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Plant genomics gets a \$100 million infusion

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The National Science Foundation (NSF) is adding \$100 million in support to its ongoing plant genomics funding, with the largest of [the latest grants](#) going to six new multiinstitute collaborations known as "virtual centers." The 31 grants announced Friday (October 3) range from \$600,000 to nearly \$11 million over 2 to 5 years, and more than \$40 million of the total will fund the new virtual centers.

"The benefit of virtual centers is that they bring together the diverse expertise needed to bear on specific research problems in a rapid and flexible way," NSF Plant Genome Research Program Director Jane Silverthorne told us. The virtual centers make it possible "to assemble a research group with a diverse range of skills, from bioinformatics to plant breeding to sequencing, to come together rapidly to tackle a large problem," Silverthorne explained. "This kind of expertise may not be available at a single institution."

"It's just hard to assemble a team that can do everything," said Rod Wing, director of the Arizona Genomics Institute, whose team will lead one of the new virtual centers funded by a \$9.7 million, 4-year grant. "Instead, we have specifically picked two collaborators that are world experts in their fields. It would have been impossible to try and duplicate that and get it right."

"We're really under the gun, because we have specific objectives we have to meet every year, and if we don't meet the timelines, we're in danger of losing funding. It's a lot of pressure," Wing said. "Also, we're set up with an advisory committee that meets once or twice a year, who chart our progress, write a report to us, and we have to respond to that and submit it to NSF."

Wing's team will map and align 12 wild genomes of rice to the public finished [rice genome sequence](#). "This is the first time a whole genus of anything - mammals or plants or insects - has been described in such detail," Wing said. "It's going to prove a whole new system for studying evolution of a species."

The other new virtual center grants include a 3-year, \$3.6 million grant for a center for maize research microarrays, with Vicki Chandler at the University of Arizona as principal investigator. "The project will develop what should become a standard array," Silverthorne said.

A center run by John Doebley at the University of Wisconsin will have \$10.2 million over 5 years to study genes controlling variation across wild maize and cultivated lines, as well as developing a set of markers for them, to "allow researchers, growers and breeders to map essentially any maize trait," Silverthorne said.

Further work on rice will be done with the \$4.2 million, 3-year grant awarded to create a center run by Richard McCombie at Cold Spring Harbor Laboratory. His group's goal will be to finish the public rice genome sequence so it is essentially error and gap-free.

Blake Meyer at the University of Delaware received nearly \$4.2 million for 4 years to collect small tags using a method called "massively parallel signature sequencing," which represents genes expressed in a wide range of rice tissues and environmental stages. "This approach has been shown to detect gene expression at low levels and will be valuable for annotation of the rice genome sequence," Silverthorne said.

Nearly \$10.9 million over 3 years will create a virtual center led by Nevin Young at the University of Minnesota. Its task is to help complete sequences for the gene-rich portions of the genome of *Medicago*, a forage legume related to alfalfa that has become a useful [model system](#) for research.

Virtual centers have been part of NSF's Plant Genome Research Program since its inception in 1998, Silverthorne explained. While other [plant genome research](#) grants for individual labs or small groups of investigators support \$500,000 per year for 5 years at most, virtual center grants support up to \$2 million per year for 5 years. There are currently 23 virtual centers supported by a total of \$31 million. The next announcement for virtual center proposals will be out by the end of October, Silverthorne said.

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