Adaptability during uncertain times

Annual Report 2020 – 2021

Graduate Studies | Postdoctoral Education
A MESSAGE FROM THE DEAN

It is my pleasure to share the 2020–2021 annual report, featuring the many accomplishments made by our graduate students, postdoctoral fellows, and faculty members.

The academic year began as a year of evolution for Graduate Studies. The ongoing COVID–19 pandemic continued to transform how we behave, teach, live, and learn — yet our faculty, postdocs, and students persisted in their pursuit of innovative research and educational excellence.

Finding new ways to adapt to the challenges COVID–19 presented, our trainees and mentors continually made an impact inside and outside the classroom and laboratories. Additionally, they excelled in scholarly activities, including awards, fellowships, and publications.

Our graduate programs continue to grow, offering new fields of study and partnerships locally and globally. Further, our postdocs remain a key part of our mission to transform lives through biomedical research.

Join us in celebrating the journey of some of our extraordinary faculty and trainees over the past year, even amid the uncertainty that surrounded the pandemic.

H. Dele Davies, MD, MS, MHCM
Senior Vice Chancellor for Academic Affairs
Dean for Graduate Studies

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adaptability | əˌdæptəˈbɪləti | the quality of being able to adjust to new conditions

OUR MISSIONS

Graduate Studies
Our mission is to be the best place in the nation for training graduate students through exceptional health science educational and research programs, faculty mentoring, and professional skills development.

Postdoctoral Education
The mission of the Postdoctoral Education program is to promote and facilitate outstanding training and education of postdoctoral scholars and their timely transition toward independent careers.
Leadership

H. Dele Davies, MD, MS, MHCM
Senior Vice Chancellor, Academic Affairs
Dean, Graduate Studies

Iqbal Ahmad, PhD
Associate Dean,
Postdoctoral Education & Research,
Graduate Studies

Pamela K. Carmines, PhD
Executive Associate Dean, Graduate Studies

Kendra K. Schmid, PhD
Assistant Dean, Graduate Studies

Terri A. Vadovski
Director, Graduate Studies

Kendra K. Schmid, PhD
Assistant Vice Chancellor, Academic Affairs
Assistant Dean, Graduate Studies

Graduate Council Members & Staff
The Graduate Council is composed of graduate program directors, members of the Graduate Studies staff, and the Graduate Student Association president. The Council, in conjunction with the Dean, is responsible for Graduate College activities at UNMC.

H. Dele Davies, MD, MS, MHCM
Dean

Pamela K. Carmines, PhD
CHAIR Executive Associate Dean

Kendra K. Schmid, PhD
Assistant Dean

Iqbal Ahmad, PhD
Associate Dean

Paul N. Lovell
Graduate Student Association President

Mark D. Shriver, PhD
Applied Behavior Analysis (MS)

Laurey A. Steinke, PhD
Biochemistry & Molecular Biology (MS)

James C. McClay, MD
Biomedical Informatics

Christopher S. Wichman, PhD
Biostatistics

Chandan Achutan, PhD
Environmental Health, Occupational Health & Toxicology

Paraskevi Farazi, PhD
Epidemiology; Emergency Preparedness (MS)

Tammy L. Webster, PhD
Healthcare Delivery Science (MS)

Melissa K. Tibbits, PhD
Health Promotion & Disease Prevention Research

Hongmei Wang, PhD
Health Services Research, Administration & Policy

Karen A. Gould, PhD
Interdisciplinary Graduate Program in Biomedical Sciences (IGPBS)

R. Katherine Hyde, PhD
IGPBS - Biochemistry & Molecular Biology

Michael R. Rowley, PhD
IGPBS - Bioinformatics & Systems Biology

Joyce C. Solheim, PhD
IGPBS - Cancer Research

Rakesh K. Singh, PhD
IGPBS - Immunology, Pathology & Infectious Disease

Matthew C. Zimmerman, PhD
IGPBS - Integrative Physiology & Molecular Medicine

Andrew T. Dudley, PhD
IGPBS - Molecular Genetics & Cell Biology

Keshore R. Bidasee, PhD
IGPBS - Neuroscience

Justin L. Mott, MD, PhD
MD/PhD

Karen A. Gould, PhD
Medical Anatomy

Laura D. Bilek, PhD
Medical Sciences Interdepartmental Area (MSIA)

Nora E. Sarvetnick, PhD
MSIA - Applied Behavior Analysis & Policy

Karen A. Gould, PhD
MSIA - Biological Defense & Health Security

Lani (ChiChi) M. Zimmerman, PhD
MSIA - Clinical & Translational Research Mentored Scholars Program

