

S U M M A T I O N

The newsletter of the Division of Natural Science and Mathematics at Morningside College, Sioux City, Iowa

SPRING 1999

Morningside One of 30 Schools in the Nation Invited to Apply for Grant

Biology professors Dr. Jane Hey, Dr. Mary Leida, and Dr. Michele Arduengo didn't spend their spring break on the beach in Cancun. Instead, they teamed up with Dr. Eugenia Farrar from Iowa State University to write a collaborative research proposal for undergraduates. The group wrote a preproposal in January that was reviewed by the National Science Foundation (NSF). Out of 200 schools submitting pre-proposals, Morningside and 29 other colleges were invited to submit a full proposal to NSF. This grant, if awarded, will bring over half a million dollars to the college to support faculty and student summer salaries and approximately \$50,000 in new equipment that can be used not only for research but also for teaching.

The reviewers at the National Science Foundation commented positively on the preproposal saying that the research project described "is a beautiful example of integration across disciplines, including field work and laboratory work." The grant proposes to study development of tadpoles of the Plains Spadefoot Toad, *Spea bombifrons*. Farrar and Hey have studied this amphibian for several years looking at mating behaviors and documenting

populations of this toad in Western Iowa. This toad over winters in Iowa by digging deep burrows, and surfaces only in the summer to mate in ephemeral ponds. One particularly interesting feature of this animal is that the tadpoles exist as two different morphs, the default omnivore and a faster growing carnivorous tadpole that feasts on fairy shrimp, tadpoles of other frogs and toads, and on its own tadpole siblings. The research team is interested in learning what triggers the development of the carnivorous morph.

Hey and Farrar propose to lead a student team that will look at thyroid hormone levels in these tadpoles, since thyroid hormone is predicted to play a major role in this developmental process. Leida will use her expertise in histology to document differences in the thyroid gland and intestine between the carnivore and omnivore. Arduengo is focusing on the genetic controls of this process by asking if genes known to be important in frog development respond to thyroid hormone in the Spadefoot toad.

In addition to supporting summer research activities, the grant will provide the resources necessary to extend research into the academic year at

Morningside, further enhancing the research rich environment in the science division. The grant will provide basic equipment such as a refrigerated centrifuge, UV light box, microtome, and PCR machine for use by the researchers and by students enrolled in biology classes. Summer research students will attend at least one regional meeting, and faculty members will be able to attend national meetings in their field in order to present research results. The grant also contains provisions for working with the Admissions Office to increase the

number of students in traditionally under represented groups studying in the sciences at Morningside.

If the grant is funded, Morningside will be one of ten colleges selected to receive this prestigious award. The authors of the grant are waiting anxiously for the August 1999 announcement of grant awards. Dr. Sam Ward, Professor of Cell Biology at the University of Arizona, Tucson, wrote in support of this grant saying, "If this project succeeds as it should, I hope you will encourage some of the undergraduates who participate to apply to our graduate program. They will have the breadth of education and independent research experience we look for in prospective students."

Computer Science at Morningside: Experience, Service and Success

For the 8th year running, the computer science program at Morningside has placed 100% of its computer science graduates. The average starting salary of Morningside computer science graduates is right on par with the national average of \$37,000.00 annually.

The computer science software development clinic continues to contribute to the campus and Sioux City community. This clinic is led by computer science students with supervision from faculty to address a software need on or off campus. The most recent on-campus project is software designed to assist psychology students practicing counseling skills. The latest off-campus project is a database developed for



Spadefoot Toad

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GRADS

Laurie Walsh—Biology Major—Accepted Physician's Assistant Programs at Wichita State and University of South Dakota. Chose USD.

Matt Curry—Engineering Physics Major—Accepted to graduate programs in Materials Engineering at Arizona State University, Southwest Missouri State University, and the University of Nebraska.

Stephanie Haak—Biology Major—is employed at Moore Animal Hospital in Fort Collins, Co.

