

New study may shed light on protein-drug interactions

JARED SAGOFF

PROTEINS, the biological molecules that are involved in virtually every action of every organism, may themselves move in surprising ways, according to a recent Argonne study that may shed new light on how proteins interact with drugs and other small molecules.

This study, which relied on the intense X-ray beams available at Argonne's Advanced Photon Source, uses a new approach to characterize the ways in which proteins move around in solution to interact with other molecules, including drugs, metabolites or pieces of DNA.

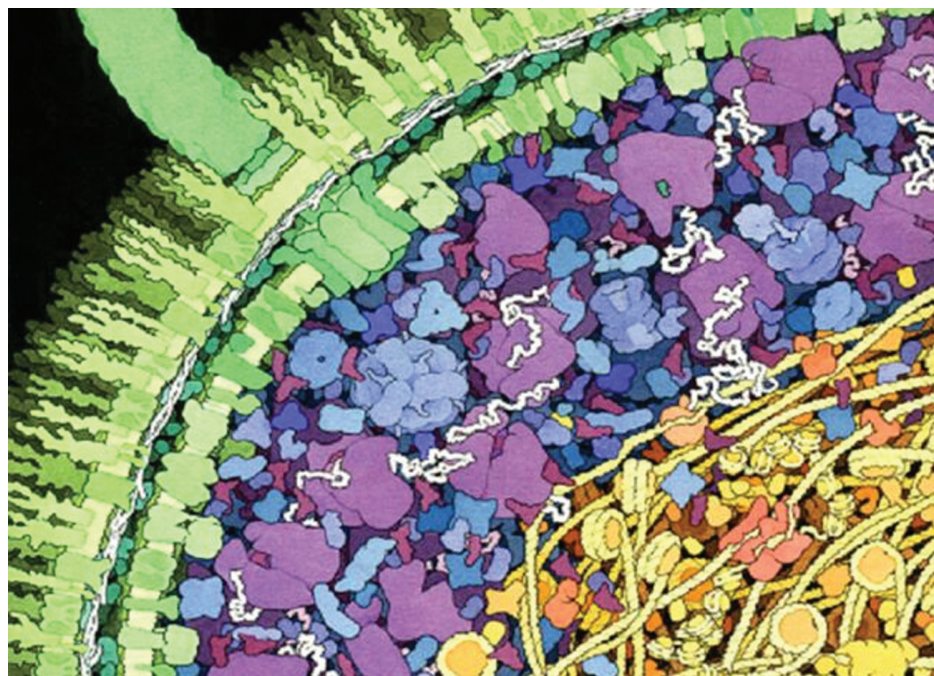
"Proteins are not static, they're dynamic," said Argonne biochemist Lee Makowski, who headed the project. "Part of the common conception of proteins as rigid bodies comes from the fact that we know huge amounts about protein structures but much less about how they move."

The study of proteins had long focused almost exclusively on their structures, parts of which can resemble chains, sheets or helices. To determine these, scientists use high-energy X-rays to take snapshots of proteins frozen in a single conformation within a highly ordered crystal. However, biologists had made relatively little progress in using these pictures to show how proteins can reconfigure themselves in different environments.

While scientists had expected proteins to behave similarly in regions of high and low protein concentration — from as high as 30 percent protein to less than 1 percent protein, respectively — they instead found that proteins had a much larger range of motion and could contort themselves into many more configurations in the dilute solutions. "The difference is comparable to skipping through an open field or being crammed into a crowded elevator," Makowski said.

For more than a century, the standard model of protein behavior depicted them as inflexible "locks" that could interact only with a small set of equally rigid molecular "keys." Even today's introductory biology courses rely on descriptions of protein behavior that require them to swivel and pivot very little as they interact with other biological molecules, according to Makowski. "That's a very powerful image but it's not the whole story," he said. "We've learned that proteins in solution can take on an entire ensemble of slightly different structures and that, for most proteins, this ensemble grows much larger as you go to lower and lower concentrations."

