IMPACT

A Journey of Landmark Successes in Health Science Graduate and Postdoctoral Education
A Message from the Dean

I am delighted to share the 2017-2018 annual report, featuring the many contributions made by our graduate students and postdoctoral fellows to the research, teaching, and outreach missions of UNMC.

During the past year, our trainees excelled in scholarship, highlighted by many local, regional, and national awards and fellowships, and a strong record of publications. However, this report also details some examples of how our students are impacting the greater Omaha communities in which they work and live through their volunteerism and outreach activities.

The past year also saw continued creation of partnerships that are providing diverse training opportunities for our students and our commitment to transparency by making the outcomes data of our programs publicly available to all prospective trainees.

Finally, our graduate students and postdoctoral fellows supported the work of our faculty investigators, who continue to have an increased impact in transforming lives through biomedical research with a record $135 million dollars in external funding during 2018.

Join us in looking back and celebrating some major landmarks on our shared journey in positively impacting the nation’s supply of research scientists, educators, and leaders.

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

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ABOUT US

Driven by Impact

UNMC’s health science education programs consistently perform among the best in the nation. Graduate Studies is at the very heart of UNMC, and scholars in Postdoctoral Education are one of the main driving forces behind our success.

Our vision is to be the best place in the nation for training of graduate students and postdoctoral fellows because we know impact in the health sciences begins with one individual. Our programs, faculty, and mentors provide a map and a compass, but our learners blaze new trails on their journeys to leaving an indelible impact on our local, national, and global communities.

In this report, we celebrate the landmark successes of our trainees and faculty as we continually move forward together in innovative research that leads to extraordinary patient care for a healthier future.

Training the Next Generation of Scientists

A journey of success in graduate & postdoc education

Graduate Studies
Advanced instruction leading to MS and PhD degrees in health sciences

The mission of the Graduate Studies program is to provide, promote, and enhance the highest quality graduate education in health sciences at the University of Nebraska Medical Center.

Postdoctoral Education
A liaison between postdoctoral scholars and UNMC administration

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.

9
PhD degree-granting programs

8
MS degree-granting programs

2
interdisciplinary umbrella programs

1
certificate program in Business for Bioscientists

Power of Partnerships
Graduate Studies and Postdoctoral Education aim to provide diverse training and experiences to our students and postdocs. To that end, we have formed a variety of external partnerships with organizations, such as:

» Bio Nebraska
» Metropolitan Community College
» Purdue Pharma L.P.
» University of Nebraska Omaha
» US Army Medical Research Institute of Infectious Diseases

Impact Report 2017 - 2018
Leadership

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

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

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

Kendra K. Schmid, PhD
Assistant Dean, Graduate Studies

Terri A. Vadovski
Director, Graduate Studies

Graduate Council Members & Staff

The Graduate Council is comprised of graduate program directors and members of the Graduate Studies staff. The Council, in conjunction with the Dean, is responsible for Graduate College activities at UNMC.

Chandran Achutan, PhD
Environmental Health, Occupational Health & Toxicology

Iqbal Ahmad, PhD
Office of Graduate Studies

Rebecca R. Anderson, JD, MS, CGC
Health Promotion & Disease Prevention Research

Keshore R. Bidasee, PhD
IGPBS Neuroscience

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

Pamela K. Carmines, PhD - Chair
Graduate Studies

Carol A. Casey, PhD
MSIA Clinically Relevant Basic Research

Kaustubh Datta, PhD
IGPBS Biochemistry & Molecular Biology

H. Dele Davies, MD, MS, MHCM
Graduate Studies

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

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

Gleb Haynatzki, PhD
Biostatistics

Tayla B. Heavican
Graduate Student Association President

James C. McClay, MD
Biomedical Informatics

Sharon J. Medcalf, PhD
MSIA Health Practice & Medical Education Research; Emergency Preparedness

Aaron M. Mohs, PhD
Pharmaceutical Sciences

Carol H. Pullen, EdD
Nursing

Nicole M. Rodriguez, PhD
MSIA Applied Behavior Analysis

Shelley D. Smith, PhD
MD/PhD Scholars Program

Joyce C. Solheim, PhD
IGPBS Cancer Research

Shinobu Watanabe-Galloway, PhD
Epidemiology

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

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

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

STAFF:
Cody Phillips
Graduate Studies Specialist

Terri A. Vadovski
Director, Graduate Studies

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
Ophthalmology & Visual Sciences

