I am delighted to present highlights of the events and accomplishments involving our graduate and postdoctoral students during 2014-15. You will find that our students are excelling in their chosen research fields, with many receiving national awards, publishing in national peer-reviewed journals and receiving competitive UNMC and national fellowships. We had a record 88 graduate students complete their training with us, while we welcomed another 122 excellent new students into our programs.

Whether it is through our postdoctoral fellows teaching and mentoring Metro Community College students, or through our graduate students engaging in community outreach or working closely with alumni, our postdoc and students are making a difference.

Our graduate faculty remain fully engaged and dedicated in strong support and mentoring of our students. Special congratulations to Dr. Jennifer Black and the Cancer Biology program for successful renewal of their T32 Training Program, and to Dr. Tammy Kielian for being recognized as the 2015 Distinguished Grad Student Mentor.

Looking ahead, incoming students will have the benefit of participating in the new Interdisciplinary Graduate Program in Basic Sciences program as we complete the approval processes for this exciting new training mechanism.

Hope you enjoy reviewing this report!

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**We help you take your career to the next level**

**Graduate Studies**

**Advanced instruction leading to MS and PhD degrees in health sciences**

The mission of the Graduate Studies programs is to provide, promote and enhance the highest quality graduate education in health sciences at the University of Nebraska Medical Center.
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# 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 our postdoctoral scholars and their timely transition toward independent careers.
Leadership

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

James B. Turpen, PhD
Associate Vice Chancellor,
Academic Affairs
Executive Associate Dean,
Graduate Studies

Jialin Zheng, MD
Associate Vice Chancellor,
Academic Affairs
Associate Dean, International
Programs, Graduate Studies

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

Pamela K. Carmines, PhD
Assistant Dean,
Engagement & Assessment,
Graduate Studies

Terri A. Vadovski
Director, Graduate Studies
Graduate Council Members

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.

Chandan Achutan, PhD
Environmental Health, Occupational Health & Toxicology

Ann Berger, PhD, APRN
Nursing
>> University of Nebraska Executive Graduate Council Representative

Keshore R. Bidasee, PhD
Pharmacology and Experimental Neuroscience

Laura D. Bilek, PhD, PT
Medical Sciences Interdepartmental Area

Pamela K. Carmines, PhD
Cellular & Integrative Physiology
>> University of Nebraska Executive Graduate Council Representative

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

Karen A. Gould, PhD
Genetics, Cell Biology & Anatomy

Gleb R. Haynatzki, PhD, DSc
Biostatistics

James C. McClay, MD
Biomedical Informatics

Daniel T. Monaghan, PhD
Biomedical Research Training Program
(soon to be Interdisciplinary Graduate Program in Biomedical Sciences)

David Oupicky, PhD
Pharmaceutical Sciences

Tyler D. Scherr
Graduate Student Association President

Alice M. Schumaker, PhD
Public Health

David H. Shaw, PhD
Medical Sciences Interdepartmental Area

Rakesh K. Singh, PhD
Pathology & Microbiology

Shelley D. Smith, PhD
MD/PhD Program

Joyce Solheim, PhD
Cancer Research

Ghada A. Soliman, MD, PhD
Health Promotion & Disease Prevention Research

Paul L. Sorgen, PhD
Biochemistry & Molecular Biology

James B. Turpen, PhD
Office of Graduate Studies

Shinobu Watanabe-Galloway, PhD
Epidemiology

Fernando A. Wilson, PhD
Health Services Research, Administration, & Policy

Graduate Studies and Postdoctoral Education Staff

Giovanni Jones
Associate
Postdoctoral Education

Cody Phillips
Associate
Graduate Studies

Vanessa Wilcox
Admissions Associate
Graduate Studies
Matriculation Offered an Inspiring Start for Incoming Graduate Students


Getting to know each other — creating a sense of community among the cohorts of incoming graduate students — was one of the reasons Graduate Studies instituted its Matriculation Ceremony in 2013.

Along with a week-long series of orientation events — some specific to graduate students, some not — the ceremony offered not only a celebration of the past accomplishments that brought students to UNMC, but a chance to begin developing the friends and teammates students would lean on as they work toward their various advanced degrees.

These relationships will be pivotal in the years ahead, as the journey is often difficult and best not undertaken alone.

“Reaching the finish line will require intensive training, unwavering commitment and intellectual fortitude,” explained Karen A. Gould, PhD, as she spoke to the students. “You know the journey ahead of you will be difficult, but it will also be immensely rewarding and empowering.”

The event often draws a large crowd since all incoming MS and PhD students and their family and friends are invited to the Matriculation Ceremony, and graduate faculty and current students are encouraged to attend.

“The single most important thing that I have to do this afternoon is to say thank you and extend a very warm welcome,” Dr. Gold said. “A warm welcome to our graduate students and a thank you to students and their families for being part of our family today.”

What Is Matriculation?

The Matriculation Ceremony is a place for incoming students to be honored and also to meet faculty and current students who will be important in ensuring their time in academia is successful.

In 2014–2015, 53 of the incoming students were honored at the Matriculation Ceremony by over 100 attendees.
“The journey ahead of you will be difficult, but it will also be immensely rewarding and empowering.”

Incoming students **Chelsea Lyle** and **Logan Bulock** knew each other before they got to the Graduate Studies Matriculation Ceremony — the Minnesota natives are married, after all.

But their acquaintances at UNMC were fewer. “We’re interested in getting to know what’s going on and meeting people,” Lyle said. “Other than Logan, I don’t really know anybody here, so I’m excited and nervous to get to know people I’m going to be working with in this new situation.”
Postdoctoral Partnership a Success

In Spring 2015, UNMC Postdoctoral Education and Metropolitan Community College (MCC) Department of Mathematics and Natural Science worked together to provide teaching and mentorship opportunities for UNMC postdocs and research opportunities for MCC students.

