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THE UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE & HEALTH SCIENCES

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**Celebrating 40 Years
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There's an APP for That

Holly Brown-Borg

Sophomore Awards



Summer 2013
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FEATURES

Team Science: A New Biomedical Research Model	12
The School's researchers seek transdisciplinary cures for diseases.	
Research Mentors	16
Two researchers kindle the flame of learning for gifted high school students.	
Scrubs Camps: Growing The Program That's Growing Our Own	20
The Center for Rural Health connects health care professionals with youth to foster health care careers.	
Celebrating 40 Years of INMED: 1973-2013	26
A look at who guided the Indians Into Medicine program through pitfalls and challenges to see it become the largest program of its kind in the nation.	
There's an APP for That	28
Researcher studies a gene that may cause Alzheimer's disease and atherosclerosis.	
Holly Brown-Borg Receives Lifetime Award	29
Researcher receives the 2013 Denham Harman Lifetime Achievement in Research Award.	
Sophomore Awards	30
Medical students and faculty are honored.	

DEPARTMENTS

Dean's Letter	4
News Briefs	6
Guest Authors - Raymond and Karen Goldsteen	18
Workforce - Team Boosters	22
Student Profile - Ilse Coleman	24
Alumni Notes	31
In Memoriam	32
Philanthropy	34
Parting Shots	36



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A Bright Future for Health

“The degree of financial support from the Legislature is unprecedented.”

What an exciting era we are entering at the UND School of Medicine and Health Sciences! Thanks to the generous support of the North Dakota Legislature and strong leadership from Governor Jack Dalrymple and Lt. Governor Drew Wrigley, the School will soon be fully implementing the Health Care Workforce Initiative (HWI) and constructing a new home. The HWI is a four-pronged plan to help address North Dakota's health care workforce needs now and in the future by reducing disease burden, retaining more of our graduates for practice in North Dakota, training more practitioners, and improving the efficiency of our health care delivery system.

The degree of financial support from the Legislature is unprecedented. The new facility received total funding of \$122.45 million spread over two biennia (plus a reserve of \$1.55 million held by the State Board of Higher Education). Such impressive support would not have been possible without the efforts of many people, including the members of the State Board of Higher Education, UND President Robert Kelley, members of the School of Medicine and Health Sciences Advisory Council, and a whole cadre of stakeholders from across the state.

But what is remarkable about the entire School of Medicine and Health Sciences' facility project is the astounding degree of cooperation and non-partisan support the project received. Although the building will be built in Grand Forks, the benefits will be felt throughout the state—and North Dakota's legislators realized that fact, and acted in magnanimous good faith. Overall, almost eighty percent of our state's legislators endorsed the higher education bill and the contained provisions for the School—about as decisive a degree of support as one ever sees. Democrats and Republicans, senators and representatives, small town and big city, east and west—all came together to do the right thing for all of North Dakota.

Ray Holmberg, a senator from Grand Forks and chair of the Senate Appropriations Committee, and Bob Skarphol, a representative from Tioga (near Williston), chair of the Education and Environment Division of the House Appropriations Committee, were able to find common ground for the benefit of all North Dakotans. Rep. Skarphol deserves special praise for his efforts to find an acceptable funding mechanism for the new building. In the last Legislature, he tried a novel approach to funding that ultimately wasn't successful. But he persevered, and this session he and Sen. Holmberg came up with a



Joshua Wynne



Dave Molmen

Care in North Dakota

compromise that the Governor and the Legislature endorsed, and guess what—North Dakota is getting a new, state-of-the-art building to house the School of Medicine and Health Sciences!

In addition to Sen. Holmberg and Rep. Skarphol, there were others from across the state who played critical roles. Sen. Bob Erbele, a rancher from the western part of the state, played a major role in the last Legislature to provide funding for the space study that helped establish the rationale for a new building. And this year, he was the carrier of the bill in the Senate. Tim Mathern, a senator from Fargo, made major contributions both through his membership on the School's Advisory Council and in the Senate. And Sen. Judy Lee from West Fargo chaired the Interim Health Services Committee that was the initial endorser of the HWI and the new building—by a unanimous vote! She spoke eloquently on the floor of the Senate in support of the plan and the building.

Rep. Bob Martinson has been masterful in his knowledge of how to get things done in the Legislature, first being instrumental last session in securing funding for the Center for Family Medicine building in Bismarck, and this session for helping to build support and arrange funding for the new building. Rep. Mark Sanford, with his extensive experience in education and his calm demeanor, helped to inform and enlighten his colleagues, as did Sen. Mac Schneider and the rest of the Grand Forks delegation. There were many others, too numerous to count. What matters is that they all pulled together and did what was right for the state and its citizens.

We fully recognize the trust bestowed upon us by the Legislature, and we will work tirelessly to help address the health care delivery challenges facing our great state. With this support, we are confident

that we now have a clear path forward. From Fargo and Grand Forks to Hettinger and Williston and points in between, the benefits of the HWI and the training that will go on in the new building and in our

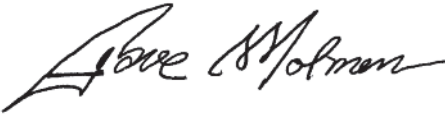
“We extend our heartfelt thanks to all who worked so hard to advance the health care workforce plan for North Dakota.”

communities will be felt for a long time. The health care future of North Dakota has been changed forever, and the benefits will be reaped for decades to come.

We extend our heartfelt thanks to all who worked so hard to advance the health care workforce plan for North Dakota. We look forward to transforming these plans into reality, so that all North Dakotans can benefit from the high-quality affordable health care that they deserve, wherever they live in the state.



Joshua Wynne, MD, MBA, MPH
UND Vice President for Health Affairs
Dean, UND School of Medicine and Health Sciences



David Molmen, MPH
CEO, Altru Health System, Grand Forks
Chair, UND School of Medicine and Health Sciences Advisory Council

UND School of Medicine and Health Sciences recognizes volunteer faculty

The University of North Dakota School of Medicine and Health Sciences presented the Dean's Special Recognition Awards for Outstanding Volunteer Faculty to the following physicians during commencement ceremonies on Sunday, May 12.

- Douglas D. Berglund, M.D., clinical associate professor of surgery, Bismarck, N.Dak.
- David A. Billings, M.D., clinical associate professor of obstetrics and gynecology, and alumnus (M.D. Class of 1992), Minot, N.Dak.
- Charles P. Dahl, M.D., clinical associate professor of surgery, Bismarck, N.Dak.
- Christie A. Iverson, M.D., clinical assistant professor of obstetrics and gynecology, and alumna (M.D. Class of 1991), Bismarck, N.Dak.
- Eduardo E. Meza, M.D., clinical assistant professor of clinical neuroscience, Fargo, N.Dak.
- Mahesh N. Patel, M.D., clinical professor of pediatrics, Bismarck, N.Dak.
- Kamille S. Sherman, M.D., clinical assistant professor of family and community medicine, and alumna (M.D. Class of 1999), Dickinson, N.Dak.
- Scott L. Stephens, D.O., clinical assistant professor of pediatrics, Fargo, N.Dak.
- Chi Kong Yeung, M.D., clinical professor of surgery, Minot, N.Dak.

"As a community-based medical school, the UND School of Medicine and Health Sciences relies on about 1,000 part-time or volunteer faculty in over 30 communities throughout the state to educate medical students and residents," said Joshua Wynne, M.D., M.B.A., M.P.H., UND vice president for health affairs and dean of the School of Medicine and Health Sciences.

"Two out of three of the state's physicians assist the school in teaching the patient-centered curriculum and conducting performance-based assessments of the professional competence of the 258 students enrolled in the four-year Doctor of Medicine program," Wynne said.

Celebrate Occupational Therapy!



The best way to explain occupational therapy is by going to the roots of the occupational therapy program here at the University of North Dakota. The following quotations come from students,

faculty, and staff who have decided to dedicate their lives to promote healthful living and a higher quality of life for our clients through participation in their meaningful occupations.

What does occupational therapy mean to you?

"What I love to do is an expression of who I am; through OT, I help clients rediscover who they are and what they can do."

—*Deb Hanson*

"Bottom line for me is that OT is about enabling participation in meaningful, valued everyday occupations."

—*Sonia Zimmerman*

"I believe OT is about helping people continue doing what they are passionate about and what makes life enjoyable and meaningful for them. It's about making the world a better place, one life at a time."

—*Taylor Hardina*

"Having the opportunity to help someone else find personal meaning and joy as they live their life to the fullest."

—*Lavonne Fox*

"Occupational therapy is about facilitating the physical, cognitive and psychosocial health and wellness of individuals to enable them to engage in occupations [life tasks] that are meaningful to them. In short, occupational therapists ask "what do you want to be able to do in your life" and then work with clients and families to develop a plan to achieve the skills to live that life."

—*Anne Haskins*

"Making sure that everyone is as fully engaged in life as possible."

—*Sarah Nielsen*

"OT means helping someone achieve independence and happiness, when they never thought they would smile again."

—*Erica Myers*

"Occupational Therapy works with people to develop the skills needed to live as independently as possible while participating in their desired daily occupations and activities."

—*Laura Tvrdik*

"Occupational therapy is a dynamic and client-centered health profession that enables individuals, throughout the lifespan, the opportunity to continue or get back to engaging in any activities that are meaningful to them. I value the fact that occupational therapists are concerned with not only the clients they are treating, but also the families and support systems that surround these clients. There are countless opportunities within the profession of occupational therapy — you can work almost anywhere with almost anyone!"

—*Sara Joersz*

"OT means being able to get back to the activities you enjoy in life! OT means having the skills needed in order to live independently and successfully!"

—*Lauren Schneibel*

"OT allows me the opportunity to bring the meaning of each individual client's life back to them."

—*Megan Meyer*

For more information about occupational therapy and the program here at UND check out UND Occupational Therapy and the American Occupational Therapy Association. The Occupational Therapy Program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE).

UND Doctors honored with Tow Humanism in Medicine Awards

Charles E. Christianson, M.D., Sc.M., associate dean for clinical education and associate professor in the Department of Family and Community Medicine at the University of North Dakota School of Medicine and Health Sciences, was honored with the prestigious Leonard Tow Humanism in Medicine Faculty Award at the medical school's commencement on May 12.



Charles
Christianson

Kendra Lystad, M.D., a 2013 UND medical school graduate, received the Tow award for graduating medical students.

The Leonard Tow Humanism in Medicine Awards are sponsored by the New Jersey-based Arnold P. Gold Foundation. The awards recognize a physician and a graduating medical student who best demonstrate the foundation's ideals of outstanding compassion in the delivery of care, respect for patients, their families and health care colleagues, as well as demonstrated clinical excellence. The Gold Foundation sponsors the annual Leonard Tow Humanism in Medicine Awards at over 90 of the nation's medical schools. The awards are made possible through a generous donation from entrepreneur and teacher Leonard Tow.

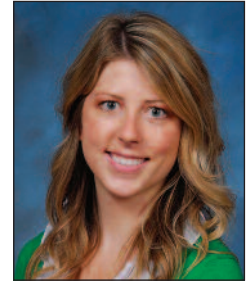
"Dr. Christianson has exemplified compassion and empathy with our patients; exhibiting care, concern, psychological empathy, and respect for patients who may not be well-educated and who have multiple physical and psychological issues," said Sharon R. Ericson, chief executive officer of Valley Community Health Centers, in nominating Christianson for the award. "Patients seek out Dr. Christianson, and some of our most complicated patients are part of his panel. Dr. Christianson has provided primary care for patients with long-term pain issues, successfully using patient contracts and monitoring and alternatives to medications."

Christianson is responsible for coordinating clinical education throughout the four years of the medical curriculum, working closely with campus deans and instructors across North Dakota to educate students on how to provide the best evidence-based care for their patients. He is a graduate of Princeton University and the Johns Hopkins University School of Medicine and the Johns Hopkins University School of Public Health. He completed his post-medical school residency training in family medicine at the University of California San Francisco General Hospital, where he was chief resident.

He is board-certified by the American Board of Family Medicine. His research interests and publications are focused on medical education, family-centered primary care and the ethical issues that arise in patient care. He has always been highly involved in volunteer community service, particularly to improve the medical care of low-income patients. He created a clinical experience for second-year medical students to provide health screenings for people living at the Northlands Rescue

Mission in Grand Forks.

"He seeks out his patients' opinions, worries and concerns, and addresses them with great empathy and patience," said Rosanne McBride, PhD, co-director for medical curriculum, Year 1 Clinical Sciences at the SMHS. "It is very clear that he places the highest value on his patients' understanding of issues as well as on his understanding of his patients' beliefs and viewpoints," McBride said. "He shows an unusual willingness to take the risk of talking to students not only about the strengths of medicine but also about its frailties at times as well as his own struggles with difficult ethical and patient issues."



Kendra Lystad

Fargo native Kendra Lystad, M.D., 2013, was nominated by Stephen J. Tinguely, MD, chair of the Department of Pediatrics and associate professor of pediatrics at the SMHS. "Kendra's humanistic aptitude started at an early age," Tinguely said. He cited Lystad's work in high school as a counselor at the Muscular Dystrophy Association's summer camp. In college, she volunteered at Sanford's Neonatal Intensive Care Unit, the Simpson Housing Women's Shelter in Minneapolis, and as an educator on shaken baby syndrome at Regent Hospital Birth Center in St. Paul.

During medical school, she was a Special Olympics volunteer and health screening clinic organizer at Northlands Rescue Mission. She was president of the Physicians for Human Rights chapter and was elected to the North Dakota Medical Association's Commission on Socioeconomics as a student representative. Lystad studied in Bangladesh as a researcher of health care needs of rural people. She taught children affected by HIV/AIDS in Tanzania and administered vaccines as a volunteer worker at an outreach clinic in the Ngorongoro Conservation Area. She volunteered as a medical student on a mission trip to Chimbote, Peru, and returned to Chimbote as a clinic and pharmacy assistant. During her fourth year of medical school, Lystad completed international electives in Africa and Thailand. She also worked with children who have complex developmental and medical special needs at the Anne Carlsen Center in Jamestown, N.Dak.

