COMPACT FOR THE COLLEGE OF BIOLOGICAL SCIENCES
FY 2003-04

A. Introduction

Biology has become the dominant science at the beginning of the 21st century: advances in biology will be essential for solving many of the world’s most challenging problems, ranging from defense against bioterrorism to ecosystem degradation. The mission of the College of Biological Sciences is to cultivate and communicate these scientific breakthroughs by providing high quality education and research programs from molecules to ecosystems. To accomplish our mission, we integrate strong basic research programs with innovative teaching and intensive mentoring of students.

The College of Biological Sciences (CBS) is a champion for curiosity-driven research in the core disciplines of biology. Research accomplished by our faculty has a major impact, often influencing entire fields of inquiry to turn in new directions.

CBS is responsible for undergraduate education in introductory biology and in the core biological disciplines. CBS offers seven bachelors degrees (Biology; Biochemistry; Ecology; Genetics, Cell Biology and Development; Microbiology; Neuroscience; and Plant Biology). In addition to providing high quality education for students majoring in these disciplines, the College also provides classroom, laboratory, and field experiences for students from other majors at the University of Minnesota, including agriculture, engineering, health sciences, liberal arts, and natural resources.

CBS is a collegiate partner in graduate education leading to masters and doctoral degrees in ten biological disciplines (MBS, the professional masters program in biological science; Biochemistry, Molecular Biology and Biophysics; Conservation Biology; Ecology; Microbiology, Immunology and Cancer Biology; Molecular, Cellular, Developmental Biology and Genetics; Neuroscience; Plant Biological Sciences; Microbial Engineering; and Genetic Counseling). The faculty of CBS serve as mentors in the MD/PhD Program and in the Joint Degree Program in Law, Health and the Life Sciences. CBS faculty are also significantly involved in several other graduate programs across the University.

The faculty and staff of CBS provide expert service and outreach to the state of Minnesota, the nation and the world. For example, members of our faculty and staff work closely with the community and other educational institutions to promote science education. Members of the college actively participate in the worldwide community of scientific peers, serve in the leadership roles of professional organizations, and contribute to the administration and governance of the University. Since basic research is often translated into solutions by organizations outside of the University, the college is committed to developing partnerships with industry and other for-profit agencies.

On a daily basis, the people of the College give substance to the words we use to recruit new students: “Explore a world of opportunities, from molecules to ecosystems.”

The College of Biological Sciences consists of nine budgeted areas:

COLLEGE OF BIOLOGICAL SCIENCES (TCBS)
BIOLOGICAL SCI, COLLEGE OF-ADM
BIOLOGICAL SCI STDT SVCS
BIOCHEMISTRY-CBS
BIOTECHNOLOGY INSTITUTE
ECOLOGY, EVOLUTION & BEHAVIOR
GENERAL BIOLOGY PROG
GENETICS & CELL BIOLOGY
PLANT BIOLOGY
CBS COMPUTING FACILITIES

The compact between the Executive Vice President and Provost and the Dean of the College of Biological Sciences for 2003-04 includes the following:

B. Update – Major Long-Term Goals/Priorities from Previous Compacts

1. Improve and expand the undergraduate experience in biology.

The University has recognized that biology offers some of the greatest opportunities in our future. This recognition has led the administration to declare biology to be one of the highest priorities of the University of Minnesota and to invest significantly in its future. This investment has included the Functional Genomics initiative in Molecular and Cellular Biology. With a combination of new and re-allocated resources the University (CBS in partnership with the Medical School) has hired 41 new faculty, built two new buildings, and refurbished laboratories and classrooms in existing buildings. Using reallocation, we have strengthened our premier
department (Ecology, Evolution and Behavior) with resources to hire eleven new faculty, with eight having been hired to date. Our undergraduate education mission is to translate the excitement and the substance of our new faculty and new facilities into new opportunities for student learning.