Carol A. Casey, PhD
MSIA - Clinically Relevant Basic Research

Sharon J. Medcalf, PhD
MSIA - Health Practice & Medical Education Research

James K. Wahl, PhD
MSIA - Oral Biology

Ka-Chun (Joseph) Siu, PhD
MSIA - Patient-Oriented Research

Nora E. Sarvetnick, PhD
MSIA - Regenerative Medicine & Biomaterials Design

Kathleen M. Hanna, PhD
Nursing

Paul C. Trippier, PhD
Pharmaceutical Sciences

Terri A. Vadovski
Director

Emily E. Brandt, MA
Admissions & Assessment Specialist

Cody R. Phillips
Specialist

Iqbal Ahmad, PhD
CHAIR Associate Dean

Kaustubh Datta, PhD
Biochemistry & Molecular Biology

Terrence Donohue, PhD
Internal Medicine

Keith Johnson, PhD
Oral Biology

Luis A. Marky, PhD
Pharmaceutical Sciences

Kaushik P. Patel, PhD
Cellular & Integrative Physiology

Rakesh K. Singh, PhD
Pathology & Microbiology

Huangui Xiong, MD, PhD
Pharmacology & Experimental Neuroscience

Nicolò M. Rodriguez, PhD
MSIA - Applied Behavior Analysis

Joshua L. Santarpia, PhD
MSIA - Biological Defense & Health Security

Postdoctoral Education Advisory Council & Staff
The Postdoctoral Education Advisory Council (PEAC) examines issues related to postdoctoral education at UNMC and provides guidance in matters related to training and recruitment.

Iqbal Ahmad, PhD
CHAIR Associate Dean

Kaustubh Datta, PhD
Biochemistry & Molecular Biology

Terrence Donohue, PhD
Internal Medicine

Keith Johnson, PhD
Oral Biology

Luis A. Marky, PhD
Pharmaceutical Sciences

Kaushik P. Patel, PhD
Cellular & Integrative Physiology

Rakesh K. Singh, PhD
Pathology & Microbiology

Huangui Xiong, MD, PhD
Pharmacology & Experimental Neuroscience

Postdocs
Katie Bailey, PhD
Surgery
President, UNMC Postdoctoral Association

Rohit Gaurav, MSc, PhD, FAAAAI
Internal Medicine

Staff
Charles Klinetobe, PhD
Coordinator
Turning challenges into opportunities

562 students enrolled in fall 2021
This is the largest number of students in the history of Graduate Studies and an increase of 13.8% over 2020.

32 different countries represented
Students come from all over the world, with 3 of 10 students being international.

115 graduates earned degrees
In 2020 – 2021, 44 students earned MS degrees and 71 earned PhD degrees.

Student Accomplishments at a Glance
- $1,169,291 in UNMC fellowship funding, including supplements
- $738,472 in external fellowship funding
- $22,533 in travel awards
- 525 peer-reviewed publications, and 21 book chapters or government reports — 30% of publications had students listed as first author
- 370 hours of service-learning activities, and 1 platinum badge awarded
- 353 conference presentations — 24% increase over last year
- 88 national, regional, and local honors

International student enrollment increased by 24%, after dropping 16% in the previous year as many students struggled to obtain visas during COVID-19 lock downs.
Honors & Recognition

New Graduate Students of Distinction: Students who received national or international recognition

A total of 53 students have been named Graduate Students of Distinction since the program was instituted in 2014.

Caitlin A. Golden
Health Promotion & Disease Prevention Research
HONOR: American Heart Association Predoctoral Fellowship

Jed R. Hansen
Nursing
HONOR: National Rural Health Association Rural Health Fellows Program

Tyler N. Kambis
IGPBS - Molecular Genetics & Cell Biology
HONOR: NHLBI Ruth L. Kirschstein National Research Service Award Individual Predoctoral Fellowship

Sarah L. Schlichte
IGPBS - Integrative Physiology & Molecular Medicine
HONOR: NIH Ruth L. Kirschstein National Research Service Award Individual Predoctoral Fellowship

Jed R. Hansen
Nursing
HONOR: National Rural Health Association Rural Health Fellows Program

Tyler N. Kambis
IGPBS - Molecular Genetics & Cell Biology
HONOR: NHLBI Ruth L. Kirschstein National Research Service Award Individual Predoctoral Fellowship

Sarah L. Schlichte
IGPBS - Integrative Physiology & Molecular Medicine
HONOR: NIH Ruth L. Kirschstein National Research Service Award Individual Predoctoral Fellowship

Nicholas J. Mullen
MD-PhD Scholar in IGPBS - Cancer Research
HONOR: NIH Ruth L. Kirschstein National Research Service Award Individual Predoctoral MD/PhD Fellowship

Moses O. New-Aaron
Environmental Health, Occupational Health & Toxicology
HONOR: NIAAA Ruth L. Kirschstein National Research Service Award Individual Predoctoral Fellowship

Visit unmc.edu/GradStudies to watch interviews with our Graduate Students of Distinction

Pranita Atri, PhD
IGPBS – Biochemistry & Molecular Biology

“I am beyond honored and humbled that I was considered worthy enough to get this incredible honor and it means a great deal to me. It is also a great source of motivation and filled me with zeal to better myself and keep working towards my bigger goals.”

