Plant Sciences Institute Approved for Iowa State University

“As bold an initiative as our university has undertaken in a very long time” is how President Martin C. Jischke describes Iowa State University’s new Plant Sciences Institute. The institute is an umbrella organization over a group of centers that focus on specific areas of the plant sciences. The Board of Regents, State of Iowa, formally approved the creation of the institute at its mid-September meeting.

In Pursuit of Excellence

The Plant Science Institute’s responsibilities include providing an environment that promotes excellence in plant sciences through multidisciplinary collaboration; fostering quality research, including graduate and postdoctoral research; providing a forum for national and international symposia and scientific exchange; encouraging collaboration among industry, ISU, other universities, visiting scientists, and the State of Iowa; aiding wise application of developing knowledge about plants; and providing excellent scientists for employment in the private and public sector organizations related to plant science.

ISU’s funding proposal calls for an investment of nearly $400 million over the next 10 years with 25% from taxpayer money allocated by the state, 25% from private fundraising, and the remaining 50% from increased sponsored funding from government, foundations, and industry. Governor Tom Vilsack and the Iowa Legislature supported the institute with an initial allocation last spring of $2.25 million that the university is using to hire faculty and renovate research facilities.

At the Center of the Plant Sciences

Initially, eight centers have been identified as part of the Plant Sciences Institute, including these six new centers and their directors:

- Center for Plant Genomics – Pat Schnable, professor of agronomy
- Laurence H. Baker Center for Bioinformatics and Biological Statistics – Jim Cornette, professor of mathematics
- Center for Plant Transformation and Gene Expression – Pat Schnable, professor of agronomy
- Center for Plant Breeding – Arnel Hallauer, professor of agronomy
- Center for Designer Crops – Basil Nikolau, professor of biochemistry, biophysics and molecular biology, interim appointment
- Center for Plant Responses to Environmental Stresses – Charlotte Bronson, professor of plant pathology, interim appointment

In addition, two existing centers administered by the Iowa Agriculture and Home Economics Experiment Station and their directors with on-going appointments are included in the Plant Sciences Institute:

- Seed Science Center – Manjit Misra, professor of agricultural biosystems engineering
- Center for Crops Utilization Research – Larry Johnson, professor of food science and human nutrition

Working with the Best

The institute and the centers involve faculty and staff in about a dozen ISU departments, but primarily in the Colleges of Agriculture, Engineering, and Liberal Arts and Sciences. Colin Scanes, executive associate dean of the ISU College of Agriculture, has been appointed interim director of the Plant Sciences Institute. He will oversee the operations of the institute, recruitment and hiring of new faculty, and relations with external organizations.

The institute director reports directly to the ISU provost. Advising the provost is a group called the Plant Sciences Board that is chaired by the provost and consists of the deans of participating colleges, the vice provosts for research and extension, the director of the Iowa Agriculture and Home Economics Experiment Station, the director of the Plant Sciences Institute, the president of the ISU Foundation, and a representative of an external advisory group.

Molecular Biology Techniques Course Offered Spring 2000

A series of workshops in molecular biology techniques will be offered during spring semester on the ISU campus. A total of 15 workshops are available, to be presented in three sections of five workshops each. The workshops will be taught by staff from ISU’s biotechnology instrumentation facilities.

Workshop topics include transformation of *E. coli*, isolation and quantification of DNA, automated DNA sequencing and sequence analysis, polymerase chain reaction (PCR), genotyping, protein isolation and purification, nuclear magnetic resonance, SDS-PAGE and blotting for amino acid analysis and protein sequencing, monoclonal antibody development and use, cell immobilization, immunophenotyping (flow cytometry), ELISA assays, chromosome karyotyping, and image analysis.

For registration details and more information, see the December issue of *The Innovator* newsletter on the World Wide Web at [http://www.biotech.iastate.edu](http://www.biotech.iastate.edu) or contact Kristi Harkins, 1104 Molecular Biology Building, phone 515-294-2472, e-mail kharkins@iastate.edu or Gary Polking, 1184 Molecular Biology Building, phone 515-294-1813, e-mail polking@iastate.edu.

An additional plant transformation section also will be offered during spring semester 2000. Interested persons should e-mail Kan Wang at kanwang@iastate.edu or Gary Polking at polking@iastate.edu to be put on an e-mail list to be notified of further developments.

