Front cover print: “Science Complex Atrium” by C. Petit
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Introduction

Creighton faculty members conduct research
◊ to enhance teaching,
◊ to contribute to the betterment of society, and
◊ to discover new knowledge.

Creighton University Mission Statement

In its Mission Statement, Creighton University proudly proclaims that it “exists for students and learning.” And, in fulfillment of that mission, Creighton has long held a reputation as an institution of dedicated, inspiring, and student-oriented teachers. The Creighton Mission Statement also explains, however, that “Creighton faculty members conduct research to enhance teaching, to contribute to the betterment of society, and to discover new knowledge.” As the university’s annual Faculty Bibliography shows, Creighton faculty members have distinguished themselves in their research, as well.

Creighton University consists of a community of scholars dedicated to the discovery and sharing of truth and to applying truth to shape a better world. It is committed to the teacher-scholar model, and to achieve that model, quality teaching and scholarship are inextricably linked. Quality teaching cannot exist without quality scholarship. As Creighton’s President, Rev. John Schlegel, S.J., explained in his inaugural address on September 15, 2000, “teaching has been and must remain central” to Creighton University. But faculty must also be “active scholars, contributing to the advancement of their disciplines and to our common fund of knowledge.”

But what is scholarship? At a time when the value of scholarship in institutions of higher education has been called into question, it is important to ask that question, even if this is not the forum in which to explore the answer in any depth. At the least, university scholarship is more than keeping up with the latest discoveries in one's field — or consuming new knowledge. University scholarship produces new knowledge. It breaks new ground. It is innovative, has significance and impact. It is reported to others in the community of scholars, where it is peer reviewed and its quality measured for all to see.

This Faculty Bibliography represents the scholarly accomplishments of Creighton University faculty for the 2001-2002 academic year. It includes publications of peer-reviewed articles and books, but omits minor publications and abstracts of papers read before local, regional, and national academic societies. Also absent are those publications currently listed as in press; they will appear in future bibliographies, as they are published. The Faculty Bibliography gives public recognition of the scholarship in which Creighton faculty members are engaged. It also provides a snapshot in time of the intellectual life of Creighton University. It is an impressive snapshot, in the quantity and quality of research being conducted at Creighton University. It reflects Creighton's commitment to the teacher-scholar model, which enriches our students' experience at Creighton and makes the world a better place for its presence.

Barbara Braden, Ph.D., Dean
Graduate School & University College
Creighton University
Biomedical Sciences

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 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 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 including the epidermal growth factor receptor and erbB2/neu regulate cell survival, migration and activates epidermal growth factor receptor family members. We are investigating the mechanisms of non-melanoma skin cancer development by focusing on the role of erbB2 and 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 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 on 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, structural and functional properties of the sensory cells, hair cells, and associate support cells, 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 and hair cells 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: Kirk Beisel, 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 cell structure and function 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, Mayo School 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: Kirk Beisel, Bernd Fritzsch, Richard Hallworth

Control of Gene Expression

The 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

The 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**

The 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 bromo-deoxyuridine 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 led 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 alpha 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 & Proteomics

Eighteen Alpha CPU-based and eighty Athlon 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](http://www.biomedsci.creighton.edu/research/areas.html) 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 the 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)
The Boys Town National Research Hospital (BTNRH) is on the campus of Creighton University adjoining Saint Joseph Hospital, the primary teaching hospital for the Creighton University School of Medicine. BTNRH operates as a division of Father Flanagan’s Boys’ Home and also functions as the Department of Otolaryngology and Human Communication of the Creighton University School of Medicine. All members of the BTNRH professional staff hold faculty appointments at Creighton and many have cross appointments in other Creighton departments. BTNRH is in its twenty-sixth year as an active clinical and research center dealing with disorders of hearing, speech, language, and learning. It is now one of the world’s largest centers doing work in these areas, both in terms of the size of the research program and clinical caseload. The research effort at BTNRH is conducted in twenty different laboratories representing three broad areas of research: neurobiological studies of hearing, hereditary communication disorders, and clinical and behavioral studies of human communication.

Our research programs in the area of neurobiological studies of hearing represent a multidisciplinary effort to achieve a better understanding of peripheral and central processes in the auditory and vestibular systems. Work at this level is essential if we are to understand the causes of hearing loss and vestibular disorders, with the ultimate goal of prevention and treatment. Individual research programs are focused on the neuroanatomy of the efferent portion of the auditory system that transmits information from the brainstem to sensory cells and afferent dendrites in the inner ear; neurochemical studies of synaptic transmission within the cochlea and central auditory system; the physiology and biophysics of hair cells in the inner ear; developmental changes in physiological function at multiple levels within the auditory system; and mathematical modeling of the mechanical processes of the inner ear. Studies of the anatomy, physiology, and neurochemistry of the olivocochlear efferent system, funded by a program-project grant, provide an example of the multidisciplinary, collaborative work within this group. That research program also includes faculty members in the Department of Biomedical Sciences.

Our research programs in the area of hereditary communication disorders represent an integrated approach to a wide range of genetic communication disorders. This work began with studies of dyslexia, one of the first inherited behavioral traits for which a gene was localized to a specific chromosome. We subsequently extended our efforts to syndromes that have an impact on hearing. Isolating and cloning the genes for hearing disorders will result in immediate improvements in genetic counseling and make it possible to use gene therapy and related techniques to effect a cure. Our goal is to acquire a better understanding of hearing and of the causes of hearing loss. A detailed knowledge of the specific genes involved gives insights into the different mechanisms that those genes control.

Effective research into the role of genetics in communicative dysfunction requires a mix of a good clinical program, molecular biology lab, statistical analysis capabilities, and access to families with specific hereditary disorders. These are all present at BTNRH. Current efforts are focused on Usher syndrome, Alport syndrome, Branchio-oto-renal syndrome, dominant progressive hearing loss, nonsyndromic recessive hearing loss, and hereditary cleft palate. We use the most current molecular biology techniques to locate and characterize genes causing
hearing loss, to develop animal models of known heritable forms of human deafness, and to develop and use tissue-specific cDNA libraries. In addition, we have established a resource of families with hearing problems who are willing to participate in genetic research. Collaborative work within this group is facilitated by a program/project grant on Usher syndrome.

Our research programs in the area of clinical and behavioral studies of human communication are conducted by people with clinical responsibilities as well as those in full-time research positions. Much of the clinically related work represents an effort to develop improved clinical procedures, in many cases drawing on resources from the hospital’s basic research programs. All members of the clinical staff are encouraged to monitor clinical service outcomes, develop model programs, and describe case studies.

Individual research programs are focused on the acoustical properties of the peripheral auditory system; auditory perception in listeners with normal hearing and in those with sensorineural hearing loss; the use of evoked potentials and otoacoustic emissions in the early identification and quantification of hearing loss; the development of techniques for better hearing aid fitting; the development of speech perception and language organization in normal children and in those with speech, language, or hearing problems; the physiology of normal and abnormal speech and voice production, including abnormalities associated with hearing loss; and language and cognitive development in children with severe to profound hearing loss.

See the Boys Town National Research Hospital webpage for additional information about the hospital’s research activities: http://www.boystownhospital.org/.
Cancer

Creighton University has been a recognized center of excellence in cancer research for decades.

In the late 1960s, long before the rest of the world recognized his forward-thinking and intuitive insight into cancer genetics, Creighton University hired Dr. Henry Lynch as a faculty member of Internal Medicine. Today, Dr. Lynch chairs the Department of Preventive Medicine and Public Health and is the first holder of the Dr. Harold J. Bonnstetter Endowed Chair in Preventive Medicine in the School of Medicine. The Hereditary Cancer Institute, under Dr. Lynch’s leadership, leads the Creighton investigations into cancer genetics. This research has lead to the identification of several hereditary cancer syndromes, including hereditary colorectal nonpolyposis cancer (HNPCC), also known as the Lynch syndrome.

Cancer activities at Creighton span the range from basic science investigations, such as the role of regulatory peptides in cancer cell growth, to clinical trials of new, potentially life-saving therapeutic agents. Dr. James A. Mailliard directs Creighton’s efforts in clinical trials 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).

NIH-funded projects at Creighton include collaborations with University of Nebraska Medical Center researchers on pancreatic cancer studies, as well as several basic studies of cancer cell biology.