Reflecting the growing importance of biological sciences in our society, the number of undergraduates seeking degrees in CBS has increased 157% in the past five years. Based on high school placement and ACT scores, students admitted to CBS are among the best in the university. In the past year, to more effectively bring the challenges and opportunities of 21st-century biology to these talented students, we have:

• Strengthened our sense of community through a series of college events, including a year-end picnic that attracted about 1000 students, faculty, and staff
• Developed a highly successful pilot orientation program for freshmen at the Itasca Field Station and Laboratories; rigorous assessment of this program was the basis for developing the current orientation program for all incoming freshmen
• Offered 12 new freshmen seminars, taught by senior faculty; assessment of the effectiveness of these seminars for improving student satisfaction and retention is ongoing
• Implemented strategies to increase the effectiveness of our honors program, which currently serves 170 students of our most talented students; these strategies include developing a web site as an information source for students and faculty as well as a recruitment and retention tool; begun to integrate lower and upper division honors programs by holding joint events such as “Pizza & Profs” and the Life Sciences Undergraduate Research Symposium; introduced a new honors colloquium; assessment of these programs is ongoing
• Begun an analysis of our Student Services Office, involving Student Services staff as well as individuals from CBS and from other colleges; begun to develop a paperless record-keeping system that will help us serve the advising needs of students on both campuses
• Developed a mechanism to introduce students to modern laboratory research approaches in the context of the Biology Colloquium course
• Structured general biology lab sections to better serve IT students’ increased needs and abilities in quantitative methods
• Continued to help disadvantaged students meet the academic challenges of college through the Math & Science Tutoring Program; increasing diversity among our students, faculty, and staff remains an important and ongoing goal
• Begun to implement the HHMI-funded program that provides continuing education for science teachers in Northwest Minnesota as well as opportunities for our undergraduate students to explore a career in teaching
• Made funds available to help provide research supplies for undergraduates working in faculty labs
• Attempted to increase the number of undergraduate scholarships awarded by the college by increasing the undergraduate scholarship endowment; stock market issues played a role in limited available funds
• Attempted to find a solution for curriculum delivery for the microbiology and neuroscience majors which are housed in medical school departments; the perceived research demands upon these faculty make it difficult for them to devote sufficient effort to undergraduate education.

During the next fiscal year, we anticipate taking the following additional actions on several of our previous plans and initiating several new steps designed to further strengthen the undergraduate experience and the learning community. We will:

• Conduct the Nature of Life course at Itasca, to introduce all incoming Freshmen students to CBS, the study of biology, and their responsibilities in planning their education and careers
• Continue to build and strengthen the sense of community among our students, faculty, and staff through a series of community-building events, including ones that extend from the freshmen experience at Itasca
• Improve our recruitment and retention success by increasing scholarship support, building upon the highly successful model of the MST program, raising the prominence and impact of the honors program, and actively recruiting diverse applicants, including students from outside Minnesota
• Increase the effectiveness of Student Services in meeting student needs by hiring a permanent director, defining core functions of the office, identifying and implementing best practices in advising, developing procedures and documentation that help staff work more efficiently, and developing improved ways of delivering services to our students on both campuses, including efforts to create a paperless record keeping system – The college will submit a brief report to the Executive Vice President and Provost on what has been accomplished with cumulative compact investments in this area and
what remains to be done. The report will be submitted by April 15, 2004.

- Initiate curriculum restructuring to reflect changes in biological sciences, particularly the need to better integrate mathematics, physical sciences, computation, and engineering into biology education
- Increase the number of undergraduates conducting independent research in faculty labs at the University of Minnesota
- Promote multiculturalism and international perspectives among our students by increasing opportunities for undergraduates to conduct research outside Minnesota and outside the United States
- Continue to seek solutions to issues raised by undergraduate majors in medical school departments (i.e. microbiology and neurosciences)
- Launch the second phase of the plan that was funded by the Howard Hughes Medical Institute to use our Itasca Biology Station as our campus for serving five K-12 districts in communities that surround the station. After planning activities between administrators and teachers at the northern MN partner schools was conducted, the college is ready to involve student teachers in the classroom during fall, 2003. Our goals remain the same: to provide opportunities in biology for students from these districts (and recruit them to CBS/U of M), provide opportunities for our undergraduate students to become teachers of biology in rural areas, and provide continuing education for science teachers in Northwest Minnesota.

The metric of our success in undergraduate education continues to be the quality and quantity of the students that we attract, retain, and graduate in four years. Our programs will be informed and shaped on the basis of scientific assessment of student satisfaction, preparation, and progress, guided by an assessment specialist.

The college continues to have the number of biology students admitted limited by the course availability in chemistry. This is also somewhat true of calculus, but progress has been made on development of a calculus for biology course, which will address this situation.

2. Improve graduate programs in core disciplines of biology.

Graduate education is increasingly important in this “information age”. With a higher proportion of the population seeking and obtaining undergraduate degrees, the case for reinforcing and augmenting graduate programs is even more compelling. Individuals with graduate degrees will emerge as the leaders of government and non-profit agencies, companies, academic institutions, and our nation. Thus, it is imperative that the State of Minnesota and the University of Minnesota, as the doctoral granting institution of the state, focus new efforts and resources on this priority.

