regional critics.

Departmental faculty are committed to sharing their work and craft as artists within various educational settings. Professional activity for departmental members includes participation as jurors, reviewers, judges, clinicians, and presenters for local, regional, and national arts councils, workshops, evaluations, and conferences. The artist-faculty of Fine and Performing Arts believe their work is best described by the departmental mission statement: “We believe in the value of the arts as the voice of the human soul. The arts educate, communicate, and inspire us to know more about ourselves, each other, and our place in creation. We believe in the unity of the arts and in the crucial role of arts in education.”

Health Policy & Ethics

The Center for Health Policy and Ethics is comprised of a multidisciplinary group of scholars dedicated to the study and teaching of ethical dimensions of health care and health policy. Scholarship at the Center for Health Policy and Ethics responds to the challenge of ethical issues raised by the health care system, patient care, and public health. The multidisciplinary nature of the Center for Health Policy and Ethics encourages a variety of perspectives and resources for topics of scholarly inquiry, conceptual analysis, and discussion. The research interests of the faculty of the center reflect the stereoscopic vision implied in its name – the ethics of both health policy and health care. Global topics of public policy as well as the traditional details of clinical decision making are addressed.

Areas of sustained research are: (1) ethical issues at the end of life, palliative care and chronicity; and (2) issues of justice. Scholarly
products of the center have included: guidelines for confidentiality in pediatric AIDS, contributions to the second and third editions of the field’s standard encyclopedia, analyses of values at stake in managed care, health care reform, ethical and legal aspects of home care and hospice, and materials related to the scholarship of teaching and learning in ethics in all of the health sciences represented on the Creighton campus.

One notable project during the past year was the preparation of an edited book entitled *Ethical Foundations of Care for Alzheimer’s Disease: U.S. and European Perspectives* (Ruth Purtilo, Ph.D. and Henk ten Have, Ph.D., editors), about to be released by Johns Hopkins University Press. It represents one product of a multi-disciplinary international scholars invited conference convened by the Center in 2001. The organization and contributions involved all members of the Center for Health Policy and Ethics. The book focuses on the economic, clinical, and ethical and social challenges in the treatment of Alzheimer’s disease globally.

Issues of health policy and ethics will continue to demand scholarly inquiry as well as public attention. Critical concerns about ethics education will require closer examination of student learning and outcomes. The health care system will continue to evolve, and these changes will inevitably lead to new moral considerations. Faculty at the center will continue to make important contributions in this challenging arena as they have done significantly in the past.

For additional information about the Center for Health Policy and Ethics, visit the center’s webpage at: [http://chpe.creighton.edu](http://chpe.creighton.edu)

**Medical Microbiology & Immunology**

**Research Overview**

The Department of Medical Microbiology and Immunology consists of thirteen PhDs and four MDs with primary appointments and six PhDs and four MDs with secondary appointments. The department is multi-institutional, encompassing the Creighton University Medical Center (CUMC), the University of Nebraska Medical Center (UNMC), Children’s Hospital, and the Veterans Administration Medical Center (VAMC).

The research programs of the department are multi-disciplinary, with expertise in a variety of areas broadly related to medical microbiology and immunology. In addition, collaboration with faculty of other departments within Creighton University School of Medicine, the Veterans Administration Hospital, the University of Nebraska at Lincoln, and the University of Nebraska Medical Center provides an opportunity for innovative research opportunities and supports an integrated graduate program. These collaborative efforts include research in the general areas of antimicrobial agents and chemotherapy, molecular biology, genetics, immunology, microbial toxins, virology, bacterial pathogenesis, diagnostic and clinical microbiology, adult infectious diseases, epidemiology, microbial physiology, and nosocomial infections. The range of research interests extends from clinical trials to test the efficacy of...
antimicrobial agents to the basic aspects of cellular and subcellular microbiology. The diversity of faculty research interests and scientific pursuits, including a listing of publications and research grants in progress, is summarized in the individual faculty bibliographies.

Major areas of emphasis within the department include:

**Infectious Disease**

Overall, the Infectious Disease Division provides clinical services in four broad areas: clinical infectious disease consultations, laboratory management, infection control services, and advisory support to public health agencies and organizations. Patient consultations are provided by the adult disease services at several regional hospitals. The adult service is under the direction of Laurel Preheim, M.D. and provides all adult (nineteen years and older) inpatient and outpatient consultations at the Creighton University Medical Center and the Veterans Administration Medical Center-Omaha. Members of the department provide consultation in infectious disease at each of these institutions.

Faculty: Marvin Bittner, M.D., David Dworzack, M.D., Martha Gentry-Nielsen, Ph.D., Donald Giger, M.D., Gary Gorby, M.D., and Laurel Preheim, M.D.

**Center for Research in Anti-Infectives & Biotechnology (CRAB)**

*The Center for Research in Anti-Infectives and Biotechnology (CRAB) is an association of researchers within the Department of Medical Microbiology and Immunology, Creighton University School of Medicine. The research interests of the center are on many aspects of antimicrobial chemotherapy ranging from drug discovery to studying the molecular mechanisms of antibacterial resistance among bacteria, solving problems of detecting antibacterial resistance in the clinical laboratory, and evaluating new drugs and novel drug combinations to effectively treat resistant bacteria. For over eleven years, CRAB faculty have been studying the super-bug strains that are resistant to antibiotics.*

The members of the center include specialists in clinical microbiology, molecular biology, and pharmacodynamics. In addition to research endeavors, members of CRAB are active in the teaching of many courses within the Schools of Medicine, Dentistry, and Pharmacy and Health Professions. Courses taught include medical microbiology and immunology, and antimicrobial agents and chemotherapy. The center associates also teach a summer “minicourse” in antimicrobial agents and chemotherapy to pharmaceutical and industry professionals.

Faculty: Nancy Hanson, Ph.D., Phillip Lister, Ph.D. and Kenneth Thomson, Ph.D.

**Flow Cytometry Core Facility**

The Creighton University Flow Cytometry Core Facility is located in and administered by the Department of Medical Microbiology and Immunology. The facility was established in 2001 to serve research investigators of any department at Creighton University and Boys Town National Research Hospital, as well as outside (such as Omaha Children’s Hospital). Within Creighton, the facility routinely provides service to investigators in Medical Microbiology and
Immunology, Biomedical Sciences, Allergy and Immunology, Cardiology, and Psychiatry.

The centerpiece of the facility is a Becton Dickinson FACSCalibur dual laser, 4-color flow cytometer. This instrument is equipped with both optional sorting capabilities and a Multiwell Autosampler. A separate computer workstation is available in the facility for off-line data analysis using any of several advanced data analysis packages available in the facility.

In addition to the FACSCalibur, the facility houses a Beckman Coulter Z1 particle counter, a Nikon E-400 microscope and an IEC Centra-GP8R refrigerated centrifuge. The cell purification-sorting capabilities of the facility have been significantly enhanced through the purchase of two magnetic separation units (VarioMACS and QuadroMACS) from Miltenyi Biotech. Through the use of monoclonal antibodies and magnetic beads, these units allow the purification of specific cell populations for further analysis or cell culture. All of these additional items are also available for use by any investigator.

Faculty: Patrick Swanson, Ph.D.; Technical Director: Greg Perry, Ph.D.

Cancer Center

Creighton University Cancer Center’s core molecular and cancer biology laboratory is located within and administered by the Department of Medical Microbiology and Immunology. The main focus of the research is to provide insight into the genetic techniques that can alter the processes by which cancer develops. The center is currently studying the molecular genetics of breast and prostate cancers as well as the signal transduction or cell processes of tumor growth in cancer systems. Thus far, the center has identified and cloned a protein which is known to have a regulatory effect on the levels of a growth and tumor suppressive protein.

Secondary Faculty: Zafar Nawaz, Ph.D.