The idea for a partnership first came to Iqbal Ahmad, PhD, Associate Dean of Postdoctoral Education, while he was attending a seminar on careers for postdocs outside of research. “I thought, ‘Wouldn’t it be nice if our postdocs can get an opportunity to teach, so they have the experience and know what they’re getting into,’” Dr. Ahmad said. “At the same time, they can put it on their resume, and that experience in teaching will make them much more marketable.” MCC was a good fit, he believed, because it has many classes on the weekend and in the evenings, so postdocs would find it easier to fit into their schedules.

The program offered postdocs three weeks of teaching experience with an MCC faculty member, and postdocs quickly found themselves working with students one-on-one in the classroom, writing test and homework questions, and lecturing.

“This program gives postdocs who don’t necessarily have any experience teaching an amazing opportunity to learn how it works — as I personally found it a bit daunting when I first started teaching,” said Marissa Stanton, PhD, MCC faculty mentor to two postdoc students.

The Benefits Went Both Ways

MCC students were selected to work with the UNMC postdocs for month-long stints assisting in research at UNMC — a sort of “mini mentorship” that allowed the students to gain research experience.

Michael Flesch, MSEd, Dean of Mathematics and Natural Sciences at MCC, said he was pleased by the synergy of the project. “For us it is a way to give a highly qualified postdoc a great experience working in a community college setting with our students. Some of the postdocs may want to pursue employment with us after this initial training.” He continued, “I am also excited about providing a research opportunity to our students that may help shape where they want to go in their career.”
Program Participants Pleased by the Opportunity

Matt Northam, PhD, was one of the first postdocs from UNMC to teach at MCC. “The teaching internship program between MCC and UNMC has been a great opportunity for me,” he said. “The program has exposed me to multiple environments of teaching at the undergraduate level and better prepared me for the teaching aspect of a career in academic research. Postdoctoral experiences at research institutes that lack a direct connection with undergraduate students could benefit from a program of this nature.”

MCC student Russell Kottwitz, whom Dr. Northam mentored, said he was excited by the opportunity to study research at UNMC. “I’ve always been very curious about science, and I think it’s a field I’m interested in for the future,” he said. “This is a great opportunity.”

Kelly Stauch, PhD, another postdoc participant, said she hopes for a career in academia and appreciates the teaching experience, but she also enjoyed the prospect of mentoring an MCC student.

“I’ve enjoyed this experience more than I thought I would,” she said. “I enjoy teaching, but it is harder than I thought. You not only really have to understand the material, but you have to be able to explain it in the way that helps the students. I highly recommend this internship program to anyone interested in teaching at the college level as well as mentoring students in the lab setting.”
New Graduate Studies Umbrella Program
Benefits All

Modern biomedical research is increasingly dependent upon larger interdisciplinary teams that can perform more complex research using a variety of techniques and approaches — which is one of the main reasons for the creation of the Interdisciplinary Graduate Program in Biomedical Sciences (IGPBS). This new umbrella PhD and training program reorganized six UNMC basic science PhD-granting programs and will have its first cohort of students enrolling in fall 2016.

“Research is becoming increasingly multidisciplinary,” said Daniel T. Monaghan, PhD, Professor in the Department of Pharmacology & Experimental Neuroscience and co-chair of the committee that helped create the new program. “Training therefore has to be more interdisciplinary. We’re hoping that having these interdisciplinary programs, having multiple faculty from different departments participate in individual integrated graduate programs, will make each of those areas stronger and provide better training opportunities and stronger, broader training for our students.”

The new program will make it easier to recruit top students, said Vimla Band, PhD, Chair of the Department of Genetics, Cell Biology & Anatomy, who chaired the initial task force on the project.

“Most institutions already have interdisciplinary programs,” Dr. Band said. “In order for us to compete with them, we need to have an interdisciplinary program. Not only is science moving in that direction, but also it’s a competition. If you give students more choices, they like it.”

Interdisciplinary training also is valued by extramural funding sources such as the National Institutes of Health (NIH), and the IGPBS may help position UNMC for new types of funding, such as NIH training grants.

Programs Under IGPBS

The PhD programs united under the IGPBS umbrella were those directed by the College of Medicine’s basic science departments and the Eppley Cancer Institute:

\ Biochemistry & Molecular Biology
\ Cellular & Integrative Physiology
\ Genetics, Cell Biology & Anatomy
\ Pathology and Microbiology
\ Pharmacology & Experimental Neuroscience
\ Cancer Research
“Based on the level of our extramural funding at UNMC, if you compare us to other institutions with similar amounts of funding, we are underpowered in terms of training grants,” said Karen A. Gould, PhD, Associate Professor and Vice Chair for Graduate Education in the Department of Genetics, Cell Biology & Anatomy, and co-chair of the committee that helped create the IGPBS.

Because the IGPBS is a degree-granting program, it also offers more flexibility for international students, said Dr. Gould. “International students are required to have an offer of admission from a degree-granting program to get their student visa. Previously, international students couldn’t come in through the Biomedical Research Training Program — it was the most flexible graduate program, but it was an entry program, not a degree-granting program.”

Moving forward, faculty participation will be integral to the success of the program, Dr. Monaghan said. “The new structure will give us the opportunity to make graduate training much better, but it’s going to require ongoing follow-up by the faculty to truly make it better,” he said. “Given the dedicated and excellent faculty that we have, I am confident this will happen.”

Dr. Dele Davies
Vice Chancellor, Academic Affairs

A Student’s Perspective

Tyler D. Scherr, President of the Graduate Student Association, has been excited about the IGPBS since he heard it was a possibility. He gave a number of reasons.

“It streamlines the application process for prospective students by essentially expanding on the Biomedical Research Training Program and allowing them to apply to six programs with one application,” he said. As an undergraduate, Scherr was passionate about medical research, but didn’t know what area he wanted to specialize in. As a result, he only applied to umbrella programs. “If it hadn’t been for the BRTP, I likely would have ended up at a rival institution, such as Iowa.”

Further, implementation of the IGPBS will standardize graduation requirements across all participating programs, eliminating what should be secondary concerns from a prospective student’s mind and allowing him or her to pick a program and lab based on their scientific or career interest.