The State of Nebraska supports cancer research at Creighton University under its cigarette tax-supported program (Cancer and Smoking Disease Research Program, LB595). This program supports research in hereditary cancer by Dr. Lynch and his team of researchers. During the past thirty years, Lynch has amassed an enormous family database and DNA collection. These database and tissue samples will be “mined” for crucial genetic information to aid in understanding familial pancreatic cancer, hereditary lymphoma, and colorectal cancer, and will help support a hereditary cancer research network in Nebraska. This program also supports research in Dr. Robert Recker’s Osteoporosis Research Group on the effects of smoking on bone biology, and in the Cardiac Center, under Dr. Syed Mohiuddin, on the effects on cardiovascular disease. This year, Tobacco Tax Settlement funds became available through LB692, and several cancer related projects, including studies of skin cancer by Dr. Laura A. Hansen, have been supported.
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 – both health policy and health care ethics. 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 edition of the field’s standard encyclopedia, analyses of values at stake in managed care and health care reform, studies regarding the health care costs of violence, ethical and legal aspects of home care and hospice, and instructional materials in ethics education in all of the health sciences represented on the Creighton campus.

A project of particular note in the area of palliative care and chronicity is the result of a meeting in 2001 of multidisciplinary international scholars supported by the Greenwall Foundation, New York. The meeting in Berg en Dal in The Netherlands began the center’s exploration of ethical foundations needed for the toll Alzheimer’s disease takes on individuals, families, health care institutions and the larger society. The papers presented at the meeting comprise a book, Ethical Foundations for Palliative Care Approaches in Alzheimer’s Disease: An International Dialogue (accepted for publication, Johns Hopkins Press). The twenty-two contributors describe demographic, economic, clinical, and ethical challenges in the treatment of Alzheimer’s disease.

Another project that merits individual mention is the culmination of almost twenty years of research by Dr. Winifred Ellenchild Pinch regarding the parental perspective in neonatal intensive care. When the Bough Breaks: Parental Perceptions of Ethical Decision-Making in the NICU (University Press of America, 2002) takes a hard look at ethical issues at the interface of health care institutions and parents of the tiniest patients in the health care system.

These two examples of specific scholarship by center faculty reflect the diverse influences and concerns that comprise the work of the center. 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 significantly done in the past.
Communication Studies

Consistent with the departmental mission statement, the faculty of the Department of Communication Studies conduct research that not only promotes and contributes to the advancement of communication competence across contexts, but also provides students with the opportunity to become involved in research projects at both the theoretical and applied levels. Examples of such research being conducted with undergraduate students includes a historical analysis of the American Hospital Association, a study on communication in alcoholic families and a senior-level course that is assessing the Creighton Health Sciences Library.

In our personal research agendas, the Communication Studies faculty concentrates on applied communication research that has practical implications for society as well as our discipline. One area of faculty specialization is organizational communication, with an emphasis on how intrapersonal discourse and interpersonal interaction impacts organizational programs and policies. One such area of research is work-family communication. Faculty research examines the interface between an employee’s personal and professional life, including the implications this has for organizations and families. A specific focus has been on how written work-family policies in organizations are undermined by communicative interactions with coworkers and supervisors.

Faculty members are also studying issues of intrapersonal communication in organizations. One such project is an exploration of the meanings of work for at-risk youth, emphasizing the importance of communication competency skills in the curriculum of employability training programs. Another project examines the influence of individual spirituality on communication in both organizations and the mass media.

A third trajectory of organizational research is studying organizational rhetoric and the strategies used by all types of organizations to influence public perceptions of the organization as well as to influence the development of public policy. Specific projects of faculty members include analysis of the rhetoric of special interest groups’ influence on health policy as well as rhetorical strategies used by Firestone to manage its product recall. In addition, the language choice of “managing diversity” has been critically examined for its consequences in organizational practices.

Another area of faculty specialization is interpersonal communication across several contexts. One such project utilizes the family as a basis for examining metaphors of family communication and how these are in many ways culturally based. Another study concentrates on long distance relationships, examining how these relationships are maintained given changes in technology. An additional context is the health care arena, examining the nurse-patient relationship as to whether and how outcomes of interaction change with differing nurse communication behaviors.

Furthermore, departmental members are doing research that fits with a scholarship of teaching model. Faculty members are actively publishing in the teaching journal for the discipline. In particular, faculty members are interested in student learning and critical thinking in the communication curriculum. Several faculty are interested in service-learning as an area of
research and teaching. Research projects include the importance of assessing community agencies in creating a service-learning program and the importance of training in justice and diversity for faculty who are going to use service-learning.

Finally, faculty members are conducting research on competitive speech and debate. Current research projects include examining topics and case construction in parliamentary debate, as well as studying differences in how male and female judges critique debate. As a whole, the department seeks to complete research that has real implications, not only for students and academia, but also for the broader world in which we live.
The Creighton University Biomedical Engineering (CUBE) Research Center, co-directed by Reginald Q. Knight, M.D. and Dennis A. Chakkalakal, Ph.D., is part of the Department of Orthopaedics and Rehabilitation at the Creighton University Medical Center (CUMC). All departmental research activities are organized under the CUBE Research Center. Currently, in addition to Drs. Knight and Chakkalakal, the following orthopaedics faculty members are conducting research projects: Bhakta R. Dey, Ph.D., Charles E. Giangarra, M.D., and James P. Devney, D.O. Charles Filipi, M.D. (CUMC Department of Surgery) is also an investigator in the CUBE Research Center. Collaborators from other departments at CUMC and from outside CUMC are also involved in some of the projects.

Sami Zeineddine, M.D. coordinates the research activities in the CUBE Research Center in his capacity as the Education and Research Coordinator for the department. There are three types of research activities in the CUBE Research Center: (1) clinical studies, (2) device development and testing, and (3) basic and applied research. The first two are conducted at CUMC, whereas basic and applied research projects are performed at two sites: CUBE Research Center facilities located in the Boyne School of Dentistry Building and the facilities of the Creighton University Osteoporosis Research Center at CUMC, and in the Orthopaedics Research Laboratory at the Omaha Veterans Affairs Medical Center (VAMC). The technical personnel performing the work in CUBE Research Center projects are: Douglas Cornet, M.S., Teresa Mollner, B.S., Edward Fritz, B.S., Jerzy Novak, D.V.M. (VAMC), and Amy Langan, B.S. (VAMC).

Many of the research projects in the CUBE Research Center are related to orthopaedics and rehabilitation. However, the scope of some of the projects extend beyond orthopaedics consistent with the original mission of the CUBE Research Center when it was established in 1996. Specifically, the CUBE Research Center serves as a research and educational resource for developing biomedical engineering solutions at CUMC to problems in health care not only in orthopaedics but in other areas as well. Orthopaedic residents and medical students at CUMC and engineering students from the University of Nebraska at Lincoln (UNL) participate in CUBE Research Center projects for training in biomedical engineering applications in medicine.

Device development and testing activities in the CUBE Research Center are conducted by biomedical engineer, Mr. Douglas Cornet, M.S. Dr. Knight and Mr. Cornet are evaluating spinal instrumentation by mechanical testing conducted in collaboration with Dr. Hani Haider of the University of Nebraska Medical Center (UNMC), Department of Orthopaedic Surgery. Mr. Cornet, in collaboration with Charles Filipi, M.D. (CUMC Department of Surgery), is also developing/modifying instrumentation for endoscopic surgery.

Basic and applied research projects in the center are directed by Dr. Chakkalakal and performed at two sites: the facilities of the CUBE Research Center and the Osteoporosis Research Center at CUMC and the Orthopaedic Research Laboratory at the Omaha Veterans Affairs Medical Center. The projects include a cervical spine fusion study (Drs. Knight and
Chakkalakal), evaluation of effects of COX-2 specific inhibitor drugs on bone healing (Drs. Knight and Chakkalakal), methods to enhance prosthesis-bone bonding in noncemented hip arthroplasty (Dr. Chakkalakal), mechanisms of adverse effects of chronic alcohol consumption on bone healing (Dr. Chakkalakal) and potentiation of cytotoxic effects of chemotherapy drugs on cancer cells by magnetic field (Dr. Chakkalakal).

A Bioengineering Research Partnership (BRP) has been formed by the CUBE Research Center with Dental Materials Group at UNMC-Lincoln (directed by Dr. Mark Beatty) and the Comparative Orthopaedic Laboratory at University of Missouri-Colombia (directed by Dr. James Cook). We are preparing a BRP proposal to investigate the relationship of pathomechanics and cell function in degenerative diseases affecting intervertebral disc, temporomandibular joint disc and knee meniscus (to be submitted to the National Institute of Biomedical Imaging and Bioengineering in August 2003).