Lystad is entering the Pediatrics Residency Program at the University of Utah Affiliated Hospitals in Salt Lake City. At the awards presentation, she was also named to the Alpha Omega Alpha Honor Medical Society, and she earned the Dr. Marlin H. Poindexter Outstanding Pediatric Student Award.

"When she was a third-year medical student rotating through pediatrics, it was quickly apparent to me that Kendra was uniquely concerned about caring for the needs of all people, especially the poor and those living outside the United States," Tinguely said. "Kendra Lystad lives and breathes and thinks altruism and humanism."

UND honored for contributions to building the family medicine workforce

Twelve medical schools that have contributed the most to the pipeline of family physicians were honored when the American Academy of Family Physicians presented its Top Ten Awards during the Society of Teachers of Family Medicine Annual Spring Conference. The awards recognize schools that, during a consecutive three-year period, graduate the greatest percentage of students who chose first-year family medicine residency positions. Known as the Top Ten Awards, this year's recognition was expanded to 12 schools to accommodate the growth in the number of geographically separated medical school campuses. The University of North Dakota School of Medicine and Health Sciences is in a virtual tie with three other medical schools for the largest percentage of the graduating class going into family medicine at 20.5 percent. The Brody School of Medicine at East Carolina University is first at 20.9 percent. At a time when the United States is facing a shortage of primary care physicians, filling the pipeline is vital to the health of America, according to A.A.F.P. President Jeff Cain, M.D.

"Family physicians are the foundation of primary care," Cain said. "Theirs is the only specialty in which all physicians are trained to provide primary care. Research has consistently shown that more than six in 10 people who have a usual source of health care say a family physician provides that care. The expertise of family physicians becomes even more important to people who have serious and chronic health conditions."

Americans make more office visits to family physicians than any other medical specialty, and family physicians provide care for patients who have a sore throat, patients who need stitches, and patients who have multiple, complex conditions such as diabetes with congestive heart failure.

Research has shown family physicians are the usual source of care for more than six in 10 patients with anxiety, depression or diabetes; six in 10 patients with cancer, and nearly six in 10 patients with heart disease.

"These 12 medical schools have demonstrated their consistent commitment to meeting the nation's need for family physicians," said Cain. "I commend them, their leadership and their faculty for helping to ensure that Americans have access to the care they need."

Stan Kozakowski, M.D., A.A.F.P. director of medical education agreed. "Initiatives at the medical school level are invaluable to increasing the number of students who choose family medicine for their specialty," he said. "Admissions policies, academic and clinical experience with family physicians, and rural medicine tracks have significant influence on students' choices."

He noted that 2013 is the third consecutive year that six of the AAFP's top 10 schools—the Brody School of Medicine at East Carolina University; the University of North Dakota School of Medicine and Health Sciences; the Joan C. Edwards School of Medicine at Marshall University; the University of New Mexico School of Medicine; the University of Kansas School of Medicine; and the University of Washington School of Medicine—have been cited as a Top 10 school.

"This says much about their focus on educating students to meet the needs of the nation," Kozakowski said.

The UND School of Medicine and Health Sciences has several unique programs designed to educate students about the benefits of family medicine. The nationally recognized Rural Opportunities in Medical Education (ROME) program places third-year medical students in several rural communities in North Dakota for a seven-month rotation. In 2010, the UND SMHS signed its first RuralMed Scholar; currently there are 13 students enrolled in the program. The goal of the RuralMed Scholarship Program is to recruit, educate and retain physicians who will practice family medicine in rural North Dakota. The program absorbs the tuition costs for all four years of medical school for students who agree to practice family medicine in a rural area of North Dakota for five years.

The 2013 award recipients and their percentage of graduates entering family medicine are as follows:

- The Brody School of Medicine at East Carolina University—20.9%.
- University of Kansas School of Medicine—20.8%.
- University of North Dakota School of Medicine and Health Sciences—20.5%.
- Oregon Health & Science University School of Medicine—20.1%.
- Joan C. Edwards School of Medicine at Marshall University—18.5%.
- University of New Mexico School of Medicine—18.3%.
- University of Minnesota Medical School—17.3%.
- University of Arizona College of Medicine—17.2%.
- University of Washington School of Medicine—17.2%.
- Wright State University Boonshoft School of Medicine—16.1%.
- University of California-Davis School of Medicine—15.8%.
- University of Missouri-Columbia School of Medicine—15.4%.

Family medicine physicians are the most sought after specialty in rural North Dakota; 89 percent of the counties in North Dakota are partially or fully designated by the federal government as a primary care physician shortage area.

"We are very pleased to be recognized as one of the nation's most effective medical schools in encouraging students to pursue the specialty of family medicine," said Joshua Wynne, M.D., M.B.A., M.P.H., UND vice president for health affairs and dean of the UND SMHS. "We are working hard to address North Dakota's need for physicians and other health care workers, especially those in the field of family medicine, through our Health Care Workforce Initiative. Although our percentage is among the best in the country, the small size of our class means that we still don't produce enough family physicians for the needs of the region. That's why we are so pleased that the Legislature has funded an increase in our class sizes, which will enable us to produce even more of the health care providers that North Dakota needs."

Ashley Bentley and Leslie Champlin with the American Academy of Family Physicians contributed to this article.

UND researcher discovers potential off switch for deadly response to infection or traumatic injury

A UND researcher and her team have demonstrated for the first time that a molecule involved in the human body's initial response to an infection or trauma may be the key in preventing sepsis, a life-threatening medical condition with a high mortality rate that results from a runaway inflammatory response by the body to fend off a severe infection or to recover from a traumatic injury.

"The mortality rate is very, very high—20 percent to 50 percent of people admitted to an ICU with sepsis are at risk of dying," said Jyotika Sharma, Ph.D., a microbial immunologist in the Department of Microbiology and Immunology at the University of North Dakota School of Medicine and Health Sciences.

"Inflammation occurs rapidly following infection, injury, or other trauma, and normally resolves within 24 to 72 hours," said David S. Bradley, Ph.D., chair and associate professor of the Department of Microbiology and Immunology at the UND SMHS. "However, unresolved inflammation can result in sepsis with tissue damage, organ failure, and ultimately death. The 'off switch' for inflammation is poorly understood."

The onslaught of sepsis is frighteningly fast; it can progress from simple sepsis to septic shock within hours. Blood vessels are particularly affected by the hyperinflammation that accompanies sepsis. Extensive blood clotting occurs in vessels as a result of the ongoing inflammation, which disrupts blood flow and thus oxygen supply to the organs. Patients suffer a fever or hypothermia, a rapid heart rate, rapid respiration, and multiple organ failure because vital tissues lack perfusion with oxygen as a result of low blood pressure.

In addition to the high toll in lives lost, combatting sepsis is a huge drain on hospital resources. "Half of the ICU resources in this country are spent on these patients," Sharma said. "The annual expenditure is around \$17 billion."

Sharma is the lead author of a research paper that will appear online in May and in the September print issue of the *Journal of Leukocyte Biology*. The journal's editors found Sharma's findings significant enough to garner a separate editorial in the journal. Bibhuti B. Mishra, Ph.D., a research associate professor in the UND Department of Microbiology and Immunology; and Sharma's graduate students Anthony L. Steichen and Brandilyn J. Binstock co-authored the paper. The research paper is titled "C-type lectin receptor Clec4d plays a protective role in resolution of Gram negative pneumonia."



Jyotika Sharma



David Bradley

Doctor of Medicine degrees

The University of North Dakota School of Medicine and Health Sciences conferred the Doctor of Medicine (M.D.) degree during commencement ceremonies Sunday, May 12, at the Chester Fritz Auditorium on the UND campus in Grand Forks.

Patrick Carr, Ph.D., associate professor in the Department of Anatomy and Cell Biology at the School of Medicine and Health Sciences, delivered the keynote address titled "Essentials of Career Management." Carr was raised in western Manitoba and completed his undergraduate education at Brandon University and a doctoral degree in physiology at the University of Manitoba. He then completed further training at the University of Manitoba, the National Institutes of Health in Bethesda, Md., and at Wright State University in Dayton, Ohio. He joined the University of North Dakota in 1998, where he is currently the director of the basic sciences component of the first-year medical curriculum and assistant dean for Faculty Development for the School of Medicine and Health Sciences. His research has focused on understanding the neurochemistry and neurophysiology of pain and motor control. His teaching responsibilities currently include gross anatomy and neuroscience. Medical students have honored Carr with 14 Instructor Awards.

Fifty-nine degree candidates participated in the ceremony. The graduates have completed four years of medical education to earn their Doctor of Medicine, beginning with two years of instruction at the UND campus in Grand Forks, followed by two years learning and working with practicing physicians who volunteer to serve as their teachers in hospitals and clinics throughout North Dakota. Upon graduating, the doctors will complete their residencies, a period of advanced intensive training in their chosen medical specialty before independent practice as a physician. Depending on the medical specialty, medical school graduates complete anywhere from three to seven years of residency training after medical school.

For a complete list of the graduates, with their hometowns and residency programs, please visit <http://bit.ly/2013-UND-Med-Grads>.



Patrick Carr

Mann and Romanick earn honors from North Dakota Athletic Trainers Association

University of North Dakota School of Medicine and Health Sciences faculty members William Mann, M.D., and Mark Romanick, P.T., Ph.D., A.T.C., were honored recently by the North Dakota Athletic Trainers Association.

Mann is the medical director for the Bachelor of Science in Athletic Training program and clinical associate professor in the Department of Family and Community Medicine. He received the Non-Athletic Trainer Service Award. Mann has been a team physician for UND since 1985; he has served on the North Dakota Licensure Board for Athletic Training and has presented many talks on sports medicine for athletic trainers.

Romanick is an associate professor in the Department of Physical Therapy; he was elected to the NDATA Hall of Fame for his work and achievements in furthering the athletic training profession in North Dakota. A physical therapist and a certified athletic trainer, Romanick teaches biomechanics and kinesiology, clinical examination and evaluation, manual therapy, intervention techniques, prevention and wellness, and advanced anatomy and sports physical therapy. His areas of interest are sports medicine, orthopedics, biomechanics, and the biology of aging.



William Mann



Mark Romanick

Most importantly, the approximately 378,000-gross-square-foot facility will also allow the school to fully implement its Health Care Workforce Initiative, a four-pronged plan to help address North Dakota's health care workforce needs now and in the future by reducing disease burden, retaining more of the school's graduates for practice in North Dakota, training more practitioners, and improving the efficiency of the state's health care delivery system.

"This new building is a critical component of our Health Care Workforce Initiative that will help provide the health care practitioners that North Dakota needs," said Joshua Wynne, M.D., M.B.A., M.P.H., UND vice president for health affairs and dean of the UND School of Medicine and Health Sciences. "It will be the place where we train doctors and other members of the health care team for clinical practice in the dynamic environment that is North Dakota."

Doctor of Medicine Class of 2013 award winners

Medical students of the M.D. Class of 2013 and faculty of the University of North Dakota School of Medicine and Health Sciences were recognized by the school at the Commencement Awards presentation on Sunday, May 12.

For a complete list of the awards and winners, please visit <http://bit.ly/128C1xN>.

Allen, Relling, Schauer, and Sukalski earn North Dakota Spirit Faculty Achievement Awards

Four professors at the UND School of Medicine and Health Sciences were honored with North Dakota Spirit Faculty Achievement Awards on May 1 at the Gorecki Alumni Center.

The North Dakota Spirit Faculty Achievement Awards were established to recognize significant contributions by faculty in teaching, research, and service. The awards are funded by the UND Foundation. Dean Joshua Wynne and Senior Associate Dean Gwen W. Halaas congratulated the recipients for their outstanding achievements. Outgoing Provost Paul LeBel introduced and read the names of the award recipients; incoming Provost Tom DiLorenzo delivered certificates to the awardees:

- Jon Allen, MD, director of ND STAR (North Dakota Simulation, Teaching, and Research Center for Healthcare Education), associate professor of medicine.
- David Relling, PT, PhD, CSCS, associate professor in the Department of Physical Therapy.
- Roger Schauer, MD, director of Rural Opportunities in Medical Education (ROME), associate professor in the Department of Family and Community Medicine.
- Katherine Sukalski, PhD, interim chair and associate professor in the Department of Biochemistry and Molecular Biology.

Architects announced to design new home of UND School of Medicine and Health Sciences

University of North Dakota President Robert O. Kelley has named the noted regional and national firm of JLG Architects in partnership with the internationally recognized firms of Perkins+Will and Steinberg Architects to design the new home of the University of North Dakota School of Medicine and Health Sciences. The building received endorsements and funding from the 2013 North Dakota Legislature and Governor Jack Dalrymple.

The UND School of Medicine and Health Sciences building, which received total funding of \$122.45 million to be spread over two biennia (plus a reserve of \$1.55 million held by the State Board of Higher Education), will incorporate, for the first time under one roof, all of the school's educational, service, and research programs, some of which have had to be housed in separate locations on the UND campus for lack of space at the SMHS.

Frank Low Research Day award winners named

Thank all of you who participated in making the 33rd Annual Frank Low Research Day at the School of Medicine and Health Sciences a success. Special thanks to UND Vice President for Health Affairs and Dean of the School of Medicine and Health Sciences Joshua Wynne for ongoing support of this important annual event and for providing opening remarks at the oral session, and to Joyce Ohm, PhD, for serving as chair of the afternoon oral session.

