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Introduction

In higher education, when we do scholarship and research that lifts the human spirit and heals the human body, when we provide an environment where love and service to others are fostered in our students, when we nurture them in their faith life and in the greatest traditions of Christian Humanism and train them to be scientists, doctors, teachers and businesspersons of integrity, when we engage our benefactors or alumni to build not only a better university but a better world….we are working in solidarity with “the least” and with all.

From – A Meditation on Our Response to the Call of Christ, 2006

This is the sixteenth Faculty Bibliography produced annually by Creighton University’s Graduate School. The bibliography documents the scholarly accomplishments of the University community for the 2006-2007 academic year. The bibliography includes reports from various units on campus (departments, centers, or offices) that highlight the broad range of research and scholarly activity across the campus. These reports are followed by a listing of the scholarly accomplishments of Creighton faculty, including peer-reviewed articles, book chapters, and books; funded grants; and student dissertations and theses. The bibliography does not include papers in press or abstracts of professional presentations at local, regional, national or international meetings.

The contributions in this bibliography demonstrate the rich diversity and broad application of scholarship across the Creighton campus from the traditional scholarship of discovery to scholarly work of application, integration, engagement, and teaching and learning. There is strong evidence that Creighton faculty are committed teacher-scholars and true stewards of their disciplines. As stewards, Creighton faculty have a sense of purpose beyond themselves, focusing on who students become and what they will do in building a better world with “the least and with all.”

This the second year that data mining techniques and the reference database software, RefWorks, has been used to gather and produce a more complete listing of all faculty publications. Richard Jizba and his reference staff at the Health Sciences Library continue to lead us in this process. A very special thanks to Lauren Petit for her continued consultation and to LuAnn Schwery who has put in the long hours in integrating all of the components of the bibliography. This process continues to be one that demands patience in crafting the reference foundation for the document. Thanks for your continued patience in this journey.

Gail M. Jensen, Ph.D.
Associate Vice President for Faculty Development and Graduate School Dean
A Sampling of Creighton University's Research Endeavors

Center for Health Policy and Ethics

The Center for Health Policy and Ethics is 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, increasingly complex patient care, and public health problems. 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 range from individual ethical concerns such as clinical decisions involving patients and families to societal ethical and policy concerns such as health disparities and reform of health delivery models on a local and international basis.

Areas of sustained research are:

- Ethical issues at the end of life, palliative care and chronicity;
- Issues of justice, especially those dealing with health disparities and those marginalized in the health care system; and
- Disciplinary focus on teaching professional ethics and clinical ethical issues.

Key examples of the scholarly work that falls under the Center for Health Policy and Ethics' disciplinary focus on the teaching of professional ethics in the health sciences are the following books and journal articles produced by the Center faculty.

- Dr. Winifred Ellenchild Pinch, Professor Emerita and CHPE Faculty Member, and Dr. Amy Haddad, Director of the Center for Health Policy and Ethics, served as co-directors on the project, "Nursing and Health Care Ethics: A Legacy and A Vision." Twenty-five nationally and internationally recognized scholars in nursing ethics participated in a two and a half-day working seminar and submitted papers for a book to be published by the American Nurses' Association, Washington, D.C. in early summer of 2008.

- Dr. Jos Welie and CHPE Senior Visiting Fellow for 2007, Dr. Wolter G. Brands, DDS, JD, PhD, are completing their manuscript for the book, *Dental Ethics and Law: An International Handbook*.

- Dr. Christy Rentmeester and Creighton colleagues Drs. Amy Badura (Psychology) and Michael Kavan (School of Medicine) collaborated on a study resulting in the publication: “Third and Fourth Year Medical Students’ Attitudes about and Experiences with Callousness: The Good, the Bad, and the Ambiguous” *Medical Teacher* 29(4): 358-364, May 2007.


Issues of health policy and ethics will continue to demand scholarly inquiry and public attention. Critical concerns about ethics education will require closer examination of student learning and outcomes. The health care system will continue to develop, and these changes will inevitably lead to new moral considerations. Faculty at the Center will continue to make important contributions in these challenging areas and direct attention to issues and concerns that align with the Center's mission as they have done significantly in the past.

For additional information about the Center for Health Policy and Ethics, visit the Center's webpage at: [http://chpe.creighton.edu](http://chpe.creighton.edu)
College of Arts and Sciences

Department of Chemistry

The chemistry department has a broad range of research projects, all of which involve undergraduate students. Please see the descriptions below of individual faculty members’ research interests.

Dr. Bruce Mattson is currently interested in gas phase reactions taking place over a palladium-coated ceramic catalyst. The “Gas Reaction Catalyst Tube” has been developed in the Department of Chemistry lab and is now commercially available through Educational Innovations, a company that sells primarily to teachers and scholars. Among the interesting reactions being studied are:

- Deuterium exchange in methane to produce all five isotopomers, $\text{CH}_4-n\text{D}_n$, $n = 0 – 4$;
- Deuterium exchange and hydrogenation at 0°C for ethane with deuterium. In this work, we have learned that deuterium exchange is faster than deuteration so that the deuteroethanes produced have between 1 and 4 deuterium atoms. The D/H exchange is statistical for mole ratios smaller than 2 H : 1 D;
- Ethyne undergoes D/H exchange at 0°C but, unlike ethene, does not add across the triple bond, perhaps due to the sp-hybridization; and
- Dihydrogen ($\text{H}_2$) and dideuterium ($\text{D}_2$) undergo D/H statistical exchange in the presence of the catalyst at temperatures as low as $-78^\circ\text{C}$. Our group uses high-field nuclear magnetic resonance and mass spectroscopy to study these reactions.

Dr. Julie Soukup’s laboratory has an interest in nucleic acid structure and function. The lab is investigating riboswitches and RNA-protein interactions. Utilizing Nucleotide Analog Interference Mapping (NAIM) and Nucleotide Analog Interference Suppression (NAIS), Dr. Soukup is investigating the important functional groups within RNA that are needed for the activity of these molecules. The recently discovered RNA elements termed riboswitches control the metabolic state of microorganisms (such as Bacillus anthrax, a pertinent bioterror threat) by directly binding metabolites and regulating gene expression of essential metabolic pathways. A novel catalytic riboswitch has been identified and it undergoes self-cleavage in the presence of the metabolite glucosamine-6-phosphate. The Soukup laboratory has elucidated some of the mechanistic details of metabolite binding and self-cleavage of the RNA. In addition, they have designed a technique to study interactions between the catalytic riboswitch and its metabolite in the hopes of being able to design non-natural metabolites as potential antibiotics. Finally, the lab is beginning X-ray crystallography studies on two different classes of riboswitches.

Dr. Mark Freitag’s research focuses on theoretical and applied quantum chemistry. Theoretical quantum chemistry is the development of new methods of quantum chemical evaluation. In this area, Dr. Freitag has developed a method to quickly calculate the nuclear magnetic resonance (NMR) chemical shifts of nuclei in the presence of a discrete solvent potential. Basically, he is trying to predict chemical shifts in solution. He models the interactions of the solvent using the Effective Fragment Potential method. These theoretical methods have recently been incorporated into the quantum chemistry package GAMESS.

Dr. James Fletcher’s research is based on developing new organic and organometallic molecules constructed from aromatic rings that have interesting and useful physical properties. Currently active projects include:

- The use of ‘Click Chemistry’ to create new organic ligands and organometallic complexes for applications in light-harvesting, sensing, bioimaging and catalysis;
- Establishing new classes of ionic liquids; and
The design, synthesis and analysis of oligoarenes that display permanent and prescribed three-dimensional peptidomimetic shapes.

Dr. Erin Gross’ research interests involve the combination of electrochemical and spectroscopic analytical techniques to study chemiluminescent reactions. Ultimately, Dr. Gross would like to perform chemical analysis on a microchip. This would involve the separation, identification and quantitation of an analyte mixture via capillary electrophoresis with chemiluminescent detection on a microchip. The first analytes Dr. Gross is studying are a class of antibiotics called fluoroquinolones which are used to treat infections in both humans and animals.

Dr. Stephen Gross’ research focuses on three different areas of polymer chemistry:

- The development of ionic liquid containing composites for use in advanced energy conversion applications (lithium polymer batteries, solar cells);
- In collaboration with Dr. Mark Latta and Dr. R. Scott Shaddy at the Creighton School of Dentistry, the adhesion of resin modified glass ionomer cements to dentin, and also the development of new composites with dental applications; and
- In collaboration with Dr. Somnath Singh in the School of Pharmacy and Health Professions, the synthesis of polymers that can be used for subcutaneous drug delivery.

Dr. Marty Hulce’s laboratory specializes in synthetic organic chemistry, investigating new methods to prepare carbon-carbon bonds and the creation of novel structural motifs. Exploiting the power techniques of modern metalloorganic chemistry, students in his laboratory currently are exploring:

- The synthesis and reactions of mixed hybridization state, conjugated systems with unique topologies that interfere with tumor cell growth;
- The synthesis of modified amino acids to build bioactive peptides with increased bioactivity relative to the unmodified peptides;
- Preparations of hepatoprotective glycine betaine analogues;
- The synthesis and $^{17}$O NMR characterization of endoperoxides;
- Greener approaches to insect repellents; and
- Beneficial chemical modifications of the outermost layer of the skin.

Dr. Eric Haas’ research aims to design better inhibitors of Galectins. Human Galectin-3 is implicated in the inflammatory response as well as targeting of tumor cells in metastases. Dr. Haas’ group has established a protocol to quantitatively model interactions of small molecules with Galectins using available computer docking programs. This group will soon begin synthesis in an attempt to generate compounds that exhibit tight, specific binding to various Galectins. Actual binding properties of newly synthesized compounds will be tested in the lab. Crystallization and structure determination will also be used to better characterize structural response of the protein to modifications of ligand binding partners.

**Department of Exercise Science**

The Department of Exercise Science at Creighton University has ongoing research/scholarly projects. Many projects involve undergraduate students. Faculty interests and accomplishments in 2006-2007 are presented below.
Dr. Thomas Baechle’s previous experience as an Olympic-style weightlifter, powerlifter, and strength and conditioning coach, combined with his involvement in developing the National Strength and Conditioning Association, a professional organization of over 33,000 members, has laid the foundation for his interest, expertise and research in strength training. The 14 books that he has authored or served on as editor were written with the express purpose of educating individuals in the design of safe and effective strength training programs for college students, athletes, and older adults. He has made 35 professional presentations in 16 countries and his books have been translated into 10 languages. In 2006-2007 he was secondary author of the second edition of *Strength Past 50*, and four of his previous texts were translated and published in Japanese, Russian, Estonian, or Spanish.

Dr. Anthony Bull has two primary research interests that he focuses on at Creighton. With a personal history of morbid obesity, Dr. Bull’s interest in battling physical inactivity and obesity is very strong. Collaborating with the College of Nursing at the University of Nebraska Medical Center, Dr. Bull has been examining physical activity in mostly Latino elementary school children. This research will hopefully lead to a program to reduce childhood obesity and its related health concerns in this and other populations. In other projects, Dr. Bull continues his research on the measurement and modeling of high intensity cycling and running performance. He often collaborates with others in the department using high intensity models to study nutritional supplementation or gastrointestinal physiology. In 2007, Dr. Bull had a manuscript examining the modeling of running performance accepted for publication in the *European Journal of Applied Physiology*.

Dr. Joan Eckerson has conducted research to examine the validity of different techniques for estimating body composition, including multi-component models, and more recently has focused upon the effects of sports supplements on anaerobic exercise performance, body composition, and muscle fatigue. She strongly believes in collaboration and is currently working on a funded study with several colleagues from her department, and the Departments of Biomedical Sciences and Medicine on a project designed to examine the effects of different creatine formulations on skeletal muscle creatine retention. During 2007, Dr. Eckerson published two book chapters and has an additional chapter and two manuscripts in press.

Dr. G. Patrick Lambert conducts research on gastrointestinal (GI) physiology and body fluid balance as it relates to exercise in humans. Specifically, Dr. Lambert studies GI barrier dysfunction, gastric emptying, and intestinal absorption. Dr. Lambert published two research articles in 2007 in the *International Journal of Sports Medicine*. Those studies examined the effects of non-steroidal anti-inflammatory drugs and dehydration on GI barrier dysfunction during prolonged exercise. In addition, he presented study results at the 2007 Experimental Biology meeting in Washington D.C. examining the effects of L-arginine and nitric oxide on intestinal absorption of fluids. Dr. Lambert's interest in GI physiology has resulted in collaborations with Drs. Stephen Lanspa and John O'Brien in the Creighton University School of Medicine.