Makowski and his colleagues were also surprised to discover that



In this *e-coli* cell, the proteins (shown in blue) crowd around ribosomes (purple). These regions have a high concentration of protein, typically greater than 30 percent, which limits the ensemble of states into which the proteins can bend themselves.

environmental conditions strongly influence which state in this "ensemble" of conformations a protein prefers to enter. Most of a protein's common configurations have a functional purpose, he said, as it is "not likely to twist itself into something completely irrelevant to its function."

For example, one of the five proteins examined in the study, hemoglobin, has two favored conformations: one in which it binds oxygen very readily and one in which it does not. When hemoglobin is placed in a solution that contains a great deal of available oxygen, it spends most of the time in the former state, but when oxygen is not easily accessible, it usually flips into the latter. "We now know that in dilute solutions, hemoglobin can actually take on both conformations — even in the absence of oxygen," he added.

By keeping all of the environmental factors the same save for the protein concentration in the solution, Makowski and his team discovered another surprising result. Scientists had known for many years that when proteins are too concentrated, they aggregate and fall out of solution. However, biochemists previously had difficulty explaining why a similar effect also occurs in overly dilute solutions.

Proteins have hydrophobic — or "water-hating" — core regions that try to avoid touching water if at all possible. Because of this characteristic, proteins will rearrange themselves to protect these regions from coming into contact with water. In dilute solutions, however, Makowski's team discovered that proteins fluctuate far more than in concentrated solutions, and these

fluctuations expose the proteins' hydrophobic core, making them more likely to stick to one another or to the container walls.

The results of the research appeared in the Jan. 11 issue of *the Journal of Molecular Biology*. ■

Seminars on Ricketts Lab answered employee questions

ABIGAIL ALLRED

INFORMATION on the Howard T. Ricketts Regional Biocontainment Laboratory, which will open at Argonne in late spring or early summer of 2008, was provided to Argonne employees at a recent series of seminars.

"Demystifying the Ricketts Laboratory: An Introduction to Biosafety" was presented by Joe Kanabrocki, assistant dean for biosafety and associate professor of microbiology in the Biological Sciences Division of the University of Chicago. He also serves as the director of the biosafety program at the Ricketts Laboratory. The seminar was presented for all Argonne, Department of Energy and University of Chicago employees working at Argonne.

Kanabrocki, who has spent the past 16 years of his career in biosafety, gave a presentation focused on the importance of the research agenda, why Argonne was chosen as the site for the facility, and what's being done to make sure the facility is safe.

In early 2002, The National Institutes of Health (NIH) requested applications to seek funding for research in biodefense and emerging infectious diseases. This research would be conducted in Regional (See "Ricketts" on page 2)

Innovation at APS inspires award-winning image

CUTTING-EDGE SCIENCE that could help shape our energy future, combined with the graphic arts, has resulted in an award-winning scientific illustration based on experiments at Argonne's Advanced Photon Source (APS). A figure created for an abstract submitted to the American Physical Society's March 2007 Meeting, and previously for a press release by the National Science Foundation (Feb. 16, 2007), is one of the winning entries in the "Gallery of Nonlinear Images," a competition held at the meeting and sponsored by the American Physical Society's Group on Statistical and Non-linear Physics. Researcher Peter Pfeifer and his colleagues from the University of Missouri, the Midwest Research Institute and Argonne won for a figure that graphically describes a new methane storage system for natural-gas vehicles.

The APS ultra-small-angle scattering instrument installed at X-ray Operations and Research beamlines 32-ID and 33-ID was used by the scientists in the course of developing a nanoporous carbon material made from waste corncob, which according to the abstract, "stores CH₄ [methane] at an unprecedented capacity (See "Illustration" on page 3)



Research at the Advanced Photon Source helped scientists from the University of Missouri-Columbia and the Midwest Research Institute in Kansas City develop a method to convert corncob waste into a carbon "sponge" with nanoscale pores. The new material can store large quantities of natural gas and can be formed into a variety of shapes, ideal characteristics for next-generation gas storage tanks on methane-powered automobiles. *Illustration by Nicolle Rager Fuller, National Science Foundation*

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INSIDE ARGONNE
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Ricketts

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An artist's rendering of the Howard T. Ricketts Regional Biocontainment Laboratory, which will open at Argonne later this year.

