

FOR IMMEDIATE RELEASE

Related site-link below.

[Ron Nief](#)

(608) 363-2625

BELOIT COLLEGE PROGRAM BUILT ON BEDROCK

Beloit, Wis.—Beloit College and the BioQUEST Curriculum Consortium, a 16-year old internationally honored program of innovation in bioscience education based at Beloit College, have received a \$1.4 million award from the National Science Foundation (NSF). The grant, under the NSF course curriculum and laboratory improvement national dissemination program, will fund **BEDROCK: Bioinformatics Education Dissemination Reaching Out, Connecting, and Knitting-Together**.

Bioinformatics has fundamentally changed life science research and its application to problems in medicine, agriculture, conservation and forensics. It involves the use of computer based analytical tools on electronically stored and distributed data. In light of this "information revolution," undergraduate biology curricula must be redesigned to prepare the next generation of informed citizens and prepare those who will pursue careers in the life sciences. The **BEDROCK** initiative is enhancing, expanding, and empowering a national community of bioinformatics educators.

Investigators for the project include John Jungck, Mead Family Professor of the Sciences, and Sam Donovan, visiting assistant professor of biology, both on the faculty at Beloit College. They are, respectively, founder and associate director of [BioQUEST](#). Prof. Donovan notes that "This is a special type of grant that supports the national dissemination of projects that have already proven their effectiveness. While [BioQUEST](#) has received NSF funding before, this project will focus on reaching out to a broad community of undergraduate faculty through a series of six regional workshops per year for the next three years."

Bioinformatics is a dynamic new field that uses large databases and computational tools to analyze biological data. "Its growth caught everyone by surprise," notes Prof. Donovan. "The use of these techniques has spread very rapidly across biology. Most biology faculty were prepared pre-bioinformatics. Now there is a huge demand for individuals with an understanding of bioinformatics in teaching, research, and industrial work.

"Bioinformatics grew up with computers. The roots of sequence comparison go back to the 1970's, but at that point data was being accumulated and analyzed by hand. The advent of the human genome project demanded new methods. This is the next level of research."

In his proposal to the National Science Foundation, Prof. Jungck noted that "This is an exciting time for biology education and the [BioQUEST](#) curriculum consortium. The collection and analysis of molecular data is having a growing impact on all our lives and, at the same time, is providing new opportunities and challenges for undergraduate education."

The project goals include identifying and supporting faculty who can take a leadership role in bioinformatics education; highlighting and distributing innovative approaches to incorporating bioinformatics data and techniques through undergraduate biology education; and establishing

mechanisms for the broad dissemination of bioinformatics resource materials and innovative teaching models. "The **BEDROCK** funding allows us to extend our work in bioinformatics education over the last four years during which time we have established a community of collaborators representing the diverse resources required to mount a national dissemination effort."

Beloit undergraduates have unique opportunities in their science courses because so much curriculum development and reform takes place at Beloit College. Students actually get to be involved in the developments in education, much to their benefit. Bioinformatics programs are now exploding at the graduate level. With this funding, [BioQUEST](#) can start to meet the demand for workshops and speaking engagements and the need to systemically address the conceptual barriers that are keeping many faculty from getting started in bioinformatics. Also, according to Prof. Jungck, "There is no structure at this time for supporting the growing community of faculty who are using bioinformatics in their teaching."

[BioQUEST](#) has organized more than 15 bioinformatics workshops and 30 presentations during the last three years at Beloit and elsewhere. These efforts have generated many more requests for faculty development sessions. This summer, almost 50 faculty will participate in a nine-day workshop at Beloit College, but many well-qualified applicants had to be turned away. Working closely with so many faculty on issues in bioinformatics education has provided [BioQUEST](#) with real insights into what works. "The greatest barrier that we have encountered to the adoption of bioinformatics is the lack of conceptual grounding that allows faculty to relate these emerging techniques to their existing biological knowledge and teaching needs."

One of the primary goals of the workshops is to identify and support future leaders of bioinformatics education efforts. "We will actively recruit faculty from diverse institutions serving diverse students, both majors and non-majors, to participate in these workshops," notes Prof. Donovan. Already, collaborators from the University of Vermont, Cornell, Emory University, University of California at San Diego, Lane Community College in Oregon, and the National Center for Genome Resources in Santa Fe, New Mexico, and the University of Wisconsin at Parkside will develop workshops.

Tied into the project will be the development of a book on "Evolutionary Bioinformatics Making Biological Meaning of Molecular Messages." Professors Jungck and Donovan will use manuscript chapters for the book in the first round of proposed workshops as they address their relationships between evolutionary theory and the analysis of molecular sequence and structure data. "We identified the need for developing a book to accompany our workshops because almost everywhere we went, we found that the primary content area with which we were being asked to help was in enabling students to see what basic bioinformatic tools, like multiple sequence alignment, depend upon, and assisting them in an understanding of evolutionary processes." The book will be written to appeal broadly to biology faculty and advanced undergraduate students in a wide-range of sub-disciplines. Laboratory manuals, problem solving activities, and on-line collaboration for faculty and students who are using bioinformatics to answer biological questions will also be developed.

BEDROCK will utilize a project leadership team drawn from institutions throughout the nation. The leadership team will collaborate closely on issues and will contribute to the project management and feedback evaluation by Prof. Kathy Greene, department of education and chemistry at Beloit College, who will serve as an external evaluator for the project. She has evaluated earlier projects in the [BioQUEST](#) programs.

In addition to Professors Jungck and Donovan, other members of the project leadership team will include Flora McMartin, Berkeley; Chris Smith, University of California at San Diego; Margaret Corbit, Cornell; Steven Everse, University of Vermont; Pat Marsteller, Emory; Carmel Ruffolo, University of Wisconsin-Parkside; Damian Gessler, National Center for Genome Resources, Santa Fe; Linda Grisham, Leslie University, Boston; Stacy Kiser, Lane Community College (Oregon); and Muriel Posten, Howard University. In addition, through long-term collaborations, the program hopes to further develop links to industry to serve the educational goals.

RELATED LINKS:

[Beloit College Department of Biology](#) Home Page

[Beloit College BioQUEST](#) Home Page

[Beloit College Virtual Tour](#) (south campus)

EMAIL:

[Sam Donovan](#) - Associate Director of BioQUEST

[Kathy Greene](#) - Associate Professor of Education

[John Jungck](#) - Mead Family Professor of Sciences and Professor of Biology

#####

0102-136
April 19, 2002

Back to [Beloit College News](#)