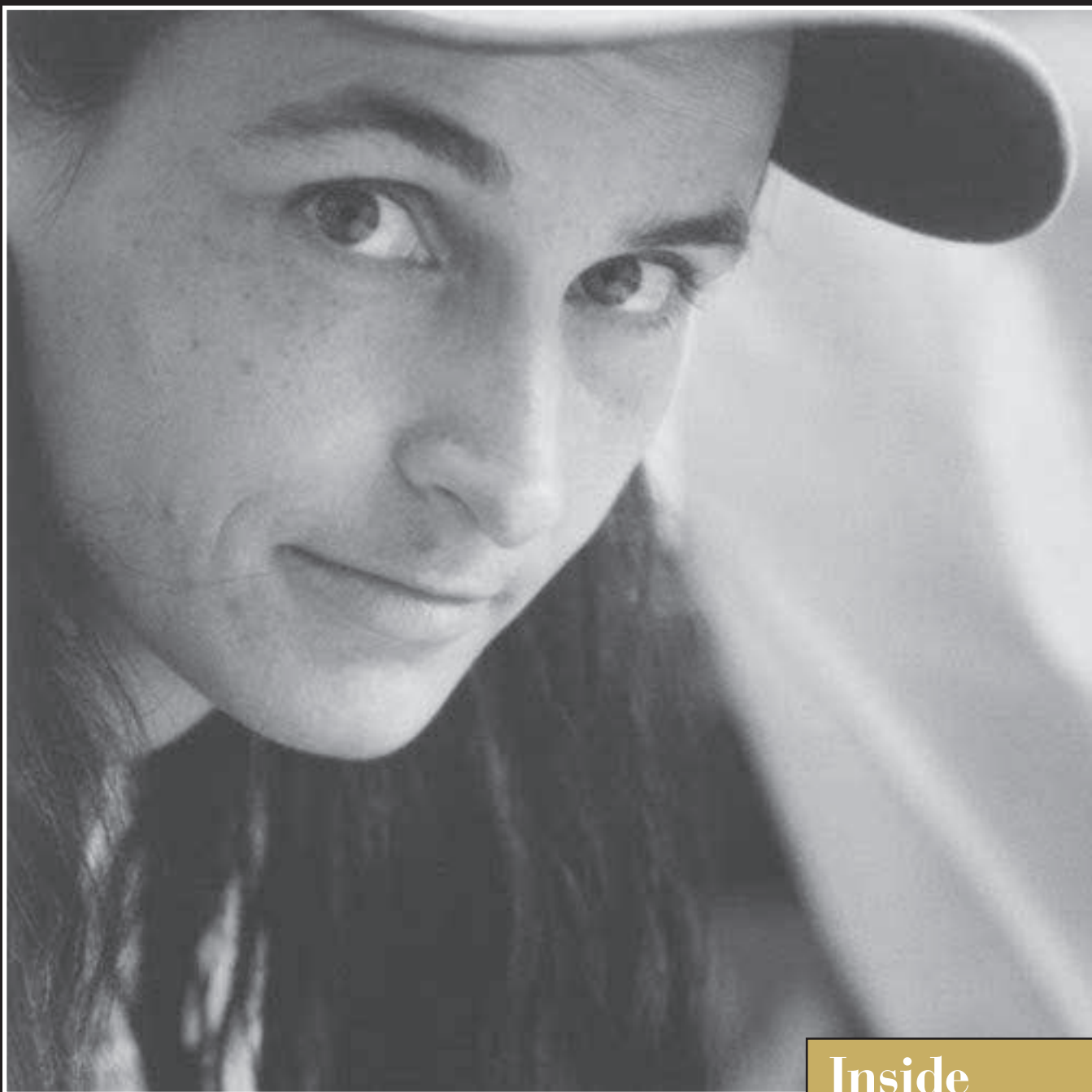


Fall 2001

UNIVERSITY OF MINNESOTA

# Frontiers

MAGAZINE OF THE COLLEGE OF BIOLOGICAL SCIENCES



## **Making dreams come true**

*The College hopes to raise \$10 million for a scholarship and fellowship endowment to help students pay increasing education costs.*

### Inside

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A maverick researcher  
triumphs *page 14*

# From the dean

## The best and brightest are choosing the cheapest, which may not be a public university



John Neltner

Dean Robert Elde

**Imagine this scenario: A bright, young student is shopping around for an undergraduate biology program. She considers the University of Minnesota, Princeton, and Stanford. After studying program options, quality of faculty, students, and facilities, she decides that the three are comparable, so she chooses the most affordable.**

That would be the University of Minnesota, right? Wrong. Her choice would be Princeton. Princeton University now provides full scholarships to all students who meet financial need criteria. The school's huge scholarship endowment, built up over many years by gifts from alumni and friends, has made this possible.

Unfortunately, this could easily happen; in fact, it may already have. While public research universities used to be a bargain, they are being undercut by private universities with large endowments. At the same time, tuition at public universities is going up. The University of Minnesota will increase tuition by about 25 percent over the next two years because of declining state support, which is expected to continue. This isn't just happening in Minnesota, nor is it a one-time phenomenon. The whole picture of funding for public education is changing.

The College of Biological Sciences is at a particular disadvantage because our scholarship endowment is relatively small and because the University has less money to give students. Because of the budget shortfall, the University has been forced to take money out of the scholarship fund and reallocate it for more urgent needs. Consequently, we need to build CBS' scholarship endowment, which is approximately \$1.4 million, up to at least \$10 million to continue attracting top students.

Why does it matter if we have top students? If you've read this column before, you know that my mantra is 'put students first, and the rest will fall into place.' We

need to attract the best students to sustain the quality of the school. Students who attend as undergraduates are likely to stay or return later and spend their careers here. The better they are, the better we are, and the more valuable a CBS degree is.

We have a lot to offer to top students. I don't know of a better place for an undergraduate to go for biology. The breadth and depth of classroom, laboratory and field experiences are hard to match. Freshman Seminars provide singular opportunities for first-year students to learn from world-class scientists. And undergraduates often become part of the families of post-doctoral and graduate students who surround these star professors. Added to that, the University of Minnesota was recently ranked third among public research universities in the U.S. (See story on page 17.)

Please consider a gift to our scholarship endowment to assure that the quality of the College of Biological Sciences remains high, and imagine this scenario:

Three biology graduates apply for the same position – one has a degree from Princeton, one has a degree from Stanford, and one has a degree from the University of Minnesota. The U of M graduate gets the job.

A handwritten signature in gold ink that reads "Robert Elde". The signature is written in a cursive, flowing style.

Robert Elde  
Dean, College of Biological Sciences

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Fall 2001

Volume 4 Number 2

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*Frontiers* is published three times a year by the University of Minnesota College of Biological Sciences for alumni, faculty, staff, and friends of the college. It is available in alternative formats upon request; please call 612-624-0774 or fax 612-624-2785.

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*Printed on elementally chlorine-free recycled paper containing 20 percent post-consumer waste.*

Cover photo: Jeanette Martinez is the 2001 recipient of the Florence Rothman Fellowship. See page 10.

# Evolution of the College of Biological Sciences



The College's roots reach back to 1851 territorial legislation that created the University. Biology departments sprouted independently, co-evolving with health sciences, agriculture and liberal arts. In 1965, the College of Biological Sciences unified these departments. And in 1998, the U's biological sciences reorganization gave CBS a boost. Today, with new department heads in place and new facilities under construction, CBS has its seatbelt fastened for the next part of its evolutionary journey.



Photos courtesy of U of M Archives

Greenhouses have played an important role in biology research since 1889, when regents approved \$500 to build an herbarium.

AS UNIVERSITY OF MINNESOTA biologists puzzled over the evolution of plant and animal species within their laboratories in the late 1800s, social and economic forces beyond

their walls already were beginning to shape the future of their world. More than 100 years later, biology at the University has come a long way. And with the explosion of knowledge in genomics and advances in

biotechnology, there's a lot more growth and change just ahead.

CBS' roots can be traced back to territorial legislation that created the University of Minnesota in 1851, naming science, arts and

## CBS timeline

**1851** The University of Minnesota was created by territorial legislation and a federal land grant of 100,000 acres. Science was among the original disciplines proposed.

**1868** The College of Sciences, Letters, and the Arts (CSLA) was established.

**1887** The Animal Science Department was established in CSLA. In 1927, it was renamed Zoology.

**1891** The Botany Department was created in CSLA.

**1900** Josephine Tilden, the University's first woman scientist, established the Minnesota Seaside Station on the coast of British Columbia.

**1909** Lake Itasca Forestry and Biological Station was established with a forestry training program.

**1913** The Agricultural Biochemistry Department was formed within the Institute of Agriculture.

**1915** The Zoology Building was constructed on the Minneapolis Campus.



**Zoology Building, constructed 1915**

**1926** The Botany Building was constructed on the Minneapolis Campus.

**1928** Snyder Hall, named for agricultural scientist Harry Snyder, was built to

house Agricultural Biochemistry. Snyder Hall is now headquarters for CBS.

