

NORTH DAKOTA STATE UNIVERSITY

pharmacy

THE COLLEGE OF PHARMACY, NURSING, & ALLIED SCIENCES

alumni news

FALL '09



**Making a difference
in the world**
Pg. 7

A leader in research ②

Becoming more diverse ⑧

Pharmacy by the numbers ⑮

Preparing students to become competent, caring, ethical health professionals and citizens.

NDSU pharmacy research ranks 13th nationally

NDSU's pharmacy program is ranked 13th in the United States for the percent of doctoral faculty with National Institutes of Health funding. The American Association of Colleges of Pharmacy determines the ranking based on National Institutes of Health funding for pharmacy schools. NDSU has 42 percent of full-time equivalent doctoral pharmacy faculty receiving funding from the National Institutes of Health. The 2008 ranking is out of 112 schools of pharmacy.

The pharmacy program's percentage of pharmaceutical sciences faculty with competitive National Institutes of Health funding exceeded many other prestigious research universities including the University of Maryland, University of Illinois at Chicago, University of North Carolina at Chapel Hill, The Ohio State

University, University of Minnesota, University of Iowa and the University of Florida.

NDSU ranked 38th nationally for total National Institutes of Health grant dollars awarded per full-time equivalent faculty, just behind the University of Minnesota (34th) and the University of Iowa (35th).

"This is a great acknowledgment of the quality and competitiveness of our research within the Department of Pharmaceutical Sciences and within our college," said Charles Peterson, dean of the College of Pharmacy, Nursing, and Allied Sciences. "We have a great group of faculty, working very hard, and producing great results. They are competing successfully with the best in the nation."

NDSU is one of 112 schools of pharmacy nationally accredited by the Accreditation Council for Pharmacy Education. *Sadie Anderson*

Pharmaceutical Sciences faculty

Bin Guo

Position: assistant professor

Arrival at NDSU: 2003

Research interest: programmed cell death, also known as apoptosis, which is a cell suicide program that occurs in both normal and cancer cells

Process: Guo looks at changes in the expression of genes to find those that are associated with programmed cell death and how they are regulated. This process is very important in the regulation of normal cell processes and is directly involved in the prevention and treatment of cancer.

Most recent research discovery: Researchers from Guo's lab published a paper in the June 2009 issue of *Cancer Prevention Research*, a top journal in the cancer prevention field. The paper explains that diindolylmethane (a molecule found in cabbage and broccoli) can effectively prevent colon cancers in a mouse model when used together with another butyrate (an agent found in fiber-rich food). Guo says the diindolylmethane and butyrate combination can induce significantly more apoptosis in colon cancers than either drug alone.

Best research experience: "My best research experience has occurred at NDSU. My lab has made a number of key discoveries and published papers in top scientific journals including *Cancer Research* and the *Journal of Biological Chemistry*."

Greatest influence: "My doctoral mentor, Dr. Youcef Rustum, at Roswell Park Cancer Institute in Buffalo, N.Y.,



has inspired me to pursue new cancer therapeutics to help patients who have cancer."

Goals: "To understand the mechanisms that regulate cancer cell apoptosis and to develop new and more effective treatment for cancer."

Favorite medicine or prescription drug: "My favorite drug is Prilosec, the proton pump inhibitor for treating heartburn and ulcers, because the drug has a specific target – the proton pump. It is very safe and very effective. I hope some day there can be a drug like that for cancer."

Hobbies away from NDSU: travel, fishing, skiing, swimming and reading

Awards: 2009 Who's Who in America, three research grants from the National Institutes of Health and one grant from Department of Defense

Benedict Law

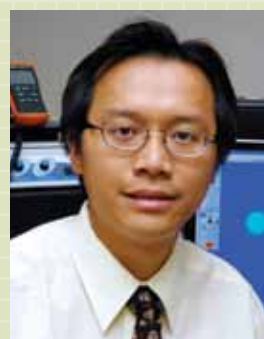
Position: assistant professor

Arrival at NDSU: 2007

Research interest: development of clinical imaging techniques for the diagnostic detection of tumors

Process: Law looks at the design and production of medical imaging agents which target specific markers on the surface of cancer cells. He is interested in finding ways to use the markers for peptide and protein drug delivery systems directly to the sites of the tumor.

Most recent research discovery: Law and researchers in his laboratory discovered a new type of nanomedicine called



nanofiber precursors. "The nanofiber is made from peptide. It has the ability to detect an enzyme (urokinase) that is over expressed at the tumor site. We expect the success of this technology will bring protease imaging closer to the clinic, and also will establish an individualized therapeutic cargo for anti-tumor delivery, based on the protease expressions."

Best research experience: design of the peptide delivery system and optical imaging agent

Greatest influence: Professor Stephen W. Hawking

Goals: "To develop a new type of nanomedicine for individualized patient therapy."

Favorite medicine or prescription drug: "Penicillin. The discovery of penicillin saved a lot of lives and this drug is still very useful. When I was an undergraduate, I was taught that a good pharmacist should know the structure of penicillin."

Hobbies away from NDSU: downhill skiing, fishing and tennis

Sanku Mallik

Position: professor

Arrival at NDSU: 1998

Research interest: design of small molecules for use as potential drugs and also the delivery and targeting of drugs to their sites of action through the use of liposomes

Process: Mallik is a synthetic and medicinal chemist who synthesizes compounds that can inhibit enzymes found in a variety of different disease states including cancer, infectious disease and high blood pressure.

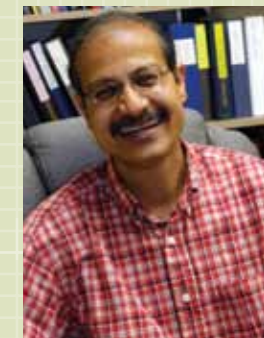
Most recent research discovery: Mallik and researchers in his laboratory are trying to release drugs from lipid-based nanoparticles (liposomes) only in the presence of enzymes involved in cancer cell metastasis. They discovered the nanoparticles will release the drugs in the presence of highly metastatic breast cancer cells.

Best research experience: "I take it for granted that the experiments may not work out in the first attempt. When this happens, I sit with my students and we brainstorm together. When the experiment works, it is very satisfying."

Greatest influence: Anthony J. Pearson, professor and Mallik's doctoral supervisor at Case Western University

Goals: "To reduce the metastasis of breast and prostate cancer cells and to find a way to detect of cancer-associated enzymes without the use of biological antibodies."

Favorite medicine or prescription drug: "Even though we conduct research on disease treatment, I am a strong believer of prevention (this includes healthy eating and regular exercise). I do not have a favorite medicine."