Centers of Excellence for Biodefense and Emerging Infectious Disease Laboratories, or RCEs. Kanabrocki explained that the Ricketts Laboratory will partner with the Great Lakes region RCE Consortium, hosted by the University of Chicago. The RCEs' strategic goals are to train researchers for biodefense activities, develop and maintain comprehensive core facilities to support research and training, to make facilities available for qualified investigators from academia, biotech companies and the pharmaceutical industry, and to have a facility and scientific support staff that is ready and available in the event of a national biodefense or public health emergency. The Ricketts Laboratory will be one of 13 regional NIH laboratories in the country to conduct research for biodefense and study emerging infectious diseases.

The Ricketts Laboratory is scheduled to open in late spring or early summer 2008 and will employ approximately 50 people.

The Ricketts Center relies on three concepts to ensure safety, Kanabrocki said: biosafety, or protection from exposure and containment of agents; biosecurity, which includes locks, secured databases and controlled access; and biosurety, where the quality of the investigators working in the laboratory is maintained with background checks, FBI clearance, fingerprinting, training and the "buddy system," ensuring there are at least two people in the laboratory at all times for both safety and security.

Pathogens — disease-causing organisms — that will be studied at the facility are found in nature and many are endemic to the United States. Kanabrocki stated that the greatest risk of exposure is to the investigators in the laboratory, and all pathogens they currently plan to study are treatable by antibiotics. Many factors need to be considered when a risk assessment is done — the quantity and concentration, natural resistance, communicability, vectors, environmental stability, how pathogenic it is, the source and exposure routes. All of these factors weigh in on the method of containment and the likelihood of the pathogen's survival should it be released into the environment. Barriers and controls in place at the Ricketts Laboratory to prevent exposure and maintain physical containment include engineering controls, personal protective equipment (PPE), training, work practices, equipment, protocols and facility design. Kanabrocki stressed there will be multiple layers of physical containment. In addition to the laboratory safety measures, the pathogens, many of which

are "select agents," as they are called by the Centers for Disease Control (CDC), will be transported on site under police or security escort. The laboratory will be staffed and monitored continuously.

In addition to its role as a research center, it will also serve as a regional resource in the event of an outbreak of disease.

Kanabrocki concluded his presentation by discussing the reasons that Argonne was selected as the site to build this state-of-the-art facility. Argonne is a central location to other parts of the region with scientific and technical expertise and has a proven track record of safely working with hazardous materials. The laboratory offers a well established safety culture and security infrastructure.

If employees have any questions about the Ricketts Laboratory, they are encouraged to contact Kanabrocki at jkanabro@bsd.uchicago.edu or 773-834-7496. ■

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Six Argonne scientists elected American Physical Society fellows

THE AMERICAN PHYSICAL SOCIETY (APS) has recently announced new fellows for 2007, and six Argonne scientists have been elected. Fellowship is an honor that recognizes important work in the physical sciences by professional peers. Each nominee was evaluated by the fellowship committee of the appropriate APS division, topical group or forum. After review by the APS fellowship committee, the successful candidates are elected by the APS Council.

Michael Borland (ASD) was elected for his contributions to fourth generation light sources, particularly for development and support of the program ELEGANT, the first integrated accelerator code to realistically model coherent synchrotron radiation effects. More information on his work can be found online. www.aps.anl.gov/News/APS_News/Content/APS_NEWS_20071204.php



Borland

Paul Fenter (CSE) was elected for his innovative application of X-ray

Argonne's Blue Gene/P to host large cadre of INCITE researchers

ANGELA Y. HARDIN

TWENTY RESEARCH PROJECTS have been awarded more than 111 million hours of computing time at the Argonne Leadership Computing Facility (ALCF).

The awards are part of a competitively selected group of 55 scientific projects announced Jan. 17 by the Department of Energy's Office of Science. The awards are made through the 2008 Innovative and Novel Computational Impact on Theory and Experiment (INCITE), a DOE program that supports computationally intensive, large-scale research projects. DOE has allocated more than 265 million processor-hours for supercomputing and data storage resources located at Argonne, Oak Ridge, Pacific Northwest and Lawrence Berkeley national laboratories.

