Bayer School of Natural & Environmental Sciences

Spectrum

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Inside

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From the Dean's Desk

I would like to thank our readers for returning the surveys from our inaugural issue of Spectrum. This magazine dedicated solely to Bayer School news was apparently long overdue — 90 percent of the respondents indicated that they would like to receive Spectrum biannually rather than annually. We are pleased that we will be able to communicate with you so frequently. There is certainly a wealth of news to share!

In this issue, we are highlighting our recent conference on "Stem Cell Research: Science, Religion and Ethics." It was an honor for us to welcome several national speakers to Duquesne University for this special event. The conference gathered leading experts from an array of disciplines, including medicine, politics, health care ethics, biotechnology and patient advocacy. In addition, panelists were carefully chosen to represent the perspectives from the three major religious traditions of the Western World.

At the Bayer School of Natural and Environmental Sciences, and across Duquesne University, ethics is an integral component of each student's learning experience. We recognize that today's technology is advancing so rapidly that tomorrow's scientists will face possibilities we never before imagined. It is our hope that this conference accurately framed the issues relating to stem cell research so that we as scientists will be better prepared to encounter this and the other new challenges of the 21st Century.

Our school continues to play a significant role in the advancement of knowledge and techniques. I invite you to read about some of the latest research successes in the department of physics, resulting in two important grants for Dr. Monica Sorescu. Many faculty and students will benefit from the new supercomputer that is being funded in part by the National Science Foundation; learn more about this exciting development on page 5.

Our alumni continue to make their special mark in the scientific community. See the articles on Frank Deverse, whose skill in semiconductors formed the foundation of a tremendously successful business, and Kurt Knaus, a more recent graduate who now serves as Press Secretary for the Pennsylvania Department of Environmental Protection. The accomplishments of our students also bring us pride; as a case in point, read about Laura Thomas, a senior biochemistry major who presented her research on IBM's Blue Gene Project at the American Chemical Society Fall 2003 meeting.

Thank you once again for taking the time to share in our stories of success.

— Dr. David W. Seybert
Dean of the Bayer School of Natural and Environmental Sciences

Cover

The cover photo illustrates osteoblasts depositing new bone matrix inside compact bone with help from adult stem cells. Copyright 2003, Pittsburgh Tissue Engineering Initiative, Inc. Tissue Engineering for Life. John Archie Pollock, Ph.D., film director and associate professor of biological sciences, Duquesne University. Laura Gonzalez, artist.

Dr. Monica Sorescu

Physics Projects Explore New Materials

Dr. Monica Sorescu recently received two grants for her work in experimental condensed matter.

Sorescu and collaborator, Diamandescu, vaporize materials in a laser deposition chamber.

What kind of person makes a living by creating something entirely new? Those who come to mind include artists, musicians and writers. However, scientists can also be counted as creative types. Dr. Monica Sorescu, for instance, focuses on designing new materials that do not occur in nature.

Sorescu, associate professor of physics in the Bayer School of Natural and Environmental Sciences, recently received two grants for her work in experimental condensed matter, including $80,000 from the U.S. Department of Energy for "Laser Processing of Advanced Magnetic Materials."

"We are synthesizing new types of oxide materials," Sorescu explained, "hematite, which is an iron oxide, doped with zinc oxide or titanium oxide, for example. These novel oxide materials are very important for gas sensing applications, because they show sensitivity to oxygen as well as toxic gases like carbon monoxide. They are of much interest to technology and industry."

The one-year award is a continuation of a previous grant from 2001-2002. The award includes a post-doctoral salary that will allow Sorescu to retain her collaborator, Dr. Lucian Diamandescu. Diamandescu's professional collaboration with Sorescu began in their native land of Romania, where they co-authored several papers.

Diamandescu maintains his position as laboratory head at the Institute of Atomic Physics in Bucharest by telecommuting. Although it is not always easy to live a world away from his laboratory staff of 60 — not to mention his wife and son — the opportunity to work in Sorescu's lab was not to be missed. "Here we have much equipment and resources not available in Romania," he explained.

At this point in the project, they have obtained hematite doped with tin oxide by using a hydrothermal synthesizer in Sorescu's lab. At extremely high temperatures and pressures, the apparatus allows chemical reactions that are not otherwise possible.

