



Ames Laboratory Pre-Service Teacher Patrick Rodenborn (center) with mentors and Ames Lab scientists Kevin Dennis (left) and Bill McCallum.

## Turning Lab Experience into Classroom Expertise BY KATIE PARR

**S**PRING 2009 MARKED THE LAUNCH OF A NEW education program at Ames Laboratory called Pre-Service Teachers, or PST. The program provides Iowa State University pre-service science teachers a chance to work in a research lab and gain first-hand experience that will equip them with a better understanding of the scientific research process. They will then be able to carry their experiences to the classroom.

"Research design and analysis, critical thinking, and teamwork are essential elements to understanding the nature of scientific research, and a student cannot learn them from a textbook nor from a lecture or even a course that includes a lab component," says PST coordinator Adah Leshem-Ackerman.

The program began with one student, Patrick Rodenborn, a senior at Iowa State University majoring in physics. He is currently working on becoming a certified teacher in Iowa, endorsed to teach science. Rodenborn was paired with scientist mentors to provide him with hands-on research experience. Rodenborn's scientist mentors were senior scientist Bill McCallum, assistant scientist Kevin Dennis, and Youwen Xu, a physics professor at Minnesota State University-Mankato who spent her sabbatical year at Ames Laboratory.

"The PST program was a really good way to see what science is really like as opposed to what it appears to be in the classroom," Rodenborn says.

Rodenborn assisted the McCallum research group in determining the best process for the synthesis of a new class of superconductors based on iron and arsenic. Their goal is produce a sample free from impurities that form during the standard processing procedures.

McCallum says he participated in the PST program because "it allows a prospective teacher to experience science as a discovery process rather than an accumulation of facts taught in the classroom. Experiencing the excitement of discovery first hand should help these teachers convey to their students what a career in science is really about."

The PST program also pairs students with a teacher mentor, who will help them relate what they learn in the lab to teaching in the classroom. Participants' teacher mentors must also be master teachers, which, Leshem-Ackerman explains, are "high school science teachers who have gained much experience in a particular area and are highly respected as a leader in his/her field."

The Ames Laboratory PST program is currently funded by the Iowa Board of Regents Initiative for Math and Science Education Program (IMSEP), and a proposal to continue funding for a summer PST program has been submitted to the Department of Energy's Office of Work Force Development. Only ISU students are allowed to apply for the fall and spring PST programs, but the summer program will be open to all pre-service science teachers who are U.S. citizens.

"We're looking forward to making this program for pre-service teachers a prominent part of the Lab's overall education strategy and to building upon our new relationship in this area with ISU," says Steve Karsjen, Ames Lab's education director.

Ames Lab also has an educational program for in-service teachers called Academies Creating Teacher Scientists, or ACTS. This program is offered in the summer and gives current teachers the opportunity to work in a research lab with an Ames Lab scientist.

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