Molly Wiese—Biology—Accepted at Illinois College of Optometry (Chicago, IL)

1999

Kimnesha Counce—Biology Major—Accepted at Physical Therapy Programs at the School of Osteopathic Medicine in Des Moines, the University of South Dakota, and Mayo Clinic. Chose Mayo.

Tonya Hanson—Biology and Environmental Science Major—will be employed as a chemist at IBP.

Ryan Smith—Biology Major—Accepted to the University of Iowa School of Medicine (M.D. Program)

Christine Stevens—Biology Major—is employed as a residential counselor for the Boy's and Girl's Home in Sioux City, IA.

2000

David Chapman—Biology Major—Accepted to Iowa State University College of Veterinary Science (early acceptance).

Donald Champlin—Medical Technology Major—Accepted into St. Luke's Hospital Medical Technology program (Sioux City, IA)

Brandee Robeson—Biology Major—Accepted Physical Therapy Program at Creighton University (Omaha, NE—early acceptance)

Morningside Names 12th President

Effective July 15, 1999 John C. Reynders will lead Morningside College into the new millenium as its 12th president. Reynders succeeds Dr. David Marker, interim president, and Dr. Jerry Israel who resigned last year to become president of the University of Indianapolis.

Reynders' appointment culminates a 10 month national search and consideration of more than 75 applicants, according to Nancy Metz, chair of Morningside's board of directors.

"We are confident that our search committee recommended a truly outstanding candidate to carry on Morningside's tradition of excellence in liberal arts education," Metz said.

Reynders is currently vice president for administrative services and treasurer of Allegheny College, Meadville, Pennsylvania. He has also served Allegheny as director/dean of enrollment and financial aid; special assistant to the provost, and associate director of athletics; associate professor of physical education and instructor in mathematics, and as head men's basketball coach.

"During his 20 years at Allegheny, Reynders assumed key leadership roles that led to enrollement growth, higher academic quality, and greater net revenue for the college," Metz said. "There is no question that his success at Allegheny and his consulting work with over 30 other colleges and universities represent valuable experience that will be an asset to Morningside."

Mr. Reynders and his wife Beth have one son, Mathew, who graduates from high school this year. "Beth and I have been immersed in the life of Allegheny College for nearly two decades. Our decision to leave was not an easy one, because we will miss the wonderful people in the college and local communities," Reynders said. "Meanwhile, we are excited about the prospect of our new life in Siouxland and welcome the challenge of leading Morningside College into new millenium."

The faculty, staff, and students are excited about the college's future with Reynders, and extend a very warm welcome to him and his family.



Science Students Take Honors

Several students from the Division of Natural Science and Mathematics were recognized for their outstanding work at Morningside at the annual ODK spring honors assembly. Biology major Ryan Smith was named outstanding male student athlete for 1999. Ryan also received the Division of Natural Science and Mathematics Division award for outstanding senior. Ryan has maintained a high A average in his academic work and has received many awards for his

performance in men's track events at Morningside. Ryan will attend the University of Iowa School of Medicine next fall.

Kim Counce, biology major, was one of four seniors recognized by the Alumni Office as an outstanding all around student. Kim, like Ryan, is one of Morningside's track stars, and Kim was accepted to three physical therapy graduate programs in the midwest. Kim will attend the Mayo Hospital Physical

Therapy Graduate Program in the fall. Both Ryan and Kim have been nominated for NCAA graduate scholarships.

Kristi Brouwer (rising junior, biology major) won the Bodine Prize for philosophical writing for her paper connecting Spinoza's metaphysics to issues in environmental science. Kristi was also recognized as the outstanding student in sociology for 1999.

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Students Honor Excellent Science Faculty

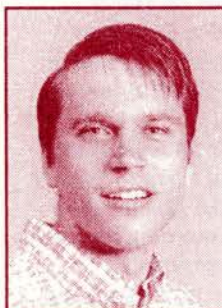
Dr. Sue McDonald, Assistant Professor of Engineering-Physics, received the prestigious ODK faculty of the year award at the Honors Assembly this April. The award is given by the students of ODK, Morningside's Honorary Leadership Society, to a professor at Morningside whom the students think does an exemplary job of teaching and mentoring. McDonald was recognized by the students for her tireless work with Morningside's Interdisciplinary Honors program, of which she is a co-director, as well as her always positive outlook and willingness to accommodate student needs in her teaching. Congratulations Dr. McDonald on a job well done!

