



# GROWING OUR OWN

by LISA SPELLMAN



PEGGY WHEELOCK, PH.D.

**Mentor:** a trusted friend, counselor, teacher, a more experienced person.

Much like spreading fertilizer on young seedlings, federal grants awarded to two experienced UNMC researchers – Peggy Wheelock and Alexander Kabanov – are helping young investigators advance their careers, enhance their education and build their networks through mentoring. [Here are their stories.](#)

Junior investigator Jenny Wang, Ph.D., was about to submit her first R01 grant application to the National Institutes of Health (NIH), and she wanted it to be perfect.

Fortunately, so did Peggy Wheelock, Ph.D., who suggested Dr. Wang wait to submit the grant. Having sat on review boards, Dr. Wheelock knows what it takes to write a grant that will pass muster.

That was in June and for the next four months Dr. Wheelock patiently helped Dr. Wang re-write and refine her grant proposal until it was nearly perfect.

“It was the nicest thing anyone could have done for me,” Dr. Wang said. “Her support was just the confidence boost I needed.”

Right up until the last minute Dr. Wheelock was still asking Dr. Wang if she wanted her to read it, just one more time.

“I said no, she had already helped me make it more understandable for the

reviewers,” Dr. Wang said. “Once we had a draft that she felt was solid, I was completely comfortable submitting it in October.”

It’s not unheard of for Dr. Wheelock, professor of oral biology in the UNMC College of Dentistry, to take time away from her research to pour over the grant proposal of a junior investigator. In fact, Dr. Wheelock spent countless hours reading and re-reading Dr. Wang’s grant proposal.

Dr. Wang, who came to UNMC last year from the Roswell Park Cancer Institute in Buffalo, N.Y., is one of five junior investigators finding guidance under Dr. Wheelock’s wing.

The mentoring program is part of a \$10.9 million Centers of Biomedical Research Excellence (COBRE) grant that was originally awarded to Dr. Wheelock in 2003.

Dr. Wheelock also is the director of the Nebraska Center for Cellular Signaling, which was established in 2003 with the

the science knowledge and opportunities for collaboration,” Dr. Wheelock said.

When they first met, Dr. Wang was struck by Dr. Wheelock’s warmth and friendly personality.

“Right away, she asked me how I was doing and offered to help in any way she could,” said Dr. Wang, an assistant professor in the UNMC Eppley Institute.

Colleagues say Dr. Wheelock’s willingness to help is what has made her successful as a mentor.

“Dr. Wheelock is approachable. The junior investigators working with her know this and are comfortable going to her,” said Rob Lewis, Ph.D., a professor in the Eppley Institute. “She will do everything she can to help her junior investigators succeed.”

That includes pairing every junior investigator with two mentors who can help them navigate the complex world of grant writing. It also may mean extending a junior investigator’s funding from the usual three years to four – to give them more time to work on their research.

“Dr. Wheelock could buy a lot of fancy equipment and fund core facilities, but instead she invests in human capital and the potential of young investigators,” Dr. Lewis said.

The nurturing and feeding of seed money has worked so well, Dr. Wheelock has another five years to show more results.

“The COBRE grant we received in 2003 helped us strengthen the biomedical research infrastructure in Nebraska. We’ve established a multi-disciplinary thematic center that enhances the research of young investigators and now we have seven success stories,” Dr. Wheelock said.

Dr. Wheelock said one objective of the renewed funding will be to initiate pilot projects that further encourage and support collaborative, multi-disciplinary projects.

“Teaching one how to be a successful, productive scientist is not a trivial task,” said Paula Turpen, Ph.D., director of research resources at UNMC.

“The fact that three of the COBRE mentors (Drs. Wheelock and Lewis and Keith Johnson, Ph.D.) have been

recognized as UNMC Distinguished Scientists in the past two years only confirms the quality of mentors in the Center for Cell Signaling. There is no doubt that the seven new NIH-funded junior faculty will continue to benefit from the guidance they received while participating in the COBRE program.”

Steve Caplan, Ph.D., assistant professor, biochemistry and molecular biology, is one of the seven researchers who received a boost from the COBRE grant.

Dr. Caplan joined the grant in 2004 when Dr. Wheelock selected him for a pilot project.

He was later asked to become a project leader and was paired with two mentors: Richard MacDonald, Ph.D., biochemistry and molecular biology, and Dr. Lewis.

“They taught me how to write better grants and advised me on where to submit my application,” Dr. Caplan said. “Peggy also helped, reading through parts of my grant proposals and manuscripts. She sets the tone for the mentorship part of the grant.”

Dr. Caplan’s area of study is in protein trafficking – how proteins get from place to place in the cell. While it is basic research, he collaborates with other researchers who study specific protein receptors and want to better understand how proteins move around.

Even though he no longer qualifies as a COBRE project leader, Dr. Caplan maintains a connection to Dr. Wheelock and her work. He finds himself in the nurturing role.

“I try to help out as much as I can with the new investigators coming in, because I believe in what Dr. Wheelock is doing,” Dr. Caplan said.

“She is an incredible role model, who dedicates a huge amount of time to mentoring while maintaining her own lab. She never stops worrying about what everyone else who is involved with the grant is doing. She is amazing.”