Hobbies away from NDSU: "Nature, quiet places, gardening and spending time with my son and my dog."

Awards: NDSU College of Pharmacy, Nursing, and Allied Sciences 2009 Researcher of the Year and 2008 Teacher of the Year

Stephen O'Rourke

Position: associate professor

Arrival at NDSU: 1990

Research interest: cellular mechanisms that promote the relaxation and constriction of blood vessels

Process: O'Rourke is a cardiovascular pharmacologist who studies the measurement of the movement of ions, such as potassium, in and out of the cell through proteins called ion channels. He and his students use both mouse and human blood vessels for their research.

Most recent research discovery: O'Rourke and researchers in his laboratory have found that sirolimus increases outward KATP current in human coronary arterial smooth muscle cells.

Best research experience: "Watching the successes of former students."

Greatest influence: The National Institutes of Health and the American Heart Association

Goals: "To uncover the mechanisms by which melatonin regulates nitric oxide signaling in coronary arteries."

Favorite medicine or prescription drug: "Nitric Oxide, because of its importance in cardiovascular physiology and pathophysiology."

Hobbies away from NDSU: golf, fishing and reading

Awards: Fellow of the American Heart Association



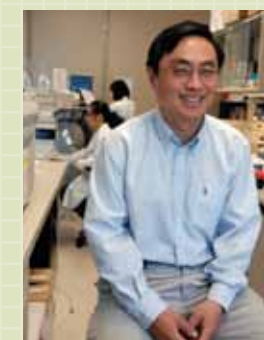
Steven Qian

Position: assistant professor

Arrival at NDSU: 2005

Research interest: free radical oxidative damage within cells and the role of antioxidants in the prevention of this process

Process: Qian uses sophisticated spectrometers known as electron paramagnetic resonance and mass spectrometry to study the formation of free radicals within cells and tissues, which helps determine the sites of oxidation within living systems.



Most recent research discovery: Qian and researchers in his laboratory have recently characterized novel fatty acid metabolites formed from a cyclooxygenase pathway, which provides a new mechanistic insight into lipid peroxidation for cancer biology as well as for other human health diseases biology.

Best research experience: “As a faculty member at NDSU, to continuously conduct research through mentoring and educating graduates and undergraduates in the lab.”

Greatest influence: “My postdoctoral adviser R.P. Mason from the National Institutes of Health/National Institute of Environmental Health Sciences, Research Triangle Park, N.C.; and my graduate adviser G.R. Buettner from the Free Radical and Radiation Biology Program at the University of Iowa.”

Goals: “The goals and objectives of my research are to advance knowledge and techniques in cell and tissue lipid peroxidation to guide research in developing therapeutic strategies to prevent diseases such as cancer.”

Favorite medicine or prescription drug: “Vitamins. As antioxidants, vitamins combat free radical oxidation and prevent oxidative stress.”

Hobbies away from NDSU: fishing and table tennis

Awards: Qian received two grants from the National Institutes of Health for the projects “Endogenous Radicals, Hepatic Lipid Peroxidation and ALD” and “Refinement of LC/ESR/MS for Studying Lipid Free Radicals in Colon Cancer Growth.” He also received the Young Investigator Award from the Free Radical Biology and Medicine (Oxygen) Society.

Jagdish Singh

Position: professor and chair

Arrival at NDSU: 1994

Research interest: pharmaceuticals (drug delivery systems)

Process: Singh looks for ways to improve the delivery methods of how drugs, such as insulin, are introduced to the body.



Most recent research discovery:

Singh and his laboratory coworkers’ most recent invention has resulted in two patent applications to deliver insulin and calcitonin, using smart polymers for treatment of diabetes and osteoporosis, respectively. He also discovered a way to prevent type 1 diabetes by delivering plasmid DNA encoding interleukin-10 using nanotechnology.

Best research experience: “My best research experience is watching and working with doctoral graduate students. They come to my laboratory with little background and

leave the laboratory as experts in drug delivery research. They are highly recruited by pharmaceutical industries.”

Greatest influence: “My dad is the greatest influence who instilled in me confidence and ability to imagine.”

Goals: “My overall objective is to develop novel therapeutic systems to prevent diabetes in children by delivering gene-using nanotechnology, and to treat osteoporosis in aging women and men by delivering calcitonin using smart polymers.”

Favorite medicine or prescription drug: “Transdermal patches, which can deliver the drug non-invasively to treat numerous diseases.”

Hobbies away from NDSU: exercise, international travel

Awards: NDSU College of Pharmacy, Nursing, and Allied Sciences 1999 and 2001 Researcher of the Year; NDSU College of Pharmacy, Nursing, and Allied Sciences 1998, 2000 and 2003 Teacher of the Year; 2002 Fred Waldron Research Award; 1998 and 1999 Mortar Board Preferred Professor; 2004 American Association of Pharmaceutical Scientists Fellow

Chengwen Sun

Position: assistant professor

Arrival at NDSU: 2007

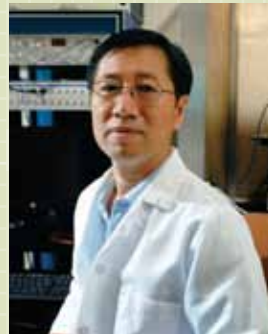
Research interest: hypertension (high blood pressure)

Process: Sun identifies targets for the treatment of cardiovascular diseases. Using this information, he is working to develop pharmaceutical tools that can be used in the clinic for treatment of hypertension and cardiovascular disease.

Most recent research discovery: Sun and researchers in his laboratory found that levels of a novel protein, named apelin, in the brain cardiovascular regulatory area are increased in hypertensive animal models. This suggests that apelin may have potential effects on blood pressure control and it could be a new target for the treatment of cardiovascular diseases.

Best research experience: “The best day in my life is the day when I have a new discovery in an unknown area.”

Greatest influence: “The most influential persons in my research are my previous mentors, Mohan K. Raizada from the University of Florida and Richard J. Roman from the Medical College of Wisconsin. They are all pioneers in cardiovascular research, and we are still collaborating side by side to fight cardiovascular diseases.”



Goals: “We are currently working on three potential targets for the treatment of hypertension and cardiovascular diseases. Our objectives are to identify more therapeutic targets for the treatment of cardiovascular diseases, examine the role of these proteins in the blood pressure regulation and in the pathogenesis of hypertension and develop novel therapeutic tools by targeting those proteins.”