“The IGPBS should work to foster improved collaboration across programs,” Scherr said. “While my experience at UNMC has been very interdisciplinary, not all students currently have the same opportunities. The IGPBS should liberate students to more freely and organically connect otherwise disparate labs across programs based on the student’s thesis project/research interests.”

“UNMC’s major interdisciplinary research themes will all benefit from having broader faculty participation in each of these areas. In addition, the IGPBS umbrella will help produce highly qualified PhD recipients who are more competitive in the job market.”
Postdoc Is on the Pathway to Independence

Adam Case, PhD, a postdoctoral fellow in the lab of Matthew Zimmerman, PhD, in the UNMC Department of Cellular & Integrative Physiology, was awarded a K99/R00 grant, known as the “NIH Pathway to Independence Award.”

Dr. Case, who also won UNMC’s “Pathway to Independence” Award in 2014, credited his mentors, Dr. Zimmerman and Kaushik P. Patel, PhD, for helping with his career development and his long-term career goals, as well as with the grant submission, a process that took approximately two years with revisions.

“Of course, I have to thank my girlfriend, who is an assistant professor in biomechanics at the University of Nebraska–Omaha, so she understands the grant-seeking process. But it’s never easy for a significant other to be with someone who is a self-diagnosed workaholic and is trying to make it in this field, which is getting tougher and tougher every year.”

Dr. Case is only the fourth investigator in the state of Nebraska to receive a K99/R00. He received just under $1 million for the five-year grant, which will allow him to explore the role of reactive oxygen species and free radicals, also known as pro-oxidants, in the communication between the brain and the body’s immune system.

“The immune system and the brain are highly linked in cardiovascular disease,” Dr. Case said. “So understanding how those two communicate is essential in understanding that pathway. What’s novel about my research is I’ve found the brain communicates with the immune system via reactive oxygen species and free radicals.”

Although many people are leery of free radicals, Dr. Case’s research is beginning to show this may be an overgeneralization. “In fact, these are really necessary,
essential molecules for communication between organ systems and even between cells,” he explained. “My research has actually discovered that one way the brain communicates with the immune system is through these free radicals. A major aspect of the project is discovering how that communication affects what genes and proteins are changing inside the cell to signal — but then taking a step back and seeing how this is important in the context of cardiovascular disease.”

In addition to understanding the communication between the brain and the immune system, Dr. Case and his team have found that in stressful events like cardiovascular disease where the brain is overactive, free radicals actually are working to tell the immune system to slow down.

This leads to the practical, clinical application of the project. “We’ve heard many times that stress is bad for your immune system,” Dr. Case said. “So the idea here is that there may be a way that we can understand how to improve immune function in these diseases where there’s increased stress and brain response.”

Improving immune function in times of increased stress is applicable not only to cardiovascular disease but many other diseases, as well. “So if we can really pinpoint the mechanisms of that, we could potentially improve immune system function in these patients with other co-morbidity diseases, such as diabetes or stroke,” Dr. Case concluded.
Graduate Students Ensured a PhUn Day Had By All

More than 250 students, mostly Native American youths, participated in Physiology Understanding (or “PhUn”) Day on March 3, 2015 in South Sioux City, Nebraska. The day was an outreach event organized by the UNMC Science Education Partnership Award (SEPA) program, an NIH-funded initiative to engage Native American youths in science.

The purpose of the NIH grant is to strengthen the math and science curriculum of Native American youths living on reservations and in urban areas in Nebraska and South Dakota.

“Engaging Native American youth in science activities is a critical first step to increase the numbers of Native American health professionals in the future,” said Maurice Godfrey, PhD, principal investigator on the SEPA grant.

Physiology graduate students Alicia Schiller and Bryan Becker provided the content expertise to involve students in hands-on learning.

“The students were excited and engaged throughout the day as they participated in the various stations demonstrating physiological systems,” Becker said. “Our excellent group of volunteers motivated students to interact with the scientific method by asking questions, making predictions, and conducting experiments.”

Activities were led by UNMC graduate students, faculty, and alumni. The students also took the opportunity to discuss scientific and medical careers with the middle and high school students as they learned more about physiology and health.
The event featured a booth in which students could put their face in a bucket of water while recording their heart rate, dissect owl pellets, check blood pressure and other activities.

“The weeks of intense preparation by SEPA staff is well worth the priceless smiles of students doing science-related activities,” said Liliana Bronner, MHSA, MBA, SEPA program coordinator.

Schiller and Becker also put together a pamphlet that can be used to re-create the outreach event in the future.

Schiller said it was important to expose the students, drawn from schools on Native American reservations, to science careers. “It’s important to get the message across that science and medicine aren’t necessarily the same career path,” she explained. “All most kids really know about science and medicine is that some student wants to be a pediatrician. And these students come from economically challenged areas, where a lot of these careers might seem unattainable — so for us, one of the joys is when they see that we’re ‘normal kids’ just like they are.”

For Becker, the best part of the day was seeing students get excited about physiology. “Watching the natural curiosity of students come alive as they explore science is an incredibly rewarding experience,” he said.
No Small Feat: 700 Pages in 7 Weeks

For seven weeks in 2014, Jennifer Black, PhD, was all about grant-writing. Seven hundred pages later, Dr. Black, the Eppley Institute and UNMC were awarded a renewal of their long-standing National Cancer Institute “Cancer Biology Training Program” T32 Grant — an award to support the nation’s best graduate students in the field of cancer research.

UNMC has held the competitive NIH-funded T32 grant since 1988, with Angie Rizzino, PhD, of the Eppley Institute serving as program director for seven years before Dr. Black took over in 2012.

The five-year, $1.2 million grant will support six graduate students each year, with the maximum length of support for an individual student of three years. Graduate students are moved into the program as slots become available. Participating in the grant is prestigious for the graduate students.

In addition, part of the grant application calls for institutions to show that PhD candidates supported by the grant in the past went on to success. “So the training record is a very big deal,” Dr. Black said. “Where it really helps the students is when they go on to get a postdoc or when they apply for postdoctoral fellowships or career development awards from the NIH (F32 and K awards).”