Sorescu explores the structure and properties of her samples by using x-ray diffraction, Mossbauer spectroscopy, which applies gamma radiation, and good "old-fashioned" electron microscopy. "Our strategy is to use complementary techniques of investigation, and each shines some light on the properties of the material, so if you look at them all together you get the whole picture," she said.

Sorescu's goal is to expand the class of materials that fall into this new category of oxides. At the same time, she is also working on "The Properties of Magnetite at Nanoscale," a project that was recently awarded $50,000 from the Petroleum Research Fund. The work with magnetite, another type of iron oxide, could lead to important applications for the magnetic recording industry.

Physics is a family tradition for Sorescu, who began learning from her physicist father at the age of five. Her husband, who resides with her in downtown Pittsburgh, is a physicist employed at the National Energy and Technology Laboratory. Asked to describe her creative profession, Sorescu said, "Unlike other disciplines, the study of physics begins with qualitative descriptions of nature using words. The formulas and math come later." She disclosed with a smile, "For me, physics is the only science."

— LVM

Passion for Science Passed on through Alumnus Gift

Patsy and Frank Deverse

The last time Frank Deverse visited Duquesne, he had to admit that he was a bit envious.

The old house on the Bluff where he used to go for his physical chemistry lab had been razed more than 30 years ago to make way for the Mellon Hall of Science. "The school was highly fragmented back then — classes were all over the place," he recalled. "We also had labs in the Quonset huts that were left over from the war years. They were in the last days of their life by then. We had a few fires in there. There was even an explosion!"

Deverse is actually pleased that today's science students at Duquesne have access to facilities that he and other chemistry majors in the class of 1963 never even imagined. In fact, he decided to offer these youngsters another opportunity he did not have. In the year 2000, he and his wife established the Frank and Patsy Deverse Endowed Science Scholarship. The renewable award is available each year for a new freshman enrolled in the Bayer School of Natural and Environmental Sciences.

Born and raised in Greensburg, Pa., Deverse's simple beginnings belie the tremendous success of his later life. The founder and retired president and CEO of International Microcircuits, Inc., he did not begin college until he was 22 years old. A husband and father of two (with two more still to come), he had been trained as a draftsman but lost his job at Westinghouse due to layoffs.

"I wasn't really sure exactly what to do when I first went into college, but I always liked to know how things worked," Deverse said, explaining his career choice. "Once I got into science, I was interested in learning everything." He immersed himself not only in science, but math and theology as well, picking up enough extra credits for two minors and pushing himself to take graduate courses in his senior year. Deverse identified Dr. Kurt C. Schreiber, then the department chair, as a mentor who took an interest in his unique situation.

" I was never obsessed with grades," Deverse said. "I learned it because I wanted to know it. And I subsequently found out in my later career that you can't take your education too seriously, or you lock yourself into what is known today. That makes it more difficult to discover the unknown."

While he had begun a successful run at Gulf Research & Development Corporation in 1963, the unknown world of transistors captured his imagination. "I was absolutely mesmerized by the fact that you could rearrange atomic structures to change the physical properties of materials," Deverse said. "I thought, 'That's really exciting. I need to get a job there!'" So he searched out a company where he could work on transistors and discovered the IBM laboratory in New York state.

Deverse generated 17 patents during his five years at IBM. "One of my patents turned out to be very significant in the semiconductor world, and in fact it's still used today," he noted. IBM recognized his achievements with the company's Outstanding Contribution Award, accompanied by a $25,000 prize.

Deverse decided to take another chance in 1969, venturing out with 60 other former IBM employees to create a start-up company. When the venture went bankrupt, he simply used the failure as a foundation for even greater success. He bought some of the old company's equipment and used it to start his own business in California – in the center of what would become the Silicon Valley.

Struggling for a few years while operating out of his garage, Deverse did not wait for opportunities to find him. "At that time, CB radios were a big item, and I thought, 'We should be selling to this market — we make products this market uses.' I picked up the phone and started calling CB manufacturers," he recounted.

He finally connected with a company in the Midwest. "I gave him my pitch and told him what I had to offer, and he said, 'If you're telling me what I think you're telling me, you just solved the problem I've been staring at for two weeks.' He was my first million-dollar customer."

