

# Message from the Biomedical Sciences Chair:

Dear Alumni and Friends:

Greetings on behalf of the Biomedical Sciences Ph.D. Program! It is a pleasure to represent this diverse, vigorous, and exciting group of students and faculty. As you can tell from this insert, there is much to make us proud. Did you know that our fully affiliated faculty now number approximately 70, our students number over 50, our alumni number over 140, external faculty funding is increasing (currently \$11 million), and our students and faculty are publishing at the rate of about 140 manuscripts per year?

This is everybody's reunion year. Please plan to attend our BMS reunion/25th year celebration on October 28 and 29, 2005. We are planning great conversation, chances for scientific interchange, and a thoroughly enjoyable time.

As we celebrate our 25th year, I want to acknowledge all the students and faculty whose hard work are responsible for the BMS Program's current success. As we look to the future, one thing is certain—we cannot stand still. We must rise to changing realities, developing new areas of investigation, and seize surging

opportunities. We must continue to train students who are great today—and better tomorrow! To succeed, we are counting on your continuing support.

We look forward to seeing you in October!

Sincerely,

Gerald M. Alter, Ph.D.,

Director, Biomedical Sciences Ph.D. Program

## A Passion for DNA Research and Teaching Ph.D. Students

Having been with the program since its early beginnings in 1979, it's not surprising that Dr. Michael Leffak has graduated more BMS Ph.D. students than any other faculty member. What may be surprising, however, is how much he still loves what he does after 25 years. "I love doing science," he said. "I love writing papers, and I enjoy seeing results and figuring out what they mean. I try to convey this excitement to the students."

As part of the BMS Ph.D. Program, Dr. Leffak makes sure that students get a broad exposure to the field of molecular genetics.

They learn to think critically about data, how to do experiments, write journal articles, and present talks. Most of the students proceed into a post-doctoral program after earning their BMS degree; this is when they really have the opportunity to define their specific research interests.

Dr. Leffak teaches Biochemistry and Molecular Biology, Research Ethics, and Computational Tools and Strategies. According to him, if it were not for the BMS Ph.D. Program and the outstanding students that he has had the opportunity to work with, he would not be at WSU. He has graduated a diverse group of 15 students, almost all of whom are now in research positions.

When asked if there is a single quality that defines a student as a successful scientist, Dr. Leffak said not necessarily. "Some succeed because of their creativity, others because of the detail in their research method, and others due to their intense focus," he explained.

DNA replication is Dr. Leffak's current focus; his latest research involves the *c-myc* replication origin DNA unwinding element (DUE) and the DUE binding protein (DUE-B). Higher levels of DUE-B have been found in people with ovarian and kidney cancer, and Dr. Leffak is interested in pursuing research regarding this link. Over the years, his research has been well supported by the NIH, and he has several new funding

proposals pending for research on DUE-B and its relationship to cancer.

Having grown up in New York City, Dr. Leffak attended the City College of New York, earned his Ph.D. at the City University of New York, and then did post-doctoral work at Princeton. In 1988–89, he located the chromosomal replication origin of the *c-myc* cancer gene. For many years, his research focused on cloning and mutating of the *c-myc* origin, then reintroducing it into healthy living cells to determine effects.

In addition to his research on DUE-B, Dr. Leffak is working to develop the "Families in Science" research support program. In recent years, he has noticed the change in family roles and responsibilities and the difficulty of maintaining a research laboratory during times of childrearing or family illness. The Families in Science Program would help junior faculty members who have to be away from their labs for personal or medical



As we proudly celebrate the 25th anniversary of the Biomedical Sciences Ph.D. Program, we pause to reflect on the exciting progress made since 1979. Today, we have a robust, interdisciplinary program featuring nine areas of concentration below linking to more than a dozen affiliated departments.

