



Undergraduate Newsletter

The Department of Biochemistry and Molecular Biology

In its efforts to keep the BMB undergraduate student body informed about people, programs and events in the BMB Department, the *Undergraduate Newsletter* is pleased to initiate a series of interviews that will hopefully provide a new dimension to the BMB faculty who teach departmental courses and to the exciting areas of research that they conduct in their labs with the assistance of undergraduates, graduate students and postdoctoral fellows. We hope our readers will find this new feature both interesting and, perhaps, valuable to future endeavors. Herewith, we present

An Interview with Dr. Susan Abmayr

UN (Undergraduate Newsletter): What is the immediate goal of the research being conducted in your laboratory?

Dr. ABMAYR:

Our immediate goal is to understand how developing muscle cells, or myoblasts, in an embryo recognize each other and fuse together to form larger muscle fibers. For the past several years, we have been trying to identify genes that are essential for this process. We use the fruitfly embryo as our model system because it is easy to manipulate genetically, and we can examine whole embryos very easily in the microscope. The muscles that develop in this embryo are similar in structure to human muscles, just much smaller. In flies, however, we can look for defective embryos in which no muscle forms at all. We then try to identify the defective gene. The most interesting gene that we have identified is called SNS. It encodes a cell adhesion molecule that sits on the surface of myoblasts and helps them to recognize, and fuse with, other myoblasts. If it is defective, these cells never recognize each other and therefore never fuse together to form muscle fibers.

UN: What are the possible larger implications/applications for the findings of your research?

Dr. ABMAYR:

Over the last decade, many of the genes that have been identified as important in the formation of fly muscle have homologs in mice and humans. We therefore hope that SNS also has a homolog in mammals. This would be extremely interesting because human myoblasts must also recognize each other and fuse together. Perhaps more importantly, some myoblasts remain in the body throughout your entire lifetime. These myoblasts are an insurance policy in case of muscle injury or certain diseases that damage muscle. In some cases, the myoblasts can help to repair the damaged muscle by fusing with it. If we can figure out the genes that control this process, it is likely to have benefit to

humans. That is why there is so much interest in myoblast fusion in the last few years, even in the tiny fruitfly.

UN: Why did you choose to pursue a career in academic research and why in this particular field?

Dr. ABMAYR:

I worked in a lab as an undergraduate, and realized that I loved designing experiments to test new ideas. Even when experiments weren't working or gave unexpected results, I liked the challenge of figuring out what this meant. I probably like brain teasers and crossword puzzles for the same reason. For my generation, there were not many challenging jobs in the life sciences field in industry. So everyone's goal was to be able to work in academia, have a research lab, and teach young scientists how to do research. I have worked in many different areas in my career. I settled on this area of research because I liked all of the different approaches one could take using fruitflies. And when I first saw an embryo in which no muscle formed, it was so dramatic that I knew this would be an interesting problem to solve.

UN: What do you look for in selecting an undergraduate student to do research in your lab?

Dr. ABMAYR:

I really enjoy having students in my lab, both graduate and undergraduate. The most rewarding thing that I do is to see them develop as good scientists, who can think critically, design good experiments and learn things from their results. In selecting undergraduates, I look for students who are good academically, and are willing to do the necessary work even if they don't always enjoy it. I look for students who are willing to spend a few semesters doing research, since it takes some time before a student is really able to work independently. I look for students who take it seriously, and are not just trying to get a few easy credits. But most importantly, I like students who get really jazzed and excited by lab work, and figuring things out.

Students Continue History of Winning Academic Awards

Last Spring semester, three students were named *Evan Pugh Scholars*. *Heather D. Agnew* (BMB/Chem 9th), *Yelena Bernstein* (Micrb 02nd) and *Catherine E. Vrentas* (BMB 10th) were recognized as being in the top 0.5% of their Senior class which represents a minimum of a 3.97 cumulative GPA. *What an exceptional accomplishment!!*

2 BMB Students Named Barry Goldwater Winners

Each year, colleges and universities in the US and Puerto Rico are invited to nominate outstanding sophomore and junior students for Barry Goldwater Scholarships. 309 scholarship awardees were selected from 1,155 nominees earlier this year. The scholarship program honors the memory of Arizona Senator and one-time presidential candidate Barry M. Goldwater. It is designed to foster and encourage outstanding students to pursue careers in mathematics, the natural sciences or engineering. A Goldwater Scholarship is considered the premier undergraduate award of its type in these fields. This year, Penn State nominated four students for the Goldwater, and all four were chosen as recipients. Two of the four students are BMB majors.

