BGSU undergraduates to pilot groundbreaking genome project

BGSU biology undergraduates will soon be contributing to the body of knowledge in genomics while they learn. BGSU has been selected as one of 12 institutions nationwide to pilot the new Microbial Genome Annotation research program through the U.S. Department of Energy Joint Genome Institute (DOE JGI).

Analysis of the genomes of microorganisms is an important new tool in understanding the biology of organisms, and with new technologies available, complete bacterial genomes can be sequenced in a matter of hours. Undergraduates will have the opportunity to computationally map the DNA of a microbe, conduct experiments to test their findings, publish their work in the worldwide online genome database—and gain valuable skills in genomics and bioinformatics.

Bowling Green will collaborate with the Department of Energy and the other 11 pilot schools, which include Michigan State University, UCLA, the University of Nebraska at Lincoln, the University of South Florida and Hiram College. “The scope of the project is to work in teams,” an important skill for young scientists to learn, said BGSU project director Dr. Zhaohui Xu, biological sciences.

Xu became aware of the JGI program at a bioinformatics workshop where she met Dr. Cheryl Kerfeld, director of the JGI Education Department and leader of the nationwide initiative. Xu and her biology colleagues Drs. George Bullerjahn, Paul Morris and department chair Scott Rogers wrote the application to be part of it. Bowling Green’s reputation in microbiology and genomics, along with the support of the biological sciences department, helped secure its place as one of the first universities in the country to collaborate on the project, Xu said.

The first genome to be analyzed is a microbe found in Indonesian volcanic hot springs. “What we hope to gain from this is some insights into how bacteria survive in extreme environments,” Morris said. “If we can learn how life can survive in these environments, it can help us address some of our environmental and energy challenges today,” Xu added.

Assembling DNA sequences into complete genomes may also allow scientists to identify enzymes for potential commercial applications, they pointed out. Though invisible to the naked eye, microbes are powerful organisms that play a critical role in the atmosphere and the environment, and can have many practical applications, such as cleaning up oil spills and conversion of plant products to ethanol.

The project is also in line with National Science Foundation initiatives to improve the training of students in the science, mathematics, engineering and technology disciplines, Xu and Morris said.

Changing science education, building knowledge

The project represents an important step for science in general and for BGSU in particular, according to Xu and Morris. “This is certainly the most exciting change in our undergraduate program since we developed the marine biology program a quarter century ago,” Morris said. “It’s an opportunity in several directions.”

In the initial phase, beginning in January, Xu, Morris and their students will use the Collaborative Genomics Annotation Tool, a bioinformatic platform being developed by Kerfeld and colleagues at the Argonne National Laboratory in Chicago to begin decoding the first genome, which will also be worked on by the other participating schools. Then, each school will choose a microbe to “adopt,” Xu said, and the project will expand to other biology faculty, who can incorporate the organism into their courses across the curriculum. Xu has already been working on a special microbial genomics course dedicated to the genome analysis program.
The bioinformatic analysis of genomes "could raise interesting questions and hypotheses," Xu said. "The next step, in two to three years, we will be looking at functional genomic research and 'wet lab' experiments to test and verify what we find with our computers." She and Morris also foresee spin-off research projects for those who want to look more deeply at a gene sequence. "Student research in this project could evolve into honors theses and projects and real publications," she said. "Students will be making meaningful contributions. Their results will be deposited to online databases and be accessible to research communities around the globe."

The excitement of discovery is powerful, Morris said. "They'll be looking at stuff no one has seen before."

Because the students’ data will be credited with their names attached, there is considerable accountability involved, the two biologists said. Responsibility for quality control will rest with participating faculty, who will conduct backup checking of data. In addition, "redundancy is good," observed Xu, and if more than one institution works the same sequence, it will actually be helpful in ensuring accuracy.

A vast undertaking

The originator of the groundbreaking Human Genome Project, which was later taken over by the National Institutes of Health in the late 1980s, the Department of Energy is the world leader of genomic research of microbes that contribute to environmental stewardship and clean energy, Xu said.

The DOE Joint Genome Institute, supported by the DOE Office of Science, unites the expertise of five national laboratories: Lawrence Berkeley, Lawrence Livermore, Los Alamos, Oak Ridge and Pacific Northwest, along with the Stanford Human Genome Center, to advance genomics in support of the DOE mission related to clean energy generation and environmental characterization and cleanup.

