

# Lifeline

UMKC SCHOOL OF BIOLOGICAL SCIENCES

UNIVERSITY OF MISSOURI-KANSAS CITY • WINTER 2009

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## Message from the Dean

### *THE CHANGING FACE OF THE SCHOOL OF BIOLOGICAL SCIENCES*



Dr. Lawrence A. Dreyfus

Throughout our relatively short history at UMKC, the School of Biological Sciences (SBS)\* has been recognized for outstanding contributions in life sciences research to the University, the State of Missouri and the region.

SBS is home to numerous UMKC Trustees' Research Scholars and Fellows. Faculty research awards over the last decade have totaled more than \$40 million, and our faculty has published numerous journal articles. An enduring hallmark at SBS has been our excellence in research. Yet, our academic unit is rapidly changing.

Once the smallest academic unit at UMKC, SBS has sustained the largest rate of growth in recent years and is now the fastest growing School at UMKC. Over the last decade, SBS has experienced growth rates that exceed 10 percent per year. In 2000, we had 195 biology majors. Today, that number is more than 500. Modest projections indicate that biology majors housed by SBS will exceed 750 by 2015. This is good news and, at the same time, poses serious challenges for our School.

The good news is the fact that the distribution of campus resources is largely based on student headcount and academic output. Thus increased headcount represents more revenue for the School, as well as greater involvement of undergraduates in research and other activities that advance the life sciences goals of our University Strategic Plan. The bad news, however, is that we have relatively few teaching spaces for laboratory instruction, a necessity for a biology curriculum. This puts a tremendous strain on scheduling of classes.

Soon we will be teaching general biology classes at night and on weekends. Moreover, the laboratory spaces that we do have are decades old, underequipped

and, in some cases, inferior to some teaching laboratories operated by Kansas City metro area community colleges, as well as some neighboring high school biology laboratories and across the state. This fact serves to undermine the extraordinary instruction, outstanding educational opportunities, and the hard work of our faculty and staff who bring excellent life science education to the Kansas City community and the region. As an institution of higher education, we owe it to our students to provide the very best facilities possible. I believe Kansas City and State of Missouri citizens want the best UM System facilities as well.

My hope is that we will immediately begin a capital improvement plan to rectify our laboratory teaching needs. A plan in place now will hopefully meet our needs by 2015, as the School will be home to potentially more than 750 undergraduates and a total student population, including graduate degree programs, of more than 800. To wait any longer will erode the excellence of instruction that ensures the future success of our students and the return that it brings to Kansas City, and we owe it to our students, the citizens of Kansas City and the State of Missouri to have the best academic facilities.

Many of our undergraduate students go on to graduate degree programs, medical and dental schools and other health professional programs in the state, region and the country. Many have multiple offers from some of the best programs in the country. We are extremely proud of our graduates and strive to continue to provide them with the very best education possible.

Congratulations also goes out to one of our recent graduates, Maria Iliakova (B.S. '09), who received a Fulbright Scholarship to continue her studies in cellular and molecular biology with Professor Johannes Jaeger at the European Molecular Biology Laboratory Center for Genomic Regulation in Barcelona, Spain. Congratulations, Maria!

— Lawrence A. Dreyfus  
Dean

\*Founded in 1983 as the School of Basic Life Sciences, the School was chartered to develop a world-class basic life sciences research program. The School was also the first to offer a life sciences Ph.D. program at UMKC, while additionally providing basic science academic support to the health professional schools. In 1993, the School was renamed the School of Biological Sciences and the undergraduate biology degree program through the College of Arts and Sciences was transferred to the School.