"309 scholarship awardees were selected from 1,155 nominees earlier this year"

Thomas Denkenberger (BMB 5th) has a goal of leading a research group that will investigate the molecular aspects of disease and aging, with a focus on the roles of telomeres and telomerase.

Catherine Vrentas (BMB 10th) intends to earn the PhD in Cancer Biology. As a university professor, she plans to use her background in molecular genetics to contribute to a more complete understanding of cancer cell biology. Thomas and Catherine bring exceptional honor to

our Department through the Goldwater awards, and we honor them for this outstanding accomplishment.

Congratulations, and best wishes for continued success in your undergraduate studies!

An Award that is really outta this world

Michelle Kinder (BMB 6th) has been awarded a Sylvia Stein Memorial Space Grant Scholarship for the 02-03 academic year. The scholarship is awarded to students with an outstanding record in both academics and service. Among her other activities outside the classroom, Michelle will be serving as the president of the Biochemistry Society for this academic year. One of the interesting obligations of the Sylvia Stein Scholarship is to spend 10-20 hours per semester serving as a mentor to students in science, engineering or mathematics, or engaging in outreach activities.



3 Schreyer Scholars Win Summer Research Awards

The BMB Department was honored to have three of its undergraduate Schreyer Scholars receive awards to support their research efforts during the recent summer months. Jodi Washinsky (Micrb 8th) and Christine Wolfe (BMB 10th) conducted research over the summer months with the support of a Summer Undergraduate Research Scholarship from the Schreyer Honors College. Maria Aponte (BMB 9th) was awarded a Schreyer Honors College Summer Internship Award. Jodi conducts her research in the laboratory of Dr. Gilmour, Christine in the laboratory of Dr. Luscher in Biology, and Maria in the laboratory of Dr. Andrews in Chemistry. **Congratulations to all three of you!**

Alexander & DeNicola Receive Pfizer Awards

Diane Alexander (Micrb 8th) and Gina DeNicola (BMB 7th) were selected as recipients of a 2002 Pfizer Summer Undergraduate Research Fellowship Award. The awards are granted in several categories including Biology, Chemistry, Biochemistry, Molecular Biology, plus others. Diane won her award in Biochemistry, and Gina won her award in the Biology category. The Pfizer Global Research & Development Division of Pfizer Inc. sponsors the summer research fellowships. Each award provides \$5000 with a minimum of \$3500 going to the student to support full-time sum-

mer research and up to \$1500 going to the academic department to provide supplies and equipment for the research project. Students spend the summer between their junior and senior years on their own campus with a faculty mentor. Diane works in the laboratory of Dr. Pugh and Gina in the laboratory of Dr. Abmayr. One other attractive benefit of the award is that awardees and their mentors are invited to present the results of their research in a poster session at the corporate home of Pfizer in Groton, Connecticut, in the fall, with all expenses paid by Pfizer. **Well done**, Diane and Gina!!

KETURAH BROWN EARNS UNCF-MERCK SCHOLARSHIP

Keturah Brown (Micrb 9th) has been named a recipient of a United Negro College Fund-Merck Undergraduate Science Research Scholarship Award. Eligibility requires that a student be a junior African American enrolled in a 4-year U.S. college in a life or physical science major with a minimum GPA of 3.3 who is willing to commit to two 10-12 week summer internships at a Merck research facility. The award is sponsored by the Merck Company Foundation and is administered by The United Negro College Fund. The award provides up to \$25,000 to support tuition, room and board and other billable fees for the senior academic year.

CONGRATULATIONS,
KETURAH!!!

Attention Biotech Juniors in the CLS Option

There will be an informational meeting regarding the senior year clinical practicum on Monday, September 9th, at 7 p.m. in 112 S. Frear. All students in the CLS Option of the biotechnology major who will have completed the non-clinical course requirements of the major by the end of SP03 are eligible for admission to the hospital program and **should attend this meeting**. Information about the admission process, organization of the clinical practicum, job opportunities, etc. will be discussed. Contact Dr. Mohr if you plan to apply but are unable to be present that evening.

