

NEWS RELEASE

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NSF Grant to Fund Study of Origins of Plant DNA Replication

FOR IMMEDIATE RELEASE

What began as a class exercise has produced a \$5 million grant to a scientific team that includes researchers from North Carolina State University to study where replication begins on DNA, the molecule that contains the instructions for assembling all forms of life.

The funding is being provided by the Plant Genome Panel of the National Science Foundation, said Dr. Linda Hanley-Bowdoin, a professor of molecular and structural biochemistry in the College of Agriculture and Life Sciences at NC State and member of the research team.

Hanley-Bowdoin said the project grew out a class exercise by Randall Shultz, a Ph.D. student in functional genomics working with Dr. Bill Thompson, professor of botany, genetics and crop science. Thompson also is involved in the effort. Shultz prepared a research proposal for a class taught by Hanley-Bowdoin. She suggested the proposal was worth submitting to the National Science Foundation, and after two years of preliminary work and contributions from several other colleagues, the project was funded.

The grant will fund studies designed to determine where DNA replication begins on plant chromosomes. Chromosomes are made of DNA, which is composed of chemicals called nucleotides. There are millions of nucleotides on a typical chromosome. Cells divide and produce new cells when the chromosomes unwind, replicate and reform to build new chromosomes and cells identical to the original.

Hanley-Bowdoin said studies funded by the grant will use genomic techniques to determine the nucleotide sequences and chromosome structures where a cell begins DNA replication. While the research is basic, it could lead to the kind of understanding that will be important to the next generation of genetic engineering technologies, which may include new methods of directing gene expression, targeted gene insertion and construction of artificial chromosomes.

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Little is known about the origins of DNA replication, particularly in plants. The research will examine one chromosome of *Arabidopsis* – or mustard weed, a plant often used in scientific studies – and half of one chromosome of rice in an attempt to determine which parts of each chromosome are active when replication begins.

The research is a collaboration between scientists from NC State, Cold Spring Harbor Laboratory on Long Island, N.Y., and Clemson University. The project will be directed by Thompson, who will work closely with Hanley-Bowdoin. Other participating NC State faculty members are Dr. George Allen in the Department of Crop Science and Dr. Bryon Sosinski in the Department of Horticultural Science. Sosinski directs NC State's Genome Research Lab. Dr. Robert Martienssen will direct work at Cold Spring Harbor Lab, and Dr. Doreen Main will direct studies at Clemson. The funding, which will be provided over a five-year period, will support post-doctoral researchers and provide educational opportunities for graduate and undergraduate students.

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