Rachel Kae Spooner, PhD
IGPBS – Neuroscience

“I feel incredibly proud and honored to have received this award. I strive to use multidisciplinary perspectives to study the neural mechanisms serving the cognitive and motor dysfunction in age-related pathologies and having my research accomplishments recognized by my peers and colleagues only reinforces my passion for continuing this work as a research scientist. My achievements as a graduate student would not have been possible without the truly collaborative and supportive mentorship that I received during my PhD training at UNMC.”

Karen Zagorski
Pharmaceutical Sciences

Alec McCarthy
MSIA - Regenerative Medicine & Biomaterials Design

Ellen Kerns
Biomedical Informatics

UNeMed Innovators of the Year 2020

Pranita Atri, PhD
IGPBS – Biochemistry & Molecular Biology

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Karen Zagorski
Pharmaceutical Sciences

Alec McCarthy
MSIA - Regenerative Medicine & Biomaterials Design

Ellen Kerns
Biomedical Informatics

UNeMed Innovators of the Year 2020
A UNMC graduate student is part of a team of U.S. scientists advocating for increased diversity in vaccine trials after publishing a new study that highlights disparities.

The study, published in the Journal of the American Medical Association Network Open, found that among U.S.-based vaccine clinical trials, people who are Black/African American, American Indian/Alaska Native, Hispanic/Latino and age 65 and older were the most underrepresented groups. Conversely, adult women were overrepresented.

Laura Flores, an MD/PhD student in MSIA Patient-Oriented Research, is first author on the study that analyzed data from 230 U.S.-based vaccine trials (of all phases) with nearly 220,000 participants from July 2011 through June 2020. Data came from vaccine trials registered on ClinicalTrials.gov.

The top findings, after analyzing the studies that reported demographic information, include:
- White people accounted for 78% of all participants
- Women accounted for 56%
- Black/African Americans accounted for 11%
- American Indians/Alaska Natives accounted for 0.4%
- Hispanics/Latinos accounted for 12%
- People 65 and older accounted for 12%

Asian and Native Hawaiian/Pacific Islander participants were equally represented compared to the U.S. population.

The research team also discovered that problems with capturing and underreporting participant demographics remain, despite efforts from the National Institutes of Health and Food and Drug Administration to implement policies and guidelines.

“At a time when there is disproportionately high morbidity and mortality of some racial and ethnic groups as well as older adults due to COVID–19, it is important to know whether we have historically done enough to include them in vaccine clinical trials,” Flores said. “We are currently witnessing dramatic health disparities in disproportionate rates of COVID–19 in Hispanic and African Americans.”

She said solving the diversity and equity problems require a multi-faceted approach.

“We need to work on ensuring our health care workforce is representative of the population. One step is to diversify medical schools to reflect the population,” Flores said. “It’s really important to ensure everyone has equitable access to good care and ensure representation in clinical trials which also should improve health outcomes.”
Maranda Thompson, an MD-PhD scholar, is incredibly busy and eminently accomplished. She has won a handful of awards and holds a host of offices. But beyond the accolades, Thompson, a PhD candidate in the Medical Sciences Interdepartmental Area specializing in patient-oriented research, is using her MD-PhD training to make a difference in the real lives of real people.

Thompson studies how nutrition affects pregnancies and infant outcomes. But she took that interest and adapted it to boots-on-the-ground outreach with the Women’s Center for Advancement, a local organization that serves as a designated direct service provider for victims of domestic violence and sexual assault in Douglas County.

In addition to organizing outings to grocery stores with dieticians, Thompson launched a video series on quick, easy recipes, making nutritious meals with WIC (Supplemental Nutrition Program for Women, Infants, and Children)-eligible foods.

“They are meant to be quick and easy,” Thompson said. “They are a minute to a minute-and-a-half long, designed so that a person can watch it quickly, and then is able to do it themselves.”

Thompson is not the star of the videos. In fact, only her hands are seen in the video. But, she is using another aspect of her training — science communication. Thompson is blending the technical knowledge she gained through her work at UNMC with the unique ability to explain it in a simple, digestible way — ensuring that scientific information will help others.

“I ask, ‘What are the most important things people need to know?’” Thompson said. “And then I present that in an interesting way, and in a way that people will see it.”

Thompson is taking her research, and reaching real people, in a way that is “understandable, very short and sweet and to the point,” she said. That is the recipe for making a difference.
DR. PRANITA ATRI:

Success in and out of the lab

When you are surrounded by fellow high-achieving students, it can be difficult to stand out. But Pranita Atri, PhD, did all that and more. The New Delhi native paved her own path of success, despite tough competition and a worldwide pandemic.

Dr. Atri came to UNMC with a bioinformatics background and applied those techniques to understand the complexity of gastrointestinal (GI) cancers. Her analysis led to new basic science insights about the roles of mucins in GI cancers and has direct clinical implications through identifying new treatment options.

Beyond her research efforts, the scope of Dr. Atri’s impact was far-reaching. She proved to be a natural leader among her peers, with multiple roles including serving as President of the Graduate Student Association (GSA) and being a driving force in the #MaskOn initiative, which encouraged mask wearing in public to protect against COVID-19. Further, Dr. Atri was a tireless volunteer in the community through her efforts benefiting the Ronald McDonald House, Habitat for Humanity, and the Nebraska Humane Society.