Bhakta R. Dey, D.V.M., Ph.D., with extensive background in molecular and cellular biology of cancer, joined the department in October 2002, significantly enhancing our capability for interdisciplinary research. With the addition of Dr. Dey, activities in the CUBE Research Center now include investigations on the role of insulin-like growth factor receptor and suppressor of cytokine signaling (SOCS) proteins 2 and 3 in malignant cells. Dr. Dey has extensive experience in molecular and cellular research on oncogenes, tumor-suppressor genes, and SOCS proteins. His research in the CUBE Research Center includes collaborations with the National Cancer Institute and UNMC.

Bioengineering research the CUBE Research Center involves application of interdisciplinary approaches utilizing principles and methods of biomechanics, biomaterials, cell biology, tissue engineering and bioelectromagnetics to problems in orthopaedics and rehabilitation.
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 as well as numerous commissions of two- and three-dimensional pieces. Additionally, faculty are engaged in three-dimensional portrayals of the human figure in metal, photographic imaging in traditional techniques (e.g., platinum and cyanotype printing), ceramics within architectural contexts, 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. 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, Omaha Symphonic Chorus, the Omaha Symphony (in both solo and ensemble roles), and Mannheim Steamroller. Music faculty have appeared internationally, enjoying concert venues from Europe to Asia. Additionally, most performing artists annually direct, conduct, and supervise student productions, concerts, and recitals. The department’s complete collection of Javanese court gamelan instruments, unique within the state of Nebraska, affords additional emphasis on non-Western cultural expressions.

Scholarly work includes traditional academic research as well as arts-specific activity. Music faculty annually produce articles for professional journals, with recent work including the first published primary review in English of the Liszt organ works. Additionally, music faculty are actively engaged in the composition and presentation of new scores as well as the production of pedagogical texts. Dance faculty are not just highly sought performers but choreographers and pedagogues as well, with countless appearances and works evidenced throughout the Midwest. 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) and large format photography. 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, 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.”
Medical Microbiology & Immunology

The Department of Medical Microbiology and Immunology consists of twelve PhDs and four MDs with primary appointments and three PhDs and five MDs with secondary appointments. The department is multi-institutional, encompassing the Creighton University Medical Center (CUMC), the University of Nebraska Medical Center (UNMC), Childrens 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.

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.

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.
The research-oriented faculty and laboratories of the Department of Medicine posted many accomplishments in the 2001-2002 academic year. Medicine had another record year in industry research funding as well as publications. The faculty published more than 140 peer-reviewed articles, as well – also a record.

The leading division for research was Endocrinology, with the Osteoporosis Research Center, Bone Metabolism Center, and Diabetes Center all making substantial research contributions. Recent recognition by faculty in the Endocrine Division include Dr. Robert Recker’s presidency of American Society of Bone and Mineral Research (ASBMR). The Division of Allergy and Immunology continues to expand its scholarship and international recognition, particularly for work in reactive airway disease, and recently secured substantial NIH support for a large clinical trial through the Immune Tolerance Network. The Division of Cardiology conducts numerous clinical studies related to the treatment as well as prevention of cardiovascular disease; Dr Mohiuddin was recently awarded a substantial contract from the National Institutes of Health (NIH) for the implementation and evaluation of a novel community-oriented approach to cardiovascular risk reduction. Hematology/Oncology continues to be very active in clinical research, particularly through the Missouri Valley Cancer Consortium directed by Dr. James Mailliard. General Internal Medicine has become involved in a number of nationally funded research and education projects.

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 looking at 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 is poised to begin a new line of investigation examining the immune tolerance effects of anti-IgE monoclonal antibodies plus immunotherapy for the treatment of allergic respiratory disorders. This will be a large-scale project 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.
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, pharmacologic (including the availability of compassionate drugs), laboratory services, and risk reduction.

Clinical Operations.

During this past year, the Cardiac Center has extended its clinical service area to include a new satellite clinic in Onawa, IA while increasing the number of days at our clinics in Harlan, IA; Atlantic, IA; and Sarpy County, NE. With our increase in services, we saw an 11 percent increase in outreach visits, with 13 percent increase in new patients.

As part of our effort to make available the most current treatment methods and diagnostic tools, our cardiac catheterization lab has been outfitted with updated imaging technology which gives cardiologists clear pictures and data to provide the best possible care. Brachytherapy (radiation therapy) has been added to our list of interventional strategies to treat narrowing or occluded coronary vessels and prevent restenosis.

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.

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 yield of current trials, implement new strategies for successful patient recruitment, and increase the volume of sponsored projects.

The Cardiac Center initiated twenty-three new clinical trials during the past year alone, including phase II/III/IV pharmaceutical and device trials, as well as investigator-initiated research. Those topics include anemia, heart failure, coronary syndrome, hypertension, coronary bypass, TEE, lipid lowering agents, C-reactive protein, acute MI, intervention and post-intervention studies.
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 of Creighton University Medical 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 will use 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, together with the CARSI program, will run a mobile education and screening unit, sponsor heart fairs, nutrition education and other seminars; employ community health advocates; and conduct a comprehensive community awareness campaign. This project, one of six in the country, is funded under contract with the National Heart, Lung, and Blood Institute (NHLBI), and is equally supported with funding from the Creighton University School of Medicine.

◊ The goal of the Cardiovascular Risk Factor Screening and Intervention in African Americans (CARSI) program 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.

◊ Smoking is the leading preventable cause of premature death in the United States, and it is responsible for more than 400,000 deaths annually. Many of these smoking-related
deaths occur in patients with cardiac disease. These effects are potentially reversible, and significant reductions in mortality have been observed in patients with established cardiovascular disease who quit smoking. 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.

For additional information about the Creighton Cardiac Center, visit the department’s webpage at: http://thecardiaccenter.creighton.edu/.

**Hematology/Oncology**

The Hematology/Oncology Division research is primarily focused on clinical oncology trials. The division is an active participant in cancer prevention, supportive care as well as active treatment trial, through nationwide cancer cooperative groups including the North Central Cancer Group and the Eastern Oncology Cooperative Group. Patients are placed on trials at Creighton University Medical Center, Veterans Administration Hospital, and Burgess Medical Center in Onawa, IA. The division is planning to conduct original research on some unique methods to control vomiting in cancer patients, as well experimental phase I trials utilizing new agents in the care of cancer patients.

**Osteoporosis**

Investigators in the Creighton Osteoporosis Research Center (ORC) have, for the past forty-four 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 effort on the effects of smoking on bone health. Additionally they have begun to study the inheritance of bone mass and are conducting studies to identify the several genes that affect 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 thirty-five 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 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. Three 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 we use far more of this key substance every day than had been previously thought. Typically, we get 80 to 90 percent 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, who are 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 and 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 and 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). The director of the center was recently named “Master” in the American College of Physicians.
Nursing

School of Nursing faculty members are involved in research and scholarly activities in a variety of areas related to clinical practice, curriculum and teaching innovations, outcomes research, and health policy and ethics. These activities have been enriched by participation in the university-wide Carnegie Teaching Project and by joint appointments of several faculty members to the Center for Osteoporosis Research and the Center for Health Policy and Ethics. The School of Nursing has been well represented at regional, national, and international nursing and health conferences. Faculty members are involved in scholarly consultation, education, and service activities in Lithuania, Azerbaijan, Armenia, El Salvador, Nicaragua, and the Dominican Republic.

Recent clinical practice and research publications of faculty members have addressed assessment and promotion of bone health, emotional health of nursing home patients, cardiac rehabilitation, adjustment following body-image disruptions, stress and coping, deep vein thrombosis, and development of evidence-based protocols for advanced practice nurses. Ongoing externally-funded projects focus on delivery and outcomes of services for high risk mothers and infants, and testing the Transtheoretical Model of Change in promoting healthy behaviors.

Curriculum innovation, teaching, and evaluation efforts have been characteristic of much recent faculty scholarly activity. Research and synthesis papers are being published on several aspects of curriculum development, innovative teaching strategies, educational assessment, and outcomes research. The recent curriculum changes and nationwide emphasis on integrating hospital-based and community-based care have resulted in grant funding for two new projects. Faculty will develop, implement and evaluate a new MS Program curriculum option to prepare advanced practice nurses for blended roles as family nurse practitioners with community health nursing specialization. This new innovation is designed to address the needs of smaller, rural communities for the services of a primary care provider with expertise in public health and community-based aspects of healthcare. A second project focuses on faculty development and testing of a model for preparing nursing faculty to function effectively and expand undergraduate student learning opportunities in community-based care.
THE DEPARTMENT OF ORTHOPAEDICS AND REHABILITATION

The Department of Orthopaedics and Rehabilitation at Creighton University Medical Center (CUMC), chaired by Reginald Q. Knight, M.D., was formally established as a separate department on July 1, 2002. Formerly, it was the Division of Orthopaedic Surgery in the Department of Surgery at CUMC. The clinical activities in the Department of Orthopaedics and Rehabilitation are organized into the following three divisions:

◊ Division of Sports Medicine consists of two faculty members: Charles E. Giangarra, M.D. (Chief), specializing in arthroscopic surgery, and Stephen P. Peterson, M.D. in primary care sports medicine.