"They have an ambitious plan," Xu explained, noting that the JGI hopes to sequence the genome of all cultured bacteria and archaea in the next few years, and "the amount of sequence is huge." With more than 5,000 genomes, averaging 4 to 5 million base pairs each, "they need the input of a big community, including our BGSU undergraduates, to annotate all that," Xu said. There are about 100 genomes "in the pipeline now," she added.

Hence, the education component drawing in undergraduate researchers—a move predicted to revolutionize undergraduate biology research, according to Xu and Morris. As one of the first participants, BGSU will help develop new models to be disseminated nationally that will help transform life sciences education.

BGSU reaches $120 million goal, campaign continues through '08

The University has reached the $120 million goal for its major fund-raising campaign nearly 13 months ahead of schedule.

This is a significant milestone in the University's fund-raising history, said President Sidney Ribeau. "With this being the first major campaign in the nearly 100 years since the University was founded, the support of alumni and friends has been overwhelming. They have spoken their belief in the institution and the priority initiatives that are part of this campaign," he added.

Ribeau also praised the campus community for its support. Faculty and staff have contributed more than $10.8 million to the campaign since its inception.

The $120 million goal was set in 2002 at the start of the "quiet campaign" for Building Dreams: The Centennial Campaign for Bowling Green State University. "It was an unlikely
time to start a major fund-raising campaign," said Marcia Sloan Latta, senior associate vice president for University advancement and campaign director. "In the U.S., we were still feeling the effects of 9-11, the stock market was down and we were just going to war in Iraq," she continued. "Some people suggested we wait a year or two, or lower the goal."

The University did neither. It forged ahead with the campaign, and by the time the public announcement was made in 2004, the campaign, with $75 million raised, was well on its way to reaching the lofty goal of $120 million by the December 2008 target date.

BGSU alumni have played a key role in advancing the University for this campaign and in the past, said J. Douglas Smith, vice president for University advancement. "Historically, our graduates have believed in the quality of education they received here and have always been positive about helping in any way they can."

According to Kermit Stroh, co-chair of the Building Dreams Campaign, "Fund-raising for many of the campaign priorities has been successful; however, we are hoping to reach the established goals for all the campaign initiatives by the end of the campaign in December 2008."

Donations still are being sought for: Strengthening Faculty and Staff Support, an additional $4 million; the Values Initiative, an additional $3.5 million, and the Wolfe Center for the Arts, an additional $500,000. While the $35 million goal for scholarships has been met, scholarships continue to be a high priority to help students cover rising educational costs.

Private funds will be raised for BGSU Ice Arena renovations and construction of a new convocation center—two of the projects that have recently been announced as part of the University's new $150 million capital projects plan. BGSU expects to raise $4 million of the $8 million for improvements to the Ice Arena and $14 million of the $36 million cost of the convocation center. Additional funds will be provided for these two projects through state funds and bonded debt.

EPA applauds BGSU efforts to reclaim mercury

Over the past decade, nearly 10 tons of mercury have been removed from the environment through a BGSU program. The U.S. Environmental Protection Agency is very pleased about that.

David Heinlen, director of BGSU's Elemental Mercury Collection and Reclamation Program, recently accepted the agency's National Partnership for Environmental Priorities (NPEP) Achievement Award. The award honors the University for surpassing an EPA challenge goal and collecting 7,100 pounds of mercury in 15 months.

"The thing that is so exciting is that Bowling Green is one of the few schools that is doing this," according to Janet Haff of the U.S. EPA's Region Five office in Chicago. Haff came to campus Dec. 4 to present a plaque—made of recycled wood—to the University. Heinlen had been unable to attend a national awards ceremony held earlier in Washington, D.C.

Removing mercury from the environment is important, Haff said, because it means the reclaimed material will not be released into the air or the water supply.

Considered a "priority pollutant" by the EPA, mercury is present in a number of everyday items, such as thermometers, pressure gauges, barometers and thermostats, and can be a significant health risk when inhaled.