Reflecting on her time at UNMC, Dr. Atri attributed the various student leadership positions — as well as learning directly from campus leaders — as having a life-altering impact in helping her grow personally and professionally.

“The best trait of Graduate Studies is their unwavering commitment to give students a seat at the table, and I will always be thankful to them for giving me this opportunity,” explained Dr. Atri.

“My time as the GSA president gave me a chance to be involved in the actual decision-making process and I could see the changes that I suggested being implemented in real time. This one year has taught me so much that no words can do justice to what it means to me.”

“Pranita is one of the most exceptional students I have ever mentored. She not only emerged as one of the most productive graduate students on campus in terms of publications, but her computational work provided unique directions to the lab, with it becoming the basis of several new projects and grant proposals,” praised Surinder K. Batra, PhD, Stokes-Shackelford Distinguished Professor of Biochemistry & Molecular Biology and Dr. Atri’s mentor.

“In addition to working on her projects, she actively collaborated with other members of our group and outside with clinical investigators, sharing her skills to solve bioinformatics-associated problems,” Dr. Batra continued. “It was a pleasure to have her in the lab as she is a great team player, positive, and highly motivated. One quality that sets Pranita apart from others is her selfless willingness to help everyone academically or socially, which translated into her student leadership activities on campus and her well-rounded education.”

As Dr. Atri begins the next phase of her career as a postdoc, she has two major long-term goals: to carry out translational research and to have a social impact in the world by helping change the things that need to be changed.

“My time here at UNMC has prepared me for both of these goals,” said Dr. Atri. “The training I received in Dr. Surinder Batra’s laboratory has helped me understand the intricacies of cancer research and has prepared me to use my computational biology skills to answer pertinent translational research questions. Further, my involvement in the various student organizations has helped me grow as a person and has brought me closer to final goal.”

“I hope my story inspires more students to take part in leadership and service activities that help them get an interdisciplinary, well-rounded education. I wholeheartedly believe that I learned as much outside the research setting as I did within it. I want every student to know that we can make a great impact, if only we set our minds to it.”

ACKNOWLEDGMENTS

» PhD from the IGPBS, specializing in Biochemistry & Molecular Biology
» 24 publications
» 14 poster or podium presentations

SERVICE & OUTREACH

» President, Vice President, and Social Co-Chair, Graduate Student Association
» Treasurer, International Student Association
» Graduate Student Senator, UNMC Student Senate
» Student Representative, Biochemistry & Molecular Biology
» Student Representative, IGPBS
» Student Ambassador for incoming international students, UNMC
» Volunteer, Support your NEighbor: COVID19
» Volunteer, Ronald MacDonald House
» Volunteer, Habitat for Humanity
» Volunteer, Nebraska Humane Society
Postdocs:

Staying focused through a pandemic

121 postdocs trained
During 2020 - 2021, postdocs contributed to the research in 34 different disciplines.

2.72 years in training
The average time our postdocs spend training at UNMC is between 2–3 years.

88 faculty mentor postdocs
Faculty across colleges and institutes provide training to postdocs.

Postdoc Accomplishments at a Glance

$114,409 in new fellowship and grant support received from the American Heart Association or the Government of Canada

533 first-author peer-reviewed publications over the last five years — an average of 6.12 per respondent

39 conference presentations given during 2020-2021

12 national, regional, or local honors received during 2020-2021

1 patent was received by Fei (Freya) Wang, MD
The “Metformin Nanoformulations and Methods of Use Thereof” invention can be used for the treatment of a variety of diseases, such as cancer, diabetes, and immunological disorders and diseases.
Honors & Recognition

Postdoc scholar Johnson Vitharikunnil John, PhD, was the 2020 Excellence in Research Award winner. The award recognizes his outstanding achievements in research that impact his field of study.

Dr. John’s research was the cover story in the May 2020 issue of the journal SMALL. The article details a simple, yet versatile approach for engineering injectable and biomimetic porous nanofiber microspheres via gas bubble-mediated co-axial electrospraying. This holds the potential for a variety of biomedical applications, including tissue filling, cell and drug delivery, and tissue regeneration in a minimally invasive manner.

Dr. John credits his mentor, Jingwei Xie, PhD, Associate Professor of Surgery and the Mary and Dick Holland Regenerative Medicine Program, for helping him dream big. “I’ve never worked with such a cool mentor. Dr. Xie sees my potential, is always there to listen to any problems I encounter, and does his best to help me figure them out,” he said.

While Dr. Xie initiated the research, Dr. John said he would like to carry it further. “My goal is to find an injectable form of nanofiber materials for tissue repair and regeneration studies because nanofiber composed materials show a more extracellular matrix mimicking structure as compared with other scaffolds like hydrogel or ceramics,” he said.