Kaustubh Datta, PhD
Biochemistry & Molecular Biology

Sharon Del Bem Velloso de Morais, PhD
Postdoctoral Research Associate, Cellular & Integrative Physiology

Terrence Donohue, PhD
Internal Medicine

Keith Johnson, PhD
Oral Biology

Luis A. Marky, PhD
Pharmaceutical Sciences

Kaushik Patel, PhD
Cellular & Integrative Physiology

Rakesh K. Singh, PhD
Pathology & Microbiology

Joshua Soucek, PhD
Postdoctoral Research Associate, Pharmaceutical Sciences

Huangui Xiong, MD, PhD
Pharmacology & Experimental Neuroscience

STAFF:
Michele L. Adkins, MS, C-TAGME
Postdoctoral & Interprofessional Education Program Coordinator

Excellent graduate students and postdoctoral fellows are integral to the success of all the missions of UNMC, and as such, deserve a training environment that is second to none. - Dr. Dele Davies
Making their mark at UNMC and beyond

Impact in Numbers
Graduate student accomplishments at a glance

$862,032 in external fellowship funding
$91,204 in extramural contracts
$51,333 in travel awards
750 hours of service-learning activities
397 conference presentations
357 peer-reviewed publications - view the publication list online.
77 national, regional, and local honors
24 book chapters or government reports

Purdue Pharma Scholars Impact Our Community and Beyond
UNMC has partnered with Purdue Pharma L.P. to offer the Purdue Pharma Scholars program, which provides graduate students funding for a one-year assistantship, as well as an additional scholarship of up to $10,000.
The first two cohorts of five students are already producing notable results:

- 21 publications
- 2 earned NIH fellowship funding
- 3 applied for NIH fellowship funding
- 19 poster or oral presentations

494 students enrolled in fall 2018
For the second year in a row, enrollment increased from the previous year.

95 graduates earned degrees in 2017 - 2018, 30 students earned MS degrees and 65 earned PhD degrees.

$1 million awarded in UNMC fellowships
The total value of Graduate Studies Fellowships (including supplements) was $1,071,183.

Visit unmc.edu/gradstudies to learn more about our students.
Graduate Students Offer Insights to Undergraduates

At a Nebraska Science Festival (NeSciFest)-affiliated event, graduate students held a panel discussion about their experiences in graduate school, providing much-needed insights to undergrads about life at UNMC.

In addition, 40 graduate students presented posters and discussed their research with undergraduates. Prizes were awarded to six graduate students for their research poster presentations.

Non-Clinically Relevant Category

1st Constance Mietus
Medical Sciences
Interdepartmental Area

2nd Daniel Mitteer
Medical Sciences
Interdepartmental Area

3rd Jaime Larson
College of Public Health

Clinically Relevant Category

1st Alex Wiesman
Neuroscience

2nd Shashank Shrishimal
Biochemistry & Molecular Biology

3rd Justin Grassmeyer
Pharmacology & Experimental Neuroscience

This year, the third cohort of Purdue Pharma Scholars was added to the roster of UNMC graduate students conducting neuroscience, pharmaceutical science, or pain research. The new UNMC Purdue Pharma Scholars are:

Danielle Frodyma
A third-year PhD student in Cancer Research, she has contributed to multiple publications and is a UNMC cancer biology training grant predoctoral fellow.

Eliezer Lichter
A second-year PhD student in IGPBS Biochemistry & Molecular Biology, he credited current scholar Dannah Miller with impressing upon him the benefits of the program and encouraging him to apply.

Swagat Sharma
A second-year PhD student in pharmaceutical sciences, he will serve as UNMC Graduate Student Association president in 2018 - 2019.

Students with notable impact

Graduate Studies Convocation Awards

Megan E. Bosch, PhD
Pharmacology & Experimental Neuroscience

Praesto Award: Given to the most outstanding or exceptional graduate for the academic year

Since graduating, Dr. Bosch is now a postdoctoral scholar in UNMC’s Pathology & Microbiology Department.

Beth K. Neilsen, PhD
Cancer Research

As an MD/PhD Scholar, Dr. Neilsen is now in her third year of medical school at UNMC.

2017 – 2018 New Graduate Students of Distinction

Maggie L. Bartlett
IGPBS – Immunology, Pathology & Infectious Disease

Honors Research Fellowship

Dilorom (Delia) Djalilova
Nursing

Honor

Shrabasti Roychoudhury
Genetics, Cell Biology & Anatomy

Honor

Richard Lee Sleightholm
Pharmaceutical Sciences

Honor

From left to right: Swagat Sharma, Eliezer Lichter, Danielle Frodyma
A Tough (imp)Act to Follow

This academic year, one graduate student made a lasting impression that will not soon be forgotten. In addition to receiving multiple fellowships, several local honors, and publishing 12 times, MD/PhD Scholar Beth K. Neilsen has yet to be matched.