Favorite medicine or prescription drug: “My most favorite medicine would be a drug discovered and designed by me.”

Hobbies away from NDSU: outdoor activities, but most importantly fishing and tennis

Awards: The American Heart Association and the National Institute of Neurological Disorders and Stroke are supporting Sun’s current research.

Erxi Wu

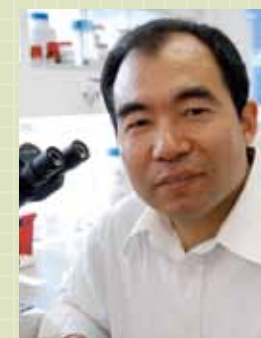
Position: assistant professor

Arrival at NDSU: 2008

Research interest: cancer therapeutics targets, anticancer natural products (traditional Chinese medicine) and drug discovery and blood biomarkers in cancer and other diseases

Process: Researchers in Wu’s laboratory are focused on finding cancer therapeutic targets and their specific treatments. They are interested in early detection diagnostic bio-markers for cancer as well as finding a way for early, cost-effective diagnosis of brain tumors so that appropriate and potentially life-saving treatment can be initiated before the tumors have progressed.

Most recent research discovery: “We have some exciting discoveries in our three areas of research. We have found that platelet-derived growth factor and receptor signaling play an important role in brain tumors such as medulloblastoma. We also have identified some novel potent anticancer



compounds from plants used in traditional Chinese medicine. We have demonstrated that blood with globin mRNA removal could provide a practical platform for a cancer biomarker study using an Illumina Sentrix human-6 v2 array.”

Best research experience: “The most rewarding part of my research experience is the fact that my collaborators and I work very well together and we enjoy the synergy of working to accomplish our common goals. My passion is cancer research. I feel frustrated when results do not always come out as expected. However, I am thrilled when the results are better than expected or the results are unexpected and novel.

Greatest influence: “My mother is my greatest influence. She was instrumental in setting the stage to my success, leading to my obtaining advanced degrees. The values she instilled in me in my early years continue to influence my life. She taught me to help others and work hard. Realizing the great potential higher education has, she encouraged me to obtain a higher education even though she did not have that benefit.”

Goals: “To find the best way to prevent and treat cancers such as brain tumors.”

Favorite medicine or prescription drug: “Amoxicillin. It works every time I take it.”

Hobbies away from NDSU: table tennis, soccer, community service

Awards: Wu is the recipient of the Sino-British Friendship Scheme Scholarship, the Overseas Research Scholarship and the National Library of Medicine Fellowship for bioinformatics training, Sino-American Pharmaceutical Professional Association Excellence Service Award and the International Association of Biological and Medical Research Leadership Award.

Organizations: American Association for Cancer Research, International Association of Biological and Medical Research, Sino-American Pharmaceutical Professional Association, Chinese-American BioMedical Association

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a message from the dean

I hope this issue of our alumni newsletter finds you in good spirits and in good health.

We had 82 students graduating from our pharmacy professional program this spring. The Pharmacy Graduation Hooding Ceremony was held May 15. Tony Welder, BS '61, pharmacy, was the keynote speaker. He addressed graduates with an inspiring message, "It's your future, create it." Several of our faculty and staff received awards at hooding (see page 10).

Two commencement exercises were held at the Fargodome this spring – one for graduate degrees and professional doctorates and another for undergraduate degrees.

This year's pharmacy professional program applicant pool has 126 applicants with 85 being admitted. Of the 110 students invited for formal interviews, 106 were interviewed. Their average GPA was approximately 3.69; and the average PCAT score was approximately 69.20.

Preference is given to students with demonstrated leadership skills, work or volunteer experience in a health-related area, and North Dakota residency. An ethics exam is part of the admission assessment. Although admission to pharmacy schools remains competitive, students applying to NDSU have a much greater chance of being admitted to our pharmacy professional program than at other schools in our region. In the past two years, NDSU has admitted 67 percent of the total applicant pool, compared to an average of 20 to 25 percent for other pharmacy schools regionally and nationally. The pharmacy program admitted 82 percent of North Dakota residents applying to the program in 2008.

Tuition and fees for students in the NDSU pharmacy professional program for 2008-09 are approximately \$11,490 per year. The 2009 N.D. Legislature infused an additional \$8.2 million into the North Dakota University System this session that will be targeted to help lower student tuition increases in the next biennium. As a result, tuition increases will be limited to 4 percent per year for North Dakota's four-year schools with no tuition increases for two-year programs in the next biennium.

About 50 professional program students participated in Pharmacy Legislative Day in Bismarck. They learned about the legislative process, the political process and being involved politically in their future roles as pharmacists, how a bill is passed, what bills might impact the pharmacy profession, and how to address a legislator. They learned that students and pharmacists can have an impact by being actively involved politically and by helping advance the profession of pharmacy through the legislative process.

The students provided general health screening and heartburn awareness education to legislators (between sessions) and interacted with legislators at the annual ice cream social. Our students continue to represent us well at all levels. They are truly, "The Pride of North Dakota."

I hope you enjoy our newsletter. If you have comments, stories to share or suggestions for future issues, let us know. For more information about our college, its people and programs, visit our Web site at: www.ndsu.edu/pharmacy.



Volunteers assist in preparation for Guatemala mission trip

Although tired and sore after weeks of fighting the Red River flood, pharmacy, nursing and allied science students still found the time and energy to help people in the mountains of northwestern Guatemala. Just days after classes resumed and for the second consecutive year, NDSU students, faculty and staff helped a local medical team prepare for their Guatemala Medical and Dental Mission. NDSU volunteers gathered at the Concept Pharmacy and filled more than 8,000 prescriptions on April 8.

"The flood caused some shipping problems for the medication, but we didn't have any trouble gathering volunteers," said fourth year student Maari Loy, event organizer. "This type of volunteering was much easier on our physical bodies than sandbagging around the clock," she added with a grin.

Volunteers began working at 2:30 p.m. and were finished by 6 p.m. Sixty-three students, eight faculty and eight staff assisted with the project. Organizers counted 78 different medications.

Sponsored by the Episcopal Diocese of North Dakota, Dr. John Baird, health officer of Fargo Cass Public Health and his medical team travel to Guatemala each year to provide care to people in the most populous nation in Central America.



Students, faculty and staff help prepare medications for Guatemala mission.

"We enjoyed making a difference in the lives of these villagers who likely had not had medical care since last year's mission trip," Loy said. "This made us appreciate all we have here and the healthcare system all of us are contributing to in the United States."