Iowa State University Biotechnology Update

Michael Zeller – Biotechnology Outreach Education Coordinator

Michael Zeller, a nationally-honored high school teacher at Woodward-Granger Community School, has been named Iowa State University’s first biotechnology outreach education coordinator. Zeller will begin the position in January.

As biotechnology outreach education coordinator, Zeller will develop and conduct workshops for K-12 teachers and students, extension service professionals, adult educators, industry personnel, and the public. His responsibilities will include developing curriculum, networking with other biotechnology educators, and pursuing outside funding for educational programs. Many of the educational activities will be conducted in ISU’s new Biotechnology Outreach Education Center that is scheduled to be completed by year’s end.

Zeller is a Fellow of the Iowa Academy of Science and is a past president of the Iowa Science Teacher’s Section. In 1992, Zeller won an Iowa Governor’s Teacher Award for Community Involvement for designing a molecular biology science program. Zeller has served on the governing board of the Iowa Coalition for Mathematics and Science, the Pioneer Hi-Bred International Biotechnology Advisory Committee, and the ISU Biotechnology Education Advisory Council.

The Business of Biotechnology

IBA Annual Conference Report

In early September, members of the Iowa Biotechnology Association gathered in Ames for their annual conference. This year’s theme was *Growing Biotechnology Companies in Iowa: Opportunities, Strategies, and Partnerships for Biotechnology Businesses*.

The keynote topic “Research: Protecting Investment or Public Access?” was addressed by Alice O. Martin of Barnes and Thornburg, Chicago, Ill.; Ed Kaleikau, Plant Genome Projects, United States Department of Agriculture, Washington, D.C.; and Wendy Marsh, patent counsel with Zarley, Mckee, Thomte, Voorhes, and Sease. A panel including Kurt Heiar, EnzyMed, Inc.; David Faber, Trans Ova Genetics; and Judi Eilertson, Optimum Quality Grains, L.L.C.; and moderated by Walter Fehr, ISU, discussed how to translate genetic information into useful products. Iowa’s lieutenant governor, Sally Pederson, spoke to the IBA members followed by Michael Phillips of the Biotechnology Industry Organization who shared his international perspective of biotechnology.

Attendees could select from four concurrent workshops with moderators and panelists drawn from industry, government, and educational institutions. Workshop topics included business mergers and acquisitions, strengthening research and development, employee training, and purchasing/E commerce.

Next year’s annual conference is scheduled to be held September 20 in the Memorial Union at the University of Iowa in Iowa City. Suggestions for program topics are welcomed. For more information about the Iowa Biotechnology Association, please contact Doug Getter, Executive Director, Iowa Biotechnology Association, 1200 Valley West Drive, Suite 206-7, West Des Moines, IA 50266, phone 515-327-9156, FAX 515-327-1407, e-mail dgetter@netins.net or visit the IBA web site at [http://iabiotech.ftechg.com/index.html](http://iabiotech.ftechg.com/index.html).

IBA / ISU Career Day Is Huge Success

On October 20, the first ISU Biotechnology Career Day was held in the Molecular Biology Building atrium on the ISU campus. The event was sponsored by the ISU Office of
Biotechnology and the Iowa Biotechnology Association.

From 9 a.m. to 4 p.m., an estimated 400 students armed with their résumés explored employment and internship opportunities at Iowa biotechnology companies. Companies represented at Biotechnology Career Day included American Cyanamid; Cargill; EnzyMed, Inc.; Fort Dodge Animal Health; Garst Seed Company; Genecor International; Lab Support; Monsanto; Land O’ Lakes, Inc., Research Farm; Pioneer Hi-Bred International, Inc.; Silliker Laboratories; and Trans Ova Genetics.

**News Around ISU**

**Gloria Culver Joins Biochemistry Department**

Gloria Culver is a new assistant professor in the Biochemistry, Biophysics and Molecular Biology Department. Culver comes to ISU from the University of California, Santa Cruz, where she was a postdoctoral fellow in the biology laboratory of Dr. Harry F. Noller. Culver received her B.A. in biology from Ithaca College and her Ph.D. from the University of Rochester, NY.

Culver's research focuses on understanding the functional roles performed by ribosomal proteins during translation and ribosome biogenesis. The small subunit ribosomal proteins are involved in critical steps during translation such as transfer RNA and messenger RNA binding, 30S subunit assembly, and subunit association. However, the molecular basis of these functions is unknown. Culver is using a combination of biochemistry and genetics to study ribosome protein function, while a biochemical approach is being used to identify factors involved in ribosome assembly.