**1928** The Agronomy and Plant Genetics Department was established in the Institute of Agriculture.

**1930** Cedar Creek Natural History Area was discovered and was later preserved for research.

**1937** The Botany Department added ecology as a discipline, and an era of interest in conservation began.



letters as one of five original disciplines. In 1868, the College of Sciences, Arts and Letters was formed. Biology began to flourish in earnest when animal science and botany departments were created within CSLA in 1887 and 1891 respectively.

Another key department, agricultural biochemistry, was formed on the St. Paul Campus in 1913 within the Institute of Agriculture. A genetics program, established within agriculture, was also an ancestor of a current CBS department.

Other important evolutionary events were the acquisition of field research stations. In 1900, botanist Josephine Tilden led an expedition along the coast of British Columbia, establishing the Minnesota Seaside Station. In 1909, the Lake Itasca Forestry and Biology Field Station was established. And in 1930, Cedar Creek Natural History Area was discovered.

While departments sprouted independently, they also co-evolved with medicine and liberal arts in Minneapolis and agriculture in St. Paul. Thus, the history of biology at the University can be told in terms of affiliations with other disciplines and migration patterns of faculty who lacked a true home of their own.

The College of Biological Sciences was organized under Dean Richard Caldecott in 1965 to unify existing biology departments and to reflect advances in biology, such as the emergence of molecular biology and the

growth of ecology. Botany and Zoology were transferred from the College of Liberal Arts and Biochemistry was moved from the College of Agriculture. Two new departments were created: the Department of Genetics and Cell Biology and the Department of Ecology and Behavioral Biology. The first combined the Genetics Center in agriculture with a new emphasis on cellular biology and biophysics. A decade later, zoology was disbanded and faculty were divided between the two new departments.

In 1998, Dean Elde led the University-wide biological sciences reorganization, which was undertaken to further strengthen



**Itasca in the 1930s**



**Botany faculty in 1916, with Josephine Tilden, center.**

alliances among biology programs, primarily in CBS, the Medical School, and the College of Agricultural, Food and Environmental Sciences. The goal was to merge departments and share resources in order to strengthen education and raise the U's national standing in biology. The reorganization was strongly supported by president Mark Yudof, who identified molecular and cellular biology as one of his five top initiatives.

CBS' current structure, with its four departments, reflects the reorganization. Two departments, Genetics, Cell Biology and Development, and Biochemistry, Molecular Biology and Biophysics, are joint departments with the Medical School. Next year, many CBS and Medical School faculty in these departments will move into the new Molecular and Cellular Biology Building in Minneapolis. Shortly after, the new Cargill Microbial and Plant Genomics Building will be constructed on the St. Paul campus.

—Peggy Rinard



**The Bell Museum, founded as the Zoology Museum in 1872, has always been closely associated with CBS.**

alliances among biology programs, primarily in CBS, the Medical School, and the College of Agricultural, Food and Environmental Sci-

**1965** The College of Biological Sciences was organized, culminating an effort begun in the early 1950s to unify biology departments on the Minneapolis and St. Paul campuses. Agricultural Biochemistry, Botany, Zoology, and the Bell Museum were administratively joined under CBS, and two new departments, Genetics and Cell Biology, and Ecology and Behavioral Biology were created.

**1967** Gortner Laboratories was built, named for Ross Gortner, chairman of Agricultural Biochemistry from 1917-42.

**1973** The Biological Sciences Center was built to house the Botany Department and the Genetics and Cell Biology Department.

**1976** The Zoology Department was disbanded; faculty joined either Ecology and Behavioral Biology or Genetics and Cell Biology.

**1983** The Biological Process Technology Institute was formed to create a connection with biotechnology industry. It has been renamed the Biotechnology Institute.

**1988** The name of the Botany Department was changed to Plant Biology.

**1989** The department of Ecology and Behavioral Biology was renamed Ecology, Evolution and Behavior.

**1993** The Ecology Building was constructed on the St. Paul campus.

**1995** Administration of the Bell Museum was transferred to the College of Natural Resources.

**1998** Biological sciences University-wide were reorganized.

**1999** Ground was broken for the Molecular and Cellular Biology Building in Minneapolis, which will house many CBS researchers.

**2001** Biodale opened, offering biological research support services to faculty, students, and industry.

Planning was begun for the Microbial and Plant Genomics Building on the St. Paul campus.

# Back to the future

**W**ith the new departments and department heads in place, the College of Biological Sciences is well positioned for strengthening education, interdisciplinary collaboration, and moving up in the national research rankings. If you graduated from the College of Biological Sciences more than a few years ago, your department may have a new name

and identity. Added to that, most department heads assumed their positions in just the last year or two.



Richard Anderson

**David Bernlohr is Distinguished McKnight University Professor and Head of Biochemistry, Molecular Biology and Biophysics.**

**D**AVID BERNLOHR LIKES TO say he's been at the University of Minnesota since 1961. And it's the truth, despite his youthful appearance. When Bernlohr was in elementary school, he used to tag along with his father, Robert, a professor of microbiology.

While hanging out in his father's lab he learned to transfer cultures with a pipette, use a microscope to look at bacteria, and count

colonies on plates. But his favorite experiment was melting the glass pipettes over a Bunsen burner.

The Bernlohrs lived in Roseville, a short bike ride away from the St. Paul campus, so he was a frequent visitor. "I practically grew up here," he says. He often rode his bike around the campus, and also took the bus from the St. Paul campus to Gopher football games in Minneapolis.

## Biochemistry, Molecular Biology and Biophysics

colonies on plates. But his favorite experiment was melting the glass pipettes over a Bunsen burner.

Johns Hopkins School of Medicine. In 1985, he came back home to CBS.

Since his post doc years, Bernlohr has been interested in relationships between obesity, diabetes and insulin resistance. He's now zeroed in on the metabolic relationship between diabetes and insulin resistance in type 2 diabetes, and lipid metabolism in disease and health.

Bernlohr was interim head of the CBS biochemistry department from 1995-1998

**While hanging out in his father's lab he learned to transfer cultures with a pipette, use a microscope to look at bacteria, and count colonies on plates. But his favorite experiment was melting the glass pipettes over a Bunsen burner.**

# Ecology, Evolution and Behavior

**Here's a chance to learn about the new departments and get acquainted with their leaders.**

and has been head of the merged Department of Biochemistry, Molecular Biology and Biophysics (BMBB) since 2000. BMBB, which grew out of the University-wide biological sciences reorganization in 1998, is a joint CBS and Medical School department. Bernlohr is also a Distinguished McKnight University Professor.

As department head, his primary goals are to gain recognition for the U as a national leader in biochemistry research, build relationships between faculty and students, particularly undergraduates, communicate the excitement of biochemistry research through classroom and laboratory teaching, and promote research in genomics and proteomics.

Research in his department spans several areas:

- How cells communicate with each other to control such functions as metabolism
- How molecules interact to regulate the function of genes and proteins
- Organization of genes within a genome, and how genes are expressed
- Replication of the genome during cell division and how DNA repairs itself
- Mechanisms of transcription
- Structure of molecules
- Computational biophysics
- Bioengineering of microbes to clean up the environment and develop new environmentally friendly processes and products

**W**hen Robert Sterner began to look for a graduate program in freshwater biology, his mentor suggested the University of Minnesota. The College of Biological Sciences offered just what he was looking for, and with 10,000 lakes, the headwaters of the Mississippi, and a shore of Lake Superior, Minnesota offered more than enough bodies of water to quench his scientific thirst.

Today, Sterner heads the Department of Ecology, Evolution and Behavior (EEB), where he earned his doctorate in 1986. Created shortly after the College of Biological Sciences was formed, it expanded in 1976 to encompass the Zoology Department. EEB is ranked among the top 15 departments of its kind in the nation. Faculty are frequently cited in scientific literature and featured in the *New York Times* and other national media.

Some examples of the diversity of research include:

- Social behavior of animals, such as chimpanzees and lions in Africa
- Ecological research on links between biodiversity and ecosystem function at Cedar Creek
- Dynamics of novel species and novel genes in a community context
- Use of prehistoric and geologic sources, such as lake sediment, to study the history of ecology
- Freshwater science

Sterner's goals for the department are to maintain and improve quality as he recruits new faculty – one third of the faculty will retire over three to five years. Areas of emphasis include assessing planetary ecosystem changes, animal behavior studies of neural, endocrine and cognitive systems, and evolution, which Sterner calls “the glue that binds all of biology as a discipline.”