**Department of 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 involves x-ray production from atomic inner-electron-shell ionization using a particle accelerator to produce positive ion beams 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. Atomic inner-shell ionization is also being investigated through the photo-ionization process using radioactive sources of x-rays.

Research is currently active 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 is used to measure structural relaxation of liquids, gels, and epoxies on approach to the transition point. Another area of research is the rapidly growing field of “solid state ionic.” It involves 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, the department has developed a fully configurable three-channel, laser-scanning confocal microscope that works in both reflectance and fluorescence modes. In addition, they 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 it is anticipated that they will be able to conduct multiphoton microscopy in the near future. Finally, in collaboration with the Department of Biomedical Sciences, an optical stretcher facility has recently been built for biomechanical studies of outer hair cells, osteocytes, and cancer cells.

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

For more information about the Physics Department, visit the department’s webpage at: http://physics33.creighton.edu/

Department of Sociology and Anthropology

James Ault is collaborating with Dr. Stephanie Wernig in analyzing variables that predict academic success for undergraduates at Creighton. He is also working with faculty and administrators in the School of Dentistry to analyze variables that predict satisfaction with professional practice patterns of alumni. Dr. Ault is also in the seventh year of a project to evaluate the relative reliability of surveys of student opinion about faculty effectiveness in classroom settings.

Roger Bergman is researching and writing a book to be titled Catholic Social Learning: How to Educate the Faith that Does Justice, based on his experience as a reflective practitioner of justice education in various faith-related settings, his awareness of the need for reflection on Catholic social pedagogy, and his own work as the founding director of the Justice & Peace Studies Program at Creighton and his
commitment to justice in Jesuit higher education. In the upcoming year, he plans to research and write a chapter on service-learning and justice and to prepare the entire manuscript for submission to a publisher.

Ray Bucko, S.J. is currently researching and writing a book introduction for a re-publication of Conquering the Mighty Sioux (University of Nebraska Press) by William James Bordeaux. He is working with Marcia Poole, director of the Betty Strong Encounter Center, on a permanent exhibit which will describe Native games encountered by Lewis and Clark on their journey and integrate them with a wider range of Native American games in this area. Fr. Bucko also continues his research on Peter the Aleut with a proposed second article on contemporary interpretations of the saint’s life. Finally, Fr. Bucko is working on a research grant to update the Buechel Museum database and make it a Lakota language learning resource.

Barbara Dilly is currently on sabbatical, completing her book-length manuscript on the Social and Cultural Transformations of the American Family Farmer’s Daughter. This project is an interdisciplinary and cross-cultural study of the social and economic role of daughters of farmers in American agriculture and rural society. It recognizes that the cheap, flexible, highly adaptive, and often skilled labor of young farm women in various racial, ethnic, class, and historical contexts was not recognized as such because of the iconic status of the yeoman family farm by an American public that romanticized its image of honest labor, intimate kinship relations, and opportunities for social mobility through land ownership and entrepreneurial business talents. This work tests the hypotheses that inequality in race, class, ethnicity, and gender attitudes and practices across time and place in American agricultural history are demonstrated in popular culture depictions of young women in agriculture. A large database of these images in art, literature, illustrations, nursery rhymes, music, film, joke lore, and advertisements is the primary focus of analysis in this work.

Charles Harper revised two books, Food, Society, and Environment, second edition ( Trafford Publishers), and Society and Environment, fourth edition, which will be published in 2008 by Pearson Prentice-Hall. He wrote and presented two invited papers: ‘Environmental Education: Culture, Incentives, and Public Campaigns,’ was presented at the Fourth Annual Conference on Environmental Education in Cheju South Korea, sponsored by the Korean Government and Korean UNESCO; and ‘Religion and Environmentalism,’ presented to the Symposium on Religion and Environment sponsored by the Kripke Center for the Study of Religion and Society. The second paper has also been submitted for publication.

Dawn Irlebeck is collaborating with Julia Hudson, a current senior Sociology major, researching the experiences of Latino police officers as they interact with different racial/ethnic groups. They will be presenting their initial research findings at the Academy of Criminal Justice Sciences conference in March, 2008. In addition, Dr. Irlebeck is completing a book on racial profiling for a scholarly publishing company. The book is scheduled to be published in 2008. Dr. Irlebeck is also working with another Creighton student, Ryan Vacanti, to conduct a qualitative analysis of interactions between law enforcement officers and motorists during traffic stops.

Rebecca Murray, along with senior Sociology student Shannon Keating, is researching the effects of liquor-serving establishments on crime. They have teamed up with the Ph.D. research methods class at the School of Criminology at UNO to collect data. In addition, she will be using a summer faculty fellowship to research residence restrictions for sex offenders on recidivism. Finally, she is also working with former Anthropology major Kristin Czerminger and Bob Blair, chair of the Urban Studies Department at UNO, to research the effects of neighborhood empowerment on crime and environmental issues.

Alexander Rodlach is currently researching popular Zimbabwean beliefs associating HIV/AIDS with ‘unhealthy,’ western nutrition and implying a cure by returning to ‘healthy,’ traditional food items. He will present a paper on this topic during the annual meeting of the Society for Applied Anthropology. Additionally, in collaboration with medical anthropologists from five different European countries, he is studying how immigrants cope with barriers to access to health care. Dr. Rodlach and others are organizing a workshop on this topic during the biennial meeting of the European Association of Social Anthropologists. Finally, he and Dave Turkon from Ithaca College, NY, are examining the partnerships
created among scholars and practitioners of different disciplines and professions as a result of research on HIV/AIDS in Africa. Drs. Rodlach and Turkon have organized a panel on this topic for the annual meeting of the American Anthropological Association.

The Jesuit Community

Phil Amidon, S.J. is currently working on a revision of an index to C.H. Turner's *Ecclesiae Occidentalis Monumenta Iuris Antquissima*.

Ray Bucko, S.J. is currently researching and writing a book introduction for a re-publication of the University of Nebraska Press' *Conquering the Mighty Sioux* by William James Bordeaux. He is working with Marcia Poole, Director of the Betty Strong Encounter Center, on a permanent exhibit which will describe Native games encountered by Lewis and Clark on their journey and integrate them with a wider range of Native American games in this area. Fr. Bucko also continues his research on Peter the Aleut with a proposed second article on contemporary interpretations of the saint's life. Finally, Fr. Bucko is working on a research grant to update the Buechel Museum database and make it a Lakota language learning resource.


Don Doll, S.J., consultant to the new Betty Strong Encounter Center in Sioux City, Iowa, gave presentations at the opening of the center. Fr. Doll also has four ongoing exhibits at the center:

- **The Missouri River:** Carol McCabe and Don Doll designed [as Magis Productions] the sixty-foot hallway connecting the two above buildings with a Missouri River exhibit. One side of the hallway has photographs of the flora and fauna along the river pulled from *NebraskaLand Magazine's* best photos which Carol scanned from their original slides. The other side features the Missouri River from Yankton to Omaha, with informational pull-outs with design by Pat Osborne, lead graphic designer at Mutual of Omaha.

- **The St. Augustine Indian Mission 2008 Calendar:** Seventeen 24 x 36 inch framed prints are on exhibit, along with artwork in the foyer from the students of St. Augustine. A seven-foot enlargement of the Buffalo in Custer State Park adorns another wall at the theater entrance.

- **Corn Exhibit:** Fr. Don Doll and the Lewis and Clark Center commissioned a South Dakota photographer to do a story on CORN. Carol and Fr. Doll designed the exhibit housed in the main gallery. Greg Latza, the photographer, made his own enlarged prints. Fr. Doll and center members also did a side panel on Corn palaces of the area one hundred years ago, and another panel on Jolly Time Popcorn.

- **Aegean Encounters:** Fr. Don Doll photographed and enlarged 16 20 x 30 archival photographs of members of the Greek Orthodox community. They are on display in the exhibit space of the Lewis and Clark Interpretive Center.

Fr. Doll also has two upcoming exhibits scheduled for Sioux City: ‘Searching for Lake Wobegon’ by Richard Olstenius, done with Garrison Keillor for the *National Geographic*; and ‘Nebraska’s Highway 20,’ by Matt Miller, *World-Herald* Photographer. Fr. Doll also has an exhibit at Marquette University, Haggerty Art Museum, entitled ‘The Grandeur of God.’ As holder of the Wade Endowed Chair at Marquette, Fr. Doll will be in residence at Marquette for one month. He is also expecting a new book, *America at Home*, which will be published in March 2008. He was one of 100 photographers invited to participate in this new ‘Day in the Life of’ book.

Dennis Hamm, S.J. has presented a number of papers at regional, national, and international meetings. ‘The Contemplatio ad Amorem of Ignatius of Loyola: A Christian Practice with Eco-Friendly Side Effects’
was presented at the annual meeting of the American Academy of Religion. ‘The Creation Spirituality of Ignatius of Loyola: Still Pertinent for Life on a Fragile Planet’ was presented at “Religion and Environment,” a symposium sponsored by the Rabbi Myer and Dorothy Kripke Center for the Study of Religion and Society. ‘Teaching the Eunuch to Read: Wordplay and Echoes of Greek Isaiah in Acts 8:26–40’ was presented at the Seventieth International Meeting of the Catholic Biblical Association of America. ‘The Uses and Abuses of Scripture in Discourse about Faith and Public Life’ was presented at the Fifty-third Annual Convention of the College Theology Society. This article has also been accepted for publication in the annual volume. Fr. Hamm also presented “Watch How You Hear: Being Kòphos ["deaf-mute"] in Luke,” at the Rocky Mountain/Great Plains Regional Meeting of the Society of Biblical Literature. This will be published in a festschrift.

William Harmless, S.J. has published Mystics (Oxford University Press). This book introduces readers to the scholarly study of mysticism, exploring both mystics’ extraordinary lives and their no-less-extraordinary writings using a unique case-study method. The heart of the book focuses on six Christian mystics: Thomas Merton, Bernard of Clairvaux, Hildegard of Bingen, Bonaventure, Meister Eckhart, and Evagrius Ponticus. It also steps beyond Christianity and explores mystical elements within Islam and Buddhism, offering a chapter on the popular Sufi poet, Rumi, and one on the famous Japanese Zen master, Dōgen. It concludes with an overview of the century-long scholarly debates on mysticism and suggests a unique, multifaceted optic for understanding mystics, their communities, and their writings. The book was published on November 19, 2007, and was made available to the public at the American Academy of Religion meeting in San Diego. Fr. Harmless has also published Hubertus R. Drobner, The Fathers of the Church: A Comprehensive Introduction (Trans. Siegfried S. Schatzmann: Hendrickson Publishers), with bibliographies updated and expanded for the English edition by William Harmless, SJ, and Hubertus R. Drobner. Hubertus Drobner’s Lehrbuch der Patrologie, 2nd ed. (Freiburg im Breisgau: Herder & Herder, 2001), has been recognized as an important reference work in the field of early Christian studies. Fr. Harmless served as the bibliographic editor for this first-time edition in English, which required translating over 175 pages of bibliographic entries from the German original. It also required adding more than 50 additional pages of bibliography geared to an English-speaking readership. The long-standing project was finally published in November, 2007.

Richard J. Hauser, S.J. is reading and researching the role of the Holy Spirit in Ignatian spirituality as part of his sabbatical project. His goal is to produce articles integrating the theology of the Holy Spirit with the traditional Ignatian approaches to spirituality, with reference to topics such as prayer, discernment, decision-making, and finding God in all things. In addition, as part of his sabbatical project he is reading and researching the topic of the Ignatian Pedagogical Paradigm. This paradigm has been adopted and applied by the Jesuit Secondary School Association (JSSA) to all Jesuit high schools. He is examining its relevance for application to higher education. Each year, The International Thomas Merton Society solicits Merton scholars throughout the world to contribute to an annual volume of Merton writing on a pre-selected theme. This year’s theme is on prayer. Fr. Hauser was solicited to write an article for the 2008 volume by the editor, Victor Kramer. His article, “From Thomas Merton’s ‘Contemplation’ to Ignatius of Loyola’s ‘Contemplation to Obtain Love’: A Personal Prayer Journey” was submitted and accepted.

Roc O’Connor, S.J. has submitted a verbal proposal to Liturgical Press for a book on liturgical participation, Can the liturgy serve as a mentor in exploring the depths of discipleship? He is currently generating an outline for the book and writing the introduction for the editors to review.