The Undergraduate Study Center Has Moved...

Check out the new location of the Undergraduate Study Center in 101 S. Frear. This room has been dedicated to **YOUR USE!** The Study Center is intended to be a handy retreat for quiet study or to serve as a site for small group meetings or group study. In addition, the Study Center has filing cabinets that contain information on graduate programs, a book shelf with reference books and older editions of textbooks. It also serves as the repository for the periodicals, *Morbidity and Mortality Report*, and *Journal*



Watch. Bound copies of the senior theses of former Schreyer Scholars are also available for review by current Honors students. The room has been renovated with new flooring, ceiling tile, lighting, and fresh paint. Connections for laptop computers have been installed but await the re-wiring of S. Frear by the Office of Telecommunications to become activated.

Be sure to check out these and other features in the **new and improved Undergraduate Study Center**.

New Faculty Join Department

It is a pleasure to announce that four new faculty members have joined the BMB Department since last Fall. We welcome to Penn State...

Dr. Sarah Ades. Dr. Ades comes to Penn State via the University of California, San Francisco where she was a postdoctoral fellow in the lab of Dr. Carol Gross where she worked on the regulation of the extracytoplasmic stress response in *E. coli*. Before moving to UCSF, Dr. Ades served as a postdoctoral fellow at the Institut de Biologie Moleculaire et Cellulaire in Strasbourg, France, where her research focused on the identification and characterization of receptors for microorganisms on *Drosophila* hemocytes, and on the structure and function of Heliomycin, an antifungal peptide. Dr. Ades received her undergraduate degree in Molecular Biophysics and Biochemistry from Yale University and her PhD in Biology from the Massachusetts Institute of Technology. You will find Dr. Ades office in 303 S. Frear.

Dr. Kenneth Keiler received his B.S. and M.S. degrees from Stanford University and his PhD in Biology from the Massachusetts Institute of Technology. Dr. Keiler comes to Penn State from a post-doctoral position in the laboratory of Dr. Lucy Shapiro at Stanford where his research focused on the control of cellular differentiation and protein localization in the stalked bacterium, *Caulobacter*. Dr. Keiler's office is in 261 North Frear.

Dr. Carsten Krebs will be teaching BMB 474, *Properties of Biological Macromolecules*, in Spring semester. He earned his undergraduate degree in Chemistry at the Ruhr-Universität in Bochum, Germany. Work for his doctoral thesis was conducted at the *Max Planck Institut für Strahlenchemie* in Mulheim, Germany. Dr. Krebs undertook postdoctoral work on the Mossbauer and EPR spectroscopic characterization of reaction intermediates in a variety of iron-containing proteins in the laboratory of Prof. B.H. Huynh at Emory University. Dr. Krebs' office is in 306 S. Frear Building.

Dr. Michael Teng comes to Penn State from the Laboratory of Infectious Diseases at the National Institutes of Health where, as a postdoc, he worked on the roles of nonstructural and attachment proteins in the pathogenesis of Respiratory Syncytial Virus (RSV) infection. Dr. Teng also held a previous postdoctoral position in the Department of Neuropharmacology at The Scripps Research Institute in La Jolla, California. Dr. Teng earned his undergraduate degree in Life Sciences from MIT and his PhD in Immunology from the University of Chicago. Dr. Teng will be teaching Micrb 415, *General Virology: Bacterial and Animal Viruses*, in Spring semester. You may welcome Dr. Teng to Penn State in his office in 406 S. Frear.

Have you thought about Cooperative Education?.....

Penn State's Eberly College of Science Cooperative Education Program (Co-op) provides an excellent opportunity for students to integrate academic study with relevant experience in the workplace, through multiple semesters of work and study. Students apply knowledge gained in the classroom and are able to make more informed decisions about their future by participating in the Co-op Program.