Immunology Research

Within the Department of Medical Microbiology and Immunology, Kristen Drescher, Ph.D. heads studies on multiple sclerosis. Dr. Drescher has developed a unique research technique in an effort to halt the progression of damage in the central nervous system that leads to MS. Her research is attempting to alter the immune systems of mice undergoing the disease processes associated with MS to determine whether changes in the animal’s mobility and lesion development in the central nervous system can be reduced. Through the use of a virus-based test vaccine, Dr. Drescher is studying the process of demyelination, or damage to the myelin sheaths that surround nerve fibers.
Another area of research within the department is the understanding of how the immune system adapts to combat foreign agents. Patrick Swanson, Ph.D. is researching the V(D)J recombination process that assembles genes that encode antigen receptors on lymphocytes to produce disease-fighting antibodies and T-cells. Dr. Swanson has made progress in understanding how RAG proteins bind and cut DNA and has generated transgenic mice expressing mutant forms of RAG-1 to examine aspects of lymphocyte development. Through this research, Dr. Swanson hopes to learn how mutations in the RAG or other proteins involved in V(D)J recombination could lead to human diseases stemming from impaired V(D)J recombination such as severe combined immunodeficiency (SCID) or apparent gene rearrangement such as certain lymphomas and leukemias.

Faculty: Kristen Drescher, Ph.D., and Patrick Swanson, Ph.D.

**MEDICINE**

The research-oriented faculty and laboratories of the Department of Medicine posted many accomplishments in the 2002-2003 academic year. Medicine had another record year in both federal as well as industry research funding. For the second year, the faculty have published over 140 peer-reviewed articles.

The leading division for research was Endocrinology, with the Osteoporosis Research Center, Bone Metabolism Center, and Diabetes Center all continuing to make substantial research contributions. Recent recognition by faculty in the Endocrine Division includes Dr. Robert Recker’s receipt of the Frederic C. Barter Award from the ASBMR. The Division of Allergy and Immunology continues to expand its scholarship and international recognition; recent accomplishments include Dr. Agrawal’s award of two research grants from the NIH. The Division of Allergy and Immunology has also enjoyed collaboration with several other divisions in the Department of Medicine, especially the Rheumatology and Dermatology Divisions examining the role of immune modulators for inflammatory diseases such as rheumatoid arthritis and psoriasis. The Division of Cardiology conducts numerous clinical studies related to the treatment as well as prevention of cardiovascular disease; Dr. Mohiuddin and his colleagues have also been busy implementing a variety of NIH and other extramurally funded interventions to provide educational and preventative programs relevant to cardiovascular risk reduction in the local community. Hematology/Oncology continues to be very active in clinical research, particularly through the Missouri Valley Cancer Consortium directed by Dr. James Malliard. The General Internal Medicine Division has been involved in a variety of educational research projects, including a national study of the effectiveness of clinical teaching. The Divisions of Nephrology and Pulmonary/Critical Care recently recruited clinician-scientist faculty (Richard Lund and Lee Morrow); as a result, these divisions now have a variety of new studies underway.

**ALLERGY & IMMUNOLOGY**

The Division of Allergy and Immunology has been engaged in both basic and clinical research aimed at elucidating key events in the pathogenesis and treatment of allergic and immunologic disorders. Bench research efforts have focused on allergic
respiratory disorders. A key line of investigation has been to determine the role of Flt-3 ligand as a possible immune modulator of allergic airway diseases. The Division of Allergy and Immunology is also engaged in the use of immune modulators for inflammatory diseases. Examples include the use of several different monoclonal antibodies such as anti-IL-4, anti-CD23, and anti-IgE for the treatment of allergic asthma. We are also engaged in examining the utility of new and safer inhaled corticosteroids for the treatment of airway diseases. The division is also conducting studies of the effect of mycobacterial vaccines in the prevention and treatment of asthma and allergy as an international project involving 1,700 children in four countries. Studies of the cause of airway hyperresponsiveness and the role of certain cytokines released in the airways during allergic asthma reactions are being carried out to investigate how and why interleukins-13 and –1 cause sensitivity to methacholine. The division has begun a new line of investigation examining the immune tolerance effects of anti-IgE monoclonal antibodies plus immunotherapy for the treatment of respiratory disorders. This is a large-scale project funded by the Immune Tolerance Network, NIAID, NIH, that is aimed at developing a new method for giving allergy immunotherapy for the treatment of allergic disorders. As part of this investigation, intensive laboratory studies will be done to determine the mechanism of action of anti-IgE and immunotherapy. Finally, the Division of Allergy and Immunology has enjoyed collaboration with several other divisions in the Department of Medicine, especially the Rheumatology and Dermatology Divisions, examining the role of immune modulators for inflammatory diseases such as rheumatoid arthritis and psoriasis.

Cardiology

The Division of Cardiology continues to build upon its commitment to provide superior clinical services, participation in sponsored clinical research, and community focused intervention programs. Under the direction of Syed Mohiuddin, M.D., the Cardiac Center has continued to expand its clinical operations and research activity. The Cardiac Center provides referring physicians, healthcare professionals, patients and their families with the opportunity to use the area's only freestanding facility totally dedicated to cardiovascular research and education, risk modification, diagnosis and treatment. Services at the Cardiac Center include: physician evaluation and management; electrocardiography; X-ray; exercise testing; echocardiography, including Transesophageal (TEE), Implantable Cardiac Defibrillator (ICD) and pacemaker management; cardiac catheterization and percutaneous interventions; pharmacologic interventions, including the availability of compassionate drugs; laboratory services; and risk reduction education.

Clinical Operations

During this past year, the Cardiac Center has extended its clinical service area to include a new satellite clinic in Onawa, Iowa while increasing the number of days at our clinics in Harlan and Atlantic, Iowa, and Sarpy County, Nebraska.

The Cardiac Center strives to make available the most current technologies in treatment methods and diagnostic tools. Our cardiac catheterization lab was outfitted with updated imaging technology, which gives cardiologists clearer pictures and data to provide the best possible care. Brachytherapy (radiation therapy) and drug eluting stents have been added to our list of interventional strategies to treat narrowing or occluded coronary vessels and prevent restenosis. Enhanced
External Counterpulsation (EECP) treatment is a noninvasive, outpatient procedure to relieve angina by improving perfusion in areas of the heart deprived of adequate blood supply.

Cardiology has been tailoring current equipment and systems in preparation of achieving a comprehensive database of clinical information compatible and coordinated with input from all diagnostic equipment. Integrated systems will put clinical data at our physicians’ fingertips, and provide a database to support clinical research activity. In the past year, our Noninvasive Laboratory converted to an all-digital imaging and storage system, and the Cardiac Monitoring section converted to digital Holter scanners and recorders.

**Clinical Research**

The Cardiac Center has focused attention on sponsored clinical trials, directing reorganization of the group, with dedication to the business management, marketing, and conduct of sponsored clinical research. Our overall goal is to increase the yield of current trials, implement new strategies for successful patient recruitment, and increase the volume of sponsored projects. The Cardiac Center initiated twenty new clinical trials during the past year alone, including phase II/III/IV pharmaceutical and device trials. Those topics include anemia, heart failure, endothelial function, acute coronary syndrome, hypertension, coronary bypass, TEE, lipid lowering agents, C-reactive protein, acute MI intervention and post-intervention studies.

Cardiology continues to support investigator-initiated research by developing strategic and collaborative relationships with academia, industry and the community. This effective research infrastructure includes assistance with manuscripts, funding applications, laboratory support, and data collection. By promoting education and dissemination of activities and results intramurally and extramurally to physicians and the public, we are developing an innovative clinical research network as a means to increase funding opportunities, publications, and ultimately aim to improve patient care.

**Funded Programs in Minority Cardiovascular Risk Prevention**

The areas surrounding the Creighton University Medical Center have historically lacked a constant, organized and durable program to identify and educate individuals at high risk for cardiovascular disease as well as the importance and significance of disease prevention. The Cardiac Center recognized this need to provide educational and preventative programs to the local community, and responded with multiple initiatives. These programs have enhanced the University’s visibility in the Omaha community as a partner willing to share its resources for improving health care in the minority community.