Andy Jaspers, S.J. is continuing research on the philosophy of intention. He has been working specifically on intention in thought and action theory. In October, Fr. Jaspers presented a paper entitled, ‘The Limits of Near Lying: The Intentional Difference Between Strict and Broad Mental Reservations’ at the American Maritain Association. Another paper entitled, ‘Intentio and Praeter Intentionem in the Constitution of the Moral Object in Thomas Aquinas’ was presented at the American Catholic Philosophical Association annual meeting. He wrote the ‘Praeter Intentionem’ entry for the New Catholic Encyclopedia. Finally, Fr. Jaspers served as a reviewer for a book on double-effect reasoning by T.A. Cavanaugh in the International Philosophical Quarterly, and another by Nicholas Rescher on presumptions and tentative cognition in the Review of Metaphysics.
John Schlegel, S.J. wrote a preface to *Union, Mind and Heart* and a foreword to *Cultural Proficiency in Addressing Health Disparities*.

Jack Zuercher, S.J. is in the final phase of creating a process for digesting, praying with, and sharing in community the content of “The General Principles” or the statutes of Christian Life Community. This will be made available electronically to English speaking members of the Christian Life Community.

**School of Law**

The diversity of faculty research interests and scholarly pursuits, including a listing of publications and other endeavors, is summarized in the individual faculty bibliographies.


Bruce Aronson continues to work in the areas of comparative corporate governance and the legal profession. His current work in progress is *A Japanese Calpers? Japan’s Pension Fund Association and the Emergence of an Asian Model of Shareholder Activism*.

Marianne Culhane focuses primarily on empirical research in consumer bankruptcy law. With Michaela White, she served as a consultant to the Rand Corporation on two empirical studies of the 2005 amendments to the Bankruptcy Code. Culhane and White were co-authors, along with several Rand employees, of *The Effects of Using IRS Expense Standards in Calculating a Debtor’s Disposable Income* (2007). Culhane and White hired and trained a team of Creighton law students to build the database on which two Rand studies were based.

Craig Dallon is working on an article discussing the constitutionality of the “Anti-bootlegging” provisions of the Copyright Act. These provisions deal with unauthorized recordings of live musical performances. The article addresses the international obligations of the United States under the Uruguay Round Agreements and limitations on the power of Congress imposed by the Copyright Clause of the Constitution.

Michael Fenner’s primary research interests are Nebraska civil trial law, particularly Nebraska pattern jury instructions for use in civil cases, and American constitutional law. In the constitutional law arena, he is studying federal legislative power generally and particularly under the Commerce and Taxing Clauses, limits on state and local legislative power under the dormant Commerce Clause, Fifth and Fourteenth Amendment procedural due process in civil cases, and the constitutional requirement for state action.

Michael J. Kelly is completing a book on Saddam Hussein and the genocide of the Iraqi Kurds. His prior article on the Anfal Trial and Saddam's execution was published in the *Journal of Genocide Research* (Routledge 2007) and his article on Japan's national security situation, "The Article 9 Pacifism Clause and Japan’s Place in the World" was published in the *Wisconsin Journal of International Law* (2008). He co-authored Creighton's Report on Outstanding Property Claims in Cuba for USAID in fulfillment of a federal grant.

Raneta Mack is completing the editing process on her new casebook, *Comparative Criminal Procedure: History, Processes and Case Studies*, to be published by W.S. Hein in 2008. She is currently a Criminal Procedure Fellow with the Computer-Assisted Legal Instruction organization (CALI). In that capacity, she is researching and drafting computer-based lessons in Criminal Procedure to be peer reviewed and published for law students across the country.

Collin Mangrum continues his annual updates of evidence treatises for Nebraska and Utah, and will collaborate with Ralph Whitten on issues of federalism and evidence in diversity cases. Among Mangrum’s other research projects are a treatise on expert testimony involving physicians, a project on
Mormon history and Indian land issues, and a comparison of free exercise and establishment issues in the US and Israel.

Ken Melilli will publish an article on the good faith exception to the exclusionary rule in the spring of 2008. His next project involves cross-examination techniques and controlling witnesses.

Edward Morse continues research in areas involving taxation, economic development, and law and technology. A paper on the impact of legislation restricting Internet gambling was presented in December 2007 at a conference in Beijing, China, which he helped to organize. A paper on tax jurisdiction in the Internet age was presented at the International Law Congress held in Ankara, Turkey, in January 2008. Other current projects include work on the annual summary of current federal tax developments for the Great Plains Tax Institute, research regarding liability for data security breaches, and further analysis of the proliferation of gambling in the U.S. and abroad.

Eric Pearson is currently preparing the third edition of his casebook, *Environmental and Natural Resources Law*, to be published by LexisNexis in 2008. Two recent articles concern: 1) the relationship of the constitutional law of takings to substantive due process; and 2) the National Environmental Policy Act. Pearson also researches the public trust doctrine and other subjects related to environmental protection, natural resource use and conservation.

Stephen C. Sieberson is having a book on the constitutional development of the European Union published by T.M.C. Asser Press in The Hague. The work is entitled *Dividing Lines between the European Union and Its Member States -- Will They Hold under the Lisbon Treaty?* It analyzes the EU's newest treaty amendment to determine its impact on the allocation of power within the EU.


Ronald R. Volkmer continues his research in the fields of estate planning and real property law. Professor Volkmer continues to write a bi-monthly column for *Estate Planning* magazine, continues to write on Nebraska trust law (the most recent article in the *Creighton Law Review* discussing the Nebraska unitrust conversion statute) and also is a featured speaker at Nebraska Continuing Legal Education programs. He also updates on an annual basis the chapters he wrote for a multi-volume property treatise (focusing on the law of deeds).

Sean Watts’ primary research interests relate to the evolution and future direction of the law of war. He is conducting research on the concept of reciprocity in application and observance of the law of war. Last fall, he began compiling materials to co-author a casebook on the law of war. In the future, he hopes to begin research on the Mistake of Law defense in the context of war crimes.
School of Medicine

Department of 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 molecular evolution of peptide hormones; the role of proteolytic enzymes in the biosynthesis of peptide hormones; nucleic acid catalysis and molecular engineering; the molecular biology of collagen synthesis; the regulation of gene expression and molecular diagnostics; the cellular and genetic basis for differentiation of the brain, inner ear, and cardiovascular system; comparative neuroanatomy; cellular mechanics; intracellular electrophysiology; and respiratory mechanics and control. The research is supported by facilities, including cores for bioimaging, structural bioinformatics, proteomics, genomics, and molecular diagnostics. The department encourages collaborative research interaction with faculty in the Departments of Pharmacology, Medical Microbiology and Immunology, Medicine, and Surgery; the Osteoporosis Research Center; the Boys Town National Research Hospital; the University of Nebraska Medical Center; and the Veterans Administration Medical Center.

Immunobiology of Allergy and Asthma

This research is focused on the pathophysiology of allergic asthma and the use of various immunomodulators in the prevention and reversal of airway hyper-responsiveness and allergic airway inflammation. Experiments are conducted in human blood cells from normal volunteers and patients with allergic rhinitis and bronchial asthma and in mouse and guinea pig models of allergic asthma sensitized and challenged with ovalbumin, house dust mite and cockroach antigens. Role of subtypes of lung dendritic cells and T-regulatory cells is investigated in the immune response versus tolerance to allergen. This research is supported by grants from the National Institutes of Health and the State of Nebraska-Nebraska Cancer and Smoking-related Diseases Program.
Faculty: Devendra K. Agrawal, PhD.

Immunobiology of Occlusive Vascular Diseases

This research is focused to determine cellular and molecular mechanisms underlying plaque instability in human carotid stenosis, in-stent restenosis, and vein-graft disease. Human tissues and blood cells and swine model of atherosclerosis and in-stent restenosis are used to answer specific questions. Gene therapy approach to treat occlusive vascular diseases in the swine model is being pursued in collaboration with an interventional cardiologist, vascular pathologist, and cardio-thoracic and vascular surgeon. This research is supported by grants from the National Institutes of Health, State of Nebraska-Tobacco Settlement Funds to Creighton University.
Faculty: Devendra K. Agrawal, PhD.

Pokemon Gene in Breast and Prostate Cancer

The POK family of proteins plays an important role not only in embryonic development but also in oncogenesis. Leukemia/lymphoma-related factor (LRF), a member of the POK family, has a vital function in cellular transformation. LRF is also termed POK erythroid myeloid ontogenic factor (POKEMON). Apart from its role in lymphomas, very little is known about its expression in most common solid tumors. Faculty are investigating the pathophysiological role of Pokemon and the underlying cellular and molecular mechanisms in the malignancy and proliferation of breast and prostate cancers.
Faculty: Devendra K. Agrawal, PhD, Richard F. Murphy, PhD, and William J. Hunter III, MD.
**Skin Cancer**

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

*Faculty: Laura Hansen, PhD.*

**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 of the ion transporter of interest, including cloning and sequencing of cDNA, mRNA, and protein expression studies.

*Faculty: David Petzel, PhD.*

**Airway Hyperresponsiveness**

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

*Faculty: Dale Bergren, PhD.*

**Cardiac Development**

Congenital heart defects are the most common life-threatening birth defects that are many times accompanied by craniofacial anomalies. Investigators are studying the role of cell–cell and cell–extracellular matrix interactions during normal craniofacial and cardiac development, particularly with regard to neural crest morphogenesis and migration (cells pivotal in the development of both the face and heart). Studies using *in situ* hybridization, immunocytochemistry, gene misexpression, tissue culture, enzyme assays, and time-lapse imaging show growth factors, proteases, and protease inhibitors are important overseers of neural crest cell formation and migration. Investigation into the effects of elevated homocysteine on neural crest morphogenesis and mechanisms responsible for folic acid's protective effect during cardiovascular and craniofacial development is also ongoing. In order to develop preventative strategies for congenital defects, researchers must understand the mechanisms driving neural crest and cardiac morphogenesis and how nutritional elements may be involved. These studies also enhance the understanding of adult diseases because many diseases may have embryological origins.

*Faculty: Philip Brauer, PhD.*
**Developmental Neuroscience: Ontogeny and Phylogeny**

Molecular cues control the proliferation, migration, and specification of neuronal groups. To understand the dynamics that control the development of the brain, these researchers are examining the interactions of a variety of early-onset genes in the formation of the rhombic lip and pallium of normal and mutant mice. The evolution of these brain domains forms a second focus of research. Comparative studies of gene and peptide expression patterns in developing chicken and mice provide another perspective of the genetic controls of neural domains.

*Faculty: Laura L. Bruce, PhD; David H. Nichols, PhD.*

**Ear Development**

The inner ear contains two important sensory systems: 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, in particular of the pathways of innervation in this organ, and the genetics of hearing-related disorders. Research focuses on mouse mutations that cause developmental ear defects and those that affect either the formation or the maintenance of sensory neurons in the hearing or vestibular systems. This research will lead to understanding the molecular machinery that makes and breaks ear formation, especially the innervation. In a parallel avenue, faculty are investigating the activity-dependent connectional dynamics. For this they 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 the National Aeronautical and Space Administration and the National Institute on Deafness and Other Communication Disorders.

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

*Faculty: Kirk Beisel, PhD; Laura Bruce, PhD; M-D Crapon de Caprona, PhD; Bernd Fritzsch, PhD; David He, PhD; and David Nichols, PhD.*

**Molecular Biology of the Inner Ear and Hereditary Deafness**

The mouse inner ear offers an excellent paradigm to characterize and analyze the functional genomics of unique and rare cell types in the inner ear. These include inner hairs cells, outer hair cells, inner phalangeal, border cells of the inner sulcus, pillar, Deiters’, Hensen’s and Claudius’ cells. Gene discovery and differential expression will focus on global expression analysis using microarray analyses in combination with null and spontaneous mutant mice. Quality assessment of these cDNAs will be accomplished by using *in silico* microarray analyses to detect expression of ion channel genes, rare to common housekeeping genes, developmentally expressed genes, cell-specific genes of the OC, and genes expressed in only non-sensory/non-neuronal cells. Using bioinformatics approaches, candidate genes for hereditary deafness will also be identified. One component of the research program will also focus on the development and testing of genetically engineered mouse mutant lines to determine and molecularly dissect the structure functional relationship of the altered genes in normal and dysfunctional auditory responses. This research is conducted in collaboration with Boys Town National Research Hospital, RIKEN, the National Institutes of Health, University of Iowa, and various other universities. It is funded by the National Institute on Deafness and Other Communication Disorders.