**Robert Sterner is professor and head of Ecology, Evolution and Behavior.**

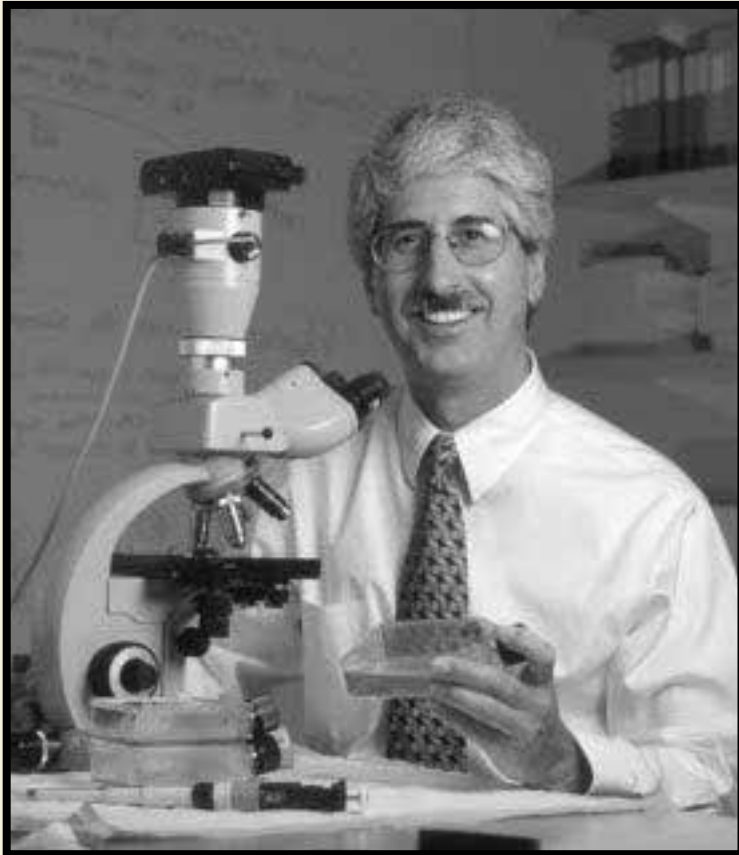
His own research is focused on the nutrient content of freshwater organisms, primarily plankton, and how that shapes their ecosystem. Using Lake Superior and other lakes as his laboratory, he addresses basic questions about how chemistry and biology interact in water ecosystems, and about the nutrition of food webs.

A native of Chicago, he earned his B.S. degree at the University of Illinois, Champaign-Urbana. There, he became acquainted with a young assistant professor, Michael Lynch, a University of Minnesota alum. Lynch “more than tolerated” his inquisitiveness about water biology and introduced him to the study of zooplankton. At CBS, David Tilman was his adviser.

Bob Sterner traces his interest in ecology and water to camping trips he took with his family as a child. He vividly recalls a trip to Acadia National Park in Maine, where he was fascinated by intertidal zonation, and another to Algonquin Provincial Park in Ontario, where his life-long interest in lakes began.



# Genetics, Cell Biology and Development



**Brian Van Ness is professor and head of the Department of Genetics, Cell Biology and Development.**

**W**hat Brian Van Ness likes about being a department head is bringing people with compatible interests together to form productive working relationships.

"I really enjoy getting person 'A' to meet with person 'B,' helping them develop a production relationship, then stepping back and letting it happen," he says.

That matchmaking ability is particularly valuable in Van Ness' department because it is organized around model systems.

"Pragmatically, genetics, cell biology and development are not three independent themes, they're very interrelated," Van Ness says. "It would be a mistake to devel-

op them separately." Some of the department's research strengths include cancer biology, gene therapy, gene regulation, genetic diseases, cell signaling and innovative microscopy. When the new Molecular and Cellular Biology Building opens next winter, a majority of the department's 50 faculty members will move into the facility. Van Ness looks forward to the move as an opportunity to further integrate faculty who are studying common organisms and developing common approaches. Labs are designed without walls to encourage collaboration, and equipment will be shared. "Sharing space and equipment leads to sharing techniques and ideas," he says.

Van Ness adds that his goals are to build on the department's strong foundation in model organisms and interdis-

iplinary connections, emphasize basic and applied research, and promote awareness of the department's strengths in the national scientific community.

"With the explosion in genomics and developmental biology, we want to be on the leading edge," he says.

Named department head in May, Van Ness had served as interim head since August 2000, and was closely involved with the reorganization of the department in 1998, which was initiated by faculty from several departments and disciplines.

"People started meeting in the halls and talking about the need to form new collaborative relationships," Van Ness says. "I remember having many hallway conversations with colleagues in cell biology and neuroanatomy, genetics, biochemistry, and medicine. Pretty soon, there were enough of us to sit down in a room and we began to schedule meetings." Van Ness adds that Tony Faras, the first head of GCD, brought people together and promoted GCD as an important part of the reorganization.

Originally from Pennsylvania, Van Ness earned his doctorate in biochemistry at the University of Minnesota. He did postdoctoral research at Fox Chase Cancer

Center in Philadelphia, and returned to the University of Minnesota in 1987. A member of the U's Cancer Center,

he was program director of cancer genetics until May. His own research focuses on genetic deregulation in multiple myeloma.

**"I really enjoy getting person 'A' to meet with person 'B,' helping them develop a production relationship, then stepping back and letting it happen," Van Ness says.**



# Plant Biology

After 12 years at Texas A&M University, Kate VandenBosch is glad to be back home in the Midwest, where the climate is generally kinder to green growing things from legumes – her research interest – to flowers in the garden.

“In Texas, you have either droughts or floods, so what gardening I did was mostly pulling up and replanting things that had died,” she says.

While at Texas A&M, VandenBosch cultivated collaborations with University of Minnesota faculty, including plant biology colleagues Steve Gantt and Nevin Young. So when she arrived here in January, 2000, she was ready to go to work. Her first task was to recruit new faculty. The department, which had not added faculty for several years, was poised for growth because of advances in the field and the University’s commitment to expanding molecular biology and genomics research. Thus far, six new faculty have arrived or will be arriving over the next year. Recruitments are being made in key growth areas – development, evolution, and genomics.

Plant Biology is vertically structured, cutting through all levels of biology, from molecules to organisms to ecosystems.

Consequently, plant biologists often interact with faculty in other CBS departments, which tend to be horizontally structured. Many also work with faculty in the College of

Agricultural, Food and Environmental Sciences. Dominant research themes are evolution and biodiversity, interactions among plants and other organisms, cell signaling and development, and responses of plants to environmental cues, such as light and temperature. Goals include applying research to preserve biodiversity and identifying molecular targets for making crops more nutritious and resistant to disease, insects, and weather, and less dependent on pesticides, fertilizer and irrigation.

**The richness of prairie soil can be attributed in part to nitrogen fixation in native legumes. VandenBosch and her colleagues hope improve nitrogen assimilation in other plants, which would reduce pollution from nitrogen fertilizers.**

ability to produce their own nitrogen through a symbiotic relationship with soil microbes, which set up housekeeping in



Richard Anderson

**Kate VandenBosch is professor and head of the Department of Plant Biology.**

VandenBosch’s own research centers on nitrogen fixation and legume genomics. Legumes, which include soybeans and alfalfa, have the unique

root nodules and convert nitrogen in the air to a form used by plants.

Growing up in a farming area of Michigan’s Lower Peninsula, with summers spent on the western shores of Lake Michigan, VandenBosch developed an interest in agriculture, forests, native plants, and their communities. As an undergraduate at Kalamazoo College, VandenBosch abandoned pre-med studies for plant physiology, ecology and evolution. She earned her doctorate in plant biology at the University of Massachusetts, ultimately focusing on form and function at the cellular level.

—Peggy Rinard

# Making dreams come true

**Tuition is way up. The University's scholarship resources are down. Bright young students are wondering how they can make their dream of a biology education and career come true. And biology is entering an era of unprecedented opportunity. CBS needs to build up its endowed and annual scholarship funds to make dreams come true and ensure a strong future for the College.**

**B**ill Ennen wants to educate Hispanic cultures about the value of preserving precious ecosystems such as coral reefs. Jeannette Martinez hopes to conserve endangered insects that play important roles in ecosystems. And after a summer internship at a hospital in rural India, Sanaya Bharucha knows she wants to be a doctor.

These three CBS students are fortunate. Thanks in part to the generosity of CBS alumni and other donors, they are on the way to realizing their dreams. But in the future, talented students like these may not be so lucky. Tuition is way up, University scholarship resources are increasingly inadequate, and the cost of a biology education is becoming less affordable for more students. At the same time, applications are pouring in, thanks to the College's reputation and a growing interest in the biological sciences.

**"The bottom line is that we need to increase our school and fellowship endowment from \$1.4 million to \$10 million," says Bob Elde, CBS dean. "If we aren't able to do that, we won't be able to attract the kind of students we need to ensure a strong future for CBS. It's ambitious, but I'm very optimistic about our success, because I believe that we have many alumni and friends who want to keep the college strong and watch it grow."**

While CBS has a number of endowed scholarships and an annual scholarship fund, in the past the bulk of student support, about \$1 million a year, has come from scholarships provided through the University's operating fund. But there is much less operating money available for scholarships because the state didn't fully fund the University's budget request. Consequently, money that used to go to scholarships is being used to pay for essentials.

Added to that, the endowment at CBS, which is a relatively young college, is much smaller than the endowments of most other University of Minnesota schools and colleges. A scholarship endowment is built up over many years with contributions and bequests from alumni, friends and foundations. Only the interest is used, so the principal remains and grows as contributions are added. Since the first CBS class graduated in

1969, the college just hasn't had the time to build a substantial endowed fund. So now, with the need to catch up driven by the tuition increase and other factors, Bob Elde, CBS dean, has identified building the scholarship endowment as one of the school's top priorities.

"The bottom line is that we need to increase our endowment from \$1.4 million to \$10 million," says Bob Elde, CBS dean. "If we aren't able to do that, we won't be able to attract the kind of students we need to ensure a strong future for CBS. It's ambitious, but I'm very optimistic about our success, because I believe that we have many alumni and friends who want to keep the college strong and watch it grow."