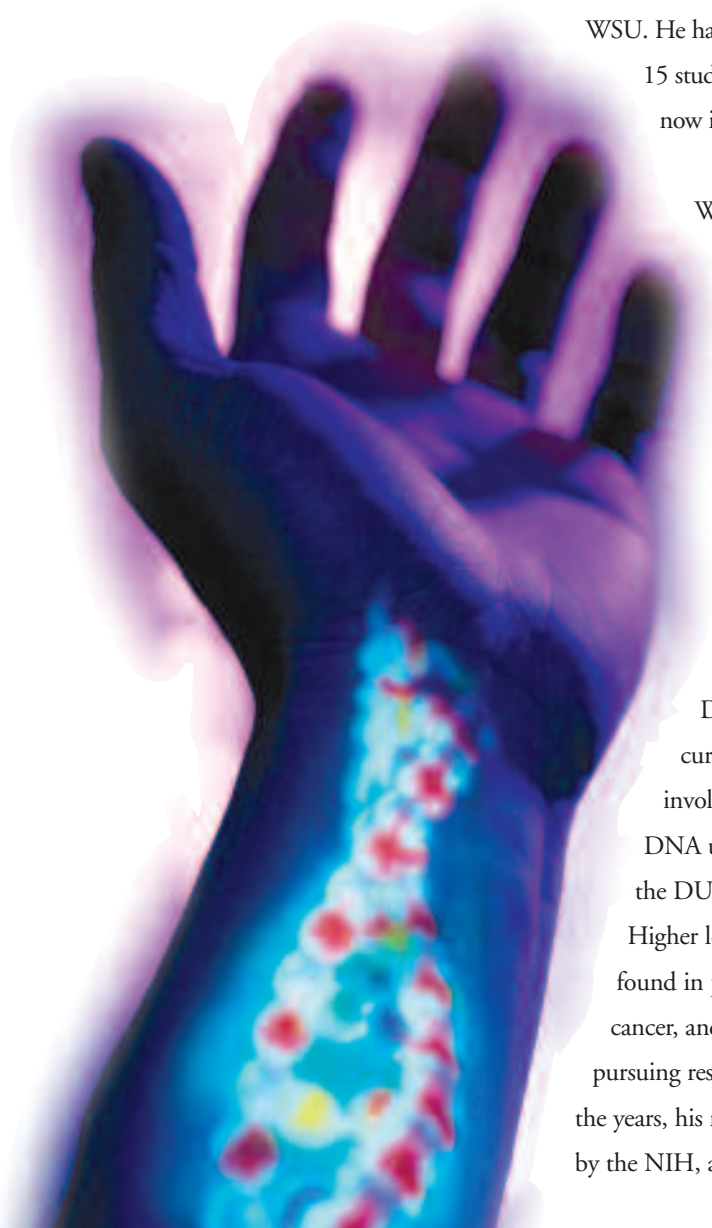
*Applied Biomedical Computation  
Applied and Predictive Toxicology  
Cell Biology and Physiology  
Chemical and Structural Biomedical Sciences  
Epidemiology  
Immunology  
Medical Physics and Engineering  
Molecular Biology and Biochemistry  
Neuroscience*

We offer advanced courses and seminars designed to give students the in-depth training required to solve the complex research problems of contemporary life sciences. We believe in nurturing original research discovery and dissemination of results across the broad spectrum of the biomedical sciences.

We congratulate our 143 BMS Ph.D. graduates on their success, and we celebrate the diversity and enthusiasm of our current students. Most recently, we welcomed 16 students (eight women and eight men) who began the program in the fall. One traveled from China to study at Wright State, and another relocated from Texas. One is currently a veterinarian, and two are pursuing the dual MD/Ph.D. degree. The youngest student in the 2004–2005 class is 22 and the oldest is 43.

With a quarter of a century behind us, we have laid a solid foundation for the future success of the BMS Ph.D. Program. Far from resting on our laurels, we will continue to work to further expand, refine, and improve the program, keeping the topics, equipment, and techniques up to date and on the cutting edge.

reasons. The funding would provide technical assistance to keep productive research going during a faculty member's absence. Dr. Leffak feels that he is "lucky to have his career at this exact moment in time," referring to the 1953 description of the structure of DNA and the era of molecular biology. "My entire career in science has been at the dawn of the age of molecular genetics," he said.