◊ The Creighton Heart Education Center (CHEC) is a unique partnership with the NIH and NHLBI to create an Enhanced Dissemination and Utilization Center (EDUC) to improve cardiovascular health at the community level, especially in communities at high risk for CVD. Along with a nationwide network of community-based organizations targeting culturally sensitive education strategies aimed at changing local physician practices and patient behaviors, the
synthesis and dissemination of our data will promote the reduction of CVD in the country as a whole. The CHEC uses a community-oriented approach based upon an alliance of Creighton University School of Medicine and community centers and churches to implement CVD risk factor education, prevention, intervention, and reduction in the African-American population. The CHEC EDUC sponsors heart fairs, nutrition education and other seminars, trains and employs community health advocates, and conducts a comprehensive community awareness campaign. In the Spring of 2004, the CHEC program will increase its involvement in the community with a teaching vehicle custom equipped to provide mobile health screenings. This project, one of six in the country, is funded under contract with the National Heart, Lung, and Blood Institute (NHLBI), and equally supported with funding from the Creighton University School of Medicine.

The Cardiovascular Risk Factor Screening and Intervention in African Americans (Carsi) program goal is to provide cost efficient, uncomplicated, risk factor reduction to a large segment of the African American community through a network of community educators. This project may serve as a model for development of more general health care intervention that may also be directed to access the relationship between Creighton University and community-based health care agencies. In addition, every effort is being made to recruit minority health care providers and students in the delivery of service, and thus, the project should enhance minority student interest in the biomedical sciences.

The Cardiac Center serves as the lead agency for the Douglas County Cardiovascular Health Initiative (DCCHI), to assess the community’s physical activity and nutritional concerns. In cooperation with the Charles Drew Clinic, Sisters Together, the Douglas County Health Department, and the Women’s Community Health Center, the DCCHI works to establish preventive programs to reverse the upward trend in CVD death rate of urban Omaha.

Funded Programs in Smoking Cessation and Cardiovascular Risk Reduction

The Cardiac Center has developed an intensive, multi-component smoking cessation/relapse prevention intervention, the effectiveness of which is being compared to traditional smoking cessation programs. This study provides a medical service that was not previously provided within the community and the surrounding area, and treating tobacco dependence offers clinicians a great opportunity to reduce the loss of life and unhappiness caused by this chronic condition.

The Peer 2 Peer program leverages the success of the lay health educator model to offer support group services as a supplement to clinic-based smoking cessation services. Ex-smokers are offered the opportunity to serve their community as smoking cessation support group leaders and are trained and paid stipends by the Cardiac Center for their dedicated services.
Investigators in the Creighton Osteoporosis Research Center (ORC) have, for the past 45 years, made Creighton an international center of excellence in human bone research — investigating how the skeleton remodels itself to repair damage, what goes wrong with that process in the development of osteoporosis, and what the nutritional and exercise requirements are for building strong bones and maintaining bone health. In recent years, the ORC researchers have also focused particular effort on vitamin D metabolism and on the inheritance of bone mass.

ORC investigators identified several kindreds in which high bone mass is inherited as a Mendelian dominant trait. In one of these kindreds, and in collaboration with biotech and pharmaceutical industry partners, they have identified the gene (Lrp5) and causal mutation (G171V) responsible for the high bone mass phenotype. This finding has created tremendous excitement within the bone field because it has revealed a previously unknown pathway important for regulating bone mass, and it provides a new target for developing pharmaceutical agents to treat osteoporosis. It also has the potential to open the window on very basic cell biology questions, such as the chemical representation of the set point involved in all biological feedback control loops.

One of their best-known projects, the “Omaha Nuns Study,” involves nearly 200 nuns from Midwestern religious communities who have been followed with intensive physiological measurements for the past 36 years. Results from this study have literally “written the book” on the metabolism of calcium in the middle-aged woman. Findings from these studies provided, for example, the principal scientific basis for the NIH recommendations for adult calcium intake. The database developed from these studies since their beginning in 1967 is continuously being mined, resulting in two to three original papers each year evaluating, for example, the relationship between calcium intake and obesity, the importance of phosphorus intake, and the role of vegetables in maintaining total body health.

In a more recent study, ORC investigators found that low doses of estrogen are effective in preventing postmenopausal bone loss, but only if combined with high intakes of calcium and supplemental vitamin D. This is good news for women who are unable to tolerate side effects of estrogen replacement therapy at conventional doses. Recently ORC researchers have broadened their scope of study to include children. Four studies of bone health in pubertal girls are currently under way.

Recent ORC work has focused on the human vitamin D requirement and has shown that normal adults use far more of this key substance every day than had been previously thought. Typically we get 80–90% of our daily need from the sun. But persons of color (and the housebound) do not make much vitamin D that way and are much more dependent on vitamin D supplements and fortified foods. The ORC is currently exploring the daily vitamin D need for persons of color, under a contract from the U.S. Department of Defense, which is concerned to ensure normal vitamin D status in persons of color stationed at northern latitudes.

Creighton ORC investigators have provided the conceptual leadership, the detailed background mapping of the field, and the technical excellence needed to...
support a significant portion of the national research effort into the problem of osteoporosis. Creighton’s expertise in the use of radioactive calcium led to the center’s being asked to do all of the calcium absorption studies for a national multi-center study involving over 8,000 aging women from around the country. Creighton has literally become the “bioavailability capital” of the world. The ORC histomorphometry laboratory is the only one of its kind in the country to meet standards termed Good Laboratory Practices, and it too serves as a center for processing and interpreting bone biopsies from many of the national osteoporosis trials.

Recognition of the ORC’s work is evidenced by:

◊ Creighton was sought by Procter & Gamble, Abbott Laboratories, the New Zealand Dairy Board, Kellogg’s, General Mill, Mead-Johnson, to name a few, as the sole site to test the bioavailability of calcium enrichment added to their foods or beverages. The ORC was a study site for the trial of one of the first effective treatments for osteoporosis, Fosamax. ORC researchers worked with Eli Lilly & Company to establish the mechanism of action on bone of their Selective Estrogen Receptor Modulator, Evista. The ORC continues to participate in clinical trials of new medications for the prevention and treatment of osteoporosis.

◊ The director of the ORC has served on the Advisory Council for the National Institute of Arthritis, Musculoskeletal, and Skin Disorders, and is immediate past-president of the American Society for Bone and Mineral Research, the world’s largest body of scientists in the bone field.

◊ ORC investigators have chaired many National Institutes of Health and U.S. Department of Defense grant review committees and served on countless others. They serve (or served) on the Board of Directors and the Scientific Advisory and Nurses’ Steering Committees of the National Osteoporosis Foundation, as well as the Panel on Calcium and Related Nutrients of the Food and Nutrition Board (Institute of Medicine), the body that set the most recent calcium requirements. They also serve as advisors to NASA and consult on experiments to determine the effect of space travel on bone health. They also serve on numerous editorial boards for all the major bone journals.

◊ ORC investigators wrote the chapter on bone health for the Encyclopedia Britannica, two books on calcium and osteoporosis for non-professional audiences, and the monograph for the Food and Drug Administration which led to approval of a health claim for calcium-rich foods. ORC researchers have published a multitude of journal articles and book chapters in a wide variety of disciplines — medicine, nursing, exercise science, nutrition, biomechanics, genetics, molecular biology, bone biology, and others.

◊ Members of the ORC have been selected as Fellows in the American Society of Clinical Endocrinology, the American Institute of Nutrition, and the American Academy of Nursing. In 1994, one member of the group received the Bartter Award of the American Society for Bone and Mineral Research (the top national prize for clinical research into bone), and then in 2002, a second ORC investigator received the same award. Creighton is the only university in the world to have two of its faculty members honored with this award. The director of the center was recently named “Master” in the American College of Physicians.
The focus of the Department of Pharmacology of the School of Medicine is to investigate and convey knowledge of the interaction of drugs, toxins and other substances with living systems. We investigate the effect of drugs on living systems from several approaches. A major emphasis is in receptor pharmacology and the nature of drug-receptor interaction, functional effects of drugs and the molecular nature of drug receptors. These approaches are applied to several organ systems including the cardiovascular system, the kidney, the eye, the uterus, the nervous system, and various exocrine glands.

Our investigations are aggressively pursued in several active laboratories within the department. These laboratories also support two successful graduate programs that educate students at the master’s and doctoral level. The Pharmacology faculty maintain active research collaborations with faculty in other Medical School departments, other Health Sciences schools, and other institutions and pharmaceutical companies. Support for our research endeavors accrues largely from extramural sources such as the National Institutes of Health, the American Heart Association, other private foundations, and the pharmaceutical industry.