Annual funds, such as the Alumni Merit Scholarship, which are dispersed each year, are also essential. CBS needs both kinds of funds to meet students' needs and keep the college strong.

CBS offers a variety of endowed scholarships and fellowships and annual awards. Many are memorials established to carry on the legacies of distinguished faculty members, alumni, and friends. One was established by Nobel Prize Winner Paul Boyer, a former CBS faculty member now at UCLA. Another carries the name of Richard Caldecott, former dean and good friend of the college. Corporations, such as 3M, have also pledged funds to support CBS students. And the Graduate School offers matching fellow-

# e true

ships of \$25,000 using funds from the sale of Ziagen, an AIDS drug developed by College of Pharmacy researcher Robert Vince and marketed by Glaxo Wellcome.

Following are a few stories behind the names of CBS scholarships and fellowships — the donors who made them possible and the students who are putting them to very good use.

## Florence Rothman Fellowship Fund

Some people show appreciation to their mothers with flowers. Russell Rothman (M.S., '77) did much more than that. He gave his mother a bouquet of bright futures by endowing the Florence Rothman Fellowship Fund in her honor.

Rothman made the gift in 1996 to thank his mother, who died of Alzheimer's disease the following year, for the role she played in nurturing his lifelong passion for biology. "My interest in nature really came from her," he says. "She encouraged my love of the outdoors."

That love eventually led Rothman to study wolves here at CBS under Professor David Mech. He was close to completing his Ph.D. when other obligations intervened, and Rothman went to work for his family's electronics distribution business instead.

Despite the career path he followed, Rothman remains immersed in the biological



**Russell Rothman, M.S., '77, established the Florence Rothman Fellowship in honor of his mother, who encouraged his interest in nature.**

**"... this way I'm able to help more students who find themselves in the same situation that I was. It's money well spent to help encourage other students at a time when they need it the most."**

**—Russell Rothman**

sciences. He's active in international conservation, gives talks on biology in schools, and contributed to Mech's recent book, *The Wolves of Minnesota*.

Based on his own experience as a grad student, Rothman targeted the fellowship to support graduate students conducting exploratory field studies. He hopes it will help them do what he was not able to—complete a formal education in the face of financial pressures.

"It would have been nice if I had finished," he says, "but this way I'm able to help more students who find themselves in



Richard Anderson

**Jeannette Martinez, 2001 recipient of the Rothman Fellowship, is interested in conserving insects that play valuable roles in nature.**

the same situation that I was. It's money well spent to help encourage other students at a time when they need it the most."

## A jewel among insects

What will it take to save the Hine's Emerald dragonfly? Jeannette Martinez, this year's Florence Rothman Fellowship Fund recipient, intends to find out. She's using population genetics to learn whether the few remaining clusters of the endangered insect intermingle or are genetically isolated—information that could help rescue it from extinction.

Martinez' long-term goal is to be an academic researcher focusing on conservation of insects, which she says deserve more respect than they get.

"When people talk about insects, they usually think of pests, but that's really a minority," she says. "Some pollinate plants, some eat other insects, and they are a food source for so many animals on different trophic levels . . . I think of them as the glue that holds the ecosystem together."





**Leon Snyder, a plant genetics professor for 34 years, believed in the value of a liberal arts education for biology students.**



Richard Anderson

**Rachel Mason, a 2000 Snyder Scholar, will use her CBS studies in animal behavior and evolution as a springboard to graduate work in psychology.**

## Leon Snyder Fellowship

To Leon Snyder, excellence meant much more than a 4.0 GPA. So it was very fitting that after the longtime professor of genetics and cell biology died in 1989, family and friends honored his memory by endowing an award for exceptional undergraduates whose interests venture beyond biology.

“The goal of the award is to provide financial assistance to students who are excellent as judged by the usual academic measures but who also show some multidimensional qualities,” says Snyder’s former colleague Michael Simmons, professor of genetics, cell biology and development. “It isn’t just that they’ve made good grades in organic chemistry, but there’s some substance there.”

Since it was established more than a decade ago, the Leon A. Snyder Memorial Fund has supported students with diverse blends of interests, including neuroscience and public health, genetics and ethics, and Spanish and ecology.

Rachel Mason, the 2000 recipient, says she liked the affirmation of her multiple interests.

“My academic career is peppered with poetry workshops, photography classes, things like this,” she says. “It really excited me to get this award because it’s between science and art.”

Mason, who majored in ecology, evolution and behavior, focused on animal behavior and behavioral ecology as an undergraduate. She plans to remain at CBS teaching biology labs for a couple of years before beginning graduate studies, probably in psychology. She’s particularly interested in studying connections between evolution and psychology.

**“The goal of the award is to provide financial assistance to students who are excellent as judged by the usual academic measures but who also show some multidimensional qualities.”**

**—Michael Simmons**

## BSAS Alumni

Since 1983, BSAS Alumni Merit Scholarships have been awarded annually to students with top grades and extra-curricular field or laboratory experiences. The money in this fund, made up of gifts from \$10 to \$5,000 from alumni and friends, is collected and dispersed annually. Currently, each award is for \$1,000. In 1999, seven Alumni Merit Scholarships were awarded. In 2000, there were 12, and in 2001 there were 18. The awards help students offset the cost of their education and provide valued encouragement to top-performing undergraduates. Sanaya Bharucha, Khaled Dajani, and Bill Ennen are all 2001 recipients of these scholarships.

### Epiphany in India

Alumni Merit Scholar Sanaya Bharucha always loved biology, she just didn’t know what she wanted to do with it. “I was debating between research and medical school,” she says. “I had been working in a lab for awhile; I wasn’t sure that’s what I wanted to do.”



**Sanaya Bharucha**



## How can you help make a student's dream come true?

Many CBS undergraduate students work at least part time to cover their education costs. Students who work extensively in college often earn lower grades and are unable to participate in activities that enrich their classroom work. Working students also take a lighter course load than ideal, making graduation in four years nearly impossible. And longer work hours are a necessity for more and more students.

Gifts can be made with cash, stocks, bonds, treasuries, mutual funds, real estate, or personal property. Some donors choose to include the College in their wills, or name the University as an owner and beneficiary of a life insurance policy.

Following are some of the ways to support scholarships and fellowships at the College of Biological Sciences:

- make an annual contribution and designate it to the CBS Annual Scholarship fund;
- establish a scholarship or fellowship endowment in your name or the name of an individual you would like to recognize;
- include CBS in your estate plans;

For more information about supporting the College of Biological Sciences, please contact Janene Connelly, ([connelly@cbs.umn.edu](mailto:connelly@cbs.umn.edu)) or 612-624-7496.

*Note: Your gift to endow a fellowship may be eligible for a match through the 21st Century Graduate Fellowship Endowment, effectively doubling the impact of your gift.*

# Merit Scholarships

A year studying the practice of medicine in rural India settled the issue. She learned a lot from the experience, perhaps most importantly that she wanted to be a physician.

She says her award means she has to work less, and thus has more time to round out her science coursework with classes on social issues.

## Tuition and validation

A BSAS Merit Award is helping Khaled Dajani save his money for a really big investment he hopes to make before too long: medical school.

Dajani has always had an interest in medicine. His CBS coursework prepared him well for the medical school entrance exams. Now the scholarship is helping him cut back on work so he can focus on the arduous application process.

In addition to financial help, Dajani says he appreciates the award's acknowledgment of his efforts to juggle academics, research (most recently on proteins in spermatozoa), and extracurricular activities, including representing CBS in the University of Minnesota student senate.

"It not only helps with tuition but validates what you're doing," he explains.

## More time to give

For senior Bill Ennen, winning a BSAS Merit Award means having more time to give.

Ennen is weaving his interests in biology, Latino culture, and the outdoors into a career focused on improving the environment and human health in developing nations. To build the many skills and connections needed to do so, he's been involved in an abundance of volunteer activities: leading outdoors programs, organizing an environmental lecture series, helping the Twin Cities Latino community—in addition holding down paying jobs as a teaching assistant, hospital worker, museum guide, and waiter. He has also managed field research trips to Venezuela and Honduras to learn about their ecosystems and practice his Spanish.

With the scholarship in place, Ennen hopes to have to spend less time earning money and more time volunteering.