◊ James P. Devney, D.O. is the Chief of the Division of Physical Medicine and Rehabilitation, specializing in spine and sports.

◊ Dr. Knight is the Chief of the Division of Spinal Surgery, specializing in the treatment of pediatric and adult spinal deformities.

Recruitment of new clinical faculty is in progress. Jerry Johnson, P.A. joined the department in August 2002 and Avinash L. Jadhav, M.D. (general orthopaedic surgeon) in December 2002. Alexander Rosenstein, M.D. (total joint surgeon) will join the department in March 2003. Clinical faculty and the supporting staff provide patient care at CUMC and its satellite facilities at the Twin Creek Medical Clinic in Bellevue, Nebraska.

Educational activities in the department include training orthopaedic residents, teaching medical students, and continuing medical education of the faculty and staff. Orthopaedic residents are trained under the combined Creighton-Nebraska Orthopaedic Residency Program in collaboration with the Department of Orthopaedic Surgery and Rehabilitation of the University of Nebraska Medical Center. The activities include classroom teaching, weekly conferences, hands-on training sessions and participation in ongoing research projects. Sami K. Zeineddine, M.D. is the Education and Research Coordinator for the department.

Research activities in the Department of Orthopaedics and Rehabilitation are organized under Creighton University Biomedical Engineering (CUBE) Research Center, co-directed by Reginald Q. Knight, M.D. and Dennis A. Chakkalakal, Ph.D. There are three types of research activities in the CUBE Research Center: (1) clinical studies; (2) device development and testing; and (3) basic and applied research. Most of this research is directly or indirectly related to problems encountered in orthopaedic care and rehabilitation of the patient. However, the mission of the CUBE Research Center also includes service to CUMC in biomedical engineering research relevant to all aspects of patient care.

Several clinical studies are conducted to measure outcome of procedures in terms of quality of life for our patients. Drs. Knight and Zeineddine are studying the outcome of Kyphoplasty procedure performed on patients with vertebral fractures referred to us by Creighton University Osteoporosis Research Center. In another study, in collaboration with Dr. Tammy Ramos (CUMC vascular surgeon), Drs. Knight and Zeineddine are evaluating the drug Procrit® for its...
effect on decreasing the need for blood transfusion in patients undergoing spinal surgery. Drs. Giangarra and Zeineddine are conducting a pain control study using the COX-2 specific inhibitor drug Valdecoxib in patients who have undergone ACL reconstruction surgery. Drs. Knight and Zeineddine, in collaboration with CUMC Division of Neurosurgery, are evaluating the safety and effectiveness of Oxiplex® gel for the reduction of pain and symptoms following lumbar disc surgery.
The research being conducted by faculty and students within the School of Pharmacy and Health Professions encompasses a rich array of topics including the following areas: molecular, basic, and sociocultural mechanisms in health; disease and drug action; outcomes research in patient care, curricular design, student performance as well as ethics, beliefs and policy in practice in settings ranging from public schools to inpatient hospitals, nursing homes and underserved sites such as the Omaha and Winnebago Nations. The School of Pharmacy and Health Professions has a vigorous and diverse research program.

Investigations are currently in progress assessing basic mechanisms of drug action, drug delivery, cell biology, and the toxicity of drugs and foreign chemicals, patient care, ethics, policy issues, and methods as well as outcomes of student instruction. Funded research projects include: ethical dimensions of patient care; development of computer-based therapeutic case studies; development of a course in pharmacocybernetics on the World Wide Web; delivery of an asynchronous program in pharmacy education on the World Wide Web; solid state characterization of drug molecules; development of novel as well as site-specific controlled-release drug delivery systems; immunoregulation of effector T-cells by endogenous mediators including the cytokines; roles of oxidative stress; reactive oxygen species and oxygen radical scavengers in the toxicity of various foreign chemicals, including smokeless tobacco, heavy metals, and pesticides; synthesis of selected drugs; volume transmission in brain renin-angiotensin systems; and a study of the entry and spread of prion disease in the central nervous system. Additional funded projects include effects of cultural immersion on students’ training, service-based learning and science education of children aged K to 12, and assessment of distance learning in pharmacy as well as occupational therapy and physical therapy education.

A wide variety of clinical drug studies are in progress involving anti-infective agents, cardiovascular drugs, antineoplastic agents, and drugs used in neurology and urology. Several cancer prevention trials involving breast cancer and prostate cancer are being conducted. More clinically applied research in progress involves studies on drug interactions in the elderly; medication compliance in the elderly; standardized patient assessment; knowledge and attitudes towards older adult sexuality; self-medication programs for the elderly and head injured patients; analysis of functional changes in arthritic subjects; rehabilitation of patients with well-defined dysfunctions of the musculoskeletal systems; electromyographic assessment of gait; assessment of rehabilitation protocols on patients with a deficiency of the anterior cruciate ligament of the knee; assessment of expert performance in physical therapy clinicians; reflective practice as it relates to program evaluation; knowledge in clinical teaching; measurement of forces in manually applied physical therapy treatment; functional outcomes in neurological rehabilitation; exercise protocols for persons with osteoporosis; mechanisms and treatment of persons with Parkinson’s disease; vestibular dysfunction in children; documentation in practice; mental health and aging; cultural dimensions of leadership development; development of meaning through occupation; research methodologies in clinical practice; minority health issues; development of tactile systems and self-esteem in children.

Related studies are underway on the valuation of the cost of congestive heart failure, diabetes, hypertension, and other diseases; prognosis and health care resource consumption;
bioethical analysis; inclusive education for students with severe and profound disabilities; augmentative and alternative communication; school-based occupational therapy practice; the ethical dimensions in occupational therapy, pharmacy, and physical therapy practice; the role of the Church in the health of elderly members; pharmacy law and management; and pharmacoeconomics and the quality of life. Additional studies are being conducted on pharmacist counseling of pregnant and lactating women; knowledge of pharmacy graduates on consultant pharmacy practice; evaluation of cardiovascular risk in postmenopausal women, and risk assessment of osteoporosis in young adults who are nonambulatory and physically challenged.

The School of Pharmacy and Health Professions has received a major federal grant from the National Institute on Drug Abuse to implement and evaluate the benefits of promoting neuroscience literacy among children, teachers, clinical practitioners, and scientists. Additional studies on perception and use of alcohol and other drugs by health professions students is underway as is a study of the degree of codependence in pharmacy and occupational therapy students.

The school has also received 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.

Faculty employ a range of research methods and strategies ranging from basic science and bench research to analysis of extant databases to qualitative inquiry. The School of Pharmacy and Health Professions is in a unique position to foster interdisciplinary research across the varied scientists and clinicians comprising the school faculty. Future goals include increasing the focus upon interdisciplinary research within the school, as well as between the school and other parts of the University, and other educational settings across the nation and globally.
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.
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. Remarkable progress is directly measurable in a number of ways, notably that funded research has risen from zero in early 2001 to some $3,000,000 as of late 2002. Also, the number of active faculty researchers has risen from zero (before Dr. Wilson arrived as Chairman in 2000) to a dozen today, and faculty peer-reviewed publications have likewise grown from zero to nearly one hundred. In addition, four post-doctoral fellowships have been created in the past year as have a number of robust collaborations. 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.

Departmental activities are primarily via the Institute for Clinical Neuroscience and Psychopharmacology, under the Directorship of Fred Petty, M.D., Ph.D. Principal sites include Creighton University Medical Center, Alegent, and the Veterans Administration Medical Center. 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. Perhaps most significant of Dr. Petty’s contributions is his devotion to collaboration and mentoring junior faculty. He has helped Dr. Wilson rapidly expand industry-sponsored psychopharmacology research in the department with more than ten studies active and seven more in process. Dr. Petty achieved a renewal of his VA Merit Award (rodent models of the neurobiology of “Learned Helplessness”) and is leading a major collaboration to situate a Mental Illness Research, Education and Clinical Center (MIRECC) within the Midwest VA system.

The department has other pending VA Merit Reviews, NIMH and NIH submissions, including Dr. Wilson’s schizophrenia relapse prevention and his disparities in psychiatric diagnosis proposals (NIMH), Dr. Hape’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 (VA). The department is also host to Evolutionary Psychology, a new international journal and human-nature.com (one of the most active biology and behavior websites in the world), both edited by Dr. Pitchford in his first year at Creighton.

