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BIOLOGY

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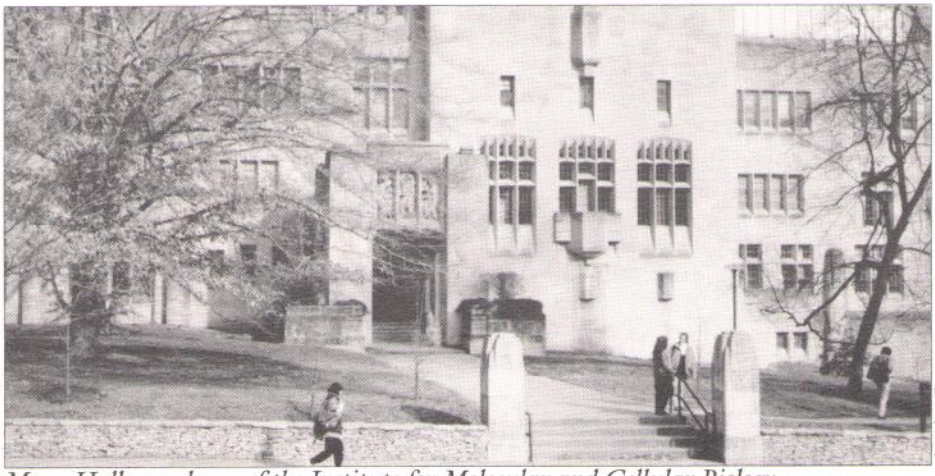
Indiana University
Alumni Newsletter

College of Arts & Sciences Alumni Association

New home for Indiana Institute for Molecular and Cellular Biology

In the near future, 57-year-old Myers Hall will be gutted and renovated to house the Indiana Institute for Molecular and Cellular Biology. While the $12 million provided from federal and Indiana University funding is only half the money originally hoped for, the Institute's director, Rudolf Raff, remains enthusiastic about the expansion. The renovated facility will create new faculty laboratories, generate resources for additional educational programs, and provide research training positions for students.



Annalese Poorman

Myers Hall, new home of the Institute for Molecular and Cellular Biology

Continuing its present role, the Institute will promote programs that are crucial to the development of biotechnology. Such programs include the maintenance of joint-use technical facilities and fellowships for advanced research training of students at the undergraduate, graduate, and postdoctoral levels. While biology is the primary academic discipline, the Institute will remain a multidepartmental complex representing biochemistry, cell biology, developmental biology, genetics, microbiology, molecular biology, and plant biology.

The Institute will sponsor an annual symposium to discuss vital research topics and biotechnology seminars to bring industrial scientists to campus to speak with graduate and postdoctoral-level students and faculty. The Institute will also continue its industrial liaison program, which manages collaborative research and training programs with biotechnology companies.

Most laboratory positions are held by graduate students. However, there is a growing demand for undergraduates to have research experience, and many undergraduates will be working with Institute staff members. "Good students have a strong research focus," Raff says, "and those with laboratory skills have no problem getting jobs or gaining admission to graduate programs.

"Although the emphasis of the new facility is on research rather than teaching, one can't exist without the other," he says. "If we expect to compete in today's market with Japan, we have to create knowledge and keep current. And we need to teach our students how to do this. "

The expanded facility will contain 46,000 usable square feet when it is completed in 1995. Besides housing the Institute office staff, the facility will also be home to specialized laboratories such as the DNA facility, a computer cluster, an auditorium, conference and seminar rooms, classrooms, and a reading room. A connecting link will join Myers and Jordan Halls.

Biology will vacate portions of the west wing of Jordan Hall to accommodate medical science faculty members who will move from Myers Hall. As a result of the move, Jordan Hall will acquire additional laboratory space. Animal quarters will remain in Jordan Hall, as will the Biology Library, which will merge with the Medical Sciences Library.

INSIDE

New center to study animal behavior

With help of new grant, CISAB scientists work to discover how animals adapt to survive.

Learning how animals adapt to survive in changing environments is one of the goals of a new five-year Research Training Grant awarded to Indiana University by the National Science Foundation. As a result of this grant, the Center for the Integrative Study of Animal Behavior (CISAB) has been founded to train future scientists in integrative research (research related to more than one discipline).

Biology, psychology, and neural science form the core disciplines of the program, and its 14 faculty members represent six sub-disciplines: sensory physiology, behavioral ecology, evolutionary biology, developmental psychology, animal learning, and behavioral neuroscience. These researchers study both the "how" and the "why" of animal behavior. For example, they might ask, "Why is that bird singing that complicated song, and how does he know how to do it? What will happen if it gets so noisy in this neighborhood that the other birds can't hear it anymore?"

The idea for CISAB was conceived by its co-directors, Ellen D. Ketterson, professor of biology, and William D. Timberlake, professor of psychology. Ketterson and Timberlake realized that for a clearer picture of how animals behave, both biology and psychology must be utilized. "A greater understanding of how animals perceive and respond to their environments is critical if we are to anticipate accurately the needs of animals as they confront a rapidly changing planet," Ketterson says.

Ketterson and Timberlake submitted their proposal in response to a request from the National Science Foundation encouraging interdisciplinary research. Theirs was one of 10 to be funded out of 500 proposals.

CISAB is located in a newly renovated, three-story brick house halfway between the biology and psychology buildings. The Center serves as a focal point for interactions among students, faculty, and visiting researchers.

Field research facilities include aviaries, greenhouses, old fields, and woods. A 300-acre woodland preserve adjoining Lake Monroe (eight miles south of the campus) and the 90-acre Kent Farm (eight miles east of the campus) are available for research.

Yellowwood Lake (11 miles east of the campus) is home to an individually color-marked population of red-winged blackbirds that has been under continuous study for the past 20 years. Students also have access to mechanical and electrical shops, animal quarters, a neuron tracing system, and a "DNA fingerprinting" facility for determining relatedness among free-living animals (e.g. , a student might ask, "Which of the male red-winged blackbirds living in this marsh actually sired these baby birds?")

"This is a time when people are very interested in animals because we are losing them," Timberlake says. "Young people especially are very concerned. It's imperative that we learn how signals, such as city background noises, affect movement and mating habits. "

In the next few years, Ketterson and Timberlake want "to preserve more green space" for research and education. They hope money will become available to acquire more land near Bloomington for preservation and field study. They plan to increase the number of students from the present 30 graduate and 6 postdoctorals. They also want to continue to sponsor visiting speakers, like Jane Goodall, to promote public insight and understanding of animal behavior.

We Want to Hear from You . . .

IU's Department of Biology and the Alumni Association are always interested to learn about alumni and their activities. Please send your news or change of address to Alumni Publications, P.O. Box 4822, Bloomington, IN 47402-4822. Please check your address label for membership status.