Students in the College of Pharmacy, Nursing, and Allied Sciences coordinated the project. Volunteers counted, labeled and packaged thousands of packets of medication for the medical team.

This is the second year NDSU has helped Baird and his team prepare for the trip. Assistant professor Jeanne Frenzel also helped in the planning. More students took on planning roles this year, including Natasha Petry, Jayme Wolf and Faith Wentzel.

"We are hoping this project becomes a tradition and we needed younger students to be able to take over for next year," Loy said. "Kimberly Halbur, associate dean, arranged the capability to actually go on the mission trip to

Guatemala for course credit. We didn't have any takers this year, but hope that this can be implemented into the curriculum."

Joel Hagen

New partnership keeps Telepharmacy program growing

NDSU's acclaimed Telepharmacy program continues to mature, serving as a national model for state policy change, service delivery, education, collaboration and partnerships. The program's partnership with Catholic Health Initiatives to develop a central ordering system for rural hospital pharmacies is an example of its continued evolution.

Catholic Health Initiatives, a Denver-based nonprofit with a strong presence throughout the Midwest, is providing support to North Dakota hospitals with a goal of eventually having 24/7 central order entry site coverage for hospitals across several states.

The central order entry site is located in Fargo. Nurses or pharmacy technicians in participating hospitals communicate doctors' medication orders and licensed pharmacists use

sophisticated telecommunications to supervise as the order is prepped for dispensing. Linton, Jamestown, McVile and Devils Lake are the first hospitals to use the central order entry system. The service is currently in operation from 4 p.m.-2 a.m. seven days a week.

The video-conferencing and order entry system is encrypted for privacy and also allows the pharmacist to check for allergies and drug interactions so patient safety is greatly enhanced. Improper dispensing and pharmacist burnout are significant problems for rural hospitals. Telepharmacy addresses those safety and quality of life issues.

The NDSU Telepharmacy project was a top news story on the Department of Health and Human Services Website in April: www.hrsa.gov/news/telepharmacy2.shtml. Laurie Baker

Walgreens presents diversity grant

The Walgreens Co. awarded the NDSU College of Pharmacy, Nursing, and Allied Sciences a \$10,000 gift to assist its diversity efforts. Walgreens representatives Thuan Do and Chad Nellis presented the gift on Oct. 21, 2008, to President Joseph A. Chapman; Evie Myers, vice president for equity, diversity and global outreach; and Charles Peterson, dean of the college.

“Diversity is hugely important to the institution,” President Chapman said. “We will not be the university that North Dakota needs if we do not aggressively address the issue of diversity and equity. This is the first gift of its kind that we have received.”



Charles Peterson, dean of the college, and Walgreens representatives Thuan Do and Chad Nellis, discuss the diversity grant Walgreens provided to the college.

According to Peterson, Walgreens will contribute an annual gift of \$10,000. He said \$2,000 will be directed to the Walgreens Diversity Scholarship to support students of under-represented groups. The remainder will be used to develop, implement and support programs that will have a positive impact and aspire more diversity in the pharmacy program.

“Diversity is a very high priority for our college, as it is for the entire university. This is a very special gift from Walgreens,” Peterson said. “The college recently completed a strategic planning process to identify future goals and priorities for advancing diversity within our college. So, this gift is very timely for us and will greatly assist us in accomplishing our vision and goals for diversity within our college.”

Family HealthCare Pharmacy joins collaborative project with patient safety focus

The Family HealthCare Pharmacy was chosen in August 2008 to participate in an 18-month Health Resources and Services Administration (HRSA) Patient Safety and Clinical Pharmacy Services Collaborative. This national initiative supports the development of best practices that enhance patient safety and expand the availability of clinical pharmacy services to patients.

The pharmacy is working in collaboration with the Family HealthCare Center, and the team has been recognized as a high performing team for their accomplishments in the first nine months of the collaborative. Areas of expansion include medication reconciliation services to diabetic patients with a pharmacist prior to their clinic office visit, incentive based programs which encourage patients to bring all medications to their clinic visit, anticoagulation services with a pharmacist specialist, patient health literacy programs, educational presentations to the medical providers, individualized patient prescription case management and medication access services, among others.

The traveling team includes Annie Ottney (PharmD), Susan Wolf Nelson (RPh), pharmacy director, and Miguel Buisan-Catevilla (RPh), all from the Family HealthCare Pharmacy, and Maxine Henderson (RN), clinical director from the Family HealthCare Center. Nicole Wald (PharmD), Betty Lee (RPh), and Jennifer Iverson (RPh) also provide clinical pharmacy services and participate in activities of the collaborative.

The traveling team has presented topics for several national phone conferences and breakout groups at the national learning sessions and was featured as a high performing team on an HRSA national satellite broadcast and at the most recent learning session in Washington, D.C., in May 2009.

The Family HealthCare Pharmacy is a department of the College of Pharmacy, Nursing, and Allied Sciences and is located in the Family HealthCare Center in downtown Fargo.

faculty

Halbur attends Harvard leadership program

Kimberly Vess Halbur, associate dean for Student Affairs, recently attended the Harvard University management development program in Boston.

Providing innovative and practical ideas about critical management issues for mid-level professionals, the Harvard University Management Development Program is a 12-day leadership program offered through the Harvard University higher education department. Halbur joined 104 other participants from a diverse cross-section of institutions in both the U.S. (30 states were represented) and 14 foreign countries.

“The application process is competitive. All candidates are reviewed and selected by the Harvard University Management Development Program admissions committee,” said Joe Zolner, director of the Harvard Institutes for Higher Education and the MDP educational chair.



Halbur

Werremeyer gives presentation on health care beliefs

Amy Werremeyer, PharmD '05, presented at the American College of Clinical Pharmacy International Congress. The meeting was held April 24-28, 2009, in Orlando, Fla. Her presentation, “Health Care Beliefs That Influence Medication Use and Safety Among Major Religious Groups,” was based on a chapter

she wrote in the book, “Cultural Competence in Pharmacy Practice.”

Werremeyer has been a faculty member at NDSU since 2006.



Werremeyer

New employees at Family Healthcare Pharmacy

Heather Stremick, Certified Pharmacy Technician, has joined the staff of the NDSU Family Healthcare Pharmacy, located in downtown Fargo. Originally from Osnabock, N.D., she received her training at North Dakota State College of Science in Wahpeton, N.D. Stremick is responsible for all areas of dispensing and customer service. She lives in Fargo.