We were pleased to have Malak Kotb, PhD, the founding chair of our new Department of Basic Sciences, review participants' posters and speak with them about their research. What a great response we had this year. Ninety-nine posters were presented; 94 of them were authored and presented by students and judged in competition in six categories. Four

graduate students delivered excellent talks: Rejwi Archarya, Biochemistry and Molecular Biology; Lalitha Kurada, Pharmacology, Physiology, and Therapeutics; Micah Schott, Anatomy and Cell Biology; and Promisree Choudhury, Microbiology and Immunology.

SMHS faculty member Jyotika Sharma, PhD, assistant professor in Microbiology and Immunology, spoke about receptors' contribution to pathology and protection in pneumonic sepsis, and Kate J. Claycombe, PhD, a research scientist with the Grand Forks Human Nutrition Research Center, spoke about obesity and adipose tissue epigenetics.

For a list of the winning student poster awards, please visit <http://bit.ly/FrankLowAwards>

Medical laboratory science students receive scholarships for 2013–2014

The University of North Dakota School of Medicine and Health Sciences awarded scholarships to medical laboratory science students at the school. Funds for the scholarships come from various private sources, endowments and scholarship funds.

- Haley Amoth of Grand Forks, N.D., received the Jean Holland Saumur Hematology Award for achieving the highest grade in hematology in the fall semester of 2012.

Jean Holland Saumur was the program director of the UND Medical Technology program for over thirty years and retired in 1985. This award was established in Jean's honor to recognize the dedication, service and significant contributions she had given to the University for over forty years. Jean passed away in April of 2011.

- Brock Davidson of Devils Lake, N. D., and Emily Peterson of Coon Rapids, Minn., each received the Ralph and Hazel Rohde Medical Technology Scholarship Award, which is given each year to UND senior medical laboratory science students who have shown academic excellence.

Ralph and Hazel Rohde's children had a strong interest in medical science. Two of their sons graduated in medicine, and their daughter and granddaughter graduated from UND in Medical Technology. The Rohdes established a Medical Scholarship Endowment in appreciation for the opportunities that were provided to their children and grandchildren. Ralph died in the 1980s and Hazel died in 1999.

- Brock Davidson also received the Miltza Luper Scholarship Award, which is given each year to a UND medical laboratory science student who demonstrated outstanding accomplishments in the subject of biochemistry and molecular biology.

Ms. Luper was an assistant professor in the Department of Biochemistry in charge of the biochemistry laboratory instruction for the medical technology (medical laboratory science) program during the years 1955–1981. This award is given yearly to the outstanding medical laboratory science student in the undergraduate Biochemistry 301 course. This scholarship is supported by income from an endowment given by various

graduates of UND in honor of Miltza Luper.

- Rachel Engel of Grand Forks received the Dr. Cyril J. Dillenburg Memorial Medical Scholarship, which is given annually to a full-time senior medical laboratory science student at Altru Hospital in Grand Forks.

Cyril Dillenburg, M.D., was the medical director of the University of North Dakota Medical Technology Program until his death in 1984. He was a friend and teacher of numerous students during this period. An award was started by his colleagues and friends to aid deserving medical technology and medical laboratory science students.

- Mary Kading of Park Rapids, Minn., and Jozey Ledoux of Mohall, N.D., each received the Eleanor Ratcliffe Scholarship award. This award is given each year to seniors in medical laboratory science who have shown academic excellence.
- Amanda Stevens of Valley City, N.D., received the Eileen Simonson Nelson Pathology Award. This award goes to the medical laboratory science student who receives the highest grade in the MLS 101 course in the fall semester of 2012.

Eileen Simonson Nelson received her Bachelor of Science in Medical Technology, cum laude, from the University of North Dakota in 1955. Eileen began her career at the Department of Pathology in 1956. Eileen served many roles in the department, including assistant professor, histopathology lab chief technologist, education coordinator of the Histotechnology Program, and acting director of the Medical Technology Program. She taught the CLS 101/MLS 101 course for many years and was the major advisor of the undergraduate students in the Medical Technology Program during that time. She was also very active in service work for her profession, having served as president and on many committees of the North Dakota Society for Medical Technology. She also was co-editor of the newsletter for the NDSMT. She did much service work for UND, including serving as an advisor to the Medical Technology Club. Eileen retired in 1994. Eileen still lives in Grand Forks.



Team Science

The School's researchers seek transdisciplinary cures for diseases.

by Juan Pedraza

As a scientist, Albert Einstein was a loner. No surprise there—like many physics superstars before him, Einstein developed his theories with thought, pen, and paper. Like Hippocrates, the Greek physician who's often dubbed the father of Western medicine, these scientists enjoy sole credit for their discoveries.

But there's quite a different model taking over the world of biomedical research.

It's called "team science" and was pioneered by folks like Marie and Pierre Curie, and Francis Crick and James Watson, all Nobel laureates and all team players whose paradigm-changing discoveries altered the course of science.

More recently, team science by different research groups—led by Nobel laureates Robert Gallo in the United States and Luc Montagnier and Françoise Barré-Sinoussi in France—uncovered the deadly AIDS virus.

"We used to focus on what was literally called the 'independent investigator,' or the lone scientist working in a lab," said Joshua Wynne, a cardiologist who's UND's vice president for health affairs and dean of the School of Medicine and Health Sciences (SMHS). "What has become clear more recently is that science now is done by interdisciplinary and interprofessional teams of people who bring different expertise and different knowledge to bear on a common problem."

Wynne explains: "In the past, research was done along discipline lines—anatomy, physiology, microbiology. Now, it's done along problem lines, for example, we're trying to understand Alzheimer's disease. To do that, we need an anatomist, a physiologist, and pharmacologist, and others."

Today's biomedical research literature abounds in studies of collaborative work across disciplines, across institutions, and increasingly across national boundaries.

But look beyond the sometimes cumbersome lists of authors and what you see is a growing movement that won't be turned back. The National Institutes of Health has even developed a detailed how-to manual about doing team science. And to go a step farther, there's a recently developed software package—the Science Collaboration Framework—to help research managers handle this type of science.

At the SMHS, that concept will soon be formalized in a new Department of Basic Sciences, approved by the North Dakota State Board of Higher Education and headed by a newly hired chair, biomedical researcher and science administrator Malak Kotb.

"To support this idea of team science—of bringing together different disciplines—we had to break down the discipline-specific silos that exist in most medical schools in the United States," said Wynne, who, in addition to his vice president and dean responsibilities, team teaches a cardiology class for second-year medical students. "The silo approach is the way it's always been done. That's because medical and other biomedical students are trained along those lines, so there was a logic for it."

But while it often led to very strong research within that department, the departmental structure became a barrier to cross-fertilization, according to Wynne.

Because we're a small and more nimble medical school than some, we had the opportunity to think about a better way to organize our basic science effort," Wynne said. "We thought there was by combining the departments—Anatomy and Cell Biology; Biochemistry and Molecular Biology; Microbiology and Immunology; and Pharmacology, Physiology and Therapeutics—and reorganizing the research efforts along a disease and problem orientation rather than discipline orientation."

The new structure is straightforward: the School's formerly departmentalized basic science efforts will now be housed in one department, chaired by one person.

"Then we'll reconstitute our research efforts within these groupings on specific diseases, such as Alzheimer's or cancer" Wynne said. "The exact nomenclature to name these new groupings remains to be determined. We've used the term *clusters* as a placeholder term for these multidisciplinary and multiprofessional groups."

One of the other critical components of this reorganization is the bridge to translational and clinical research.

"When we had discipline-specific departments such as anatomy and physiology, there was no logical connection to applying new knowledge to patients," said Wynne. "But now as we reconstitute our research efforts around diseases, there's a very logical connection to the patient."

"I don't know of any patient who has an anatomy problem, but I do know patients who have neurodegenerative problems," he said. "Anatomy is an example of a traditional style department, while a neurodegenerative disease is an example of a problem that we're studying in the laboratory but also that patients like you and me can suffer from. Thus there is a logical connection between the research cluster and the clinical patient, that is, translating what we discover at the bench to the bedside."

“We think we’re on the cutting edge of an organizational approach to science that will stand this school and North Dakota in good stead.”



Malak Kotb and Joshua Wynne

Clinical research will be incorporated into this team effort. UND's clinical departments and programs are Clinical Neuroscience (Psychiatry); Family and Community Medicine; Physician Assistant Program; Sports Medicine; Internal Medicine; Obstetrics and Gynecology; Pathology; Medical Laboratory Science;

Cytotechnology; Histotechnology; Pediatrics; Medical Genetics; Radiology; and Surgery. Its health sciences are Occupational Therapy, Physical Therapy, and Public Health.

“The ability to link these clusters to clinical programs and clinical research is vital to translational research, that is,

Team Science Tool Kit

The National Institutes of Health is the nation's medical research agency and the largest source of funding for medical research in the world. The National Cancer Institute at the NIH has a Team Science Toolkit, an interactive website to help scientists support, conduct, and study team-based research: <https://www.teamsciencetoolkit.cancer.gov/public/Home.aspx>.

The following is a description of team science from the Team Science Tool Kit.

What Is Team Science?

Team science is a collaborative effort to address a scientific challenge that leverages the strengths and expertise of professionals trained in different fields. Although traditional single-investigator driven approaches are ideal for many scientific endeavors, coordinated teams of investigators with diverse skills and knowledge may be especially helpful for studies of complex social problems with multiple causes.

Over the past two decades, there has been an emerging emphasis on scientifically addressing multi-factorial problems, such as climate change, the rise of chronic disease, and the health impacts of social stratification. This has contributed to a surge of interest and investment in team science. Increasingly, scientists across many disciplines and settings are engaging in team-based research initiatives. These include small and large teams, uni- and multi-disciplinary groups, and efforts that engage multiple stakeholders such as scientists, community members, and policy makers. Academic institutions, industry, national governments, and other funders are also investing in team science initiatives.

A growing trend within team science is cross-disciplinary science in which team members with training and expertise in different fields work together to combine or

integrate their perspectives in a single research endeavor. Cross-disciplinary team science has been identified as a means to engage in expansive studies that address a broad array of complex and interacting variables. It is seen as a promising approach to accelerate scientific innovation and the translation of scientific findings into effective policies and practices.

The success of team science is influenced by a variety of contextual environmental influences. These factors influence each stage of a scientific initiative, with implications for efficiency, productivity, and overall effectiveness. They include:

Funding trends

Institutional infrastructure and resources for communication and data sharing

Organizational policies—such as promotion and tenure policies—that impact team-based endeavors

Team processes, including the existence of agreements related to proprietary rights to data and discovery, as well as mechanisms for feedback and reflection

Interpersonal dynamics among team members

Team members' collaborative skills and experiences



Four National Eye Institute scientists collaborate on research.

Photo Credit: Rhoda Baer, National Eye Institute.

translating discoveries in the laboratory to applications with patients,” Wynne said. “That’s the translational link between the basic science and the clinical trials to see how those discoveries can benefit the patient.”

Wynne says UND is in a unique position to accomplish this vital reorganization.

“The larger schools—for example those with medical student enrollments of 1,200 or more and graduating classes of more than 200, compared with the SMHS’s 2013 graduating class of 59 students—with huge basic science departments would have a much more difficult time combining departments,” Wynne said. “Together with our smaller size, North Dakota’s ethic of cooperation for a common good—such as we saw during the flood of 1997—enables us to get this done. We think we’re on the cutting edge of an organizational approach to science that will stand this school and North Dakota in good stead.”

The newly appointed chair of basic sciences, Malak Kotb, a molecular geneticist, gets it, Wynne says.

“She understands the approach that the School is taking and understands its enormous potential,” Wynne said. “Her research, which crosses several scientific disciplines, has been built on getting different and diverse groups of scientists and physicians to work together productively to maximize the benefits to patients. That’s what we’re doing here.”

Wynne says it’s all part of a longer-term health care strategy adopted by the National Institutes of Health (NIH), which funds more basic biomedical research than any other federal agency.

“NIH has identified team science and translational research as part of its roadmap for the future,” Wynne said. “So we are really very much in line with the most progressive thinking coming out of NIH, the world’s preeminent biomedical research institution. What we hope to see as a result of all of this over the next decade is a doubling of our research enterprise, whether measured by funding, grants, publications, or, even more importantly, by actual contributions to helping people live better, fuller, healthier lives.”

Kotb was a tenured professor since 2008 at the University of Cincinnati College of Medicine’s Department of Molecular Genetics, Biochemistry, and Microbiology/Immunology and a former chair of the department. She was also a member of the Institute for Military Medicine Research in the Department of Surgery. Kotb, former director of the Mid-South Center for Biodefense and Security and the Midwest Center for Emerging Infectious Diseases, which are multidisciplinary research and education centers, will continue her own research program, but her primary focus will be on managing the new department.

“We clearly wanted someone with an active research program because it brings enormous credibility to the position,” Wynne said. “On the other hand, her priority is being chair of what now is the largest department in the School and one of the largest at UND, with 44 faculty.”

For her part, Kotb, who did her post-doc at Howard Hughes Laboratories at Duke University Medical Center, says collaborative, interdisciplinary science has long been part of her philosophy and approach to research.

“I’m not a Pollyanna, but I really do believe that my job is to bring the best out of everyone, to help them any way that I can, and to inject the spirit of enthusiasm and optimism, knowing that together we will create a highly competitive, innovative and successful program,” said Kotb, who is originally from Cairo, Egypt. “I don’t believe in silos. My own research covers all the areas of basic science and is strongly geared towards medical applications. I really benefited from this approach because when you’re tapping into these various areas, your final product is unique.”

Kotb—who received her doctorate in immunology and biochemistry from the University of Tennessee Health Science Center and St. Jude Children’s Research Hospital—points out that many diseases, such as diabetes, work complexly in the human body, that is, they’re system-wide.

“So it’s important, as we research effective cures and means to preempt disease, to take a collaborative, holistic approach,” she said.

