The beginning

It was the spring of 1984 when Walter Fehr, a professor of agronomy, presented to Daniel Zaffarano, Vice President for Research, the concept of a new biotechnology initiative at Iowa State University. The timing was right because Vice President Zaffarano and others at ISU had decided earlier in the year to hire new faculty for the university's genetics department in the field of genetic engineering. During the summer, the vice president brought together leading biological scientists from the colleges of Agriculture, Engineering, Home Economics, Science and Humanities, and Veterinary Medicine to develop a biotechnology initiative for the university. With the cooperation of the administrators and faculty, a plan was developed and funds from the State of Iowa were requested to mount the new initiative.

No funds were appropriated in the spring of 1985, but the ISU faculty and administration would not be denied. Representatives of companies with biological research interests in Iowa were enlisted to make the case for the university. The day before Thanksgiving in 1985, the industry supporters met with Governor Terry Branstad to discuss a plan to make Iowa State a leader in biotechnology. The industry leaders worked closely with the governor and the Iowa legislature to gain support for the initiative. In the spring of 1986, the Iowa legislature appropriated $18 million to be spent over a four-year period to launch the program. In 1987, they appropriated another $30.5 million for construction of a new Molecular Biology Building. The initiative was under way.

Leading the way

President Gordon Eaton met with the industry supporters in the spring of 1986 to gain their input on how the new state funds should be spent. One of the defining pieces of advice they provided was that the new funds “should not be spent like butter on warm toast” so that their impact on changing the university could be clearly identified years later. Instead of dividing the funds among the colleges with biotechnology activities, it was decided to administer them centrally in the Office of the Vice President for Research. Vice President Zaffarano, in turn, sought the advice of his faculty advisors from five colleges who became known as the Biotechnology Council. He asked the Office of Biotechnology to implement the programs that were developed. The success of the biotechnology initiative celebrated in 2009 is a direct result of the close working relationships among the Vice President for Research, Biotechnology Council, Office of Biotechnology, colleges, departments, and interdisciplinary programs. During the entire 25-year period, Walter Fehr has served as the director of the Office of Biotechnology and chair of the Biotechnology Council.

Expanding the talent

128 new molecular biologists! One of the most important legacies of the biotechnology program is its major role in the hiring of new faculty in molecular biology. A major limitation of the biotechnology program in 1984 was the lack of sufficient molecular biologists. This limitation was overcome through the cooperative effort of the colleges, departments, and the Office of Biotechnology. The colleges and departments created and fully funded tenure-track faculty positions for molecular biologists, and the Office of Biotechnology established a program to provide start-up funding to the new hires. The start-up funds assured that new faculty would have resources available immediately to initiate their research,
instead of spending their time seeking grants before their research could begin. Six new molecular biologists were hired in 1986. That number has grown to 128 new molecular biologists that have been hired by 25 academic departments in five colleges. The Office of Biotechnology has invested more than $13.8 million in their start-up funds. These scientists have brought millions of dollars to the university by obtaining additional funds from external granting agencies. They also are the core of many new university centers and programs that have been started in recent years.

Providing the tools for research and teaching

13 state-of-the-art instrumentation facilities! The ability of faculty and students to succeed in research and teaching depends on the availability of state-of-the-art instrumentation that is too expensive for any single laboratory to purchase independently. To most effectively utilize the resources of the university and avoid duplication of equipment on campus, the Office of Biotechnology was charged with establishing and managing centralized service facilities with the latest instrumentation that could support faculty, students, Iowa companies, and others.

The Office of Biotechnology currently provides support for 13 service facilities that provide access for faculty and students to the latest instrumentation at the lowest cost. The facilities also serve researchers in other institutions and industry. Today, the instrumentation facilities include the Confocal Microscopy Facility, the DNA Facility, the Fermentation Facility, the Flow Cytometry Facility, the GeneChip® Facility, the Hybidioma Facility, the Image Analysis Facility, the Microscopy and NanoImaging Facility, the Nuclear Magnetic Resonance Facility, the Plant Transformation Facility, the Protein Facility, the W. M. Keck Metabolomics Research Laboratory, and the X-Ray Crystallography Facility.

Training the next generation of scientists

207 graduate fellowships! In 1986, the Office of Biotechnology offered its first graduate fellowships to outstanding students seeking their M.S. or Ph.D. degrees. Almost 30 Iowa State academic departments and interdisciplinary programs involved in biotechnology research have utilized the fellowships to attract 207 individuals who have excelled in their graduate programs. After earning their degrees, they have assumed leadership roles in academic institutions and private industry.

Helping the public understand biotechnology

1,600 K-12 teachers and 187,000 students! The success of biotechnology research in public and private institutions led to new products, including growth hormones for dairy cattle, insect-resistant crops, DNA fingerprinting, recombinant vaccines, genetically engineered foods, and more. Consumers had to make decisions about the novel products that were developed by genetic engineering. Young people had to learn a new science that was revolutionizing biology. To educate consumers and students, the Office of Biotechnology initiated a statewide program that ultimately would serve educators throughout the world through the Internet. The biotechnology outreach education program enlisted the support of ISU Extension and leading high school educators. Through their effort, more than 1,600 Iowa educators have learned to teach biotechnology through training courses offered by the Office of Biotechnology. In 2000, the Biotechnology Outreach Education Center was opened in the Molecular Biology Building and a full-time biotechnology education coordinator joined the Office of Biotechnology. The center with its quality laboratory space for 40 individuals is the host to elementary and high school students and their teachers; university students preparing for teaching careers in science, agriculture, or family and consumer sciences; ISU Extension adult and youth groups; and industry professionals.