The recent research findings published by members of the Department of Pharmacology include the discovery of new drug receptor subtypes and the use of a variety of approaches to define function of adrenoceptors, the cloning of novel receptors, and the description and isolation of splice variances of receptors. Regulation of these receptors by specific protein regulators is also a major focus and has resulted in important findings.

The characterization of surface enzymes and their participation of secretory function and subtype characterization of adrenergic and muscarinic receptors are further accomplishments. Journals in which these findings were published include the *Journal of Pharmacology & Experimental Therapeutics*, *Molecular Pharmacology*, *The British Journal of Pharmacology*, *The American Journal of Physiology*, and *The European Journal of Pharmacology*. Two members of the department are among the worldwide group of editors of an on-line pharmacology resource called *xPharm*, due to be launched in 2004.

The department gives considerable effort to supporting its teaching endeavors and is the primary source of pharmacological expertise at Creighton University. In addition to teaching, curricular innovation, facilitating group discussions and consultation with individual students in our Health Sciences schools, four of the faculty from the department have contributed chapters to a pharmacology textbook used in the School of Dentistry. This text book is recognized nationally as the most widely used dental pharmacology text book. In addition, one member of the department co-edited the textbook. This venture constitutes a major commitment to education in pharmacology.

The department embraces the challenge of the Creighton commitment to excellence in all facets of its academic endeavors.
The faculty in the *School of Pharmacy and Health Professions* are committed to scholarly inquiry and energized by the discovery, application and integration of new knowledge. A robust and diverse research program which encourages interdisciplinary collaboration is currently in place within the School. The research emphasis is expected to grow in the coming year with the establishment of centers of scholarly excellence and as renewed strategic planning efforts address critical resource and support issues.

**The Scholarship of Teaching, Learning and Assessment**

The School’s reputation as a technology and informatics leader in health professions education has spawned a number of scholarly inquiries involving the pedagogy required for effective web-based teaching and learning. Several faculty are investigating learning outcomes in their campus and web-based courses with an intent to use findings to both improve student learning locally and to enlighten the broader academic community through publication. Our faculty is often called upon to participate in workshops, seminars and conferences around the country on the topic of the Scholarship of Teaching and Learning, and SPAHP professor Amy M. Haddad was recognized in 2003 with the American Association of Colleges of Pharmacy’s Robert K. Chalmers Distinguished Pharmacy Educator Award. At the close of 2003, eight Occupational Therapy and Pharmacy Practice faculty were awarded three of the eight funded assessment projects sponsored by the University’s Office for Excellence in Teaching, Learning and Assessment. The School’s Office of Faculty Development and Assessment is actively encouraging and facilitating interdisciplinary scholarship efforts involving curricular and programmatic assessment, and is developing tools to promote and publicize research efforts in this area.

**The Scholarship of Service**

The School’s Office of Interprofessional Scholarship and Service (OIPS) houses the federal grants that provide funding for various health care services and student training on the Omaha and Winnebago Native American Reservations. This Office involves faculty from our School’s three disciplines (OT, PT and Pharmacy) and has had many scholarly and service accomplishments in a very short period of time. We consider the OIPS a model for the University and nation for service-learning activities.

**Outcomes Research**

The School is in the last year of a major, three-year federally funded grant from the Agency for Healthcare Research and Quality to study the impact of technology-based point of care information sources and electronic prescribing in physician office-based practices on patient safety, i.e., impact on medication prescribing errors, in a randomized controlled trial. Qualitative research involving human factor analysis is also being conducted in this project to identify and overcome technology barriers of individuals and office-based cultures. Outcomes research will be the focus of the School’s first proposed scholarly center of excellence, and is expected to draw faculty from all disciplines in the study of the critical issues that impact patient safety.
and the optimum delivery of care. Related studies ongoing in the department of Pharmacy Sciences are focused on sensitive and controversial issues surrounding pharmacy benefits management. Several articles have been published by these authors and they have been in demand as speakers at national conferences debating contemporary pharmacoeconomics issues.

**Basic Science Research**

Several faculty in the departments of Pharmacy Sciences and Physical Therapy are engaging in research projects that address mechanisms of drug, physiological, pathological and neurobiological action at levels ranging from molecular to systematic. Studies are ongoing in the immunoregulation of effector T-cells by endogenous mediators (including the cytokines), molecular and genetic-based mechanisms in the pathology of meningitis, cardiovascular disorders and craniofacial defects, the pathogenesis of prion disease and the functional organization of the basal ganglia, the solid state characterization of drug molecules, novel and site-specific controlled-release drug delivery systems, drug formulation, and the synthesis of molecules designed to shed light on catcholaminergic receptors and neuroprotection.

**Clinical Research**

Faculty in all of the School’s academic departments have projects focused on patient care and clinical decision-making. Some of the areas of scholarly inquiry include therapeutic evaluation and intervention in the treatment of movement disorders, animal-assisted therapy, the role of church in the health of elders, psychosocial aspects and pharmaceutical care challenges in the aged, and pharmacotherapy of cardiovascular-related diseases. Significant effort is also being directed in the evaluation of rehabilitation methods to assist patients with musculoskeletal, sensory-motor, and neurologic disorders.

**Research Funding**

In calendar year 2003-04, the School’s faculty secured $229,384 in federally-funded grants (including support from the NIH, AHQR, HRSA, DOE and RIRC). Faculty were also awarded $3000 from foundations and professional organizations, and $20,000 from the Health Futures Foundation to advance research efforts.

**Physics**

Research in the *Department of Physics* covers a spectrum from the theoretical discussion of the physical meaning of quantum mechanics to experiments in high energy nuclear physics. The *high energy project* involves several faculty in collaboration with Brookhaven National Laboratory in New York, Lawrence Berkeley Laboratory in California, and the European Center for Particle Physics Research in Switzerland. It investigates the theoretical production of particles from intense fields and the experimental study of nuclei at very high temperatures and pressure. It is hypothesized that, by recreating the conditions present a fraction of a second after the Big Bang, a state of matter not present in the
universe since that time, a quark-gluon plasma, might be recreated as well. Observing this previously unseen state will provide information that is relevant to not only particle physics but also cosmology. The quark-gluon plasma is studied using boson interferometry and measurements of strangeness production, work that requires the development of large scale real time control and monitoring systems.

Another line of research seeks to determine the details of the x-ray production from atomic inner-shell ionization using a particle accelerator to produce low energy positive ions for bombarding atoms in solids. Very soft, low energy x-rays are measured with a Si(Li) detector equipped with an ultra-thin entrance window. Collateral information about the general interaction of ions moving in solids is also derived from these studies. The research has importance for basic studies of atomic interactions and has wide application to the nondestructive quantitative analysis of materials by measuring proton-induced x-ray emissions (PIXE) and to modifications of materials for use in the semiconductor industry. Inner-shell ionization in atoms is also being investigated through the photo-ionization process using a radioactive source of x-rays.

Research is currently being developed in the area of liquid-to-glass and liquid-to-gel transitions, one of the major unresolved problems in condensed matter physics. In this research, dynamic light scattering will be used to measure structural relaxation of liquids, gels, and epoxies on approach to the transition point. Another developing area of research is the rapidly growing field of “Solid State Ionics.” It will involve experimental and theoretical components aimed at tracing elementary steps of ion motion and understanding how the structural environment affects the dynamics of the mobile ions. The chief experimental technique is dielectric (or conductivity) spectroscopy which measures the dielectric response of mobile ions to an applied electric field.

The Department of Physics also has an active research program in the field of biophysics. Research in the biophysical optics lab is currently focused on the development and application of innovative optical techniques to study cellular and tissue environments. So far, we have developed a fully configurable three-channel, laser-scanning confocal microscope that works in both reflectance and fluorescence modes. In addition, we have built an all-solid-state Titanium:Sapphire laser that produces 1 W tunable output in the infrared from 730-900 nm. These two instruments are currently being used together to study the wavelength dependence of cellular response to intense (currently up to $10^{11}$ W/cm$^2$, CW) near-infrared radiation, and we anticipate multiphoton microscopy in the near future. Finally, in collaboration with the Department of Biomedical Sciences, we have recently built an optical stretcher facility for biomechanical studies of outer hair cells, osteocytes, and cancer cells.