Name _____ Degree/date _____

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Current position/employer _____

News of promotions, publications, awards, personal achievements, etc.

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Biology Alumni Newsletter

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THE COLLEGE

Researchers discover world's biggest bacteria

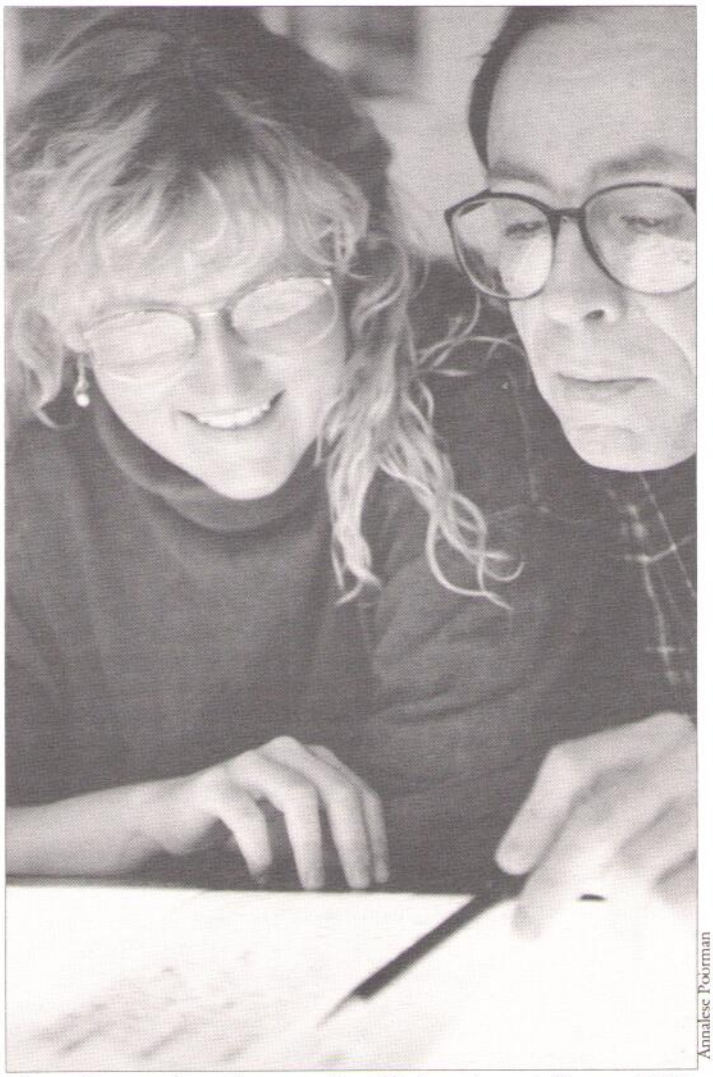
Graduate student Esther Angert and professor Norm Pace take a close look at some 'big bugs.'

A few years ago, graduate student Esther Angert joined biology faculty member Norm Pace's laboratory to do thesis research. Pace told her he had some unidentified microorganisms for her to study. These "big bugs" had been discovered in the intestines of surgeonfish and were thought to be protozoan, a single-celled organism.

Angert's research began when Kendall Clements, a graduate student at James Cook University, first sent Pace the organism. Clements sent the samples to Pace's lab to ask if they could determine what type of organism the "bugs" were. "They were very unusual looking, with strange cell structural features, so it wasn't clear what type of organism they were," Angert says. "They were large like a protozoan but had structural features like bacterial cells and also had some unique features seen in no other known cell."

Through genetic testing, Angert discovered that the organisms are, in fact, bacteria. More specifically, she did a molecular evolution study based on ribosomal RNA (rRNA) gene sequence comparisons. The rRNA sequence data suggested that the creature was related to the bacterial genus *Clostridium;* however, it had new features such as a unique manner of reproduction by producing daughter cells. All *Clostridium* species, as do all bacteria, have no membrane-bound nucleus. Protozoans have a membrane-bound nucleus.

Angert's discovery was startling because until that time, all known bacteria were microscopic. The new discovery, labeled *Epulopiscium*, is large enough that 1 million ordinary microscopic bacteria could fit inside. "The largest specimen we have measured was 0. 57 mm long and 0. 06 mm thick . . . easily visible to the naked eye," Angert says.



Annalese Pourman

Norm Pace and graduate student Esther Angert discuss rRNA gene sequences on an autoradiogram of "big bugs."

"It's an interesting story because it looked like it was going to be a different type of organism. And what's remarkable is that it's enormous."

—Norm Pace

Pace, who has recently been awarded a distinguished professorship, gives Angert most of the credit for the discovery. "Esther had a significant background in biology and wanted to work in molecular biology," he says. "She developed new techniques for analyzing the organism's properties. The problem was it couldn't be cultivated in the lab. It's an interesting story since it looked like it was going to be a different type of organism. And what's remarkable is that it's enormous."

"We knew it was weird," says Angert, "but we didn't know how weird. The discovery just opened up more questions, like how did they get to be so big? What is it doing in the intestine? But since it can't be grown in a lab, we're limited."

Angert would like to continue studying the organism, and Clements is still very interested in comparing the varieties that appear in different surgeonfish species. The variety found in the Red Sea surgeonfish were the first to be studied. Clements subsequently has looked for them in surgeonfish found in Australia's Great Barrier Reef. Speculation is that the big bugs possibly aid in the digestion of algae the fish eats. According to Angert, Pace was hoping it would turn out to be unlike anything else and would represent a new group of organisms.

I was in the right place at the right time," says the modest Angert, who has presented her research at the American Society for Microbiology. "It could have turned out to be nothing. But it turned out to be interesting to people who weren't biologists at all. That was really exciting. I learned a lot about publishing and copyrights…things outside science."

In memoriam

William Breneman 1907–1992

William R. Breneman, 84, the Luther Dana Waterman professor emeritus of zoology, died on Jan. 31, 1992. Breneman's pioneering research on endocrinology shed light on the nature, functions, and interactions of hormones at a time when they were barely understood. He was particularly interested in the regulation of the pituitary gland. The results of his work laid the base for many later advances in the field and earned him an international reputation.

Breneman received long-term funding for his research from the National Institute of Health, the National Science Foundation, and private industry. He was also the author of a widely used college textbook, *Animal Form and Function*, and was listed in *Who's Who in America*.

To thousands of IU alumni, however, Breneman is best remembered for his annual introductory zoology lecture titled "From Kalamazoo to You. "A longtime campus tradition that always attracted a standing-room-only audience of students and professors, his lecture was a vivid account of the history of the planet and the biological history of humans.