At the time of submission of the renewal application, UNMC’s training grant was the only cancer biology-focused T32 supported by the NCI within a nine-state region, including Montana, Wyoming, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Missouri, and Arkansas.

At UNMC, the grant serves as a kind of umbrella program, with students and mentors from several departments and divisions taking part.
“As long as they are doing cancer research, they can be from a number of graduate programs,” Dr. Black said. “We have faculty on the training grant from many programs, including Biochemistry & Molecular Biology, Genetics, Cell Biology & Anatomy, and Pathology & Microbiology.”

More than 30 UNMC faculty participate in the grant, working with PhD candidates. “Every faculty member on the training grant has to be funded and have a track record of funding, and also a very strong record of training of students,” Dr. Black said.

The faculty on these grants are evaluated on how many students they have graduated, and also on the quality of the publications that have resulted from those students’ work in their labs. “So you want to have really strong faculty who have both a track record of excellent science and also a track record of excellent training.”

The grant also serves as a spur for UNMC’s graduate programs to remain relevant and for its curriculum to keep pace with the latest developments and emerging trends in cancer research.

Dr. Black is already looking ahead to the next training grant application, due in five years. (She thanked her assistant, Kelly Jordan, for helping her get this one in.) “There’s a lot that goes into a training grant,” she said. “The NCI wants to see programs that are state-of-the-art, so every time you put in a renewal, there have to be new classes and new initiatives to keep it vibrant. You actually have to start thinking now, ‘What am I going to do five years from now to make it different and unique?’”

“It’s an award the NCI gives to support the cream of the crop. It’s something graduate students can put on their CV, it is helpful in one’s career because of the association with the NIH, and it’s competitive and for highly qualified students.”

Jennifer Black, PhD
Program Director, Gastrointestinal Cancer Research Program
Convocation Ceremony Helped Graduate Students Move Forward Toward Their Next Adventure

The railway cars that line the first floor of the Durham Museum never move, but they have become a familiar backdrop as graduates of UNMC Graduate Studies begin their own journeys.

Winter Convocation
Two graduates were honored as Graduate Students of Distinction, in recognition of national and international awards garnered while students at UNMC.

The Durham Museum was the setting as PhD and MS graduates, joined by their beaming mentors, were honored by UNMC leaders in the Graduate Studies Honors Convocation.

The formal honors Convocation Ceremony celebrated the significant accomplishments of each graduating student while at UNMC, as well as introduced where the graduates will be going as they move into their postgraduate or other careers. Attendees at the Winter 2014 Convocation Ceremony celebrated the accomplishments of five MS graduates and 30 PhD graduates, while the Spring 2015 Convocation honored 13 MS and 24 PhD graduates.

Dr. Dele Davies, Dean of Graduate Studies, shook the hand of each of the students as they crossed the stage. Dr. Davies said the event has become an important one for the department and the students. “The students are so excited and so appreciative that they get this individual recognition, which they don’t get in the UNMC commencement ceremony,” he stated.

Chandran Achutan, PhD, Professor of Environmental, Agricultural & Occupational Health in the College of Public Health, was on hand to support his student Mark Shepherd, PhD. “It’s a very intimate setting, and it really honors our PhD students,” he said.

“It’s great to see not only your own accomplishments but also to hear about your individual classmates and everything that they are doing,” said Alicia Schiller, PhD.
Awards Presented at Spring Convocation

Praesto Award: Alicia Schiller, PhD
given to the most outstanding or exceptional graduate for the academic year

Dr. Schiller credited her mentor, Irving Zucker, PhD, and her supervisory committee, particularly Pamela Carmines, PhD, for her success. “They enabled me to do all the things that allowed me to get this award,” she said, also mentioning Dean of Graduate Studies Dr. Dele Davies, Vice Chancellor for External Affairs Bob Bartee, and UNMC Chancellor Jeffrey P. Gold, MD, for the student initiatives they’ve supported at UNMC. “I don’t think I would have accomplished any of the things I’m getting honored for today unless those people were present,” she said. “This is definitely not a solo effort.”

Thomas Jefferson Ingenuity Award: Srustidhar Das, PhD
given to a graduate student for ingenuity in doctoral research

Dr. Das credits his UNMC mentors and professors in helping prepare him for the challenges of postdoctoral work. “My PhD training in Dr. Surinder Batra’s lab played a very important role in shaping my scientific career. Particularly, he had a lot of confidence in me and gave me a lot of freedom in planning and executing my research work. In addition, Dr. Parmender Mehta, Dr. Michael Hollingswoth and Dr. Michelle Ouellette had a significant impact in my professional as well as personal life during my graduate studies at UNMC, and I feel very confident in facing the challenges and rigors of postdoctoral work.”

Graduate Student Association’s Distinguished Graduate Mentor Award: Tammy Kielian, PhD
given to a faculty member for exemplary support in the development of graduate students

Dr. Kielian, Kommineni Professor of Pathology, was honored to be named the 2015 Distinguished Graduate Student Mentor. “This is one of the most meaningful awards that I have ever received and I look forward to seeing how this excellent group of students paves their futures in science,” she said.
Plans for the Future

The 2015 – 2016 academic year is shaping up to be even more exciting than the previous one. Graduate Studies and Postdoctoral Education are working to launch a number of new programs and services designed to help students and postdocs with their career goals.

Establishing a Writing Center

A satellite location of the UNO Writing Center is opening at UNMC as a pilot project, due in part to the hard work of several Graduate Studies faculty members. Located in the McGoogan Library, the Writing Center @ UNMC will help faculty, staff and students with writing projects, free of charge.

Forming an External Advisory Board

The Graduate Studies External Advisory Board is being formed to highlight and educate the public about the important role of graduate students in not only supporting current discovery within UNMC, but also the critical role their training plays in ensuring a strong pipeline of excellent future health science researchers. The Board will ultimately help identify potential sources of support to ensure our Graduate Studies programs are among the best in the nation.

Completing Graduate Program Reviews

All UNMC Graduate Studies programs are currently undergoing five-year comprehensive reviews. All program reviews will be completed by the end of the 2015 – 2016 academic year.