And he would not be the last. By the time Deverse sold his business in 1996, it was worth $40 million. According to Deverse, that is about 1,000 times greater than

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Duquesne University Plugs into Supercomputer

The supercomputer currently used by Dr. Jeffry Madura, associate professor and chair of chemistry (left), and Dr. Jeffrey Evanseck, associate professor of chemistry, is made of 16 processors. A recent grant will provide for a new supercomputer eight times its size.

Imagine a chemistry problem so big that the world's fastest single computer cannot solve it.

This is a daily challenge for Dr. Jeffrey Evanseck, associate professor of chemistry and biochemistry in the Bayer School of Natural and Environmental Sciences, and other members of his research group who use quantum mechanics and classical physics in their research.

Evanseck, director of the Center for Computational Sciences (CCS), and 14 faculty members of the CCS from across Duquesne University were recently awarded a $325,000 grant from the National Science Foundation, which was allocated to a $1.5 million project to build a supercomputer that will rank in the top 50 academic machines worldwide.

"The definition of a supercomputer is constantly changing. However, if a computer today performs at the TFLOP (trillion floating point operations per second) range, it is generally accepted as a supercomputer," Evanseck explained. "To extend the power of a single processor computer, a supercomputer is made up of several processors that operate in tandem, which is the only way to achieve TFLOP performance. This is known as parallel processing."

Three supercomputers currently in use by the school, which are maintained by Dr. Orlando Acevedo in the CTS Data Center, have 16 processors, while the proposed machine will have 128 that are based upon the latest technology. A Quadrics switch will be installed for communication more than a thousand times faster than standard Ethernet speeds. "The increased communication speed between the processors is what delivers true parallel processing," said Evanseck.

Supercomputers are not only useful to researchers in academia. Through a unique collaboration called $(SC)^2$ — The Supercomputing Science Consortium — Evanseck and other scientists are working to bring the benefits to local industry. The consortium sponsored "The $(SC)^2$ Computational Sciences Seminar: Regional Business Opportunities in Supercomputing" in July 2003 at Waynesburg College.

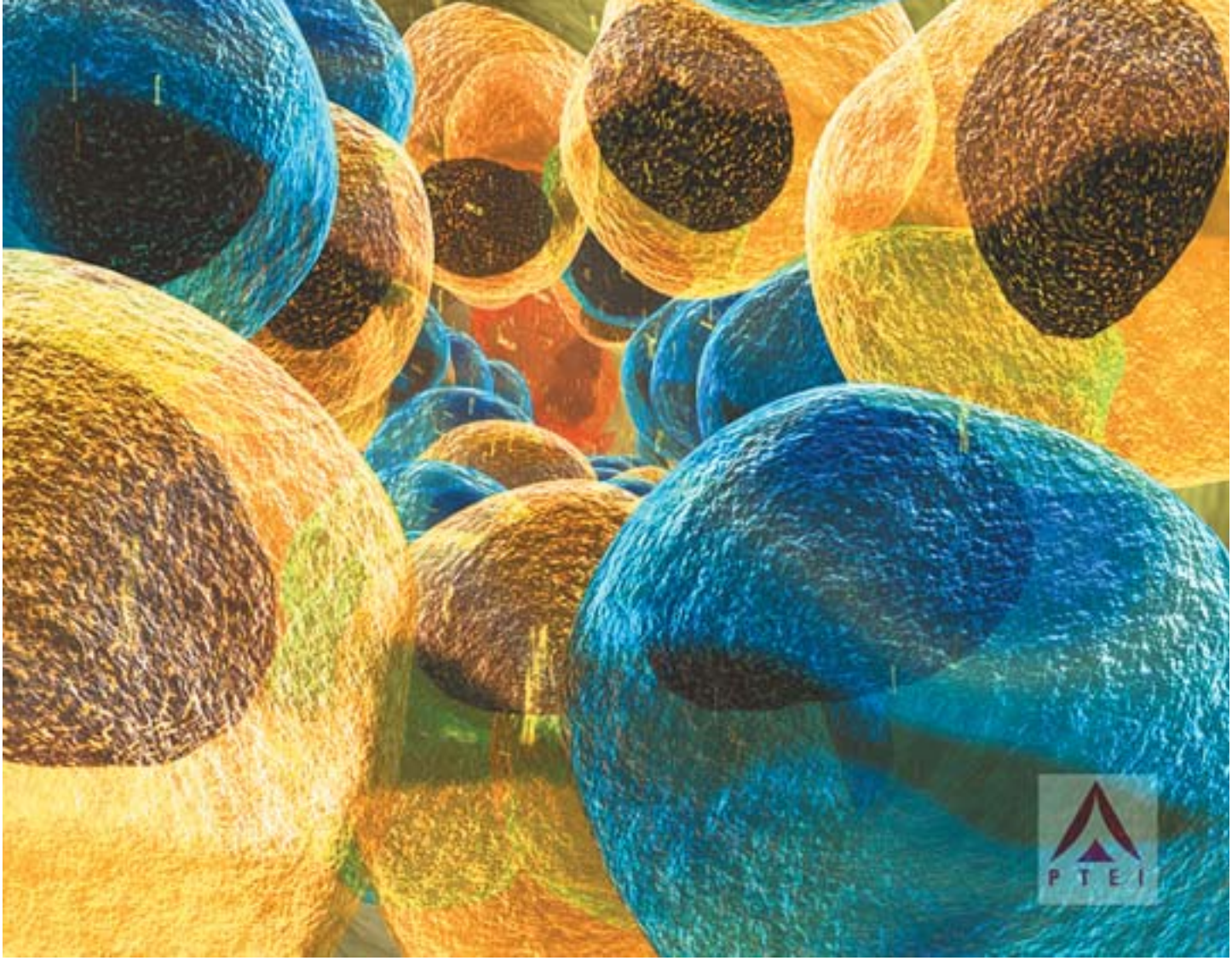
Evanseck is Duquesne's representative on the consortium and a member of the seminar planning committee. The Pittsburgh Supercomputing Center, Carnegie Mellon University, West Virginia University and the University of Pittsburgh are among the eight other member organizations. $(SC)^2$ is organized by NETL, the National Energy and Technology Laboratory.