By having each inch of the distance between Kalamazoo, Mich., and his lectern correspond to 200 years of Earth's history, Breneman could describe major events of evolution with reference to familiar cities and landmarks on an imaginary journey "from Kalamazoo to you. "

In 1978, the William R. Breneman Lecture was established in his honor at Indiana University by Alpha Epsilon Delta, the pre-medical and pre-dental honor society. The 1992 Breneman Lecture was given by Nobel Laureate James Watson, the co-discoverer of the structure of DNA.

♦♦♦

David Frey 1915–1992

David G. Frey, professor emeritus of biology, died on April 1, 1992, at the age of 76. In 1950, he joined the zoology faculty at Indiana University as an associate professor. He was promoted to professor in 1955 and retired in 1986.

Frey was a pioneer and international leader in the field of aquatic ecology or limnology, concentrating on lakes. He determined the history of lakes by studying the sediments that had accumulated on the bottoms. His work has helped scientists predict the consequences of changing a lake.

"I know of no other such laboratory visited so frequently from abroad, where so much information is so willingly shared and where so much encouragement is provided," said IU biologist Donald R. Whitehead at the time of Frey's retirement in 1986. "The fact that in recent decades Indiana University has become one of the most respected and internationally known centers of study in aquatic ecology is due entirely to the research and teaching of professor David Frey. "

Frey's work took him to Denmark, Norway, Sweden, Iceland, the Netherlands, Ghana, Kenya, South Africa, Sri Lanka, India, Cambodia, Japan, the Philippines, Indonesia, New Zealand, Venezuela, Guatemala, and many parts of North America.

Frey received many honors for his work, including the 1980 Einar Naumann-August Thienemann Model from the International Society of Limnology, election to the Royal Danish Academy of Sciences and Letters, and a Certificate of Commendation from the Ecological Society of America.

♦♦♦

Barbara Shalucha 1915–1992

Barbara Shalucha, 76, associate professor emeritus of biology, died on May 10, 1992. Shalucha was co-founder and director of Hilltop Gardens, a Bloomington Youth Garden-Nature Center, from 1948 until her retirement in 1986. A concern with the instruction of youngsters marked many of her other activities as well.

Shalucha taught horticulture as a non-major course intended for students in recreation, social services, or elementary education. She also offered a practical course titled "School Garden Management" that led to her junior gardening program.

In 1985, Shalucha was appointed a delegate by the China-U.S. Scientific Exchange to lecture on botanical gardens in Beijing, Hanjing, Suzhow, Wuxi, and Hangzhou. In recognition of her pioneering work promoting the cultivation of youth gardens nationally, she was made a member of the advisory board of the Young Garden Council in Washington, D. C., in 1963.

Hilltop Gardens earned presidential citations from the Garden Clubs of Indiana and the National Council of State Garden Clubs. Shalucha herself received the first Youth Gardening Award from national Civic Garden Centers in 1983. In the same year, she was elected to the executive board of this organization and was appointed by former Indiana Gov. Robert D. Orr to the Food and Agriculture Advisory Council of the White River Park Development Commission.

Walter A. Konetzka 1923–1992

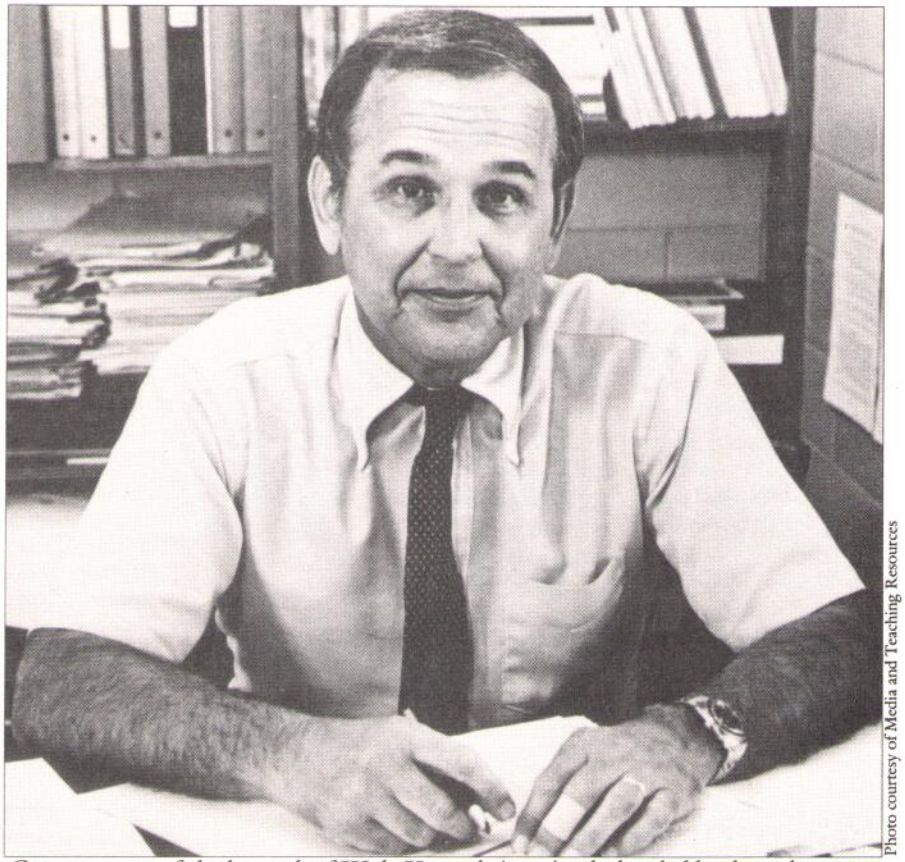


Photo courtesy of Media and Teaching Resources

Cuts were one of the hazards of Walt Konetzka's stained glass hobby; here, he sports his customary Band-Aid.

Walter Konetzka's life was more than academic credentials, teaching awards, publications, and committee work. To describe him only in those terms would be to ignore all that made him Walt.

He had impossible energy. He didn't amble down the hallways of Jordan, he parted traffic like Moses at the Red Sea. He couldn't sit still for more than five minutes. There must be a dip in the floor between the lab table and the blackboard in Jordan 124 from his years of pacing back and forth.

He had enormous sensitivities and some blind spots. Music, especially Mozart, gave him goose pimples. He could put himself in others' shoes better than anyone. He knew how to teach without making people feel stupid. He knew how to be discriminating and critical without criticizing. He was almost always kind, caring, and incredibly thoughtful. But when he wasn't, he was an awesome force—you didn't even want to be in the same town with him.

He inspired academic excellence. He paid attention. He could concentrate ferociously on a process, an idea, or a person. He was effortlessly creative and could confront an issue or a problem and see solutions other people didn't see.