This schedule will ensure all programs have been reviewed prior to the NCA-HLC accreditation review of UNMC, which is scheduled for 2016 – 2017.

Transferrable Skills

In addition to expertise in their chosen field of study, graduate students and postdocs should develop an array of core competencies that can be leveraged to support multiple career pathways.

To ensure students have these skills, Graduate Studies is developing a series of workshops on transferrable skills. The first topics in the series, scheduled to begin in fall 2015, will focus on communication and critical thinking.

Further, Postdoctoral Education will provide regular workshops and transferable training seminars in addition to a new seminar series on how to run and manage a lab.

This expansion of students’ and postdocs’ transferrable skills continues to be one of the leading initiatives for Graduate Studies and Postdoctoral Education.
Facts & Figures
In 2015, Graduate Studies reached a record high of 84 graduating PhD students.

Applications for UNMC Graduate Fellowship Awards

UNMC offers several two-year fellowships to graduate students selected during an annual competition.

Total Dollar Value

For 2014–2015, the total value of UNMC Graduate Fellowships awarded (including supplements) was $1,343,962.
Number of Postdoctoral Scholars

Postdoctoral fellows and research associates continue to enjoy excellent programmatic support. In addition to the training and productivity in mentors’ laboratories and research fields, Postdoctoral Education offered numerous career development opportunities including seminar series on teaching, grant writing, networking, responsible conduct in research, Sci-val funding search, UNMC’s designation as a Department of Defense University Affiliated Research Center (UARC) and steps to successful presentations.

![Graph showing number of scholars by year](image)

Over 90 faculty members act as mentors to UNMC postdoctoral scholars.

Postdoctoral Scholars by Gender

<table>
<thead>
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<th>Percentage</th>
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<tr>
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<td>Male</td>
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</table>

Postdoctoral Fellowship Awards

For the 2014–2015 academic year, four postdoctoral fellows were sponsored on NIH Ruth L. Kirschstein National Research Service Awards (NRSA) for Individual Postdoctoral Fellows (F32) with a total dollar value of $221,396.
Postdoctoral Scholars by Area

UNMC Has a Strong Influence on Postdoc Career Paths

After leaving UNMC, the top 3 career paths chosen by postdoctoral scholars are:

- Academia (58%)
- Science (15%)
- Medical (7%)

Based on the data collected in REDCap

Postdoctoral Scholars by Residency

Fact

International students represent the majority of postdoctoral scholars.
### Graduate Studies Degree-Granting Programs

<table>
<thead>
<tr>
<th>Program</th>
<th>MS</th>
<th>PhD</th>
</tr>
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<tbody>
<tr>
<td>Biochemistry &amp; Molecular Biology</td>
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<td>✔</td>
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<tr>
<td>Biomedical Informatics</td>
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<td>Cancer Research</td>
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<tr>
<td>Cellular &amp; Integrative Physiology</td>
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<td>Emergency Preparedness</td>
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<td>Epidemiology</td>
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<td>Health Promotion &amp; Disease Prevention Research</td>
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<td>Medical Sciences Interdepartmental Area</td>
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<tr>
<td>Nursing</td>
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<tr>
<td>Pathology &amp; Microbiology</td>
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<tr>
<td>Pharmaceutical Sciences</td>
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<td>✔</td>
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<tr>
<td>Pharmacology &amp; Experimental Neuroscience</td>
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</tbody>
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### Graduate Studies Specialized Programs

**Asia Pacific Rim Development Program**

Biomedical Research Training Program (BRTP) — changing to Interdisciplinary Graduate Program in Biomedical Sciences (IGPBS) degree-granting program in 2015–2016 academic year
Biochemistry & Molecular Biology

The goal of the Biochemistry & Molecular Biology graduate program is to prepare our students for successful careers as future scientists and educators. The Department of Biochemistry & Molecular Biology offers programs of graduate study leading to MS and PhD degrees. The MS program is designed to provide a background in analytical and experimental biochemistry and includes with or without Master thesis. The MS program may increase the likelihood of acceptance into medical school or industry. The PhD program is designed to provide a more comprehensive knowledge of the biochemistry and molecular biology of living organisms and includes the research and training experience necessary for the development of independent investigators.

Currently 42 students are in the PhD program, which includes six new students this year. Our students have been highly successful in obtaining UNMC, regional, and national graduate fellowships. There were four graduates in 2014-2015, one with a MS degree and three with PhD degrees. The Biochemistry & Molecular Biology Department started an annual research symposium to highlight all of the outstanding research being performed in the graduate program. Knowing our students work incredibly hard, at the symposium, we recognize our student nominee for the Thomas Jefferson Ingenuity Award, our third-year student who had an Outstanding Performance in the Comprehensive Examination, our first-year student with the Highest Grade Point Average, and students receiving awards at the Midwest Student Biomedical Research Forum and at the Annual Research Symposium for Best Oral and Poster Presentations.

Biomedical Informatics

The University of Nebraska Joint Biomedical Informatics (BMI) graduate degree program’s mission is to develop the next generation of biomedical informaticians who will advance research and practice in contemporary information and knowledge management using innovative evidence based approaches to improve human health.

The program was approved by the Board of Regents in 2013 as a shared degree program between UNMC and UNO. The BMI program consolidated a number of Informatics specialty track in other degree programs such as MSIA and the UNO CS departments into a university-wide program.

Since its inception, the BMI program has grown to include Masters and Doctoral students in health informatics, bioinformatics, imaging informatics and laboratory informatics. The BMI program affiliated faculty come from UNMC, UNO, and UNL colleges to provide a truly interdisciplinary education experience for BMI students. Students in the BMI program also gain experience providing services in the Bioinformatics and System Biology Core with Dr. Babu Guda, the Enterprise Clinical Research Data Warehouse with Dr. McClay and laboratory informatics with Dr. W. Scott Campbell.
Biostatistics

The PhD in Biostatistics is designed to provide students with the instruction and research experience necessary to become high-quality academic faculty members, researchers and leaders in biomedicine and public health throughout Nebraska, the country, and the world. They may also choose careers as scientists in government and private research agencies.