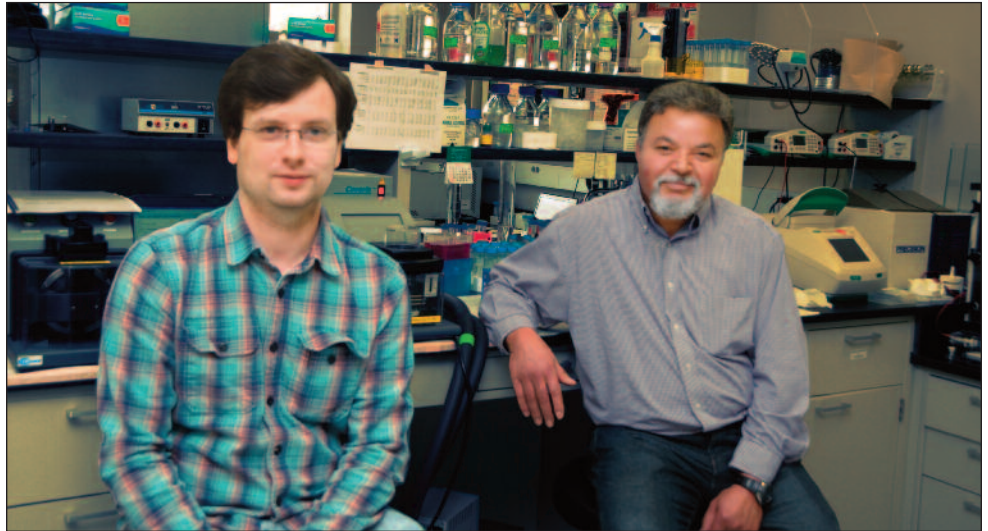
“It’s important, as we research effective cures and means to preempt disease, to take a collaborative, holistic approach.”

Research Mentors

Two researchers kindle the flame of learning for gifted high school students.

By Megan Sevigny

“Without their help, the projects would have been impossible.”



Sergei Nechaev and Othman Ghribi

North Dakota’s Regional and State Science Fairs serve as invaluable tools that allow younger students to pursue answers to their scientific questions and to have fun while doing so. For several students of Loretta Monson, a Valley-Edinburg high school science teacher, this year’s science fairs also provided the unique opportunity to work one-on-one with UND faculty and equipment.

“I have observed that students winning top awards often have the advantage of great mentorship,” Monson said. “I wanted my students from a rural area to have the ability to compete with the best.”

Students in Monson’s applied science class are required to choose and independently research a topic that they will later present at the Regional Science Fair. One potential concern faced by high school science students—particularly those from rural areas—is a lack of equipment.

“Most of the time, our science lab and local resources are adequate, but sometimes we need to ask for help,” Monson said. “As a mentor, I identified projects that were beyond our laboratory resources and my expertise. When I know students are really motivated, I will do anything I can to make their project possible.”

Monson sought out Charlene Crocker,

a research scientist at UND’s Energy and Environmental Research Center, and Karen Cisek, a project coordinator in the Department of Pathology at the School of Medicine and Health Sciences, for the connections that would allow her students to succeed.

“Without their help,” Monson said, “the projects would have been impossible.”

This is how Monson and her students became acquainted with UND SMHS faculty members Sergei Nechaev, PhD, assistant professor in the Department of Anatomy and Cell Biology, and Othman Ghribi, PhD, associate professor in the Department of Pharmacology, Physiology, and Therapeutics.

“This was really a chance occurrence,” Nechaev said. “Karen Cisek had approached me during one of the local science meetings about a high school student working on a science project. She did not give me any details, but I still said yes because a high school student who is proactively seeking advice is a good sign.”

Kari Olson, the student who worked with Ghribi, was interested in studying the mutagenic effects of the herbicide Roundup, which is used extensively by local farmers including her father. According to Monson, Ghribi suggested the chemicals to be used

for the assay of the herbicide and allowed Kari the use of his lab, where she was supervised by a graduate student over a number of sessions. Unfortunately, the first set of tests yielded results that were toxic in all concentrations, and Kari was unable to find time to redo the tests to find more meaningful results and was, therefore, unable to compete at the Regional Science Fair.

"She was very disappointed, as was I," Monson said. "Dr. Ghribi was wonderful; it was no fault of UND because the assay had not been done on Roundup as far as we knew. Actually, what happened was very common in science. Often at first, one finds out what not to do so one knows what one might do the next time.

Despite the disappointing results, Ghribi feels that it is "helpful for students to be exposed to research" and that working in the lab "may instill in them the love for science." While he admits to not having spent as much time working with Kari as his graduate student did, he said that he "will be happy to have more high school students in his lab."

Shelby Cyr, who worked with Nechaev, had better luck with her tests.

"Shelby seeks knowledge and leaped at the chance to do a challenging project," Monson said. Shelby's project focused on the effects of radiation on DNA. Using advice from Nechaev, Shelby was able to study the effects of different types of DNA-damaging agents—particularly UV and gamma radiation—on DNA.

"Shelby was able to master a technique that was new both for her and for me," Nechaev said.

According to Monson, "The question and hypothesis were Shelby's. She knew what she wanted to find out."

Nechaev found this particularly impressive. "Shelby had come to my laboratory already with the question in mind. In my experience, asking the right kind of question is perhaps the most difficult problem in science, and her success in my laboratory was attributed in large part because of her having asked the experimental question herself."

Nechaev said that Shelby surpassed the expectations he had placed upon her. "By the end of her project, she was able to perform a very complicated experiment

essentially without my supervision. I was still around and ready to intervene, but it was never necessary. Shelby is an extremely talented student. For a mentor, having a student gain independence so quickly is important."

When asked about the value of mentorship programs such as this, Nechaev answered, "The value is equally high for both the student and the mentor: for the latter, it is a great opportunity to do something other than regular research yet still be close to the laboratory, and for the student, it is potentially a career-changing experience."

Monson has similar feelings regarding the work her students have done with professorial mentoring. "In my opinion, students find validation and motivation by connecting to resources beyond high school. . . . They believe that their dreams may just be possible and are able to see a future in a scientific field."

Monson also feels that a student-faculty mentor program could be useful for UND. "Contact with select high school students is a good recruitment tool for UND. The beginning of a personal relationship is valuable."

According to Monson, all of her students who were able to complete their projects advanced to the State Science Fair. Shelby's project was one of two chosen to advance to the International Science Fair in Phoenix, Ariz.

"Student exhibitors to the International are selected at the State Science Fair; I was not surprised when the judges determined that she would be one. None of this would have been possible in our high school setting."

According to Nechaev, exposure to science at a young age is helpful in allowing the students to make important decisions about their future. "The problem is that many students are not considering a career in sciences because they do not know what science is like. And their exposure to scientific experiments, no matter how brief, gives them a more informed choice in their future career."

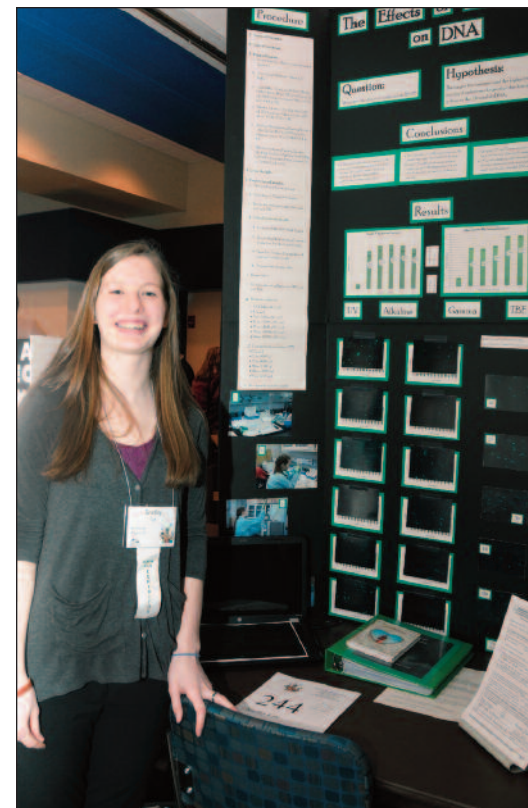
Monson said that Shelby has been approached by Nechaev concerning summer research opportunities, and with support from her family, Shelby is strongly considering accepting.



Loretta Monson



Karen Cisek



Shelby Cyr with her North Dakota State Science Fair project titled "The Effects of Radiation on DNA."

Medicine, Public Health, and the Next Generation Health Care System: Building on the Shoulders of Giants

UND's new MPH Program forges new partnerships to target better health for North Dakotans.



By Raymond L. Goldstein, DrPH,
and Karen Goldstein, PhD

Over the years, we have heard many doctors say, “I see the same patients with the same complaints and problems over and over again, and I can’t seem to make a difference. Worse still, I see their children develop the same conditions and begin the cycle anew.” It is like a merry-go-round especially for chronic conditions. Similarly, we have often heard public health practitioners express frustration with the difficulty of affecting behaviors such as smoking, alcohol and other substance abuse, poor dietary habits, and sedentary lifestyle, which lead to health problems.

All this is about to change in the twenty-first century, as we develop a health

system that brings public health and medicine and the other professions together with a common mission to improve population health outcomes. The difference will be a focus on health outcomes, rather than process alone, and the continual evaluation of these outcomes in large populations using data from electronic health records and other databases. Teams consisting of clinicians, epidemiologists, bioinformatics specialists, health services researchers, economists, social scientists, and others will use *big data analytics* (the analysis of the prodigious amounts of unstructured data myriad digital sources record of everything from business transactions to

Web logs to e-mails to social media posts and others) to conduct comparative effectiveness studies that will drive continual quality improvement and population health management.

Traditionally, clinical and public health professionals have worked mostly in parallel rather than in partnership. The public health perspective is population-based with a focus on prevention and understanding the multiple determinants of health. Public health is known for epidemiological investigations and using data analytics to monitor and understand health problems. The clinical professions are focused on diagnosis and treatment of existing health problems and the individual patient and physician encounter. However, our fields are changing rapidly as we recognize our limitations and assess the opportunities to change and improve. We can see more and more clearly that our missions are necessarily aligned. In the health care system that is emerging, each field will contribute its expertise to the goals of population health improvement, and achievement of these goals will be continually monitored and evaluated for ways to improve the system's outcomes.

What is bringing about these changes? The Affordable Care Act has hastened what was already underway since at least the 1980s—a recognition that prevention and a focus on outcomes are needed to address the serious problems of cost, quality, access, and efficiency in the health care system. In addition, the tremendous growth in computing capability, analytic software, and new technologies applied to health care records has made it possible to move beyond small-scale investigations and into the era of big data. We are building on the shoulders of giants.


Comparative effectiveness research, continuous quality improvement, and population health management are possible for large patient populations using massive clinical and administrative databases that are collected, stored, and mined digitally. Moreover, the time from encounters to results grows shorter and shorter as computing capability and software improve. Perhaps most

ironically, these advances will provide greater ability to tailor treatments to individuals than ever before and usher in the era of personalized health care. As an example, IBM has a new commercial version of its Watson system that suggests the best possible lung cancer treatment by comparing an individual's situation to a library of millions of clinical records and medical research findings.

A 2013 report by IDC Health Insights contends that “Previous attempts to improve quality and control costs through programs such as capitation and withholds were not successful, in part due to inadequate data that were retrospective and not in a format that was useful to

“It is an exciting and promising time to be in the health field.”

physicians. Advantages and reasons for optimism in 2013 and beyond are about the ability to move, normalize, and analyze data in a far more robust fashion than 20 years ago.” The same report finds that health care organizations are embracing advanced analytics and tools such as streaming data monitoring and analysis, text mining and social graph analysis. New data sources such as mobile devices, social media, and unstructured clinical data are being used to support care management.

The new Master of Public Health Program at the School of Medicine and Health Sciences has responded to the emerging needs of the new health care system. The program is preparing students, including physicians and other clinicians, to use the data capacity of the health care system to identify people at risk; tailor health care interventions; monitor and evaluate the outcomes of these interventions; and return this information to providers and other professionals to improve performance. It is an exciting and promising time to be in the health field. 

Scrubs Camps: Growing the Program That's Growing Our Own

By Kristine Morin

The Rural Collaborative Opportunities for Occupational Learning in Health (R-COOL-Health) Scrubs Camps began in 2009 as a minigrant program focused on introducing rural North Dakota students in Grades 5 through 12 to various careers in health care. If you fast-forward four years, you will clearly see that the 41 camps involving 184 communities and over 2,600 kids have touched people in every corner of the state.

This past year, the Scrubs Camp program was able to provide funds to rural communities for nine grants. Grant awardees were Bottineau Public Schools, Carrington Health Center, Northeast Education Services Cooperative–Devils Lake, Coal Country Community Health Clinic–Hazen, LaMoure County Public Health Department–LaMoure, Ransom County Public Health–Lisbon, Good Samaritan Society–Mohall, and Sanford Mayville. To be eligible for a grant, the awardees had to forge partnerships between local schools, health-care facilities, and economic or job development authorities in order to increase collaboration and awareness of the local economic impact of health care.

Interaction between local health care professionals and students is what makes the Scrubs Camp program unique. Engaging rural professionals with youth allows children to see beyond “going to a doctor appointment”—they can see first-hand what it would be like to be a health care professional in their hometown one day. Additionally, this collaborative process allows professionals to connect with kids in a different way, potentially growing the connection they have with the rural community they serve.