He could (and often did) cut to the chase and wasn't always patient once he got there. He understood that decisions made led to consequences which could be predicted (and sometimes weren't).

He had vision. It isn't surprising that the core curriculum was his idea, and because of the core, biology began hiring molecular biologists before other universities. It isn't a fluke that he established and oversaw the undergraduate advising office. It isn't astonishing that biology (and almost no other department) has established a pattern of rewarding good teaching by faculty in much the same way good research is rewarded.

He had amazing skills and enthusiasms. His ability to translate color and texture into stained glass was uncanny. He was more than a talented amateur and approached stained glass and a subsequent interest in arts and crafts with his normal single-mindedness.

He flirted with woodworking and, given time, probably would have printed wallpapers. He was an immensely private person, a difficult characteristic for someone so often in the limelight. He hated confrontations even though, as a champion of the underdog, he was part of many. He invented makeup exams so he wouldn't have to pass judgment on students' reasons for missing tests.

He had a wonderful sense of humor, was a great audience, and was a very funny man. His favorite story, and one he told often, occurred when Rollin Richmond, then chair, was trying to convince him to take the position of associate chair. They were standing in the hallway talking, and classes let out. Richmond's eloquent pleas prompted Konetzka to say, at his usual decibel level, "All I want to be is a lousy professor." A passing student immediately shot back, "Then you should be a happy man."

He was a happy man and shared his happiness with all his usual intensity. He enjoyed microbiology, teaching, retirement, his friends and students, his family, his grandchildren, his garden, and music, and he worked as hard at them as everything else in his life.

It is typical of his impact that Bloomington's arts community will miss him after only a few years of his attention almost as much as all of us who delighted in him for so long. He should have had more time, but he would have been the first to say, "What ever made you think life is fair?"

Walter Konetzka's life made a difference. How many of us can say that?

The Konetzka family has established an endowment fund in microbiology in Dr. Konetzka's honor. Contributions (made payable to the IU Foundation, the "Walt Konetzka fund") from those whose lives he touched would be welcomed.

Phillips closes in on 'sixth sense'

How do animals sense the Earth's magnetism? In the Sept. 10 issue of *Nature*, faculty member John B. Phillips and his colleague S. Chris Borland, IU staff scientist, reported their findings of how certain wavelengths of light directly affect the magnetic compass sense of semiaquatic salamanders.

Behavioral and neurophysiological studies conducted elsewhere have indicated a link between magnetic sensitivity and the visual system. However, Phillips and Borland have produced the first specific evidence that some animals use a light-dependent mechanism to detect Earth's magnetic field.

"If researchers can confirm that specialized photoreceptors are responsible for animals' magnetic sensing ability," says Phillips, "it would provide new insight into the competing selective pressures and functional constrains that have shaped the vertebrate visual system."

Alumni news

1920s

Dorothy McFarlin Kennedy, BA'22 Plant Science, MS'50 Education. Former junior high school teacher, now retired. Taught science, math, English, home economics, and physical education. Received an Emeritus Award in '72 for 50 years of faithful service. Member of Retired Teachers Association, ADK Teacher's Sorority, American Association of University Women, and numerous other organizations. Fondly remembers her days at IU when she would visit the Book Nook to hear Hoagy Carmichael play the piano.

1930s

Otis R. Bowen, BA'39 Anatomy/Physiology, MD'42, LLD'76. Rose from being a family doctor to speaker of the Indiana House of Representatives to governor to U.S. secretary of health and human services under President Ronald Reagan. Is no longer heavily involved in politics, but admits he is "still on the fringes." Assisted in the successful senate campaign of Kent Adams.

1950s

Louis W. Brittingham Jr., BA'54 Zoology. Chairs radiology department at Sunnyside Community Hospital in Sunnyside, Wash. Named president of the Washington Osteopathic Medical Association.

James P. Comer, BA'56 Zoology, ScD'91. Is associate dean of the Yale School of Medicine, the Maurice Falk Professor of Child Psychiatry at the Yale Child Study Center, and director of the Yale Child Study Center School Development Program. Named recipient of the McGraw Prize in Education in 1990 and an IU Distinguished Alumni Service Award in 1992. Received honorary doctorate from Brown University.

Janet S. Storlie, BA'57 Biological Sciences. Recently assumed the position of executive director of the Lincoln Park Chamber of Commerce.

Joan Erickson Whalen, BA'58 Biology. New granddaughter Alison Elizabeth makes four grandchildren. Taught biology course at Houston Community College.

1960s

Kirby B. Tarry, MA'62; MD'66 Self-employed urologist. Elected chief of staff for 1991-92, Physicians and Surgeons Hospital, Midland, Texas.

John F. Helfrick, BA'63 Zoology, DDS'67. Directs the health science center's cleft palate/maxillofacial deformity center at the University of Texas-Houston. Appointed a member of the joint commission on accreditation of health care organizations. Chairs oral and maxillofacial surgery department at UT-Houston's dental branch.

1970s

Joseph M. Berman, BA'71 Biology. Active in developing improved knee surgery techniques and rehabilitation. Presented results of new operation to the international forum at the Society of Sports Medicine in Israel. Recently completed video regarding improved knee rehabilitation. Fellow of the American Academy of Orthopedic Surgeons, Fellow of the International College of Surgeons, and Fellow of the International Arthroscopy Association.

Gary A. Booher, BA'77 Biology. Executive director of the Three Rivers Ambulance Authority, where he has been since '87.

Robert Keith Brateman, BA'75, MD'79. Established private medical practice in '89 in Michigan.

Jeffrey Camm, BA'76 Biology. Recently named Air Force special consultant in pediatric dentistry to the assistant surgeon general for dental services.

Patrick A. Cleary, AB'76 Biology. Recently elected president of Associates in Surgery of Muncie. Obtained certification in thoracoscopic procedures.

Nina L. Etkin, BA'70 Biology. Accepted new academic appointment and will transfer to the University of Hawaii.

Gerald Feldman, BA'75 Biology, MS'77. Employed as director of the DNA diagnostic laboratory in the medical genetics and birth defects center at Henry Ford Hospital in Detroit.

Stephen L. Hendrix, BA'74 Biology. Recently completed the Fleet Fighter air combat maneuvering readiness program.

Horton H. Hobbs III,PhD'73 Zoology. Elected member of The Explorers Club for his work as a speleologist (cave explorer) specializing in limnology and aquatic ecology and the application of his research to his classroom teaching. Explored caves in Hawaii, the Yucatán peninsula, Mexico, and Belize on a National Science Foundation sponsorship during summer '92. Expects to join an international expedition to do reasearch in caves in China this year.