"NETL has taken a leadership role to bring local researchers together, and has been an excellent advocate in promoting the computational sciences," Evanseck said. NETL and other consortium members aim to nurture a business environment that will help draw the biotechnology sector to the region.

Madura noted that the new supercomputer will bring more resources to the computational needs of the Pittsburgh region in general, as well as enhance Duquesne's reputation among prospective science students and faculty. "Our students will have access to this equipment, to work with it and train on it, so when it is time for them to get jobs, they will be hired based on their experience," he said.

The new supercomputer is expected to go online in spring 2004, but that is not the end of this story. "This project will get us a very fast machine, but eventually we will even want to expand it," Madura predicted.

— LVM



Osteoblasts depositing new bone matrix inside compact bone with help from adult stem cells. Copyright 2003, Pittsburgh Tissue Engineering Initiative, Inc. *Tissue Engineering for Life.* John Archie Pollock, Ph.D., film director and associate professor of biological sciences, Duquesne University. Laura Gonzalez, artist.

Experts Address "Defining Debate of Modern Civilization"

While medical research utilizing stem cells offers the promise of successfully treating many chronic diseases, the origins of most stem cells used in research — human embryos or aborted fetuses — is highly controversial. Research also has been conducted on stem cells culled from adults, but those cells appear to show less promise.

These issues led Eric Cohen, director of the Project on Biotechnology and American Democracy at the Ethics and Public Policy Center, to characterize the controversy as "the defining debate of modern civilization."

Eric Cohen, director of the Project on Biotechnology and American Democracy in the Ethics and Public Policy Center

As the keynote speaker of the conference, Cohen presented the differing points of view in the stem cell debate during the public session of the conference on Nov. 6.

Conflicting Agendas

According to Cohen, a consultant to the Presidential Council on Bioethics, participants in the debate fall into four main camps: "let's roll" scientists, "enlightened" liberals, "mysterious" moderates, and those who view embryos as "one of us."

According to Cohen, those scientists with a "let's roll" attitude toward research generally view the embryo as nothing more than a "clump of cells." Cohen described "enlightened" liberals as individuals with goals similar to those of the scientists. However, they view the issue more politically, believing that "scientists should be free to do their work."