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

The Psychiatry faculty are grateful for an environment at Creighton so conducive for us to contribute research that helps better understand and treat diverse mental illnesses.
— Publications —

College of Arts & Sciences


Malina, B. J. (2002). We and they in Romans. HTS Teologiese Studies/Theological Studies, 58(2), 608-631.


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**College of Business Administration**


**School of Dentistry**


CULHANE, M., & WHITE, M., Bankruptcy: Current Developments, 2002 in CONSUMER FINANCIAL SERVICES LITIGATION 67 (Practising Law Institute).

CULHANE, M., & WHITE, M., But Can She Keep the Car? Some Thoughts on Collateral Retention in Consumer Chapter 7 Cases, 7 FORDHAM J. CORP. & FIN. LAW 471 (2002).


KELLY, M. J., Understanding September 11th - An International Legal Perspective on the War in Afghanistan, 35 CREIGHTON LAW REVIEW 283 (2002).


MANGRUM, R. C., Good News Club v. Milford Central School: Teaching Morality from a Religious Perspective on School Premises after Hours, 35 CREIGHTON LAW REVIEW 1023-1074 (June 2002).

MANGRUM, R. C., Interpreting Nebraska Rule of Evidence 702 after the Nebraska Supreme Court Adopted the Federal Daubert Standard for the Admissibility of Expert Testimony in Schafersman v. Agland Coop, 35 CREIGHTON LAW REVIEW 31-114 (December 2001).

PEARSON, E., ENVIRONMENTAL AND NATURAL RESOURCES LAW (Lexis Nexis 2002).


School of Medicine


Bittner, M. J. (2002). It’s a matter of setting priorities [From the editor]. *Physicians Bulletin of the Metro Omaha Medical Society, 23*(26), 4-5.


Deng, H. W., Chen, W. M., & Recker, R. R (2002). Powerful and robust tests of linkage and association based on parental genotypes to map genes underlying complex traits. *Life Science Research* [China, in English].
Deng, H. W., Deng, H. Y., Liu, Y. J., Liu, Y. Z., Xu, F. H., Shen, H., Conway, T., Li, J. L.,
quantitative-trait loci for obesity phenotypes. *American Journal of Clinical Nutrition, 70,*
1138-1151.

Determination of bone size of hip, spine, and wrist in human pedigrees by genetic and lifestyle
factors. *Journal of Clinical Densitometry, 5*(1), 45-56.

Characterization of genetic and life-style factors for determining variation of BMI, fat mass,
percentage fat mass, and lean mass. *Journal of Clinical Densitometry, 4,* 353-361.

disequilibrium test of a QTL in nuclear families with multiple children. *Genetic Epidemiology,
21,* 243-265.


Deng, H. W., Mahaney, M. C., Williams, J., Li, J., Conway, T., Davies, K. M., Li, J. L., Deng,
susceptibility to osteoporotic fractures and its implications to gene search for complex human
diseases. *Genetic Epidemiology, 22*(1), 12-25.

Deng, H. W., Xu, F. H., Conway, T., Deng, X. T., Li, J. L., Davies, K. M., Deng, H. Y., Johnson,
marker D11S987 on chromosome 11q12-13? *Journal of Clinical Endocrinology & Metabolism,
86,* 3735-3741.

treated with topical Imiquimod 5%. *Clinical Cancer Research, 7,* 3031-3033.

Distortion product otoacoustic emission input/output functions in normal-hearing and hearing-

Anderson, R. J. (2001). Thermostable (SULT1A1) and thermolabile (SULT1A3) phenol
sulfotransferases in human osteosarcoma and osteoblast cells. *Bone, 28,* 617-624.

exchange, and health symptoms in university students. *Journal of American College Health, 50,*
75-79.


Hopp, R. J. (Topic ed.). (2002). The genetic basis of asthma. *Clinical Reviews in Allergy & Immunology, 22*(1), 1-103.


Josefson, D. (2002). U.S. drug companies will meet more than half the cost of drug approval. *BMJ, 324, 808.*


Wilson, M. R. (2002). *St. Lucia follow-up study: Progression of visual field in untreated glaucoma and glaucoma suspects* [Thesis for American Ophthalmologic Society].


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**School of Nursing**


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**School of Pharmacy & Health Professions**


Cross, P. (2002). Promoting wellness within the Omaha and Ho-Chunk Tribes of Nebraska. *In Touch, 23*, 3-6.


--- GRANTS ---

**COLLEGE OF ARTS & SCIENCES**

Cherney, M. [Principal Investigator]. Study of relativistic heavy ion collisions. $156,000 — (1 July 2001-31 July 2002).


Muskin, M. [Principal Investigator]. Creighton University paramount educational project. $18,481 — (1 September 2001-31 August 2002).

O’Keefe, J. [Principal Investigator]. The virtual world project: Creating a virtual world of the Bible and the early Church. $9,000 — (1 March 2002-15 August 2002).

Olson, L. [Principal Investigator]. A professional development project to provide a reading clinic for at-risk students in socioeconomically and linguistically diverse schools (year one). $21,620 — (1 March 2002-28 February 2003).

Otsubo, S. [Principal Investigator]. The library support program. $4,600 — (1 November 2001-31 October 2002).

Otsubo, S. [Principal Investigator]; LaCroix, M., & Grabe, L. [Co-Investigators]. Grant for instructional materials. Northeast Asia Council for the Association for Asian Studies; Japan-U.S. Friendship Commission — $1,000 — (December 2001).


College of Business Administration

Raval, V., & Vuchetich, P. J. [Co-Principal Investigators]. Applied research using PKWARE products and services. PKWARE, Inc. — $36,000 — (1 June 2002-31 August 2002).

School of Dentistry

Latta, M. [Principal Investigator]. Biomaterials/tissue engineering research initiative. $20,000 — (1 September 2001-30 June 2003).


Latta, M. [Principal Investigator]. Clinical evaluation of new “self-etching” adhesive system in class V cavities. $9,000 — (1 June 2002).

Latta, M. [Principal Investigator]. Factors affecting the mico-strain of compostie resin restorative dental material. $110,781 — (1 July 2001-30 June 2002).
Latta, M. [Principal Investigator]. Laboratory evaluation of localized wear of selected commercial and experimental composite restoratives. $9,600 — (18 March 2002).

Latta, M. [Principal Investigator]. Laboratory evaluation of the shear bond strength of rexillium to dentin using a dual-cure adhesive system. $3,000 — (8 April 2002).


**SCHOOL OF MEDICINE**

Agrawal, D. [Principal Investigator]. IGF-1 receptors, apoptosis and plaque stability. $90,000 — (1 September 2001-31 August 2002).

Agrawal, D. [Principal Investigator]. Suplatast tosilate (IPD) and chloride channels in human blood eosinophils and human bronchial epithelial cells. $50,400 — (1 April 2002-31 March 2003).

Akhter, M. [Principal Investigator]. Efficacy of soy protein in prevention of male osteoporosis bone site for histomorphometry analyses: Proximal tibial metaphysis. $8,000 — (1 January 2002).

Anderson, R. [Principal Investigator]. Double-blind randomized parallel group clinical trial to compare the efficacy safety and tolerability of metformin ER (M-ER) tablets and metformin immediate release (M-IR) tablets in the treatment of type 2 diabetes mellitus. $6,767 — (20 August 2001).


Bertoni, J. [Principal Investigator].  Bi-national multicenter double-blind randomized study to evaluate the safety and tolerability of rasagiline mesylate in advanced Parkinson’s disease (PD) patients with motor fluctuations treated with chronic levodopa/carbidopa therapy.  $9,168 — (1 September 2001).


Bertoni, J. [Principal Investigator].  Phase III double-blind placebo-controlled randomized study comparing the efficacy safety and tolerability of sumanirole versus placebo or ropinirole in patient with early Parkinson’s disease.  $17,098 — (19 November 2001).

Bertoni, J. [Principal Investigator].  Relationship of environmental heavy metal burden to Parkinson’s disease in Nebraska.  $74,813 — (1 October 2001-1 September 2003).

Bessen, R. [Principal Investigator].  Strain properties of the prion protein.  $100,457 — (1 June 2002-31 May 2003).


Bhatia, S. [Principal Investigator].  Lilly educational grant.  $2,000 — (17 April 2002).


Brauer, P. [Principal Investigator].  Homocysteine and congenital heart defects.  $52,170 — (1 March 2002-28 February 2003).