This is also a critical time for the University in increasing our stature among our academic peers, which will be reflected in the NRC ratings that will be determined in the next 18 months. One major criterion for ranking research universities is the quality of their graduate programs and their research activities. The graduate programs in which our faculty participate vary in perceived quality; the ecology program stands out as one of the most highly regarded in the country. This program demonstrates the multiplier effect that nationally ranked units have on our educational mission. The EEB faculty provide exciting academic experiences for our undergraduate students. In addition, this faculty attracts some of the most highly qualified graduate students to the University of Minnesota. These graduate students, in turn, anchor the laboratory portion of our General Biology courses in which they serve as Teaching Assistants, thereby providing the best of the best learning environments for freshmen.

It is also logical, given the investments of the State and the University in new facilities, cutting edge infrastructure and high quality faculty, that we, in turn, focus on recruiting an even better generation of graduate students and equipping them with the tools for success. This, the apex of the educated work force, impacts the local level, aiding communities in attracting business and industry within the proximity of a major university resource.

In order to further improve graduate programs in the core disciplines, we have:

- Continued our implementation of a joint recruiting and admissions process for the MCDBG and BMBB programs through seed money provided by the Graduate School.
- Continued the consolidation of some of the curriculum in the core courses for MCDBG and BMBB.
- Continued hiring of new faculty through the initiative in molecular and cellular biology and through reallocation of resources to EEB.
- Encouraged the Plant Biology graduate program to develop Itasca-based laboratory workshops to coincide with those offered by Neuroscience, BMBB, and MCDBG. This effort is ongoing.
- Utilized graduate fellowships to increase geographic and ethnic diversity in our student population, and we have partnered with the
Medical School to underwrite and integrate our Life Sciences Summer Undergraduate Research Program (LSSURP) as a major recruiting tool for our graduate programs.

- Focused on the Molecular Biology Research Experience for Undergraduates (REU funded by NSF; administered within LSSURP) as a recruiting avenue for our graduate programs.
- Supported a new Neuroscience Research Experience for Undergraduates ((REU funded by NSF; administered within LSSURP)) to be implemented for Summer 2003. Two other REU programs were submitted, but not funded.
- Increased stipends for graduate teaching assistants; the first emphasis has been on graduate students appointed in Plant Biology and Ecology.
- Worked to increase the connectivity of our graduate programs in Ecology and Conservation Biology. CNR and CBS, the two colleges most involved in the Conservation Biology grad program, are seeking an equitable arrangement for sharing of tuition revenue and responsibilities for the program.
- Worked with the Medical School and the Graduate School to try to find an alternative source of funding for our joint graduate programs; this is an ongoing effort.
- Continued to develop other emphasis areas within our professional masters program (Masters in Biologiical Sciences). A specific plan for introducing a regulatory affairs emphasis has been drafted, with a goal of introducing it in Fall 2003.

In addition to the ongoing efforts mentioned above, this year we plan to:

- Conduct self-studies and external program reviews for MCDBG and BMBB (conjoined) in the Fall of 2003.
- Conduct a self-study and external program review for Plant Biology in the Spring of 2004.
- Plan and implement a summer orientation/research session for new Plant Biological Sciences graduate students, using our facilities at Itasca. The goal is to interact with and augment existing programs for graduate students in the areas of molecular and cellular biology by developing additional programs in plant developmental and evolutionary biology, and in bioinformatics and genomics. A similar effort by the graduate program in Ecology, Evolution and Behavior will be encouraged during this academic year.
- Encourage graduate programs/departments to submit additional Federal training grant programs. BMBB and MCDBG have an application in preparation; if funded, all faculty in the BMBB will be associated with one or more graduate training grants.
- Develop plan to achieve financial resources to support students for their graduate programs
- Develop proactive approaches to improving our graduate program ratings in the upcoming NRC evaluation of doctoral programs.
- Arrange for the permanent transfer of Biological Science Policy Council (BSPC) funds ($22,000) from the Graduate School to the Department of Plant Biology to continue support of the PBS Graduate program. These funds in the past have been critical for covering such expenses as recruiting costs, summer stipends for selected students, and general operating expenses for the program. The PBS graduate program has grown from 24 students in fiscal year 2000-01 to 46 in fiscal year 2003-04. It is our objective for the program to grow approximately 60 students, and to continue to increase our competitiveness for top ranked students. We have increased funding for direct support of student stipends, including contributions from CBS and COAFES and increasing the numbers of Research assistantships from competitive grants. To fill our increased demand for top quality graduate students, we plan to intensify our recruiting efforts. The Graduate School funding is essential to accomplishing this goal while maintaining program quality through funding of program operations.
- Arrange for the permanent transfer of BSPC funds ($15,000) to the Itasca Workshop account in the GCD budget. These funds have been provided on a non-recurring basis and have been used to help offset operating expenses for the MCDB&G graduate program summer workshop at Itasca. This workshop is now a joint effort of the MCB umbrella program, but the funds should still be administered through GCD.

