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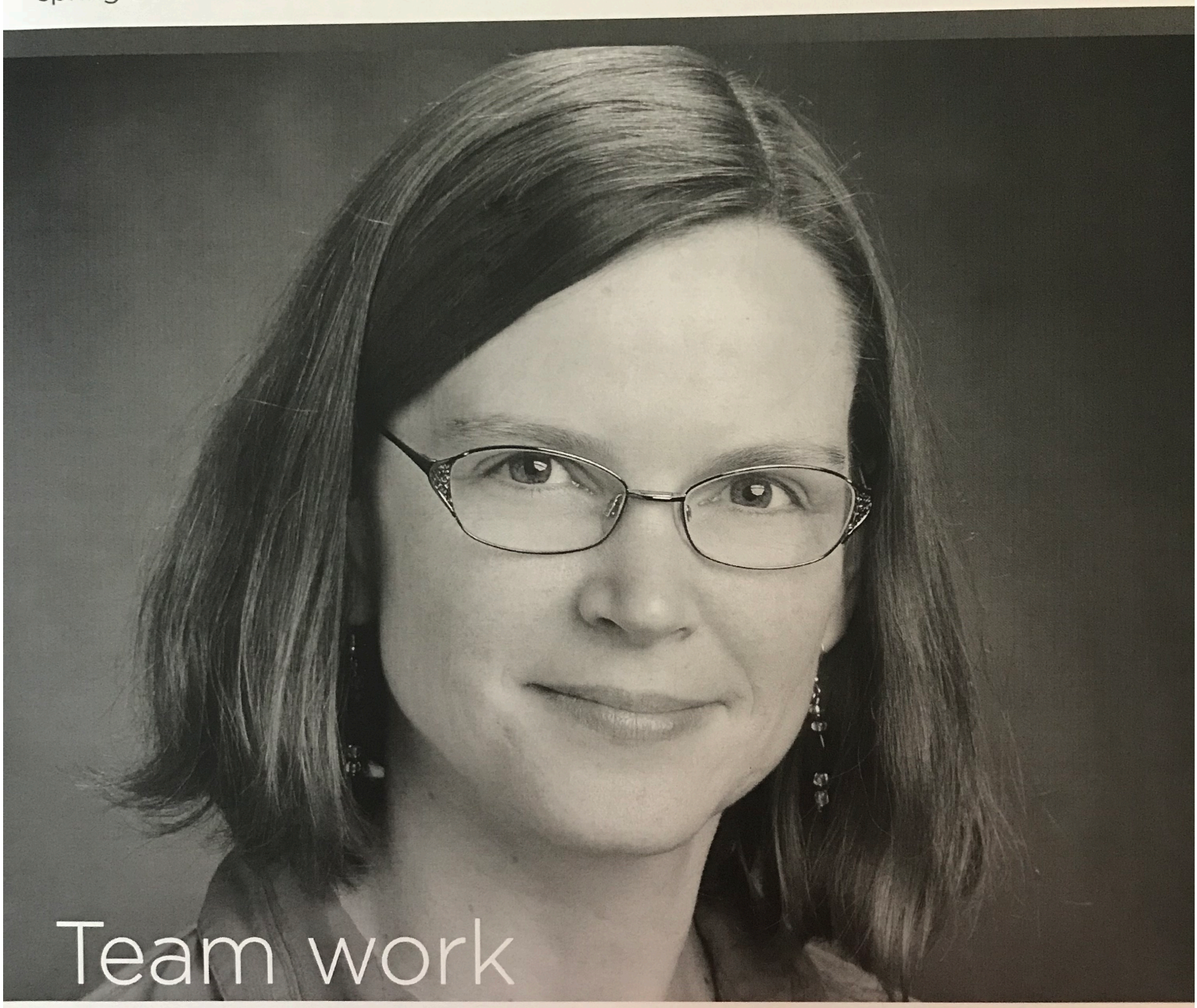

Team work

Alumna Nancy Forde brings UChicago's interdisciplinary spirit to her molecular research.

By Claire Zulkey

If there's one thing Nancy Forde, SM'95, PhD'99, came away with from her time at the University of Chicago, it's that science can be a team sport—literally. "We had a very good women's intramural basketball team from chemistry and physics," says Forde, associate professor of physics at Simon Fraser University. "There were some very competitive women in the chemistry department, and they recruited heavily. I had only played basketball in gym class before that, but we won the University championship twice, beating the undergrads. It was really fun."

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Team work

Such camaraderie didn't take place only on the basketball court. "The interdisciplinary interactions at Chicago were really good, both scientifically and socially," says Forde, whose lab was in the James Franck Institute. "I interacted with a lot of people in physics and chemistry. When you get to know people personally, it makes it a lot easier to talk to them scientifically."

These crosscurrents have remained present in Forde's work. After researching biological molecular motors for her postdoctorate at the University of California, Berkeley, she joined British Columbia's Simon Fraser University in 2004. She's now part of an international collaboration striving to predict the motor properties revealed when the team assembles proteins or nucleic acids in different ways. "We're working toward this common goal that no one's ever done before, which is to make a molecular motor out of proteins."

After they learn about molecular construction and how new properties emerge, they hope to create nanoscale devices utilizing motor transport—for example, chips for diagnostic assays. Lead project investigator Heiner Linke, now at Lund University in Sweden, asked Forde to join the collaboration because of her background with DNA and optical tweezers. "Then my role evolved," she says. "My chemistry training from Chicago helped with appreciating the importance of understanding the chemical kinetics of interactions."

Although the team is far flung, including principal investigators from four different disciplines located in Europe, Canada, and Australia, "this particular collaboration has been absolutely fantastic," says Forde. "We see things from different perspectives, but we've had annual meetings to come together for a few days and just brainstorm."

Forde believes in sharing knowledge on her home turf as well. In fall 2012 she helped organize the inaugural President's Dream Colloquium series at Simon Fraser University, presenting a seminar course on the emergence and complexity of life. Topics included: How might life have emerged on earth? What is the earliest evidence we have for life on earth? How can complexity emerge from simpler levels of organization? "We had students from eight different departments interspersed with invited speakers," she says. "A large portion of the course was getting people to communicate with each other, to be able to appreciate the literature appropriately and convey deep ideas and the overall relevance to the broader group."

This winter Forde's molecular-motors team wrapped up some proof-of-principle experiments to send to their Swedish collaborators for measurements as they looked into getting another grant. Meanwhile she is studying how collagen and elastin self-assemble from individual proteins into high-order structures. "What is it about the chemical changes that give rise to the mechanical changes?" she explains. "We're trying to understand this correlation by starting at the molecular level."

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This work is facilitated by the same collegial atmosphere that Forde found in her UChicago days. "I screen people before they're admitted to my group," she says. "I ask them about how they think about science and get a feel for their personality. It's a small group, so while they don't have to be best friends, they do have to respect each other and work well together."

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