Mr. Randy Blessing, Instructor in Physics and Chemistry, was also recognized for his excellent teaching by Morningside students. Blessing was tapped for faculty membership in ODK at the Honors Assembly this April.

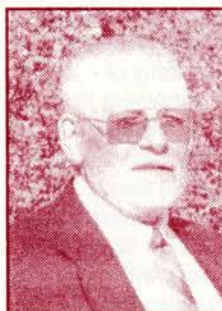
Retired biologist **Dr. Joe Claflin** received Morningside's highest commendation at the Commencement Exercises on May 1. Claflin was awarded the Order of Morningside in recognition for his service to the college during and since his tenure in the biology department. Claflin taught in the biology department for 13 years. During that time he led eleven May interim field trips to a variety of locations including the Pacific Northwest and the Desert Southwest. Dr. Claflin, along with Drs. Hey and Shane, conceived the design for the Port Neal Field Station built for Morningside by MidAmerican Energy. Dr. Claflin was also the faculty coordinator for the new building plans, guiding the faculty through the design and planning phase. The students' love for Dr. Claflin is evidenced by the fact that Claflin is the only faculty member to be named ODK teacher of the year twice by the students of Morningside. Even though retired, Dr. Claflin continues to support Morningside through Admissions work in Rapid City among other activities. Dr. Claflin is a spokesperson beyond compare.



Sue McDonald



Randy Blessing



Joe Claflin

Science Across the Community Series Successful

Students had a new opportunity to learn through the Science Across the Community Seminar Series this year at Morningside. The series, intended as a science education outreach, is targeted to non-science audiences on and off campus. This spring several of the seminars were offered as part of the Academic and Cultural Arts Series in order to reach a larger audiences. Attendance has ranged from 10 to 12 people to standing room only. Brenda Zabel at Heelen High School in Sioux City brought her upper level biology classes to several of the talks in this series and says that the students have reacted positively to the experience of interacting with college students and faculty at Morningside.

Topics lined up for next year's seminar series include presentations by Dr. Rich May and his students on their studies of low birth-weight infants in Woodbury County, a presentation by Dr. Aline Bobys, "Hands on, Minds on Science", and a debriefing of Dr. Jim Stroh's Great Lakes Ecology field trip. Stay tuned next Fall for the full schedule of events.

Science Students Take Honors continued...

The Farnsworth scholarship was awarded to Ryan Reinking (biology, rising junior) and the Hitzhusen scholarship was awarded to Kylie Wainer (biology, rising junior). Jason Hargens (Engineering Physics), Kylie Wainer, (Biology), and John Howett (Physics Education) all were elected to membership in ODK, Morningside's Honorary Leadership Society.

The Terra Chemical International Scholarship in Informational Sciences

was awarded to Computer Science major Sam Otis, and TC Watt received the Elsie Muller Scholarship for Outstanding Work in Mathematical Sciences.

Biology major, Janet Dubois ('00), has been accepted into the prestigious University of Minnesota (Twin Cities) summer undergraduate research program. Janet will be working with a skin cancer research team in the Medical School.

SUMMATION is a semi-annual publication of science and math news at Morningside.