Nicole Wald, PharmD '08, is a staff pharmacist at the NDSU Family HealthCare Pharmacy. She is a graduate of the College of Pharmacy, Nursing, and Allied Sciences. Wald is responsible for prescription dispensing and a range of clinical services offered in the pharmacy. She is originally from Dickinson, N.D., and lives in West Fargo with her son.

College of Pharmacy, Nursing, and Allied Sciences faculty honored at hooding ceremony

The following college faculty members were honored for outstanding achievements at the Pharmacy Hooding Ceremony on May 15, 2009:



Sanku Mallik
Pharmaceutical Sciences
Dean's Award for
Excellence in Research



Wanda Roden
Pharmacy Practice
Dean's Award for
Exemplary Service



Polly Olson
Allied Sciences
Dean's Award for
Outstanding Advising



Robert Sylvester
Pharmacy Practice
Teacher of the Year Award



Mark Dewey
Pharmacy Practice
Faculty Preceptor
of the Year Award

NOT PICTURED

Jeff Sawyer
Melrose Pharmacy
Adjunct Preceptor
of the Year Award

Promotion and tenure announcements

Three faculty members have received promotions in the College of Pharmacy, Nursing, and Allied Sciences. Both Sanku Mallik and David Scott were named full professors and given tenure; and Cynthia Naughton was named associate professor.



Mallik



Scott



Naughton

alumni news

Alumna brings medication therapy management to Nebraska Medical Center

Intelligent, ambitious, innovative and hard working all describe Wendy Friedig, clinical pharmacist in Nebraska Medical Center's fast-paced emergency department (ED). The North Dakota native earned her PharmD degree from NDSU in 1999.

Friedig always intended to become a community pharmacist. However, life as a hospital pharmacist piqued her interest when she started her fourth-year rotations in pharmacy school.

Like most ED pharmacists, Friedig works varying shifts and has varying hours. She described it as seven 12-hour shifts per two weeks. While many pharmacists would balk at these hours, Friedig thrives on the schedule.

But what exactly does the medication therapy management role of an ED pharmacist include? "More than you think," laughed Friedig. "The most time-consuming component of my job is taking a medication history for every patient admitted to the hospital through the ED."

In a 12-hour shift, the Nebraska Medical Center ED can have between five and 30 admissions. Friedig spends a lot of time trying to ascertain what medications patients are currently taking and why. "Believe it or not, the majority of patients [not only] don't know what medications they are currently taking, but also have no idea what the medications are for." To obtain an accurate medication history, Friedig calls pharmacies, uses Micromedex to identify "mystery pills" brought from home, and talks with patients.

Most of the day, Friedig works with at least two attending physicians and several residents in the ED. These physicians call on and use the expertise of Friedig and her fellow ED pharmacists when treating patients. The Nebraska Medical Center has institutional guidelines, similar to protocols, available for various disease states, including pneumonia, sepsis and infections. Friedig and her ED pharmacist colleagues are commonly called on to dose and/or prepare medications for intubation and



Friedig

sedation, to make general therapy recommendations, and to teach patients being discharged from the ED about their medications.

In the fast-paced environment of an ED, a pharmacist's responsibilities change quickly depending on what comes through the door. When the trauma beeper goes off, Friedig is ready. She has the necessary training to help with life-threatening situations. She is certified in the American Heart Association's Pediatric Advanced Life Support Course and took their Advanced Cardiac Life Support training.

When codes occur in the Nebraska Medical Center ED, Friedig "takes over the [code] cart." In these situations, Friedig must know doses of medications and must be able to draw them up quickly. She tries to anticipate what medications will be needed next and to have them ready.

Friedig has a master of business administration degree from the University of Nebraska and also is a Board Certified Pharmacotherapy Specialist. Friedig uses the knowledge learned through her certification "each and every day in the ED."

Friedig has been highly involved in the American Pharmacists Association since pharmacy school, when she was a national officer for the APhA Academy of Student Pharmacists. She also has been active with APhA's Academy of Pharmacy Practice and Management since 1999 and has served in several leadership positions.

When asked what is next for her, Friedig said, "Nothing is out," as she is always "open to a new challenge and a great opportunity."

Excerpted from an article in Pharmacy Today by Ellen Whipple Guthrie, PharmD.

Friedig recently was appointed to the NDSU National Pharmacy Advisory Board.

Alumna selected for prestigious fellowship

Becky (Moos) Keel is on the front lines of studies to combat disease and limit antibiotic resistance.

Keel, PharmD '08, has been selected for a two-year fellowship beginning July 1 at the Center for Anti-Infective Research and Development at Hartford Hospital in Hartford, Conn.

She is studying how mice and rats with specific infections respond to various levels of antibiotics. Using both in-vitro and in-vivo research, she is using pharmacokinetic-pharmacodynamic modeling and studying different isolates from across the country. She is researching optimal antibiotic dosing to help reduce development of resistance and to overcome existing resistance. There is the potential for human trials, as well.

"I hope to be able to gain experience on how to conduct basic research with the goal of advancing the standards of practice and preventing antibiotic resistance," Keel said. "I want to be able to fully understand the reasoning behind the methodology of a study and how to interpret the results along with understanding the strengths and limitations of the study. Although I will have limited patient contact, I hope to gain knowledge that will help me optimize antimicrobials and make decisions in the best interest of the patient."

Earlier this year, Keel completed her general pharmacy practice residency at the University Medical Center of Southern Nevada



Keel

in Las Vegas. During the fellowship, much of her time is spent setting up, taking lab draws and analyzing data. After the research is completed, statistical analysis will be performed and a manuscript written for submission to a journal.

"Infectious disease had been an interest of mine since my first microbiology laboratory course at NDSU," Keel said. "I continued to focus and cultivate this interest by obtaining a microbiology minor. Although I was not involved with research at NDSU, there was always a strong research community surrounding our education. Many of the pharmacy professors at NDSU stressed the importance of evidence-based practice, which has helped me make sound clinical decisions."

Keel is uncertain what direction her career may take, but her fellowship should open a few doors.

"Ultimately I believe I would like to be a clinical infectious disease pharmacist at a tertiary academic hospital," she said. "I do have ambitions to become a faculty member at a college of pharmacy and look forward to precepting students. Although my career goals are dynamic, I hope this fellowship will allow me to identify and focus on a particular subset of pharmacy practice."

Keel is married to Jonathan Keel, PharmD '09, who works for Rite Aid. They live in West Hartford, Conn.

Fargo pharmacist receives national award

Oliver Frenzel loves it when people walk into The Medicine Shoppe in Fargo and know him by name. To him, that embodies what a pharmacy is all about – a bond between patient and pharmacist.