"Mysterious" moderates were characterized as those whose views are perhaps the most complex. They regard the embryo as "a life in process;" it may be less than a human being, yet it is more than a "mere

Stem Cell Conference Explores Complex Issues

The single cell that is formed by the union of human egg and sperm represents the ultimate in possibilities. It is the beginning of every human being. As it divides into two, then four and eight, it unfolds the blueprint for every kind of cell that exists in the body — and may also hold great hope for countless people who suffer.

These powerful possibilities drove the discussion of "Stem Cell Research: Science, Religion and Ethics" at Duquesne University Nov. 6–7. The conference gathered a host of national experts in multiple disciplines to discuss the facts and explore the implications of this controversial technology.

According to Dr. David Seybert, Dean of the Bayer School of Natural and Environmental Sciences and chair of the conference planning committee, "The goal in this conference is to establish an open dialogue that allows for all views to be expressed. We want to educate the public by clarifying the complex issues that surround embryonic stem cells."

Embryonic stem cells are derived from the embryo at the stage of development known as the blastocyst, a hollow ball of about 50 to 100 cells that forms three to five days after fertilization. A limited number of these cells are stem cells. These cells, which have not become specialized, can develop into any cell in the human body.

The cells can be removed and allowed to multiply into a self-perpetuating supply of cells known as an embryonic stem cell line. The original embryo is destroyed in the process.

According to Dr. David Kelly, Ph.D., professor of theology and founding director of the Duquesne University Health Care Ethics Center, we can begin to unravel the knot of ethical issues surrounding embryonic stem cell research by looking at two separate but intimately linked scenarios.

"What we have on one hand is the creation of embryonic stem cells through the destruction of the embryo," said Kelly, a member of the planning committee who brought in several speakers. "On the other hand we have the use of an existing stem cell line that was created from an embryo that was destroyed at one point in time, but is no longer being destroyed."

He continued, "Some believe that it is wrong to destroy an embryo but that it is not wrong to use the stem cell lines that have been created from them, because these cells are no longer embryos."

The issue is further complicated when one takes into account the growing number of "leftover" embryos resulting from in vitro fertilization. Those who take the position that it is wrong to destroy an embryo may, at the same time, allow that we could be justified in using these embryos for research to benefit humankind, rather than leaving them to simply die.

According to Kelly, at the heart of all the

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Dr. John Gearhart, professor of medicine at the Johns Hopkins University Institute for Cell Engineering

thing or a tool." Cohen described the individuals who see the embryo as "one of us" as people of religious faith who believe embryos are owed "the same measure of respect and protection"that is given to all human life.

For Cohen, the stem cell debate is crucial because it requires us to examine our beliefs about what makes "the good life" and "the good society." The essential question, according to Cohen, is this: "Will we become a better society or a lesser society if we engage in embryonic stem cell research?"

Great Possibilities

Dr. John Gearhart from the Johns Hopkins Institute for Cell Engineering represented the scientific community, which is anxious to explore the possibilities presented by stem cell research. "The problems we are faced with now are immense, but the potential for doing good is great," said Gearhart.

His pragmatic perspective focused on the scientific advances that offer hope to patients who suffer from illnesses such as paralysis, Parkinson's disease and heart disease. To illustrate this research, Gearhart showed video footage of a paralyzed mouse that regained movement in the lower portion of its body after neural precursor cells were introduced into its spinal cord.

Dr. Daniel Callahan, founder and director of International Programs at The Hastings Center

Despite these breakthroughs, Gearhart cautioned that a great deal of additional research must be conducted to ensure safety before application of any stem cell therapies in humans. The cells introduced into research subjects "can form tumors and migrate away from sites

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issues lies a fundamental question: Is the very early embryo a human person? One's answer to this question will guide his or her approach to the rest of the problem. The responses range from the view that the early embryo is a full human person and deserves to be treated as such, to the view that early embryo is simply a mass of cells requiring no special treatment — and several other views that lie somewhere in between.

Kelly pointed out that the Catholic Church actually takes no official position whether or not the developing embryo becomes a human person. Rather, the received tradition of the Church counsels, "We may not be able to prove that this is a full human person, but we also cannot prove that it is not a person," stated Kelly. "Therefore, we must treat it as if it is a full human person — because it may well be." The general result is a rejection of embryonic stem cell research in every scenario.