Brumback, R. [Principal Investigator]. High-quality fluorescent photomicroscope. HFF — $39,000 — (30 April 2002-31 August 2002).

Brumback, R. [Principal Investigator]. Pathology research implementation. $172,500 — (1 July 2001-30 June 2002).

Casale, T. [Principal Investigator]. Allergic airways disease research program. $20,000 — (1 September 2001-30 June 2002).

Casale, T. [Principal Investigator]. Allergy clinical research educational/training grants. $10,000 — (10 December 2001).

Casale, T. [Principal Investigator]. An open-label multicenter study to evaluate the safety and tolerability of intramuscular administration of alefacept in subjects with chronic plaque psoriasis who have completed studies c99-717 or c99-212. $4,750 — (16 October 2001).


Casale, T. [Principal Investigator]. Phase III double-blind parallel-group multicenter placebo-controlled study of ciclesonide MDI 800mg/day and 1600mg/day administered twice daily for twelve weeks to determine the effectiveness of ciclesonide to reduce oral corticosteroid (OCS) use in oral ... $3,500 — (15 August 2001).

Casale, T. [Principal Investigator]. Reappearance of grass pollen-induced skin-prick reactions and associated plasma tecastemizole concentrations in atopic subjects treated qd with tecastemizole 15mg or 30mg compared with placebo. $30,564 — (15 October 2001).

Casale, T. B. A double-blind placebo-controlled phase IIa cross-over study of single doses of AIR-Salmeterol compared to placebo and active control in adults with asthma. Alkermes — (September 2001).


Casale, T. B. A multicenter, double-blind, randomized, parallel group placebo-controlled study to assess the efficacy and safety of fexofenadine 120mg BID in subjects with mild to moderate persistent asthma. Aventis Pharmaceuticals, Inc. — (January 2002).

Casale, T. B. A multicenter, double-blind, randomized, parallel group placebo-controlled study to assess the efficacy and safety of fexofenadine 120mg BID in subjects with mild to moderate persistent asthma. Aventis Pharmaceuticals — (March 2002).


Casale, T. B. A multicenter, randomized, double-blind, placebo controlled study of the efficacy and safety of Zyrtec-D 12 Hour™ (cetirizine HCl/pseudoephedrine HCl) versus placebo in patients with seasonal allergic rhinitis and concomitant mild to moderate asthma. Pfizer, Inc. — (January 2002).

Casale, T. B. A multicenter, randomized, double-blind, placebo controlled study of the efficacy and safety of Zyrtec-D 12 Hour™ (cetirizine HCl/pseudoephedrine HCl) versus placebo in patients with seasonal allergic rhinitis and concomitant mild to moderate asthma. Pfizer Inc. — (April 2002).

Casale, T. B. Multicenter, randomized, open-label, one year long-term safety study of ciclesonide metered dose inhaler 50μg/day to 200μg/day (ex-valve) administered once daily or fluticasone dry powder inhaler (Flovent® Rotadisk®) 50μg or 100μg administered twice daily for the treatment of children with persistent asthma. Aventis Pharmaceuticals, Inc. — (February 2002).

Casale, T. B. Phase II, randomized, blinded, placebo-controlled, multiple-dose, dose-finding study to evaluate the safety and clinical activity of IDEC-152 in patients with ragweed-induced seasonal allergic rhinitis. IDEC Pharmaceuticals Corporation — February 2002.

Casale, T. B. A phase II, randomized, blinded, placebo-controlled, multiple-dose, dose-finding study to evaluate the safety and clinical activity of IDEC-152 in patients with ragweed-induced seasonal allergic rhinitis. IDEC Pharmaceuticals Corporation — (June 2002).


Casale, T. B.  A phase III, double-blind, placebo controlled, parallel-group, multicenter, efficacy, safety, and dose response study of ciclesonide metered dose inhaler 50µg/day, 100µg/day and 200µg/day (ex-valve) administered once daily for 12 weeks in the treatment of children with persistent asthma. Aventis — (August 2001).

Casale, T. B.  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 — (September 2001).

Casale, T. B.  Randomized, multicenter, placebo-controlled parallel group study of four months duration per patient to evaluate the safety and efficacy of treatment with 24mg BID and 12mg BID formoterol, double-blind, and 12mg BID formoterol with additional on-demand formoterol doses, open-label, in adolescent and adult patients with persistent stable asthma. Novartis Pharmaceuticals Corp. — (December 2001).

Casale, T. B.  A repeat-dose, placebo- and active-controlled multicenter efficacy and safety study of a tablet containing ibuprofen 200mg pseudoephedrine hydrochloride 30mg, and dextromethorphan hydrobromide 15mg in subjects with symptoms of cold or flu. Whitehall-Robins — (December 2001).

Casale, T. B.  A repeat-dose, placebo- and active-controlled, multicenter efficacy and safety study of a tablet containing ibuprofen 200mg, pseudoephedrine hydrochloride 30mg, and dextromethorphan hydrobromide 15mg in subjects with symptoms of cold or flu. Whitehall-Robins Healthcare — (February 2002).

Casale, T. B.  A six-month, randomized, multicenter, parallel-group, double-blind, vehicle-controlled study to evaluate the efficacy and safety of ASM 981 (pimecrolimus) cream 1% BID versus standard of care in the management of mild to severe atopic dermatitis in adults. Novartis Pharmaceuticals Corp. — (September 2001).

Casale, T. B.  A six-month, randomized, multicenter, parallel-group, double-blind, vehicle-controlled study to evaluate the efficacy and safety of ASM 981 (pimecrolimus) cream 1% BID versus standard of care in the management of mild to severe atopic dermatitis in adults. Novartis Pharmaceuticals Corporation — (February 2002).
Casale, T. B. A twelve-week randomized, multicenter, double-blind, double-dummy, placebo and active controlled, parallel group study evaluating the safety, efficacy, and pharmacokinetics of Foradil® (formoterol fumarate) (10 μg BID) delivered by the multi-dose dry powder inhaler (MDDPI) versus placebo versus albuterol pMDI QID in patients with persistent asthma. Novartis Pharmaceuticals Corp. — (October 2001).

Cavalieri, S. J. [Principal Investigator]. Alexander 2001 study for antibiotic susceptibility surveillance. Laboratory Specialists, Inc. — $1,350 — (1 April 2002).


Cavalieri, S. J. [Principal Investigator]. Omega project for antibiotic susceptibility surveillance in long-term care facilities. University of Iowa — $8,500 — (19 April 2002).


Chatterjee, A. [Principal Investigator]. Prospective multicenter double-blind randomized comparative study to evaluate the safety local tolerability and clinical outcome of ertapenem sodium (MK-0826) versus ceftriaxone sodium in pediatric patients with complicanted urinary tract infection skin ... $6,620 — (1 August 2001).

Chiou, R. K [Co-Principal Investigator]. Prostate cancer prevention trial. Missouri Valley Cancer Consortium — $28,050.


Deng, H. [Principal Investigator]. Genetic basis of osteoporotic fractures and bone mass. $121,230 — (1 July 2001-30 March 2006)


Deng, H. [Principal Investigator]. Pilot recruitment for genome scan for genes for osteoporotic fractures. $90,000 — (1 September 2001-31 August 2002).

Deng, H. [Principal Investigator]. Test linkage of VDR and ER genes to osteoporosis. $40,000 — (1 July 2001-30 June 2002).


Dewan, N. [Principal Investigator]. Lilly educational grant. $2,500 — (25 April 2002).

Dewan, N. [Principal Investigator]. Randomized double-blind double-dummy parallel-group comparative clinical trial evaluating fluticasone propionate/salmeterol zinafoate (250/50mg BID via diskus) to ipratropium bromide/albuterol sulfate (36mcg/206mcg QID) inhalation aerosol in subjects ... $14,700 — (1 December 2001).

Drake, C. [Principal Investigator]. Child health clinics project. $50,000 — (1 July 2001-30 September 2002).


Drescher, K. [Principal Investigator]. Use of coxsackieviruses as TMEV vaccine vectors. $88,287 — (1 September 2001-31 August 2002).
Filipi, C. [Principal Investigator]. Endoluminal prosthetic valve for the treatment of gastroesophageal reflux. $10,000 — (29 April 2002).


Filipi, C. J. [Principal Investigator]. Funding for research nurse. HFF — $82,564 — (December 1999-June 2002).


Fleming, A. [Principal Investigator]. Maurice Grier symposium. HFF — $1,000 — (1 December 2001-31 December 2002).


Fritzsch, B. [Principal Investigator]. Neurobiology of the auditory system, to include Project II: Embryonic development of the efferent system & Core C: Electron microscopy. NIH-NIDCD, PPG — $1,050,000 — (1 February 1998-31 January 2003).