"The Department of Energy's Office of Science has two of the top 10 most powerful supercomputers, and using them through the INCITE program is having a transformational effect on America's scientific and economic competitiveness," said DOE Under Secretary for Science Raymond L. Orbach. "Once considered the domain of only small groups of researchers, supercomputers today are tools for discovery, driving scientific advancement across a wide range of disciplines. We're proud to provide these resources to help researchers advance scientific knowledge and understanding and thereby to provide insight into major scientific and industrial issues."

At Argonne, new and returning INCITE researchers will conduct projects ranging from large-scale simulations of potentially dangerous heart rhythm disorders to running detailed numerical experiments of thermal striping in sodium-cooled fast reactors.

"It is thrilling to see the broad range of scientific projects to be conducted at Argonne," said Argonne Director Robert

Rosner. "The investigators on these projects will be able to conduct cutting-edge research that will take only a few weeks or months — a relatively short period of time compared to the years and decades that would have been needed without DOE's supercomputing resources. That means important scientific findings can be made more quickly and used to develop technologies that will benefit U.S. economic competitiveness and address society's concerns about the environment, clean and efficient energy, climate change, and healthcare, to name just a few.

"For example," Rosner said, "Andrew Siegel, Argonne's project leader for nuclear simulation, will have the opportunity through INCITE to test a set of integrated models that will help to optimize and validate the design and safety of a new generation of advanced recycle reactors. The integration of these models would represent a sea change over the traditional reliance on expensive instrumented experiments. In the long run, advanced simulation will significantly reduce the cost to construct new nuclear reactors, a carbon-emissions-free source of electricity."

ALCF Director Raymond Bair said that, "Argonne has expanded its supercomputing capabilities to give scientists even more advanced computing resources with which to conduct more detailed and accurate simulations of scientific problems. Within the last year, the ALCF has expanded its computing power by more than a factor of 20, to 111 teraflops. Argonne's recent order for a 445-teraflops IBM Blue Gene/P supercomputer will soon bring the ALCF a total computing power of 556 teraflops. A lot of important science is going to be done on this machine."

Of the 20 INCITE projects that will use the Blue Gene/P at Argonne, 13 are new projects and seven are projects renewed from 2007. ■



Fenter

online. www.aps.anl.gov/Science/Highlights/2006/20061205.htm



Gray

of electromagnetic radiation with nanoparticles. More information on his work can be found online. www.aps.anl.gov/Science/Future/Workshops/Mesoscopic_and_Nanosopic_Science/Summaries/Gray.pdf

Albert Macrander (XSD) was elected for advancement of X-ray science, X-ray optics and X-ray measurements on crystals and for his leadership as editor of the *Review of Scientific Instruments*. More information on his work can



Macrander

be found online. www.aps.anl.gov/News/APS_News/Content/APS_NEWS_20071210.php



Streiffer

Harold Spinka (HEP) was elected for his contributions to spin physics and leadership of symmetry experiments at ZGS, LAMPF, AGS, and RHIC. More information on his work can be found online. www.anl.gov/Media_Center/News/2005/RHIC050527.html

Stephen Streiffer (CNM) was elected for his experimental studies of ferroelectric thin film physics, which have established the relationships between epitaxial strain, ferroelectric phase transition behavior and domain structure and size effects, and for advancing the fundamental understanding of complex oxide thin film microstructure. More information on Streiffer and his work can be found online. www.msd.anl.gov/groups/im/personnel/streiffer/ ■

Illustration

(Continued from page 1)

of 118 g CH₄/liter carbon, or 180 times its own volume (DOE target) ... This provides the technology to replace bulky cylindrical compressed natural gas tanks ... in current natural-gas vehicles by a flat, light-weight tank with storage as adsorbed natural gas, under the floor of a car, in next-generation clean vehicles. Natural gas ... gives near zero emissions ... can be produced in significant amounts from renewable sources ... and costs 30%-60% less than gasoline or diesel, at the pump per-energy equivalent."