Culver may be contacted at 4258 Molecular Biology Building; Biochemistry, Biophysics and Molecular Biology Department; ISU; Ames, IA 50011-3260; phone 515-294-3382 or e-mail gculver@iastate.edu. Photo courtesy of BBMB Department.

**Chemistry Department Welcomes Mei Hong**

Mei Hong has chosen to pursue her biotechnology interests as an assistant professor in the ISU Chemistry Department. She received her B.A. degree from Mount Holyoke College in South Hadley, Mass., and her Ph.D. in chemistry from the University of California at Berkeley. Hong arrived at ISU after one year of postdoctoral research as an NIH Fellow at the Massachusetts Institute of Technology in Cambridge and two years as a research assistant professor at the University of Massachusetts at Amherst.

Hong's research laboratory develops and applies advanced solid-state NMR techniques to study the conformation and dynamics of proteins. She is currently focusing on the conformation of ion channel membrane proteins and the dynamical structure of water-swollen protein hydrogels. Her work should contribute to understanding the function of naturally occurring proteins and improving the design of novel protein-based biocompatible materials.

Mei Hong's campus address is 0108 Gilman Hall, Chemistry Department, ISU, Ames, IA 50011-3111, phone 515-294-3521 or e-mail mhong@iastate.edu. Original photo copyrighted by M.F. Photography, Amherst, MA. Used by permission.

**Research News Briefs**

View the full text of these and other ISU biotechnology news releases online at http://www.biotech.iastate.edu/news_releases/News_Releases.html.

**Genes Constructed at ISU May Improve Cancer Treatments**

Biochemists at Iowa State University have constructed several genes that could lead to improved chemotherapy drugs for treating cancer. The genes are benign forms of mutant Ras genes that are implicated in up to 30% of all human malignancies. Contact Janice Buss; Biochemistry, Biophysics and Molecular Biology; 515-294-6125 or e-mail jbbuss@iastate.edu.

**In Search of Alternatives to Swine Antibiotics**

ISU microbiologists are searching for a better way to keep pigs healthy without relying on antibiotics. The researchers are (continues on page 4)
News Briefs – continued from page 3

working with viruses called bacteriophages that reproduce in and kill bacterial cells. The researchers want to know if bacteriophages injected into pigs that have *Salmonella* bacterium will reduce the occurrence of disease in the pigs and foodborne pathogens in meat. Contact D. L. Harris; Veterinary Microbiology, Immunology, and Preventive Medicine; 515-294-1664 or e-mail hharris@iastate.edu.

**Dollars for Research**

The following are some of the grants recently awarded for biotechnology-related research at ISU. For more information about establishing research relationships with ISU biotechnology researchers, please contact the Office of Biotechnology. See the address in the box on p. 3.


Jankowiak, Ryszard. Chemistry. *Laser-Based Fluorescence Studies: DNA Damage and Repair*. University of Nebraska Medical Center, Eppley Institute for Research.

Jurenka, Russell. Entomology. *Isolation, Purification, and Sequence Determination of Pheromonotropic Receptors*. Binational Agricultural Research and Development Fund, BARD.


**New Technologies Available from ISU**

Use of Natural Compounds to Overcome Effects of Abnormal Phosphorylation in Alzheimer’s Disease . . . Natural compounds that correct the abnormal phosphorylation of the tau protein that leads to the brain cell death and dementia associated with Alzheimer’s Disease. Reference number 02485.

Disease Resistance in Soybeans: Identification and Application . . . Twelve cloned gene messages (cDNA) associated with disease resistance in soybeans whose sequences can be used to locate other disease resistance genes. Reference number 02547.

Genes for MCCase (3-methylcrotonyl-CoA carboxylase) Cloned . . . The isolation of the two genes that code for MCCase. Possible applications include altering the metabolism of organisms, especially treatment of human inherited metabolic disorders. Reference number 02537.

Iowa State University is seeking industrial partners to develop and/or commercialize the above technologies. Interested parties should contact the Office of Intellectual Property and Technology Transfer, 310 Lab of Mechanics, Iowa State University, Ames, Iowa 50011-2131; Tel: 515-294-3893; FAX: 515-294-0778; E-mail: licensing@iastate.edu. Please cite reference number. Full text of these technology descriptions can be found at http://www.public.iastate.edu/~isurf.