Several topics in the field of astro-particle physics are also under investigation in the department. One of
the greatest mysteries of our time is dark matter; evidence shows that the Universe is dominated by a form of matter which does not interact electromagnetically and which is not composed of the familiar protons, neutrons, and electrons. Using theoretical models which propose particle physics candidates for the dark matter, detection rates in current and future detectors are calculated through extensive computer simulations. Such calculations can shed light on the distribution of dark matter and rule out classes of theories which are not yet testable directly at accelerators. In addition to the research on dark matter, the composition of extremely energetic cosmic rays is also being studied to determine realistic backgrounds at neutrino telescopes which are opening new windows on the Universe. In particular, the energy and angular dependence of prompt muons, those created in the decay of charmed particles, is being simulated numerically.

**Psychiatry**

*Creighton Psychiatry* is an essentially new department arising from the 1999 reconfiguration of academic psychiatry in Omaha. The department continues to rapidly expand research activities within and beyond the faculty. Perhaps most significant is the mentoring of junior faculty as well as active engagement in collaborative projects with local, regional, national, and international colleagues. Remarkable progress is directly measurable, notably that funded research has risen from zero in early 2001 to some $6 million as of late 2003. Also, the number of active faculty researchers has risen from zero (before Dr. Wilson arrived as Chairman in 2000) to more than a dozen and continues to increase.

Departmental activities are primarily via the *Institute for Clinical Neuroscience and Psychopharmacology* founded by Dr. Wilson and now under the directorship of Fred Petty, MD, PhD. Principal sites include CUMC, Alegent and the VA Hospital. Dr. Petty, an internationally respected and highly productive basic and clinical neuroscientist, is Vice-Chair for Research in Psychiatry and Professor of Psychiatry at Creighton as well as Director of Mental Health Research for the Nebraska-Western Iowa VA. Dr. Petty achieved a renewal of his VA Merit Award and is leading a major collaboration to situate a Mental Illness Research, Education & Clinical Center (MIRECC) within the Midwest VA system.

The department also has pending submissions, including Dr. Wilson’s schizophrenia relapse prevention and his disparities in psychiatric diagnosis proposals (NIMH), Dr. Happe’s work in autonomic nervous system development (VA and NIH), Dr. Sokol’s PANDAS pilot study (NIMH), and Dr. Fernandes’...
mood-brain imaging correlation study now in the pilot phase (VA). Industry-sponsored psychopharmacology research continues to grow dramatically. Moreover, Drs. Wilson and Petty serve on the national research committees for NIH-SAMSHA and the VA, respectively, as well as the scientific CNS advisory boards for numerous pharmaceutical houses. Both also participate in diverse multi-center studies that have begun to involve more junior Creighton faculty as well.

Collaborative research remains robust. Within Creighton, the department has established links with Biomedical Sciences, Pharmacology, Cardiology, Medicine, as well as the Center for Health Policy & Ethics, School of Nursing, School of Pharmacy and Health Professions, and the Law School. Beyond Creighton, the department has established substantive links with the University of Nebraska Department of Psychology, UNMC, Nebraska Health & Human Services, Children’s Hospital, Douglas County Health Center, Catholic Charities, and Boys and Girls Town.

Senior faculty are also closely involved in the state proposal to reform mental health in Nebraska. As this relates to research in particular, we are supportive of emerging plans for a Center of Excellence. This should include clinical and basic science research facilities for studies in Omaha, as well as state-of-the-art telehealth linkages to promote clinical and research outreach across the state. This network will include both clinical trials, as well as services and outcomes research.

The Psychiatry faculty is grateful for an environment at Creighton that has been so conducive to these opportunities for us to contribute research that helps better understand and treat diverse mental illnesses. Indeed, we are especially grateful this year to have Dr. Petty honored with the Creighton Distinguished Research Career Award, particularly as it reflects on the unique research collegiality that has flourished here.
Publications

College of Arts & Sciences


Michael Sundermeier — English


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Ashton Welch — History


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**Edward O’Connor — Education**


Rev. Richard Hauser, S.J. — Theology


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**College of Business Administration**


Andrew Hoh — Marketing


**School of Dentistry**


**School of Law**


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FENNER, G. M., The Two Most Important Trials of This Young Century, CREIGHTON LAWYER MAGAZINE 13 (Summer 2003).


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MELILLI, K. J., The Consequences of Refusing Consent to a Search or Seizure: The Unfortunate Constitutionalization of an Evidentiary Issue, 75 SOUTHERN CALIFORNIA LAW REVIEW 901 (2002).


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SHUGRUE, R. E., THE HONORABLE WILLIAM CAMBRIDGE (District of Nebraska Branch of the Historical Society of the United States Courts in the Eighth Circuit 2002) [videorecording].

SHUGRUE, R. E., Shugrue, DAILY REC. [weekly].

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VOLKMER, R. R., Probate Appeals, in NEBRASKA APPELLATE PRACTICE HANDBOOK 2002 (Nebraska State Bar Association 2002).


VOLKMER, R. R., Update on the Proposed Nebraska Uniform Trust Code, NEBRASKA LAWYER 26 (February 2003).


Burke, W., Acheson, L., Botkin, J., Bridges, K., Evans, J., Frias, J., Hansen, J., Kahn, N., Pagon, R., Pinsky, L., Press, N., Puryear, M.,


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were identified in a whole-genome linkage scan. *American Journal of Medical Genetics, 119A*, 121-131.


*William Dossel — Anatomy*


JOHN BAUMSTARK — OB/GYN


Frank Iwersen — Orthopaedics


Townley, R. G. (2003). Short and long-acting bronchodilators in asthma. In M. Kaliner (Ed.), *Current reviews of asthma* (pp. 151-172). Philadelphia: Current Medicine, Inc.


Zhao, Q., Brauer, P. R., Xiao, L., McGuire, M. H., & Yee, J. A. (2002). Parathyroid hormone-related peptide (PTHrP) and its receptor (PTH1R) influence the growth of the chicken mandibular process. *Journal of Anatomy, 201*, 137-151.


**School of Nursing**


**School of Pharmacy & Health Professions**


Salvatore Greco — Pharmacy


Grants

College of Arts & Sciences

Austin, T. [Principal Investigator]; & Fleming, P. [Co-Investigator]. Service learning faculty development project. Hewlett Foundation — $50,000 — (1 July 2002-31 August 2003).


Kosoko-Lasaki, S. [Principal Investigator]; Kissell, J., O’Brien, R., Purttilo, R., & Cook, C. Promoting cultural proficiency in researchers to enhance the recruitment and participation of minority populations in research. State of Nebraska — $38,000 — (1 June 2003-30 June 2004).


Mattson, B. [Principal Investigator]; & Anderson, M. Microscale gas chemistry. NASA/EPSCoR — $1,000 — (1 March 2003-31 January 2004).

Muskin, M.-B. [Principal Investigator]. Creighton University paramount educational project. Nebraska Department of Education — $13,208 — (1 September 2002-31 August 2003).
Olson, L. [Principal Investigator]. Professional development project to provide a summer reading clinic for at-risk elementary students in socioeconomically and linguistically diverse schools - year two. Nebraska Department of Education — $28,027 — (1 March 2003-28 February 2004).


Soukup, J. K. [Co-Investigator]; & Turpen, J. [Program Director]. Nebraska training network in functional genomics. NIH Health Biomedical Research Infrastructure Network — $1,900,000 — (2002-2004).


Treonis, A. [Principal Investigator]. Megan van Hecke: How do fungal endophytes affect the key microbes of the festuca grass rhizosphere. American Society for Microbiology — $4,000 — (1 June 2003-31 May 2004).


Wright, W. [Principal Investigator]. Saints alive! Rediscovering heroes and holy ones for today. Nebraska Humanities Council — $1,500 — (1 August 2002-31 December 2002).
**College of Business Administration**

Vuchetich, P.; & Raval, V. [Co-Principal Investigator]. Applied research using PKWARE products and services. PKWARE, Inc. — $36,000 — (May 2002-September 2002).

**School of Dentistry**


Latta, M. [Principal Investigator]. IADR meeting/Sweden. 3M Dental Products Division — $1,500 — (7 November 2002).

Latta, M. [Principal Investigator]. Laboratory evaluation of the degree of conversion of prime and bond NT adhesive using a spectrum 800 halogen light compared to an experimental LED light. Dentsply International DeTrey/DeDent — $1,600 — (1 April 2003).