These are exciting times for the Co-op Program! Despite the current eco-

nomie climate in the U.S., the scientific research field is thriving. So, there continues to be an abundant number of co-op opportunities available for scientists

in government, pharmaceuticals, the biotechnology industry, and others. In the current competitive job and graduate school markets, co-op students are a cut above the rest. Imagine if

you were an employer, and you had to choose between an individual who graduated in four years and a student who had up to a year of research experi-

ence prior to graduation – which would you choose!

A special Information Session on the Science Co-op will be held on Wednesday, September 4th in 111 Wartik at 6:30 p.m.

Check out the Cooperative Education program at any of the following:

Office of Cooperative Education
520 Thomas Building
Phone: (814) 865-5000
Email address:
co-op@thunder.science.psu.edu

FIND OUT MORE
Science Co-op Information
Session
Wednesday, September 4, 2002
6:30 p.m.
111 Wartik

Biotechnology, BMB, and Microbiology Co-op Placements Academic Year 2001-02

First Last	Major	Company
Leslie Albright	Biotechnology	J & J Pharmaceutical Research and Development
Edward Ballat	Biotechnology	Masterfoods USA
Tom Bodensine	Biotechnology	GlaxoSmithKline
Frank Cichocki	Biotechnology	Charles River Laboratories, Argus Division
Matthew Constanzer	Biotechnology	Human Genome Sciences, Inc.
Karl Devlin	Biotechnology	Merck & Co., Inc.
Melissa Drexel	Biotechnology	J & J Pharmaceutical Research and Development
Scott Jarvis	Biotechnology	GlaxoSmithKline
Charles Kaittanis	Biotechnology	Walt Disney World
Patricia Kratz	Biotechnology	GlaxoSmithKline
Dana Pietrzak	Biotechnology	GlaxoSmithKline
Heather Reed	Biotechnology	Merck & Co., Inc.
Tasha Reitz	Biotechnology	J & J Pharmaceutical Research and Development
Abby Smith	Biotechnology	The Wistar Institute
Tim Stewart	Biotechnology	GlaxoSmithKline
Michael Strunk	Biotechnology	Walter Reed Army Institute of Research
Kim Allen	BMB	Walter Reed Army Institute of Research
Melissa Baker	BMB	GlaxoSmithKline
Lin Chuong	BMB	McNeil Consumer and Specialty Pharmaceuticals
Joshua Cirulli	BMB	J & J/Merck Joint Venture
Lise Gelatko	BMB	GlaxoSmithKline
Joshua Goldstein	BMB	Penn State University
Erin Heritage	BMB	J & J Pharmaceutical Research and Development
Peter Jordan	BMB	GlaxoSmithKline
Sara Kubek	BMB	GlaxoSmithKline--UK
Genna Lutz	BMB	Buckman Laboratories International**
Kirsten Lynn	BMB	J & J Pharmaceutical Research and Development
Daniel Lysko	BMB	GlaxoSmithKline
Tracy Mandichak	BMB	GlaxoSmithKline
Laura McClellan	BMB	J & J Pharmaceutical Research and Development
Michael Reilly	BMB	Centocor
Sandra Ritter	BMB	Cephalon**
Mark Rodgers	BMB	J & J/Merck Joint Venture
Matthew Tonero	BMB	GlaxoSmithKline
Joseph Vennarini	BMB	GlaxoSmithKline
Justin Weaver	BMB	J & J Pharmaceutical Research and Development
Luis Agosto	Microbiology	Walter Reed Army Institute of Research
Katherine Blocher	Microbiology	Walter Reed Army Institute of Research
Todd Borland	Microbiology	GlaxoSmithKline
Michelle Buono	Microbiology	Penn State University
Kassi Cronin	Microbiology	Walter Reed Army Institute of Research
Tina DiCuccio	Microbiology	GlaxoSmithKline
Richard Egolf	Microbiology	GlaxoSmithKline
Danielle Elicker	Microbiology	Walter Reed Army Institute of Research
Kelly Fisher	Microbiology	McNeil Consumer and Specialty Pharmaceuticals
Anita Gillis	Microbiology	Walter Reed Army Institute of Research
Michele Gornick	Microbiology	University of Pittsburgh School of Medicine**
Rebecca Mair	Microbiology	GlaxoSmithKline and The Wistar Institute
Matthew Miller	Microbiology	Centocor
Brian Peters	Microbiology	Masterfoods USA
Justin Smith	Microbiology	GlaxoSmithKline
Kristin Smith	Microbiology	GlaxoSmithKline
Carolyn Wassong	Microbiology	Walter Reed Army Institute of Research and Wyeth Research
Laura Yerges	Microbiology	Walter Reed Army Institute of Research
** Denotes student developed position		

Althouse Laboratory
108 Althouse
Phone: 814-865-5497
Fax: 814-863-7024

We're on the Web!

www.bmb.psu.edu

Some Interesting Statistics...