—profiles by Mary K. Hoff



Khaled Dajani

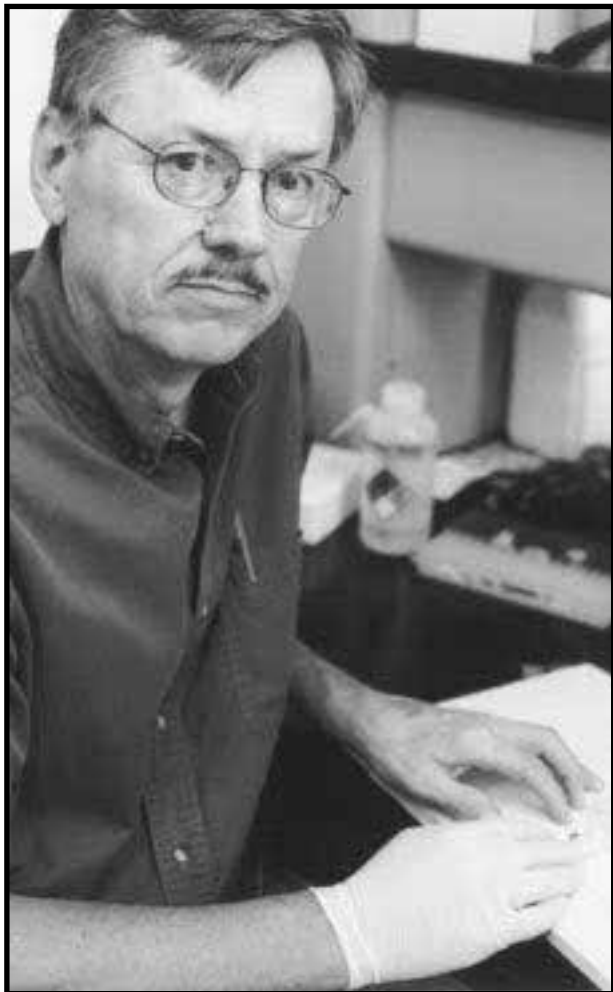
Richard Anderson



Bill Ennen

# Rebel with a cause

**Gary Nelsestuen followed an unpopular hunch that led to a breakthrough drug for treating sepsis. The U of M has licensed the technology to Eli Lilly, which plans to launch the drug soon.**



Richard Anderson

**Gary Nelsestuen, professor of biochemistry, molecular biology and biophysics.**

Challenging a scientific dogma is like striking at a king: If you do it, you'd better win. No one knows this better than Gary Nelsestuen, who bucked the scientific establishment over how to modulate blood clotting.

A professor of biochemistry, Nelsestuen has worked for 30 years with proteins that cause or prevent blood clotting. One was protein C, a natural anticoagulant that should soon be approved by the Food and Drug Administration to be marketed by Eli Lilly as the first sepsis drug. Sepsis occurs when the immune system overreacts to bacterial antigens in the bloodstream, causing widespread clotting and reduction of

blood flow to organs. Worldwide, sepsis kills at least a third of the 1.5 million people it strikes each year.

"My dad had sepsis and nearly died," Nelsestuen says. "He got a shot of cortisone in the shoulder, and that may have introduced *E. coli*."

In the mid-90s, Nelsestuen was trying to understand how protein C and related clotting and anti-clotting proteins attach to membranes because those that attach best would make the best candidates for drugs. Based on protein C's three-dimensional structure and the properties of protein C

variants made by inducing specific mutations, virtually all other laboratories working in this area supported a common idea of membrane attachment. But Nelsestuen suggested that both the 3-D structure and the mutation studies had shortcomings.

He had other ideas about membrane attachment, based on work in his own lab.

As he pursued his unpopular ideas, neither of his grants from the National Institutes of Health was renewed. The Graduate School provided a small grant, but the number of laboratory students and

staff rapidly approached zero.

In March 1998, a series of collaborations resulted in a modified protein that reflected Nelsestuen's ideas. With his remaining students, Nelsestuen showed that the mutant protein attached to membranes much more powerfully than the natural protein and had 10- to -20 times higher activity.

Suddenly, the tide turned. Nelsestuen's NIH funding was restored, and the NIH also funded a program project grant called "New Therapies for Hemophilia" involving Nelsestuen and colleagues Nigel Key and Bianca Conti-Fine. Eli Lilly licensed the modified protein C as a possible successor to the first sepsis drug, and license fees from Eli Lilly have helped endow the Dagley-Kirkwood award for outstanding teaching in CBS. Finally, Nelsestuen has

**What was it like to work for two years virtually unfunded, faced with a popular opinion that he was on the wrong track? Nelsestuen won't say it was scary, but "it took a lot of confidence to proceed."**

been instrumental in acquiring new mass spectrometry instruments necessary for work in this area and in the new field of proteomics.

What was it like to work for two years virtually unfunded,

faced with a popular opinion that he was on the wrong track? Nelsestuen won't say it was scary, but "it took a lot of confidence to proceed."

—Deane Morrison

# New role for RNA

**Researchers discover that RNA as well as DNA plays a role in genetic disorders such as myotonic dystrophy.**

Nine years ago, University neurologist John Day noticed something strange about a condition affecting several members of one large family. They showed all of the symptoms of myotonic dystrophy (DM), the most common form of muscular dystrophy in adults, yet none carried DM's characteristic flaw on chromosome 19.

Two years later, after having examined several more family members, Day told University molecular geneticist Laura Ranum about the family. The two collaborated and in 1998 showed that the milder form of DM in Day's patients

**Ranum and Day's work paves the way for a genetic test for a form of myotonic dystrophy and better treatments for the disease. Whatever the outcome, their demonstration of RNA's ability to cause disease all by itself stands out as a scientific accomplishment.**

(DM type 2, or DM2) was caused by a mutation on chromosome 3. In August of this year, Day and Ranum announced in the pages of *Science* that "rogue" RNA—not a defective protein—was the culprit in both forms of DM.

"Up until now, most researchers have focused on protein abnormalities as the ultimate cause of genetic disorders," says Ranum, associate professor in the



**Laura Ranum, associate professor of genetics, cell biology and development, with John Day, associate professor of neurology.**

Richard Anderson

Department of Genetics, Cell Biology and Development and the Institute for Human Genetics. "Now we have reason to examine the role of RNA."

In addition to causing muscle deterioration, and an odd inability of muscle to relax (myotonia), both DM1 and DM2 cause heart problems, diabetes, male infertility, a particular pattern of balding, and, perhaps most striking, cataracts that appear red and green through an ophthalmologist's slit lamp. DM2 is never as severe as DM1 can be, however, because it lacks a congenital form and severe central nervous system involvement.

"It seemed important to us that the same constellation of seemingly unrelated and rare clinical features had a different genetic cause," says Day, an associate professor in the department of neurology and the Institute of Human Genetics. "Identification of the unusual mutation in DM2 opens the door to finding ways to stop both DM1 and DM2." Both types of DM result from a mutation in

which a sequence of DNA is repeated over and over in tandem. In DM1, a triplet of nucleotides recurs between 100 and 3,000 times; in DM2, a quartet of nucleotides is repeated an average of 5,000 times.

The irony of a larger genetic flaw producing a milder form of the disease is not lost on Ranum and Day. But even more intriguing is RNA's central role in causing the damage. In most genetic diseases, DNA defects are reproduced in RNA, which exits the nucleus and directs the manufacture of defective protein. But in DM1 and DM2, RNA apparently does its mischief inside the nucleus. To top things off, the defect occurs in an RNA segment that's ordinarily snipped out before the RNA molecule leaves the nucleus.

Ranum and Day's work paves the way for a genetic test for DM2 and better treatments for the disease. Whatever the outcome, their demonstration of RNA's ability to cause disease all by itself stands out as a scientific accomplishment.

—Deane Morrison



## CBS students to benefit from 3M \$6.2 million gift

University graduate students in health, technology, and biology will benefit from a \$6.2 endowment established by a gift from 3M, Inc. The endowment, part of a \$15 million donation from 3M, will be used to pay expenses each year for 48 graduate students. The gift, announced in March, is among the largest the University has ever received.

"It's exciting that the University's priorities coincide with 3M's priorities," said Bob Elde, Dean of CBS. "This is a great opportunity for a new synergy between the University and 3M. 3M provides support that enables us to attract high caliber graduate students in genetics, biotechnology, bioinformatics, and nanotechnology. We train them to be the kind of scientists 3M needs to develop new products that ultimately strengthen Minnesota's economy and provide jobs. Everyone benefits."

Dr. Gregg Vandesteeg, executive director of research and development in 3M's Corporate Technology and Health Care Market, said that "providing financial support through scholarships and fellowships is a sound investment in both organizations. We are very pleased to provide this support to the University."

The Richard C. Nelson Endowed Scholarship for Biochemistry has grown by \$600,000 through a bequest by his daughter, Sarah Nelson Cook, who passed away in January, 2001. The scholarship was established by Cook to honor her father, who earned a Ph.D. in biochemistry from the University in 1937 and went on to a distinguished career in academia and industry. The scholarship supports students in the Department of Biochemistry, Molecular Biology and Biophysics.

**Frank McKinney**, Curator Emeritus of the Bell Museum, passed away suddenly on June 12, 2001. McKinney was an internationally renowned scientist and leading expert on waterfowl behavior. Born in Ballymena, Northern Ireland in 1928, he studied zoology at Oxford and earned a Ph.D. from the University of Bristol. He taught at the University of Minnesota for 33 years, and was curator of animal behavior from 1973 until his retirement in 1999. A fund has been set up in McKinney's honor to provide support for graduate students. Donations can be made in care of the Bell Museum, 10 Church Street SE, Minneapolis, MN 55455.



