Section 1. Goals and Accomplishments

Goal 1: Access and Diversity: The Center will assist faculty to recruit, retain, and graduate a larger, more academically prepared, and diverse graduate and undergraduate student body for training in Biotechnology and Genomics-related fields.

- The Center’s technical staff remains heavily involved in training both undergraduate and graduate students in techniques of protein chemistry and molecular genetics. As a result, these students are better prepared for graduate training and professional schools (in the case of undergraduates) and for responsible scientific positions in academia and the private sector (in the case of graduate students, both from Texas Tech University and the T.T.U. Health Sciences Center).

- Prospective faculty members in the biological sciences (both at Texas Tech University and the T.T.U. Health Sciences Center) have all been sent descriptions of the Center's activities and of services available through the Core Facilities. Co-Directors Knaff and Allen have given tours of the Core Facilities to all interested prospective faculty members. These activities have contributed significantly to making Texas Tech an attractive job option for prospective faculty members. Particular attention has been focused on making Texas Tech more competitive as a place for women and minority faculty and in one case contributed significantly to the hiring of a tenure-track female faculty member in the Department of Chemistry and Biochemistry.

- Center Co-Directors Knaff and Allen have visited schools in the region to recruit students and have stressed our interest in attracting women applicants and applicants from historically under-represented groups.

- The Center Directors and Core Facility technical staff have given numerous presentations for local high school and junior high school groups, with an emphasis on making education and careers in science attractive options for female students and students from historically under-represented groups.

Goal 2: Academic Excellence: Attain national recognition for excellence in research and teaching in biotechnology and genomics.

- The Center’s Biotechnology M.S. program has become established with a stable enrollment of eleven. All of the second-year students have been placed in paid internships with companies in the biotech industry or in research groups at Texas Tech Health Sciences Center (as part of our cooperative agreement with the HSC). Both of the interns, who will be completely internships in May, 2005 have been offered permanent jobs at these companies upon graduation. Clearly, the program is developing a national reputation for excellence in training technicians for the biotech industry.

- The two students are currently enrolled in the MS/JD program, jointly administered by the Center and the School of Law, have completed their first full year of the M.S. portion of their curriculum and both have been offered summer law internships. One of these students ranked first in her Law School class. This is one of the very few programs of this type in the nation and it has helped Texas Tech establish a regional reputation for innovation in biotechnology education.

- The Center’s Core Facilities have continued to offer researchers at Texas Tech University (TTU) and the Texas Tech University Health Sciences Center (TTUHSC) access to new technologies to enhance their research capabilities. Through these facilities, we are continuing to provide outstanding service and have attained a national reputation for excellence.

- Requests for Core Facility services are routinely received from universities and private companies located throughout the U.S.
Goal 3: Engagement: The Center for Biotechnology and Genomics will provide technical resources to the West Texas community to build community and regional connections that enhance the quality of education and life.

- The Core facilities operated by the Center provide outstanding technical resources for academic institutions, government laboratories and private companies throughout the region. We are servicing numerous DNA sequencing projects from the TTUHSC, TTUHSC-Amarillo, Texas Agricultural Experiment Station and the USDA-ARS laboratory. Approximately 60 research groups are served.
- Outreach activities to local schools have been carried out to introduce high school teachers and students to modern molecular genetics technologies. These activities included demonstrations of genetic testing in cotton and in humans. We have hosted several tours by local primary and secondary school classes and from West Texas A&M University. We have also provided tours for several visiting international delegations including those from India and China.

Goal 4: Technology: The primary function of the Center for Biotechnology and Genomics is to provide researchers in the areas of molecular biology and biochemistry with access to critical research technologies.

- Recent additions of state-of-the-art equipment available in the Core Facility and staffed by Core personnel that are available to the TTU and TTUSHC research communities include: high throughput DNA sequencing, oligonucleotides synthesis, microsatellite/AFLP detection; protein sequencing, high-throughput LC-MS proteomics analysis; BiaCore molecular interaction assays. A significant upgrade of the multi-capillary DNA sequencing system was carried out and the acquisition of new software has significantly improved the facility’s capabilities in the area of DNA fragment analysis.

Goal 5: Partnerships: Build collaborative relationships that generate increased research expenditures or other direct benefit to the university.

- The Center has established partnerships to jointly operate major instrumentation items with the U.S.D.A. Plant Stress Lab, the Texas Tech Department of Chemistry and Biochemistry, the Texas Tech Department of Plant and Soil Sciences and the Texas Tech Health Sciences Center Department of Ophthalmology and Visual Sciences. These agreements have allowed our Core Facilities to provide new, cutting-edge, technical services to users without any costs to Texas Tech for capital equipment acquisition.
- A partnership was established with the Texas Tech Nanotechnology Center, academic departments in three T.T.U Colleges (Arts & Sciences, Education and Engineering) and two academic departments at the Health Sciences Center resulting in the submission of a full proposal for a project with a budget of $2.5 million over the next 5 years.
- A partnership has been established with the Texas Agricultural Experiment Station Lubbock Laboratory to carry out joint research in molecular genetics.
- We are continuing to cooperate with the Texas Tech academic Departments to provide cutting-edge classes for students in Biotechnology and Genomics training programs. These include a multi-disciplinary graduate course in bioinformatics and with the Department of Biological Sciences and a course in transgenic technologies with the Department of Plant & Soil Sciences.
- Center personnel have cooperated with other researchers across campus to prepare and submit competitive grant proposals to state and federal agencies. These include a USDA-NRI proposal funded for more than $300,000.
- BTEC 5338, Methods in Biotechnology, trains graduate students in the College of Agricultural Sciences and Natural Resources and the College of Engineering, in addition to Biotechnology M.S. Both of the Center Co-Directors make substantial contributions to the team-taught BINF 5301, Biological Informatics, course serving ca. 25 graduate students from several colleges, in addition to serving Biotechnology M.S. students.
- Co-Director Knaff has bee assisting Dean Eibeck and Associate Dean Hoo of the College of Engineering in planning for a program in bio-engineering.