**The Research Project Grant (R01) is the original and historically oldest grant mechanism used by the National Institutes of Health. The R01 provides support for health-related research and development based on the mission of the NIH.**

ALEXANDER KABANOV, PH.D.

## NEW COBRE GRANT TO GROW NANOMEDICINE PROGRAM

Alexander Kabanov, Ph.D., just received \$10.6 million and he knows exactly what he's going to do with it.

The UNMC researcher hopes to save as many lives as he can by finding better ways to treat and cure hypertension, Parkinson's disease and cancer.

He plans to do this through nanomedicine, an emerging area of science that uses small polymeric particles to deliver drugs safely to disease sites.

He has formed a team of highly talented junior investigators whose own complimentary projects will help Dr. Kabanov grow a world-class program in nanomedicine. Each of the junior investigators will be paired with mentors, including Dr. Kabanov.

"The research projects funded by this grant will one day provide drug therapies to physicians that

target disease without harming the surrounding healthy tissue, which will result in better clinical outcomes for patients," Dr. Kabanov said.

He received a five-year COBRE (Centers of Biomedical Research Excellence) grant award in October from the National Center for Research Resources (NCRR), a part of the National Institutes of Health (NIH).

As the director of the Nebraska Center for Nanomedicine, a part of the regent approved Center for Drug Delivery and Nanomedicine, and the Parke-Davis Chair in Pharmaceutics in the College of Pharmacy at UNMC, Dr. Kabanov tried for five years to get the grant.

It was worth the wait.

"While working on the grant proposal, I got to know UNMC and its scientists and administrators much

better, giving me a deeper sense of pride for the institution," he said. "Those years also gave me time to develop myself into a leader and for that I am very grateful."

### GROWING OUR OWN

There are other benefits to having the COBRE grant.

"It allows us to attract the best and brightest scientists to Nebraska and develop novel technologies that could contribute to the economy of the state with the help of spin-off companies that would bring the results of the scientific research to public use," Dr. Kabanov said.

Not a bad combination, saving lives – and helping the economy.

The COBRE is part of the Institutional Development Awards

(IDeA) network created by the NIH/NCRR to more equally distribute funding to states that have not traditionally received as much funding. The awards support multidisciplinary centers – each concentrating on one general area of research – that strengthen institutional biomedical research capability and enhance research infrastructure.

"By bridging the research funding gap in IDeA states, we are building innovative research teams, leveraging the power of shared resources, and enhancing the science and technology knowledge of the state's workforce," said NCRR Director Barbara M. Alving, M.D.

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ALEXANDER KABANOV, PH.D.

The COBRE grant will support the research projects of four junior faculty members, all of whom have been paired with an established faculty member, Dr. Kabanov said. The grant promotes collaboration among researchers with complementary backgrounds, skills and expertise.

"All four projects focus on how polymer nano systems may be used to enhance the delivery of drugs, inhibit tumor growth, and improve treatment of cancer, neurodegenerative and central nervous system-associated cardiovascular disorders," Dr. Kabanov said.

The grant also will help establish core facilities needed to carry out the objectives of the multidisciplinary collaborative program. The first is a bioimaging core lab that will allow noninvasive diagnostics of neurodegenerative disease. The second will focus on preparation of new nanomaterials and ensure that these materials are safe for human use.

Dr. Kabanov has prepared the ground and planted the seeds of research success. This grant provides the fertilizer that he needs to help grow the program.

Ultimately, it is up to Dr. Kabanov and his team of researchers to make it thrive. 🌱

## Research seedlings

The four young investigators whose projects will be supported through Dr. Kabanov's COBRE grant are:

### PROJECT 1:

**Principal investigator:** Elena V. Batrakova, Ph.D., assistant professor of pharmaceutical sciences.

**Mentor:** Howard Gendelman, M.D., chairman, department of pharmacology and experimental neuroscience; director, Center for Neurovirology and Neurodegenerative Disorders.

Dr. Batrakova's project focuses on creating a drug delivery system to treat Parkinson's disease using nanozymes and immune cells in the brain as the delivery agent. Nanozymes are tiny particles consisting of an enzyme in a protective polymer coat.

### PROJECT 2:

**Principal investigator:** Matthew Zimmerman, Ph.D., assistant professor, cellular and integrative physiology.

**Mentor:** Irving Zucker, Ph.D., professor and chairman of the cellular and integrative physiology department.

Dr. Zimmerman's research project focuses on using antioxidant therapy and nanozymes to treat hypertension.

### PROJECT 3:

**Principal investigator:** Huanyu Dou, Ph.D., assistant professor, pharmacology and experimental neuroscience.

**Mentor:** Surinder Batra, Ph.D., professor, biochemistry and molecular biology.

Dr. Dou's research project focuses on developing a cell-based nanoformulated anti-tumor therapy that would improve biodistribution of the drug to the tumor and reduce chemotherapy-induced neurotoxicity.

### PROJECT 4:

**Principal investigator:** Joseph Vetro, Ph.D., assistant professor, pharmaceutical sciences, and Center for Drug Delivery and Nanomedicine.

**Mentor:** Alexander Kabanov, Ph.D., director, Center for Drug Delivery and Nanomedicine.

Dr. Vetro's research focuses on inhibiting the growth of cancer tumors by using specially developed nanocarriers that disrupt the tumor's ability to recruit surrounding blood vessels.