Our success with each of these actions will be assessed by appropriate measures. For example, success with our program reviews will be a set of clear recommendations about mechanisms for increasing program quality; success with our efforts to diversify our graduate student populations will be measured by increases in numbers of students from diverse backgrounds; success with fellowship-directed development efforts will be measured by increases in endowments.

3. Technology and information/library issues.

Computing and Networking: This year, the CBS Coordinator of Information Technology has been developing an overall computing and
networking plan for our college, with special emphasis on providing access to high-end computing in our two new buildings: Molecular and Cellular Biology and Microbial and Plant Genomics. Although the plan is not complete, several elements have been implemented, including installing new servers, increasing security measures, and improving (with undergraduate computer techs) desktop support.

The college will continue to develop a set of web based applications using open source software which will automate many college functions while making them more accessible and more responsive. These applications will be built around a common infrastructure of databases, software, and templates for authentication that will make development of new functions fast, flexible and secure. Some current projects include an online college directory (which allows sorting by department, program and other parameters and contains a more complete search engine than the U of M directory), multiple surveys, registration forms for student services including orientation and an application to allow extensive web based file sharing. We feel that the number of possible uses growing out of this project is very large as is the potential to make the delivery of services more efficient. We will explore ways to make some of these new tools available to other U of M users.

**Technology to Support Research:** As part of the University-wide effort in bioinformatics, genomics, and proteomics, CBS will revitalize discussions between AHC, IT and CBS to assess needs in bioinformatics and proteomics in the context of rapidly evolving needs of biosciences.

**Web Page Redesign:** We are developing a new series of web pages for the college and an intranet web system.

### 4. Diversity

As a fundamental component of our ongoing faculty/staff hiring and student recruitment, we remain committed to attracting individuals from underrepresented groups to opportunities here in CBS. We are pleased to note that our LSSURP program, from last year to this, doubled the number of minority students enrolled. This year’s class meets our long-range goal of having underrepresented groups make up at least fifty percent of our participants. We expect that the class for Summer 2003 will have at least as high if not higher proportion of students from underrepresented groups.

We have implemented an initiative to increase the geographic and ethnic diversity of our freshman classes. During the past year we have:

- Conducted a pilot recruitment project involving CBS alumni who live in targeted parts of the country
- Continued discussions with the Office of Admissions, in partnership with CLA, CSOM and IT, to conduct an experiment in national recruiting of first year undergraduates. One of the goals of this effort is to increase diversity in our freshmen class.
- Connected the LSSURP participants with our Directors of Graduate Study and Chairs of Admissions Committees. Meetings with DGS’ of relevant programs have been convened for discussions of strategies for increasing recruitment of LSSURP participants and other students of color into their programs.

This next year we plan to:

- Convene a working group of LSSURP alumni and faculty from Historically Black Colleges and Universities (HBCU) with the goal of connecting with the science faculty from these HBCUs. This was on our previous year’s plan, but was not completed. With the help of Patricia Jones-Whyte from the Graduate School and in conjunction with IT and the Medical School we are soliciting the assistance of the Omicron-Boule’ group, a local organization of African-American businessmen. We will also be asking members of this group to become involved in several other ways in our summer UG research programs as a means of improving our recruitment of students of color into our graduate programs.
- Continue our restructuring and refocusing of the LSSURP program in ways we hope will increase the numbers of LSSURP participants who enter our graduate programs.

Success with these efforts will be measured by increased diversity of our graduate programs.

Attention on improving diversity has been focused on students in the past few years. The new director or human resources for CBS, to be hired in winter 04, will begin efforts to plan goals for faculty and staff diversity. Plans will take into consideration the current racial and ethnic diversity of CBS programs and the potential for future recruitment.