Gallagher, J. [Principal Investigator]. Double-blind randomized placebo and active controlled safety and efficacy study of bazedoxifene/conjugated estrogens combinations in postmenoausal women. $20,000 — (2 February 2002).

Gallagher, J. [Principal Investigator]. Multinational multicenter randomized double-blind parallel group placebo-controlled clinical trial of the effects of tibolone (ORG OD-14 1.25mg) on the incidence of new vertebral fractures in osteoporotic postmenopausal women. $139,856 — (1 November 2001).


Gallagher, J. [Principal Investigator]. Randomized double-blind multi-center 24-week study to assess cumulative amenorrhea in postmenopausal women taking femhrt and prempro. $11,988 — (1 November 2001).

Gallagher, J. [Principal Investigator]. Randomized double-blind placebo-controlled study to evaluate the safety and efficacy of three doses of synthetic 10-component conjugated estrogens (CE10 0.3mg 0.45mg and 0.625mg modified release tablets) compared with placebo in hysterectomized ... $66,399 — (1 September 2001).


Gentry-Nielsen, M. [Principal Investigator]. Bioterrorism training. $7,000 — (1 August 2001-31 December 2002).

Giangarra, C. [Principal Investigator]. Multicenter double-blind placebo controlled randomized study of the analgesic efficacy safety and tolerability of valdecoxib 40mg qd over seven days in patients undergoing anterior cruciate ligament reconstruction. $20,084 — (6 November 2001).

Goering, R. [Principal Investigator]. Analysis of bacterial clinical isolates by pulsed field gel electrophoresis. $15,300 — (1 August 2001-30 June 2007).


Gong, G. [Principal Investigator]. Genes affecting bone mineral density in Africans. $90,000 — (1 September 2001-31 August 2002).


Hallworth, R. [Principal Investigator]. Development of an optical stretcher facility. $184,931 — (1 September 2001-31 August 2002).


Hallworth, R. [Principal Investigator]. The mechanism of outer hair cell motility. $194,974 — (1 December 2001-30 November 2002).

Hansen, L. [Principal Investigator]. Cell cycling and death in ER6BZ nullskin tumor cells. $88,650 — (1 September 2001-31 August 2002).

Hansen, L. [Principal Investigator]. Effects of loss of ERBB2 on skin tumorigenesis. $40,000 — (1 July 2001-30 June 2002).

Hanson, N. [Principal Investigator]. Characterization of β-lactamase resistance in entero-bacteriaceae. $600 — (13 February 2002).

Hanson, N. [Principal Investigator]. Characterization of β-lactamase resistance in a Morganella morganii isolate. $300 — (13 February 2002).

Hanson, N. [Principal Investigator]. Research protocol for reference strains: ESBLS AMPCS and multiply resistant. $4,150 — (30 January 2002).

Hanson, N. [Principal Investigator]. WAVE applications. $90,000 — (18 December 2001).


Huerter, C. [Principal Investigator]. Vehicle-controlled double-blind study to assess the safety and efficacy of imiquimod 5% cream applied once daily three days per week for the treatment of actinic keratoses on the head. $29,632 — (1 September 2001).


Jung, L. [Principal Investigator]. Twelve-week double-blind randomized trial with a twelve-week open-label extension to investigate the efficacy and safety of meloxicam oral suspension administered once daily and naproxen oral suspension administered twice daily in children with juvenile rheum…. $11,914 — (1 August 2001).


Kenik, J. [Principal Investigator]. Rheumatoid arthritis DMARD intervention and utilization study (Radius 1). $600 — (15 November 2001).


Knight, R. [Principal Investigator]. Creighton University biomedical engineering (CUBE) research center. $119,025 — (1 July 2001-30 June 2002).

Knight, R. [Principal Investigator]. Pathomechanics and cell function in disc degeneration. $20,000 — (1 September 2001-31 August 2002).

Knight, R. [Principal Investigator]; Ramos, T. K., & Zeineddine, S. [Co-Principal Investigators]. Open-label randomized parallel group study to confirm the safety and efficacy of Procrit (epoetin alfa) administered perioperatively versus the standard of care in blood conservation in subjects undergoing major elective spinal surgery. Ortho Biotech, Inc. — $7,000.

Kumar, S. [Principal Investigator], & Kimberling, W. J. [Co-Investigator]. Molecular genetic studies of branchiogenic disorders. NIH-NIDCD — $875,000 — (1 June 2002-31 May 2007).


Lovas, S. [Principal Investigator]. BRIN: Bioinformatics core. $35,137 — (1 October 2001-30 September 2004)

Lovas, S. [Principal Investigator]. BRIN: Proteomics core. $72,302 — (1 October 2001-30 September 2004)

Lynch, H. [Principal Investigator]. Chemoprevention for women at high risk of breast cancer. $120,618 — (1 January 2002-31 December 2002).


Lynch, H. [Principal Investigator]. Mammographic density project. $3,800 — (1 January 2002).


Mailliard, J. [Principal Investigator]. Prospective randomized controlled double-blind multicenter study of G17DT immunogen in combination with gemcitabine versus G17DT placebo in combination with gemcitabine in previously untreated subjects with locally advanced (non-resectable stage II and ... $3,500 — (17 July 2001).

Maio, A. [Principal Investigator]. Multicenter randomized double-blind active controlled trial to compare the efficacy and safety of 104 weeks of starlix (nateglinide) plus metformin versus glyburide plus metformin in drug naive subjects with type 2 diabetes mellitus who have inadequate gly ... $2,015 — (9 August 2001).


Mohiuddin, S. [Principal Investigator]. CIG-cardiovascular research program. $100,000 — (1 July 2001-30 June 2002).


Moland, E. [Principal Investigator]. Evaluation of sensititre 18-24 hour susceptibility system. $6,000 — (1 April 2002).

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

Moland, E. S., & Thomson, K. S. Validation of TREK confirmatory tests for ESBLs in *Klebsiella pneumoniae*, *Klebsiella oxytoca*, and *E. coli*. TREK Diagnostics — $13,760 — (6 February 2002-6 September 2002).


Murphy, R. [Principal Investigator]. BRIN: Project direction. $4,158 — (1 October 2001-30 September 2004)

Murphy, R. [Principal Investigator]. BRIN: Training/mentoring program. $93,620 — (1 October 2001-30 September 2004).

Murphy, R. [Principal Investigator]. Informatics center for the life sciences: Infrastructure improvement grant. $154,016 — (1 February 2002-31 January 2003).

Nairn, R. [Principal Investigator]. CIG-development for cancer and smoking disease research program. $5,125 — (1 July 2001-30 June 2003).

Nairn, R. [Principal Investigator]. Expansion of virology and immunology as research centers of excellence. $20,000 — (1 September 2001-30 September 2002).

Narotam, P. [Principal Investigator]. Neurosurgery research implementation. $34,500 — (1 July 2001-31 December 2002).


Petty, F. [Principal Investigator]. Lilly educational grant. $6,000 — (3 April 2002).


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

Preheim, L. [Principal Investigator]. Education support for ID symposium. $5,000 — (3 July 2001).

Preheim, L. [Principal Investigator]. Educational grant support. $1,500 — (13 February 2002).

Preheim, L. [Principal Investigator]. Educational support for ID. $3,879 — (1 February 2002).

Preheim, L. [Principal Investigator]. Educational support for infectious diseases. $1,500 — (23 May 2002).


Recker, R. [Principal Investigator]. Newsletter and patient support. $3,000 — (1 December 2001).

Recker, R. [Principal Investigator]. Raloxifene alendronate comparison in postmenopausal women with osteoporosis. $34,619 — (1 October 2001).


Rendell, M. [Principal Investigator]. Long-term safety of exubera (inhaled insulin): Extension of therapy in subjects with type 1 or type 2 diabetes mellitus completing phase III randomized treatment trials trends in pulmonary function after discontinuation of exubera (inhaled insulin). $15,000 — (15 March 2002).

Rendell, M. [Principal Investigator]. Multinational randomized double-blind placebo-controlled forced-titration 2x2 factorial design study of the efficacy and safety of long-term administration of nateglinide and valsartan in the prevention of diabetes and cardiovascular outcomes in subjects ... $4,273 — (1 February 2002).

Rendell, M. [Principal Investigator]. Open-label randomized multi-center phase IIb parallel group switching study to compare the efficacy and safety of lipid lowering agents atorvastatin and simvastatin in high risk subjects with type IIa and IIb hypercholesterolemia. $26,210 — (15 December 2001).