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Faculty Professional Activities and Publications



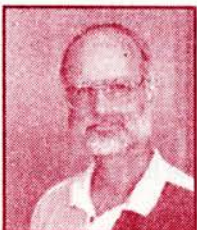
Michele Arduengo



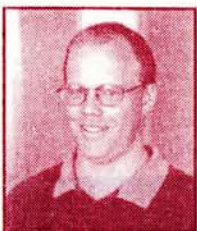
Mary Leida



Jane Hey



Larry Martin



Rich May



Steve Nimmo

Dr. Michele Arduengo (biology) attended the 7th Annual Developmental Biology Symposium at the University of Minnesota with summer research students Kim Counce ('99) and Vince Dvorak ('00). The students gave a poster presentation of their research "Characterization of Nematocidal Activity of alpha-terthienyl in the Nematode *Caenorhabditis elegans*." Arduengo also presented a seminar entitled "Alzheimer's Disease Genetics" for the St. Olaf College Biology Department Seminar Series (Northfield, MN). Dr. Arduengo served as the keynote speaker for the Coleridge High School Commencement Exercises on May 9, 1999. Arduengo returned to Coleridge High after graduation to speak to sophomore and junior biology students about tanning bed bacteria.

Dr. Arduengo and **Dr. Mary Leida** (biology) are co-authoring a paper "Survey of Bacteria on Commercial Tanning Bed Surfaces". The paper is based on research conducted during the Experimental Research course by these professors and their students Tonya Hanson ('99), Ellen Harbaugh ('99) and Chris Niles ('00).

Dr. Jane Hey (biology) and students Kristi Brouwer ('00) and Ellen Harbaugh ('99) attended the Iowa Academy of Sciences Meeting in April to present their summer research results "Monitoring the Plains Spadefoot Toad in Western Iowa." Hey and colleague Dr. Eugenia Farrar (Iowa State University) have received a grant from the Northern Prairie Science Center to complete their work with autocallers to develop a monitoring program for amphibians in western Iowa. Dr. Hey also spoke to the Interprofessional Society and the Engineers Club of Sioux City on her amphibian research.

Dr. Larry Martin (chemistry) served on the American Chemical Society examinations committee that is writing the next standardized general, organic and biochemistry examinations. Larry will attend the American Chemical Society Meeting in New Orleans in August as part of his duties on this committee.

Dr. Rich May (biology) is first author on a 1999 publication "Growth changes in measurements of upper facial positioning" in the American Journal of Physical Anthropology 108:269-280. May also received a grant from the Siouxland Foundation in support of summer (1999) research conducted with Morningside students. May and his students are

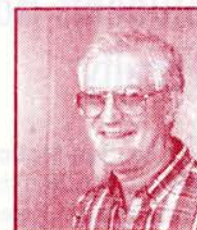
investigating "Post natal growth of low birth-weight infants in Woodbury County." The grant will support May and two students, Kelly Bass and Julie Tramp for the summer.

Dr. Steve Nimmo, **Dr. Doug Swan** and **Mr. Eric Canning** (math and computer science) attended the Kansas City Regional Technology Conference on the Teaching of Mathematics in October 98. These professors also attended the meeting of the Iowa Section of the Mathematics Association of America in April 99. **Nimmo** has also been named editor-elect of *Pentagon*, a publication for undergraduate mathematics research.

Dr. Steve Nimmo and his colleague, **Ms. Lillian Lopez**, from the history, political science and Indian studies department at Morningside also attended a national conference on core curriculum sponsored by the American Association of Colleges and Universities. Just this year Morningside has instituted an innovative core curriculum designed to incorporate more active learning and student participation throughout a student's tenure at Morningside.

Dr. Ed Shane (chemistry) chaired the Analytical and Physical Chemistry section of the Iowa Academy of Science at its annual meeting in April. Tonya Hanson ('99), who collaborated with Dr. Shane on summer research in 1998 (SEURP), presented a poster paper at the IAS on "The Association of Polycyclic Aromatic Hydrocarbons with Humic Acids." Tonya's research along with that of Miranda Price from the prior summer has been the basis of a paper submitted to the Journal of Chemical Education entitled "Fluorescence Measurement of Pyrene Wall Absorption and Pyrene Binding to Humic Acids." The paper has been reviewed and is now in the revision stages. During the year, Ed gave a talk on Global Climate Change to the InterProfessional Society in Sioux City and collaborated with Katie McCanh ('00) to present a chemical magic show to the students at Jackson Elementary School, NE; the reception was enthusiastic.