Priscilla P. Marchus, BS'71 Biological Sciences. Medical technologist in a small hospital laboratory, working in all departments including micro, chemistry, and hematology. Has two sons, a dog, cat, and two goldfish. Enjoys singing in a women's chorus and other small groups. President of the Santa Barbara Treble Clef Chorus. Also enjoys bird watching.

Terry W. Marsh, BA'77 Biological Sciences, MD'81. Co-authored *Gettysburg*, a musical drama, with **Andrew C. Marsh,** BA'81, and **John S. Marsh**, BS'84. The musical premiered at the Paramount Theatre in Anderson in October '92.

Denise R. Norberg, BA'74 Biological Science. President, Gust A. Norberg & Son Inc., since 1985. Recipient, President's Award '90 and National Secretary, '91. Member of National Association of Women in Construction. Executive Committee member of the Chicago Building Congress. Enjoys golf, Latin, Spanish, and other languages.

Daniel Patrick O'Connor, BS'77 Biology. Employed as senior investment analyst for Delta Airlines since 1985. Recipient of the CFA (Chartered Financial Analyst) in '89. Married to Patsy and father of son,

Rob. Also has two cats named Max and Bogie. Enjoys wine collecting, traveling, gardening, and reading.

Dirk T. Pruis, BA'76 Biology, MD '80. Opened two offices in Cincinnati to practice orthopedic surgery. He specializes in total joint replacement and fractures in adults and children. He and his wife, Linda, have one child, Emily. They reside just northeast of Cincinnati.

Mark Sheehan, AB'70 Botany; MA'72 Plant Sciences; PhD'79. Employed as manager of publications and technical communications administrator with University Computing Services at IUB, 1982-present. Author or ghostwriter of articles and essays on computing published in the IU computing center journals. Elected vice president, IUB Professional. (staff) Council. Presently secretary to the Board of Trustees of the Indiana chapter of The Nature Conservancy. Member of Association for Computing Machinery. Mark and wife Kathy have two sons, David and Michael. Enjoys aviation, backpacking, and Cub Scouts in spare time.

Thomas Roberts, MA'76. Appointed pastor at Christian Life Center in Morrisville, Vt.

1980s

Piyatilake Adris, BS'89 Microbiology. Applied to St. George's University School of Medicine. Working as research assistant in field of microbiology. Living in Malaysia with his wife Visaka Kumori Chanderasane.

Andrew Alexander, BS'89 Biology. Attending IU School of Dentistry, expecting graduation May '93.

John D. Alexander, BS'86 Biology. Lives in Kentwood, Mich. Employed by Curtin Matheson Scientific as a sales representative. Enjoys snow skiing, rock climbing, golf, and bow hunting. Active member in the National Ski Patrol. Attends the First Evangelical Free Church.

Pat Barron, BS'89 Biology. Employed as Quality Control Inspector in Evansville. Enjoys motorcycle riding cross-country during summers.

Henry Jon Bausback, BA'89 Biology. Attending IU School of Optometry. Member of the American and Indiana Optometric Student Association Elected fire marshal of his floor in Eigenmann Hall. Enjoys golf, tennis and swimming. Member of IU Alumni Association

David Biggs, BA'79 Biological Sciences, MBA '81 Director, Cook Cardiology, Bloomington. Married to Sandy who received RPh from Purdue. Has two children: son Nicholas and daughter Casey. Member of Phi Gamma Delta board of Chapter Advisors. Enjoys all types of exercise (running, biking, tennis, racquetball, roller blading). Also enjoys friendly battles with wife regarding IU-Purdue athletics.

Jack A. Bobo, BS'89 Biology. Enjoyed climbing Mt. Roraimg in Venezuela in '88. Teaching for the Peace Corp in Central Africa. Plans to attend graduate school upon return to the United States.

Richard L. Bohnenkamp Jr., BS'89 Biology. Attending IU Medical School.

Michael D. Boyer, BS'89 Core Biology. Attending IU Medical School.

Gay W. Brodersen, BA'89 Biology. Attending University of Illinois Dental School in Chicago. Enjoys being with friends, riding bikes along the lake, and reading in her spare time.

Timothy Alan Busteed, BS'89 Biology. Working on master's degree in medical genetics and on MD at IU Medical School. Recipient of a March of Dimes fellowship for birth defects research.

Lisa Le Farris, BS'89 Microbiology. Married Jerry Gootee after graduation. Employed by the University of Cincinnati Medical Center in a research position.

Christina Cragoe Fox, BS'89 Core Biology. Attending IU Medical School. Married to Bartholomew Todd Fox (IU BFA'91) in June '91. Adopted a basset hound named Lady.

David Hugh Garelick, BA'89 Biology. Attending IU Medical School. Employed by Northwestern University at the Center for Health Services Policy Research during summer of '90.

Paul A. Gill, BA'89 Biology. Attending IU School of Optometry in Bloomington. Enjoys live music and playing tennis.

Stephen Eric Goldberg, BA'89 Biology. Attending IU Medical School on the IU Northwest campus.

Robert Greenberg, BS'89 Biology. Attending St. Louis University School of Medicine.

Kerry Elizabeth Greene, BS'89 Core Biology. Attending University of California, San Diego in neurosciences PhD program. Research interests in neuroendocrinology, specifically GnRH and its regulators. Enjoys hiking and going to the beach.

Jonathan W. Hamilton, BS'89 Biology. Completed one year of graduate school, then went to work for the University of Wisconsin's cardiology research center.

Jeffrey C. Hatcher, BS'89 Microbiology. Attending University of Louisville Medical School. Summer research at Northwestern University's Medical School.

Carole Jean Hauser, BS'89 Biology. Worked as science/math teacher in a high school summer after graduation. Attending USC Medical School.

Lisa Charlene Hendricks, BA'89 Biology/Psychology. Attending St. George's University School of Medicine in the West Indies.

Kristin B. Highland, BA'89 Biology/Chemistry. Attending IU Medical School.

Dirk R. Hines, BS'89 Biology. Attending at University of Cincinnati College of Medicine. A part of the Air Force Health Professions Scholarship Program. Married Amy Godby (IU BS'90) in June '90.

Daniel A. Hodek, BS'88 Microbiology. Attending IU Medical School. Employed by Quad Pharmaceuticals Inc. as microbiologist. Member of Indianapolis Bicycle Team.

Steven Kurt Hopf, BS'89 Biology. Attending IU Medical School at Evansville.

David P. Joseph, BS'89 Biology. Employed by EMS Heritage Inc. as an environmental analyst. Enjoys playing golf and active in coed sports at work. Stays in shape by working out at the local health club.

Mary Jozwiak, BS'89 Biology. Attending IU Medical School-Bloomington.