## BMS Graduates Working for Local DNA Analysis Company

Of the 143 BMS Ph.D. graduates, several are currently working at the Dayton location of Orchid GeneScreen: **Cheryl Conley**, **Joy Johnson**, and **Debbie Baker**. We've profiled these three individuals to highlight some of the good work that's come out of the BMS Program.

Through its accredited laboratories in the U.S. and U.K., Orchid GeneScreen provides DNA testing services for both governmental agency and private customers to determine the parentage of a child and other familial relationships. Over the last two decades, Orchid GeneScreen has analyzed millions of samples.

**Dr. Cheryl Conley**, the fourth graduate of the WSU BMS Program (1984), is a Laboratory Director for Orchid GeneScreen. She reports that her Ph.D. has been extremely valuable and was a requirement for her current position, which involves all scientific aspects of identity testing. She has used her degree to move into clinical areas and appreciates the diversity of training the WSU program included.

After earning her Ph.D., Dr. Conley completed her postdoctoral work at the University of Louisville, where she was a NASA Fellow studying the effects of weightlessness on immune response. While working as an Assistant Professor of Medical Technology at the University of Louisville, she established a bone marrow transplant program. Here in Dayton, she started an accredited HLA typing program at GeneScreen and the tissue bank at the community tissue services provider.

Twenty years after obtaining her Ph.D., Conley still gets excited about new discoveries and new areas of scientific exploration. She also gets excited about encouraging young adults to pursue biomedical sciences. "I look at science analytically, like a puzzle," she said. "How can we solve this problem in the most efficient way?"

**Dr. Joy Johnson**, the 23rd graduate of the WSU BMS Program (1987), reviews data for Orchid GeneScreen. She is thankful that the WSU program taught her "how to have a critical eye" since her position involves "determining if the analysis of the data is legitimate and sound."

Dr. Johnson chose WSU because she was impressed with the diversity of training offered in the interdisciplinary program and the number of specialties. The BMS Ph.D. Program provided "lots of interaction between the disciplines," she said. "When you get out in the work world, you have to know where to go to get information outside of your expertise. That is a valuable skill I learned in the BMS Program at Wright State."

Dr. Johnson loves kids and feels that her job is about "putting families together" by obtaining financial support from a father or confirming the status of siblings and other relations.

**Dr. Debbie Baker**, the 61st graduate of the WSU BMS Program (1992), also works at Orchid GeneScreen. She values her BMS Ph.D. because it prepared her for her career and gives her a deeper understanding of her work.

When asked what the most exciting aspects of her job are, Dr. Baker responded "trying out new technology and problem solving."

## Recent Academic Graduates

### Brena S. Mauck

Entered: 1998  
Graduated: August 2003  
Area of Concentration: Cell Biology & Physiology  
Director: Dr. Robert Grubbs  
Thesis: Effect of Pyridostigmine Bromide and Stress on Neuronal Apoptosis and Muscarinic Receptor Density in C57Bl Mice  
Position: Postdoctoral Fellow, University of Kansas

### Kenneth Gagnon

Entered: 1998  
Graduated: December 2003  
Area of Concentration: Cell Biology & Physiology  
Director: Dr. Peter K. Lauf  
Thesis: Localization and Functional Properties of KCC1 and KCC2, Two Isoforms of the K-Cl Cotransporter, in the Mammalian Central Nervous System  
Position: Postdoctoral Fellow, Vanderbilt University

### Emma T. Lavoie

Entered: 1998  
Graduated: December 2003  
Area of Concentration: Immunology  
Director: Dr. Keith Grasmann  
Thesis: Immunotoxicity of Organochlorine Contaminants in Juvenile Chickens and Fish-Eating Birds from the Great Lakes  
Position: Faculty Research Asst., Univ of Maryland