Dr. Jim Stroh (biology) and student Chad Scherbring ('00) attended the Iowa Academy of Sciences meeting in April to present their summer research "Historical Vegetation Patterns and Woody Plant Dynamics of Woodbury County, IA. Stroh also presented work from his dissertation research "Vegetation Changes in South Texas" at the Prairie Conference in Carney, NE this year.



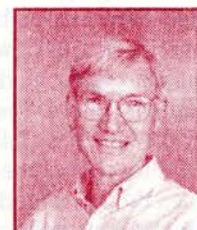
Doug Swan



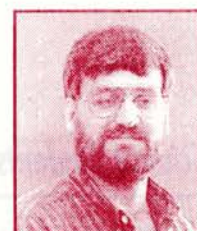
Eric Canning



Lillian Lopez



Ed Shane



Jim Stroh



Mark Winegar

Visiting Scientists Speak to Students

Dr. Robert Elde, Dean of the College of Biological Sciences at the University of Minnesota, Minneapolis-St. Paul, presented two talks to Morningside College biology majors this fall. In Dr. Jane Hey's physiology class, Dr. Elde talked about his research on pain receptors in the brain, and in Dr. Michele Arduengo's Cellular and Molecular Biology class, Dr. Elde led a discussion on the genetic control of behavior in animals. Dr. Elde visited Morningside as part of a graduate school recruiting effort at the University of Minnesota.

Dr. Suzanne Kehoe Cordovado from the Center for Disease Control in Atlanta also presented two seminars at Morningside this fall. She addressed the

student body on the work of the CDC and major public health issues at an ACAS event, and she spoke to students in the physiology class about the Center for Environmental Health work on the genetics of diseases such as hemochromatosis, spina bifida, and type I diabetes. Dr. Córdovado was available all week to meet and work with students at Morningside.

Dr. Gene Fleharty, retired ecologist from Fort Hays State University in Hayes, KS, spoke to students at an ACAS assembly about "The Great American Desert in Western Kansas." Using journals, diaries, and land surveys, Fleharty reconstructed for Morningside students the settlement of the Kansas territory.

Practical Microbiology

Students in the microbiology class at Morningside took a first hand look at practical microbiology this year. Larry Chase, brew master at The Fourth Street Brewing Company, walked the students through the biology, chemistry and logistics of brewing beer with a tour of the brewing facility on Fourth Street.

For the third year running Dr. Mark Titus (1969) and Tim Doden from Bayer Veterinary Diagnostics came to Morningside and walked the microbiology lab students through the ELISA procedure. Students used the indirect ELISA test to look for antibodies to the swine pathogen, (*Haemophilus parasuis*) in five different sera samples.

New Courses Offered

Science and Religion will be offered by the biology and religious studies departments this fall as part of the upper division new core courses. The course will be team taught by Dr. Bruce Forbes (religious studies) and Dr. Michele Arduengo (biology). Forbes and Arduengo are designing the course to be a seminar style course that requires student participation and activity. Topics covered will include the relationship between science and religion; evolution and creation debates; cosmology and purpose; and the ethical dilemmas of new genetic technologies.

Developmental Biology will be offered for the first time in several years in the biology department. The course which looks at the developmental events of embryogenesis will be team taught by Dr. Michele Arduengo and Dr. Rich May in the biology department. Dr. Arduengo brings her expertise in genetics to examine the genetic programs that control and coordinate developmental events, and Dr. May contributes his expertise in anatomy and evolution to the study of embryogenesis.