Goal 6: Human Resources and Infrastructure: The Center for Biotechnology and Genomics will enhance the quality of the work experience for center employees and provide the necessary resources for center activities and services.

- One undergraduate student assistant were employed and subsequently hired on a temporary basis to carry out some of the more routine Core Facility assays. Her presence allowed the full-time technical staff to concentrate on the more technically demanding aspects of the work. A part-time research associate was hired to put the Core Facility’s robotic solution-handling system into full operation.
The Center's secretarial position was decreased from 1.0 to 0.5 FTE in order to fund the salaries for the additional technical staff hires. Co-Director Knaff has taken on many of the bookkeeping, student record maintenance and administrative duties formerly performed by this secretary.

- Planning for the moves of the Core Facilities and the Center administrative offices to the new Experimental Sciences Building has been completed. This included: planning for installation of furniture and equipment platforms; designing communication, computer and security systems; securing contracts to move all Core Facility Equipment; and purchasing special service contracts to cover de-installation, re-installation and re-calibration of equipment.
- The Center website has been completely re-designed, using the skills of one of the Center technical staff and at no out-of-pocket cost to Texas Tech. The new website provides better dissemination of information about Center activities, graduate programs and Core Facility Services.

Goal 7: Tradition and Pride: The Center will play a critical role in the establishment and maintenance of a tradition of innovative research in the molecular biosciences at Texas Tech University. Pride in our accomplishments, in our colleagues, and our institution will naturally follow.

- The accomplishments of the Center, described under Goals 1 through 6, and 8, are communicated to Center members through regular e-mails from the Directors and on the Center's website so that a sense of pride in accomplishments of Center–affiliated faculty is fostered.

Goal 8: Financial Stability: Center members will submit proposals each year for new funding and enhance chances for continued funding by achieving the research goals. The Center will enhance its graduate programs, providing a steady flow of formula funding and student fees and increase the efficiency of its core facilities so that user fees will cover an increased portion of operating costs.

- Students in the Biotechnology M.S. program, administered by the Center, who are now in their second-year internships, have paid fees and tuition while their stipends are paid entirely by the private-sector firms that provide the internships. First-year students from the new entering class are also paying fees and tuition. Students in the M.S./J.D. program have completed a full year in the M.S. portion of the program, contributing additional tuition and fee revenues to the university. The fact that tuition and fee rates have been increased will enhance the revenue generated by the Center for the University.
- The two Center Core Facilities brought in approximately $70,000 in user fees. These revenues covered all of the costs of supplies for the facilities, a portion of the costs of service contracts for major equipment in the Core Facilities, for software and other upgrades and for training sessions for Center technical staff.
- The Center participated in five different successful grant proposals that involved Center participation were funded. The Center is credited with the generation of $76,669 in grant funding and $6,987 in F&A revenues to Texas Tech University.
- Cooperative agreements with three academic departments (two at the T.T.U. general Academic Campus and one at the T.T.U. Health Sciences Center) and with a U.S. government laboratory, continue to provide Center-affiliated research groups access to new technology without any capital investment costs to Texas Tech University. The Health Sciences center continues to pay 50% of the salary of one of the Center's technical staff.

Goal 9: Accountability: The Center will establish a series of benchmarks for its externally funded research programs, its graduate education programs, its community outreach programs and its Core facilities.

- The Center has established a benchmark of entering classes of at least 12 students per year in its M.S. program and 5 students in the M.S./J.D. program by the 2006/07 Academic Year.
- The Center has established a benchmark of $80,000 in Core Facility revenues by FY06.
- The Center has established a goal of participating, as a major sponsor, in at least one successful multi-disciplinary training grant and at least four major research grants each year, by FY05.
Section 2. Universal Quantitative Data

There are no Universal Quantitative Data for this area/unit.
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Section 3b. Qualitative Information.

There is no qualitative information for the current year.
Section 4. Strategic Planning Update.

There is no strategic plan update for the current year.

Commentary:
The Center for Biotechnology and Genomics remains fully committed to the research and training missions of Texas Tech University. The Center serves a critical niche in the molecular biology research program at Texas Tech University. Our core facilities provide researchers with convenient and affordable access to state-of-the-art research facilities and expertise. Establishment of these types of facilities in an individual research lab is not sound because, in addition to hardware costs, the expense of maintenance and dedicated personnel is prohibitive. Though difficult to quantify, it is clear that the Center for Biotechnology and Genomics core facilities have played an important role in the development of competitive molecular research programs. This role has been both direct, through participation in cooperative grant proposals, and indirect, by providing critical research capabilities. It is our goal to increase the capability of the Center in this area with expanded services once the core facilities are established in the Experimental Sciences Building. The Biotechnology MS program is our second major contribution to Texas Tech University. The program is growing at an acceptable rate and, more importantly, the capability of our graduates is excellent. Our students are placed in industrial internships after a relatively short training period. Though this approach is somewhat risky, the success of the program is clearly in evidence by the offers our students receive for permanent jobs within the Biotech industry. This indicates that our students are performing well in industrial settings and bodes well for the program.

Implementation Plan:

There is no implementation plan for the current year.