Dr. Xie sees a bright future ahead for Dr. John saying, “Dr. John is a highly motivated researcher, who is easy to communicate with, good at listening to suggestions and always pays attention to the progress of the relevant research in the field. He would like to develop his career in academia, and I am optimistic he will find a faculty position after completing postdoc training.”
The UNMC Pathway to Independence Award recognizes promising postdocs at early stages in their career for their contributions to research and career preparation. A highly prestigious and coveted award, the Pathway to Independence is not awarded every year. The last one was given out in 2015.

“I am incredibly honored, yet, pleasantly surprised to receive the award. Because the award is not given every year, it holds great merit not only for our research team and the department of OB/GYN, but also the UNMC research community,” Dr. Plewes said.

Dr. Plewes’ research focuses on understanding the molecular role of mitochondria in the regulation of ovarian function and how that ultimately impacts fertility and women’s overall reproductive health. Her research also focuses on understanding how hormones induce changes in mitochondria and cholesterol mobilization for testosterone biosynthesis in males.

“Mitochondrial research is on the rise across the biomedical sciences, impacting nearly all areas of cell biology and medicine. Mitochondria influence cellular physiology by undergoing functional and morphological changes in response to genetic, metabolic, endocrine and paracrine signals, all of which contribute to disease complexity. This uniquely placed mitochondria is the key cellular gateway to the intersection of the cell and its environment,” she explained.

In receiving this award, Dr. Plewes is recognized as an individual who demonstrates early preparation, defining career objectives, an understanding of her chosen area of research, productivity in terms of manuscripts, and independence.

“My passion for biomedical research stems from the love of the scientific process — innovating, experimenting, testing, developing, and designing new approaches for improving women’s reproductive health,” Dr. Plewes said.

Dr. Plewes and her mentor John Davis, PhD, Professor and Director of Research and Development with the Olson Center for Women’s Health at UNMC, were recognized during the annual postdoctoral seminar held in 2020.

“Michele is bright, focused, well-organized and works efficiently,” Dr. Davis said. “She is always looking forward to answering the next question, to figuring out what else she can do to further a line of inquiry and to better understand how mitochondria function in ovarian cells.”

A Boulder, Colorado native, Dr. Plewes came to UNMC in 2018 in large part because of the research being done by Dr. Davis.

“In this field of research, Dr. Davis is world renowned as an endocrinologist and biochemist,” Dr. Plewes said. “He is someone you want to learn from and while his research drew me, the idea of being able to work with him, as a mentor and collaborator, was one of the biggest reasons I came to UNMC.”
**Former postdoc returns to create world-class program**

Bhavesh Kevadiya, PhD, began working in molecular imaging as a postdoc at UNMC in 2015. But after working two years at Stanford University — recognized as having the best molecular imaging program in the world for cancer diagnostics and therapy (theranostics) — he returned to UNMC in 2020 as an assistant professor and graduate faculty member. His focus now is to create a world-class viral theranostics program in Nebraska.

“At Stanford, they focus on cancer,” Dr. Kevadiya said. “But I wanted to bring this technology to virus molecular imaging, particularly HIV-1 and SARS-COV-2.”

The creation of a lab that will use molecular imaging and therapeutic payload tracking to target infectious diseases will put UNMC on a path toward groundbreaking translational research. It will impact early diagnostics and treatment of infectious disease. The technologies being developed could be used across the world.

Molecular imaging is being used in real-time, Dr. Kevadiya said, to explore interactions between the microbe and the body’s subcellular, cell and tissue pathologies. It permits tracking between a virus and the drugs or the immune system fighting it and allows researchers to discover if treatment is arriving where a virus is present in the tissue so it can be eliminated.

“Using molecular imaging to address infectious diseases, particularly in relation to CRISPR-Cas9 technology for the treatment of diseases, is an exciting avenue of research with potentially global implications to eliminate chronic infections,” Dr. Kevadiya said.

Consider a person who has had HIV. Using molecular imaging, researchers can radiolabel the nanoparticles of a long-acting antiretroviral and gene-editing technology therapy and track the real-time path of the particles in a living person — checking the effectiveness of the targeting at different time intervals.

So rather than waiting years to see how a particular dosage or toxicity of the drug is affecting the virus (while the drug also is affecting the patient), the researcher can track the levels of the virus and see how much of a drug is needed to improve the therapeutic outcomes in a much shorter time.

The results, Dr. Kevadiya said, could lead to more effective therapies for infectious diseases beyond HIV or SARS-CoV-2, the virus that causes COVID-19.

Dr. Kevadiya said the new lab, which already is generating grants, is an excellent opportunity for UNMC to increase its reputation as a world leader in the fight against infectious diseases.

“He recently used his artistic talents when he worked with collaborators on a major COVID-19 paper submitted to Nature Materials and an invited review in the Journal of Neuroimmune Pharmacology.

Dr. Kevadiya did all the illustrations for the articles, including key images documenting the SARS-COV2 lifecycle and a comparison of a healthy and injured alveolus in a COVID-19 patient.

Dr. Kevadiya said that he is not a trained illustrator, but, evolving from his hobbies of painting and drawing, he has become adept at using illustrating software to more easily communicate difficult scientific concepts.

