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## **NY Plant Genomics “Dream Team” Wins \$5 Million NSF Grant**

*Genomics Consortium Brings Together Expertise from NYU, The New York Botanical Garden, American Museum of Natural History, and Cold Spring Harbor Laboratory*

A consortium of four of New York’s top science institutions—New York University, The New York Botanical Garden, The American Museum of Natural History, and Cold Spring Harbor Laboratory—has been awarded a \$5 million grant from the National Science Foundation to create a “Virtual Center for Plant Evolutionary Genomics.” The grant will support the creation of cutting-edge genomic DNA analyses and bioinformatics tools to understand the evolution of seeds and other traits of ecologically and economically important plants in an effort to ultimately improve seed quality.

The four institutions comprise the New York Plant Genomics Consortium, which combines the strengths of each partner: NYU in plant genomics and bioinformatics (the development of computer databases and algorithms for biological research), The New York Botanical Garden in plant diversity expertise and access to living and preserved plant collections, The American Museum of Natural History in DNA-based methods for species classification, and Cold Spring Harbor Laboratory in genomics and plant molecular genetics.

“This grant is certainly a welcome recognition of our collaborative efforts in comparative functional genomics in plants, as well as a significant investment in the future potential of this unique genomics consortium,” said Gloria Coruzzi, the Carroll and Milton Petrie Professor and chair of the biology department at NYU and the principal investigator on the grant. “I believe it’s just the first step in realizing NYU’s and New York City’s potential in this increasingly important area of comparative genomic research.”

The co-principal investigators and lead researchers of the project include: Dr. Dennis Stevenson, Vice President for Botanical Science at The New York Botanical Garden; American Museum of Natural History Curator Robert DeSalle, who is also a distinguished professor in residence at NYU’s biology department; W. Richard McCombie, director of Cold Spring Harbor Laboratory’s Genome Research Center; Professor Rob Martienssen of Cold Spring Harbor Laboratory; and Dennis Shasha, a professor at NYU’s Courant Institute for Mathematical Science.

“As scientists, we came together to learn about the diversity of approaches to evolutionary biology and from that came a multi-faceted approach to biodiversity, which has been recognized as unique by the community through this funding,” added Stevenson.

“This is an exciting opportunity for the American Museum of Natural History to collaborate with NYU, The New York Botanical Garden, and Cold Spring Harbor Laboratory, especially as it will offer an enhanced interchange of ideas among faculty and students at these four institutions,” said DeSalle, curator in the Museum’s Division of Invertebrate Zoology and a co-principal investigator on the grant. “The project also is a perfect fit for our existing programs and laboratories in molecular systematics, including our Institute for Comparative Genomics, Ambrose Monell Collection for Molecular and Microbial Research, and Lewis and Dorothy Cullman Program in Molecular Systematics.”

“This collaboration will give us the chance to take state-of-the-art technology, which was developed to study the human genome, and apply it to understanding the evolution and biodiversity of seed plants,” said Martienssen of Cold Spring Harbor Laboratory. “It is a rare opportunity for some of New York’s best-known institutions to come together in a common program of research and education.”

“The enormous diversity of biological data in our New York institutions offers a rainforest of opportunities for data analysis, experimental design, and computational infrastructure,” added Shasha of NYU Courant. “Our research should lead to new insights into the evolution and extinction of plants, the primary food source of our planet.”

The NSF grant will fund the consortium’s Gymnosperm Genome project, where researchers examine the genetic make-up of plants over time. By doing this, the research seeks to gain insight into the genetic properties of seed evolution, which may be applied to “crop” genomes for agricultural and environmental purposes. The findings will have implications for improving seed quality, as much of today’s agriculture, from food to textiles, depends on seed products. In addition, the coupling of bioinformatics and the genomic methods for this project can be used for comparative genome and evolutionary analysis across any species.

The NY Plant Genomics Consortium was formed in 2000 in an effort to pool the abilities and resources of the various New York-based institutions. Scientists at NYU’s Department of Biology establish the framework and methodology for specific plant genomics research; The New York Botanical Garden provides access to expertise in plant diversity and an unparalleled number of species of plants; scientists at the American Museum of Natural History are experts in developing new DNA based methods for species classification; Long Island’s Cold Spring Harbor Laboratory is a leading center for genomics and plant molecular genetics; and, the NYU Courant Institute for Mathematical Science conducts cutting-edge research in developing algorithms for bioinformatics research.

The grant is part of NSF’s Plant Genome Research Program (PGRP), now in its seventh year. The program’s goal is to expand knowledge about the biology of the plant kingdom, especially plants that people around the world rely on for food, clothing and other needs.