Latta, M. [Principal Investigator]; & Barkmeier, W. [Co-Investigator]. Laboratory evaluation of the shear bond strength of composite resin to dentin and enamel using two self-etching adhesive systems. Ivoclar — $4,800 — (22 August 2002).


School of Law


School of Medicine


Agrawal, D. [Principal Investigator]. Educational grant in support of guest lecturers Drs. Larry Borish, Kenneth Adler, and Reen Wa. Sepracor, Inc. — $8,100 — (18 September 2002).


Agrawal, D. [Principal Investigator]. IGF-1 receptors apoptosis and plaque stability. State of Nebraska — $90,000 — (1 September 2002-31 August 2003).

Agrawal, D. [Principal Investigator]. Investigations of S-albuterol binding site(s) in human airway smooth muscle cells. Sepracor, Inc. — $49,941 — (1 August 2002).


Joseph Holthaus - Medicine
Anderson, R. [Principal Investigator]. Multi-center double-blind randomized study to evaluate the safety and efficacy of lamotrigine 200mg/day, 300mg/day and 400mg/day compared with placebo in subjects with painful diabetic neuropathy. GlaxoSmithKline Company — $7,200 — (1 November 2003).


Bertoni, J. [Principal Investigator]. Unrestricted educational grant. Boehringer Ingelheim Pharmaceuticals, Inc. — $1,000 — (6 August 2002).

Bertoni, J. [Principal Investigator]. Unrestricted grant for grand rounds. Cyberonics — $1,000 — (25 April 2003).

Bertoni, J. [Principal Investigator]; & Huerter, C. [Co-Investigator]. Survey to assess the incidence and characteristics of melanoma in Parkinson’s disease patients. TEVA Pharm. Industries, Inc. — $33,674 — (1 December 2002).


Casale, T. B. [Principal Investigator]. Educational/training grant. Novartis Pharmaceuticals Corporation — $10,500 — (7 November 2002).

Casale, T. B. [Principal Investigator]. Evaluation of the onset of action (day-in-the-park) of a single dose of 400 mg loteprednol etabonate nasal spray in adults and adolescents with ragweed induced seasonal allergic rhinitis (“intermittent rhinitis”). Muro Pharmaceutical, Inc. — $270,067.50 — (1 August 2002).


Casale, T. B. [Principal Investigator]. An open-label, multi-center study to evaluate the safety and tolerability of intramuscular administration of alefacept (LFA-3/IgG, fusion protein) in subjects with chronic plaque psoriasis who have completed studies C99-171 or C99-727. Biogen, Inc.

Casale, T. B. [Principal Investigator]. Phase II double blinded placebo controlled efficacy and safety evaluation of allergen immunotherapy co-administered with omalizumab, an anti-IgE monoclonal antibody. Immune Tolerance Network.
Casale, T. B. [Principal Investigator]. A placebo-controlled, multiple dose sequential dose-escalating study to evaluate the safety and clinical activity of IDEC-152 (anti-CD23) monoclonal antibody in patients with mild persistent to severe persistent allergic asthma. IDEC Pharmaceuticals Corporation.


Casale, T. B. [Principal Investigator]; & Bewtra, A. Multi-center, double-blind, randomized study investigating the clinical effect of montelukast on allergic rhinitis in patients with seasonal allergic rhinitis and chronic asthma. Merck & Company, Inc. — $15,643 — (1 April 2003).


Fitzgibbons, R. J., Jr. [Principal Investigator]. Cyclooxygenase 2 (Cox2) inhibitors for control of perioperative pain in inguinal hernia patients. Merck Pharmaceutical [Drug and placebo only requested from Merck; no other external support].

Fitzgibbons, R. J., Jr. [Principal Investigator]. Development of a registry for long-term follow-up of inguinal hernia patients managed by different treatment strategies. American College of Surgeons — $100,952.


Fitzgibbons, R. J., Jr. [Principal Investigator]. Tension free inguinal hernia repair: Comparison of open and laparoscopic surgical techniques. Veterans Administration — $1,446,801 — (1 August 2002-31 July 2003).


Fritzsch, B. [Principal Investigator]. Cellular interaction during ear development. NIH — $331,056 — (1 July 2002-30 June 2007).


Goering, R. [Principal Investigator]. Effect of hospital formulary conversion from levofloxacin to gatifloxacin on the near term institutional prevalence of oxacillin-resistant *staphylococcus aureus* (MRSA/ORSA). Bristol-Myers Squibb — $2,000 — (20 November 2002).


Hansen, L. [Principal Investigator]. Taghrid Bahig El-abaseri research funds. Egyptian Cultural & Educational Bureau — $10,000.

Hanson, N. [Principal Investigator]. Identification of the involvement of plasmid-encoded AmpC β-lactamases in the resistance phenotype of salmonella species from Alberta, Canada. Calgary Laboratory
Services — $2,000 — (3 January 2003-2 January 2004).


Heaney, R. P. [Principal Investigator]. Osteoporosis support group. Tytex, Inc — $1,000 — (1 May 2003).


Hopp, R. [Principal Investigator]; Casale, T., & Huerter, C. [Co-Investigators]. Randomized, multi-center, parallel-group, double-blind, vehicle-controlled study to evaluate the time of pruritus improvement during the first week of pimecrolimus cream 1% treatment in patients greater than two years old with mild to moderate atopic dermatitis. Novartis Pharmaceuticals Corporation — $1,372.32 — (15 January 2003).

Hopp, R. [Principal Investigator]; & Wilson, M. [Co-Investigator]. Twelve-week, randomized, double-blind, double-dummy, active-controlled study of symbicort pMDI administered once daily in children and adolescents six to fifteen years of age with asthma - sprout. AstraZeneca — $4,850 — (15 December 2002).


Hurley, J. [Principal Investigator]. Rheumatoid arthritis DMARD intervention and utilization study (radius1). Immunex Corporation — $200 — (1 August 2002).


Jung, L. [Principal Investigator]. Clinical protocol for a randomized, double-blind, multi-center, active controlled, parallel group study to evaluate the efficacy and safety of celecoxib suspension compared to naproxen suspension in patients with JRA. Pharmacia, Inc. — $27,900 — (1 September 2002).


Kenik, J. [Principal Investigator]; & Hurley, J. [Co-Investigator]. Educational grant. Pharmacia, Inc. — $12,000 — (1 July 2002).

Kern S. [Principal Investigator]; & Watson, P. [Principal Investigator for Creighton subcontract]. Susceptibility prediction in familial colon cancer. NIH — $26,754.

Kincaid, A. E. [Co-investigator], & Bessen, R. A. [Principal Investigator]. Routes of prion neuroinvasion following oral infection. NIH/NIAID — $1,100,000 — (1 May 2003-30 April 2007).


Kosoko-Lasaki, S. [Principal Investigator]. Short term training for minority students program. NIH — $39,645 — (1 April 2003-31 March 2004).

Kosoko-Lasaki, S. [Principal Investigator]; Kissell, J., O’Brien, R., Purtilo, R., & Cook, C. Promoting cultural proficiency in researchers to enhance the recruitment and participation of minority populations in research. State of Nebraska — $38,000 — (1 June 2003-30 June 2004).

Kosoko-Lasaki, S. [Principal Investigator]; & Wilson, M. [Co-Investigator]. Student sight savers project: Preventing glaucoma blindness in Nebraska. Friends of the Congressional Glaucoma Caucus Foundation — $13,800 — (1 July 2002-30 June 2004).


Lappe, J. [Principal Investigator]; & Cullen, D. [Co-Investigators]. Exercise and calcium effect on pubertal bone gain. NIH — $224,438 — (1 April 2003-31 March 2004).


Li, H. [Principal Investigator]; Stanek, K., & Hee, T. [Co-Investigators]. Painfree Rx II (does pacing fast VT reduce shock Rx). Medtronic, Inc — $1,200 — (1 February 2003).
Lister, P. [Principal Investigator]. Comparison of piperacillin-tazobactam and piperacillin-In1255 in the protection of mice from lethal bacteremia with a tem-1-producing E. coli and an E. coli producing a plasmid-encoded AmpC. AlamX L.L.C. — $12,770 — (1 July 2002).