### 5. Partnerships: Service, Outreach and External Relations

A partnership is a relationship involving close cooperation between parties having specified rights and responsibilities. Partnerships expand upon the traditional approach of outreach and service. The mutual advantage of
partnership is one of interactive communication and action, rather than the traditional one-way distribution of information or service. The College of Biological Sciences through its faculty and staff engage in a wide variety of partnerships with business/industry, K-12 education, professional organizations, government and other communities.

It is our belief that what we accomplish in our scholarship is informed by the challenges of society and the natural outcome of which is an understanding, engagement, and application of this scholarship to those challenges. We identify the current challenges, problems, and their solutions, but it is the students we train who will impact the future. This is the foundation of an educated work force. Our primary purpose in educating is not to do it exclusively within the walls of the university but within the realms of society. It is a lifelong discovery and dissemination of knowledge. The multiplier effect is produced through our partnerships with our external partners (business/industry, K-12 education, organizations, government, and communities) where basic research is often translated into solutions.

The College has focused on priorities that reflect these partnerships:

- **Enhanced Educational Programming at Itasca**
  As a result of funding from the Howard Hughes Medical Institute, we are using the Itasca Biological Station and Laboratories as our campus for courses, seminars, and meetings for teachers and students participating in the Science Education Partnership in Greater Minnesota. The first year of this program is designated as development, and usage of the classrooms and cabins at the Itasca Station will continue to increase as this program evolves in northwest Minnesota.

- **Life Science Enterprise Park (University Enterprise Laboratories, Inc.)**
  A non-profit organization has been created to oversee the proposed laboratory-based incubator facility and is now referred to as University Enterprise Laboratories, Inc. Two sites on the University transitway have been identified for purchase; construction will take place on one of these sites when the fundraising phase of this effort is concluded.

- **Economic Development**
  The College of Biological Sciences has developed relationships with major Twin Cities corporations, regional small and growing biotechnology companies, and early-stage startup companies. The College is also actively involved in working organizations such as MNBio, Minnesota Technology Inc., Minnesota High Technology Association, the Department of Trade and Economic Development, the Department of Commerce and the Cities of St. Paul and Minneapolis.

  - **Speakers Bureau**
    During the past year, the College formally launched a Speakers Bureau to serve undergraduates and graduates students. As a result, the College has offered 6 sessions with a total of 22 speakers providing a total of 55 hours of volunteer time. In addition, the College has received the benefits of over 1200 volunteer hours from alumni, faculty/staff retirees, community and business leaders who have been engaged in assisting us with legislative calling nights, the State Fair Exhibit, the Mentor Program, and various other advisory roles.

  - **Individual efforts of Faculty, Staff and Students**
    In addition to these priorities, we have ongoing individual faculty and staff efforts. They include:
    - Membership on national review panels, task forces, editorial boards
    - Meetings with outside economic groups or companies
    - Speakers at alumni and community gatherings
    - Guest lecturers or members of senior defense committees at regional four-year colleges
    - Participants in “alumni or legislative calling nights” and State Fair activities
    - Judges at the Minnesota Science Fair
    - Guest speakers for K-12 and community events

  Each of our departments, in their annual review of faculty, includes this component as one of the performance measurements, which, in turn, contributes to the faculty member’s compensation adjustment.

  - **Capital Campaign and Development**
    Development is integrated into and central to the strategic plan of the college and its priorities are noted throughout this document. They include:
    - Increase financial support for undergraduate and graduate students. During the past year we have added one fellowship endowment, three undergraduate scholarship endowments and have increased our annual donors by 11% annual and dollars raised by 50% over the previous year. Increasing participation and dollars raised is an ongoing effort of the College.
    - Fundraising for the laboratory incubator facility is in progress with the expectation that we will announce the Founding Partners late spring 2003.
• Identify complementary funding for the HHMI grant.
• Identify funding needs and sources for the biocatalysis initiative.
• The draft case statement for the Educational Resource Center for faculty and students at the Itasca Biological Station is under review. We are currently in the process of identifying the pool of prospects who will be approached for private support.

6. Strategic Opportunities

The leadership of the college (deans, department heads and directors) has worked to identify strategic opportunities where our recent and future investments in new faculty and facilities can propel us into unique leadership positions among our academic peers. We have also given careful consideration to the timing of our efforts, given the time-dependent, competitive, global nature of progress in our disciplines. In addition, we have asked which of our possible options makes sense for this community, state and region. Finally, we have asked which other units at the University of Minnesota could effectively partner in achieving these goals. As a consequence, we identified three priorities we are pursuing.