Both Seybert and Kelly applaud the University's willingness to address the issues openly. "Duquesne is a university," Kelly remarked. "It is committed to a search for knowledge and a search for truth. That does not mean that the University as an institution agrees with all these positions. But we will invite others to show us all sides of the question."

Seybert agreed: "This conference is an opportunity for people to come with their own beliefs, to hear the various opposing viewpoints, and by gaining that perspective, to be able to formulate and articulate their own beliefs more clearly."

— LVM

Charles J. Queenan III, director of the board and chair of the research portfolio committee for the Juvenile Diabetes Research Foundation International

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where you introduce them," said Gearhart.

He stressed that the goals of the scientific community are only to help those who are suffering from diseases. "We are not interested in cloning human beings," said Gearhart. Instead, he emphasized scientists are "morally and ethically obligated to pursue [stem cell research] on behalf of those who suffer."

Moral Opposition

Dr. Daniel Callahan, the director of international programs at the Hastings Center, a non-profit bioethics research institute, argued that there is no valid way to compare the value of the embryo with the value of research. In voicing his opposition to stem cell research, he pointed to the human experiments conducted by the Nazis during World War II that were justified by the possibilities of advancing the human race. "Just because it is scientifically promising, doesn't mean it should be given a free moral pass," said Callahan.

Callahan also expressed skepticism about research efforts that claim to treat the embryos that generate the stems cells with respect. It is "misleading to talk about respecting what you are about to destroy," said Callahan. He also raised the possibility that federal money could be used to eliminate human suffering more effectively — and ethically — through increased funding for education or health care.

Research With Limits

Queenan, director of the international board of the Juvenile Diabetes Research Foundation International, represented the perspective of those with much more at stake in the stem cell debate — patients with chronic illnesses that could be cured through stem cell research.

When the JDRF developed its position on stem cell research, Queenan said that it was "not a slam dunk as you might assume for a patient organization." The foundation considered all sides of the debate before deciding to fund stem cell research. A key factor in their decision was the strong support among his organization's constituency — families affected by diabetes.

The foundation also decided to be selective in the types of stem cell research it would fund. For instance, JDRF will not support nuclear transfer, which is the cell combination process that is used in cloning. "We looked at [research options] very carefully and implement [our research funding] in a way that does have limits," said Queenan.

— AW

Duquesne University President Dr. Charles Dougherty (right) looks on with Dr. Laurie Zoloth, professor of medical ethics at Northwestern University (center).

Audience members weigh the moral and ethical issues presented by stem cell research.

"Every time I look out this window, I consider myself extremely fortunate," Kurt Knaus comments on his promotion from the House of Representatives Legislative Information Office to his current position, press secretary for the PA DEP.

Kurt Knaus '99

Certificate in Environmental Management, Capital Region Campus

Alum Takes ESM to the State Capital

Most students are glad to shed their book bags and leave the classroom far behind them when they graduate. But Kurt Knaus is still attached. "I actually keep some of my research papers from Duquesne with me in the office because I am tackling some of the same issues I studied." And his other school supplies? "I'm bringing my textbooks in, too!"

These are only a few of the necessary resources Knaus uses daily. His recent appointment as press secretary for the Pennsylvania Department of Environmental Protection has required him to call upon the broad knowledge the Environmental Science and Management program provided. He credits the ESM program as an aide to his success.

"I enrolled at Duquesne to gain the experience I would need for this very position," Kurt says, and he's been contemplating taking a few more ESM classes through the Post-Master's program. His previous experience as assistant manager and senior editor with the House of Representatives Legislative Information Office and press secretary and director of communications for state Rep. Mike Veon aid him in his latest assignment.

Knaus's responsibilities in crisis management and public relations require him to answer questions that range in topic from sewage enforcement, wind energy, illegal dumping, state environmental budget and land use. "Every day is an education. There are many calls I get that I can't answer right away. I'm lucky this department has many skilled and committed people who will sit down with me and educate me on their specialty," he said.