One of the unique hallmarks of the education program is that the Office of Biotechnology has made available at no cost to educators the curricula, equipment, and supplies needed to provide hands-on experience in biotechnology to more than 187,000 Iowa students. The curricula developed for the program are made available worldwide through the Internet. In addition, the Office of Biotechnology provides financial or organizational support for conferences and symposia for on- and off-campus audiences, faculty retreats, public forums, and free printed and online publications to help youth and adults explore new advances in genetic engineering.
Bettering Iowa’s economy through biotechnology developments
The Office of Biotechnology has been committed to the transfer of scientific discoveries and technology to industry and local economic development groups. In 1988, its first biotechnology industrial liaison was hired to make the resources of the university available to biotechnology companies, establish and promote opportunities for research collaboration between biotechnology industries and the university, promote industrial investment in university product development and commercialization activities, and assist in the location of research and production facilities in Iowa. In these activities, the Office of Biotechnology works closely with many university, local, state, and national organizations that are active in economic development in biotechnology.

Exploring the issues
The support of the Office of Biotechnology has been vital in the development of an outstanding bioethics program to explore the ethical, social, and environmental implications of biotechnology. The Bioethics Program serves students on campus by providing bioethics courses for graduate credit and an M.S. degree in bioethics. Lectures, forums, and other bioethics-related events held on campus are open to faculty, students, and the general public. A series of faculty retreats, bioethics institutes, summer workshops, and online courses have provided faculty and ISU Extension educators with opportunities to explore how bioethics can be incorporated into the classroom or in discussions with adult audiences.

Looking back, looking ahead
Since the biotechnology program was launched 25 years ago, numerous centers and institutes have developed at ISU that are related to the biological sciences. These activities have been built on the foundation established by the Office of Biotechnology. The Office of Biotechnology has helped position Iowa State University at the forefront of biotechnology research, education, and outreach in the nation.

Although 25 years have passed, biotechnology is still in its infancy. New biotechnology developments in agriculture, human health, food processing, the environment, and many other arenas are announced almost daily. The Office of Biotechnology will continue to play a major role in helping Iowa State University contribute to society through the exciting technologies yet to be discovered.

Happy birthday, Office of Biotechnology, and many, many more!

25 Years of Innovation with the Office of Biotechnology

1984 Biotechnology Council made up of faculty from five colleges is established.

1985 Iowa industries that support biotechnology meet with governor to secure state funding.

1986 State of Iowa provides $18 million over four years for biotechnology program at ISU.

1987 State of Iowa authorizes the Board of Regents to issue $30.5 million in bonds for construction of a new Molecular Biology Building.

1988 Iowa State's first biotechnology industrial liaison is hired. Office of Biotechnology’s public education program begins.

1989 The Kresge Foundation awards $500,000 for new biotechnology instrumentation. Iowa State conducts first U.S. field test of genetically engineered trees.

1990 Office of Biotechnology hosts national meeting to assess benefits and risks of herbicide tolerant crops.

1991 First bioethics institute held for Iowa State faculty.

1992 Molecular Biology Building is dedicated.

1993 Iowa State uses the Iowa Communication Network to offer a course in Biotechnology in Agriculture, Food, and Human Health to community colleges. Roy J. Carver Charitable Trust provides $120,000 to the Office of Biotechnology to equip Iowa schools for hands-on biotechnology laboratories.

1994 Office of Biotechnology begins free lab supplies program for Iowa educators and partners with ISU Extension to hold 15 workshops for educators throughout Iowa.

1995 The Plant Transformation Facility is established.

1996 Iowa State hosts international conference on extension's role in biotechnology education.

1997 Office of Biotechnology uses the Iowa Communication Network to help middle school biology teachers do real time wet-lab procedures with classes at Iowa schools.
1998  New Confocal Microscopy Facility opens its doors at Veterinary Medicine. High school students offered a full year of college biology online through ISU’s Project BIO.

1999  The Biotechnology Outreach Education Center (BOEC) is built to provide year-round educational opportunities for Iowa’s students, educators, biotech industry, and the public. Iowa State’s first Biotechnology Career Day attracts more than 400 students.

2000  A full-time biotechnology outreach education coordinator is hired. The 100th biotechnology graduate fellowship is awarded. The U.S. Department of Agriculture awards Iowa State and eight other Midwest land-grant institutions $3.7 million to study economic, ethical, and social aspects of biotechnology.


2002  A full-time bioethics outreach coordinator is hired and initiates the first bioethics course in Iowa taught entirely on the Internet.

2003  The 1,000th Iowa teacher receives training through the Biotechnology Outreach Education Center. Iowa State’s first-ever summer bioethics workshop for educators is offered. Iowa State holds public forums on USDA regulations for field testing pharmaceutical crops.

2004  The Biotechnology Outreach Education Center reaches a record 20,000th user.

2005  A 228-page curriculum From Mendel to Markers is released for grades 9-12.

2006  The Nuclear Magnetic Resonance Facility installs a new 700MHZ spectrometer for studying large and complex molecules. The Microscopy and Nanoinaging Facility receives a $795,000 federal grant for a new scanning transmission electron microscope.

2007  Iowa’s K-14 and extension educators who learned biotechnology teaching skills through the Biotechnology Outreach Education Center tops 1,500.

2008  DNA Facility pools resources with University of Iowa to buy new generation DNA sequencers. Image Analysis and Confocal Microscopy Facility receives funds from the National Institutes of Health and the Roy J. Carver Charitable Trust for a new confocal microscope.

2009  The 25th anniversary celebration year for the Office of Biotechnology.