The research was carried out under the Alliance for Collaborative Research in Alternative Fuel Technology, or ALL-CRAFT, a partnership of the University of Missouri-Columbia (lead institution), the Midwest Research Institute in Kansas City, and other partners, with major funding

from the National Science Foundation's Program "Partnerships for Innovation," to develop low-pressure, high-capacity storage technologies for natural gas and hydrogen as alternative fuels for advanced transportation. The research supported by the group's work at the APS has met the ALL-CRAFT objective to "replace bulky cylindrical, heavy-walled compressed natural gas tanks ... in current natural-gas vehicles by a flat, light-weight tank, with storage as adsorbed natural gas, in next-generation clean vehicles."

The prize-winning illustration, which was created by Nicole Roger Fuller of the National science Foundation, was published in "Complex Pore Spaces Create Record-Breaking Methane Storage System for Natural-Gas Vehicles," P. Pfeifer et al., *Chaos* 17, 041101 (2007). ■

'INTRODUCE A GIRL TO ENGINEERING DAY' APPLICATIONS ONLINE

Student applications for Argonne's Introduce a Girl to Engineering Day activities, to be held Thursday, Feb. 21, are now available online.

"Introduce a Girl to Engineering Day" is an educational and fun one-day event focused on introducing girls in 6th through 8th grade to engineering careers through hands-on activities and direct interaction with engineers and scientists.

Deadline for applications is Friday, Feb. 8.

DIRECTOR'S SPECIAL COLLOQUIUM TO BE HELD

Neil Gershenfeld, director of the Center for Bits and Atoms at the Massachusetts Institute of Technology, will speak at a Director's Special Colloquium titled "Programming Bits and Atoms" Wednesday, Jan. 30, at 1:30 p.m. in the Building 362 Auditorium.

The colloquium will detail Gershenfeld's research on breaking down assumptions about information technologies and removing the boundaries between bits and atoms in order to help improve not just the performance and scalability but also the relevance of computation to some of the greatest technological challenges and opportunities.

OCF LAUNCHES GENERAL TRAVEL EXPENSE QUESTION HOTLINE

OCF now offers a new travel expense report question hotline and e-mail address to be used for laboratory personnel to obtain answers to general questions about their travel expense reports.

The phone number is ext. 2-1000 and the e-mail address is ocftravel@anl.gov. OCF asks that you direct general travel expense report related inquiries to either of these instead of calling a specific contact in Accounts Payable.

Questions regarding a specific paid expense report should be addressed to the person indicated in the Automated Clearing House e-mail you receive. The person indicated in this e-mail is the person who processed your expense report and is responsible for answering questions regarding it.

For questions regarding travel authorization numbers and traditional agent-assisted reservations, travelers should call the travel office at ext. 2-5050 or e-mail anl@owt.net.

ARGONNE CLUB SPONSORS 'THINK HOT-HOT-HOT' PARTY AT BUILDING 617 LOWER LEVEL

Argonne Club will sponsor its "Think Hot-Hot-Hot" Party Thursday, Feb. 7, from 4:30 to 8 p.m. at the Building 617 Lower Level.

There is no cover for the event, and there

will be tropical drinks and music as well as prizes for the best tropical outfit.

All non-Argonne employees must be badged by the AIC prior to 4 p.m.

For more information, see the Argonne Club's Web site or e-mail argonneclub@anl.gov.

AABC JOINS WITH THE REED GALLERY TO PRESENT ART EXHIBIT IN CELEBRATION OF BLACK HISTORY MONTH

Thursday, Feb. 14, through Friday, Feb. 15, the African American/Black Club along with The Reed Gallery will exhibit a collection of African American art, collectibles and shadow boxes by various artists in the Building 213 Cafeteria Lobby.

WEB-CONFERENCING SERVICE AVAILABLE

The Computing and Information Systems Division (CIS) has recently acquired a Web-conferencing service for general laboratory use. The product, Adobe Connect, is a platform-independent, Web-based conferencing service that provides a media-rich, virtual collaboration environment where laboratory employees can interact among themselves and with external participants. This service enables laboratory employees to host virtual meetings with little or no training.