Lister, P. [Principal Investigator]; Thomson, K., & Hanson, N. Antimicrobial agents and chemotherapy training course. Various agencies — $5,700 — (1 April 2003).

Loggie, B. W. [Principal Investigator]. Relationship between transcriptional modulator (E6-AP), tumor suppressor (P58) and mucin expression in breast and colon cancer. State of Nebraska — $100,000 — (1 October 2002-30 June 2003).


Lovas, S. [Principal Investigator]. Informatics center for the life sciences. NSF/EPSCoR — $109,779.


Moland, E. S., & Thomson, K. S. [Investigators]. TORS clinical trial. TREK Diagnostics — $12,000 — (1 June 2002-1 December 2002).


Murphy, R. F. [Principal Investigator]. BRIN: Training/mentoring program. NIH — $175,311 — (1 September 2002-30 August 2003).


Pedersen, W. [Principal Investigator]. Resources for laboratory start-up. State of Nebraska — $60,000 — (1 September 2002-31 August 2003).


Petty, F. [Principal Investigator]; Dickerson, D., Price, P., Marcil, W., Chu, C., Bhatia, S., & Wilson, D. [Co-Investigators]. Double-blind, randomized, multi-center, parallel-dose study to evaluate the efficacy and safety of zonisamide 300mg and 600mg/day and placebo in subjects with bipolar I disorder currently experiencing a recurrent manic or mixed episode. Elan Pharmaceuticals, Inc. — $7,387 — (15 July 2002).

Petty, F. [Primary Investigator]; Happe, H. K., & Kohen, R. [Co-Investigators]. Learned helplessness model of stress. Omaha VA Medical Center — $748,000 — (1 October 2002-30 September 2007).


Petzel, D. [Principal Investigator], & Brauer, P. R. [Co-Investigator]. Malpighian tubule Na/H exchanger during development. NIH-NIDK — $300,000 — (1 September 2001–31 August 2004).


Reidelberger, R. D. [Principal Investigator]. Research supplements for underrepresented minorities to support the research of high school students. NIH-NIDDK — $43,036 — (1 July 2002-31 August 2003).


Rendell, M. S. A multinational randomized, double-blind, placebo-controlled, force-titration, 2 X 2 factorial design study of the efficacy and safety of long-term administration of nateglinide and...

Rendell, M. S. Open-label, randomized, multi-center phase IIIb, parallel group switching study to compare the efficacy and safety of lipid lowering agents atorvastatin and simvastatin with rosuvastatin in high risk subjects with type IIA and IIB hypercholesterolemia. AstraZeneca — $31,000 — (2001-2003).


Rendell, M. S. Safety and efficacy of propionyl l-carnitine in peripheral arterial disease (intermittent claudication) as assessed by a fixed treadmill protocol in a diabetic population. Sigma-Tau Research, Inc. — $51,600 — (2002-2004).

Rendell, M. S. Twelve-week, multinational, multi-center, controlled, open 1:1:1 randomized, parallel clinical trial to assess noninferiority between pre- and post-meal administration of HMR 1964 and pre-meal regular human insulin in subjects with type I diabetes mellitus receiving insulin glargine as the basal insulin therapy. Aventis Pharmaceuticals — $34,550 — (2002-2003).


Rendell, M. S. Twenty-six-week, multinational, multi-center, open, clinical extension trial to assess one year safety of HMR1964 compared with regular human insulin injected subcutaneously in subjects with type 2 diabetes mellitus also using NPH insulin, and previously participating in study. Aventis Pharmaceuticals —$14,140 — (2002).


Rendell, M. S. [Principal Investigator]. Clopidogrel for high atherothrombotic risk and ischemic stabilization magement and avoidance. Bristol-Myers Squibb — $11,782 — (1 November 2002).

Rendell, M. S. [Principal Investigator]. Double-blind comparison of the efficacy and safety of lercanidipine versus hydrochlorothiazide as add-on therapy to ramipril 10 mg qd in diabetic hypertensive patients with macroalbuminuria. Forest Laboratories — $3,300 — (1 April 2003).


Rendell, M. S. [Principal Investigator]. Phase II long-term open-label safety study of tak-677 0.3 mg bid in type 2 diabetic subjects. Takeda America, Inc. — $1,800 — (1 November 2002).

Rendell, M. S. [Principal Investigator]. Randomized, double-blind, comparator-controlled study of pioglitazone HCl versus glyburide in the treatment of subjects with type 2 (non-insulin dependent) diabetes mellitus and mild to moderate congestive heart failure. Takeda America, Inc. — $6,000 — (20 September 2002).

Rendell, M. S. [Principal Investigator]. Twelve-week, multi-center, double-blind, randomized, parallel-group, dose-ranging study to assess the efficacy safety and tolerability of laf237 25mg bid, 25, 50, or 100 mg od compared to placebo in patients with type 2 diabetes. Novartis Pharmaceuticals Corporation — $1,065 — (1 December 2002).


Reyes, P. [Principal Investigator]. Randomized, double-blind, placebo-controlled, multi-center study of the effects of ono-2506 intravenous infusion on the amelioration of neurological damage and improvement of stroke assessment scale scores in patients with acute ischemic stroke. Ono Pharma USA, Inc. — $30,775 — (24 September 2002).

Reyes, P. [Principal Investigator]. Recruitment of outstanding research faculty. State of Nebraska — $166,000 — (1 July 2002-30 June 2003).


Romero, J. [Principal Investigator]. Multi-center randomized comparative study to evaluate the efficacy and safety of levofloxacin in the treatment of children who have recurrent and/or persistent acute otitis media. Johnson & Johnson — $750 — (15 November 2002).
Romero, J. [Principal Investigator]. Pre-booster concentration of anti-PrP antibodies in serum samples obtained from toddlers (twelve to eighteen months of age) who have completed the primary series of vaccination with licensed Hib-containing vaccines. Aventis Pharmaceuticals — $8,875 — (24 March 2003).


Romero, J. [Principal Investigator]; & Chatterjee, A. [Co-Investigator]. Phase III observer-blinded, randomized, multi-center clinical study of the safety immunogenicity and consistency of three manufacturing lots of GlaxoSmithKline biologicals DTPa candidate vaccine as compared to U.S.-licensed TD vaccine when given as a booster. GlaxoSmithKline Company — $88,463 — (1 November 2002).


Rosenquist, T. H. [Principal Investigator], & Brauer, P. R. [Co-Investigator]. Homocysteine and congenital heart defects. NIH-HLBI — $1,000,000 — (1 March 2000–28 February 2004).


Saxena, S. [Principal Investigator]; Daher, P., Levy, J., & Elsasser, G. [Co-Investigators]. Randomized, double-blind, multi-center, positive controlled, parallel group study to evaluate the safety and efficacy of lotrel (amlodipine/benazepril) compared to zestoretic (lisinopril/hydrochlorothiazide) in hypertensive patients (high dose combinations). Novartis Pharmaceuticals Corporation — $1,029 — (1 September 2002).


Silberstein, P. [Principal Investigator]; & Caracioni, A. [Co-Investigator]. Randomized multi-center phase III trial of irinotecan in combination with three different methods of administration of fluoropyrimidines: Infusional 5-fu (folfox), bolus 5-fu (day 1&8) and oral capecitabine (day 1-4) with celecoxib versus placebo. Pharmacia, Inc. — $5,000 — (4 February 2003).


Smith, D. D. [Co-Principal Investigator]. Regulation of food intake and body weight by amylin. NIH — $179,100.


Stokes, J. R. Evaluation of the onset of action (day in the park) of a single dose of 400mg loteprednol etabonate nasal spray in adults and adolescents with ragweed induced seasonal allergic rhinitis (“intermittent rhinitis”). Muro Pharmaceutical, Inc. — (July 2002).


Stokes, J. R. A phase II, double-blinded, placebo-controlled, efficacy and safety evaluation of allergen immunotherapy co-administered with omalizumab, an anti-IGE monoclonal antibody. Immune Tolerance Network — (March 2003).

Stokes, J. R. A twelve-week randomized double-blind double-dummy, placebo and active controlled study of SYMBICORT™ pMDI administered once daily in adults and adolescents with asthma–STEM. AstraZeneca — (November 2002).