"We want a trusting relationship, where our customers are not afraid to come in to ask a question or give us a call with concerns," he explained.

Frenzel's was one of 10 pharmacists acknowledged with the 2009 Pharmacy Today One to One Patient Counseling Recognition Award at the American Pharmacists Association annual meeting in San Antonio.

"It is a big honor for me," said Frenzel, PharmD '03. "Personalized care is something we pride ourselves in at The Medicine Shoppe. One-on-one time with people is really important."



Frenzel was honored for his patient counseling skills at a conference in April.

Frenzel is a preceptor for final-year NDSU pharmacy students. Experiential director Wanda Roden, and NDSU pharmacy students, including Kraig Kraft, Matthew Kessler, Dena Spaeth and Nehal Patel, nominated him for the honor.

"To be nominated by students who rotated through here is a great honor. That makes this a very special award," said Frenzel.

His dedication to readily accessible patient care was formed when he was an NDSU student. He believes in providing patients with information needed to fully understand their medications and to use them safely.

"Everyone, whether a new prescription or a refill, deserves the opportunity to ask any questions or express any concerns they have about their medication," Frenzel said.

obituaries

Lyle E. Anderson, 85, BS '50, worked for many years as a pharmacist at Golden Valley Health Center. He served in the U.S. Army in Europe during WWII. He enjoyed hunting and fishing. He lived in Rogers, Minn.

David A. Lewis, 90, BS '53, served in the Army Air Corps as an aircraft mechanic in Georgia during WWII. After the war, he worked at maintaining family farms in Deer Creek and Albert Lea, Minn., as

well as working at the First National Bank of Henning, Minn. He moved to Texas to practice pharmacy in Fort Worth and Odessa, Texas. He eventually moved to Midland, Texas, and lived at Manor Park Retirement Complex.

John Lommel, 74, BS '56, worked in North St. Paul, Minn., and Breckenridge, Minn., until purchasing Herman Drug in Herman, Minn. He enjoyed hunting, trapping, fishing and bird watching. He

was a lifetime member of the Minnesota Pharmaceutical Association. He retired in 2001 and lived in Herman.

Ralph Miller, 73, BS '60, worked as a pharmacist in Missoula, Mont., and at Williams Drug in Bottineau, N.D., prior to moving to Rugby, N.D. There he worked at the Hersey Drug Store until 1969, when he opened his own pharmacy, which he operated until retiring in 2000. He lived in Rugby.

class notes

PharmD grads are loyal Bison fans



Michael Gulseth, PharmD '99, and **Thomas Johnson, PharmD '97**, cheer on the Bison men's basketball team to their first ever Summit League tournament championship in Sioux Falls, S.D. The Bison men's basketball team went on to play in the NCAA tournament, "The Big Dance."

College names new ambassadors

Seventeen new members of the Pharmacy, Nursing, and Allied Sciences Ambassadors class of 2009 were welcomed representing pre-professional to graduate students from each department in the college.

The students will join current ambassadors who promote the college through events including the White Coat Ceremony, Nurse Pinning Ceremony, Ticket to Your Success event, the 50-year reunion, Homecoming activities, Discover NDSU, Expanding Your Horizons and Career Day.

New ambassadors from pharmacy include Kailee Donner, Lexi Hoefs, Amanda Jorgenson, Jason Lind, Rupa Patel, Natasha Petry, Haylee Preabt and Mckaya Schmit. New ambassadors from pharmaceutical sciences include Namrata Bhatnagar and Praveen Shukla. New ambassadors from nursing include Amanda Booke, Anne Dunham, Brett Halvorson, Danielle Hasslinger and Ashlie Seifert. New ambassadors from allied sciences include Lindsey Bruner and Tania Peters.



Student Ambassadors promote the college to prospective students and host alumni homecoming tours.

The ambassadors are co-advised by Dana Davis, director of recruitment, and Sara Wald, director of advancement for the College of Pharmacy, Nursing, and Allied Sciences.

Student pharmaceutical scientists have successful year

The NDSU-student chapter of American Association of Pharmaceutical Scientists (AAPS) made significant progress this year. A challenging graduation rate of 26 percent of our chapter members was overcome by increasing our total roster size by 33 percent more than the previous record level. This increase in roster size resulted in a 50 percent increase of our yearly national stipend.

Our student chapter also made an impact at the national level with being chosen for the Pharmacokinetics, Pharmacodynamics and Drug Metabolism (PPDM) Education Initiative Award. This award provides funding for travel to an invited visiting PPDM Fellow to present their research and interact with undergraduate, Pharm.D., graduate students, postdoctoral fellows and junior faculty. NDSU joins the University of Minnesota, University of Illinois at Chicago and University of Nebraska Medical Center as a recipient of this award.

NDSU also was well represented at various regional and national conferences. Five of our student-members presented two podiums and four posters at the Pharmaceutics Graduate Student Research Meeting 2008 (PGSRM), at the University of Michigan in Ann Arbor. Jayati Banerjee, student chapter vice chair, took third place out of more than 50 posters submitted from other pharmacy schools in the Great Lakes region. Ashwin Basarkar,

Ph.D., former student chapter chair, gave an invited podium presentation at the 35th annual meeting and exposition of the Controlled Release Society in New York City. NDSU also was represented with 10 poster presentations at the 2008 AAPS annual meeting in Atlanta.

Students from our chapter made an impact in June 2009 at the American Peptide Symposium at Indiana University, National Biotechnology Conference in Seattle, and the 41st annual Pharmaceutics Graduate Students Research Meeting at Purdue University in West Lafayette, Ind. Upcoming national conferences include the AAPS annual meeting in Los Angeles (November 2009) and International Pharmaceutical Federation Pharmaceutical Sciences World Congress in New Orleans (November 2010).

Elections for new officers were held in August, and Rhishikesh Mandke, chair elect, will assume the position of NDSU student chapter chair. He and his newly elected officers will continue to promote the representation of NDSU at various national conferences.

Michael D. Scott, chair
NDSU Student Chapter of AAPS

NDSU Pharmacy Program by the numbers

- 800 students are enrolled in the pharmacy pre-professional or professional programs.
- 80 to 85 students are admitted annually to the pharmacy professional program.
- About 60 percent of pharmacy students applying to the professional program are admitted, compared to 20 to 25 percent for other pharmacy schools in the region.
- Approximately 65 percent of students in the pharmacy professional program are women.
- Approximately 83 percent of North Dakota residents who applied to the program were accepted in 2009. This number is up from more than 77 percent accepted in 2007.
- 30-35 percent of pharmacy graduates stay in North Dakota to practice in their profession.
- \$90,000 to \$100,000 is the average salary of NDSU pharmacy graduates, based on an annual survey of graduates.
- \$11,535 per year is paid by NDSU pharmacy students in the professional program for tuition and fees compared to \$18,000-20,000+ per year at other institutions in our region. This is based on 2008-09 rates.