**Illustration of proposed Biotechnology Precinct as seen from Biological Sciences Tower looking toward Fairgrounds.**

Regents have had their first glimpse of plans for a St. Paul campus biotechnology precinct. Bob Elde, CBS dean, and Orlyn Miller, Facilities Management, presented the plans at the board's July meeting. The proposed precinct, to be located on the northeast quadrant of the campus, grew out of planning for the Microbial and Plant Genomics Building. Other components include an incubator building, where industry partners and faculty could work together to develop biotechnology of mutual interest, renovation of the cattle barn on Gortner and Buford to provide meeting space, offices, and dining services, a building dedicated to biocatalysis and biomaterials development, and another to biosensors. Regents will vote on the proposal, which is part of the University's six-year capital plan, this fall.

**Former Professor David Parmelee** will be remembered at the annual alumni weekend at Lake Itasca Forestry and Biological Station, Sept. 28-30, when a remodeled recreational field will be dedicated in his name. Parmelee's widow, Jean, recently made a generous donation to upgrade Itasca recreational facilities. Improvements include a new baseball diamond, badminton court, play equipment for children, and landscaping. Parmelee, who died in December 1998, was a station director from 1971 to 1986. All former station directors have been invited to participate in the dedication program. For more information, call Paul Germscheid at 624-3752.

**Peggy Rinard** joined CBS in July as Communications Coordinator. Rinard comes to the college from the Academic Health Center, where she was publications manager in the Office of Communications. She welcomes you to contact her at 624-0774 or rinar001@tc.umn.edu with news for internal and external publications, or if you have any suggestions about communications.



## CBS faculty receive McKnight awards

Several CBS faculty received McKnight Foundation awards for 2001. Among the University's highest honors, the McKnight awards identify and recognize the most promising junior faculty and most distinguished senior faculty.

David Tilman, professor of ecology, was one of only three professors University-wide selected for the McKnight Presidential Endowed Chair. Tilman is internationally known for his work elucidating the effects of

biodiversity on ecosystems. Author of five books and 150 scientific papers, he is the most cited environmental author of the past decade, according to Essential Science Indicators. The endowed chairs were created with a \$15 million gift from the McKnight Foundation made to the University in 1999. Larry Wackett, biochemistry, molecular biology and biophysics, was named a Distinguished McKnight Professor, which carries an award of \$100,000 over five years.

A 2001 McKnight Land-Grant Professorship went to Claudia Schmidt-Dannert, biochemistry, molecular biology and biophysics. Schmidt-Dannert combines metabolic engineering and molecular evolution techniques to create biosynthetic pathways. Schmidt-Dannert will hold the title of McKnight Land-Grant Professor for two years and receive a \$25,000 research grant for each year.

## UM ranked third among U.S. public research universities

The University of Minnesota came in third among U.S. public research universities in a recent report of "Top Research Universities" from the University of Florida.

The Florida study used nine measures of performance, including research dollars, private support, faculty honors, the amount of advanced training provided, and the quality of undergraduate students. UM came in just behind the University of California, Berkeley and the University of Michigan, Ann Arbor, and ahead of Princeton, Yale, the University of Chicago, and the University of Wisconsin.

The only category in which the University of Minnesota fell short was qualifications of entering undergraduates. The school was ranked

37th among public institutions and 182nd among all institutions in this area. If not for that, UM would have been at the top of the merged public-private rankings, an elite group including Harvard and Stanford.

The Florida report was developed in part as a response to such popular rankings as the *U.S. News and World Report* annual college issue. Larger universities have long been unhappy with the magazine's rankings, which tend to recognize small private universities.

Peter Zetterberg, director of Institutional Research and Reporting for the University, said he liked the Florida rankings, not just because the University did well, but because he believes the process is the fairest and looks at the broadest range of measures.

## Female lions share breeding rights

Female lions are "equal opportunity breeders," according to Craig Packer, ecology, evolution and behavior, who published a study in the July 27 issue of *Science* on the breeding habits of female lions.

The study showed no trace of any hierarchy in which certain animals were more likely than others to produce cubs. Such egalitarian breeding sets female lions apart from reproductive patterns of some other social species, including chimpanzees, wolves, and hyenas, in which there are one or more dominant reproductive females. Breeding hierarchies are even found among male lions.

"In some years, only one or two females manage to raise a litter of cubs, but over time, all the females have the opportunity to breed," says Packer.

Packer and his colleagues studied lifetime reproductive variation in females from 31 prides (social groups) of Tanzania's Serengeti National Park and Ngorongoro Crater. He also observed that while female lions are competitive at kills, they respect the rights of the first female to arrive at the site, whereas in male lions and many other carnivores the larger animal usually supplants the smaller.

"The female lion is one of nature's few true democrats," he said.

Anne Pusey, ecology, evolution and behavior and Lynn Eberly, School of Public Health, biostatistics, were co-authors.



# AlumNews

## From the president

### Opportunities for you to give back to CBS

AS CBS ALUMNI, WE HAVE BEEN given a gift. Sure, as students, we worked hard and made serious personal investments of time, energy and money. But we have been rewarded with an invaluable education that makes us better, more enriched people. We may not have been aware of it at the time, but there were many people working behind the scenes helping in many ways to assure our success in CBS.

As I step into the role of the President of the Biological Sciences Alumni Society, my main message to CBS alumni is to look for ways to give back. I'd like all of us to think about giving back to the college, students, other alumni and our communities. And I hope BSAS will continue making strides to facilitate and encourage our members to give back. We have an opportunity, indeed an obligation, to give back. Here are some ways:

- Make a contribution to the annual merit scholarship.
- Make a donation to the college.
- Be a mentor. You can also offer workplace tours, job shadowing or internships.
- Help recruit talented students.
- Help with one of our committees or participate in an event (Legislative Network, Speakers Bureau, Alumni Events, etc.).
- Consider joining the BSAS Board, or at least join the UMAA.
- Donate a building (it doesn't hurt to think big).

BSAS has a hand in all of these programs and activities. We welcome and encourage your participation and contributions.

I hope all CBS alumni look for ways to give back. If you have other ideas or would like further information, I am happy to chat with you at any time. You may call me at 952-470-4449 or contact me by e-mail at Dick-



Dick Osgood

Osgood@aol.com. You may also contact Paul Germscheid, Coordinator of Alumni Relations and Annual Giving at CBS (612-624-3752 or pgermsch@cbs.umn.edu).

In my experience, the more we give, the more we get.



Dick Osgood,  
President, BSAS

### The 2001-2002 Biological Sciences Alumni Society Board

#### President

Dick Osgood (*B.S. Biology 1977, M.S. Biology, UMD 1979*)

Dr. Jerald M. Barnard (*B.S. Biology 1978, M.D. 1983*)

Carol Pletcher (*Ph.D. Biochemistry 1979*)

Carolyn Bagne (*B.S. Biology 1997*)

Mervyn de Souza (*M.S. Microbial Engineering 1997, Ph.D. BMBB 1998*)

Laura Erickson (*B.S. Zoology 1977, M.D. 1981*)

Scott Erickson (*Biology, 1977*)

Curt Henry (*B.S. Biochemistry 1996*)

Kendra Kauppi (*B.S. Biochemistry 1994, M.S. Food Science 1997*)

Kristopher Kehner (*B.S. BMBB 2000*)

Phil Lawonn (*B.S. Microbiology 1997*)

Rachel Mason (*B.S. Ecology, Evolution, & Behavior 2000*)

Paula J. Penning (*B.S. Genetics and Cell Biology 1989*)

Douglas Pratt, Ph.D. (*B.S. Natural Science 1952, M.A. Botany 1959, Ph.D. Botany 1960*)

Tom Skalbeck (*Ph.D. Entomology 1976*)

Kevin Waddick (*B.S. Microbiology 1976, M.S. Microbiology 1983, Ph.D. Biophysical Sciences 1993*)

**Please join us for the First Annual CBS Homecoming Picnic** on Friday, October 19, 2001 from 4:30 to 7:30 p.m. All CBS alumni, faculty, staff, friends, and students are invited to gather on the front lawn of Snyder Hall for fun and festivities. Enjoy

food, games, tours, and prizes provided by your hosts, the College of Biological Sciences and the Biological Sciences Alumni Society. The picnic costs \$10 for adults and \$8 for children six to 12.

**Advance tickets for the Homecoming football game**, versus Michigan State on Saturday, October 20, are available for \$20 each. A section is reserved for CBS Gopher fans. Contact Julie Ulrich at 612-624-4770 or julrich@cbs.umn.edu to reserve your spot at the picnic and at the game. Come and have some fun!

**The Annual Biological Sciences Alumni College Weekend at Itasca** will be held Friday, September 28 through Sunday, September 30 at the University of Minnesota's Itasca Forestry and Biological Station. The week-

end provides an opportunity for CBS alumni and friends to gather and reconnect through activities and social events in the relaxing atmosphere of the Itasca Station. Programs will include speakers from the College of Biological Sciences, the U of MN Raptor Center, the Natural Resources Institute, Center for Water and the Environment in Duluth, and the National Park Service.

Please accept our invitation to participate in this fall's Alumni Weekend. If you have any questions, contact Paul Germscheid at 612-624-3752 or pgermsch@cbs.umn.edu.

### **New members of the Biological Sciences Alumni Society Board**

**Mervyn deSouza** is a senior scientist in biotechnology research at Cargill, Inc. in Minnetonka. He is very interested in staying involved with CBS, and looks forward to working on networking events and with the mentor program.