*Faculty: Kirk Beisel, PhD.*
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 and the Richard J. Bellucci, MD, Medical Research Fund, the basic science of hair cells and the mechanisms underlying their loss are being studied, with a view to finding rescue and repair methods. This work is being pursued in collaboration with investigators at Boys Town National Research Hospital, Harvard University, Baylor College of Medicine, St. Jude's Hospital in Memphis, University of Colorado at Boulder, University of Texas at Austin, University of Texas Health Science Center at San Antonio, University of Maryland, Oregon Health Sciences University, Case Western Reserve University, and Northwestern University. Faculty: Kirk Beisel, PhD; Bernd Fritzsch, PhD; Richard Hallworth, PhD; David He, PhD; and David Nichols, PhD.

Biophysics of Cochlear Hair Cells

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

Control of Gene Expression

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

Molecular Genetics of Hereditary Cancers

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

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

Faculty: Garrett Soukup, PhD.

Osteoporosis

Collaboration between Creighton faculty in the Departments of Biomedical Sciences and Internal Medicine focuses on osteoporosis and the cellular basis of how skeletal mass is achieved and maintained: bone mass changes in response to varying loads — disuse reduces and heavy use increases bone density; how loads placed on the skeleton are detected and converted into biological signals that affect the balance between bone formation and resorption is not understood. Studies currently underway use bromodeoxyuridine to characterize the proliferation and differentiation of osteoprogenitor cells in response to biomechanical loading in adult rats. The role of prostaglandin E (PGE) 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, PhD.

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 the Creighton University Physics Department, an optical stretcher facility has been constructed in the Department of Biomedical Sciences. 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, PhD.

Control of Appetite and Digestion

Dr. Roger Reidelberger’s research focuses on the question: How does the gastrointestinal tract communicate with the brain to control food intake and energy reserves (adiposity; body weight)? Meal initiation is typically preceded by sensations of hunger and followed by sensations of fullness and satiety, which affect the timing of meals and amount of food consumed. Various gastrointestinal hormones and nerves are postulated to play important roles in conveying information to the brain about the quantity and quality of food consumed. Less is known about the brain substrates that receive this information, produce hunger and satiety sensations, and regulate adiposity. Dr. Reidelberger’s research specifically focuses on the role of various gastrointestinal peptides (cholecystokinin, amylin, peptide YY(3-36), glucagon-like peptide-1, ghrelin) and nerves (vagus) in control of food intake, gastric emptying, and body weight. Most of his studies use the rat as an experimental model. Rats are prepared with chronic indwelling cannulas in specific areas of the gastrointestinal tract, vascular system, and/or brain for computer controlled delivery of test substances and withdrawal of blood. Food intake and meal patterns are determined from continuous computer recordings of changes in food bowl weight. Many of the peptides and peptide antagonists are synthesized either locally in the Veterans Administration Peptide Core Facility or by Dr. Martin Hulce in the Department of Chemistry at Creighton University. This research is supported by the
Medical Research Service of the Department of Veterans Affairs, the National Institutes of Health, and the National Science Foundation.

Faculty: Roger Reidelberger, PhD.

**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, PhD.*

- 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, PhD; and Richard F. Murphy, PhD.*

- 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, PhD; and Richard F. Murphy, PhD.*

- 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, PhD.*

**Structural Bioinformatics and Proteomics**

Eighteen Alpha cpu-based and 80 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 high level quantum chemical calculations.

*Faculty: Sándor Lovas, PhD; and Richard F. Murphy, PhD.*

**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. Dr. Robert Mackin is 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, PhD.*

**Bioimaging**

The Nebraska Center for Cell Biology in the Department of Biomedical Sciences in 2004 obtained a Zeiss multi-photon confocal microscope. Investigators in the department and other departments of the School of Medicine, the Departments of Physics and Biology, Creighton University, Boys Town National Research Hospital, the University of Nebraska Medical Center, and outside centers such as the University of South
Dakota, St. Judes Children’s Research Hospital (Memphis, TN), and the Virginia Military Institute (Lexington, VA) are using the instrument to extend their knowledge of the inner workings of cells. 

Faculty: Bernd Fritzsch, PhD; and Richard Hallworth, PhD.

For more information about the Department of Biomedical Sciences’ current research activities, visit the department’s webpage at: [http://biomedsci.creighton.edu](http://biomedsci.creighton.edu)

**Department of Medical Microbiology and Immunology**

The Department of Medical Microbiology and Immunology consists of eleven PhDs with primary appointments and six PhDs and four MDs with secondary appointments. 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 Medical Center, the University of Nebraska at Lincoln, and the University of Nebraska Medical Center (UNMC) 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.

**Flow Cytometry Core Facility**

The Creighton University Flow Cytometry Core Facility is located in and administered by the Department of Medical Microbiology and Immunology. The facility was established in 2001 to serve research investigators in any department at Creighton University and Boys Town National Research Hospital, as well as those working outside of the Creighton system at such institutions as UNMC and Children’s Hospital. Within Creighton, the facility routinely provides service to investigators in a number of departments, including Medical Microbiology and Immunology, Biomedical Sciences, Allergy and Immunology, Cardiology, and the Cancer Center.

The centerpiece of the facility is a state-of-the-art, three-laser, twelve-parameter, high-speed sorting FACSAria flow cytometer from Becton Dickinson. When installed, this instrument was the first FACSAria in the world to have UV capabilities. This instrument is capable of routinely performing ten-color analysis (plus two scatter parameters). The presence of the UV laser allows the instrument to be used with UV compatible dyes for DNA analysis or hematopoietic side population sorting experiments. In addition to its analysis capabilities, the strength of this instrument is its ability to sort to purity any cell populations defined by any combination of its twelve parameters. Up to four populations can be sorted simultaneously. Sort purities of greater than 99.5 percent are common, even at sort rates of over 30,000 cells/second. Sorted cells can be collected in bulk, or any number of cells can be put directly into microtiter plates (any number of wells), PCR plates, or directly onto microscope slides or Petri dishes. The instrument also allows the investigator to control the temperature of both the input sample and the sorted cell populations.

In addition to the FACSAria, the facility houses a Becton Dickinson FACSCalibur dual laser, four-color flow cytometer. This instrument is used for the bulk of the routine cell analysis in the facility. It is equipped with both sorting capabilities and a Multiwell Autosampler. A separate computer workstation is available in the facility for off-line data analysis using any of several advance data analysis packages.

Other instruments used in the facility include a Beckman Coulter Z1 particle counter, a Nikon E-400 microscope, and an IEC Centra-GP8R refrigerated centrifuge. The cell enrichment capabilities of the facility have also been enhanced through the purchase of two magnetic separation units (a Vario-MACS
and a QuadroMACS) from Miltenyi Biotech. Using magnetic particle techniques, these units allow the enrichment/purification of specific cell populations for further analysis or culture. All of these additional items are available for use by any investigator.

*Faculty: Patrick C. Swanson, PhD; Technical Director: Greg A. Perry, PhD.*

**Prion Research**

Prion diseases are a group of fatal neurodegenerative diseases that affect humans (e.g., Creutzfeldt-Jacob disease) and animals (e.g., chronic wasting disease). Prion diseases have long subclinical incubation periods of months to decades with a short clinical phase that is characterized by the onset of behavioral, cognitive, or motor deficits. Deposition of the abnormal isoform of the prion protein, PrP\(^\text{Sc}\), is pathognomonic for prion diseases, and its deposition in the central nervous system (Sc CNS) results in neuronal loss and onset of clinical symptoms. PrP\(^\text{Sc}\) is an amyloid protein that is resistant to proteolytic degradation and is postranslationally derived from the protease sensitive non-amyloid host encoded prion protein, PrPC. Outside of the CNS, PrP\(^\text{Sc}\) deposition occurs in the peripheral nervous system and secondary lymphoreticular system (LRS) tissues such as spleen and lymph nodes. All prion diseases in animals and a majority of prion diseases in humans are due to prion exposure by a peripheral route (e.g., ingestion). Details of the mechanism(s) of prion transport to the CNS are poorly understood. To better define prion transport to the CNS, Drs. Jason Bartz and Anthony Kincaid are investigating three areas of prion pathogenesis. First, they are exploring alternative routes of prion entry into the host in an attempt to better define the possible routes that prions can gain access to the CNS. Second, they are investigating the role of the innate immune system in the processing and transport of prions to secondary LRS tissues. Finally, they are interested in factors that influence susceptibility of neurons to prion infection and/or replication. The understanding of routes and mechanisms of prion transport will enhance the future development of therapeutic interventions to prevent prion spread to the CNS.

*Faculty: Jason Bartz, PhD; and Anthony Kincaid, PhD.*

**Immunodeficiency Research**

Dr. Michael Belshan’s fundamental research interest is virus-host cell interactions, specifically related to the replication and pathogenesis of the lentivirus subfamily of retroviruses. Members of this subfamily include the human and simian immunodeficiency viruses (HIV and SIV, respectively). The focus of Dr. Belshan’s work is to understand the interaction of viral components and the host cell environment by using a cell biology approach to obtain results that provide insights not only into mechanisms of virus replication and pathogenesis, but also the biology of cellular pathways. All the members of the diverse family of retroviruses have a common genomic structure and life cycle, yet they have evolved to infect a broad range of cell types in diverse species and elicit various pathologies. Current research focuses on characterizing early events in HIV infection. A hallmark and critical feature of the pathology of lentiviruses is the ability to infect non-dividing cells. Productive infection of non-dividing cells by HIV requires active nuclear transport of the viral DNA to and across the host cell nuclear membrane leading to viral dsDNA integration into the host genome. This process is mediated by a large nucleoprotein complex called the viral pre-integration complex (PIC). Dr. Belshan’s lab is currently investigating the composition, assembly, and transport of both the HIV and IV PICs. This area remains one of the least defined aspects of HIV replication and thus a novel and exciting area to study. The characterization of the pathway of PIC transport to the nucleus is a first step in the development of a new class of antiviral therapeutics.

*Faculty: Michael Belshan, PhD.*

**Multiple Sclerosis Research**

Multiple sclerosis (MS) is the most common demyelinating disease of the central nervous system (CNS) in humans. Patients with MS normally experience a chronic progressive loss of motor and/or sensory functions. The origin of MS is unknown, although some investigators have postulated that an environmental agent (i.e., a virus or bacteria) may trigger the disease. Dr. Kristen Drescher’s laboratory utilizes a mouse model of virus-induced demyelination (Theiler’s murine encephalomyelitis virus) to study immune factors involved in the development of pathology and clinical disease.

*Faculty: Kristen Drescher, PhD.*
**Center for Research in Anti-Infectives and Biotechnology**

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 center’s research interests focus 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 their research endeavors, members of CRAB actively teach many courses within the Schools of Medicine, Dentistry, and Pharmacy and Health Professions. These courses include medical microbiology and immunology and antimicrobial agents and chemotherapy. Center associates also teach a summer “minicourse” in antimicrobial agents and chemotherapy to pharmaceutical and industry professionals.

*Faculty: Nancy Hanson, PhD; Phillip Lister, PhD; and Kenneth Thomson, PhD.*

**Department of Pharmacology**

Departmental faculty are engaged in a range of approaches and techniques in research aimed at understanding the mechanisms of drug action. The activities of Department of Pharmacology faculty reflect the complex scope of modern pharmacological research as they apply methods of systems and cell physiology, neuroscience, biochemistry, and cellular and molecular biology to better understand drug action.

Departmental faculty are engaged in diverse areas of research including G protein-coupled receptor signal transduction, regulators of G-protein signaling, regulation of receptor gene expression, control of neurotransmitter release, ion channel modulation, molecular pharmacology of excitatory neurotransmission, and cardiovascular and CNS drug discovery. These studies provide insight into the mechanisms of drug action and the means by which drug action is translated into responses in the cardiovascular system, the nervous system, exocrine glands and cancer cells. Extramural funding for departmental research projects is derived from grants awarded by the National Institutes of Health, American Cancer Society, Department of Defense, American Heart Association and the pharmaceutical industry.

Department of Pharmacology faculty and their respective research emphasis are as follows:

Peter W. Abel’s research program is focused on understanding the actions of G protein-coupled receptors including adrenergic receptors and neuropeptide receptors. Current projects focus on α1- and α2-adrenergic receptor subtypes and the calcitonin gene related peptide receptor family. His interest is in identifying and characterizing receptor subtypes and determining the efficacy of their signaling pathways to aid in the design and testing of receptor subtype selective agonist and antagonist drugs.