The curriculum design of this program is consistent with the core competencies of Biostatistics and strongly emphasizes the acquisition of applied skills as well as the theoretical mathematical foundations of Biostatistics. The primary focus is in the following areas of Biostatistics: clinical trials; study design; survival analysis; generalized linear models; longitudinal analysis; survey methodology; and analysis of microarray gene-expression data and other high-dimensional data.

Since starting the PhD program in 2012, the program now has eight students. PhD students in Biostatistics have opportunities to gain experience in teaching and research through teaching assistantships within the Department of Biostatistics as well as research assistantships in applied biostatistics, pediatric cardiology and nutrition.

Cancer Research

The Cancer Research PhD Program is one of several PhD programs with students and faculty participating in UNMC’s Cancer Biology Training Program. This graduate student training program has received support for many years from a National Cancer Institute T32 grant, which was renewed again in 2015 (Dr. Jennifer Black, Principal Investigator).

New educational initiatives in the Cancer Research PhD Program include the design of a course to provide intensive training in translational cancer research, with clinical cancer-relevant interactions and instruction for graduate students on topics ranging from diagnostic pathology to personalized medicine to the decision-making processes used by oncologists. Another new initiative in the PhD program in Cancer Research is coursework (first offered in Fall 2015 as a CRGP Special Topics course) geared toward designing novel cancer research projects and preparing NIH individual pre-doctoral fellowship applications.

Students who received financial support from the Cancer Biology Training Program also now participate in a new course on giving an effective research data presentation, with the course offered in a format that gives students an opportunity to receive feedback on their presentation skills in a small-group setting from their Training Program peers and from faculty members.

With the advent of the Interdisciplinary Graduate Program in Biomedical Sciences, the Cancer Research Program is joining with the PhD programs in the College of Medicine in the formation of a new combined graduate program.
Cellular & Integrative Physiology

The Cellular & Integrative Physiology (CIP) graduate program provides students with diverse training and interdisciplinary approaches ranging from the molecular level to the whole organism. The MS program is designed to enhance the student’s preparation for medical or dental school while the PhD program provides the research and training experience required for development of independent investigators who have career goals in academia or industry.

CIP underwent a period of self-assessment during the 2014-2015 academic year, in concert with the five-year review carried out by the UNMC Graduate Council. The review process had a favorable outcome, with the program receiving particular acclaim for its long-standing effort to encourage students to submit proposals for extramural fellowship support. Not only do most CIP students apply for extramural support, 50% of CIP students enrolled in the PhD program in 2014-2015 have garnered fellowships from either the American Heart Association or the National Institutes of Health. This success reflects well on our students, along with the faculty mentors who developed strong, individualized training plans as part of the fellowship application process. In accord with the concept of physiology as “the science of medicine,” the CIP graduate program has continued to grow its reputation for mentoring MD/PhD scholars (about 40% of CIP students). This phenomenon reflects an intentional effort to meet the unique interests and needs of MD/PhD students by incorporating physician scientists into each student’s mentoring team. It is anticipated this interdisciplinary and translational approach will expand as CIP reorganizes into the IGPBS doctoral program in Integrative Physiology & Molecular Medicine.

Emergency Preparedness

The Master of Science (MS) in Emergency Preparedness is designed to prepare professionals in a world where emergency preparedness and response skills are essential to the public health infrastructure, and ultimately build community resilience.

Events explored include naturally occurring disasters, intentional acts of terrorism, and new emerging infectious disease threats. The course curriculum is designed to be reflective and inclusive of current and nationally endorsed competencies in emergency preparedness leadership, communication, information management, practice improvement and planning and worker health and safety. A new course in high-level biocontainment is scheduled to be added to the program in 2017.

This program attracts students from across the nation and the globe, creating a future network of professionals to prepare for the next disaster. Students also belong to a Student Response Team here at UNMC and gain valuable experience in outbreak management, mass dispensing, and monitoring social media in a disaster. Research opportunities are abundant as partner organizations look to our students and faculty for expertise. Current studies are underway with partners such as the American Red Cross, the American Healthcare Association, the national Hospital Preparedness Program, and multiple agencies involved in the response to the 2010 earthquake in Haiti.
Environmental Health, Occupational Health & Toxicology

The Environmental Health, Occupational Health & Toxicology graduate program provides students with the knowledge base, field and laboratory skills, and problem-solving abilities to become independent, innovative professionals using state-of-the-art approaches to address scientific problems in the fields of environmental health, ecological health, occupational health and safety, and toxicology.

Our PhD program offers three educational tracks to meet the research interests of our students. The tracks are: Environmental and Occupational Hygiene, Occupational Biomechanics, and Toxicology. Specific objectives are to provide students with: 1) a basic knowledge in ecological, environmental, agricultural and occupational health, as well as toxicology; 2) a broad understanding of relevant problems in the various areas of ecological health (effects of contaminants and practices on air, water, soil and ecosystems), environmental health (effects of environmental contaminants and practices on human health), occupational health and safety, or toxicology, with particular emphasis on agriculture; and 3) the ability to apply this information to important scientific questions and solve problems in these areas.

Our faculty conducts research in areas of environmental, agricultural and occupational health. Often their research and service activities are accomplished through multi-disciplinary collaborations within and outside the College of Public Health, the UNMC campus, and the NU system. This broad approach enables them to tackle difficult issues in order to improve the health of our community, especially rural and agriculture-based communities both in Nebraska and around the world. Over 20 PhD students have graduated from this program.

Epidemiology

The Epidemiology graduate program prepares practitioners and researchers for positions in government agencies, the private sector, and academia. Students learn to design, conduct and analyze research studies, interpret research findings and the literature, apply findings to solve public health problems or discover causes of diseases.

The Epidemiology PhD is one of the newest epidemiology programs in the College of Public Health but has been successful recruiting a large number of promising students beginning in August 2012. Currently, we have a total 22 students.

