



Bikram Gill stands beside wheat genetic samples in the climate-controlled storage facility in the Kansas Wheat Innovation Center.

# Partnerships Prevail

Bikram Gill came to Kansas in 1979 specifically to work with wheat. His 35-year career at Kansas State University has been devoted to conserving wheat genetic resources, sharing those resources with the world, and training future scientists.

“Twenty percent of calories consumed by humans worldwide come from wheat,” said Gill, university distinguished professor of plant pathology. “I wanted to work on a crop that would make a global difference,”

At K-State, Gill found his dream job and colleagues who shared his passion for wheat genetics research and making the genetic stocks available to the world.

In 1984, the Kansas Board of Regents established the Wheat Genetics Resource Center (WGRC) as a center of excellence at K-State, with Gill as director. The center — with support from the Kansas Wheat Commission and a federal grant — established a repository of wheat genetic materials and made them available to public and private wheat breeders.

## KWIC Formed

Forrest Chumley, former associate director of research; Dusti Fritz, former Kansas Wheat Commission CEO; and other industry partners, working with

the University of Kansas and K-State faculty earned a grant in 2009 from the Kansas Bioscience Authority to found Heartland Plant Innovations, a plant biotechnology company, and Earth’s Harvest, a 501(c)3 nonprofit, all to be housed in the Kansas Wheat Innovation Center (KWIC) financed by wheat grower contributions. Its state-of-the-art facilities have become a major hub for wheat research. HPI, WGRC, and General Mills share laboratory space there.

## NSF Center Created

When the WGRC lost its federal funding in 2011, industry partners worked together to secure funding for the valuable resource. They looked to the National Science Foundation (NSF) for help in establishing a wheat research center. Historically, NSF centers are devoted to engineering and electronics.

“The original vision of the center was a collaborative effort among the Kansas Wheat Commission, Earth’s Harvest, Heartland Plant Innovations, WGRC researchers, and K-State administrators,” said William Zorrilla, who worked with Chumley, Gill, and NSF staff to prepare the proposal.



Bikram Gill, WGRC director; Jon Raupp, senior scientist; Duane Wilson (BS '76 horticulture), associate scientist; and Bernd Friebe, research professor, have 127 years of combined service to K-State research.

“With the mission of the center clear and our industry network established, the WGRC team (led by Bikram Gill), Earth’s Harvest, and grant specialist Terri Fayle submitted the grant.”

Their hard work paid off. In August 2013, the National Science Foundation created the Industry/University Cooperative Research Center on wheat — the first NSF-established research center for any crop plant.

Zorrilla, who serves as managing director for the center, appreciated guidance from the NSF I/UCRC program officers.

“The center would not have been awarded without industry participation and buy-in,” said Zorrilla.

The NSF I/UCRC Wheat Genetics Resource Center is a partnership between K-State and Colorado State University (CSU), with K-State as the lead institution and Gill as director and Pat Byrne of CSU as co-director.

It focuses on improving the food production and disease resistance of wheat, as well as a training hub for graduate students and young researchers.

### Industry Partner Participation

The National Science Foundation awarded a seed grant to start the research center, with the stipulation that at least three industry partners join and financially back the center.

Collaborators now include the USDA/Agricultural Research Service Hard Winter Wheat Genetics Research Unit; the Kansas Wheat Commission; the Kansas Wheat Alliance; and multiple corporations, including Bayer CropScience, Syngenta, Limagrain, Dow AgroSciences LLC, General Mills, and Heartland Plant Innovations.

K-State departments of Agronomy, Plant Pathology, Entomology, and Grain Science and Industry, as well as the Agricultural Research Center–Hays are involved with the WGRC.

The wheat gene bank moved from Throckmorton Hall to the Kansas Wheat Innovation Center. It was funded equally through an Economic Development Administration federal grant and the Kansas Wheat Commission.

Scientists associated with the NSF center use the gene bank to conduct research on wheat germplasm improvement. It has 20,000 strains of wheat genetic stock from about 24

*“Bikram Gill is the world’s foremost expert on wheat genetics and genomics.”*

countries, and 5 to 10 percent of the collection is grown each year.

According to Gill, the research center creates unprecedented opportunities for graduate students and postdoctoral researchers to work alongside industry partners and academic scientists, as well as to develop new genetic research that could immediately improve food security and safety.

### Endowed Chair Established

To honor Gill’s accomplishments and ensure that his important work

continues, the Kansas State University Foundation established the Bikram S. Gill Chair in Wheat Genetics through gifts from Bayer CropScience, other private industries, friends, and colleagues.

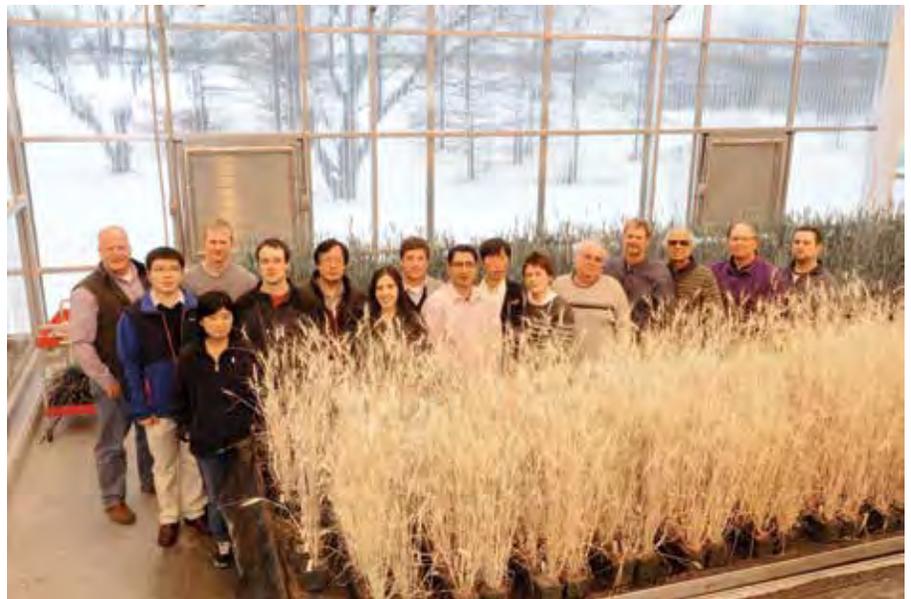
“Bikram Gill is the world’s foremost expert on wheat genetics and genomics,” said John Floros, dean of the College of Agriculture and director of K-State Research and Extension. “Through his leadership, the contributions of the WGRC have likely impacted every key wheat-breeding program in the U.S. and worldwide.

“This endowed chair will help K-State attract and retain the brightest minds and the world’s foremost experts in wheat genetics.”

Gill will hold the chair for the last year of his phased retirement in 2017–18. After that, it will be used to recruit his successor.

Gill sees the endowed chair and the new NSF center as ways to build new partnerships and increase the genetic collection.

“As we have more climate change and weather uncertainties, the endowed chair and NSF center will allow high-level research to tackle future problems,” Gill said.



The NSF I/UCRC Wheat Genetics Resource Center faculty, research associates, and visiting scientists gathered in a Kansas Wheat Innovation Center greenhouse. From left: Justin Gilpin, CEO of Kansas Wheat; Xu Wang; Jesse Poland; Shuangye Wu; Ryan Steeves; Wenxuan Liu; Lisa Borello, project coordinator; William Zorrilla, NSF center managing director; Sunish Sehgal; Dal-Hoe Koo; Tatiana Danilova; Bernd Friebe; Jon Raupp; Bikram Gill; Duane Wilson; and Josh Sharon.