Charles S. Bockman’s research program focuses on α1-adrenergic receptors, which interact with norepinephrine to mediate the actions of the sympathetic nervous system in regulating salivary gland secretion and activation of mitogen-activated protein kinase pathways. The functional significance of subtype-specific activation of various signaling pathways in salivary glands is unknown but is currently being explored in this laboratory. These studies will identify and characterize novel drug targets that may provide a rational basis for the design of drugs specific for treating salivary gland hypofunction.

Frank J. Dowd’s research program is focused on the pharmacology of salivary gland secretion. Research projects include exploring the link between muscarinic receptors and the MAP kinase pathway and interaction of muscarinic pathways with adrenergic signaling pathways in salivary glands. Investigation of
these aspects of secretion is aimed at an understanding of salivary function, and the beneficial as well as detrimental effects of drugs on salivary gland dynamics.

Shashank Dravid’s research program focuses on the function and modulation of ionotropic glutamate receptors in the central nervous system. This research concerns the basic physiology of the NMDA subtype of glutamate receptors and their modulation by potential drugs for neurodegenerative diseases and mental disorders. Another area of interest is the modulation of synaptic transmission by G-protein coupled receptors. This laboratory utilizes a range of electrophysiological, calcium imaging and molecular biology techniques, including single channel and whole cell recording to investigate these processes.

Margaret A. Scofield’s research program is focused on the molecular pharmacology of G protein-coupled receptors including adrenergic, adrenomedullin and calcitonin gene-related peptide receptors. The adrenomedullin and calcitonin gene-related peptide receptors are being characterized in various tissues. The pharmacological properties of these receptors are determined by various accessory proteins termed receptor activity-modifying proteins. This research has discovered and cloned splice variants for the receptor activity-modifying proteins and is using signal transduction assays and immunofluorescence to investigate the influence of spliced transcripts on the pharmacology of these receptors.

Yaping Tu’s research focuses on regulators of G-protein signaling (RGS) proteins that inhibit G protein-coupled receptor (GPCR) signaling. The long-term goal of this laboratory is to elucidate the functions and mechanisms of RGS proteins in prostate tumorigenesis and metastasis. Prostate cancer is the most common cancer in American men and acquisition of androgen independence by prostate cancer is the key problem of prostate cancer progression. This lab has found that RGS2, a member of the RGS protein superfamily, inhibits androgen-independent androgen receptor signaling in prostate cancer cells. These studies will significantly advance understanding of how dysregulation of RGS proteins causes GPCR-mediated androgen-independent androgen receptor activation, thus contributing to prostate cancer progression to androgen-independent disease. Such knowledge will ultimately aid in the design of novel therapeutic approaches for hormone-refractory prostate cancers.

A second area of research emphasis for this lab concerns the mechanisms of metastasis. Metastasis is the chief cause of mortality in prostate cancer. Mounting evidence suggests that Rac-dependent directed cell migration plays a critical role in prostate cancer metastasis. This lab has found that migration of prostate cancer cells was enhanced by P-Rex1, a Rac-specific activator that is stimulated by Gi-coupled GPCRs. P-Rex1 expression was correlated with the metastatic potential of established human prostate cancer cell lines, and metastatic human prostate cancer specimens expressed significantly higher levels of P-Rex1 protein compared to matched normal prostate tissues and localized prostate tumors. This group is now attempting to identify factors that trigger prostate cancer migration and is investigating the molecular mechanisms underlying prostate cancer metastasis. These studies could lead to the development of novel anti-metastasis strategies for preventing and halting prostate cancer progression.

Thomas F. Murray’s research program is focused on neuroreceptor-operated processes in the general context of understanding excitotoxicity and the neurobiology of drugs of abuse. The analysis of receptor-mediated cellular actions requires a multidisciplinary approach, which is accomplished through the use of a variety of neurochemical and molecular methods, as well as key collaborations with medicinal and natural product chemists. Current research is directed towards understanding the mechanisms responsible for marine neurotoxin-induced alteration of neuronal viability. These toxins are also used to explore interactions between voltage-gated sodium channels and the NMDA subtype of glutamate receptor. In the area of drug abuse research, this group is characterizing novel opioid peptides synthesized by a peptide chemist collaborator. The goal of this research is to develop novel agonist, antagonist and inverse agonist ligands for kappa opioid receptors.
Department of Medicine: Division of Cardiology

The Division of Cardiology continues to build upon its commitment to provide superior clinical services, participate in sponsored clinical research and take part in community-focused intervention programs.

Clinical Operations

The leadership of the Division of Cardiology and The Cardiac Center changed hands in March 2007, when Syed M. Mohiuddin, M.D. was named Chair of the Department of Medicine. Following Dr. Mohiuddin’s appointment, Dennis J. Esterbrooks, M.D. was promoted from Associate Director of The Cardiac Center to Director of The Cardiac Center and Chief of the Division of Cardiology, and Michael G. Del Core, M.D. was named Associate Director of The Cardiac Center. In their new roles, Dr. Esterbrooks and Dr. Del Core continue to maintain the very high standards of clinical practice, education and research which are the hallmarks of the Division of Cardiology and The Cardiac Center.

The Cardiac Center provides referring physicians, healthcare professionals, patients and their families with the opportunity to utilize the area’s first freestanding facility dedicated to cardiovascular research and education, risk modification, diagnosis and treatment.

Services at The Cardiac Center include: patient evaluation, treatment and management; electrocardiography; x-ray; exercise testing; cardiovascular sonography services; Implantable Cardiac Defibrillator (ICD) and pacemaker management; pharmacologic interventions (including the availability of compassionate drugs); laboratory services; risk reduction education and smoking cessation services.

Corporate Tobacco Cessation Program

Commit to Quit, Creighton’s premier tobacco cessation program, was developed in 1999 and is responsible for helping hundreds of tobacco users end their addiction to nicotine for good. Now, Commit to Quit is available to corporations, on-site, during the workday to offer businesses the chance to help employees lead healthier lives.

Tobacco cessation is the single most cost-effective clinical preventive service that can be provided to employees, according to the American Journal of Preventive Medicine. With Commit to Quit, we strive to:

- Encourage businesses to help employees quit tobacco use; and
- Urge insurers to provide tobacco cessation counseling and medication as standard benefits.

The Cardiac Center has provided its Commit to Quit program to many corporations over the past 12 months, including Blue Cross Blue Shield, American Title Company, Grace Mayer Insurance, Nebraska Furniture Mart, Oriental Trading Company, Kutak-Rock Law Firm, Boys Town National Research Hospital, Tenet Healthcare, Creighton University, Strek Labs, NetShops Inc., and Crown, Cork, Seal.

Research

The Division of Cardiology, Clinical Research continues to conduct research in various areas of Cardiology evaluating and answering questions regarding best treatment and prevention of heart disease. Cardiology builds upon its superior clinical services by participating in sponsored clinical research, supporting faculty- and fellow-initiated investigations, and offering community focused intervention programs. The Cardiac Center initiated multiple new research studies during the past year, including phase II, III and IV pharmaceutical and device trials, as well as investigator-initiated research.

Many of our double-blind clinical trials are focused on Acute Coronary Syndrome (ACS), with the goal of better defining the best possible standard of care in the treatment of the entire spectrum of patients from unstable angina to ST elevation MI. During 2006-2007, we completed participation in the MERLIN Trial (TIMI-36), which evaluated the use of Ranolazine versus placebo long-term in the treatment of non-ST elevation ACS. Although use of Ranolazine did not show significant difference when compared with
placebo in the acute setting, it was found to be safe and effective and to lower HbA1c. The Cardiac Center also completed participation in TRITON (TIMI-38), which compared an investigational antiplatelet, prasugrel, with standard clopidogrel in ACS patients having a percutaneous intervention. Recent results of this trial showed a reduction in ischemic events and platelet aggregation in the prasugrel group, but the need for careful selection of patients to prevent increased bleeding. Participation in upcoming studies of this investigational drug is planned at The Cardiac Center.

New ACS clinical trials initiated at The Cardiac Center include CURRENT and PLATO. CURRENT compares a high dose and standard dose of clopidogrel in patients with a planned percutaneous coronary intervention and includes an open-label aspirin factorial. PLATO compares clopidogrel in ACS patients with a new investigational antiplatelet drug over the period of at least a year. Also during 2006-2007, enrollment continued in the IMPROVE-IT Study, another TIMI study which evaluates Zocor and Vytorin in recent ACS patients to see if very aggressive lipid-lowering therapy will translate into fewer events in the long-term.

The Cardiac Center continued follow-up of a large number of patients in the NHLBI sponsored HAT – Home AED Study. Patients with a past anterior MI, not eligible for AICD implantation, were randomized to standard CPR training via videotape and reinforcement, or provision of a home automatic external defibrillator with training in its use as well as CPR. Coordinators worked intensely with these patients and their spouses to familiarize these couples with whatever method they were assigned, promoting confidence in their ability to intervene if faced with sudden cardiac death.

Addressing the challenge of anticoagulation in patients with chronic atrial fibrillation, Clinical Research at the Cardiac Center enrolled and continues to follow multiple patients in the RELY Study. These patients are assigned to one of two doses of dabigatran, an investigational anti-thrombin agent, or standard coumadin. An investigational new class of drug, a vascular protectant, was studied in the FOCUS Study, a follow-up of the ARISE Study. This study of prevention of events in patients with a history of coronary artery disease was terminated after approximately 9 months due to findings that the initial ARISE Study did not reveal a significant reduction in events, but it did show a possible future indication in the prevention or treatment of diabetes.

The Cardiac Center also participated in an outpatient study of lipid control involving an investigational fenofibric acid. A blood pressure study, COSMOS, was initiated in 2007. EVENT and ARRIVE-2 registries were continued in the follow-up of patients with coronary artery stents. We also entered into the collection of data and further knowledge of carotid artery stents by our participation in the SAPPHIRE Registry.

Beyond these varied inpatient and outpatient clinical trials, The Cardiac Center conducts multiple investigator-initiated studies. Over the past year Clinical Research has participated in studies of drugs that may or may not go on to FDA approval, but in any case will shed more light on the prevention and treatment of cardiac disease. Many lab tests have been done to test for drug safety and to help develop markers of cardiac disease. We have followed many patients closely, attempting to educate and empower them to be as healthy as they can be, as a benefit of their participation in a clinical trial.

**Funded Programs in Minority Cardiovascular Risk Prevention**

The Cardiac Center recognized a need to provide educational and preventive programs to the local community and responded with multiple initiatives. These programs enhance Creighton’s visibility in the Omaha community and establish the University as a partner willing to share its resources to improve health care in the minority community.

**Creighton Community Health Center**

The Cardiac Center of Creighton University Medical Center and Creighton University established the Creighton Community Health Center (CCHC) in an effort to enhance educational opportunities for
Creighton students, improve health care services to area underserved populations and advance the science directed toward reducing, eliminating, or preventing health disparities in minority and underserved populations.

The Center provides outpatient basic medical care encompassing curative and preventative medicine, health promotion and maintenance, education, nutrition and continuing care evaluation and management for men, women and children.

Our continued goals for the Community Health Center include:

- Accelerating the discovery of new interventions and expanding the utilization/adaptation of existing evidenced-based interventions for preventing, reducing or eliminating health disparities;
- Increasing the number of researchers and professionals from minority and medically underserved populations trained in biomedical and behavioral research;
- Increasing the quality of the training provided to biomedical and behavioral researchers and professionals conducting research on health disparities; and
- Increasing public trust and the dissemination and utilization of scientific and health information relevant to health disparity populations.

The clinic continues to focus on prevention and care of patients with chronic conditions and has experienced tremendous growth during fiscal year 2006/2007. Expanding provider hours has resulted in a dramatic increase in patient clinic visits. This increase has also encouraged greater patient numbers for several outreach activities such as blood pressure; cholesterol and glucose screenings; Lunch ‘n’ Learn presentations; cooking schools; shopping tours; an on-going exercise program; and HIV/STD testing. CCHC continues to explore ways to assist other Creighton clinics while serving the community.

**Black Education and Treatment of Hypertension (BEAT HTN)**

Hypertension is a key contributor to cardiovascular, renal, and all-cause morbidity and mortality, with an incidence that is disproportionately high in African Americans, contributing to 30% of all African American deaths. Black Education and Treatment of Hypertension (BEAT HTN) study was designed to increase the proportion of hypertensive African Americans meeting the Seventh Joint National Commission on the Control of Hypertension (JNC VII) guidelines for hypertension in an effort to eliminate this disparity and increase quality and years of life. Participants are provided FDA-approved antihypertensive medication free of charge. Subjects work with a nurse practitioner/physician team, health educator, dietitian, pharmacist, social worker, and Cardiac Center-trained lay health educators to encourage medication compliance and lifestyle modification. Our hypothesis is that the patients receiving consistent lifestyle intervention with medical care will have better blood pressure control than those receiving only standard of care. Currently, 73 individuals (21 male, 52 female) are enrolled in the study, with a goal enrollment of 300. The inclusion criteria is African Americans 25-80 years of age with uncontrolled hypertension (>140/90, or >130/80 for diabetics and those with kidney disease).