The program has room to grow to make each year better by fostering the potential of youth to commit to health-related occupations. “Each year the camps become more and more hands-on,”

said Kylie Nissen, senior project coordinator at the Center for Rural Health at the School of Medicine and Health Sciences who coordinates the Scrubs

Camp program. “Part of this stems from camps learning from other camps. We have heard from students and seen from evaluations the campers complete that these camps are making a difference. Students report they never knew there were so many different health professions. The older students are also very excited to hear about the job outlook—that the odds of their getting a job are better than in many industries if they go into health care. A rural community that has held camps every year that we have hosted the program reported a specific story about two girls that attended their camp a few years ago. Neither of the girls had considered a health care career, but after attending the camp, they both wanted to pursue health careers in different professions that they had learned about at the camp. They are both now graduated from high school and are attending college for those careers.”

In addition to positive stories from around the state that trickle in to the Center for Rural Health, Nissen and others have had the opportunity to share the Scrubs Camp model on a national level. “I have also been contacted on numerous occasions asking for ideas and information on how other states could host this type of camp,” Nissen said. “Recently a

“Students report they never knew there were so many different health professions.”



The Center for Rural Health connects health care professionals with youth to foster health care careers.

university in Florida contacted me asking about our program. It is really neat to know that something that means so much to us here in North Dakota is also having an impact on other states.”

The Center for Rural Health has also created a three-day summer camp held at the University of North Dakota, the R-COOL-Health Scrubs Academy, which is modeled after the Camp program. Because of overwhelming requests, the CRH is working with the North Dakota Area

Health Education Centers to provide another Scrubs Academy in the western part of the state. The inaugural “Scrubs Academy II” will take place in Bismarck in early August.

Positive outcomes, collaborative work, and ultimately “growing our own” make up the mantra of the Scrubs program. Another four years of this innovative program will inevitably provide more success stories for rural North Dakota communities and their youth.



Todd Schaffer, MD '02, Carrington Health Center, works hands on with a Scrubs Camp participant.

Team Boosters

By Mark Barclay

A bright spot for rural North Dakotans is the increasing role that advanced practice providers play in primary care.

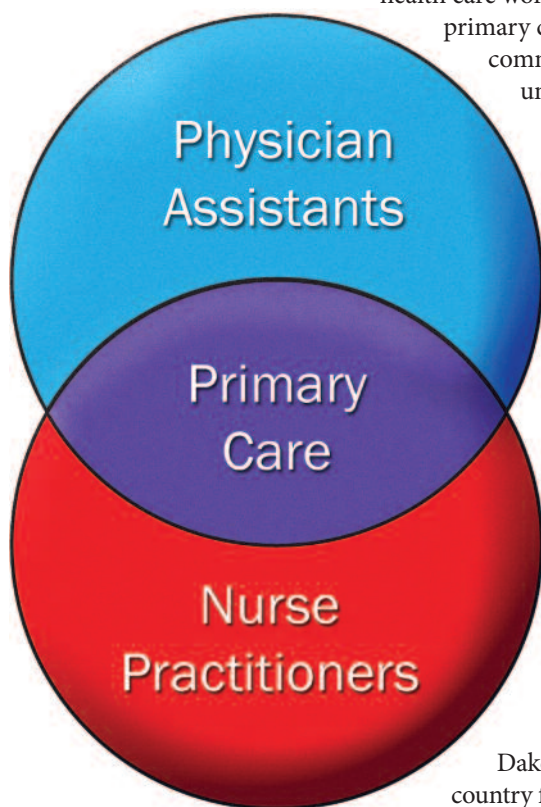
It is no secret that the country is facing a shortage of primary care physicians now and into the future. The Association of American Medical Colleges estimates that by 2020 there will be 45,000 too few primary care physicians. With shortages this large, and demand still increasing, there is no easy solution. These shortages are exacerbated in rural North Dakota, where communities can spend tens of thousands of dollars and years recruiting a physician to their community.

Despite these challenges, there does appear to be a bright spot in rural North Dakota's health care workforce: the increasing role that advanced practice providers are playing in primary care. In rural North Dakota, advanced practice providers are most commonly physician assistants (PAs) and nurse practitioners (NPs). It's very unlikely that most rural North Dakota health care facilities could operate without PAs and NPs.

PAs and NPs are able to contribute to primary care in a number of ways. They see patients in the clinic and hospital, cover call in the emergency department, write prescriptions, and provide patient education and more, depending on their specialty. While it varies by facility, rural North Dakota PAs and NPs see as many as 25 patients a day. This large contribution to patient care was noted in a 2012 report by the Center for Rural Health in which rural residents reported receiving care most often from, first, PAs, second, NPs, third, advanced practice providers (unsure if provider was PA or NP), and fourth, physicians.

Along with providing care, PAs and NPs also have a large economic impact in their communities. As noted in a recent report from Gerald Doeksen, PhD, at the National Center for Rural Health Works, "One PA/NP in a rural community generates over \$175,000 in wages, salaries, and benefits annually." Doeksen also noted that this number doesn't include revenue generated from the PA/NP, so the actual number is probably much higher. Considering North Dakota has 772 PA/NPs currently practicing, their combined annual economic impact on the North Dakota economy is at least \$135,100,000.

For decades, UND has been committed to training providers for rural North Dakota. Along with consistently being one of the top medical schools in the country for the percentage of graduates choosing family medicine as a specialty, UND also has top-notch programs for PAs and NPs aimed at helping to reduce rural North Dakota workforce shortages.



Physician Assistants

The relationship between a physician and a PA is unique, and has a long history in rural North Dakota. PA training consists of working primarily with one physician, known as a preceptor, for the duration of the PA's education. Working together like this tends to build a strong, collaborative, and trusting relationship between the physician and the PA.

As part of its mission, the UND PA program at the UND School of Medicine and Health Sciences strives to serve rural North Dakota. Students are often selected from rural backgrounds and complete the majority of their education in the rural area in which they plan to practice. According to UND PA Program Director Jeanie McHugo, PhD, "Our program prides itself on working to serve rural North Dakota. Our students tend to have a solid connection to their communities and a strong desire to return to their home communities to

provide medical care for rural populations.” Currently, there are 272 PAs licensed to practice in North Dakota; of those, 139 have graduated from UND’s PA program. A spring 2013 survey conducted by the UND Physician Assistant Program showed that 68 percent of UND PA graduates are practicing in primary care, 36 percent were working in rural areas, and 78 percent returned to their home communities for clinical practice.

Nurse Practitioners

In North Dakota, NPs are registered nurses with additional training and licensure. Since legislation was passed in 2011, NPs in North Dakota have the ability to operate independent practices. As of May 2012, there were about 500 NPs practicing in North Dakota, according to a May 2012 survey by the U.S. Bureau of Labor statistics.

UND’s College of Nursing and Professional Disciplines is one of three NP schools in North Dakota. In addition to offering programs in family practice, adult-gerontology, and family psychiatry, UND also offers a post-master’s certificate in family psychiatry that targets rural NPs already in practice. Qualified mental health providers are in great need, as all but six counties in North Dakota are identified as underserved for mental health. Mental health coverage has also been identified as a top challenge for North Dakota critical access hospitals (CAHs) through a 2011 survey of CAH administrators conducted by the Center for Rural Health and over the last two years by the Community Apgar Project (CAP). This project uses a validated research tool, developed by Boise State University and the Idaho Family Medicine Residency, that assists CAHs in determining their relative strengths and challenges when recruiting family medicine physicians. The CAP results indicated that advanced practice providers, with mental and behavioral health training, such as those educated through UND’s NP post-master’s program, can improve access to care, reduce the burden on rural physicians, and may reduce physician turnover.

Bright future

As health care delivery evolves, new team-based care models are becoming more prominent. These models involve a variety

of health care professionals working in collaboration to promote preventive care, manage chronic diseases, and provide emergency services—all of which may help keep costs down. In models such as patient-centered medical homes and accountable care organizations (ACOs), PAs, NPs, and primary care physicians play a significant role in care coordination. Coordinating and managing care by using interprofessional collaborative teams, through integrated delivery systems, is a primary focus of the Affordable Care Act (ACA).

Many rural North Dakota communities are being assisted with workforce recruitment and retention through the Center for Rural Health’s Workforce Development Program. In the past, recruitment and retention was almost

“ “ Our students tend to have a solid connection to their communities and a strong **desire to return to their home communities to provide medical care for rural populations.** ” ”

exclusively associated with physician workforce needs; however, because of the scope of workforce needs in rural areas, the CRH works with community and health organizations to facilitate the placement of not only physicians but also PAs, NPs, and other health workforce professionals. The delivery of rural health care is more complex today and can involve an array of organizational delivery models, interprofessional teams, educational and training venues, increased use of technology, and other innovative solutions. As the ACA continues to be rolled out, we are likely to see even more experimentation within the U.S. health system, including rural health.

While there are many uncertainties for the future of health care, one thing is clear in rural North Dakota—PAs and NPs, many of whom are trained through UND, greatly complement primary care physicians to ensure that rural residents have access to high quality health care.



Ilse Coleman

Occupational therapy student, McNair Scholar

By Juan Pedraza



Ilse Coleman (left) and Anne Haskins

Ilse Coleman's driving ambition is to be helpful.

That's why this Spanish-speaking Latina from El Paso, Texas, chose UND's occupational therapy program. A family connection helped her link up with UND.

"I found out about UND because my dad, a U.S. Border Patrol agent, lives up here, and I toured the School and liked it a lot," said Coleman, who's tackling a lot of volunteer activities amid the rigorous academic program in OT. "When I came to UND, I knew that I was going to do something in health care because I have an inner drive to help people. I want to be a resource for them when they're in need, but I wasn't sure what career path to take. I really liked the science behind the health care professions, but I also liked that there's a real human component to those careers."

Coleman wrote herself an ambitious road map that includes becoming a college professor eventually.

"I took premed biology, explored various career options, and finally shadowed an OT," said Coleman, a 2013 UND Alumni Association Spirit Award winner. "I saw that OTs took a lot of time to get to know their clients, and that was the first time that I'd really seen that in a health care profession, which I think is very important."

She was accepted into the OT program—part of the UND School of Medicine and Health Sciences—in April 2012.

It's a great choice among the many available at UND.

A McNair scholarship—part of the federal TRIO programs, which were originally launched by act of Congress in 1965—helps her get through college.

Coleman connected with this TRIO program through a colleague at the UND Multicultural Student Services Center, which she frequents.

"I didn't quite understand it, so I decided to go see what it was about," she said. "I applied and wrote an essay about why research is important to me and my plans for a PhD. Ultimately, I want to be faculty at a university, but at the beginning of my career, I want to do research and treat patients in a research-

hospital setting. The McNair Scholarship relieves a lot of stress in my life."

Coleman is always on the lookout for interesting volunteer opportunities,

“When I came to UND, I knew that I was going to do something in health care because I have an inner drive to help people...”

putting new twists on traditional ideas, especially with respect to interprofessional collaboration. She and some colleagues from occupational therapy, physical therapy, music therapy, and nursing are working on a fall event for special needs children.

"First, we need to establish those cooperation skills and understand each person's role [as part of a health care team]," she said. "Second, it's fun to work with people, meet new people, and provide a service together."

Coleman, who won a Special Olympics benefit dance competition this spring, said faculty support is vital to her success.

"Because I'm so far away from family in El Paso, that kind of support keeps me going," she said. "I fit in great here, but it's not my Hispanic culture and that's sometimes been very challenging."

Mentorship is key.

"So faculty, especially my mentor Anne Haskins, have been my backbone here," Coleman said. "In that regard, the UND OT program is excellent. Every single person in the program is there to help you.

I felt very lucky to be accepted into this program, to be able to collaborate with the team here and get to know them."

Elaine Metcalfe is director of TRIO Programs at UND.

What is TRIO?

The federal outreach and student services programs known as TRIO—represented here at UND—were launched as a direct consequence of the Higher Education Act of 1965. They're designed to identify and provide services for individuals from disadvantaged backgrounds. TRIO includes eight programs targeted to serve and assist low-income individuals, first-generation college students, and individuals with disabilities to progress through the academic pipeline from middle school to postbaccalaureate programs. TRIO also includes a training program for directors and staff of TRIO projects.

TRIO was given its name because it started as a group of just three programs; the name is not an acronym.

To learn more about TRIO, please visit www2.ed.gov/about/offices/list/ope/trio/.

Celebrating **40** years of **INMED: 1973–2013**

A look at who guided the Indians Into Medicine program through pitfalls and challenges to see it become the largest program of its kind in the nation.

By **Jessica Sobolik**

Rarely does a program funded by the federal government last 40 years. But the UND School of Medicine and Health Sciences' Indians Into Medicine



Lois Steele, first director

program has been one exception. A recent celebration of its 40-year anniversary honored those who started the program and kept the ball rolling. The event also celebrated its promising students and successful alumni. It was a great opportunity to look back on the history of the program that is still going strong today.

The Start

In 1971, Dr. Robert Eelkema, then chair of the Department of Community Medicine, visited the National Institutes of Health (NIH) in Rockville, Md., to investigate funding opportunities that would help move the UND School of Medicine from a two- to four-year degree program. There, he learned about a new minority health program that offered grant funding for the medical training of American Indians. Eelkema and his cohorts called their grant proposal Indians Into Medicine (INMED). The program was one of the first minority programs to be funded by the NIH, receiving \$350,000 in 1973.

At that time, there were only 26

American Indian physicians in the nation, and one dentist.

"I'm happy it's lasted 40 years," Eelkema said.

Gaining Momentum

Lois Steele, a member of the Fort Peck Assiniboine/Sioux tribes, was the first director of INMED. "INMED was a challenge, but I loved nearly every minute of those eight years," she said. After one year, she left UND to earn her medical degree. Then Dean Tom Johnson hired her back after she completed her training.