Described by her program director, Joyce Solheim, PhD, as “an exceptionally accomplished and well-rounded student leader,” Dr. Neilsen’s volunteer efforts extend beyond UNMC to the local community and the regional scientific community for which she has received national recognition. Together with her productive efforts in the research laboratory, it is clear that the scope of her impact has been wide-reaching.

“My ultimate goal is to perform integrative medical research as a physician-scientist who can take medical questions to the research bench and solutions back to the patient bedside,” said Dr. Neilsen.

Since completing her doctorate under the supervision of Robert Lewis, PhD, Dr. Neilsen is in her third year of medical school at UNMC. It is clear this is only the beginning of her accomplishments.

Recognition Outside the Classroom and Laboratory

On top of all her academic work, Dr. Neilsen was also the first-ever recipient of the Platinum Badge from the Service-Learning/Interprofessional Education Badge Program. She earned this honor by completing over 120 hours of service outside of the classroom and laboratory.

“My ultimate goal is to perform integrative medical research as a physician-scientist who can take medical questions to the research bench and solutions back to the patient bedside,” said Dr. Neilsen.

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I am incredibly honored for the recognition I received during my time as a graduate student. Being recognized for my research excellence, personal development, and service is both motivating and a critical step for my career progression. These awards will help me distinguish myself as a top candidate as I begin the next phase of my journey in applying for medical residency programs next year.

Beth K. Neilsen, PhD

Awards

- NIH National Research Service Award Individual Predoctoral MD/PhD Fellowship from the National Cancer Institute (NCI)
- NCI Cancer Biology Training Grant Fellow
- Shawn Jessen Memorial Graduate Research Award (two-time recipient)
- UNMC Graduate Studies Fellowship

Honors

- Graduate Student of Distinction from UNMC Graduate Studies
- Dean Britigan Physician-Scientist Award of Excellence from UNMC
- Praesto Award from UNMC Graduate Studies
- Platinum Badge from UNMC Service-Learning/Interprofessional Education Badge Program
- Student Impact Award from UNMC Student Senate

Service & Outreach

- President, vice president, and founding member of American Physician Scientists Association (UNMC chapter)
- Graduate Studies representative on the Student Senate
- Organizer of Eppley Institute’s Adopt-a-Family effort
- Volunteer at Eppley Institute’s Hospice Pet Therapy
During 2017-2018, over 130 postdoctoral research associates and fellows trained at UNMC.

Impact in Numbers
Postdoctoral scholar accomplishments at a glance

- **$110,428** awarded as new American Heart Association (AHA) Postdoctoral Fellowships
- **$61,880** in new National Institutes of Health (NIH) Predoctoral to Postdoctoral Fellow Transition Awards (F99)
- **$60,900** in new National Institutes of Health (NIH) Individual Postdoctoral Fellows Award (F32)
- **1.5 per postdoc** peer-reviewed publications and book chapters
- **1 per postdoc** national, regional, and local professional development sessions attended
- **1 per postdoc** conference presentations

Top Reasons Postdocs Chose UNMC
In a 2018 survey, postdocs indicated the top reasons for choosing UNMC for their training was due to:

- Principal investigator/mentor reputation
- Future career opportunities
- Location
- UNMC reputation
- Cost of living in Omaha

Visit [unmc.edu/postdoced](http://unmc.edu/postdoced) to learn more about our postdoctoral scholars.
Dr. Shyam Nandi
Making His Mark

Shyam Nandi, PhD, a postdoctoral fellow in the Department of Cellular & Integrative Physiology, was the 2017 recipient of the annual Postdoctoral Excellence in Research Award.

Dr. Nandi joined UNMC in 2013 after completing his graduate degree at the Indian Institute of Chemical Biology – Kolkata. His primary mentor is Paras Kumar Mishra, PhD, Associate Professor in the Department of Cellular & Integrative Physiology.

“It has been a pleasure to work with Shyam in my laboratory for five continuous years,” Dr. Mishra said. “He is a dedicated, hard-working scientist, and he has given maximum effort into becoming the best independent scientist he can be. I look forward to seeing his career accomplishments in addition to his outstanding academic success.”