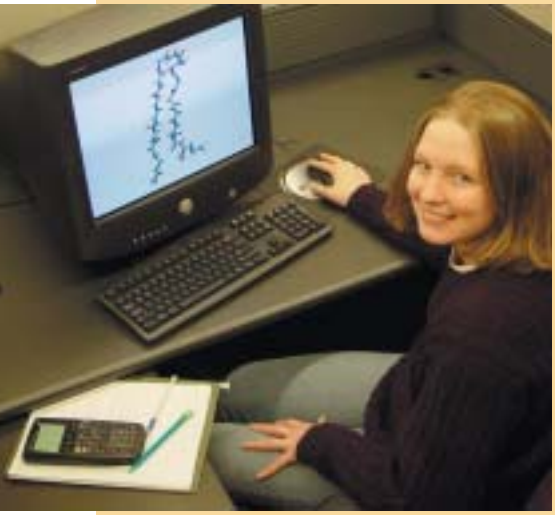
Knaus admits he must rise early and read every newspaper he can so that he's ready to deal with current environmental issues each day. He acknowledges that what he learned in school has also been very useful. "Everyone here talks in acronyms all the time," he says. "The environmental law and public policy classes I took have really provided a solid foundation for me."

— SB

Kurt Knaus, outside the Pennsylvania State Capitol, a short walk from his new office in the Rachel Carson Building.

Student Profile

Laura L. Thomas



Laura Thomas, a senior biochemistry student, is always on the go. Perhaps it is her training as a distance free-style swimmer, or perhaps it is her natural energy that keeps her on the fast track. Laura's zest for life, learning and success is evident in her very active undergraduate studies.

Laura came to Duquesne University on an athletic scholarship and was a member of the swim team. She traveled quite a bit during her freshman and sophomore years as the swim team participated in the Atlantic 10 Conference competition.

At the end of her sophomore year, however, Laura did not know if her science career was moving in the right direction. "I wasn't sure if biochemistry was what I wanted to do, because I hadn't taken any courses that resonated with me," she recalled. Then she met with Dr. Jeffry Madura, chair and associate professor of chemistry and biochemistry, to schedule her fall classes. He encouraged her to join his team in the summer of 2002.

In Dr. Madura's research group, Laura worked on ligand binding to chitnase, an enzyme that breaks down a sugar that may have a link to breast cancer. Laura was hooked, and spent the rest of her junior year working with Madura. She presented her research poster on chitnase at the American Chemical Society Spring 2003 Meeting in New Orleans.

In the summer of 2003, with the encouragement and support of Madura, Laura applied and was accepted into the very prestigious internship program at IBM Almaden Research Center in San Jose, California. Laura spent 10 weeks working on molecular dynamic simulations of the protein gene beta hairpin. She analyzed the interactions of the protein gene with water. "It was really nice working in that atmosphere," she said. "I worked long days and spent the weekends sightseeing."

Laura started her senior year by presenting her research on IBM's Blue Gene Project in the Computers in Chemistry Poster Session at the American Chemical Society Fall 2003 Meeting in New York City. She continues her research with Madura. "Dr. Madura pushed me to do things I wouldn't have done otherwise, because a) I wouldn't have been aware of these opportunities, and b) I didn't have the confidence to do them," she stated.

Now heading towards the senior year finish line, Laura plans to pursue a graduate degree in computational theoretical studies. The next challenge is deciding which graduate school to attend. Wherever Laura's career takes her next, that winning spirit is sure to follow!

— CR

Faculty Highlights

Recent Grants

Scott Cohen received a Duquesne University Presidential Scholarship award for his project entitled, "Relative Sum Rules and the Bethe Theory of Stopping by Heavy Element Targets." This award, in the amount of $5,000, is to fund his writing of an invited review article on this topic, which will appear in an upcoming volume of the serial, *Advances in Quantum Chemistry.*

Jeffrey D. Evanseck and **Jeffry D. Madura** received funding from the National Science Foundation MRI to complete research in conjunction with D. Simon entitled "Acquisition of a 128-Processor Beowulf Cluster for Research and Education in the Computational Sciences."

Jeffrey D. Evanseck received funding from National Institutes of Health R15 to complete research in conjunction with W. Meng entitled "Rational Design of Peptide Based Tumor Vaccines."

Jeffrey D. Evanseck received funding from the Department of Defense-NETL to complete research entitled "Development of Multiscale Simulation Methods."