Diane J. Kania, BA'89 Biology/Psychology. Employed as a child care counselor at a youth residential substance abuse facility for Tri-City Comprehensive Community Mental Health Center in East Chicago, Ind.

Michael A. Kellams, BS'88 Biology. Attending medical school at Michigan State, college of osteopathic medicine. Intern at Michigan State, Ingham Medical Center. Vice president of Lambda Omicron Gamma national medical fraternity. Faithful fan of IU athletics.

Stephen E. Kemker, BS'86 Biology, MD'90. Is in the last year of the family practice residency program at Community Hospitals of Indianapolis. He and his wife, **Kalen Carty**, BS'86, MD'91, plan to practice together in rural Salem, Ind., and eventually in Pekin, in the building in which Carty's father practiced for 29 years.

Sheryl Kaiser King, BA'83 Biology, MD'91. Pediatric resident at IU Medical Center.

Sarah K. Kirtland, PhD'83. Joined the U.S. Navy in May '85 and recently reported for duty at National Naval Medical Center, Bethesda, Md.

Kathleen Ann Klein, BS'89 Biology. Attending IU Medical School at Fort Wayne. Engaged in research for Cardiology Consultants on calcium channel blockers in Fort Wayne. Enjoys playing golf in spare time.

Michael G. Klug, BS'89 Core Biology. Attending IU Medical School.

Jennifer Lynn Krieger, BS'89 Biology. Attending IU Medical School as a graduate student in the medical genetics department. Areas of interest are genetic epidemiology and population genetics.

Douglas Todd Lawson, BS'89 Biology. Attending IU Medical School.

Gwen Annette Lesoine, BS'89 Biology. Employed by IUPUI as a medical research technician.

Richard Lind, BA'82 Biology/Chemistry. Married Mona Mejac in September '90. Opened private practice in Milwaukee, caring for disorders of the foot and ankle.

Michele R. Maxwell, BS'89 Biology. Attending IU Medical School-Indianapolis. Hopes to specialize in dermatology or internal medicine with subspecialty in pulmonology.

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Martin Neil May, BA'82 Biology. Named "Hawkeye of the Year" and "Instructor Pilot of the Year" in 1990.

Ira Kenneth Means, BA'89 Microbiology. Attending IU Medical School, PhD program in the department of pharmacology/ toxicology.

Carl Eugene Medsker, BA'88 Biology. Pursuing a PhD in information sciences at Drexel University. Directing a clinical lab at the hospital of the University of Pennsylvania. Involved in raising a family while pursuing education. Has completed two papers which are ready for publication.

Stephen Louis Mehay, BS'89 Biology, received his master's degree in environmental affairs at IUB in '91.

Karen O'Keefe Melbert, BA'89 Biology. Employed by Parke-Davis as a pharmaceutical sales representative. Married in October '91.

Charlotte Free Miller, BA'83 Biology. Employed as a manufacturing engineer manager at Procter & Gamble paper products division. Married Cliff Miller in '86, lives in northeastern Pennsylvania.

Paul Edward Mitchell, BS'89 Core Biology. Attending medical school at University of Louisville. Plans to travel to Europe during summer months.

Mary Beth Mock, BA'89 Biology/Psychology. Attending IU School of Law-Bloomington, as well as pursuing a master's degree in environmental science from SPEA-Bloomington. Enjoys her cat Chelsea and photography in what spare time she has. Plans to practice environmental law.

Sibyl Munson, BS'88 Biology. Attending University Wisconsin-Madison, pursuing PhD in the department of bacteriology.

Wanda I. Nazario, BS'89 Biology. Attending school of dentistry at the University of Puerto Rico. Involved in social activities and organizations. Class representative for the American Student Dental Association and upcoming NED for the International Association of Dental Students.

Susan Corwin Nettleton, BS'89 Biology. Currently residing in Bloomington, raising daughter Michelle.

Kathy Lynn Osborn, BA'87 Biology. Selected as Big Sister of the Year by Monroe County in '92. Employed as a transition specialist with the Institute for the Study of Developmentally Disabilities. Enjoys spending time with her "Little Sister" hiking, camping, eating out, and shopping.

Sarah E. Owen, BA'89 Biology. Employed by Upjohn Pharmaceutical Company as a marketing representative. Lives in the Lincoln Park area of Chicago.

Todd R. Parody, BS'89 Biology. Pursuing a PhD at IUB.

Shawn D. Pearcy, BS'89 Biology. Attending graduate school at Washington State University seeking master's in zoology, followed by a PhD in zoophysiology.

Lance R. Petersen, BS'89 Biology. Attending Texas A&M University College of Medicine. Married and has one child. Enjoys sailing. Employed by a chemical company in Irving, Texas.

Harvey G. Phillips, BA'89 Biology/Political Science. Attending Law School-Bloomington and operating Southern Indiana Adventures Inc., a small recreational commercial enterprise.

A.J. Pillai, BA'86 Biology. Resident in oral/maxillofacial surgery at Long Island Jewish Medical Center.

Charles D. Pratt, BA'89 Biology. Attending IU Medical School at Evansville. Involved in externship at Deaconess Hospital in Evansville.

Vicky Pratt, BS'88 Biology. Co-authored two abstracts: "Molecular Analysis of the PLD Gene of Affected Individuals with Pelizaeus- Merzbacher Disease" and "Possible Cryptic Splice Site Found in the PLP Gene in a Patient with Pelizaeus-Merzbacher Disease."

Long T. Quan, BS'89 Core Biology. Pursuing MD/PhD at Duke.

Karen Marie Redmond, BS'89 Microbiology. Employed at IUPUI's Krannert Institute of Cardiology as a research technician. Enjoys playing tennis.

Tina Rife-Bastin, BS'78 Microbiology, MS'83 Science. Employed as scientific systems analyst at Eli Lilly & Co. Lives in Greenfield with husband Tom Bastin and two daughters, Katie and Kelli.

Donald R. Ritter Jr., BA'89 Biology. Employed by Boehringer Mannheim Corp. in the biochemical products division. Responsible for new product development, product promotions, and current/future market analyses.

Catherine C. Robb, BS'89 Biology. Attending graduate school at the University of Connecticut in the ecology and evolutionary biology. Served as rehearsal accompanist for a campus choral group and plays on the department's intramural softball team.

Melissa Tipton Roth, BS'89 Biology. Attending medical school at IUPUI. Married to Ken Roth, an electrical engineer at PSI. Member of Phi Rho Sigma, AMA, Medical Student Council (secretary), American Academy of Family Physicians, Plainfield Chapter of OES (chaplain). Also decorates cakes.

Jerry L. Rushton II, BA'89 Biology. Attending IU Medical School. Summer research at Methodist Sports Medicine Clinic.