**Phil Lawonn** is a manager of analytical and regulatory services at Cellresin Technologies, LLC in St. Paul. He is interested in helping students with career development and being involved in the mentor program and networking.

**Kevin Waddick** recently was hired as a staff scientist at the Parker Hughes Institute in Roseville, and is starting law school this fall at St. Thomas University. Kevin feels much loyalty toward the University and the College and is looking forward to helping out with board activities.

**Rachel Mason** began working as a TA for the College's General Biology Program this fall. She has been impressed with the breadth of opportunities available through CBS, and would like to help current and incoming students through mentoring and career development.

**Carolyn Bagne** is a biology and chemistry teacher at Lakeville High School. She has a wide range of interests and is looking forward to working with the board.

**Curtis Henry** is a marketing specialist at Gentra Systems in Eden Prairie. He is working towards his MBA at the University of St. Thomas. As a board member, Curt is hoping to help increase the visibility of the Alumni Association.

## Class notes

**Patrick Cahalan (B.S. 1973)** is director of research for Intelligent Biocides, Tewksbury, MA. Prior to this, he was employed for 22 years by Medtronic in a number of research and scientific positions. He was made a Bakken Fellow in 1989 at the prestigious Medtronic Bakken Research Center, Maastricht, the Netherlands.

**James Langland (B.S. 1974)** is a physician working at the Dakota Clinic in Thief River Falls, MN.

**Kai Deusch (B.S. 1979)** has been appointed as a director on the biotech team at Apax Partners, joining the company at its Munich Office. Previously, he worked for the management consultancy McKinsey, and in 1999 founded the Medicis Group, a specialist health care and life sciences venture capital company. While at McKinsey he founded McKinsey New Venture Practice, which provides strategic and operational advice to new enterprises in the life sciences sector.

**Steve Matson (B.S. 1979)** is an associate professor of pediatrics at the Medical College of Wisconsin, where he is specializing in adolescent medicine. He is also the director of the Milwaukee Adolescent Health Program, which provides 18,000 visits per year to high-risk teens in Milwaukee.

**Mark Canales (Ph.D. 1983)** was recently hired by LION Bioscience as senior vice president for cheminformatics development. He will be responsible for integrating cheminformatics product development with bioinformatics product development for LION's U.S. operations.

**Kari Kenefick (B.S. 1983)** is working as a technical writer for Promega Corporation in Madison, Wisconsin.

**Todd Juneau (B.S. 1992)** is a lawyer with Nath & Associates in Washington, D.C. working on patent issues.

**Cassandra Moe (B.S. 1994)** recently completed her Ph.D. in the Marine, Estuarine & Environmental Sciences Program at the University of Maryland, College Park. Her work focused on protein purification,



**At the CBS All College Picnic this spring, students, faculty, staff and alumni celebrated the graduation of Class of 2001, the first class to graduate since CBS began admitting freshmen in 1997.**

enzymatics and fish ecology. She started a post-doc at the University of Minnesota in July.

**Melinda Bimberg (B.S. 1995)** relocated to the San Francisco Bay in 1995. She has been working in the biotechnology field and recently began a new job in the toxicology department of Chiron. She welcomes anyone interested in working in the Bay Area to e-mail her at melinda.bimberg@chiron.com.

**Mary Chien (M.S. 1997)** is working toward her Physician's Assistant degree at the University of Texas Southwestern Allied Health Program in Dallas.

**Kim Hillers (B.S. 1997)** recently spoke to the Biology Colloquium classes about her career in veterinary medicine.

**Joseph Fong (B.S. 1998)** recently graduated from the Carlson School of Management with a master's degree in healthcare administration. He has accepted an administrative fellowship with the Providence Health System in Anchorage, Alaska.

**Wade Anderson (B.S. 2001)** is in graduate school at Stanford University.

**Marie Dvorak (B.S. 2001)** is attending graduate school at the Carlson School of Management.

**Dan Owens (B.S. 2001)** is attending the University of Michigan Medical School.

**Margaret Sarafiny (B.S. 2001)** has relocated to Montana, where she is enjoying the wildlife and scenery.



# Honor Roll

We are extremely grateful to the following alumni, individuals, and organizations who have provided financial support to the College of Biological Sciences during Fiscal Year 2001 (July 1, 2000 to June 30, 2001). Every effort was made to list all names accurately. If you detect a mistake, please notify the CBS Development Office at 612-625-7705.



**Members of the class of 2001, the first admitted as freshmen, celebrate at the College picnic.**

**Curtis M. & Janice M. Wilson**  
Dr. Robert C. Wong

## 1960s

Ms. Margaret Johnson Barch  
Dr. A. Linn & Margaret P. Bogle  
Dr. William C. Buh  
**Ms. Kathleen G. Fahey**  
Mr. & Mrs. David R. Foreman  
Mikul & Aparna Ganguli  
**Dr. Norman R. Gould**

**Dr. James E. Burrell\***  
W. W. Carley & C. J. Mac Key  
Dr. Alan E. Comer  
**Mr. Jeffrey T. De Zellar**  
**David & Wendy Devin**  
**Dr. Terry G. & Barbara J. Domino**  
Dr. Allen E. Eckhardt  
**Mr. Mark A. Einerson**  
Dr. Roger H. Erickson  
**Dr. Gunnar J. & Susan J. Erickson**  
Mr. Thomas J. Fischbach  
Dr. Carl E. Frasch  
Dr. Thomas R. Fritsche  
Mr. Jeffrey D. Gabe  
John P. & Nancy K. Harvat  
Dr. Stanley E. Hedeen  
**Dr. John W. Hiemenz**  
Danny & Evelyn Hoffa  
Dr. John D. Jackson  
Dr. Dagmar L. Johnson  
Dr. Daniel V. & Karen P. Johnson  
**Todd R. & Amy E. Klaenhammer**  
**Mr. Arlo S. Knoll**  
**William Kojola & Shayne Dizard\***

**Ms. Kathryn R. Lamar\***  
**James T. & Penny I. Langland**  
Dr. Arlene T. Larson  
M. G. Lindberg & M. J. Hansel  
Mr. Karl J. Ludescher  
**Dr. Douglas R. & Patricia G. Nelson**

**Dr. Douglas L. Nelson**  
**Mr. Timothy R. Nelson**  
**Mr. Daryl E. Nelson**  
**Randi Nordstrom & James Walker**

**Douglas & Mary Olson**  
Mr. Patrick E. O'Regan  
**Dr. Kathleen A. Parson**  
J. Quast Paulu & G. R. Paulu  
**Mr. James J. Pearson**  
Dr. William & Suzanne Peglow  
Mr. Dale W. Perman  
Dr. John H. & Bonnie Rappole  
Dr. John J. Reiners, Jr.  
Dr. Michael D. Rohwer  
**Ms. Susan V. Schauer**  
Dr. Paul W. Schultz  
Sandra H. & Allen V. Seilheimer  
**Gary B. & Jane M. Silberstein**  
Mr. Michael K. Stock  
Dr. Gerald L. Storm  
**Mr. Larry B. Sundberg**  
Mr. Dennis N. Thaden  
Dr. Jeffrey Thorkelson  
Roger & Elizabeth C. Tsang

Drs. Tingchung & Nancy T. Wang  
**Thomas J. & Eileen M. Welna**  
Mrs. Judith L. Wulff  
Dr. Thomas H. Zytovicz

## 1975-1979

Ms. Joan S. Anderson  
Mr. Robert A. Arntsen  
Mr. Carl E. Bauer  
**David A. & Suzanne M. Bernlohr**  
**Dr. Robert W. Bertoy**  
Dr. Paul C. Billings  
**Patrick J. & Anne D. Byrne**  
Mr. Steven E. Clemants\*  
**Henry M. & Claudia B. Colvin**  
**James F. & Carole N. Drake, Jr**  
William & Suzanne Drehmel  
Mr. Roger F. Drong  
Mrs. Milta Rabell Dudek\*  
**Mark E. & Susan M. Edstrom**  
**Ms. Kathleen A. Ferkul**  
**Miss Judith M. Fitterer**  
Drs. C. Fitzpatrick & J. Griswold  
**Mr. David L. Flaten**  
**Ms. Cynthia K. Folland**  
**Mark & Dana Fuller**  
**Dennis Garin & Mary Connolly**  
**Dr. Scott R. & Laurie A. Gauer**  
Dawn E. & Michael K. Georgieff  
Dr. Martin C. Goffinet  
Barbara & Steven Goodspeed\*  
**Dr. Steven R. Hagerman**  
Dr. Timothy & Susan Halloran  
Ms. Karen A. Hansen  
Dr. James M. Haynes  
William & Nancy Henke  
Dr. Paul W. Hladky  
Dr. Robert J. Hofman  
**Paul E. & Nancy M. Huepenbecker**  
Mr. Stephen D. Johannsen  
Mr. Jerome L. Johnson  
**Dr. Steven R. Johnson**  
S. L. Johnson & S. M. Longbotham  
**Dr. Thomas A. Jones**  
Mr. Mark R. Kaster  
**Mary M. & Daniel S. Knudsen**  
**Dr. Jeffrey A. Kohen**  
Ms. Sharon D. Kvistad  
Dr. Richard P. Lampe  
Dr. Margaret E. Latchaw\*  
Mr. Leo G. Lehmicke  
Dr. Nancy G. Lillehei  
**Ms. Patricia D. Lohmar**  
Dr. Daniel & Nancy Lussenhop