"Most organizations we work with through the NPEP program are industries, and there is a business payback for them to reclaim mercury. They are able to collect maybe three to five pounds of mercury in a year. What Bowling Green is doing is phenomenal. It is huge. We really can't thank you enough for being such a good partner in these efforts for the environment," Haff told campus representatives.
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BGSU started the mercury collection and reclamation program in January 1998 under the leadership of Heinlen, the University's safety and health coordinator. Since then, nearly 20,000 pounds of the potent neurotoxin have been collected free of charge from individuals, academic institutions, small businesses, governmental agencies, and industrial, medical and dental facilities.

Although it began on a small scale—just to collect mercury locally—the BGSU program now encompasses the entire state of Ohio and five bordering states plus Illinois, Wisconsin, Nebraska, Texas, Tennessee and Georgia.

The strength of the program, Heinlen says, lies with the University's partners throughout each of those states who help collect the material.

Heinlen particularly expressed appreciation to Joe Rader of Rader Environmental Services in Findlay for his volunteer work in traveling to collect and consolidate materials for the program, and for the collaborative efforts of partners in numerous district EPA offices throughout the multistate area BGSU now serves.

Bowling Green became the first university partner in the National Partnership for Environmental Priorities in 2004. In 2005, the University received an EPA Achievement Award as the partnership's first Mercury Challenge Supporter, having posed—and met—a challenge to collect at least 3,000 pounds of mercury over three years. Last year, Heinlen won the EPA's Champion Award for leading BGSU's reclamation efforts.

The program also has received recognition from the National Safety Council.

Pauken wins national teaching award from Mensa

It was about five years ago, toward the end of her master's degree program in educational administration and supervision at BGSU, that Angela Miller met Dr. Patrick Pauken.

Pauken, educational administration and leadership studies, would be teaching her "Law, Ethics and Negotiations" class, and Miller's first thought was "Who is this guy?"

He was, as it turned out, an educator instrumental in Miller's current pursuit of a doctorate at BGSU and so influential that she nominated him for the national honor he received Dec. 3—the Mensa Education & Research Foundation's Distinguished Teacher Award.

Pauken, a 10-year Bowling Green faculty member, is the lone winner of the 2007 award, which was presented by members of Maumee Valley Mensa during a meeting of BGSU School of Leadership and Policy Studies faculty. The award carries a $500 cash prize, which Pauken said will go toward "a niece and nephew who deserve a little extra shopping" for Christmas.

The honor "recognizes a teacher, professor or instructor at any educational level who has had an especially positive influence on the education or life of a Mensa member," according to American Mensa. The only qualification for membership in the international society is a score in the top 2 percent of the general population on an approved standardized intelligence test.

Miller, a rural Tiffin resident and fifth-grade teacher in Upper Sandusky, has been a member of East Central Ohio Mensa for about seven years. In the nominating essay on which Pauken's selection was based, she described how he energized her interest in that first summer class in which they were teacher and student.

"Over the course of the semester, Dr. Pauken challenged me more than any other educator and helped fuel my passion for knowledge, reinvigorate my interest in law, and strengthen my intellectual confidence," wrote Miller, who went on to earn her master's degree in August 2003.
"Not only was his intellect unparalleled, so were his expectations. I gave what I thought was my best, and he would demand more. Because of his persistence, I produced work of a quality I didn’t realize I possessed. The end of the semester came, but it was only the beginning of his tremendous influence."

Pauken is also graduate coordinator of BGSU’s doctoral program in leadership studies, in which Miller is now pursuing a doctor of education degree. He is serving as advisor for her Ed.D. program, which is focused, she explained, on the ethics of trying to balance the education of special education students with that of regular education students.

She worked at a summer camp for children with multiple handicaps while pursuing her bachelor’s degree in elementary education from Ohio State University, then taught special education for two years at the beginning of her career in Upper Sandusky. Now, she noted, she would like to work with regular education teachers on the best way to educate special education students in regular classrooms.

She has also taken courses in special education law and moral and ethical leadership from Pauken as part of her doctoral program. "He encourages debate, and just because it’s not his point of view doesn’t mean it’s not worth discussing or keeping an open mind toward," she said. "He epitomizes what a scholar should be."

In addition, Miller pointed out what she called their "really good rapport," an assessment with which Pauken concurred.

"It’s always been healthy banter," he agreed, saying that education is more than just teaching and learning, but also about relationships between teachers and students. The intellectual challenges posed by students such as Miller are often more rewarding than those that teachers can offer their students, he added.

