

# AG RESEARCH SPOTLIGHT



## Jian-Kang Zhu

*"To study epigenetic code is at the very frontier of molecular biology. There is a lot to be understood, so there are a lot of activities and new discoveries."*

*- Jian-Kang Zhu, Distinguished Professor of Plant Biology*

The Ag Research Spotlight shines each month on an individual whose work reflects our commitment to the six strategic themes that guide Agricultural Research at Purdue. Our spotlight for February 2014 underscores the theme, "Utilizing molecular approaches to expand the frontiers of agriculture and life sciences."

**THE RESEARCHER:** For Jian-Kang Zhu, life on his family's farm in a small village in China was often a struggle against the elements. "People did not have enough to eat," he recalls, and suggests those circumstances had a strong influence on his decision to study soil science at Beijing Agricultural University. In a quest for something "exciting and challenging," he pursued a master's degree in botany at the University of California-Riverside. A McKnight Fellowship enabled him to complete his Ph.D. in plant physiology at Purdue in 1993, followed by a postdoctoral program in molecular biology at Rockefeller University. After academic appointments at Auburn University, the University of Arizona and UC Riverside, Zhu joined Purdue's College of Agriculture in fall 2010. "Agricultural research is traditionally very strong at Purdue," he says, explaining his decision to return to West Lafayette. "Also I had good memories of my student days here."

**THE RESEARCH:** "For more than 20 years now, I have been studying how plants cope with bad environments—how they manage to survive and be

productive when there is not enough water, when there is too much salt in the soil, when temperatures are too cold," Zhu says. Trying to improve how crops resist environmental challenges is one aspect of his work; another focuses on epigenetics, the study of chemical reactions that switch parts of the genome off and on at strategic times and locations. His research on the genetic and epigenetic mechanisms of plant responses to adverse environments has led to the identification of genes for modifying the responses of crops to environmental stressors. He is a member of the National Academy of Sciences.

**A PROCESS OF PATIENCE:** Zhu's research demands patience. "I'd be really excited if some of my technologies were already in commercial application on the farms," he says a bit wistfully. "But it's a long cycle that takes a long time. What's excited me every day is to have some interesting results, to have a question that we find out an answer to—that's most appealing to me." Aha moments? "There are quite a few of them!" he says.

**WORLD TRAVELER:** Zhu's work involves a great deal of global travel, much of it for scientific conferences to further knowledge among scientists. "A lot of these questions we're addressing are very difficult, very complex," he says. "One lab cannot possess all the technology that's necessary. You have to collaborate worldwide. That's a common feature of scientific research these days."