**Illustrating science**

Dr. Kevadiya also is a skilled scientific illustrator.
Faculty:

Cultivating resilience in the face of adversity

568 faculty teach graduate students
Faculty from all 6 colleges and 2 institutes teach and mentor graduate students.

59 UNMC faculty newly appointed to the NU Graduate Faculty in 2020-2021
37% of graduate faculty at UNMC have worked here for 10 years or more.

7 of 10 are senior-ranking faculty
45% of UNMC graduate faculty hold the rank of professor, while 27% are associate professors.

Faculty Accomplishments at a Glance
2,035 courses or lectures moved to 100% remote learning due to COVID-19 and 459 courses moved to hybrid format
1,590 peer-reviewed publications
1,192 boards or committees on which faculty serve
731 conference or invited speaker presentations
494 students taught in the previous academic year
158 international, national, regional, or local honors

View a complete list of faculty honors at unmc.edu/gradstudies

130 book chapters or government reports
121 postdocs mentored in the previous academic year

2,494 courses or lectures changed format due to COVID-19
Honoring an extraordinary graduate student mentor

There are two honors given to graduate faculty in recognition of their achievements as a graduate student mentor. In 2021, the awards were given to the same person, a true testament that he possesses all the qualities of an exceptional mentor and role model.

The greatest reward of mentoring is knowing that I contribute to graduate students’ training and help them be the best they can be, witness their progress professionally and personally, and treasure their success as scientists and human beings.

Rakesh Singh, PhD
Professor, Pathology & Microbiology

"The greatest reward of mentoring is knowing that I contribute to graduate students’ training and help them be the best they can be, witness their progress professionally and personally, and treasure their success as scientists and human beings. I consider myself fortunate to be a small part of each of my student’s careers. Every day mentoring is a learning experience for me and an exciting opportunity to witness the changes students go through during their program of study.”
Partnerships with colleges address growing needs across the country

Graduate Studies partnered with both the College of Public Health and the College of Allied Health Professions to launched two new programs that present exciting opportunities to meet both the needs of students, as well as the regional and national workforce.

NEW BIOSTATISTICS DEGREE PROGRAM

Biostatistics is one of the fastest growing high-wage, high-skill, and high-demand professions. But to get started in the job market, most people need a master’s degree in biostatistics. That is why UNMC launched a new training program focused on providing students with essential skills in statistical methods and data science techniques for biomedical research and clinical studies.

The program is administered by the UNMC College of Public Health and housed in UNMC Graduate Studies.

Ali S. Khan, MD, MPH, Dean of Public Health, stated, “Biostatisticians are the new age wizards to help decipher the growing world of data. The new MS program will complement our MPH and PhD program to help transform data to information and ultimately knowledge for a healthier and more equitable society.”

**PROGRAM DETAILS**

**MASTER’S TRAINING:** Students learn essential skills in statistical methods and data science techniques for biomedical research and clinical studies.

**36-CREDIT HOUR PROGRAM:** The online or in-person program is designed to be completed in 2 years by full-time students and in 4 years by part-time students.

**FUTURE CAREERS:** Graduates will be positioned to pursue careers as statisticians or data analysts in health care research institutions or the pharmaceutical industry, or to continue to a doctoral program.

The curriculum includes biostatistics theory, statistical modeling of clinical data, clinical trials methodology, biostatistical computing, and methods of machine learning. Though the program can be taken in-person, it has an online option that provides flexibility for distance learning, which allows the program to draw students from beyond Nebraska.

**UNMC’s is the only program among peer institutions in surrounding states to include this distance-learning option.**

The program began in the 2021-22 academic year with five students, moving to an enrollment of up to 24 students in the fifth year.

NEW HEALTHCARE DELIVERY SCIENCE DEGREE PROGRAM

Many healthcare professionals are asked to assume roles related to teaching and leadership without formal education in these areas. The new Master of Healthcare Delivery Science fills this void. The program is administered by the UNMC College of Allied Health Professions and housed in UNMC Graduate Studies.

The Healthcare Delivery Science degree provides a unique plan of study for currently practicing healthcare professionals to gain knowledge and develop skills beyond their discipline-specific clinical competencies. The program, which includes emphases on finance and clinical education, provides participants with the foundation to meet expanded roles in management and leadership within the healthcare system.

“The curriculum examines U.S. healthcare from a systems perspective and is specifically designed to allow the participant to immediately apply newly acquired knowledge to their own role and workplace. Additionally, being able to complete the degree fully online with an interprofessional cohort of healthcare providers will make the course of study an extraordinary experience,” explained Kyle P. Meyer, PhD, Dean of Allied Health Professions.

The program began in the 2021-22 academic year with 11 students, and new students can join the program on a rolling basis in any of the three semesters.

**PROGRAM DETAILS**

**MASTER’S TRAINING:** Students learn administrative and leadership skills in patient-centered care, interdisciplinary teamwork, quality improvement, and informatics utilization.

**30-CREDIT HOUR PROGRAM:** The fully online program can be completed in as little as 1.5 years for full-time students and 2.5 years for part-time students.