"To be recognized in any form by students is an honor," said Pauken, expressing his appreciation for "the confirmation that the work I put in has positive impact." Learning he had won the award was both surprising and "thrilling," he said. "It really does mean a lot."

The honor is not the first for Pauken, who is the current chair of BGSU’s Faculty Senate and received its Distinguished Service Award last year. Also the holder of a law degree from OSU, he has a record of service to the University, the College of Education and Human Development, the School of Leadership and Policy Studies, and the educational administration and leadership studies programs.

IN BRIEF

Monitor announces holiday schedule
Monitor will publish Dec. 17 and then again on Jan. 14.

Shields, Gordon to speak at commencement
Two esteemed members of the faculty will speak at fall commencement. Addressing the graduates will be Dr. Ronald Shields, chair of theatre and film, on Dec. 14, and Dr. Jeffrey Gordon, geography and the University’s 2006 Master Teacher, on Dec. 15.

Shields will address degree candidates in the Graduate College, College of Business Administration, College of Health & Human Services, College of Musical Arts and College of Technology during ceremonies at 7 p.m. Dec. 14 in Anderson Arena.

The following day, Gordon will be the speaker for those graduating in the College of Arts &
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Sciences and in the College of Education & Human Development. Those ceremonies will begin at 10 a.m. in Anderson Arena.

In all, the University will award some 1,100 diplomas at the ceremonies.

The fall graduating class includes more than 80 students who will receive associate degrees and about 225 who will receive graduate degrees. The graduate students include 19 Ph.D. candidates, 202 master's degree candidates and three candidates for the doctor of education degree.

The graduating students represent 62 Ohio counties, 32 states and 24 nations.

Campus Severe Weather Policy provides guidelines

Now that we've felt the first blast of winter, it's a good idea to review the campus Severe Weather Policy for guidance on University closings and employee responsibilities in extreme weather conditions.

To view the policy for main campus (included in the Handbook of Commonly Shared Employment Policies for BGSU Faculty, Administrative and Classified Staff), visit www.bgsu.edu/downloads/execvp/file8135.pdf

In the event of a closing, regional radio and television stations will be notified. Faculty, staff and students will be sent an email message, and information related to the emergency will be posted on the Web site. In addition, text messages will be sent to those who have signed up for AlertBG.

Efforts will be made to notify media, send email and text messages and post Web announcements by 6:30 a.m. the day of the closing. For evening closings, Marketing and Communications will attempt to notify the campus and media by 4 p.m.

BGSU Firelands has its own policy on severe weather, and employees should consult the college for guidance.

Be safe: Follow campus fire, decoration policies

As cold weather and winter holidays are upon us, students, faculty and staff are reminded of BGSU's Fire Safety Decoration Policy. The University community is also reminded of the prohibition of portable heaters and halogen lamps.

For the safety of students, employees and visitors at BGSU, there are requirements for the use of candles, lighting, Christmas trees and holiday decorations.

• Candles, incense, lanterns and similar "open flame" receptacles are not permitted in residential housing, burned or unburned. Candles and other open flame devices can be burned only in Olscamp Hall, the Bowen-Thompson Student Union and Prout Chapel, and only with a permit issued by Environmental Health and Safety.

• Decorations shall be fire resistant, and cannot interfere with safe passage or evacuation.

• Exit signs, fire extinguishers, smoke detectors, fire alarm pull stations, emergency lights, sprinkler heads and audible fire signals/strobe lights cannot be decorated, covered or obstructed in any way.

• Live or cut trees are not permitted in any building.

See the complete Fire Safety Decoration Policy at www.bgsu.edu/offices/envhs/page14008.html

The portable heater and halogen lamp policy can be viewed at: www.bgsu.edu/offices/envhs/page14014.html

If you have any questions, call Environmental Health and Safety at 2-2171.
BGSU Relay for Life team announces chili cook-off, BGSU cookbook fund-raisers

The BGSU Relay for Life team—which was presented a silver medal at the Relay for Life event at Bowling Green High School last May—has announced two new initiatives to raise funds for cancer research.

Chili cooks can compete in the BGSU Chili Cook-off Jan. 4. Executive Vice President Linda Dobb will be the judge and will award prizes for first, second and third place.