**Communities of Excellence in Tobacco Control**

The Communities of Excellence Tobacco grants are part of local efforts to prevent tobacco use within Douglas and Sarpy counties. This project is supported by grant dollars from Tobacco Free Nebraska, a division within Nebraska Health and Human Services System. The goals of the grants are to reduce exposure to secondhand smoke in the workplace, home, and house of worship, and to prevent youth initiation of tobacco use through education and product placement policies. The emphasis for the past year has been building capacity with the Latino community within Douglas and Sarpy counties. We have sponsored a Smoke-Free Cinco De Mayo, Smoke-Free Youth Soccer League, and participated actively with the Latino Police Officers Association.
Latinas, Tabaco, y Cáncer

The Latinas, Tabaco, y Cáncer project, funded by the Nebraska Comprehensive Cancer Control Program, is in its second year. The goal has been to engage the Latino community in tobacco treatment through the services of a promotora, a Creighton University-trained community health advocate who leads tobacco treatment classes, support groups, and individual counseling sessions in Spanish for community members. This continues to be the only Spanish language tobacco treatment service in the Omaha metro area. The promotora counsels on average six individuals per month.

Tobacco-Free Creighton

On July 1, 2008, Creighton University will become a tobacco-free campus. Creighton will be the first university in Nebraska to become tobacco-free, and will be the first Jesuit university in the nation to take this step. The Rev. John P. Schlegel, S.J, President, at his request appointed Dr. Syed Mohiuddin, Chair of Internal Medicine in the School of Medicine, to chair a strategy workgroup to address the myriad issues associated with the implementation of a tobacco-free policy at Creighton University. Dr. Mohiuddin oversaw the implementation of a successful tobacco-free pilot at The Cardiac Center. Working with Dr. Mohiuddin on the workgroups are representatives from multiple areas, including Human Resources, the Wellness Council, Creighton Student Union, Facilities Management and the Staff Advisory Council. Our tobacco treatment specialist serves as a member of the Executive Committee and technical advisor to the seven working groups.

School of Nursing

School of Nursing faculty members participate in varied areas of research that address varied topics of interest in health care and in the scholarship of teaching. Faculty members also assist students in mastering competencies related to evidence-based practice to improve nursing care. A qualitative, grounded theory study was recently completed that resulted in a conceptual framework of the Partnering Process with high risk, pregnant adolescents to improve their parenting and health related outcomes. This study expanded on the existing Nurse Home Visitation Model to include the social process of nurses building an effective relationship with these vulnerable and difficult to engage patients. Faculty: Eleanor Howell, PhD; Mary Kunes-Connell, PhD; Joan Norris, PhD; and MarySue. Wyedeven, MSN.

Several faculty members have recently completed doctoral dissertations. These included:

- Dying to be rescued: American hospitals, clinicians and death (Helen Chapple);
- The experience of infant death for lower income African American mothers (Merry Foyt);
- Treatment decision making in older adults with cancer (Maribeth Hercinger);
- Effects of involuntary institutional relocation on physical, psychological and cognitive functioning in older individuals (Ann Laughlin);
- Risk factors for overweight at five years of age: Birth characteristics, rate of weight gain, mode of infant feeding and adiposity rebound (Catherine O'Keefe);
- Spirituality and the experience of being a member of a family with hereditary breast and ovarian cancer (Susan Tinley); and
- Impact of the Eden Alternative on quality of life in nursing home residents (Mary Parsons).
Faculty members currently working on doctoral dissertations include the following:

- Post operative symptom clusters in coronary artery bypass graft patients (Amy Abbott);
- The educational needs of impoverished Latino women with drug and alcohol problems (Jo Kostka);
- From bedside to classroom: The process of development from clinicians to educators (Anne Schoening); and
- Perceptions of parents regarding BMI and overweight in school age children (Misty Schwartz).

Five research teams are involved in ongoing projects in the school. One team is engaged in scholarship of teaching research to develop and test high fidelity simulation strategies and the methods for assessing student performance in simulated clinical situations. They are in the process of ongoing studies with initial projects being disseminated through presentations and publications in review.

**Faculty:** Mary Parsons, PhD, Maribeth Hercinger, PhD, Julie Manz, MS, Kimberly Hawkins, MS, and Martha Todd, MS, FNP.

A team of qualitative researchers is describing hereditary breast and ovarian cancer families’ adaptations to genetic risk. They hope to identify influences and patterns of communication and decision making in an intergenerational family context.

**Faculty:** Joan Norris, PhD, Susan Tinley, PhD, Stephanie Stockard-Spelic, MSN, and Carrie Snyder, MS.

Given national concern about an epidemic of obesity and the increasing prevalence of Type Two Diabetes, a team of faculty and students is conducting a program of health promotion research in multiple local schools. School-based health screenings and interventions are designed to educate students and their families on the nature and importance of healthy diets and activity levels.

**Faculty:** Joan Lappe, PhD, Ann Laughlin, PhD, Misty Schwartz, MSN, Barb Synowiecki, MSN, Amy Yager, MSN, and Meghan Potthoff, MSN.

Based on similar concerns about obesity in adults, Cindy Costanzo is studying behavioral counseling as an intervention to increase physical activity in sedentary African American and Hispanic American Women and a multidisciplinary group of Schools of Nursing and Pharmacy and Allied Health faculty are in the process of planning a Diabetes prevention project for Native American youth in Nebraska.

Parent-child nurses are currently planning two pilot studies:

- One will test use of online and neonatal nurse practitioner support to reduce stress for women who are hospitalized during their pregnancies due to risk of preterm labor.
  
  **Faculty:** Lorraine Rubarth, PhD, Anne Schoening, MSN, Joyce Tow, MSN, Amy Cosimano, MSN, and Holly Sandhurst, MSN.

- The other is a descriptive study of neonatal feeding practices and their relationship to weight at three years of age.
  
  **Faculty:** Catherine O’Keefe, DNP, and Lorraine Rubarth, PhD.
School of Pharmacy and Health Professions

The faculty of the School of Pharmacy and Health Professions (SPAHP) guides the development of excellence in the clinical professions of occupational therapy, pharmacy, and physical therapy. The school also offers courses of study that lead to a certificate in Health Services Administration and grants the degree in Emergency Medical Services. The School consists of four academic departments: Occupational Therapy, Pharmacy Practice, Pharmacy Sciences and Physical Therapy. These departments work collaboratively and collectively to achieve excellence in these professional program offerings.

Office of Research

The scope of research is broad – with active research programs and projects in the biomedical sciences, health services research, clinical research, and educational research areas of emphasis. Interdisciplinary and inter-professional approaches characterize the school’s research models and culture throughout the scope of research. The faculty is composed of both basic scientists and clinician scientists who provide a framework for basic, translational and applied research opportunities. Faculty engage in national, regional, state-wide and local research initiatives – with several holding appointments on federal grant review panels and providing consultation and service for agencies within the United States Department of Health and Human Services National Institutes of Health (NIH), Health Resources Services Administration (HRSA), Agency for Healthcare Research and Quality (AHRQ), Indian Health Service (IHS), as well as the National Science Foundation (NSF) and the Department of Defense (DoD). The school’s Office of Research was established in mid-2004 to provide faculty support and services to assist faculty with quality and productivity in research efforts. The office provides faculty, staff, and students opportunities for the utilization of up-to-date technologies in its computer laboratory and conference areas. These technologies allow researchers to come together to share ideas and more rapidly produce proposals.

The office continues efforts to facilitate team building interprofessional collaborations with faculty in the School of Medicine who are active in the COBRE program and strategic efforts have been made to engage the Nebraska-Western Iowa Veterans Affairs Medical Center in research opportunities with our faculty. A focused effort has been made with Department of Physical Therapy faculty to develop the Creighton University Rehabilitation Science (CURES) laboratory as a certified site for the VA. Individualized efforts have also been made with newer faculty members who have expressed great interest and promise in pursuing research. The Office of Research has also provided core leadership to the development of the following programs: SPAHP Internal Faculty Grant Program, the SPAHP Creighton Health Services Research Program (CHRP), and the SPAHP Research Student Program.

Research Funding and Cross Campus Collaborations

Both internal and external funding has been received by the faculty in the broad research categories of biomedical sciences, health services research, clinical research, and educational research. For the period July 2006 through June 2007, faculty obtained 13 externally funded research and training grant awards and three internal grant awards through the Creighton University Health Futures Foundation. The total award amount for this period was $624,727. SPAHP faculty served as principal investigators and worked with co-investigators from other schools or collaborated with principal investigators external to Creighton University on two funded projects; and one project involved a SPAHP faculty member who served as a co-investigator on a project funded through the School of Medicine.

SPAHP Faculty Research Grant Development Program

Beginning in January, 2005, the School has provided internal seed money through a grant program supported by the Health Futures Foundation entitled the SPAHP Faculty Research Grant Development Program to facilitate faculty research efforts for high impact, high value and potentially externally fundable works. This program was conceptualized as a quality building effort using the peer and administrative review process to enhance faculty competitiveness and productivity in research. During the ensuing
three-year period, 24 faculty members received $289,000 in internal funding. The SPAHP Office of Research provided the complementary education and project management expertise to launch this program and monitor its ongoing progress.

This program has demonstrated success in the development of faculty members as scholars and researchers. Since the program launch, over 125 publications and presentations have been completed by participating faculty and the result of the scholarly work and dissemination of research findings from award recipients has been positive. Projects resulting from investigators’ funded awards included: linkage on research projects with VAMC and Rutgers University Biomedical Engineering department; development of a website focusing on occupational therapy practice in rural Nebraska; faculty collaboration with the Nebraska AgraAbility project; and numerous radio, television interviews, and newspaper articles.

**Student Research**

- **Graduate Student Research.** The school has both undergraduate and graduate students actively engaged and mentored by faculty in research. At present, nine students are enrolled in the Master of Science Program in Pharmaceutical Sciences. A research thesis is required for the partial fulfillment of the requirements of the program. The research areas include pharmaceutics, immunology, pharmacology, anatomy, toxicology and pharmacokinetics. The specific areas of interest include drug delivery systems, regulation of T helper cells, pharmacology of the eye and TCDD toxicity. To date, 14 students have graduated from the program. Doctor of Philosophy (Ph.D.) candidates in a joint program with the School of Medicine participated in faculty-mentored projects during this past year.

- **Clinical Doctorate Student Research.** Research project completion is a required activity within the Doctor of Occupational Therapy and Doctor of Physical Therapy programs, and encouraged in the Doctor of Pharmacy Program. The faculty provides mentorship and guidance in skills development for all forms of research, with common areas of emphasis being service-learning, reflective practice, and applied outcomes research.

- **Student Research Program.** Students enrolled in the Occupational Therapy, Pharmacy and Physical Therapy professional degree programs were given the opportunity to competitively apply for either a summer or academic year faculty-mentored research experience. This experience was planned with a faculty member who provided oversight and guidance to the students’ research skills development by engaging the student in components of active, on-going research projects. In 2006-2007, 24 students were awarded $3,000 stipends to participate in either the summer or academic year programs. Eighteen students from the summer and academic year research program, along with four graduate students, one pharmacy resident, and seventeen students from the Physical Therapy and Pharmacy Science programs, participated in the university-wide St. Albert’s Day student research forum which provided them the opportunity to present their research findings to a campus-wide audience.

**Creighton University Health Services Research Program (CHRP)**

The Creighton Health Services Research Program (CHRP) is a research and development program designed to promote and sustain health services research. The program brings researchers and scholars together for inter-professional collaboration and faculty development. Faculty examine issues related to patient safety and quality in health care, including new and emerging technological influences on safety, the effects of health care financing, relationship of costs of pharmaceuticals and treatments, social and behavioral influences on care, access and disparities issues, and models of care delivery.

The program was launched within the School of Pharmacy and Health Professions and funded through a three-year Creighton Health Futures Foundation grant. Since its inception, it has grown to include university-wide representation. Year 1 focused on establishing key technology infrastructure, Year 2 on establishing and expanding external community, private and government relationships, and Year 3
focused on an intensive research development process for faculty through both training and the conduct of research.