**FUTURE CAREERS:** Graduates will be well positioned to pursue careers as a health professions manager/leader, lead clinical technologist, health professions educator or health education specialist.
Faculty teach infectious diseases class as part of global outreach

Jana Broadhurst, MD, PhD, Assistant Professor of Pathology & Microbiology, and David Brett-Major, MD, MPH, Professor of Epidemiology, taught a week-long virtual class on emerging infectious diseases, zoonosis, and tropical medicine for the University of Global Health Equity (UGHE) in Rwanda.

The class was the result of an effort by Senior Vice Chancellor Dele Davies, MD, and John Lowe, PhD, Executive Director of Education for the Global Center for Health Security, who visited UGHE in early 2020.

Dr. Broadhurst and Dr. Brett-Major both jumped at the chance to teach a course in Rwanda. In fact, the chance to engage with African and Asian at-risk community institutions was one reason they each recently joined UNMC.

Dr. Broadhurst, who completed tropical medicine postgraduate training at the Liverpool School of Tropical Medicine, said the course had a practical focus and material tailored to be most relevant for the health care settings in which the Rwandan students are likely to practice.

Drs. Broadhurst and Brett-Major also taught the week-long course on Rwandan time, which meant most interactions took place between 1 a.m. and 8 a.m.

“We’ve essentially been doing double shifts — drinking a lot of coffee and sleeping during the lunch hour,” Dr. Brett-Major said with a laugh. “But for us, this was one of the reasons we came to Nebraska — to work with the Global Center and the Colleges of Medicine and Public Health to do this kind of work.”

“During the curriculum, we were asked to give a three-hour, ‘broaden-your-horizons’ seminar, and we chose severe acute respiratory infections as the focus area, in part because they have so much contemporary experience with COVID-19 and SARS-CoV-2,” Dr. Brett-Major said.

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Personal protective equipment for research and class
Clinical and field research experiences were held in-person, and all students were expected to wear personal protective equipment, such as a mask and eye gear.

Masks and social distancing
Every student, faculty, and staff member was required to wear a mask in public places and common areas on campus, such as hallways, restrooms, lobbies, and elevators. Further, UNMC maintained social distancing, frequent hand washing, and regular cleaning of surfaces and equipment.

Self-monitoring for symptoms
Students were expected to self-monitor regularly for any potential COVID-19 symptoms and to stay home feeling sick. For self-screening, the 1-Check COVID mobile app developed by UNMC was used.

Safety first at Graduate Studies ceremonies

Masked, socially distant matriculation in August 2020
Graduate Studies held a masked, socially distanced matriculation, welcoming 138 incoming students, the first class to begin its training amid the pandemic. Due to COVID-19 concerns, the in-person audience was limited to new students only, while their family and friends watched it digitally from afar.

Virtual convocation in December 2020
As COVID continued to spread across the world, December graduates were celebrated online in a fully virtual ceremony. Each student was recognized for their accomplishments and was asked to submit a picture of themselves in their gowns to be added to a congratulatory video reel.

Masked, de-densified convocation in May 2021
As UNMC reached a 75% vaccination rate, Graduate Studies held a de-densified, in-person convocation ceremony. This hybrid event featured an in-person hooding with limited attendance and a live, virtual experience for family and friends unable to attend.

COVID-19 Response
Throughout the COVID-19 pandemic, UNMC Graduate Studies took comprehensive measures to ensure students had a safe, welcoming environment as they navigated the challenges COVID-19 posed to their educational experience.

De-densified, in-person teaching
This meant fewer people in each space and shorter interactions between them. Some classes were also a combination of remote learning and in-person experiences.

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Dissertation Boot Camp, like everything else during the ongoing pandemic, looked different in 2021. The camp is a four-day retreat to help PhD candidates overcome writing obstacles and make progress on their dissertations. One of the camp’s credos is “No more excuses or distractions.”

Previously, campers met in a single room to ensure a conducive, positive working environment. They gathered at the same tables, set goals together every morning, and met at lunchtime to talk about progress.

Unfortunately, COVID-19 safety guidelines made that impossible. So, organizers went back to the drawing board to figure out how to have an engaging, productive session while also social distancing.

“Students need dedicated space and time for writing that is free of distractions, but they also forge connections with other people going through the same frustrations. They commiserate, connect, and encourage one another, which helps them stay motivated,” explained Pamela K. Carmines, PhD, Executive Associate Dean of Graduate Studies. “But social distancing added a layer of complexity.”

The solution? Each student came to campus to get away from the distractions of normal day-to-day life but had their own individual study room in the McGoogan Health Sciences Library. They would meet online regularly throughout the day with the rest of their boot camp cohort and spend the rest of the time writing in a quiet area.

“Even though we didn’t see each other in person, we would meet through Zoom,” said Yanqui Li, a PhD student in Oral Biology who attended boot camp.

Students were still able to make connections with fellow boot campers, who became valuable partners, explained Li, adding that she also had access to other resources, including counsel from staff and faculty, like Dr. Carmines. “She helped me not only with my dissertation, but also my research,” Li praised.