One of the objectives of the Office of Postdoctoral Education is to facilitate postdocs’ timely transition to independent careers. For Dr. Nandi, postdoctoral training gave him the confidence that he had found his passion and was on the right career path.

“My ultimate career goal is to become a leading scientist in the field of cardiovascular research, and this award has helped me enormously to expand my network with established peers in the field, which is very important for jump-starting my career,” Dr. Nandi explained, “as well as encouraged me to further broaden my research endeavor.”

In 2018, Dr. Nandi joined UNMC faculty as an instructor in the Department of Cellular & Integrative Physiology under the mentorship of Kaushik P. Patel, PhD, A. Ross McIntyre Professor of Physiology. Dr. Nandi is studying several features of mitochondrial abnormality in hypertensive cardiomyopathy and ischemic heart failure induced by myocardial infarction and applying for career development grants from the American Heart Association and the National Institutes of Health.

Dr. Nandi’s accomplishments don’t end with the Postdoctoral Excellence in Research Award. He has also received multiple awards from international societies, including:

- 2017 and 2018 Caroline Tum Suden/Frances Helebrandt Professional Opportunity Award from the American Physiological Society
- 2017 Cardiovascular Section Research Recognition Award from the American Physiological Society
- 2016 Postdoctoral Fellowship Award from the American Heart Association
- 2015 Morris Karmazyn Award from the International Academy of Cardiovascular Sciences: North American Section
- 2015 Featured Speaker Travel Award from the American Physiological Society

These equal over $100,000 in awards.

“I have been lucky to have an outstanding mentorship team in the Department of Cellular & Integrative Physiology. Support from the department, as well as the unmatched research environment at UNMC, made accomplishing my personal and professional goals possible and allowed me to receive this prestigious recognition.”

Shyam Nandi, PhD
Impact in Numbers
Faculty accomplishments at a glance

1,425 peer-reviewed publications
494 students taught last year
360 conference presentations
173 international, national, regional, and local honors
134 postdoctoral scholars mentored
42 book chapters
4 e-modules created specifically for IGPBS core courses

Distinguished Graduate Mentor Award
from the Graduate Student Association

Justin Mott, PhD
Biochemistry & Molecular Biology

“I feel honored to receive this award. Often a student needs to be encouraged to stick with a challenging project, invited to fail so they may succeed. I hope to support the students I mentor in a way that they find research enjoyable, even while it is at its most challenging.”

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

33 new faculty joined Graduate Studies
Almost 50% of Graduate Studies faculty have worked at UNMC for 10 years or more.

7 out of 10 are senior-ranking faculty
47% of faculty hold the rank of professor, while 29% are associate professors.
New NIH Training Program Aimed at Developing ‘Bilingual’ Scientists

This year, UNMC launched its PhD Neuroimmunology of Disease Training Program, supported by an NIH National Institute of Neurological Disorders and Stroke training grant. The program is co-chaired by Howard Gendelman, MD, Chair of the Department of Pharmacology & Experimental Neuroscience, and Dan Monaghan, PhD, Professor in the department. Each of the two received classical training in neuroscience or immunology and now have learned both languages.

This training program creates scientists bilingual in both neuroscience and immunology, two disciplines that are traditionally kept separate due to their varied tools, directions, and languages. Because of the separation, it’s rare for experts to talk to each other across disciplines.

But despite their differences, these disciplines are inseparably linked in inflammatory, infectious, degenerative, and developmental neurological disorders. This includes Parkinson’s and Alzheimer’s, multiple sclerosis, and infectious diseases.

“The immune system commonly drives disease, and harnessing it can slow or perhaps eliminate signs, symptoms, and might even achieve a cure,” Dr. Monaghan said.

Now the challenge is to produce bilingual scientists with knowledge and tools in both immunology and neuroscience.

To meet this need, the program “provides advanced training to better understand how the immune system interacts with the nervous system during development, infections, and neurodegenerative diseases,” Dr. Gendelman explained.

To help think about problems from different research approaches, students will produce one dissertation chapter based upon work done in another laboratory outside that of their primary mentor. Students will also have opportunities for clinical observations of these neuroimmune interactions in real patients, which will provide them with firsthand experience regarding the potential impact of their research.

The program’s emphasis on cross-disciplinary training runs contrary to the traditional PhD path, but it is required to better understand complex disease processes and to develop state-of-the-art diagnostic and therapeutic interventions. The program is specifically designed to produce a new generation of scientists suited to fight diseases by harnessing immunology to combat neural injury.
Preparing for the Future
Trainees receive guidance in soft skills development

Every third Thursday of the fall and spring semesters, the Professional Development Lunch & Learn Series provides graduate students and postdocs with various seminar topics to help develop a professional skill set that could be used in virtually any career path.