• Initiative in Global Ecosystem Change – More than two years ago, and in collaboration with the Institute of Technology, we determined that we have an internationally renowned platform of faculty expertise in the sciences that underlie our need to understand the mechanisms by which ecosystems provide services upon which all life depends. Thus, our faculties have developed proposals that we have and will continue to use for development of resources necessary to capitalize on this platform. We will continue to “shop” these proposals with foundations, corporations, individuals and governmental agencies. In the meantime, our existing resources are being directed to hire additional faculty in these disciplines. Expertise from faculty in IT, CNR and COAFES will be incorporated.

• Initiative in Biocatalysis – Again, in collaboration with the Institute of Technology, we have examined the breadth of biotechnology to determine the sector in which the University of Minnesota could establish a bona fide leadership position. Our analysis and conclusions led to the “white paper” – A Forum on a New Science and New Industry in Minnesota: Biocatalysis and its Synergy with Healthy Ecosystems. We believe that the science and engineering that underlies biocatalysis is a substantive, academic enterprise that can be sustained for many years into the future. Moreover, faculty in our departments (Biochemistry, Molecular Biology & Biophysics; Chemistry; Chemical Engineering and Materials Science; Biotechnology Institute) comprise a world-class platform upon which further development can occur.
  o Biobased Materials – To date, most of the efforts in biocatalysis have focused on expanding our scientific expertise that underlies the engineering of enzymes and microorganisms in order to create new chemical entities that underlie new materials. Current and newly-recruited faculty in the Biotechnology Institute form the core of these exciting, new efforts.
  o Biobased Energy – During the past academic year, it has become clear that faculty scattered throughout several departments and colleges at the University of Minnesota provide expertise that could be linked to discover new approaches to the production and use of hydrogen as fuel for transportation and electricity. In particular, we envision hydrogen produced both from wind-based electrolysis of water, and biocatalytically produced from sunlight and carbon dioxide as a long-term pathway to energy self-sufficiency for the State of Minnesota. To that end the dean has led this university-wide effort with the creation of the University of Minnesota Initiative for Renewable Energy and the Environment (2-page summary attached). We are seeking funding of these efforts from existing, legislatively mandated set-asides related to Minnesota’s electrical utilities.

• Strengthen the Center for Microbial and Plant Genomics. The CBS Dean will discuss with the Dean of COAFES the possibility of conducting a review of the center in 2005-06 as a way to assess accomplishments and review the future work of the center. The review date is timed in such a way as to incorporate the effect of the new facilities on the Center.

C. New Long-Term Goals/Priorities

No new goals to report at this time.

D. Enrollment Management

The latest figures from the Office of Admissions indicate that the freshman class of 2002 numbered 351 students, an increase of 28.1% over Fall 2001.
Interest in the biological sciences remains strong and the college continues to attract some of the most highly qualified students admitted to the University. The long term goal of matriculating approximately 500 freshman students and 25 MBS students each year will be realized within 4 – 5 years if enrollment figures continue to grow at the anticipated rate of 8 – 12% per year.

**E. Facilities Issues**

The following is a list of the long-term facilities issues facing CBS. The first six represent the college’s top priorities.

- **Bioenergy and Biomaterials Research Laboratory** – design and construct a new Laboratory that will enable further research in biocatalysis. The lab will reside in the Biotechnology Quadrant of the St. Paul campus.
- **Itasca Multi-function Education, Student Resource Center** – construction of a multi-purpose station center to enhance education, research, and outreach.
- **Itasca Classroom/Laboratory** – replace a number of old, outdated labs with a single new structure.
- **Itasca Lake Side Laboratory** – modernization of existing lakeside lab building to accommodate current and anticipated teaching/research needs.
- **Cedar Creek** – construction of condominium style housing for visiting researchers, and/or U of M researchers and research staff as well as a multi-function building to enhance education, research, and outreach.
- **Biological Sciences Center - Behavioral Biology Laboratories and Vertebrate Animal Quarters** – Conversion and renovation of space in the basement of Biosciences are being explored as a way to support our animal behavior faculty and program.
- **Laboratory-based Incubator Building** on the Transitway in St. Paul. The new non-profit entity, University Enterprise Laboratory, will build and manage this facility in order to provide space for biotech-related startup companies.
- **Classrooms 12 and 70 in the Biosciences Center** need to be upgraded with the instructional technology package.
- **Constant Temperature Rooms** replace evaporators and repair cabinet interiors of 27 constant temperature rooms to extend useful life of the facilities.