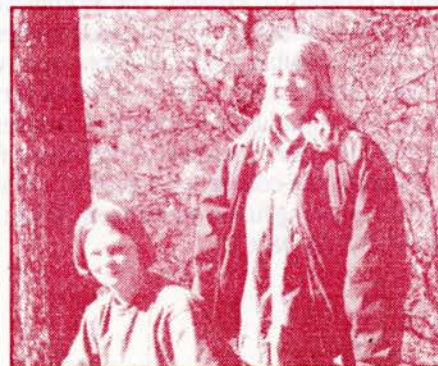
Dr. Douglas Swan (math) has been invited to present a paper at the Iowa Section Meeting of the Math Association of America. The paper entitled "NonEuclid and Euclid every day: Reorganizing Modern Geometries" will be presented on April 16, 1999 and centers on novel teaching methods for

upper level geometry courses in the math major. Swan will discuss the syllabus of the course that he has taught this semester.

Mr. Mark Winegar, instructor in Computer Science, has been appointed to coordinate the Morningside College web page.

Students Benefit from One-on-One Mentoring

Project Hope student Amanda Retland is interested in geology, so Dr. Sue McDonald in physics is mentoring Amanda in this subject. This year Amanda and Dr. McDonald worked together on an independent study course that culminated with a Spring Break field trip to the Badlands, Black Hills and Big Horn Mountains to study structural geology. Chemistry major Katie McCain also accompanied them on this trip. The two students are pictured below enjoying this hands-on field education experience.



Amanda Retland and Katie McCain

Computer Science continued...

Lutheran Social Services (LSS). This database helps LSS match clients and volunteers. Although this was begun as a project for the local Sioux City office, the LSS information technology center in Des Moines is considering the Morningside developed software for use by LSS centers throughout the nation.

The computer science major continues to attract well-prepared students who like the success with placement, the valuable internship opportunities, and the newly remodeled major at Morningside College. Compared to only four years ago, the number of students in computer science programs has doubled. The cutting edge training provided by the Morningside computer science program is well received by employers of Morningside computer science graduates.

Phase II Capital Campaign Announced: Funding the New Science Center and Renovation of Jones-Jacobsen

Morningside College successfully completed Phase I of the Investing for The Future Campaign in three short years, surpassing our goal of \$14,250,000.00. Now comes the challenge of Phase II of the three phase campaign with a goal of \$15,000,000. When the all three phases are complete, the Investing for the Future Campaign will have raised \$40,000,000.00 for the college.

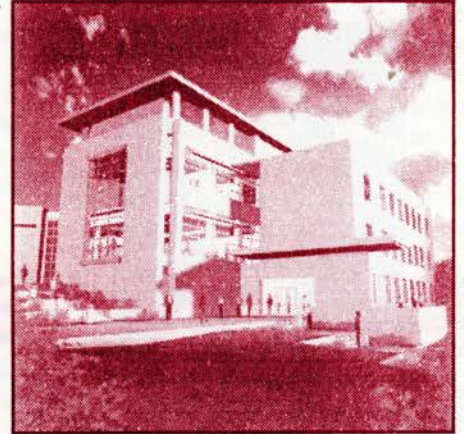
Morningside Science Center: \$13,000,000

The addition of the Morningside Science Center forms the principal component of Phase II of the campaign. This innovatively designed facility will provide 47,000 square feet for additional classrooms, improved laboratory facilities, and research space. The facility will further enhance the excellent education that Morningside science students receive as they prepare for graduate and professional schools, high school teaching, and other science related careers.

The project costs include the building construction, architect fees and expenses, and projected price escalations. The building will provide space and facilities to support research not possible in the current building, and will allow our already successful summer research program to expand. The Morningside Science Center includes a natural history study room to showcase the college's impressive collections and allow for natural history research. The new complex will have complete ADA accessibility, and all laboratories will be equipped with chemical fume hoods and proper chemical storage facilities.

The current facility, built in 1948, has served the sciences at Morningside extremely well, but the new facility is critical if Morningside College is to continue its standard of excellence and safety in science education. The additional space will allow for the continued growth of the science majors, and dedicated space for a new core course—Math in the Physical World.

Currently the college has raised 6.5 million toward the science center, but the ground breaking for the new building cannot begin until the remaining funds are in hand. If you would like to contribute to this campaign, please contact Tom Rice in the Development Office (1-800-831-0806).



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