Steele appointed Jim Claymore, a member of the Cheyenne River Sioux Tribe of South Dakota, to the Tribal Advisory Board. He chaired the board



In 1998, David Gipp (left) is congratulated by Jim Claymore on becoming Chair of the Tribal Advisory Board.

for more than 20 years before handing the reins over to David Gipp, current board chair and member of the Standing Rock Sioux Tribe of North Dakota, in



1998. Claymore passed away in 2008 at the age of 88.

During Bernard Kahrahrah's time as director, program members drove a trailer adorned with the INMED turtle logo created by Chip Houle, a Chippewa artist from the Turtle Mountain Reservation, to more than 100 elementary schools in five states. Over the years, the group recruited students like Dr. Richard Larson, BS Med '82, who in high school had not given any thought to a career in health care. After attending the INMED Summer Institute, he realized he had found his calling.



Continuity

Today, INMED continues to offer its Summer Institute program along with a Pathway Program that prepares tribal community college students for the transfer to a UND health care program, and a Med Prep Program that prepares students for medical school. More information on summer programs can be found at www.med.und.edu/inmed.

INMED's mission is to identify, recruit, retain, graduate, and return individuals to positions that serve the Native population, and it's not just for medical students. It has expanded to include programs for occupational therapy, physical therapy, physician assistants, public health, nursing, dietetics, social work, medical technology, clinical psychology, and chemical dependency counseling. Over 200 physicians have graduated from the INMED program, as well as 240 nursing

and other health care professionals. One in five American Indian physicians from federally recognized tribes have received their training at UND.

At INMED's 10-year celebration in 1983, Dean Johnson called the event "the celebration of an idea ... that did not disappear when so many things from 10 years ago did disappear." Current INMED Director Eugene DeLorme, member of the Turtle Mountain Band of Chippewa, pointed out the even bigger accomplishment that the program has lasted 40 years. "Obviously the program is doing what it was designed to do," DeLorme said. "The design was for a real need, and the communities it serves have actually been served."

Giving

Indians Into Medicine greatly appreciates thoughtful gifts from alumni and donors. To make a gift to INMED, visit www.undalumni.org/medicine.



Eugene DeLorme
present director

“The design was for a real need, and the communities it serves have actually been served.”



Alan Demaray plays the flute at the 40th celebration.

WEB EXCLUSIVE:

More photos from the program's 40-year history can be viewed at <http://bit.ly/inmed-40>.



There's an APP for That

Researcher studies a gene that may cause Alzheimer's disease and atherosclerosis.

By Juan Pedraza



Colin Combs

Can't find your keys? Forgot the last name of your kid's hockey coach?

Misremembered your parent-in-law's birthday?

These quirky tricks of memory—most often associated with becoming a senior citizen—happen to all of us throughout our lives.

But for folks with atherosclerosis and related circulatory system ailments, fading memory power is an ever-deepening reality, along with more sharply defined problems such as heart attacks.

University of North Dakota neuroscientist Colin Combs, PhD, is on the trail of one mechanism in the blood stream that's a likely culprit in causing these troublesome blood vessel blockages. The National Institutes of Health thinks he's on to something too—the world's largest biomedical research funding agency recently approved a two-year \$379,000 grant to Combs.

Combs, a professor in the Department of Pharmacology, Physiology, and Therapeutics at the UND School of Medicine and Health Sciences, will use the funding to continue his work on atherosclerosis.

"Atherosclerosis—popularly known as hardening of the arteries—results from the buildup of deposits in arteries," said Combs. "These deposits are a sticky substance made up of fat, cholesterol, calcium and other substances found in blood."

The buildup of plaque eventually hardens, narrowing the arteries and restricting the blood flow, particularly in the region of the heart and in the brain. Hence, for many people with this disease, this results in noticeable memory loss.

The slow, subtle onset of the disease, starting as early as childhood, means many people are unaware of the disease until they suffer a stroke or a heart attack in their 50s or 60s. Atherosclerosis is

implicated in a host of other problems, including heart failure, aneurysms, and kidney failure.

Combs' focus is on a gene—amyloid precursor protein, or APP—that is found in cell membranes throughout the body. Its normal function is unknown; however, research, including ongoing work in Combs' lab, has shown it may be involved with Alzheimer's disease as well as atherosclerosis.

"We're looking to develop two strategies relative to this process," Combs said. "The first is genetic modifications in the mice used for this research that will inhibit the role of APP specifically with respect to plaque formation. The second is a pharmacological intervention that uses drugs to accomplish the same thing."

"The pharmacological approach allows us to identify and propose novel therapeutic agents for treating these diseases," he said.

Atherosclerosis is preventable and treatable.

"Preventive steps are to quit smoking, eat healthful foods, maintain a healthful weight, exercise more, and manage stress," Combs said.

People with the condition may be treated with medications to lower "bad" cholesterol, low-density lipoprotein (LDL), and raise the "good" cholesterol, high-density lipoprotein (HDL), in their blood.

Physicians may also prescribe aspirin to reduce platelets from clumping and further blocking the arteries. Other treatments may include angioplasty, a procedure to physically widen the artery to improve blood flow.

Longer term, Combs said, he's pursuing a broad series of projects related to atherosclerosis, Alzheimer's disease, Parkinson's disease, cerebrovascular disease, and multiple sclerosis.



Holly Brown-Borg Honored with Lifetime Achievement Award

By Denis MacLeod

Holly Brown Borg, PhD, Chester Fritz Distinguished Professor of Pharmacology, Physiology, and Therapeutics at the University of North Dakota School of Medicine and Health Sciences, was presented the 2013 Denham Harman Lifetime Achievement in Research Award recently at the 42nd Annual American Aging Association (AGE) Meeting in Baltimore, Md. Brown-Borg also delivered a lecture at the conference titled “Hormones and Aging: Lessons from the Dwarf Mouse.”

Established in 1978, the Lifetime Achievement Award was named in honor of Dr. Denham Harman, a co-founder of the association, and honors a person who has made significant contributions to biomedical aging research. The association’s primary mission is to promote biomedical aging studies directed toward increasing the functional life span of humans with one goal being to slow the aging process.

“Holly should be very proud of her achievements,” said Jonathan D. Geiger, PhD, Chester Fritz Distinguished Professor and chair of the Department of Pharmacology, Physiology and Therapeutics; and interim chair of the Department of Anatomy and Cell Biology at the School of Medicine and Health Sciences. “She has worked very hard and has earned great respect from her colleagues locally, nationally and internationally. Her successes help her and help us institutionally. We will certainly do all we can to help her and to ensure her future successes.”

Brown-Borg’s aging research is internationally recognized. Recently, Brown-Borg became the organizing chair of the International Symposium on Neurobiology and Neuroendocrinology of Aging. She has served as the president of the American Aging Association, chair of the Biological Sciences Section of the Gerontological Society of America (GSA), and chair of the Gordon Research Conference on the Biology of Aging. In 2006, she was elected as a fellow in the GSA,



the highest honor given to active members of this society which researches aging.

The National Institutes of Health, the nation’s medical research agency and the largest source of funding for medical research in the world, has provided grant support for Brown-Borg’s work for more than 18 years. In addition, Brown-Borg has earned funding from the American Federation for Aging Research, the Glenn Foundation and the Ellison Medical Foundation.

Also recognized at the meeting were two graduate students in Brown-Borg’s lab. Receiving awards were Vanessa Armstrong and Joe Wonderlich, both won runner-up Walter Nicolai Awards for meritorious research by a graduate student or medical student in the area of biomedical gerontology. Wonderlich delivered an oral presentation titled “Dietary methionine and aging in long- and short-living growth hormone mutant mice” at the Aging and Nutrition pre-meeting on May 31 and Armstrong presented a poster titled “Growth hormone receptor knockout mice display differences in DNA methyltransferases and interspersed repeats” at the AGE conference on June 2. Both received monetary awards and certificates.

Vanessa Armstrong, Holly Brown-Borg, and Joe Wonderlich

Sophomore Award Winners

Medical students and faculty are honored.

By Denis MacLeod

North Dakota Medical Association Awards

Awarded to second-year students nominated by their peers, the Class of 2015, and recognized for outstanding performance in the following three curricular areas:

Group Leadership and Professionalism—*Craig A. Meiers*

Engages in ethical conduct, facilitates group interaction and productivity, motivates others to learn, exhibits personal integrity, and interacts with others appropriately with respect and courtesy



Joy Dorscher, Craig Meiers, and Joshua Wynne

Peer Teaching—*Lucas G. Teske*

Outstanding contributions to the group's database and facilitating group learning, skillful and accurate presentations, and willingness to assist fellow classmates to learn concepts they do not understand

Integration of Basic Science and Clinical Application—

Andrew M. Mills

Ability to analyze problems, generate hypotheses, set priorities, test hypotheses and formulate alternative hypotheses, draw appropriate conclusions, and apply the knowledge to patient cases

Academic Awards

The following awards are presented to second-year medical students in recognition of their overall academic achievements:

The DeBoer Memorial Award—*Craig A. Meiers*

Given in memory of Mrs. Benjamin DeBoer and presented by the Department of Pharmacology, Physiology, and Therapeutics

Dr. Philip H. Woutat Memorial Scholarship Award—

Amanda L. Blanchard

Presented by the Department of Anatomy and Cell Biology on behalf of Mrs. Philip H. Woutat in memory of her husband

for his longtime service as a radiology instructor

Dr. William Eugene Cornatzer Award—*Bethany D. Kaemingk*

Presented by the Department of Biochemistry and Molecular Biology in recognition of Dr. William Eugene Cornatzer, the founder of the department, the first chair and a pioneering and innovative leader in medical education and biomedical research

Dr. James Kelleher Award—*Joshua D. Johnson*

Presented by the Department of Microbiology and Immunology in honor of Dr. Kelleher's outstanding service to the School of Medicine and Health Sciences and his dedication and contributions to the teaching of medical students

Service Award

Kevin Monk Award—*Elizabeth A. Gray*

Given to a second-year medical student for outstanding service to the School of Medicine and Health Sciences

Outstanding Teacher Awards

Portrait Award—*Susan Splichal*, PhD, Family and Community Medicine

For outstanding support of students during their first two years of medical education



Tom Botsford, Susan Splichal, Joshua Wynne

Golden Apple Award

For excellence in teaching, presented to the instructor whose instruction has had the greatest impact on the class

Presented by sophomore students to *Thomas M. Hill*, PhD, Assistant Dean for Preclinical Education, Professor of Microbiology and Immunology

Presented by freshman students to *Patrick A. Carr*, PhD, Assistant Dean for Faculty Development, Associate Professor of Anatomy and Cell Biology

'00s



Jason Askvig, PhD Anatomy '12, was just hired as an assistant professor in the Biology Department at Concordia College. Askvig will be teaching cell biology, and an anatomy and physiology course.



Khalin Dendy, MD '09, is now certified in internal medicine through The American Board of Internal Medicine. Dendy is an internal medicine physician at Sanford Clinic in Bismarck.



Joni Buechler, MD '06, has joined the Essentia Health Cancer Center in Fargo. Buechler, a native of Golden Valley, N.Dak., previously worked at St. Vincent Frontier Cancer Center in Billings, Mont. She served a residency in radiation oncology at the University of Iowa Hospitals and Clinics in Iowa City.

Elena Rodgers-Rieger, MD '03, has joined the Pathology Department at Essentia Health in Fargo. She most recently worked for Sanford Health. She served a residency in anatomic and clinical pathology and a fellowship in surgical pathology at the University of Minnesota Medical School in Minneapolis.



Lisa Henry, MD '00, has joined Blue Cross Blue Shield of North Dakota as a medical director in the Health Network Innovation division. Henry, a native of East Grand Forks, Minn., is responsible for providing leadership and oversight for quality management activities, including quality monitoring, fraud, waste and abuse, physician reporting and medical policy development. She will also provide clinical support for Utilization Management, Case Management and Disease Management.

'90s



David Schall, MD '97, is now at Valley Bone and Joint Clinic in Grand Forks, N.Dak. Schall specializes in adult reconstruction surgery.

'80s



Jo Van Winter, MD '80, has joined the family medicine team at the Mayo Clinic Health System in Austin, Minn. Van Winter has more than 25 years of combined clinical experience in family medicine, OB-GYN, and pediatrics.

Please send your news items
for the next issue of
North Dakota Medicine
to Kristen Peterson:
kirsten.peterson@med.und.edu
or call 701.777.4305.

Got news? We want to hear it!
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Chester Carlyle Borrud, BS Med '50, 90, of Andover, Minn., died peacefully in his sleep on the evening of February 22, 2013. Born in Williston, N.Dak., on May 10, 1922, to Hjalmar and Alice Borrud, he was preceded in death by his wife of 52 years, Shirley Loretta (Sheik) Borrud, his parents, and brothers Reuben and Albert Borrud. Dr. Borrud served honorably in the U.S. Navy during WWII before attending the University of North Dakota, where he graduated Phi Beta Kappa. He then proceeded to medical school, with his first two years at the University of North Dakota and his final two years at Temple University, Philadelphia, Pa. He returned to complete his residency in internal medicine in Minneapolis, Minn., and Grand Forks before becoming a co-founder of the Harmon Park Clinic in Williston, N.Dak., where he resided and raised his family until relocating to Anoka, Minn. He was a founding member of the American Academy of Family Practice, in the new specialty of family practice, serving patients in the East Main Clinic of Anoka and Mercy Medical Center, Coon Rapids, Minn., until his retirement in the early 1990s. He was an active member of Zion Lutheran Church in Anoka, including membership on the church council and the Kiwanis Club. He was an avid gardener, landscaper, remodeler, and tinkerer, as well as a restorer of antique clocks and furniture.