Jeffrey D. Evanseck and **Jeffry D. Madura** received funding from the National Science Foundation/ National Institutes of Health to complete research in conjunction with Ivet Bahar, J. Stiles and B. Ermentrout entitled "Simulation and Computer Visualization of Biological Systems."

Simonetta Frittelli received a three-year grant from the NSF in the amount of $75,000. The grant goes from 8/1/03 to 7/31/06. The title of Simonetta's project is "Properties of the Einstein Equations and Gravitational Lensing in Relativity." This award is especially impressive since it is in a fore-front field of physics in which funding is difficult to obtain.

Mitchell E. Johnson received an NRSA Kirchstein Senior Fellowship from NIH to support research in clinical microfluidics at the University of Virginia during his sabbatical leave.

Stanley J. Kabala received a grant from the Heinz Endowments for the project "Best Management Practices for Water Quality: A Multi-Municipal Stormwater Management System for the Turtle Creek Watershed." The project will be carried out in cooperation with the 3 Rivers Wet Weather Demonstration Program.

H.M. "Skip" Kingston received funding from the EPA for continuation research entitled "Compilation of Validation Data for EPA draft method 3200 Speciation of Mercury in Soils."

Jeffry Madura, **Omar Steward**, **Partha Basu**, and **Fraser Fleming** received funding from the National Science Foundation Chemical Research and Instrumentation Facilities Program to upgrade the departmental single crystal X-ray diffractometer to a state of the art instrument with a CCD detector.

Monica Sorescu received a grant from the Petroleum Research Fund for her proposal, "Properties of Magnetite at Nanoscale." Her grant is for $50,000, going from 9/1/03 to 8/31/06. This funding also includes support for an undergraduate research student each summer. Monica also received a new DOE grant in the amount of $80,000 for the project "Laser Processing of Advanced Magnetic Materials." This funding is for one year and includes a postdoctoral salary.

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Achievements

After conducting a national search, Duquesne University named CERE adjunct faculty member **Paul M. King** as Director of Environmental Health and Safety. King will direct the development and implementation of risk management, loss and prevention, environmental protection, hazardous waste disposal, radiation and occupational safety, and health programs. Overseeing a staff of five, King will also work collaboratively with University deans, directors, managers, chairs, faculty and students to maintain a safe campus.

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Spectrum

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Frank and Patsy Deverse Endowed Science Scholarship

what he had originally invested.

These days Deverse spends much of his time fishing on Lake Tahoe, but his passion for science will never retire, which explains why he established the scholarship at Duquesne. Deverse said he named his wife, Patsy, in the scholarship as well because she was a true partner in his success. "I never could have accomplished what I did without her support," he admitted.

Times were tough for Frank and Patsy Deverse when he was a student at Duquesne. "I worked second shift and went to school first shift, so it was a real challenge," he recalled. "By the time I graduated, I was really burned out."

Thanks to the generosity of the Deverse couple, that is a problem Edward Franklin should not have. Franklin, a sophomore pursuing the entry-level master's in forensic science and law, is one of the first students to benefit from the Deverse scholarship. Born and raised in Greensburg like Deverse, Franklin was also unsure of his future as he entered college. Then, about a month before his first day of classes, he received the letter that changed his life.

"It was awesome," Franklin said. "It was like a huge burden was lifted. My parents were willing to help as much as they could, and I wanted to work as much as possible. The greatest thing [about the scholarship] is that it has given me the opportunity to concentrate fully on my studies."

That opportunity is paying off. At the end of his freshman year, Franklin had a 3.9 grade point average. No longer concerned with holding down a summer job, Franklin used his time last summer to participate in the school's Undergraduate Research Program. Now he is a regular assistant in the laboratory of Dr. Jeffrey Evanseck, associate professor of chemistry and biochemistry.

"The research experience just opened my mind to where science is headed in the future," he said. "When I am in class, I can look at what my professors are showing me, and I can see all the applications. I don't think I would be able to focus on that if I was worried about making money to support myself in college."

Those words would surely be good news to Deverse. Describing his hopes for the scholarship recipient, he said, "I want him to have fun! Getting an education is about an appreciation for learning. Do what you really enjoy, and you will find a way to make a contribution."

— LVM