### Jing Zhang

Entered: 1998  
Graduated: March 2004  
Area of Concentration: Cell Biology & Physiology  
Director: Dr. Norma Adragna-Lauff  
Thesis: Regulation of K-Cl COT in primary cultures of

VSMCs by growth factors  
Position: Postdoctoral Fellow, National Institute of Health

### John Casper

Entered: 1998  
Graduated: June 2004  
Area of Concentration: Molecular Biology/Biochemistry  
Director: Dr. I. Michael Leffak  
Thesis: The c-myc DNA Unwinding Element Binding Protein DUE-B is Important for S-Phase Progression  
Position: Postdoctoral Fellow, Medical College of Ohio

### Elizabeth Muennich

Entered: 1998  
Graduated: June 2004 WITH MD  
Area of Concentration: Neurosciences  
Director: Dr. Robert E.W. Fyffe  
Thesis: The Distribution and Membrane Organization of Kv2.1 Subunit-Containing Voltage-Gated Potassium Channels in Mammalian Spinal Motoneurons  
Position: Resident Physician, Kettering Medical Center

### Jonathan Nuss

Entered: 1998  
Graduated: June 2004  
Area of Concentration: Molecular Biology/Biochemistry  
Director: Dr. Gerald M. Alter  
Thesis: Prediction of the Structure of Replication Protein A  
Position: Jeane B. Kempner Scholar, University of Texas Medical Branch

### Beth Kuczynski

Entered: 1999  
Graduated: June 2004  
Area of Concentration: Molecular Biology/Biochemistry  
Director: Dr. Nicholas Reo  
Thesis: The Effects of Myo-inositol and Ethanolamine

Administration on Rat Brain Phosphatidylethanolamine Plasmalogen and its Potential Role as an in vivo Antioxidant  
Position: Postdoctoral Fellow, University of California at Berkeley

### Andrea Hoffman

Entered: 1999  
Graduated: November 2004  
Area of Concentration: Cell Biology & Physiology  
Director: Dr. David Cool  
Thesis: Characterization of the Angiotensin II Response in the Neuroblastoma Cell Line Neuro-2a  
Position: Research Associate, Miami Valley Hospital, Dayton

### LaTonia Stiner

Entered: 1999  
Graduated: June 2004  
Area of Concentration: Cell Biology & Physiology  
Director: Dr. Michele Wheatly  
Thesis: Upregulation of NXC mRNA and Protein Associated with Calcium Flux in Hepatopancreas and Antennal Gland of Freshwater Crayfish *Procambarus clarkia*  
Position: Postdoctoral Fellow, The Ohio State University

## ENVIRONMENTAL CHEMISTRY AWARD

**Marc Greenberg** (Ph.D. student under **Dr. Allen Burton**), senior research associate in the Institute for Environmental Quality, has received the 2004 **Roy F. Weston** Environmental Chemistry Award from the Society of Environmental Toxicology and Chemistry (SETAC). The award was presented during the opening events at the Fourth SETAC World Congress and 25th Annual Meeting on November 14, 2004.

This award is made annually to honor **Roy F. Weston**, founder of Roy F. Weston, Inc. The award is designed to encourage the advancement of environmental problem solving and to encourage the professional development of young scientists in the field of environmental chemistry. To this end, the award is given to a scientist under the age of 40 for contributions made to the field of environmental chemistry. The award, which is announced each year at the SETAC North America Annual Meeting, is in the form of \$1,000 to support the cost of the recipient to attend the SETAC Annual Meeting.

## AWARDS



## DISTINCTIONS:

Join us in congratulating these BMS Ph.D. students on the following awards and distinctions:

### Poster Awards:

Fred Garcia (regional)  
Jon Nuss (local)

### Graduate Student Excellence Award:

Carol Mercer

### First Dual Degree Student:

Elizabeth Muennich (MD/Ph.D.)

### Pre-doctoral Fellow:

Ryan Geyer, American Heart Association  
Fred Garcia, American Physiological Society