Across the nation, people became eligible for vaccine access through specific criteria, like age or essential job status — and, while some UNMC graduate students qualified, about 300 initially did not.

But the university sprang into action to procure vaccination opportunities for these grad students.

“There was an intensive effort to get these graduate students vaccinated,” said Pamela K. Carmines, PhD, Executive Associate Dean of Graduate Studies.

Working with Nebraska Medicine, Graduate Studies set up a system in which graduate students would get leftover doses at the end of each campus clinic day. Dr. Carmines and her team used an online program to prioritize students who had conditions that put them at higher risk. All others who signed up were randomized and entered into a lottery.

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It took about two hours a day to manage, but Graduate Studies was determined to make sure all students who wanted a shot could get one.

“It was a lot of work,” Dr. Carmines said. “One day, early in the process, 20 students were vaccinated — it was a cause for celebration! But on several days, zero students got the shot — frankly, those days were depressing. One student I am aware of was sent to the clinic three times before he got the vaccine.”

Graduate Studies was hoping they could get shots into the arms of 40 students. Instead, 180 graduate students received vaccines through this effort. Plus, many others were able to become vaccinated through other mechanisms.

“I personally phoned each student when their name rose to the top of the list and told them when they could report to the vaccine clinic,” Dr. Carmines said. “They were happy to hear from me. They were especially happy after they got the vaccine, and several of them followed-up with nice emails or phone calls conveying appreciation for our work to get the vaccine to as many grad students as possible. It was absolutely a worthwhile effort!”
Faculty discover RA patients have higher risk of COVID-19

A yearlong study led by a UNMC and Veterans Affairs researcher found that rheumatoid arthritis was associated with a 25% higher risk of COVID-19 and 35% higher risk of COVID-19 hospitalization or death.

Researchers used a national VA health care database comparing 33,886 patients with rheumatoid arthritis to 33,886 patients without it for the study.

The large, national study accounted for many factors that influence COVID-19 risk, including age, sex, race, comorbidities, and geography.

“RA patients are known to be predisposed to infection, but prior literature was largely for bacterial infections,” said Bryant England, MD, PhD, Assistant Professor in the UNMC Department of Internal Medicine Division of Rheumatology & Immunology and the VA Nebraska-Western Iowa Health Care System.

“During the pandemic, both providers and patients consistently have been asking whether RA may predispose patients to COVID-19 — a viral infection — and a more severe COVID-19 disease course.”

Dr. England said the team’s findings showed RA patients with greater levels of immunosuppressive therapies, such as biologic disease-modifying antirheumatic drugs and prednisone, had the highest risk of COVID-19 and severe COVID-19.

“This does not mean the medications cause COVID-19 and patients should not preemptively discontinue their use,” he said. “Rather, they should work with their rheumatologist to determine the optimal treatment regimen that balances the benefits of controlling their RA with the potential risks of these therapies.”

He said factors that may be associated with these medications, such as more severe RA, also may be contributing to the COVID-19 risk.

“RA represents a population at high risk for COVID-19 and a severe COVID-19 disease course. Thus, we need to prioritize delivering preventive and therapeutic strategies to these patients in order to minimize negative health outcomes. To date, the list of ‘high-risk’ conditions has not included most patients receiving immunosuppressive therapies.

“While future studies are needed outside of RA, our findings suggest that policy makers should consider broadening the ‘high-risk’ group to include patients taking immunosuppressive therapies for reasons other than post-transplant,” Dr. England said.

COLLABORATORS

Other UNMC authors were Punyasha Roul, Yangyu Na, PhD, Andre Kalil, MD, Kaleb Michaud, PhD, Geoffrey Thiele, PhD, and Ted Mikuls, MD.

Drs. England, Yang and Thiele are all graduates of UNMC Graduate Studies.
Strategic planning retreat establishes key goals for the future

UNMC Graduate Studies undertook a strategic planning retreat in spring 2021 with the goal of charting its future. Committees were formed and plans for action were undertaken in several areas.

“The strategic planning retreat aims to identify key areas of focus for improving the learning experience of our students and ensuring graduate faculty have the ongoing support they need,” explained Dele Davies, MD, Dean of Graduate Studies. “We focus on issues not just important at UNMC but issues at the national level, in order to ensure we remain one of the best places in the nation for health sciences training.”

Four key goals were established:

- **Diversifying student and faculty bodies**
  Working with the UNMC Office of Inclusion, this committee’s action items include reviewing student survey data, proposing new graduate student scholarships to foster recruitment and retention, and more.

- **Promoting and facilitating wellness**
  This committee is working on a proposal to create a graduate student wellness advocate position, as well as looking to improve processes for resolving conflicts, leadership training, and more.

- **Training faculty on mentorship and sponsorship**
  This committee is focusing on instituting programs to train graduate faculty on effective mentoring and sponsoring of graduate students.

- **Training students to be educators**
  This committee is developing an overarching plan to educate graduate students about educational best practices and to match students with training opportunities to enhance their teaching skills.