Dr. Jerome P. Hager, MS Pharm, '53, 93, Coon Valley, Wis., died Saturday, May 4, 2013, in the VA Medical Center of Tomah, Wis. Jerome P. Hager, MD, PhD, was born July 15, 1923, the youngest of seven children, to Martin A. and Nekoline Hager in Northgate, N.Dak. First and foremost, he was an accomplished trombonist, his mother allowed "Jerry" his Saturday night "Jerinites" dance band gigs only if he sang every Sunday at United Lutheran Church, where he was confirmed. In 1941, he graduated from Central High School with dreams of medical school. Jerry was united in marriage to Donna Mae Peterson on February 14, 1944, in El Paso, Texas, where he served as special agent with the Counter-Intelligence Corps of the United States Army from 1943 to 1946. During that time, the base received a request for a trombonist from Louis Armstrong's band, so they sent Jerry, who was so nervous he went early and sat back stage to "warm up my lips." Little did he know, Louis was listening and came back stage to personally ask him to play first chair. Although Jerry's education was interrupted by military service, he and Donna returned to Grand Forks and the University of North Dakota campus to live in the "tin huts" (married student housing). Jerry was a member of Alpha Tau Omega Fraternity and graduated with honors (Kappa Kappa Psi, Phi Rho Sigma, and Sigma Xi) earning a bachelor's (1949) and a master's (1953) in science with an emphasis on pharmacology. They relocated to Denver, Colo., where Jerry earned a PhD in Pharmacology from the University of Colorado School of Medicine in 1956. With one child in tow, the couple moved to Winston-Salem, N.C., where Jerry "went through medical school with a trombone in one hand and a peanut butter sandwich in the other." He graduated with his Medical Doctorate from Bowman Gray, now University of Wake Forest School of Medicine, in


1958, where he remained actively involved with classmates and the Medical School Foundation until his death. After experiencing the challenges of solo practice in Hankinson, N.Dak., where the family grew to three children, Jerry decided to pursue psychiatric medicine in Cherokee, Iowa. He graduated from the University of Iowa School of Medicine Mental Health Institute in 1967. The family then settled in Fargo, N.Dak., where Dr. Hager practiced psychiatry with the Neuropsychiatric Institute (TNI) and St. Luke's and St. Ansgar Hospitals. Jerry and Donna enjoyed entertaining professional colleagues, friends, and family. Thanksgiving and Christmas were special times in the Hager household, and summers were greatly enjoyed by all "at the lake."

After his divorce in 1979, Dr. Hager practiced briefly in Houston, Texas, and then joined the United States Air Force as a psychiatrist, Lt. Col., MC, which brought him to March Air Force Base, Riverside, Calif. After an honorable discharge in 1981, he remained in California, practicing general and biological psychiatry in Riverside until 1993. "Doc" Hager then relocated to Coon Valley, Wis., to take an active role in raising his first grandson. The list of honors, society memberships, teaching activities, and publications is extensive. Dr. Hager put his trombone talents to use throughout his life, from his own "Jerinites" dance band to the "Scrubs" of TNI, who entertained all within earshot on Lake Melissa. He took the instrument and his "typewriter" on every family vacation and "sat in" anytime there was a band playing. In addition, Dr. Hager had a lifelong commitment to the Shriners, marching in parades and supporting fundraising efforts for their hospitals by playing with the Shrine Circus Band in North Dakota, North Carolina, Iowa, Colorado, Texas, California, and Wisconsin.

Dr. Gerald W. Oehler, BS Med '56, passed away Tuesday, February 26, 2013, at his home in Palm Desert, Calif., surrounded by family. Born January 29, 1933, in Harvey, N.Dak., Jerry was the second son of Irving and Alma Oehler. Jerry grew up in North Dakota, graduating from Grand Forks Central High School and the University of North Dakota. In 1958, he graduated from the University of Kansas School of Medicine. He served as a medical officer in the U.S. Navy from 1958 to 1960. After leaving the service, he began private practice in Galt, Calif. In 1965, he moved to Salinas, Calif., where he practiced medicine until his retirement in 2009. Jerry loved practicing medicine, especially the interaction with his patients and the camaraderie of the physicians and the office staff. He was very proud of his role in the formation of the family practice group PrimeCare. He also was proud of his large family and loved the gatherings they shared on the patio of his San Benancio Canyon home. Jerry was a member of Corral de Tierra Country Club, where he played many rounds of golf and hands of gin rummy with his friends. After moving to Palm Desert, Jerry rediscovered his interest in duplicate bridge and became a regular winner in the Duplicate Bridge Club of Sun City.

Dr. Norbert O'Keefe, 84, Bismarck, died April 3, 2013, at St. Alexius Medical Center in Bismarck, N.Dak., after a long illness. As he did with his five strokes, he fought for life the past month and worked hard at therapy to recover. Norb was born on October 6, 1928, in Williston, N.Dak., the son of John and Marian (Myers) O'Keefe. He was raised and educated in Williston, where he graduated in 1946 from Williston High School, where he was active in football and basketball. He was a Depression-era child, gained his pilot license the day he turned sixteen, and was a GI who served in Tokyo right after World War II. Norb married Angela O'Neill on August 1, 1953, in Williston. He put himself through medical school, built a clinic in a small town in Minnesota, and went back to school at the age of forty to become a radiologist. As a radiologist, he worked at St. Alexius Medical Center from 1970 until his retirement. He helped build the University of North Dakota Radiology Department, serving as its chair. He belonged to numerous professional associations, including the North Dakota Medical Association, the AMA, and was a fellow of the American College of Radiology. Throughout his life, Norb had a passion for aviation. Although he flew many types of aircraft, he particularly enjoyed his years flying his de Havilland Beaver floatplane. He was a member of the Experimental Aircraft Association and was recognized as an outstanding aviator in the Bismarck flying community. Norb was presented the Wright Brothers Master Pilot Award for fifty years of dedicated service in aviation safety by the Federal Aviation Administration. Norb was a longtime member of Cathedral of the Holy Spirit, Elks Club, and the American Legion. He and his family have many happy memories of their summers at Lake Audubon. His family was blessed to have had such a loving, kind husband and father who shared his many gifts and talents with them and those he worked with.

Dr. John C. Smith, II, age 83, formerly of Minot, N.Dak., died March 14, 2013, at his home in Minneapolis, Minn., surrounded by his family. John was born in Honolulu, Territory of Hawaii, October 5, 1929, to Lt. Col. John C. and Lillian Dahl Smith. As the son of an Army officer, he lived in many locations as a child, but he always considered the family ranch near Sheridan, Wyo., as home. In 1947, he graduated from high school in Erlangen, Germany, as class valedictorian. In three years he graduated with honors and Phi Beta Kappa from the University of Oklahoma in Norman in 1950. He attended Johns Hopkins Medical School, Baltimore, Md., graduating in 1954. He did his pathology residencies at Strong Memorial Hospital, Rochester, N.Y., 1954–1956, and at the Boston Lying-In Hospital, the Free Hospital for Women, and the Peter Bent Brigham Hospital, Boston, Mass., 1956–1958. He was board-certified in clinical and anatomical pathology, nuclear medicine, and ultrasound. After his medical training, Dr. Smith served as a captain in the United States Air Force Medical Corps, 1958–1960. He was stationed at Andrews Air Force Base, Md. He was later promoted to major. John married Julia Reeder Summerall in the Washington Cathedral of St. Peter and St. Paul, Washington, D.C.,

April 18, 1953. They had daughter Margaret, son John III, son Robert Bruce, and twins Julia and Charles. After his service in the Air Force, John, Julia (Judy), and family moved to Portland, Ore. Dr. Smith practiced pathology at Providence Hospital. He also served as an assistant professor of medicine for the University of Oregon Medical School and as the medical advisor to the Portland Zoo. In 1971, he accepted a position as director of pathology and nuclear medicine at Trinity Medical Center, Minot, N.Dak. He later started the ultrasound department at Trinity. In 1985, Dr. Smith opened a private pathology practice and laboratory. He served as Ward County coroner for more than 30 years. Dr. Smith trained in forensic science and scene investigation at the FBI Academy in Quantico, Va. He provided expert testimony in numerous high profile state and federal trials, including the federal trial of Yori Kahl after the Medina “shoot out.” Dr. Smith served as an associate professor of pathology for the University of North Dakota School of Medicine. He held many positions in local and state medical societies, including the Fifth District Medical Society for 40 years, the North Dakota Medical Association for 40 years, president of the North Dakota Society of Pathologists for 20 years, and the College of American Pathologists for 50 years. Dr. Smith retired from medicine in 2008. Second only to his family, which included numerous dogs, John loved the outdoors. He was an avid hunter. He hunted elk in the Big Horn Mountains of Wyoming and deer in North Dakota. He enjoyed hunting upland game, ducks, and geese. He was a crack shot, and continued to hunt deer well into his late 70s. His hunting prowess earned him the nickname of Hawkeye, or Natty Bumppo, the deer slayer, by his children. He loved fly-fishing for steelhead salmon in the rivers of Oregon, as well as salmon and walleye in Lake Sakakawea. He made many trips to Alaska, Florida, and Belize in search of new fishing adventures. Summer weekends were spent at the family cabin on Douglas Bay, Lake Sakakawea. Dr. Smith designed and built the cabin himself. He took up skiing at age 50. The family ski trip to Beaver Creek, Colo., was an annual highlight, especially once his grandchildren were old enough to keep up with him. “Poppa,” as he was lovingly called by his grandchildren, was passionate about his garden, which the family called the truck farm. The large garden provided fresh vegetables for the entire summer. He planted a variety of apple trees at home and also at the lake. The lake apple trees still provide apples for his favorite desert, Judy’s apple crisp. He was an enthusiastic Minnesota Twins baseball fan, and seldom missed a TV broadcast. He enjoyed his trips to Target Field with his family. Sadly, the family home and garden of nearly 40 years were destroyed in the 2011 Souris River Flood. John and Judy moved to Minneapolis and lived with son Charles. John had been diagnosed with leukemia. Charles tenderly provided his father with all daily care until John’s death. 

Funding Scholars

Mounting student debt illustrates scholarship need at SMHS.

By Alyssa Shirek



Megan Thorvilson

Megan Thorvilson is looking forward.

She's looking forward to the next few years, as she completes her residency in pediatric medicine at the Mayo Clinic in Rochester, Minn. She's looking forward to 2016, when she hopes to begin a permanent position in general pediatrics, maybe in Fargo.

And she's looking forward to 2033, the year she hopes to finally pay off her student loans.

When Megan graduated on May 12 with her Doctor of Medicine degree from the UND School of Medicine and Health Sciences, she came to a realization: in six months, she'll begin 20 years of repaying \$197,000 in debt from her investment in medical school.

"It is quite daunting," she said. "I have requested an income-based repayment plan that will make my monthly federal loan payments more reasonable. We hope to be fairly aggressive in paying back the debt, but I anticipate it will take between 15 and 20 years."

She's not alone. Joycelyn Dorscher, MD, associate dean for Student Affairs and Admissions at the SMHS, says 40 percent of students at the School of Medicine and Health Sciences have incurred \$150,000–\$200,000 total debt upon graduation. An additional 40 percent will graduate with a whopping \$200,000–\$300,000 left to pay off.

The average indebtedness at graduation from medical school alone (excluding undergraduate costs) stands at \$167,000—a number that puts our students among the most indebted in the nation (73rd percentile).

Low attendance cost

The high debt rate is in sharp contrast to the relatively low attendance cost—at \$183,000, the price tag on attending the SMHS is in the 15th percentile among medical schools nationwide.

"The School has done an extraordinary job of keeping costs down for students," Dorscher says.

She attributes the difference to the relatively short time that the School has been granting medical doctorates; the first four-year graduates completed their educations as recently as the 1970s. The smaller alumni base compared with other schools likely means private donations are relatively low, making the scholarship pool relatively small. Dorscher says that while 96 percent of students at the UND SMHS receive financial assistance, the majority is in the form of loans, forcing students

to compete for the scholarships that are available. "Students are so appreciative of the scholarships that they get," she added.

Megan Thorvilson says she received several scholarships and financial awards, including the Mark and Mary Andrews Scholarship, and the Kevin Monk Award for service.

"I am very grateful for the generous financial assistance of these donors, and it was encouraging to know so many people were, in a sense, cheering me on throughout the four years of medical school," Thorvilson said. "Their generosity has inspired me to give back to North Dakota—through medical service to the people of North Dakota and in opportunities to participate in the education of medical students — in time and through financial assistance."

Still, the scholarships she received totaled less than 5 percent of her cost of attendance, and mounting debt limited some of her peers' educational experiences. "Sadly, substantial debt discouraged many of my classmates from pursuing primary care specialties," she said.

PT, OT numbers

Physical Therapy Department Chair Tom Mohr says students in his department leave with average indebtedness of about \$60,000. The department has only five small scholarship funds that award just \$200–\$500 per year, and one that awards \$1,000 per year. "The funds we have now, although very nice, do very little to cover the costs of education," Mohr said. "Our students' book costs are well over \$1,000."

In Occupational Therapy, three scholarships award about \$1,000 each, and sometimes are split among students.



Dave Miedema,
Director of Development
School of Medicine and Health Sciences

For information on how to help the School of Medicine and Health Sciences' passionate students by supporting scholarships, contact Dave Miedema at 701.777.4933 or davem@undfoundation.org. To give to the SMHS online today, log on to www.undalumni.org/givenow.