Jeffrey Sassmannshausen, BS'89 Biology. Attending IU Medical School. Married to IU graduate Loretta Baker Sassmannshausen, BS'89 Microbiology, who is doing herpes virus research for Eli Lilly & Co. They have a new daughter, Connor Marie.

Stephanie Schupp, BA'89 Biology/Environmental Studies. Resided in Washington, D.C., worked as an intern for the Center for Marine Conservation immediately after graduation. Accepted a position as marine environmental educator at Jekyll Island 4-H Center, Jekyll Island, Ga.

James Wallace Sego, BS'89 Biology. Attending University of Osteopathic Medicine & Health Sciences in Des Moines, Iowa. President of the local Student Osteopathic Medical Association.

George Legrand Selden Jr., BS'85 Biological Sciences. Teaching science at New Miami High School, Miami, Ohio. Enjoys golf.

Kimberly S. Shaffer, BS'89 Biology. Attending Southern Illinois University at Carbondale, pursuing a master's in zoology with a concentration in animal behavior. Plans to enter Peace Corps after receiving master's.

Lori E. Sieboldt, BS'89 Microbiology. Attending IU Medical School, medical technology program.

Patrick Reid Smith, BS'89 Biology. Employed at University of Cincinnati School of Medicine as a research assistant. Plays golf, is involved with area high school mentoring program for at-risk students, and is restoring an old trumpet.

John Kingsley Sparzo, BS'89 Biology. Attending IU School of Medicine. Married Mandy Fogel in July '89. Active in Amnesty International.

Richard James Steffy, BS'89 Microbiology. Employed by the virology research lab of the IU Medical Center. Enjoys painting, music, reading, exercise.

Diana Suzanne Verschoor, BS'89 Biology. Attending University of Illinois Dental School. Resides in Park Ridge, Ill.

Mark J. White, BA'89 Microbiology. Employed as senior research lab technician at the IU Medical Center. Enjoys mineral collecting, cycling, running, backpacking, and photography. Member of the Nature Conservancy and the American Museum of National History.

Susan Bultman Wier, BA'83 Biology. Currently owner/ president of Sutra Financial Services. Married with two children, three grandchildren, one foster daughter. Involved in the Red Cross, American Business Women, and Bloomington Hospital Seniority +. Enjoys painting ceramics, gardening, reading. Currently writing a novel.

Barbara J. Wills, BA'81 Biology. Employed as sales representative for Reid-Rowell Pharmaceuticals in Corpus Christi, Texas.

Andrew A. Wiseman, BS'88 Biology. Employed as lab administrator in the Biotechnology Services Division of Microbiological Association, Inc. Pursuing real estate license.

Margaret A. Wohlenberg, BA'89 Biology/Mathematics. Attending graduate school in marine ecology at the University of North Carolina at Chapel Hill.

Darren M. Yoakum, BA'89 Biology. Employed as a pharmaceutical sales representative for Warner Lambert Parke-Davis.

David G. Zipes, BA'89 Biology. Attending Medical School.

Andrea K. Zipprich, BS'86 Biology. Graduated from the University of Missouri-St. Louis School of Optometry. Currently employed at Dakota Clinics in Thief River Falls, Minn.

1990s

Michael E. Ainsworth, BS'91 Biology. Attending IU Medical School. Enjoying spare time playing golf.

George Alavanja, BS'91 Biology. Attending IU Medical School. Employed as medical extern at St. Anthony Medical Center in Crown Point.

David M. Aronoff, BS'91 Microbiology. Attending Tufts University, School of Medicine. Married to IU graduate Kelly Hill, who is a management trainee.

Tylene Baldwin, BS'91 Biology. Employed by Boehringer Mannheim Corp. as a medical service representative in the diabetes and urinalysis division. Married to Jeff Baldwin and has a son, Zachary.

Holiday Wellington Banta, BA'90 Biology. Attending Vanderbilt University College of Law.

Murray E. Bartholeme, BS'91 Biology. Employed by Tom Wood Carmel-Nissan as a salesman. Anticipating returning to medical school.

Michael Scott Beltz, BS'91 Biology. Attending IU Medical School.

Jeffrey A. Berger, BS'91 Core Biology. Attending University of Kentucky Medical School. Looks forward to relaxing summers and a chance to come back to IU for visit.

Rachael S. Bowles, BS'90 Core Biology. Attending IU Medical School.

Carol Ann Brandenburg, BA'90 Biology. Working toward teacher's certification at graduate school at Illinois State University. Began student teaching in fall '91.

Ellen C. Buechler, BS'90 Biology. Attending veterinary school at Purdue. Hobbies include biking (die-hard Little 500 fan), reading, and working with animals.

John M. Burson, BS'91 Core Biology. Attending University of Iowa Medical School. Received an American Heart Association Research fellowship for the 1992-93 school year. Involved in a medical education community orientation rotation at Des Moines Methodist Hospital during summer '92.

Lisa Renee Busick, BS'91 Biology. Attending Chicago College of Osteopathic Medicine, leaning towards the area of pediatric medicine.

Stephanie Ems, BS'91 Core Biology. Pursuing PhD in medical and molecular genetics at IUPUI. Enjoys walking, computers, and crafts. Worked as lab technician in Palmer Lab at IUB for past year.

Susan E. Fantini, BA'90 Biology. Employed by American Cyanamid in New York, doing molecular biological research in the area of fermentation development.

Laura Beth Finch, BS'91 Biology. Attending IU Medical School on a regional campus. Employed as an extern at St. Mary Hospital in Hobart.

Derek Raymond Fleitz, BS'91 Biology. Attending IU School of Dentistry.

Bret Mitchell Ford, BA'91 Biology/Chemistry. Attending IU School of Dentistry.

Michael K. Frye, BA'91 Biology/Chemistry. Attending IU Medical School.

Martha F. Gerteisen, BA'90 Biology. Attending IU Medical School. Did summer research at a family practice center on campus. Enjoys aerobics/jogging.

Morris R. Gieselman, BS'90 Biology. Attending IU Medical School. Plans to pursue orthopedic surgery.

Tim Grundhoefer, BS'91 Biology. Employed as an agro-forestry extensionist in rural Paraguay.

Michael C. Hardacre, BS'91 Biology. Attending IU Northwest in medical studies. Elected to the board of trustees of the Indiana State Medical Association. Represents Northwest Center for Medical Education to the medical student section of the American Medical Association.

J. Scott Heldman, BS'91 Biology. Employed by Bristol-Myers-Squibb, Princeton Division, as a pharmaceutical sales representative.

Paige C. Hodges, BS'91 Biology. Accepted position with CICA.

Carolyn Jacob, BS'91 Biology. Attending University of Illinois at Chicago Medical School. Enjoys Stairmaster workouts and rollerblading. Member of Illinois Community AIDS-Related Education.