Rendell, M. [Principal Investigator]. Phase II twelve-week randomized double-blind four-arm placebo-controlled dose-ranging study for safety and efficacy of TAK-677 in type 2 diabetic subjects (glyburide treated or diet-controlled) as measured by glycemic control. $4,000 — (15 March 2002).

Rendell, M. [Principal Investigator]. Pregabalin open-label trial in chronic pain patients meeting treatment-refractory criteria. $5,000 — (15 September 2001).

Rendell, M. [Principal Investigator]. Randomized double-blind multi-center two-arm study to investigate the safety and tolerability of flexible doses of vardenafil or sildenafil given on demand in African American, Hispanic, and Caucasian males with erectile dysfunction. $2,430 — (13 February 2002).

Rendell, M. [Principal Investigator]. Safety and efficacy of propionyl l-carnitine in peripheral arterial disease (intermittent claudication) as assessed by a fixed treadmill protocol in a diabetic population: A multi-center study. $2,000 — (15 September 2001).
Rendell, M. [Principal Investigator]. Study comparing safety and efficacy of three doses of recombinant glucagon-like peptide 1 (RGLP-1) (1.25 PMOL/KG/MIN, 2.5 PMOL/KG/MIN, and 5.0 PMOL/KG/MIN) to placebo given by continuous subcutaneous infusion in combination with metformin and sulfonylur... $5,400 — (1 December 2001).

Rendell, M. [Principal Investigator]. Study comparing safety and efficacy of three doses of recombinant glucagon-like peptide 1 (RGLP-1) (1.25 PMOL/KG/MIN, 2.5 PMOL/KG/MIN, and 5.0 PMOL/KG/MIN) to placebo given by continuous subcutaneous infusion in combination with metformin over twelve weeks. $5,400 — (1 December 2001).

Rendell, M. [Principal Investigator]. Twelve-week multinational multicenter 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 sub with type 1 diabetes mellitus receiving ... $26,514 — (15 September 2001).

Rendell, M. [Principal Investigator]. Twenty-six-week multinational multicenter open clinical extension trial to assess 1 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 ... $1,000 — (1 December 2001).


Reyes, P. [Principal Investigator]. Educational grant pool. $2,000 — (1 August 2001).

Reyes, P. [Principal Investigator]. Educational drug pool. $1,500 — (22 March 2002).


Reyes, P. [Principal Investigator]. Recruitment of outstanding research faculty. $133,037 — (1 September 2001-30 June 2002).


Romero, J. [Principal Investigator]. Double-blind placebo-controlled randomized study to evaluate the efficacy and safety of prophylactic administration of pleconaril in the prevention of picornaviral respiratory illness in healthy adult subjects. $204,168 — (1 August 2001).

Romero, J. [Principal Investigator]. Synagis (palivizumab) outcomes registry. $1,025 — (1 November 2002).
Sims, K. [Principal Investigator]. Development of UPCMD.COM. $100,000 — (1 July 2001-30 June 2002).

Sokol, M. [Principal Investigator]. Assessment of infection-triggered anorexia nervosa. Wiebe Foundation via Children’s Hospital — $200,000 — (1 August 2001-18 September 2004).


Swanson, P. [Principal Investigator]. A flow cytometry core facility for molecular and cellular applications. $243,855 — (1 September 2001-31 August 2002).

Swanson, P. [Principal Investigator]. Eighteenth international cancer congress. $1,388 — (1 April 2002-31 March 2003).
Thomson, K. [Principal Investigator]. β-lactamases of *Pseudomonas aeruginosa*. $1,800 — (1 March 2002).


Townley, R. [Principal Investigator]. Alleviating the asthma epidemic: From Omaha to the world. $187,336 — (1 July 2001-31 December 2002).


Townley, R. [Principal Investigator]. Randomized multicenter placebo-controlled parallel group study of four months duration per patient to evaluate the safety and efficacy of treatment with 24 YG B I D and 12 YG B I D formoterol double-blind and 12 YG B I D formoterol with additional ... $3,227 — (1 March 2002).


Wilson, D. [Principal Investigator]. Creighton University distinguished visiting professors in psychiatry grant. $5,000 — (14 June 2002).

Wilson, D. [Principal Investigator]. Lilly educational grant. $5,000 — (17 April 2002).


Wilson, M. R. [Principal Investigator]. Research facility for the study of development and disease in the nervous and immune systems. $2,000,000 — (1 June 2002-1 November 2003).


School of Nursing


Kitchens, E. [Principal Investigator]. Accelerated baccalaureate nursing program. $1,161,000 — (1 June 2002-31 May 2003).


Wydeven, M. [Principal Investigator]. Moms - Child health clinics project (PEACH). $95,000 — (1 July 2001-30 September 2002).

**School of Pharmacy & Health Professions**

Bagchi, D. [Principal Investigator]. Activin cardiomyocyte apoptosis project. $5,000 — (1 September 2001).


Dash, A. [Principal Investigator], & Stohs, S. J. [Co-Principal Investigator]. Quantitation of ephedra and caffeine in MNS orange dietary supplement. AdvoCare International — $5,000 — (September 2001-August 2002).

Destache, C. J. [Co-Investigator]. Murine MPTP as an animal model of Parkinson’s disease research. University of Nebraska Medical Center (Sabbatical Research) — (2002).


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).


Kincaid, A. E. [Co-Investigator]. The role of glial cells in prion diseases. NIH — $977,000 — (1 October 2000-1 October 2005).

Lenz, T. [Principal Investigator]. Pharmacokinetic interaction between warfarin and ginseng. $10,000 — (1 July 2002-30 June 2003).


Ohia, S. [Principal Investigator]. Effect of neuroprotectants on retinal glutamate release. $25,000 — (31 July 2001).


Ohia, S. E. [Principal Investigator], & Stohs, S. J. [Co-Principal Investigator]. Determination of testicular atrophy (lipid peroxidation, physical observations and histopathology) in rats following supplementation with Super CitriMax. InterHealth Nutraceuticals, Inc. — $20,000 — (January 2002-December, 2002).

Raval, V., & Vuchetich, P. J. [Co-Principal Investigators]. Applied research using PKWARE products and services. PKWARE, Inc. — $36,000 — (1 June 2002-31 August 2002).

Royeen, C. [Principal Investigator]. Allied health leadership in generational health and ethics. $162,000 — (1 July 2001-30 June 2004)

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


Stohs, S. [Principal Investigator]. Possible therapeutic role of UC-H in rheumatoid arthritis. $4,356 — (1 August 2001)

Stohs, S. [Principal Investigator]. Web-based doctor of pharmacy program. $25,000 — (1 August 2001-31 July 2002).

Stohs, S. J. Create a web-based doctor of pharmacy pathway at Creighton University. Institute for the Advancement of Community Pharmacy — $1,000,000 — (July 2000-June 2003).


August 2001

Ding, X. Regulation of pancreatic cancer cell proliferation via lipoxygenase pathway. Doctor of Philosophy (Biomedical Sciences) — Dr. Thomas E. Adrian (Major Advisor).

December 2001

Cai, D. H. Matrix metalloproteinases and cardiac neural crest cell migration. Doctor of Philosophy (Biomedical Sciences) — Dr. Philip R. Brauer (Major Advisor).

Castellanos, D. Cholecystokinin action at CCKA receptors in the brain to produce satiety in rats. Doctor of Philosophy (Biomedical Sciences) — Dr. R. F. Murphy (Major Advisor).

Kudlacek, P. E. The relationship between the biochemical characteristics of SULTI enzymes and their amino acid sequences. Doctor of Philosophy (Biomedical Sciences) — Dr. Robert J. Anderson (Major Advisor).

Rodgers, K. D. New insights into the mechanism of Alport glomerular and tubulointerstitial pathogenesis. Doctor of Philosophy (Biomedical Sciences) — Dr. Dominic E. Cosgrove (Major Advisor).

May 2002

Guynn, S. R. The Na/K-ATPase in the gills of Anartic and New Zealand nototheniids: The physiological and molecular effects of warm acclimation. Doctor of Philosophy (Biomedical Sciences) — Dr. David Petzel (Major Advisor)

Mo, Y. Physicochemical characterization of creatine. Doctor of Pharmacy — Dr. Alekha K. Dash (Major Advisor).


Tanner, S. J. Cellular responses to short-term mechanical loading: Relative involvement of osteoblasts, pre-osteoblasts, and osteoprogenitor cells. Doctor of Philosophy (Biomedical Sciences) — Dr. John Yee (Major Advisor).
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Learning is not attained by chance, it must be sought for with ardor and attended to with diligence.

Abigail Adams (1744 – 1818)