The department is a home to the NCI-funded Cancer Epidemiology Education in Special Populations (CEESP) (Amr Soliman, MD, PhD, as PI). CEESP supports PhD and MPH students in the public health field to conduct applied cancer research studies with ethnic minority populations and international populations. Currently, three epidemiology PhD students are participating in CEESP. For example, Kate Rieke is studying the effect of diagnosis and treatment of head and neck cancer on depression, and Brittney Smith is studying stomach cancer and HIV-related malignancies in Africa. In addition to cancer research, epidemiology PhD students conduct research in a wide range or areas including agricultural injuries, respiratory disease, and metabolic syndrome. Guangming Han is the first PhD student to graduate in December 2015.
Genetics, Cell Biology & Anatomy

During the 2014-2015 academic year, nine Genetics, Cell Biology & Anatomy (GCBA) students completed the PhD degree. One of these nine recent PhDs from the department was enrolled in our rejuvenated Anatomy teaching track PhD program. This student accepted a faculty position to teach anatomy at Marquette University after completion of her degree. One student completed the traditional MS program in GCBA, which includes course work and research.

One of the key new initiatives of the GCBA graduate program during the 2014-2015 academic year was the implementation of a new one-year MS program in Medical Anatomy. This program is designed to prepare students for professional studies in medicine, education, or research. This program admitted 16 students. Seven of these 16 are currently enrolled in professional school (MD or PT) or graduate school, and an additional three have gained admission to professional school this year.

Students in the GCBA graduate program organized and participated in the first annual departmental research retreat. At the retreat, graduate students had the opportunity to share their research with faculty and other students via oral or poster presentations. The retreat also included opportunities to socialize with others in the department and to discuss ways to enhance graduate education in our program.

Finally, the GCBA graduate program continued its effort to recognize the accomplishment of our students by making annual “outstanding” and “excellent” student awards; this year’s recipient of the outstanding student award was Staci Haney, and the excellent student award went to An Wei.

Health Promotion & Disease Prevention

The Health Promotion & Disease Prevention (HPDP) PhD program is based in the Department of Health Promotion, Social, & Behavioral Health. The program emphasizes transdisciplinary and interprofessional training. As such, it strives to enable populations and communities to achieve optimal health — a balance of physical, mental and social health — through social and behavioral change and the creation of environments that are conducive to healthy lifestyles. Through an interdisciplinary approach, we integrate the expertise of faculty with diverse backgrounds in social and behavioral sciences.

HPDP continues to offer graduate students research and mentorship opportunities through the Gretchen Swanson Center for Nutrition and the Center for Reducing Health Disparities, both Centers have affiliate faculty with the Department. In addition, interested and eligible graduate students can seek funding from the Cancer Epidemiology Education in Special Populations (CEESP) Program to travel and conduct summer research in underserved sites or international settings. The Department also continues to offer travel awards for conference attendance on a competitive basis.
Health Services Research, Administration & Policy

The PhD in Health Services Research, Administration & Policy is offered through the Department of Health Services Research and Administration, UNMC College of Public Health. The program educates students to be scholars and health services researchers for careers in academia as well as large corporations, insurance companies, government agencies, health care organizations, and consulting firms.

Ten students were enrolled in the program from July 2014 to June 2015, which was a productive year in terms of research, awards and job placement. In this period, these students led or collaborated on a dozen peer-reviewed publications and received six awards and scholarships. Four students graduated and were placed at the University of Memphis, SUNY-Potsdam, University of Tennessee Health Science Center and the American Dental Association.

The year 2014 also provided a record number of high quality applicants, and eight students matriculated into the program — the largest cohort in the program’s history. Thus, we expect continued success in the productivity and placement of our PhD students in the future.

Medical Sciences Interdepartmental Areas

The Medical Sciences Interdepartmental Areas (MSIA) is an interdepartmental program intended for those who wish to pursue individually designed programs of an interdisciplinary nature within the medical sciences. Individual programs of study may be developed in a variety of research areas, including: immunology, drug metabolism, human genetics, neurological sciences, oral biology, health services research, medical nutrition, clinical & translational research, and others.

The MSIA graduate program had 12 MS students and 17 PhD students graduate in the 2014-2015 academic year. The interdisciplinary programs of MSIA prepare our alumni for variety of careers and unique positions. We are especially proud of two alumni who were integral in the success of UNMC’s biocontainment unit in treating victims of the Ebola crisis this past year.

MSIA received continued endorsement from the UNMC Graduate Council following the completion of the MSIA’s required five-year program review. Our Applied Behavioral Analysis track also underwent an accreditation review during the last academic year and received much positive feedback from the review team.

The Clinical and Translational Research Scholars program continues to grow and reached a milestone with the graduation of its first PhD student.
Nursing

The Nursing PhD graduate program prepares nurse scientists to be transformational leaders in the discovery of knowledge to improve health of individuals, families, and communities, and to advance the profession of nursing.

The PhD in nursing program completed a self-study, submitted to the Graduate School. The Graduate School review committee recommended continuation of the program to the Graduate Council. The minor recommendations related to gathering and tracking data for quality improvement are being addressed by the evaluation task force of the College of Nursing PhD Affairs Council (PAC). The PAC has held open meetings with College of Nursing faculty related to Challenges to Research Productivity of Doctoral Program Nursing Faculty; Strategies for Recruiting BSN to PhD Students; Lessons Learned When Mentoring New PhD Graduates.

Currently there are 25 students enrolled in the PhD program. Two students submitted NRSA applications. There were five graduates in 2014-2015. Three open house recruitment events were held by PhD faculty lead by Dr. Berger. Summer 2015, eight students were matriculated into the PhD program. Of the eight matriculated, six are BSN-PhD students. There are now four dual-numbered (NRSG/CTR) elective courses offered.

Pathology & Microbiology

The Pathology & Microbiology graduate program stresses molecular biological, immunological and genetic mechanisms of disease, while intimately combining clinical and applied research with basic research interests and providing the most rigorous and inspiring training for graduate students in the areas of microbiology, pathology, immunology, host-pathogen interaction and related fields. This diversity of research interests offers a variety of distinctive and highly individualized opportunities for graduate training. The flexible of this graduate program accommodates a wide-range of student interests and backgrounds. The learning experience is enhanced by an outstanding seminar series and journal clubs in which the most current immunology, pathology and infectious disease research is discussed.