The expertise provided by the CHRP research faculty enhanced the innovation, significance, rigor, and ultimate successful conduct of the research projects conceptualized by the partners and collaborators. CHRP is designed to promote collaboration of these two groups to elevate the quality of the research and increase the likelihood of successful, competitive grants being awarded.

To date, six faculty members have completed short course training in “Human Factors Engineering and Patient Safety” at the University of Wisconsin System Engineering for Patient Safety Program. During 2006-2007, faculty members also completed courses on “Research and Design Biostatistics,” “Foundations of Patient Safety,” “Psychology of Learning,” “Statistics in Application,” and “Foundations of Educational Research.” During the 2006-2007 academic year, the CHRP co-sponsored a two day university-wide grant writing workshop conducted by nationally renowned grant-writing consultants Miner and Associates entitled Proposal Planning and Writing and Judging Grant Proposal as well as a School of Medicine Distinguished Lecture Series presentation by Eduardo Salas, Ph.D., Trustee Chair and Professor of Psychology, University of Central Florida, entitled: Promoting Teamwork When the Lives of Others Depend on It – What Does it Take, and a visiting professor lecture for the Department of Physical Therapy entitled: Musculoskeletal Plasticity After Spinal Cord Injury: Implications for Early Intervention Management presented by Richard Shields, PT, Ph.D., Professor and Director, Program in Physical Therapy and Rehabilitation Sciences, University of Iowa.

CHRP was formed to provide the infrastructure and resources necessary to identify external funding sources, to prepare and submit grant applications, and to support project management through staff and technology support to achieve future growth. There is a data entry and analysis center with four workstations and installed software applications for statistical and qualitative data analysis and the repository of database and research tools is continually updated and expanded. (See www.chrp.creighton.edu for a complete listing). The CHRP computer lab is equipped with a variety of software analytic programs to assist end users in data management. The programs include: Microsoft Office, SPSS, SPSS Text Analysis, SAS, and ArcGIS. Additional programs are evaluated and installed based on special needs projects. The laboratory is made available and accessible to all students, faculty and staff in the school. Assistance is available on request.

As the program has matured, faculty participation has grown from 11 to 27 and collaborative networks with the Schools of Nursing, Dentistry, Medicine, and the Colleges of Arts and Sciences, and Business Administration have been developed. This growth is attributed to aggressive networking with individuals who have the expertise and interests consistent with the health services research mission of this program and who expect to have mutually beneficial success from involvement in this initiative. Since the program has launched, over 100 publications, 170 presentations, and 11 media releases addressing subjects such as patient safety, health information technology, and health interoperability and privacy issues have been presented.

CHRP has been successful in obtaining funding through infrastructure building competitive grants. A Building Research Infrastructure Capacity (BRIC) Proposal for $500,000 was awarded through the Agency for Healthcare Research and Quality (RFA H5-05-010) – one of only a few in the country chosen from 70 competing applications. This award has provided funds for the continuation and expansion of existing programs and provided opportunities for new research initiatives. Our success in receiving this award is attributed to the clear plan for advancement based upon our gap analysis of resource requirements to achieve sustainability, and the commitment made by the university toward sustainability. Through the implementation and conducting of this award, CHRP has been successful in developing an interdisciplinary research team and expanding health services research partnerships in Nebraska and surrounding states. Since its inception, CHRP has successfully secured $810,884 in sponsorship for health services research with a funding rate of 88%
Office of Interprofessional Scholarship, Service and Education (OISSE)

The Office of Interprofessional Scholarship, Service and Education (OISSE) was formed in 2001 and is responsible for planning, organizing, and implementing educational, service, and scholarly projects related to interprofessional community engagement in the School of Pharmacy and Health Professions.

The Office of Interprofessional Scholarship, Service and Education (OISSE) maintains a long-standing partnership with the Omaha and Winnebago Tribes addressing health disparities and providing students from across the health sciences with rural, cross-cultural, interprofessional learning experiences. Through the partnership with the Winnebago Tribe of Nebraska, a five-year clinical contract (2005-2010) was awarded to the School by the U.S. Department of Health and Human Services Indian Health Service. This provides $182,084 annually to sustain physical and occupational therapy services at the Indian Health Service facility in Winnebago, Nebraska.

Since 2005, OISSE’s community engagement model has expanded to include local opportunities in the Omaha metropolitan area, as well as international initiatives in the Dominican Republic, Ukraine and China. The OISSE infrastructure recognizes Faculty Associates and Affiliates across the health science programs and various community leaders who are interested in interprofessional community engagement. Currently, 28 Creighton faculty members from physical therapy, occupational therapy, pharmacy, nursing, medicine and dentistry collaborate across three workgroups based on faculty interest areas: Professional Formation, Health Promotion, and International Outreach. Through the workgroups, faculty collaboratively determine initiatives with community partners to meet authentic community needs, provide student learning opportunities, and disseminate initiatives via scholarly presentations and publications and grant acquisition. OISSE has a demonstrated history of scholarly collaboration and maintains relationships with strong community partners. From January to December, 2007, OISSE faculty collaborations have resulted in seven funded grants totaling $665,383, one published journal article, one book chapter, and one textbook in which OISSE faculty associates contributed 12 chapters. In addition, 14 professional presentations were delivered across international or national venues.

Department of Occupational Therapy

The Department of Occupational Therapy consists of two administrative assistants, approximately 100 on-campus and 100 distance students, and 16 faculty, including 15 faculty with doctoral degrees and one clinical faculty holding a bachelor’s degree. Faculty engage in a variety of teaching, service and scholarly activities each year. Faculty are engaged in the following areas of scholarship productivity:

- Scholarship of Practice: Increasing occupational therapy services in rural areas, interprofessional geriatric care, error reporting and patient safety, etc.;
- Scholarship of Teaching and Learning: Outcomes of service learning activities, benefits of videotaping patient care sessions as a tool for student learning during Level II FW experiences, etc.; and
- Scholarship of Engagement: health disparities, migrant workers, occupational patterns and disability, interprofessional care of the Native Americans through participation in OISSE grants and contracts, occupational therapy service delivery to address health disparities.

Extramural funding sources for current research projects include HRSA, National Patient Safety Foundation, Consejo Nacional de Discapacidad, Harvard University Center of Developmental Psychology, United Nations High Commission on Refugees, Amnesty International, and Midwest Consortium for Service Learning in Higher Education. Intramural funding was provided through faculty grants from the SPAHP.

Annual professional development plans for each faculty member includes at least one goal targeted at scholarship development and productivity. Faculty continue to garner support from institutional infrastructures such as CHRP and OISSE.
Department of Pharmacy Practice

The Department of Pharmacy Practice is primarily responsible for the clinical education of students enrolled in the Doctor of Pharmacy program. The large majority of the 43 faculty are clinician scientists whose research efforts are integrated within their clinical practice sites. Faculty maintain practices at Creighton University Medical Center, hospitals in the Alegent system, Children’s Hospital, Methodist Hospital, Veterans Administration Medical Centers in Omaha and Lincoln, and Bryan LGH Medical Center in Lincoln. In addition, the department maintains a joint relationship with Walgreen’s in Omaha for clinical model development in the community. The department’s clinical faculty has established collaborative relationships with faculty in the Department of Medicine for a number of general and specialty clinics, the Department of Family Practice, and the departments of Neurology and Psychiatry. The Department has established and maintained five residency positions in pharmacy practice who complete their training throughout the CUMC, Bergan Mercy Medical Center, and Immanuel Medical Center. One fellow in the area of cardiology completes training within the department. From July 2006 to June 2007, the faculty produced 125 peer-reviewed publications as primary or co-author, and provided 151 national, regional or state presentations.

The Center for Drug Information & Evidence-Based Practice (CDI-EBP) supports four distinct Drug Information services, including practices at the Health Sciences Library, Children’s Hospital, Immanuel Medical Center and Creighton University Medical Center. Each of these sites provides institutional support, as well as serving as a training location for rotation students. Five full-time Drug Information Specialist faculties and one resident are responsible for supporting the CDI-EBP. Additionally, collaborative efforts to provide evidence-based medicine education to medical residents at CUMC are underway. The CDI-EBP has recently entered into a contract with an industry publishing partner for medicine, nursing, pharmacy and allied health fields, to provide content for a new information product being developed.

Research and scholarship emphases are in educational assessment and outcomes research, clinical outcomes research, pharmacogenomics, nanoparticles containing three antiretroviral agents, infectious diseases, clinical research in chronic disease management of areas such as diabetes, dyslipidemia, and public health research related to immunizations and disease prevention. Very recent progress in the area of nanoparticle formation and production has been made that holds promise for the delivery of HIV drugs. This work is possible through collaborations between scientists in pharmacy practice, pharmaceutical sciences, and faculty at the University of Nebraska Medical Center. Research is active in the area of single nucleotide polymorphisms (SNPs) for warfarin through pharmacogenomics. Clinical outcomes research in the areas of implementing practice guidelines to improve drug therapy management and smoking cessation programs at the time of hospital discharge are examples of some active research within the clinical scientists in the department.

Department of Pharmacy Sciences

The Department of Pharmacy Sciences has 25 faculty who are either Ph.D. or Pharm.D., Ph.D. trained with backgrounds in pharmaceutics, pharmacology and toxicology, medicinal chemistry, health services research and administration, educational, behavioral and social and administrative sciences in pharmacy. The department is home to the M.S. in Pharmaceutical Sciences.

Faculty in the basic sciences have engaged in cross collaborations within Creighton University and at other universities. Drug and dosage pre-formulation, characterization of the solid-state properties of drugs and delivery systems, drug delivery system design using nanotechnology, pharmaceutical analysis, and nutraceuticals are funded research areas within the department. Controlled deliveries of therapeutic protein and peptides in their conformational stability and biological activity form using smart polymer based delivery system is an active area of work. Another area of focus is transdermal drug delivery using chemical enhancers as well as physical enhancers like iontophoresis, electrooration, sonophoresis while preserving skin reversibility, as well as percutaneous absorption of chemicals (toxicants, pollutants) and associated dermatotoxicity and skin irritation.
Research related to diseases and conditions under study include cancers, asthma, glaucoma, infectious disease, addictions such as cigarette smoking, and molecular mechanism of normal embryo and fetal development. Research focuses on the role of TH-1/TH-2 cytokine imbalance to the etiology of asthma and allergic disease. These investigations will provide further information about treatment approaches that may be effective in treating the disease. Faculty are investigating the effect of cigarette smoke extract (CSE) on the conformational stability and biological activity of a model protein lysozyme, so that they may understand the mechanism of genesis of the diseases caused by smoking. Ocular diseases may have new treatment opportunities through the research of faculty who are studying the role of isoprostanes on neurotransmitters in ocular tissues (NIH funded research area). Research is active in the synthesis, in vitro and in vivo biological evaluation of bicyclic octahydroisoquinolines as β₂ selective adrenoceptor agonists and of the synthesis and biological evaluation of bicyclic hexahydroaporphines as an intraocular pressure lowering and neuroprotective agent. Another research focus is the utilization of computational methodology to identify lead biologically active compounds and employing both solid and solution phase chemistry to synthesize them. Other research focuses on the control and regulation of gene expression during embryonic development. The role of Hox genes in the development of the craniofacial region of the embryo is being researched to better understand how various embryonic structures develop, how the coordination of gene activities in both time and space is critical, and how disruption of these events can lead to birth defects. These and other accomplishments have been achieved through collaboration and work with the state EPSCoR (Experimental Program to Stimulate Competitive Research) program, the University of Nebraska, and various departments (Chemistry, Biomedical Sciences, and others) within Creighton University.

Faculty with emphases in the behavioral, and social and administrative sciences conduct much of their work through the support and collaborative infrastructure of the Creighton Health Services Research Program (CHRP). Active, funded research is occurring with a core group of faculty in the study of pharmacy benefits management policies and practices, pharmacy practice models – such as mail order services and therapeutic drug monitoring services, and drug therapy adherence and compliance. Other funded research is focused on organizational theory, workforce and culture issues, and teamwork skills related to patient safety. Some faculty have focused a longitudinal effort in educational research related to pharmacy and professional development. Work is also being conducted in the area of educational technologies and student learning.