The deadline to enter your chili in the cook-off is Dec. 21. Contact Becky Lentz-Paskvan at 2-2921 or lbecky@bgsu.edu with your name, department, phone number and email. Student cooks should provide a mailing address as well.

The cook-off will be from 11 a.m. to 1 p.m. at the Central Services Building, 940 Park St. Parking is available at the building.

At 11:15 a.m., for a donation, the campus community can sample all the chili entries, along with baked goods, and bid on something unique at the silent auction of various items donated by local merchants and BGSU employees.

The second initiative, also food related, is the 2007-08 BGSU Cookbook produced by the team. Faculty, staff and students contributed almost 300 of their favorite recipes, many in honor or in memory of a loved one who has been touched by cancer.

The books are available for $8.50 each, or two books for $15. They can be purchased by contacting Lentz-Paskvan, or Tina Amos at 2-2030 or tamos@bgsu.edu. All proceeds go to the American Cancer Society.

CALENDAR

Thursday, Dec. 13
Reception and Celebration, for all contributors to the 2007 United Way with Northwest Ohio Community Shares campaign, 1 p.m., 207 Bowen-Thompson Student Union.
BG@100 Open Forum, 1:30-2:30 p.m., 315 Union.

Friday, Dec. 14
Commencement Reception, for the Graduate College and the colleges of Business Administration, Health and Human Services, Musical Arts, and Technology, 5:30-6:30 p.m., 101 Olscamp Hall.
Commencement Ceremony, for the Graduate College and the colleges of Business Administration, Health and Human Services, Musical Arts, and Technology, 7 p.m., Anderson Arena.

Saturday, Dec. 15
Commencement Reception, for the colleges of Arts and Sciences and Education and Human Development, 8:30-9:30 a.m., 101 Olscamp Hall.
Commencement Ceremony, for the colleges of Arts and Sciences and Education and Human Development, 10 a.m., Anderson Arena.

Sunday, Dec. 16
Men's Basketball vs. Illinois State, 2 p.m., Anderson Arena.
Creative Arts Program Recitals, 2, 4 and 6 p.m., Bryan Recital Hall, Moore Musical Arts Center.

Continuing Events
Dec. 10-14
Exam Week.
Dec. 17-Jan. 4
Winter Break.
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Through Dec. 16

Planetarium Show, “Secret of the Star: A Show for Christmastime,” showings at 8 p.m. Tuesday and Friday, 7:30 p.m. Sunday and 2 p.m. Saturday. $1 donation suggested.

Through Dec. 17

Art Exhibition, “BGSU Students Respond to the South Bronx,” Union Gallery. Gallery hours are 8 a.m.-9 p.m. Monday-Saturday and 10 a.m.-6 p.m. Sundays.

Through Jan. 16

Art Exhibition, 58th annual Faculty/Staff Exhibition, showcasing the work of more than 40 artists, Dorothy Uber Bryan Gallery, Fine Arts Center. Gallery hours are 10 a.m.-4 p.m. Tuesday-Saturday and 1-4 p.m. Sundays. Gallery closed Dec. 16-Jan. 7.

Through Jan. 25

Art Exhibition, "Trench Cuisine: A Rock Band’s Recipe for Semi-Success," a multimedia songbook presentation by Craig Matis, Willard Wankelman Gallery, Fine Arts Center. Gallery hours are 10 a.m.-4 p.m. Tuesday-Saturday and 1-4 p.m. Sundays. Gallery closed Dec. 16-Jan. 7.

JOB POSTINGS

FACULTY

There were no jobs posted this week.

Labor Postings
http://international.bgsu.edu/index.php?f=job postings

Contact the Office of Human Resources at 419-372-8421 for information regarding classified and administrative positions. Position vacancy announcements may be viewed by visiting the HR Web site at www.bgsu.edu/offices/hr/.

Employees wishing to apply for these positions must sign a "Request for Transfer" form

and attach an updated resume or data sheet. This information must be turned in to Human Resources by the job deadline.

CLASSIFIED

On-campus classified:
www.bgsu.edu/offices/hr/employment/BGSU_only/page11151.html

Off-campus classified:
www.bgsu.edu/offices/hr/employment/cl_staff/page11145.html

ADMINISTRATIVE

www.bgsu.edu/offices/hr/employment/admin_staff/page11137.html

OBITUARY

There were no obituaries this week.