NDSU improves commencement ceremonies

With enrollment climbing and number of graduate programs increasing, NDSU administration changed one of NDSU's most tradition-laden functions – commencement. This year, for the first time, spring commencement was split into two ceremonies; one for graduate and professional students, and another for undergraduate students.

“Overall when we looked at the length of our spring program ... and the increase of students eligible to participate ... we were at a point to start looking for alternatives to the spring format,” said Rhonda Kitch, associate registrar.

The main objectives were to decrease the length of the program and increase student participation. Both were accomplished.

“Last spring the ceremony was two hours and 45 minutes,” Kitch said. This spring the graduate and professional ceremony was reduced to an hour and 15 minutes and the undergraduate ceremony was shortened to roughly two hours.

Kitch believes the split ceremony is directly related to this spring's increased participation rate. The number of graduate

and professional participants went from 206 to 265, while the number of eligible students changed very little. “I can't help but think that some of that was due to the fact that they didn't have to sit through a long ceremony.”

Another perk of split ceremonies is more customization. “There are more opportunities to highlight the honors and achievements of each group,” she said. In the future, the graduate and professional ceremony may include a student speaker and award recognition.

“From survey feedback, the (graduate) students really felt like their programs and their achievements were highlighted a lot more,” Kitch said. “It was another reinforcement that this was the right decision to make.”

Given the success, spring commencement will continue to be two ceremonies in the future. December commencement will remain one ceremony.

Pharmacy students attend 2009 Legislative Day



The 2009 Pharmacy Legislative Day gave NDSU students in the pharmacy professional program a chance to meet with N.D. Gov. John Hoeven outside the governor's office in the state capitol building, Bismarck, as well as to learn how the legislative process in North Dakota impacts the profession.

The future of pharmacy: Congratulations 2009 4th year graduates



Isaac Aasen
Mayville, N.D.



Trent G. Anderson
Hewitt, Minn.



Jenna L. (Pepe)njak
Anderson
Pelican Rapids, Minn.



Kara M. Axvig
Rugby, N.D.



Alexis L. Barr
Ortonville, Minn.



Alanna T. Bowman
Watkins, Minn.



Shelby J. Carlson
Inver Grove Heights,
Minn.



Kayla M. (Kertz)
Clauson
Edinburg, N.D.



Philip M. Dilse
Scranton, N.D.



Hannah E. Dyk
Bowman, N.D.



Brian K. Engelman
Sauk Rapids, Minn.



Heather F. Entzel
Killdeer, N.D.



Nicole M. (Sommers)
Fries
Willmar, Minn.



Lucas B. Glarum
Mooreton, N.D.



Michael G. Glessing
Fargo, N.D.



Anne C. Gorder
Galchutt, N.D.



Chelsea L. Greutman
Fargo, N.D.



Kristin L. Gussiaas
Carrington, N.D.



Brandon J. Haas
Madison, Minn..



Brendan L. Hacker
Hancock, Minn.



Ashley M. Haefner
New Richmond, Wis.



Lee H. Hanson
Fosston, Minn.



Sara K. Hermans
Milbank, S.D.



Marci A. Jacobson
Saginaw, Mich.



Amy N. Johnson
Jamestown, N.D.



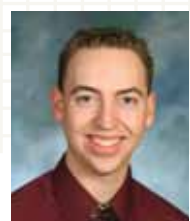
Nicolas D. Kadrmas
Bismarck, N.D.



Erica L. Kallenbach
Maddock, N.D.



Matthew L. Kapsner
Rice, Minn.



Jonathan A. Keel
Las Vegas, Nev.



Matt K. Kelly
Fridley, Minn.



Jill A. Kertz
Edinburg, N.D.



Lola M. Kettler
Melrose, Minn.



Kylian S. Kirkham
Rochester, Minn.



Kimberly S. Knain
Hatton, N.D.



Rebecca A. Knorr
Velva, N.D.



McCall K. Kovar
New England, N.D.



Chelsea R. (Kelsch)
Lawler
Linton, N.D.



Lance D. LeClair
Fargo, N.D.



Kristen L. (Bjerk)
LeClair
Mahnomen, Minn.



Emily J. Lentz
Minot, N.D.



Carmen A. Loff
Devils Lake, N.D.



Jeffrey W. Ma
San Leandro, Calif.



Hirenkumar Mahida
Bardoli, India



Ardalan Mahinfalah
Fargo, N.D.



Tonya M. (Myers)
Mayfield
Surrey, N.D.



Jennifer (Ostlie) Metz
Northwood, N.D.



Aaron M. Miller
Rochester, Minn.



Kirby A. Mohl
Minot, N.D.



Lynde Jo Monson
Fargo, N.D.



Charles K. Moore
Minot, N.D.



Ashley R. (Rudolph)
Muscha
Fargo, N.D.



John R. Naegeli
Sauk Rapids, Minn.



Patrick J. Netland
Moorhead, Minn.



Stephanie C. Noeske
Valley City, N.D.



Michael A. Nowak
Casselton, N.D.



Kevin F. Olander
Bloomington, Minn.



Dana M. Opsahl
West Fargo, N.D.



Ami B. Patel
Avon, Minn.



Nehal Patel
Gandhinager, India



Sandeep Patel
Gandhinager, India



Ryan J. Petrich
Fargo, N.D.



Ben J. Phipps
Burnsville, Minn.



Emily C. (Krause)
Phipps
Wadena, Minn.



Sarah R. (Draxton)
Reinhart
Northwood, N.D.



Nicholas D. Rogers
Grand Forks, N.D.



Andrew L. Ross
Crookston, Minn.



Michelle A. (Marihart)
Ross
Dawson, Minn.



Jesse D. Rue
Hillsboro, N.D.



Brandon P. Sis
St. Augusta, Minn.



Dena K. Spaeth
Mahnomen, Minn.



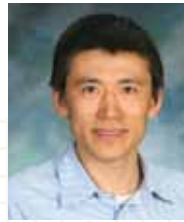
David J. Sperl
Little Falls, Minn.



Hannah J. (Molitor)
Surma
Alexandria, Minn.



Stephen J. Syverson
Enderlin, N.D.



Tiansheng Wang
Shenyang, China



Jillian Wax
Regent, N.D.