Department of Physical Therapy

The Department of Physical Therapy is composed of 19 faculty, one resident, 194 students (151 entry level program; 43 transitional program) and two staff. Thirteen faculty are “core” as defined by the American Physical Therapy Association program accreditation standards. Eight core faculty have Teaching-Research classification appointments. One of the core faculty serves as Dean of the Graduate School. Five core faculty have Clinician-Educator classification appointments. Of the six faculty not designated as core, two associated faculty have Clinician-Educator classification appointments and three faculty have Contributed Service appointments, primarily in selected teaching or clinical areas. One of these appointments supports faculty scholarship at Madonna Rehabilitation Hospital in Lincoln. One faculty member has a Visiting appointment.

The core faculty have identified four areas of emphasis for scholarship:

- Community Engagement;
- Health Services Research;
- Teaching/Learning; and
- Rehabilitation Sciences with an emphasis on movement disorders.
The Department strategic plan states that all core and associated faculty not supported by extramural funding will participate in one of the scholarship emphasis areas. The Community Engagement area is supported by the Office of Interprofessional Scholarship, Service and Education. Work in this area has centered on activities supported by HRSA training grants in Native American health and student immersion in domestic and international underserved environments. Faculty research has also been aimed at addressing childhood obesity in south Omaha, a diverse, urban community. The Health Services research area is supported by the Creighton Health Services Research Program and has focused on patient safety, building a health services research infrastructure and professional discipline/ malpractice. The Teaching/ Learning research area is supported by the Office of Faculty Development and Assessment and is focused on the scholarship of teaching. Rehabilitation science in the Biodynamics Laboratory is a department initiative with a focus on investigating the effects of therapeutic interventions on movement dysfunction with a primary focus on the adult population. Active areas of study include the biomechanical impairments, functional limitations and therapeutic strategies associated with neurologic disorders (such as those secondary to Parkinson’s Disease, diabetes and peripheral vascular disease). Rehabilitation research is being conducted in collaboration with Creighton University Medical Center’s Department of Neurology and the Department of Pediatrics. A collaborative research agreement exists with the Omaha Veterans Administration Medical Center.

During 2006, Department faculty produced 49 presentations, three published papers, and they participated in 19 grants. Eight faculty serve as manuscript reviewers for 15 professional journals, two faculty serve on the Editorial Boards of four journals and two faculty serve on grant review panels. One faculty line remains open in the department and a process is underway to search for a person to strengthen the rehabilitation science, community engagement or health services research foci of the department.
Publications

College of Arts and Sciences


Faculty Bibliography Page 37 2006-2007


### College of Business Administration


School of Dentistry


School of Law


Haddad, A. (2007). Stereotactic Biopsy [Poem]. In M. Hurst, & S. DasGupta (Eds.), *Stories of Illness and Healing: Women Writing Their Bodies* (pp. 74-77) Kent State University Press.

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School of Nursing


School of Pharmacy and Health Professions


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Other Units

Werner Institute for Negotiation and Dispute Resolution


University College

Grants

College of Arts and Sciences

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School of Dentistry


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School of Law


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School of Medicine


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Schuller, D. [Investigator]. Educational grant for city wide pulmonary physicians meeting. GlaxoSmithKline Company – $3,000.00 – [10 May 2007].


Silberstein, P. T. [Investigator]. Educational grant for oncology journal club. Genentech, Inc. – $6,500.00 – [1 May 2003].

Silberstein, P. T. [Investigator]. Educational grant for patient education, staff and physician development (including oncology journal club). Genentech, Inc. – $6,500.00 – [1 May 2003].
Silberstein, P. T. [Investigator]. Risk and outcomes of mucositis in subjects being treated for breast, colorectal, head and neck, non-small cell lung or ovarian cancers. Amgen, Inc. – $2,500.00 – [19 April 2006].

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Snyder, J. [Investigator]. Open-label prospective cohort study of antidepressants in children and adolescents with anxiety disorders depressive disorders eating disorders or obsessive-compulsive disorder. National Institutes of Health – $1,000.00 – [1 July 2006 - 1 October 2007].

Stokes, J. [Investigator]. ACAI clinical fellowship stipend in allergy and immunology. American College of Allergy Asthma & Immunology – $50,000.00 – [1 July 2006 - 30 June 2007].

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Sudan, R. [Investigator]. Bariatric fellowship grant agreement. Ethicon Endo-Surgery, Inc. – $68,836.00 – [1 July 2006 - 30 June 2007].


Swanson, P. [Investigator]. Assembly and function of v(d)j initiation complexes. American Cancer Society – $90,000.00 – [1 July 2006 - 31 December 2007].


Thomas, P., Bajenova, O., & Forse, R. A. [Investigators]. HFF SoM research development: the cea receptor structure function and metastasis/endotoxin processing in kupffer cells. Health Future Foundation – $228,176.00 – [1 July 2006 - 30 June 2007].


Townley, R. G. [Investigator]. Effect of fluticasone on airway hyperresponsiveness and diminished bronchodilatation and bronchoprotection induced by IL-13 or allergen. GlaxoSmithKline Company – $9,991.00 – [15 January 2005].


Townley, R. G. [Investigator]. Effect of xolair on inhibiting leukotriene and cytokine (IL-4 and IL-13) release from blood basophils. Novartis Pharmaceuticals Corporation – $30,000.00 – [1 June 2006].


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Tu, Y. [Investigator]. P-rex1 promotes prostate cancer metastasis. State of NE-LB595 – $80,000.00 – [1 July 2006 - 30 June 2007].


Watson, P. [Investigator]. Windber marker study. Windber Research Institute – $4,688.00 – [1 July 2003].


School of Nursing

Costanzo, C. [Investigator]. HFF faculty development: behavioral counseling intervention to increase physical activity in sedentary African American and Hispanic American women. Health Future Foundation – $19,970.00 – [1 July 2006 - 30 June 2008].


Heaney, R. P., & Lappe, J. M. [Investigators]. Pilot study to investigate the effect of bonistein bone blend containing genistein polyunsaturated fatty acids (n-3 pufas) and vitamins K1 and D3 on bone mineral density (bmd) bone mineral content(bmc) and biomarkers of bone health in early postmenopausal women. DSM Nutritional Products AG – $204,570.30 – [1 August 2006 - 31 July 2009].


Sandhurst, H. [Investigator]. The positive pregnancy project. March of Dimes Foundation – $8,000.00 – [1 January 2007 - 31 December 2007].

School of Pharmacy and Health Professions


Chatterjee, A., & Shara, M. [Investigators]. Safety and efficacy of two ingredients chromium polynicotinate (crn) and (-) hydroxycitric acid (hca) found in popular weight-loss products. InterHealth Nutritional, Inc. – $2,320.00 – [1 December 2004 - 31 December 2006].

Chiou, R., Elsasser, G., Frey, D., Goodman, M., & Levy, J. [Investigators]. Randomized double-blind parallel group study to investigate the efficacy and safety of treatment with dutasteride (0.5mg) and
tamsulosin (0.4mg) administered once daily for 4 years alone and in combination on the improvement of symptoms and clinical outcome in men with moderate to severe symptoms of benign prostatic hyperplasia. GlaxoSmithKline Company – $4,744.60 – [31 January 2004].


Galt, K. A. [Investigator]. Enhancing clinical practices through the adoption of health information technology. Physicians’ Foundation for Health Systems Excellence – $65,000.00 – [1 November 2006 - 31 October 2008].


Opere, C. A. [Investigator]. Alleviation of hyperemia in guinea pigs. Alcon Laboratories, Inc. – $60,000.00 – [1 July 2006 - 31 December 2007].

Other Creighton Grants


Chadwick, S. [Investigator]. Service-learning to increase the educational outcomes of youth in disadvantaged circumstances. Corporation for National & Community Service – $15,000.00 – [1 January 2007 - 31 December 2007].


Dameron, T. [Investigator]. Creighton university all nations pow wow. Nebraska Arts Council – $2,584.00 – [10 January 2007 - 10 April 2007].


Kosoko-Lasaki, S. [Investigator]. Cultural competency awareness training (ccat). Health and Human Services – $10,000.00 – [1 April 2007 - 31 August 2007].

Salzinger, F. [Investigator]. HFF discretionary: marketing/public relations campaign for research in health sciences. Health Future Foundation – $70,000.00 – [21 March 2006 - 30 June 2007].


Taggart, K. J. [Investigator]. HFF discretionary: grant writing workshop. Health Future Foundation – $2,000.00 – [1 April 2007 - 30 June 2007].

Thelen, B. [Investigator]. Cardoner at Creighton. Lilly Endowment, Inc. – $404,192.00 – [1 December 2002 - 31 December 2007].

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August 2006

Anson, C.  An investigation of jet triggers for the ALICE electromagnetic calorimeter. Master of Science (Physics) – Dr. Michael Cherney (Major Advisor).


Kowal, T. Anti-allergic drug and intracellular signaling mechanisms in human blood eosinophils and airway epithelial cells. Master of Science (Medical Microbiology and Immunology) – Dr. Devendra Agrawal (Major Advisor).

LaPlante, D. Another’s Walden Pond: The transcendental plain of human encounter. Master of Arts (Liberal Studies) – Dr. Richard White (Major Advisor).

Madson, J. Role of ErbB2 in ultraviolet-induced nonmelanoma skin carcinogenesis. Doctor of Philosophy (Biomedical Sciences) – Dr. Laura Hansen (Major Advisor).

Pinkerton, V. Effect of privatization on GDP in the developing countries. Master of Arts (International Relations) – Dr. Edward Fitzsimmons (Major Advisor).

Taylor, C. Design, synthesis and pharmacological characterization of calcitonin gene-related peptide receptor antagonists. Doctor of Philosophy (Pharmacology) – Dr. Peter Abel (Major Advisor).

Zhao, L. Correlation of osteoporosis and obesity. Doctor of Philosophy (Biomedical Sciences) – Dr. Hong-Weng Deng (Major Advisor).

December 2006

Bonnstetter, K. Multiplex PCR assay for detection of USA300 community-associated methicillin-resistant Staphylococcus aureus. Master of Science (Medical Microbiology and Immunology) – Dr. Richard Goering (Major Advisor).

Chaudhari, B. TRAIL and TGF-β1-induced apoptosis of human airway epithelial cells. Master of Science (Biomedical Sciences) – Dr. Devendra Agrawal (Major Advisor).


Kharmate, G.D. Regulation of STAT6 and STAT4 phosphorylation by histamine. Master of Science (Pharmaceutical Sciences) – Dr. Manzoor Khan (Major Advisor).

Ramanathan, A.A. Involvement of CIC-3 in platelet-derived growth factor induced proliferation of human bronchial smooth muscle cells. Master of Science (Biomedical Sciences) – Dr. Devendra Agrawal (Major Advisor).
May 2007

Beaudoin, M. Learning to breathe. Master of Arts (English) – Dr. Brent Spencer (Major Advisor).

Bharadwaj, A. Hyperresponsiveness in bronchial asthma by generation of semi-mature dendritic cells in the lung following Flt3-ligand treatment. Doctor of Philosophy (Medical Microbiology and Immunology) – Dr. Devendra Agrawal (Major Advisor).


Hilleman, A. Under the cool glow. Master of Arts (English) – Dr. Mary Helen Stefaniak (Major Advisor).

Hudson, H. Effect of blood volume manipulations and warm acclimation on cortisol levels in the Antarctic teleost Trematomus bernacchii. Master of Science (Biomedical Sciences) – Dr. David Petzel (Major Advisor).

Hughes, K. Those not among the elect. Master of Arts (English) – Dr. Brent Spencer (Major Advisor).

Martin, J. Mixed electoral systems: Two sides of the same coin, or unique systems? Master of Arts (International Relations) – Dr. Terry Clark (Major Advisor).

Mitra, A. Coronary artery bypass grafting: Why is the saphenous vein prone to intimal hyperplasia? Doctor of Philosophy (Biomedical Sciences) – Dr. Devendra Agrawal (Major Advisor).


Probst-Graham, K. Cirrhosis-induced defects in innate pulmonary defenses against Streptococcus pneumonia. Master of Science (Medical Microbiology and Immunology) – Dr. Martha Gentry-Nielsen (Major Advisor).

Rakesh, K. Attenuation of IGF-1 signaling by SOCS3 in human coronary artery smooth muscle cells. Doctor of Philosophy (Biomedical Sciences) – Dr. Devendra Agrawal (Major Advisor).

Young, A. Tracing meaning: Edwidge Danticat’s *The Farming of Bones* and *Breath, Eyes, Memory*. Master of Arts (English) – Dr. Jennifer Ladino (Major Advisor).*

Zou, Y. Molecular cloning and general characterization of human estrogen receptor-alpha 36 (Era36) gene promoter. Master of Science (Medical Microbiology and Immunology) – Dr. Zhao-Yi Wang (Major Advisor).
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