In order to familiarize users with the capabilities and the use of this service, CIS will offer two getting-started sessions, "Getting Started With Adobe Connect Web-Conferencing," which will be held on Thursday, Jan. 17, from 2 - 3 p.m. in Building 212, Room A157, and Thursday, Jan. 24, from 10 - 11 a.m., in Building 402, Room E1100.

Registration is not required — just show up. Bring a laptop with wireless capability in order to participate in the training and demo.

For more information, see the Web-conferencing service page.

inside.anl.gov/cis/services/web_conferencing.html

ARGONNE TOASTMASTERS TO HOST OPEN HOUSE

Those who have ever felt as if they missed an opportunity to say "the right thing" or who find it difficult to think on their feet should consider joining Toastmasters. Toastmasters can help develop these important life skills.

Argonne Toastmasters International will host an open house at their regular meeting, Wednesday, Feb. 13, from noon to 1 p.m. in Building 201, Room 190. Everyone is welcome and encouraged to come to the open house to find out what Toastmasters has to offer.

Argonne awards four employees 'Pollution Prevention Spirit Award'

DURING A CEREMONY held Dec. 18 in Building 201, four Argonne employees were recognized for their successful efforts to incorporate waste management and pollution-prevention philosophies into their daily work. Argonne's pollution-prevention coordinator Gregg Kulma said "the actions of these individuals provide an example of the benefits of investing their energy into something that they believe in."

The recipients of the "Pollution Prevention Spirit Award" ("P2" Award), Lynda Dieckman (BIO), Madonna Pence (TSD), John Schlueter (MSD) and Michael Wang (ES), each took the initiative to prevent pollution, to reduce waste, and to reuse or recycle resources.

Lynda Dieckman took the initiative to work with researchers in her area to identify obsolete mercury-containing devices, such as thermometers, manometers and syringes, and to arrange for collection and transportation of those devices to WMO.

Argonne is a member of U.S. EPA's National Partnership for Environmental Priorities. One of Argonne's goals as a member is to recycle 10 pounds of mercury by the end of 2008. Dieckman's initiative and effort will help Argonne meet its goal.

Madonna Pence has not had a trash can in her office for many years as a way to reduce trash generation. Without a trash can, Pence always looks for ways to recycle or reuse first. She takes the small amounts of trash generated to the trash receptacles in a common area.

Her efforts to ensure that less trash is generated has many added benefits to the lab:

- fewer plastic trash can liners are purchased and disposed of, which saves the laboratory money;
- less work for the custodians; and
- less waste in the landfill leaves more room for items that are harder to recycle or reuse.

Pence's actions show an important core value to minimize waste and help the environment. If 100 employees would manage their trash in the same manner, 15,000 fewer plastic bags would be used.

John Schlueter showed that the lab would save \$62,000 a year by recycling toluene and isopropyl solvents instead of buying them and disposing of them after their use. The \$10,000 cost of a solvent recycler would be paid for in about two months. Based on Schlueter's analysis, Argonne's P2 program provided funds to purchase the solvent recycler unit.

Michael Wang was involved in all aspects of the GREET (Greenhouse gases, Regulated Emissions, and Energy use in Transportation) technology transfer process — from model development, though copyright and licensing decisions, to marketing and educating users, to refining and updating the model in response to users' needs. The GREET model is a comprehensive transportation analysis tool that allows users to readily evaluate the energy and environmental benefits of advanced vehicle technologies and new transportation fuels. It is offered by Argonne to address the need for truly comparative fuel-cycle (or well-to-wheel) analyses. GREET includes fuels ranging from gasoline and diesel to bio-ethanol and hydrogen and vehicle technologies ranging from conventional internal combustion engines, to hybrid electric vehicles, to fuel-cell vehicles.

The benefits of the technology transfer efforts for the GREET software are evident by more than 4,000 registered GREET users in both the public and private sectors throughout North America, Europe and Asia. The Society of Automotive Engineers acknowledges GREET as the "gold standard" for well-to-wheel analyses of vehicle/fuel systems.