Final counts for First Year Students at University Park in Fall 2002:

Students with an intended BMB major – 71
Students with an intended MICRB major – 25
Students with an intended BIOTC major – 20

Total numbers of students pursuing:

a BMB degree – 285
a MICRB degree – 120
a BIOTC degree – 97

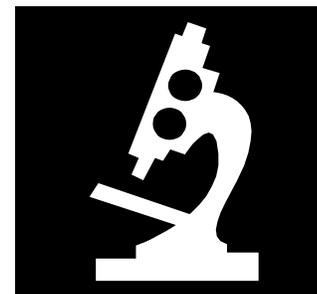
Two (Not So) New Courses Now Available

In cooperation with the V Sc Department, the BMB Department is offering two cross-listed courses that have, until recently, been offered as special topics (497) courses. These two courses now have permanent numbers in both departments. BMB/Micrb/V Sc 432, *Advanced Immunology: Signaling in the Immune System*, is taught by Dr. Pamela Correll, Asst. Prof. of Veterinary Science. BMB/Micrb/V Sc 432 is a 3-credit course with prerequisites of BMB 400 and Micrb 410. The course is offered in Spring semesters and will meet on TR at 02:30-03:45 in SP03.

BMB/V Sc 433, *Molecular and Cellular Toxicology*, is a team-taught course with Drs. Gary Perdew and Jack Vanden Heuvel serving as faculty. BMB 433, also a 3-credit course, is offered in Fall semesters and is being taught MWF at 12:20-01:10 p.m in FA02. **Both BMB/Micrb 432 and BMB 433 will serve as List A electives for BMB majors. BMB/Micrb 432 will also serve as a 400-level Micrb elective in the Microbiology major.** Although these two courses do not appear on current BMB and Micrb checksheets, they will be accepted through petition until the University computer is reprogrammed to accept them in the appropriate categories directly on the degree audit.

NOW is the Time to Enlist...in Your Student Organization

Start the new academic year off on the right foot! Join and become active in the departmental student organization that complements your scientific interests. The BMB Department supports two student "clubs"... The Biochemistry Society and the PENN STATE Student Chapter of the *American Society for Microbiology*. These student organizations are run by students for students. If you participate as an active member, you will have a voice in determining the programs and activities the organizations will offer during the academic year. Student clubs offer a great opportunity for underclassmen to meet and interact with upperclassmen, to learn of career opportunities, to become active in campus and community programs, and best of all, to have a really good time with other students who have common interests. Don't hesitate...just do it! Sign up at the Activities Fair or simply come to a meeting. Posters announcing meetings are displayed in the lobbies of Frear and Althouse. **LOOK FOR THEM!** Don't be a wall-flower! Show your colors. There is a job for everyone. All that is needed is your willingness and *action!*



This publication is available in alternative media on request.

The Pennsylvania State University is committed to the policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by state or federal authorities. It is the policy of the University to maintain an academic and work environment free of discrimination, including harassment. The Pennsylvania State University prohibits discrimination and harassment against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, or veteran status. Direct all inquiries regarding the nondiscrimination policy to the Affirmative Action Director, The Pennsylvania State University, 201 Willard Building, University Park, PA 16802-2801; (814) 863-0471/V, (814) 863-1150/T

BMB Undergraduate Newsletter is a publication of the Department of Biochemistry and Molecular Biology. Items for inclusion in the newsletter should be sent to BMB Undergraduate Newsletter, 108 Althouse Laboratory, University Park, PA 16802 Tel. (814) 865-5497; Fax. (814) 863-7024. U.Ed. SCI 03-15

Editor: Philip W. Mohr, Ph.D., PWM1@PSU.EDU