The graduate program involves nearly 38 primary faculty members within the department and 48 courtesy faculty members across campus, providing a high faculty/student ratio, while promoting an excellent environment for collegial interactions and stimulating exchanges of ideas. We also have strong relationships with other University of Nebraska’s campuses such as UNO and UNL, which provides our students with even greater opportunities for collaborative research efforts. The graduate program supports PhD, MD/PhD and MS level degree training programs. Students in the pathology and microbiology graduate program participate in coursework and laboratory research that will prepare them for competitively securing rewarding research and teaching careers in academic institutions, biotechnology industries, biomedical laboratories, and government agencies.
Pharmaceutical Sciences

The Pharmaceutical Sciences Graduate Program (PSGP) provides expertise in all areas of pharmaceutical sciences, including drug discovery, drug delivery, nanomedicine, biophysics, and pharmacokinetics and drug metabolism. The mission of PSGP is to provide an integrated, multidisciplinary graduate education in pharmaceutical sciences and to prepare PSGP students for future careers in basic pharmaceutical research and education, translational research, academic and industrial research and development, and government and regulatory agencies. PSGP is one of the largest PhD programs at UNMC and the only graduate program within the UNMC College of Pharmacy, ranking sixth in the NIH funding per faculty among all Colleges of Pharmacy in the US. Current research in the PSGP is focused on discovery and development of new drugs and drug delivery methods for the treatment of cancer, infectious diseases, and inflammatory disorders.

The program is in the phase of growth as a result of multiple faculty hires and reached its all-time high of 60 PhD students in 2015. The program has undergone significant improvements in 2015. The curriculum was updated and unified with the goal of providing all students in the program common foundation in pharmaceutical sciences. There are now three new required courses for all PSGP students consisting of Physical Pharmacy, Pharmaceutical Chemistry, and Pharmaceutical Analysis.

Pharmacology & Experimental Neuroscience

The PhD Program in Pharmacology & Experimental Neuroscience (PEN) is one of several PhD granting programs at UNMC. Research in the department is geared primarily toward understanding the molecular and cellular mechanisms responsible for the neurodegenerative and cognitive decline in susceptible individuals, and to develop therapeutic strategies to alleviate them. The diseases include Autism, Schizophrenia, Parkinson’s disease, Alzheimer’s disease, dementia from infections (e.g., HIV), metabolic diseases (e.g., diabetes), trauma (e.g., traumatic brain injury) and drugs of abuse. New chemical entities as well as novel therapeutic formulations are under development. Research is also done in the area of pulmonary diseases. Studies are conducted using pre-clinical models and clinical trials.

PEN continues to receive the bulk of its funding from the NIH, ranking 11th nationwide. New educational initiatives including the development of new courses in system and basic neuroscience, humanized mouse models and scientific writing were developed to increase interactions and instruction for students. Prospective students applying to PEN continue to have a thorough review of their applications and face-to-face interview to gauge interest. The department continues to provide financial support that includes a stipend, tuition waiver and health insurance. The curriculum consists of two years of course work (nine credited courses) and three years of research. This structure ensures intensive training in conducting and disseminating research. Students are also provided the help needed to write and submit grant applications to internal, local and external funding agencies for pre-doctoral fellowships. Starting in fall 2016, graduate training will be overseen by the Neuroscience Graduate Training Program (NGTP) housed in PEN. It is one of six umbrella programs of the new Interdisciplinary Graduate Program in Biomedical Sciences at UNMC. The new NGTP will comprise of faculty from across the UNMC campus with research interests in all aspects of neuroscience. This provides more research options for students in basic and clinical labs. The curriculum will also be tailored to help students with their research.
Honors

Graduate Students of Distinction

Recognition as a Graduate Student of Distinction is reserved for students who received: a fellowship open to national/international candidates; an award based on presentation of research results at a national meeting; an appointment to a national scientific society or professional association standing committee; or a similar accomplishment.

Urmia Basu
Cellular & Integrative Physiology

Krupa Savalia
Cellular & Integrative Physiology

Bryan K. Becker
Cellular & Integrative Physiology

Shamma Shakila Rahman
Cellular & Integrative Physiology

Soumitra Bhuyan
Health Services Research, Administration & Policy

Heather Talbott
Biochemistry & Molecular Biology

Duy M. Ha
Cellular & Integrative Physiology

Rebecca Wilshusen
Pharmacology & Experimental Neuroscience

Faculty Recognition & National Service

Myron Toews, PhD
American Society of Pharmacology and Experimental Therapeutics Mentoring Initiative
Pharmacology & Experimental Neuroscience

Irving H. Zucker, PhD
Editor-In-Chief, American Journal of Physiology – Heart & Circulatory Physiology

Sachin Kedar, MD
Fellow, North American Neuro-opthalmology Society
Medical Sciences Interdepartmental Areas

Fellow (Inaugural Class), American Physiological Society*
Cellular & Integrative Physiology

Joseph H. Evans, PhD
Education Advocacy Distinguished Service Award, American Psychological Association Board of Educational Affairs
Medical Sciences Interdepartmental Areas

Jennifer Sanmann, PhD, FACMG
Annual Meeting Co-Director, Association of Genetics Technologists
Medical Sciences Interdepartmental Areas

Pamela K. Carmines, PhD
Fellow (Inaugural Class), American Physiological Society*
Councilor, American Physiological Society
Cellular & Integrative Physiology

Tanner Hagelstrom, PhD, MBA, FACMG
Advisory Board, Clinical Practice Guidelines for Chronic Myelogenous Leukemia, National Comprehensive Cancer Network
Medical Sciences Interdepartmental Areas

Harold D. Schultz, PhD
Chair, Neural Control & Autonomic Regulation Section, American Physiological Society
Cellular & Integrative Physiology

Shane Wurdeman, PhD, MSP, CP, FAAOP
Director, American Academy of Orthotists and Prosthetists
Environmental Health, Occupational Health & Toxicology

* Out of 11,000 members, 151 individuals were named to the inaugural class of Fellows