## 1930s

Dr. Edgar & Ruth Painter

## 1940s

**Carrell & Grenaviere Kucera**  
Mrs. Elaine Lifson  
**Dr. Richard W. Luecke**  
**Ms. Jean M. Mc Intosh**  
**Drs. Bernard O. & Jean S. Phinney**  
Mr. Max L. Schuster  
**Mr. Kenneth L. Tannehill**

## 1950s

Mr. Aaron W. Burchell  
**Dr. Milton H. Fischer**  
**Mr. Robert C. Hodson**  
Arthur A. & Martha K. Johnson  
**Bruce L. & Marjorie H. Larson**  
**Morris R. & Phyllis A. Olson**  
Dr. Gerald & Kathleen Probst  
**Dr. Orlando & Gloria Ruschmeyer**  
Ms. Anne H. Schauer  
**Dr. C. Ivar Tollefson**  
A. Vincent & Janet B. Weber

**Carol & Gregory Gross**  
Dr. Roy H. & Susan A. Hammerstedt  
Dr. Edgar E. Hanna, Jr.  
Drs. Meredith S. & Richard N. Hill  
**Dr. Richard J. & Patricia L. Kirschner**  
Associate Professor Penelope J. & Howard F. Krosch  
**Mr. John A. Mayo**  
**Professor Douglas C. & Beverly A. Pratt**  
**Larry J. & Sharyn M. Salmen**  
Dr. Jon E. Sanger  
**Mrs. Marcia M. Tholen**

## 1970-1974

Gary A. & Lynda J. Ackert  
Mr. Robert L. Anderson  
**Mr. James D. Anderson**  
Mr. Thomas E. Boelter\*  
**Ms. Paula Brunetti Imai\***  
Dr. Cindy J. Brunner\*  
**Ms. Karen Z. Buggs\***  
Monika & Keith Burau



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 Dr. Karen A. Malatesta  
 Dr. Steven C. Matson  
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 Mr. Edward M. Welch  
 Dr. Jimmy D. Winter  
**Kam & Lo Wong**  
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 Dr. Jeffrey J. Anderson  
 Dr. Patrick J. Antonelli  
 Dr. Donna D. Baird\*  
 Dr. William D. Benton  
**Janet S. Boe & Thomson P. Soule**  
 Jamie T. & Scott D. Bridgham\*  
 Drs. Deborah P. Buitron & Gary L. Nuechterlein  
 Dr. Andrew & Sherilyn J. Burgdorf\*  
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 Dr. Paul L. Cisek  
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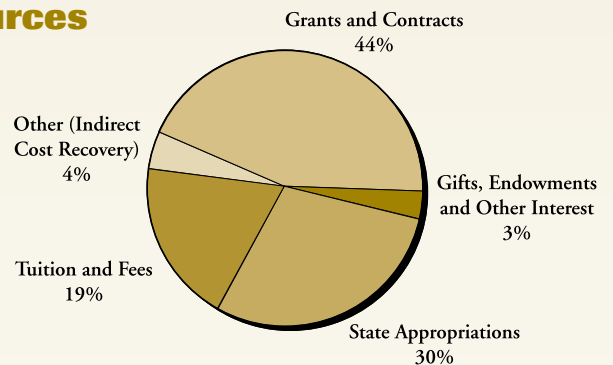
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**Michele & Chris Armstrong**  
**La Vonne M. & Paul B. Batalden**  
 Ms. Amelia J. Birney  
 Ms. Julie A. Bjoraker  
 Dr. David E. Blockstein  
 Ms. Carol J. Brozek  
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**Ms. Paula J. Penning**

**College of Biological Sciences Revenue Sources**

<b>State Appropriations</b>	<b>\$9,657,501 (30%)</b>
<b>Tuition and Fees</b>	<b>\$6,255,601 (19%)</b>
<b>Other (Indirect Cost Recovery)</b>	<b>\$1,456,026 (4%)</b>
<b>Grants and Contracts</b>	<b>\$14,325,256 (44%)</b>
<b>Gifts, Endowments, and Other Interest</b>	<b>\$1,000,000 (3%)</b>
<b>Total revenues</b>	<b>\$32,694,384 (100%)</b>



## CBS Freshman Class, 2001-2002

Number of applications: 1,307

Number of freshmen enrolled: 314\*

### Class statistics:

123 male, 191 female

average age, 18

60 students of color

average high school rank, 90%

average ACT composite, 26.7

208 are from Minnesota

(135 from the Twin Cities metro)

57 are from Wisconsin

\* As per information available in August.

Dr. Robert B. Petersen  
Dr. George E. Plum  
Dr. Nancy J. Poindexter  
James R. & Patricia M. Pray  
Ms. Anne L. Raich  
Dr. Moira L. M. Richards  
Dr. Michael B. Robinson  
Ms. Ruth A. Sendlak  
David R. & Julie A. Simonson  
Dr. John G. Steiert  
Dr. Robert W. & Joan A. Sterner  
Mr. Gary A. Strand  
David A. Walters  
Dr. Mei-Gang Yet  
Dr. James J. Youngblom  
Laurie Zempel Forsythe

Darrin P. Johnson & Charla R.  
Bunton-Johnson  
Ms. Janelle Juarez  
Mr. Todd L. Juneau\*  
Dr. Patricia Jo Keely  
Dr. Philip E. Kerr  
Scott R. Larson  
Dr. Susan E. Lewis\*  
Dr. Zhangiang Liu  
Mary Jo Lockbaum & Scott P.  
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Saliya A. De Silva & Dr. Marie S.  
Pathirana\*

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Skelly  
Robert & Helen Jo Pierce  
Carey & Jennifer Rehder  
Timothy I. and Janelle Durnett  
Richardson\*  
Timothy H. & Karin J. Robinson  
Ms. Marcy C. Salzer  
Dr. Fang-Miin Sheen  
Dr. Gregg D. Simonson  
Dr. Victoria E. Smith  
Dr. Steven M. Stone\*  
Dr. Jami R. Stromberg  
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Mr. Paul C. Truso\*  
Mr. Lee S. Unowsky\*  
Mrs. Carolyn R. Vitek  
Mr. Brent L. Wyrick  
Mr. Jeffrey Y. Yung\*  
Dr. Kathleen C. Zinnel

## 1990-1994

Mr. David S. Blehert  
Mr. Derek R. Brandt  
Dr. Gwenda L. Brewer\*  
Dr. D. Gordon Brown\*  
Dr. Virginia M. Card\*  
Dr. Manuel R. Cortinas  
Joelle M. Crosson  
Mr. Paul E. Cunnien  
Mr. Ross C. Ducept  
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Sarah Catherine & Stefan Tate  
Gantert\*  
Ms. Amy M. Valitchka Gibson\*  
Ms. Amy R. Groszbach  
Ms. Sara J. Heggland  
Ms. Nancy A. Henry-Socha  
Angela L. Hodgson  
Nancy C. & Richard G. Johnson

## 1995-2001

Dr. Sonia M. Altizer  
Shari & Jamie Bankston\*  
Dr. Diane L. Beres\*  
Ms. F. M. Beste  
Kalli-Ann L. Binkowski  
Leslie D. & William D.  
Copenhagen  
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Ms. Lori S. Ehlers\*  
Mr. Michael D. Frenchik  
Robb M. Garni\*  
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Mrs. Rebecca J. Gustafson  
Mr. Leif K. Hembre\*  
Ms. Sara C. Hotchkiss\*  
Ms. Christina L. Hyland\*  
Dr. Christopher Klausmeier\*  
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Mr. Stephan C. Meyer  
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 Professor Patrice A. Morrow  
 Eloise E. & William Nelson\*  
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**Boldface indicates membership in the University of Minnesota Alumni Association/ Biological Sciences Alumni Society.**



# Jane Goodall charms and inspires graduates

After engaging graduates, family members and faculty with her own impression of a chimpanzee welcoming call, Jane Goodall proceeded to uplift them with her commencement address "Reason for Hope," which shares the title of her recent autobiography.

In her talk, Goodall encouraged graduates to recognize and act upon their ability as individuals to help protect the global environment and the creatures who share the earth with humans. In spite of the destructive impact of humans on the planet, she remains very optimistic about our capacity to protect and conserve nature, and urged her audience to share in her optimism and "try to make a difference."

Goodall, who is renowned for her groundbreaking research on chimpanzee behavior, donated all of her field notes and slides to the University of Minnesota, which created the Jane Goodall Center for Primate Studies in her



Jane Goodall speaks at CBS commencement.



Members of the class of 2001, the first admitted to CBS as freshmen.

honor. While visiting the University this spring, she signed books at a reception in her honor and spoke with many students and others who have been influenced by her work.

In addition to the appearance of Goodall, the commencement ceremony was notable because the class of 2001 was the first admitted to the College of Biological Sciences as freshmen.

## College of Biological Sciences

University of Minnesota  
123 Snyder Hall  
1475 Gortner Avenue  
St. Paul, MN 55108

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