Onda Barton Jenks, BS'91 Biology. Employed by Purdue University in the department of botany and plant pathology. Married to Matthew Jenks. Active member of River Valley Evangelical Free Church in West Lafayette.

Julia S. Jones, BS'90 Biology. Pursuing master's degree at Penn State University. Intends to pursue a career as an RD and have a private practice. Enjoys playing tennis, softball, and visiting fiancé in Delaware.

Julie Caryl Ketner, BS'90 Microbiology. Employed by Humana Women's Hospital in a human in-vitro fertilization laboratory.

Stuart D. Klein, BA'90 Biology. Attending University of Connecticut School of Dental Medicine.

Susan E. Knight, BS'90 Biology. Attending IU Medical School.

Sheri L. Laird, BS'91 Biology. Attending medical school at IUB. Engaged in research in medical sciences department.

Gregory Lew, BS'91 Biology. Intending to pursue master's degree in physical therapy at Washington University in St. Louis.

Leslie Charles Lockridge, BS'91 Biology. Attending Chicago Medical School University of Health Sciences.

Dan Methuselah, BS'91 Biology. Attending Scholl College of Podiatric Medicine.

Joshua Simon Miller, BS'91 Biology. Attending Ohio University College of Osteopathic Medicine.

Andrew J. Minardi Jr., BS'90 Biology. Attending IU Medical School at IU South Bend campus. Planned to take medical boards exam in '92 and to continue education in Indianapolis.

Melissa Munkwitz, BS'91 Core Biology. Enrolled in the Peace Corps serving in Bnin, West Africa. Engaged in research involving the eradication of the Guinea worm in conjunction with UNICEF.

Mathew Orme, BA'91 Biology. Attending IU Medical School on a Naval scholarship. Attended officer's training school in Newport, R.I. Employed by the Naval Hospital at Pensacola Naval Base and flight school summer '92.

Jennifer J. Phegley, BA'91 Biology. Employed by Stepan Co. as a sales representative.

Richard A. Phillips, BS'91 Biology. Working with Peace Corps in Kenya. Enjoys most sports and plays in several basketball and softball leagues.

Barbara Kirchgassner Rennekamp, BS'90 Biology. Since graduation has married. Will be returning to school to receive teaching certificate for high school biology/chemistry.

Tonia L. Parker Ruddock, BS'90 Biology. Attending IU School of Medicine. Worked at Methodist Hospital during summer program, health & medical education in OB/GYN. Married in June '91.

Andrea L. Rybolt, BS'91 Biology. Received teacher's certification to teach secondary biology and chemistry.

Lisa Yvette Sarul, BA'91 Biology. Employed as a hospital specialist pharmaceutical representative for Merck and Co.

Julie Marie Scanlan-Soyka, BA'91 Biology. Laboratory technician for hepatitis quality assurance lab at Abbott Laboratories. Volunteers for the crisis hotline "Talkline."

Sonja Schaltenbrand, BS'90 Biology. Attending IU School of Medicine. Enjoys biking, scuba diving, and making stained glass.

Suzanne Stepich, BA'90 Biology. Attending law school at Indianapolis. Employed as law clerk at Mendelson Kennedy Miller Muller and Hall. Enjoys pets: fish, guinea pig, and a new puppy.

Jon Lee Stockrahm, BS'91 Biology. Attending Ohio University's osteopathic medical program.

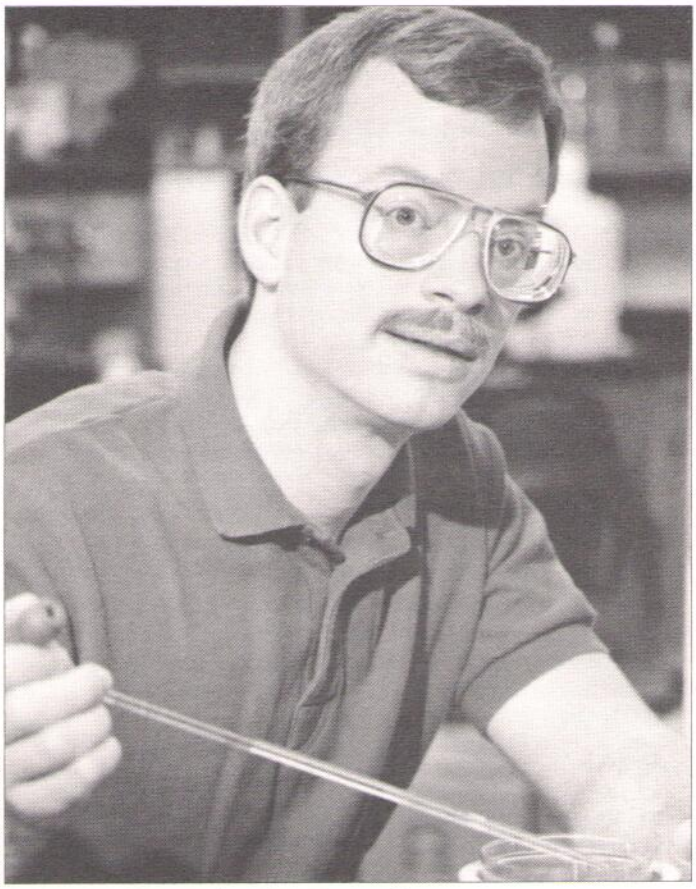
Diana Toledo, BS'91 Microbiology. Serving in the Peace Corps as a volunteer in the Central African Republic.

Sonja Trajkovski, BS'91 Biology. Attending IU School of Medicine.

Christopher Lee Wade, BS'91 Biology. Attending IU School of Medicine.

Robert Woodburn, BS'91 Microbiology. Attending IU Medical School. Hobbies and interests include sports as time allows.

Pamala L. Zimmers, BS'91 Biology. Attending University of Michigan Dental School. Plans to serve in the Peace Corps after graduation.



Annalese Poorman

Biology faculty member Alan D. Bender

Alan Bender named 1993 Searle Scholar

Assistant professor receives grant to study yeast cells

Yeast cells are very simple, with a much smaller set of genes than humans cells. But yeast and human cells share many of the same kinds of genes, and that offers opportunities to learn about human diseases such as cancer.

"For example, we probably share with yeast some of the genes that direct the assembly and propagation of cells," says biology faculty member Alan D. Bender. Bender has been awarded a $180,000 grant by the Searle Scholars Program in Chicago to support his research in developmental biology.

Searle Scholars are newly appointed assistant professors who have already conducted innovative research and who have given evidence of having the potential to make significant contributions to biological research over an extended period of time. Bender is one of 17 Searle Scholars named this year.

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