- **Student Services Satellite Office (Minneapolis)** - Space has been identified in Minneapolis for branch operations (e.g. CBS Student Services and Pre-Health Science Advising).
- **Students Commons** – provide space for student clubs and other informal student interaction
- **Biological Sciences Center - Lab Renovation** – renovation/modernization of existing lab space to accommodate changing needs of current and newly recruited faculty.
- **Ecology Lab Renovation** - renovation/modernization of existing lab space to accommodate changing needs of current and newly recruited faculty.
- **Gortner Laboratory Renovation** - renovation/modernization of existing lab space to accommodate changing needs of current and newly recruited faculty.
- **Biotechnology Commons Building** – design and renovate the Beef Barn into a Biotechnology Commons that would include space for student services and career counseling offices and a dining/faculty club.
- **Replacement of autoclaves and dishwashers** – removal and replacement of steam autoclaves and dishwashers in the Biosci Center and Gortner Lab to enable viable research activities to continue in these buildings.
- **Instructional Lab Facilities** - replace, remodel, and upgrade current teaching laboratories to accommodate the teaching of biology in the 21st century. We may well need to develop additional laboratory space for experiential learning, or laboratories for cohort-based research projects.
- **Teaching/Research Furniture** – Replace chairs in laboratories and offices in the Biological Sciences Center and Gortner Laboratory. Furnishings were purchased when these buildings opened 30 – 40 years ago, and a systematic plan for replacement must be developed.
- **Itasca/Cedar Creek** – additional/continued funding for ongoing maintenance at these facilities must be identified to allow for the repairs necessary to avoid more costly future repair/replacement.
- **Biological Sciences Center - HVAC System** – current system delivers re-circulated laboratory air to the building, which is violation of current code requirements.
- **Ecology Building - HVAC System** – the HVAC system in this building has never performed to specifications and the building, occupied since 1993, continues to present health problems.
- **Tunnel/Skyway** to connect north and south portions of the St. Paul campus.
The Cargill building is largely being occupied by faculty from CBS, COAFES, the medical school, and IT. Specifically, the building is occupied by:

- **Administration**: the Director, Assoc. Dir., and some of the support staff are in place.
- **PI**: 88% of PI and “Scholar” offices are occupied.
- **Research Associates/PostDoc/Scientists**: ca. 50% of Res. Assoc./PostDoc/Scientist space is occupied.
- **Grad Students/Lab Techs**: ca. 38% of carrels are occupied in the open lab areas.
- **Lab Benches**: ca. 70% lab benches are occupied.
- **Bioinformatics pod**: ca. 40% occupied/assigned to current PIs.
- **General**: High Throughput area is nearly functional; computational Genomics/Biology space is occupied (Supercomputer Institute)

### F. Financial Issues

**Tuition**: The agreed upon tuition revenue estimate for the College of Biological Sciences is $9,441,511 for fiscal year 2003-04.

**ICR**: The agreed upon ICR revenue estimate for the College of Biological Sciences is $1,847,394 (49.5% of $3,732,109) for fiscal year 2003-04.

### G. Compact Development

Throughout the compact planning process, the College has attempted to keep the faculty informed and has solicited their input through the use of the following mechanisms: monthly meetings with department heads/directors; compact planning meetings with departments; semi-annual all college meetings; two college-wide compact forums; presentations by the dean at meetings of the faculty of each department and the college’s biweekly newsletter. In addition, the Dean has welcomed input via email and in one-on-one meetings with faculty members.

### H. Data Profile

For a display of planning data related to the College of Biological Sciences, refer to a link off the University web site managed by the Office of Institutional Research and Reporting at [http://www.irr.umn.edu](http://www.irr.umn.edu). This site contains standard financial, staffing and student information.

### I. Report Summary and Allocation Summary

The college will submit a brief report on the development of Student Services to the Executive Vice President and Provost on what has been accomplished with cumulative compact investments in this area and what remains to be done. The report will be submitted by April 15, 2004.