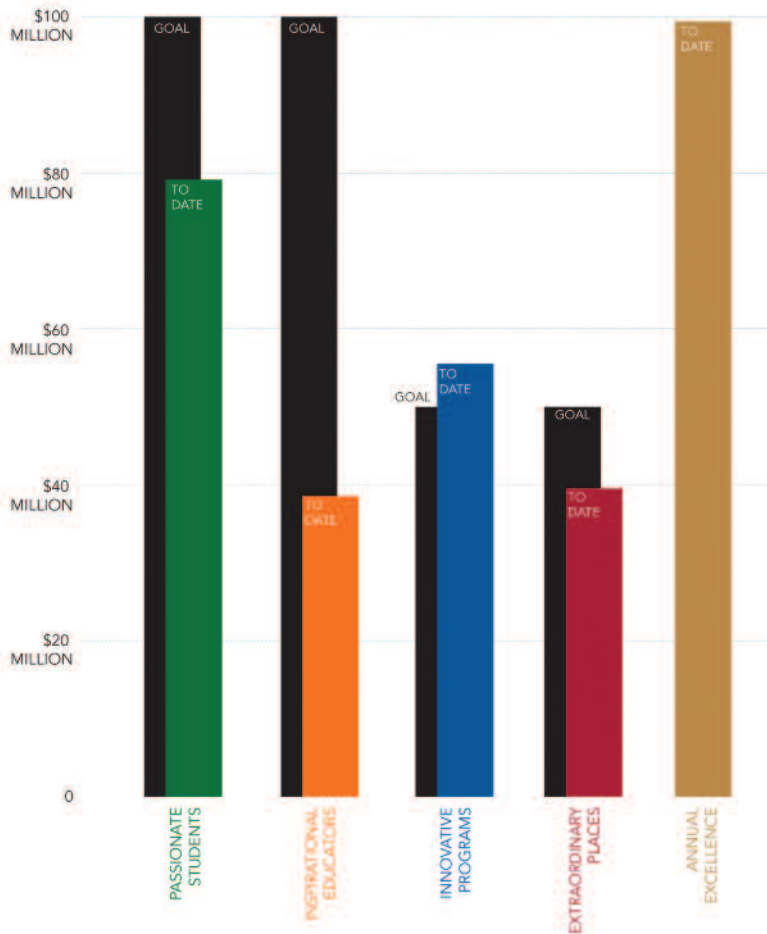


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FOUNDATION

NORTH DAKOTA SPIRIT CAMPAIGN GOAL: \$300,000,000

THROUGH MAY 16, 2013: \$307,846,884



PASSIONATE STUDENTS

One of UND's highest priorities is increasing the number of private scholarships available to students.

INSPIRATIONAL EDUCATORS

Building endowments to support faculty will dramatically strengthen the University's ability to retain our best and recruit additional, inspirational faculty leaders.

INNOVATIVE PROGRAMS

UND will strengthen programs in energy, life sciences, rural health care and more.

EXTRAORDINARY PLACES

Building and infrastructure priorities include:

- Enhanced laboratory spaces
- Continued investments in technology
- An indoor athletic training complex
- An alumni center
- A new College of Business & Public Administration

ANNUAL EXCELLENCE

Annual gifts provide flexible resources to allow the president, deans and department chairs to invest in any of the four campaign priority areas.

Thank you

to our thoughtful donors who recently gave gifts or made pledges to support the UND School of Medicine and Health Sciences

Dr. John Fischer, BS Med '65, of Gunnison, Colo., has established the John R. Fischer, MD, Medical Scholarship Endowment, which will provide scholarships to medical students, preferably those who intend to return to North Dakota to practice family medicine.

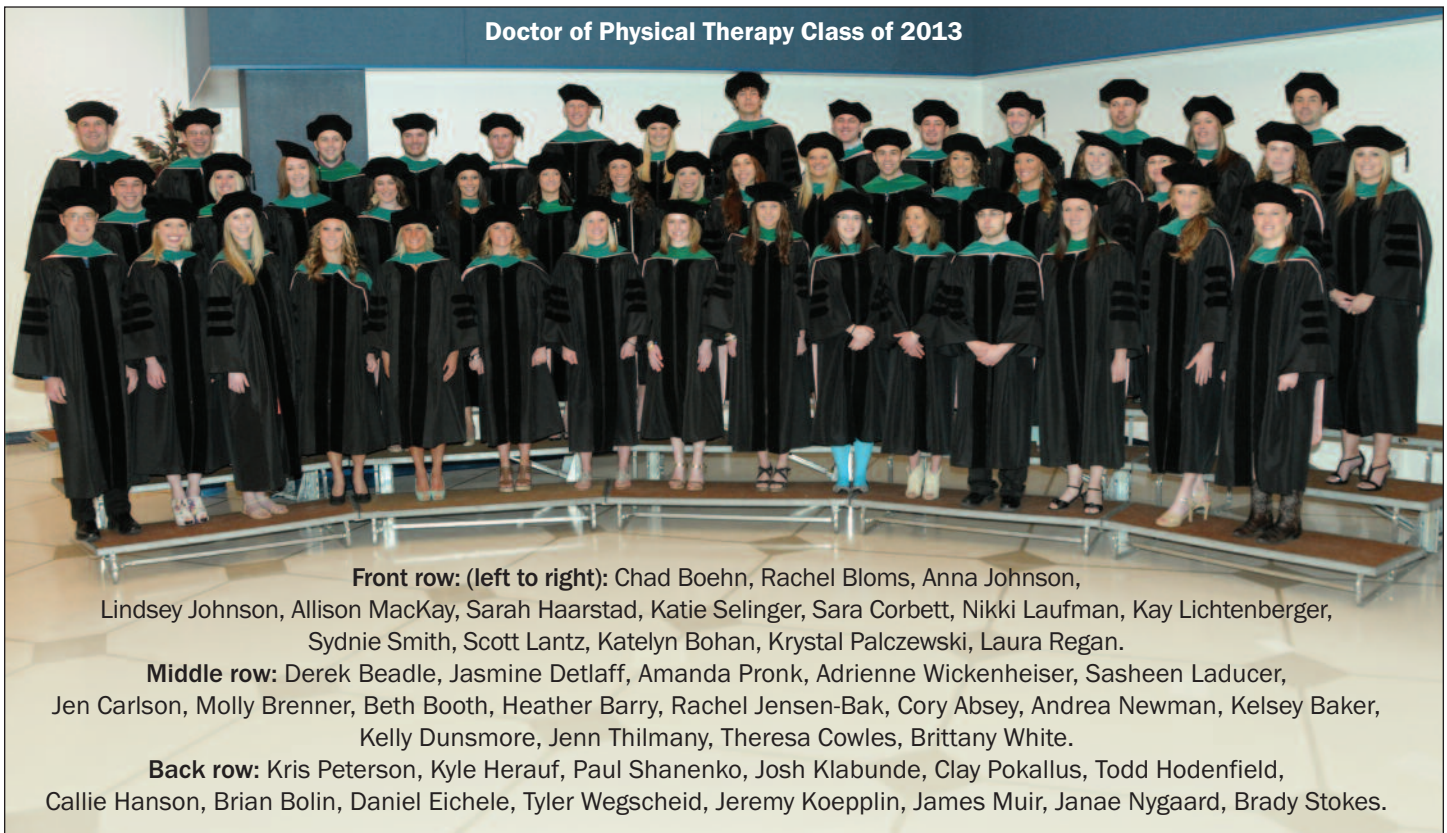
Dr. George Hallenbeck, BS Med '62, of Burr Ridge, Ill., has committed to establishing the Dr. George S. Hallenbeck Endowment to provide funding for the highest priority needs of the School. Dr. Hallenbeck is a retired radiologist, who previously worked at Radiology Imaging Consultants in Harvey, Ill.

Congratulations
to all
of our
graduates!



Athletic Training Class of 2013

Left to Right: Nikki Gorvin, Andrew Carlson, Jenna Olson, Jessica Poglajen, Matt Harder, Shantell Schutt, Rebecca Erickson.



Doctor of Physical Therapy Class of 2013

Front row: (left to right): Chad Boehn, Rachel Bloms, Anna Johnson,

Lindsey Johnson, Allison MacKay, Sarah Haarstad, Katie Selinger, Sara Corbett, Nikki Laufman, Kay Lichtenberger, Sydnie Smith, Scott Lantz, Katelyn Bohan, Krystal Palczewski, Laura Regan.

Middle row: Derek Beadle, Jasmine Detlaff, Amanda Pronk, Adrienne Wickenheiser, Sasheen Laducer, Jen Carlson, Molly Brenner, Beth Booth, Heather Barry, Rachel Jensen-Bak, Cory Absey, Andrea Newman, Kelsey Baker, Kelly Dunsmore, Jenn Thilmany, Theresa Cowles, Brittany White.

Back row: Kris Peterson, Kyle Herauf, Paul Shanenko, Josh Klabunde, Clay Pokallus, Todd Hodenfield, Callie Hanson, Brian Bolin, Daniel Eichele, Tyler Wegscheid, Jeremy Koepplin, James Muir, Janae Nygaard, Brady Stokes.



OT Graduating Class of 2013

Front row: (left to right): Myrtyce Remus, Ashley Mathieson, Megan Keidel, Susan Bonn, Kristi Fickes, Rachel Becker, Megan Enabit, Jenae Becker, Brianna Woodard.

Middle row: Erin Sykora, Stephanie Gubbels, Laura Hennes, Brook Dahle, Stephanie Haselkamp, Megan Metelak, Jennifer Styles, Kelly Bainbridge, Emilee Soper, Jessica Pastir, Lyndsey Felber.

Back row: Rebecca Polansky, Kathrynne Kitchen, Kara Black, Miranda Vastag, Christopher Johnson, Joshua Gilbertson, Jason Zacharias, Amanda Cruze, Janaye Hellman, Kelsey Hoffman, Rene Warzecha, April Benoit, Sara Joersz, Amanda Fehn.



Four of INMED's 15 graduates are pictured here at the Honoring Ceremony held at the 2013 Wacipi.

From left: INMED Director Eugene DeLorme, Shyleen Hall, Carol Two Hawk, Melissa Parisien, Chantel Vazquez.



Doctor of Medicine Class of 2013

Front row: (left to right): Assistant Dean David Theige, Associate Dean Joycelyn Dorscher, Assistant Dean Patrick Carr, Assistant Dean Kenneth Ruit, Associate Dean Charles Christianson, Senior Associate Dean Gwen Halaas, Dean Joshua Wynne, Associate Dean Randy Eken, Assistant Dean William Newman, Assistant Dean Susan Zelewski, Associate Dean Nicholas Neumann, Assistant Dean Martin Rothberg, Assistant Dean Steffen Christensen.

Second row: Adrienne Racek, Stephanie Carver, Katie Schouweiler, Pearlyn Tomosie, Heather Hagen, Kate Peterson, Rachel Peterson, Shannon Nord, Emily Stromquist, Kristina Rauser-Foltz, Lindsey Henderson, Amber Stutz, Virginia Keaveny.

Third row: Kendra Lystad, Christine Brentrup, Bethany Gourneau, Patricia Watkins, Megan Christensen, Heather Sandness Nelson, Joshua Pohlman, Jeffrey Wiisanen, Ashok Jethwa, Andrew Rodenburg, Jessie Lindemann, Emma Bjore, Bryn Putbrese, Kayla Odegard.

Fourth row: Shannon Sauter, Cameron Leitch, Justin Rosenau, Craig Wolf, Lindsey Lommen Kadrmas, Gabriel Jenko, Meghan Hendrickson, Aileen Aldrich, Angela Haley, Chelsea Traverse, Marissa Brown, Shannon Holsen, Caitlin Pandolfo, Sarah Chalmers.

Back row: Jennifer Gero, Andrew Stahl, Sydney Rooney, Adam Jangula, Amit Sharma, Richard Herold, Kristen Fiest, Matthew Uriell, Alex Cathey, Eric Schommer, Nicholas Adams, Allison Bastian, Alex Thompson, Kevin Bradley, Megan Thorvilson, Bobbie Rae Thuen.

Not pictured: Travis Greiman, Nicholas Hosey.



Second and third-year OT students from Grand Forks, N.Dak., and Casper, Wyo., traveled to San Diego in April to attend the American Occupational Therapy Association Annual Conference.

Front row: (left to right): Brianna Woodard, Susan Bonn, Taryn Wagner, Maranda Myrold, Alyssa Jenkins, Joelle Evenson.

Middle row: Megan Keidel, Maia Sobolik, Lauren Harvey, Nicolet Sadlowsky, Terese Boeder, Lauren Schneibel, Teresa Bunn.

Back row: Erin Sykora, Rachel Newman, Rebecca Polansky, Jared Zimmerman, Renae Witta, Caitlin Layden.



Crews from each of the state's six major hospitals—Altru Health System, Essentia Health, Sanford Health in Fargo and Bismarck, St. Alexis Medical Center and Trinity Health—completed intensive training for more than two weeks with ND STAR staff in Grand Forks so the crews can use the simulation units to teach emergency medical personnel across North Dakota. Information about ND STAR and SIM-ND can be accessed at <http://www.med.und.edu/simulation-center/>.

Front row: (left to right): Stacie Weible (Sanford Fargo), Melissa Misialek (Sanford-Fargo), Shelly Arnold (Sanford-Bismarck), Brittany Opp (Sanford-Bismarck), Margo Dailey-Filipkowski (Trinity), Marjorie Masten (Essentia), David Stollery (Trinity), Erica Erk (Trinity), DeeAnn Were (St. Alexis), Barbara Warren-Bloms (St. Alexis).

Middle row: Alyssa Marshall (Altru), Tiffany Eslinger (Essentia), Sonya Dreschel (Sanford-Fargo), Craig Comes (Sanford-Bismarck), Tamera Harvey (Trinity), Clifford Black (Trinity), Deb Grabow (Sanford-Bismarck), Ryan Telford (Essentia), Tom Tomaino (Sanford-Fargo).

Back row: Chuck Baskerville (Altru), Nichole Beske (Altru), Aftin Bye (Essentia), Andy Lundstrom (Altru), Steve McNichols (St. Alexis), Kyle Janssen (Essentia), Steven Siedschlag (Sanford-Fargo), Jason Eblen (Sanford-Fargo), John Breiland (Essentia).

Not pictured: Tim Nesdaahl (Altru) and Corey Kurtz (Altru).

Andrew Hvidston, MD, orthopaedic surgeon at Sanford Health, Fargo, and assistant professor of surgery, contributed a textbook to each of the second-year medical students at the School. Shown after receiving their books are (from left): Travis Waswick, Dan Field, Erin Wenzel, Annah Rodenburg.





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