Kulma says the lab is always looking for ways to improve its performance, and the P2 Award is intended to recognize efforts of individuals who have made a contribution. "These people have recognized the importance of identifying an opportunity to minimize waste or recycle and have done something about it. A key part of a successful P2 program is for individuals to question the convention of the way things are done and think about what they can do to prevent pollution." ■



The four winners of the Pollution Prevention Spirit Award are congratulated by Laboratory Director Robert Rosner and Pollution Prevention Coordinator Gregg Kulma. From left to right: Rosner, Madonna Pence, Lynda Dieckman, John Schlueter, Michael Wang and Kulma.

Argonne "...for a brighter future"

AR'GANG**NEW ARRIVALS**

A girl, Sofia Marie, born Nov. 2 to Jessica Herrera (NE); a boy, Mattia, born Oct. 31 to Cristian Rabiti (NE); a girl, Emily, born Oct. 25 to Mihai Anitescu (MCS).

Proud grandparents: grandson, Morgan Spenser, born Dec. 14 to Yvette Woell (TSD); grandson, Eli Maxwell, born Oct. 25 and granddaughter, Kelly Lane, born Nov. 14 to Jeff Rest (NE); grandson, Jacob Patrick, born Jan. 1 to Anthony Dvorak (EVS).

WEDDINGS/ENGAGEMENTS

Congratulations to Amy Brooks (TSD) on her Sept. 29 wedding to Michael Kuszewski; Jim Podraza (FMS-BM) on his August wedding to Jillian; Ellen VanDuyne (OCF/PRO) on her engagement.

GET WELL

Get well to Cindy Smithberg and Jim Hogan (both FMS-BM) and Pat Canaday (C&PA).

WELCOME

Legal welcomes Karen VanMeerten; C&PA welcomes Angela Hardin and Brock Cooper; TSD welcomes Amy Brooks; FMS-BM welcomes Scott Kovac, Corey Zadlo, Jeff Livingston, and Kent Oikle; OCF-PRO welcomes Ken Krupa and Lynda Elhard.

TRANSFERS

Good luck to Sharon Giblin who transferred from LEG to CSE, Gail Wood who transferred from OCF/PRO to SCD, Gina Gilsdorf who transferred from OCF/PRO to NE and Edy Haus who transferred from OCF/PRO to CIS.

FAREWELL

Good luck to Matt Nesta (EVS); Bill Gropp, Carol Warczak, Austin Ulas (all MCS), Eleanor

Taylor and Sylvia Carson (both C&PA) who have left the laboratory.

PROMOTIONS

Promotions reported to Ar'Gang include: Ron Moore (FMS-BM) on his promotion to foreman; Erik Schimke (OCF/PRO) on his promotion to supervisor.

CONDOLENCES

Our condolences to Karen Kerwin (EQO) on the death of her husband; Floyd Bennett (TSD) on the death of his sister-in-law, Carol McNeal; James Corsolini (TSD) on the death of his mother, Rose B.; Yvette Woell (TSD) on the death of her sister, Gloria Ann Goertel; Angie Monczynski (TSD) on the death of her mother-in-law, Anna; Paul Vanderwall (FMS-BM) on the death of his mother; Linda Wesolowski (FMS-US) on the death of her mother; Jeff Darnell (FMS-BM) on the death of his grandmother; Debbie Elcock (EVS) on the death of her mother; Lou Martino (EVS) on the death of his father; John Peterson (EVS) on the death of his mother; Cindy Boggs (EVS) on the death of her mother; and Sandy Smith (OCF-PRO) on the death of her grandmother.

ACCOMPLISHMENTS

Congratulations to Donna Shaw (AST), who received her B.A. from Lewis University in December and to Rosa Mendoza (NE) and Hubert Ley (ES), who both obtained U.S. citizenship.

CONTRIBUTORS

Thanks to this issue's contributors: Diana Grygiel (EQO); Debra Ritchie (TSD); Sharon Giblin (CSE); Brea Grischkat (NE); Nancy Cantwell (FMS); Lori Greenwood (EVS); Judy Beumer (MCS); Nancy La Rue (OCF) and Denise Voss (AST).