Andrew P. Weir
Sauk Centre, Minn.



Ashlee M. Zimbelman
Minot, N.D.

NOT PICTURED:

Carl J. Barron
New Brighton, Minn.

Malory B. (Lange)
Bjella
Devils Lake, N.D.

Steven L. Bladow
Wahpeton, N.D.

Sara Jo Erickson
Fargo ND

Erin M. (Halvorson)
Stern
Bismarck, N.D.

development

Medication donation is a boon for concept pharmacy

The donation of the U.S. division of Teva Pharmaceuticals is proof that partnerships make a big difference for students. The global pharmaceuticals company, headquartered in Israel, donated 632 prescription and over-the-counter medications worth more than \$67,000 to the pharmacy program to benefit its Concept Pharmacy laboratory.



Pharmacy students will use the medication to learn how to accurately dispense and label medications, safely counsel patients on prescribed medications, and compare and contrast over-the-counter medications. The college thanks TEVA for supporting the Concept Pharmacy through the donation of prescription and non-prescription medications.

Dynamic year one for Sudro Society

The newly established Sudro Society is off to a resounding start. The annual giving club to assist the NDSU pharmacy program has raised more than \$100,000.

“It’s been very exciting and the Sudro Society has exceeded my expectations,” said Charles Peterson, dean of the college. “We’ve seen an increasing number of individuals interested in helping out the college. It has been a fabulous program.”

The Sudro Society recognizes individuals who make annual unrestricted contributions totaling \$1,000 or more to benefit the college. The tax-deductible gifts allow the college the flexibility in its strategic planning to implement new programs and instructional concepts to continue the tradition of excellence. Gifts less than \$1,000 annually are recognized as Friends of Sudro Society.

“We want to make this the best educational environment for our students so that they can have opportunities to succeed and live their dream,” Peterson explained. “These funds give us the ability to address emerging urgent needs for the college on a yearly basis. The focus is our students; that’s why we are here.”

Members are listed in the Pharmacy Alumni News, and receive a Sudro Society pin, insider letters from the dean, invitations to special events and networking opportunities with colleagues.

“Our goal is to engage as many alumni as we can. Sudro Society allows us to do that,” said Sara Wald, the college’s director of advancement. “The gifts have helped us provide research awards, provide students with expense funds at conferences, helped us get the student ambassadors program going and assisted us as we recruit faculty.”

The program also provides crucial support for instructional technology advancements, professional support and alumni activities such as events and the college newsletter.

The chair of the Pharmacy National Advisory Board Advancement Subcommittee said the group is pleased with the initial success of Sudro Society. “We find that contributors are pleased knowing that their contributions are going directly to student enrichment programs and equipment that would be unavailable without this funding,” said Brad Trom, BS ’72, who is the CEO of retail pharmacy for Lovelace Health System in Albuquerque, N.M. “We’re certainly pleased with the initial launch, but we do want to involve all alumni in giving back to NDSU – at any level – since NDSU has given so much to us.”

Peterson points out college personnel also are participating in Sudro Society, and 78 percent of the college’s faculty and staff made contributions during the most recent annual NDSU faculty/staff campaign.

“That shows our faculty and staff are committed to the cause,” Peterson said. “They are engaged; and they also want this to succeed. Our own people give regularly and enthusiastically. That is significant.”

Peterson said, “I just want to say ‘Thank you, thank you, thank you’ to everyone who participates. Every dollar is important, and the gifts are truly making a difference in the lives of our students.”

For more information about Sudro Society, call (701) 231-6461 or visit www.ndsu.edu/pharmacy. *Steve Bergeson*

a message from the advancement office



Wald

Spring semester 2009 was not typical for NDSU students. Just like in 1997, the Red River surged and NDSU students were again asked to help hold back the water. As you would expect, our students responded with vigor and fully immersed themselves in the fight. They worked day and night filling sandbags at the Fargodome and Sand Bag Central, and

helping build dikes across the city. Proud hearts and able bodies made high school and college students leaders in the fight, not followers. The need was great and the response was even greater.

As hard as they worked, students were aided by untold numbers of people in the community. The spirit was strong throughout the region during the fight, as this personal experience illustrates: I was filling sandbags at the Fargodome with some college staff members and, when our shift ended, we were greeted with homemade treats. I asked the other volunteers who provided them and they

explained that an older woman who was unable to shovel sand or toss bags brought boxes and boxes of homemade goodies, along with the promise that she would continue to bring treats until the flood threat was past. The lemon bars she made were some of the best I have ever tasted.

Those few weeks fighting the flood really got me thinking about the impact we can make in each other’s lives. Even though this woman could not physically fill or lift a sandbag, she did her part in the fight. This is an example of the human spirit at its best. As long as we are all committed to doing our part, great things can happen.

As a college, our part is to educate students to the highest standard and provide them with opportunities they cannot get at other colleges. We hope you will help us maintain this standard of excellence by joining the Sudro Society or hosting students on IPPE or APPE rotations. If each of us does what we can, it can make a huge difference in these students’ lives.

Sara Wald
Director of Advancement
701-231-6461 or Sara.Wald@ndsu.edu.

pharmacy alumni news

FALL 2009 • VOL. 13 • ISSUE 1

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Office of the Dean
123 Sudro Hall
Dept. 2650
P.O. Box 6050
Fargo, ND 58108-6050

*NDSU has changed campus mailing procedures.
Please note the college's new address.*

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Writers: Sadie Anderson, Steve Bergeson,
Joel Hagen, Linsey Hegvik

Designer: Rebekka DeVries

Photographer: Dan Koeck

Copy editor: Kathy Laid

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This publication is available in other formats on request.

calendar of events

SEPTEMBER

- 17** Pharmacy Alumni Social, 5:30 p.m., *Holiday Inn*
Pharmacy Alumni Dinner, 6 p.m., *Holiday Inn*
50 Year Golden Reunion: The classes of 1949, 1954 and will be honored. The reunion is opportunity to come back to campus, rekindle old friendships and witness the many changes at NDSU. Join us to celebrate the university and your contribution to NDSU.

OCTOBER

- 2** Pharmacy, Nursing, and Allied Sciences Annual Continuing Education Seminar, 8 a.m.-5 p.m., *Fargodome, upper level, room 202. Open to all healthcare professionals. Cost is \$100. RSVP to Carol Jore at 701-231-7589 or carol.jore@ndsu.edu*



FEBRUARY

- 27** P3 Poster Presentation, *Memorial Union, NDSU Campus CE credit will be available.*