Sullivan, P. M. [Principal Investigator]. Adult violence linkages in youth with disabilities. CDC-NCIPC — $886,014 — (1 October 2001-30 September, 2004).

Sullivan, P. M. [Principal Investigator]. Relational aspects of neglect and children’s aggression. NIH-NIMH- University of Iowa subcontract — $625,000 — (1 July, 2001-30 June, 2005).

Swanson, P. [Principal Investigator]. Flow cytometry core facility for molecular and cellular applications. State of Nebraska — $65,005 — (1 September 2002-31 August 2003).


Thomson, K. [Principal Investigator]; & Moland, E. [Co-Investigator]. Vitek 2 clinical trial protocol for gnca4 antimicrobial susceptibility tests. bioMérieux Vitek, Inc. — $34,783 — (12 August 2002).


Townley, R. [Principal Investigator]. Multi-center, double-blind, randomized, parallel study comparing the efficacy and safety of fexofenadine 120mg bid, fexofenadine 240mg qd and placebo in subjects with perennial allergic rhinitis. Aventis Pasteur, Inc. — $89,296 — (1 August 2002).

Townley, R. [Principal Investigator]; Casale, T., & Hopp, R. [Co-Investigators]. Prospective noninterventional exploratory gene expression study in adults with mild moderate and severe persistent bronchial asthma. Wyeth-Ayerst Laboratories — $3,000 — (15 December 2002).
Townley, R. [Principal Investigator]; Hopp, R., Bewtra, A., & Casale, T. [Co-Investigators]. Placebo and active-controlled efficacy and safety study of a once-daily fixed combination tablet of desloratadine 5mg/pseudoephedrine 120mg (sch 493 [5/120]) in subjects with seasonal allergic rhinitis. Schering-Plough Research Institute — $55,128 — (1 September 2002).


Watson, P. [Principal Investigator]; & Lynch, H. [Co-Investigator]. Effect of colectomy on morbidity and mortality in HNPCC. State of Nebraska — $40,000 — (1 July 2002-30 June 2003).


Wilson, D. [Principal Investigator]; & Petty, F. [Co-Investigator]. Infrastructure support for neuroscience laboratory. Health Future Foundation — $60,000 — (2 June 2003-1 June 2004).


School of Nursing


Lappe, J. [Principal Investigator]; & Cullen, D. [Co-Investigators]. Exercise and calcium effect on pubertal bone gain. NIH — $224,438 — (1 April 2003-31 March 2004).


School of Pharmacy & Health Professions


Galt, K. [Principal Investigator]. John M. Eisenberg memorial


Griffiths, Y., & Coppard, B. [Co-Investigators]. Mixed qualitative educational research project on the use of asynchronous communication via webchats as a form of dialogic reflection with interdisciplinary students on a rural fieldwork experience using cultural immersion. HRSA, Consortium for Rural, Interdisciplinary Training.

Griffiths, Y. [Principal Investigator]; Coppard, B., & Lohman, H. [Co-Investigators]. Qualitative educational research on using interviews of published authors to learn about scholarly writing in health care.

Jensen, G. & Royeen, C. [Co-Principal Investigators]. Dreamcatchers and the common good: Allied health leadership in generational health and ethics. Allied Health Project Grant; DHHS; HRSA — $486,000 — (1 July 2001- 1 July 2004).

Jensen, G. M. [Principal Investigator]; Royeen, C., & Monaghan, M. [Co-Principal Investigators]. Continuous connection: Consortium for rural, interdisciplinary training. Quentin Burdick Rural Health Interdisciplinary Program. DDHS; HRSA — $454,000 — (1 July 1999-1 July 2003).


Khan, M. [Principal Investigator]. Mechanisms of histamine’s effect on lymphokine secretion. NIH — $142,500 — (1 August 2002-30 June 2004).

Kincaid, A. E. [Co-investigator], & Bessen, R. A. [Principal Investigator]. Routes of prion neuroinvasion following oral infection. NIH/NIAID — $1,100,000 — (1 May 2003-30 April 2007).

Lenz, T. [Principal Investigator]. Unrestricted educational grant. SCIOS, Inc — $1,600 — (7 May 2003).


Saxena, S. [Principal Investigator]; Daher, P., Levy, J., & Elsasser, G. [Co-Investigators]. Randomized, double-blind, multi-center, positive-controlled, parallel group study to evaluate the safety and efficacy of lotrel (amlodipine/benazepril) compared to zestoretic (lisinopril/hydrochlorothiazide) in hypertensive patients (high dose combinations). Novartis Pharmaceuticals Corporation — $1,029 — (1 September 2002).


Vuchetich, P.; & Raval, V. [Co-Principal Investigator]. Applied research using PKWARE products and services. PKWARE, Inc. — $36,000 — (May 2002-September 2002).
Theses & Dissertations

August 2002

Bonic, A. *In vitro* characterization of proglucagon cleavage by PC1. Doctor of Philosophy (Biomedical Sciences) — Dr. Robert B. Mackin.

December 2002

Abou El-Ella, G. Biochemical studies of uncoupling proteins and glucose metabolism in skeletal muscle. Doctor of Philosophy (Biomedical Sciences) — Dr. Richard F. “Barry” Murphy (Major Advisor).

Astuto, L. M. Characterization of Usher syndrome type I heterogeneity by genetic and phenotypic analyses. Doctor of Philosophy (Biomedical Sciences) — Dr. William Kimberling (Major Advisor).

Dang, H. K. A molecular and pharmacological study of the α1-adrenergic receptors: From the novel alternatively spliced α1a-AR isoforms to the acute effects of triiodothyronine. Doctor of Philosophy (Pharmacology) — Dr. Margaret Scofield (Major Advisor).

Dhume, A. S. Carotid atherosclerosis: Why some patients are symptomatic and others not? Doctor of Philosophy (Biomedical Sciences) — Dr. Devendra K. Agrawal (Major Advisor).

Hague, C. Functional roles of α1-adrenergic receptors in the bovine inferior alveolar artery: Regulation of contraction and activation of extracellular signal regulated kinase. Doctor of Philosophy (Pharmacology) — Dr. Peter W. Abel (Major Advisor).

LeDay, A. M. Regulation of retinal glutamate release by peroxides. Doctor of Philosophy (Pharmacology) — Dr. Sunny Ohia (Major Advisor).

Maklad, A. A. F. From the ear to the brain: Ontogeny of the primary vestibular neurons’ projection. Doctor of Philosophy (Biomedical Sciences) — Dr. Bernd Fritzsch (Major Advisor).

Staplin, W. R. Assessment of VL30 erythropeoietin responsive promoters for erythroid gene therapy. Doctor of Philosophy (Biomedical Sciences) — Dr. Joseph A. Knezetic (Major Advisor).

Weigang, T. Role of the leukotriene B4 metabolic pathway in human pancreatic cancer. Doctor of Philosophy (Biomedical Sciences) — Dr. Richard F. “Barry” Murphy (Major Advisor).

May 2003

Cabrera Lafuente, R. Simulation of jets in heavy ion collisions for the ALICE experiment. Master of Science (Physics) — Dr. Michael Cherney (Major Advisor).
Hopfenspirger, M. T. Mycobacterial antigens and immunomodulation in allergic asthma. Doctor of Philosophy (Biomedical Sciences) — Dr. William Kimberling (Major Advisor).

Krueger, K. D. Resistance to apoptosis in smooth muscle cells and stent-induced stenosis in coronary and peripheral arteries. Doctor of Philosophy (Medical Microbiology) — Dr. Devendra K. Agrawal (Major Advisor).

Parks, S. C. A study of charmed hadron production in proton-proton collisions. Master of Science (Physics) — Dr. Michael Cherney (Major Advisor).

Varga, R. J. Clinical and molecular characterization of auditory neuropathy. Doctor of Philosophy (Biomedical Sciences) — Dr. William Kimberling (Major Advisor).

Thomas, C. Developing and validating an instrument for measuring online trust. Master of Science (Electronic Commerce) — Dr. Cynthia L. Corritore (Major advisor).

Warnasooriya, N. The search for the X(1750) in ultra-peripheral collisions at STAR. Master of Science (Physics) — Dr. Janet Seger (Major Advisor).
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