The series is designed to promote development of soft skills that are just as critical for success as the hard skills garnered in the classroom and laboratory.

Workshops this year covered tips and tricks from various UNMC experts on:

- How to advance your career
- Life/work balance
- How to boost your communication skills
- Ideas for more effective organizational skills

In fall 2018, events covering wellness will be held to help trainees achieve health in all aspects of life. Additionally, UNMC, UNO, and UNL have partnered to jointly offer Career & Professional Development events for graduate students across all NU campuses.

**Lasting Impressions**

“The events helped me feel more prepared for my future. I’ve already picked up a lot of the habits that make an excellent employee from observing my mentors at UNMC, but some sessions opened my eyes to experiences I haven’t had yet, like job interviews, as well as how to effectively communicate with people who have different personality types from me.”

— Dannah Miller, Graduate Student

“The seminars were very informative. By attending, I not only broadened my horizon and realized my limitations, but I also learned useful skills to make myself better in professional as well as personal development.”

— Fangfang Qiao, Postdoc

FUTURE PLANS

In fall 2018, events covering wellness will be held to help trainees achieve health in all aspects of life. Additionally, UNMC, UNO, and UNL have partnered to jointly offer Career & Professional Development events for graduate students across all NU campuses.

7 development events held throughout the year

The most popular event, with 100 attendees, was focused on how to improve interview skills.

238 trainees attended the events

There were 141 graduate students and 8 postdocs who attended multiple events.

3x increase in attendance

In 2017-2018, the average number of attendees per event was 87. In 2015-2016, the average was 29.
Assessment Initiative
Improving learning for all students

As part of the UNMC Graduate Studies Assessment Initiative, subcommittees were formed to provide recommendations to the UNMC Graduate Council on how to ensure graduate students meet certain universal core and co-curricular competencies. These recommendations resulted in several major actions for tracking progress as Graduate Studies works to continuously improve learning outcomes for our students.

The intermediate results have been that all programs are mapping outcomes and assessments for future analysis. Standard syllabus templates were implemented for all courses, and a timeline for the comprehensive exam was developed and approved. In addition, learning outcomes for all graduates were established.

Graduates are able to critically analyze and synthesize new and complex information from diverse sources.

Graduates with research-based degrees (e.g., PhD) are able to independently identify significant unanswered questions in their discipline, and to both propose and execute original research that addresses those questions using appropriate methodologies.

Graduates demonstrate critical thinking and problem-solving abilities.

Graduates are committed to integrity within all aspects of their chosen profession, including research, and abide by existing professional standards. They are able to work in teams and assume responsibility for their actions and their career aspirations.

Communication Skills
Graduates demonstrate effective oral, written, and visual communication skills appropriate to their discipline for professional publications and presentations, teaching, grant writing, and dissemination of knowledge to lay audiences.

Alumni & Postdoc Surveys
Ensuring training effectively meets career needs

Graduate Studies launched the first in a series of surveys aimed at gathering information from PhD students and alumni regarding their career paths after graduation.

The data will be used to determine the viable careers students enter and to analyze if UNMC needs to update curriculum to better fit the qualifications for those careers.

The surveys are part of the national PhD Career Pathways Project of the Council of Graduate Schools. This project involves approximately 60 universities representing a variety of disciplines, including the health sciences.

There was a 50% response rate from the first wave of UNMC PhD alumni surveyed. The second wave of surveys will launch in fall 2018.

Faculty and mentors will be invited to complete surveys focusing on their experiences with postdoctoral training, including UNMC’s strengths and weaknesses, and thoughts for improvement. The goal is to assist Postdoctoral Education in evaluating its programs and services to better fit the needs of postdocs and faculty.

The second is a survey of postdocs’ contributions toward UNMC’s mission to excel in biomedical research and discoveries. This survey is intended to measure the impact of postdocs at UNMC.

Graduate Studies has made important strides in our assessment initiative during the past year. The creation of common Graduate Studies student learning outcomes is the first critical step in taking our assessment of graduate programs and student learning to the next level.

Kendra K. Schmid, PhD
We are very pleased to have joined the Coalition for Next Generation Life Science. Along with assisting PhD students and postdocs make more informed career decisions, providing open data as part of CNGLS will help UNMC further target our programs to better prepare trainees for the job market they will face when they complete their training. This national network will strengthen our programs and support the long-term success of our trainees.

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