FIVE SEASONS SPORTS CLUB OFFERS SPECIAL RATE TO ARGONNE, DOE EMPLOYEES

The Five Seasons Sports Club in Burr Ridge is now offering special rates for employees of Argonne and DOE.

Benefits include up to 75 percent off enrollment and 20 percent off monthly dues.

For more information and a three-day VIP pass, call 630-570-5200 or e-mail sls1@fiveseasonsbr.com or sls3@fiveseasonsbr.com.

POSTDOC OFFICE CREATES ALUMNI WEB SITE, ASKS FOR SUBMISSIONS

The Postdoctoral Office is creating an Argonne Postdoctoral alumni Web page as part of the mentoring program. Anyone who held a postdoctoral appointment at Argonne who wishes to participate in this important project should send the following information to Giselle Sandi (gsandi@anl.gov), postdoctoral programs coordinator:

- Name
- Current picture
- Argonne past affiliation (Division, postdoc tenure, supervisor)
- A research highlight of Argonne efforts
- Current affiliation and contact information (company or institution, e-mail, phone number, Web site if any)
- A short paragraph summarizing new endeavors

Contact information for former postdocs is also needed. The Web page is already active

and some examples can be viewed online.

www.dep.anl.gov/postdocs/alumni

APPLICATIONS SOUGHT FOR DIRECTOR'S POSTDOCTORAL FELLOWSHIPS

Applications are being sought for the Director's Postdoctoral Fellowships.

These postdoctoral fellows do not incur any cost to Argonne Divisions.

All candidates are required to submit the following application package:

- A nomination memo (two pages or fewer) from Argonne sponsor (with copy to division director)
- Research proposal (two pages or fewer)
- Three letters of recommendation from non-Argonne staff
- CV
- List of publications, abstracts, and significant presentations
- Undergraduate and graduate school transcripts

The application deadline is Tuesday, Feb. 5. The required documents must be submitted online.

Questions and comments should be directed to Giselle Sandi, postdoctoral programs coordinator, at ext. 2-1903.

GUEST HOUSE RESTAURANT TO OFFER 'SEAFOOD FRIDAYS'

The Guest House Restaurant will offer "Seafood Fridays" Friday, Feb. 8, through Friday, March 20. There will be a soup and salad bar along with special fish entrees.

Schriesheim gift of \$250,000 creates Penn State fellowship

RETIRED ARGONNE DIRECTOR and Penn State alumnus Alan Schriesheim has given \$250,000 to the Eberly College of Science at Penn State to create a distinguished graduate fellowship. Schriesheim, an internationally acclaimed chemist and technology executive, was a pioneer in transforming large and highly complex research organizations to yield productive commercialized technology.

The fellowship, named for the donor and his late wife, Beatrice "Bea" Schriesheim, will help the Eberly College recruit academically talented first-year graduate students who are pursuing doctoral degrees, according to Dean Daniel Larson. First preference will be given to students majoring in chemistry.

"The Schriesheim Fellowship will have an impact that will last beyond our lifetimes and will influence bright students and future discoveries," said Larson. "We are grateful to Alan for recognizing the value of such a fellowship to the Eberly College and to generations of its students."

Alan Schriesheim graduated from Penn State in 1954 with a doctoral degree in chemistry, having earned his

bachelor's degree from Brooklyn College Polytechnic Institute in 1951. He worked for Exxon for 27 years, rising through the organization to become general manager of Exxon Engineering and director of Exxon Corporate Research. In 1983, he became director and CEO of Argonne, while also holding a dual appointment as a professor of chemistry at the University of Chicago. He retired in 1996 and holds the title director emeritus. Penn State named him a distinguished alumnus in 2005, the highest honor the university can bestow on its graduates.

He and Bea, his wife of 50 years, met while they were both graduate students in chemistry at Penn State. Beatrice Schriesheim was born in 1930 in Poland and survived the Holocaust by escaping the Nazi invasion in 1939 and surviving imprisonment in Siberia. She later received her undergraduate degree from Queen's College in New York before attending Penn State's graduate school. She was a longtime high school chemistry teacher. She died in 2003.

Alan continues to reside in Chicago and is president of the Chicago Council on Science and Technology. ■