#### Historical Allocation Summary

**FY1999 through 2003 Compact Investments**

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<td>Writing Intensive Courses</td>
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<td>Gen. Bio Program Labs</td>
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<td>Molecular/Cellular Bio. Init.</td>
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<td>$1,420,505</td>
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<td>Genomics/Biochemistry</td>
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<td>Snyder/Gortner Remodel</td>
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<td>New Positions</td>
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<td>Neuroscience Grad Prog.</td>
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<td>Biocatalysis</td>
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<td><strong>Total</strong></td>
<td><strong>$810,080</strong></td>
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<td><strong>$1,654,505</strong></td>
<td><strong>$181,500</strong></td>
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Central Allocation Summary – FY2003-04

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<th>FY2004 Amount</th>
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<td>Recurring</td>
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<td>Neuroscience Grad program</td>
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<td>Advising</td>
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<td>Faculty Sabbatical Supplement (from R. Jones office)</td>
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<td>Living/Lrng Community Grants</td>
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<td>Genomics Building-Construction</td>
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<td>Genomics Building-Equipment</td>
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<td>Grad. School/Research Support*</td>
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<td>Freshmen Seminar Faculty</td>
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<td>Total FY2003-04</td>
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* As of October, 2003

Attachment

The University of Minnesota Initiative for Renewable Energy and the Environment

It is imperative to explore the increasing use of new energy sources and products from renewable resources.

Our economy depends on finite, nonrenewable, fossil fuel-based sources of energy and raw materials for chemical products. This dependency has resulted in significant reliance on imported sources, higher prices for these finite resources, and increased pressure on our environment. Concurrently, our farmers, foresters and rural communities are facing economic hardships, resulting in a devastating exodus to regional and urban centers.

As a result, there are growing concerns about national energy security, the diversity and vibrancy of our economy, and the health and sustainability of our global ecosystems. Further development of environmentally and economically sound renewable energy sources and policies is a timely and increasingly urgent priority.

Minnesota is the perfect choice to be a leader in renewable energy and products.

Our state is rich with significant natural and bio-based renewable resources that can be utilized for the effective and efficient production and utilization of hydrogen, energy, and products. These renewable resources can be utilized to enhance our energy security, reduce our dependence on fossil fuel resources,
foster diverse economic development in rural areas, and enhance the health and sustainability of our ecosystems.

The University of Minnesota is uniquely positioned to be a leader in this emerging field.

The University is a premier land-grant and public research institution with diverse research and intellectual strengths. These strengths span agricultural, biological, chemical, ecological, engineering, and natural resource sciences, as well as applied economics and public policy. In addition, the University has a long history of active engagement in collaborations with other educational institutions, various state and federal agencies, and the private sector.

The University of Minnesota Initiative for Renewable Energy and the Environment will provide the foundation for the effective use of renewable resources in Minnesota and around the globe.

The initiative will draw scientists from across the University to work collaboratively on high-impact, problem-solving, deep science in critical issue areas. This effort is being led by the College of Biological Sciences, the Institute of Technology, and the College of Agricultural, Food, and Environmental Sciences. The initiative will also bring together University expertise with experts from the private, public, and nonprofit sectors to foster research, discovery, technology transfer, and market development of new energy sources and products from renewable resources. The initiative will serve as a point of synergy for funding, collaboration, and communications on energy-related topics.
The University of Minnesota Initiative for Renewable Energy and the Environment

MISSION
To promote statewide economic development, sustainable, healthy, and diverse ecosystems, and national energy security through development of bio-based and other renewable resources and processes.

GOALS/OBJECTIVES
• Provide leadership in research and development of environmentally sound production, distribution, and use of energy, chemicals, and materials from renewable resources;
• Create jobs by transferring technologies into practical outcomes for industry and communities;
• Support the goal of moving toward an economy based on hydrogen and other renewables;
• Utilize bio-based and other renewable sources as a substitute for fossil fuel-based energy, chemicals, and materials; and
• Facilitate communication, coordination, and collaboration among University of Minnesota campuses, colleges, departments, centers, and faculty and other research and educational institutions.

ACTIVITIES
• Organize clusters of scholarly activities in the following areas:
  — Hydrogen
    • Storage and transportation
    • Utilization
    • Biohydrogen
  — Bioenergy and Bioproducts
    • Biomass
    • Biocatalysis
    • Biorefining
  — Policy, Economics, and Ecosystems
• Conduct, oversee, or collaborate on applied research and demonstration projects;
• Develop science-based public policy research and commentary on energy issues and the development of renewable resource alternatives;
• Convene meetings and symposia, and facilitate communication to foster multi-disciplinary cooperation;
• Identify sources of funding and support;
• Facilitate and manage a “seed funding, matching grant” program to facilitate cutting-edge, multidisciplinary research, technology transfer, and outreach efforts;
• Support development and integration of multi-disciplinary academic studies and courses; and
• Anticipate and respond to new and emerging opportunities and areas of emphasis.

For more information, contact Dick Hemmingsen, 612-625-2263, hemmings@umn.edu
September, 2003