## Publications

- Abe, A., B. W. Birren, G. Burger, M. Butler, S.E. Calvo, L. M. Corrochano, C.A. Cuomo, M. Elias, R. Engels, J. Fu, J. Galagan, M. G. Grabherr, W. Hansberg, A.S. Ibrahim, A. Idnurm, J.M. Kim, C. D. Kodira, M. J. Koehrsen, B. F. Lang, B. Liu, L.J. Ma, D. Miranda-Saavedra, S. O'Leary, L. Ortiz-Castellanos, R. Poulter, J. Rodriguez-Romero, J. Ruiz-Herrera, Y.Q. Shen, C. Skory, T. Sone, B. L. Wickes, Q. Zeng. "Genomic analysis of the basal lineage fungus *Rhizopus oryzae* reveals a whole-genome duplication." *PLoS Genetics*. 5. (2009): e1000549.
- Ai, H.S., Z.H. Gu, J.G. He, X.D. Huang, X.T. Jia, J.X. Liao, P.H. Wang, S.P. Weng, L.S. Yang, Z.X. Yin, X.Q. Yu. "Identification and functional study of a shrimp Relish homolog." *Fish and Shellfish Immunology*. 27. (2009): 230-238.
- Bagui, M., S. Chakraborty, J.A. Keightley, J.S. Melinger, Z. Peng. "Synthesis and Optical Properties of Triphenylene-based Conjugated Dendrons," *Tetrahedron*. 65. (2009): 1247-1256.
- Belostotsky, D.A., B.D. Gregory. "Whole-genome microarrays: applications and technical issues." *Methods in Molecular Biology*. 553. (2009): 39-56. Review.
- Black, D.J., D.L. LaMartina, A. Persechini. "The IQ Domains in neuromodulin and PEP19 represent two major functional classes." *Biochemistry*. 48. (2009): 11766-11772.
- Black, D.J., A. Persechini. "Variations at the semi-conserved Gly in the IQ domain consensus sequence have a major impact on Ca<sup>2+</sup>-dependent switching in calmodulin-IQ domain complexes." *Biochemistry*. 49. (2010): 78-83.
- Chen, W.-J., C.J. Guo, J.Q. He, D. Liu, Z.Y. Liu, S.P. Weng, Y.Y. Wu, L.S. Yang, X.B. Yang, X.Q. Yu, Y.F. Zhang. "The JAK and STAT family members of the mandarin fish *Siniperca chuatsi*: Molecular cloning, tissues distribution and immunobiological activity." *Fish and Shellfish Immunology*. 27. (2009): 349-359.
- Crosson, S., A. Idnurm. "The photobiology of microbial pathogenesis." *PLoS Pathogens*. 5. (2009): e1000470.
- Dong, C.F., J.G. He, Q.X. Lu, Y.W. Luo, X.J. Shi, Q. Wang, S.P. Weng, X.Q. Yu. "Tiger frog virus can infect zebrafish cells for studying up- or down-regulated genes by proteomics approach." *Virus Research*. 144. (2009): 171-179.
- He, J.G., L. Lü, S.D. Ouyang, Y.Y. Pei, S.P. Weng, X.Q. Yu. "Effective polyethyleneimine-mediated gene transfer into zebrafish cells." *Zebrafish*. 6. (2009): 245-251.
- Kinney, M., K. McCluskey, M. Plamann, A. Wiest. "Identification of the *Neurospora crassa* mutation un-10 as a point mutation in a gene encoding eukaryotic translation initiation factor 3, subunit B." *Fungal Genetics Reports*. 56. (2009): 6-7.
- Miziorko, H.M., D.A. Skaff. "A visible wavelength spectrophotometric assay suitable for high-throughput screening of 3-hydroxy-3-methylglutaryl-CoA synthase." *Analytical Biochemistry*. 396. (2010): 96-102.
- O'Connor, M. "Helix 69 in 23S rRNA modulates decoding by wild type and suppressor tRNAs." *Molecular Genetics and Genomics*. 282. (2009): 371-380.
- Shi, X.Z., J.X. Wang, X.Q. Yu, R.R. Zhang, X.F. Zhao. "Identification and molecular characterization of Spatzle from Chinese shrimp (*Fenneropenaeus chinensis*)." *Fish and Shellfish Immunology*. 27. (2009): 610-617.
- Wang, J.X., X.W. Wang, W.T. Xu, X.Q. Yu, X.W. Zhang, X.F. Zhao. "A C-type lectin is involved in the innate immune response of Chinese white shrimp." *Fish Shellfish Immunology*. 27. (2009): 556-562.

## Faculty awards and promotions

**Dr. Brian Geisbrecht** received a UMKC Trustees' Faculty Scholar Award for 2009.

Geisbrecht was also promoted from assistant professor to associate professor in the Division of Cell Biology and Biophysics.

**Dr. Anthony Persechini** received a UMKC Trustees' Faculty Fellows Award for 2009 and the N.T. Veach Award for Distinguished Research and Creativity.

# New personnel

**Eugenio Alcalde**  
Research Associate

**Bobbie Burgee**  
Research Assistant

**Venessa Masoner**  
Research Assistant

**Silvia Cristina Polaino Orts**  
Research Associate

**XiuZhen Shi**  
Research Associate

**Aaron Stevens**  
Support System Administrator Specialist

**Denny Swartzlander**  
Research Assistant

**Leanne Szerszen**  
Research Assistant

**Hsiao-Lin Wang**  
Research Assistant

**Xiaoxia Xu**  
Research Associate

## Major conference presentations

“The cerebellum in modules,” Neurobiology and Cognitive Science Center, National Taiwan University, Taiwan, December 2009, **Dr. Chi-ming Huang**.

“Fifty years of fungal genetics: A perspective from the Fungal Genetics Stock Center,” Indo-US Science and Technology Conference, Biology of the Yeast and Filamentous Fungi, Hyderabad, India, December 2009; “Culture collections: An important partner in establishing and enforcing regulations on research with genetically engineered plant pathogenic microorganisms,” American Phytopathological Society, Portland, Ore., August 2009, **Dr. Kevin McCluskey**.

“Unfolding Thermodynamics of the  $\Delta$ -Domain in the Phage HK97 Prohead: Determination by Factor Analysis of Raman Spectra,” 6th International Virus Assembly Symposium, Heraklion, Greece, May 2009; “Mechanisms of Virus Assembly Probed by Raman Spectroscopy,” Rush University Medical School, Chicago, IL, June 2009; “Thermodynamics and Cooperativity of Domain Unfolding in Subunits of an Icosahedral Viral Shell: The  $\Delta$ -Domain of Bacteriophage HK97,” the 23rd symposium of the Protein Society, Boston, Mass., July 2009; “Assembly Architecture of the Terminase of Bacteriophage P22,” XXI Biennial Conference on Phage/Virus Assembly, Annecy, France, September 2009, **Dr. George J. Thomas**.

## Student awards

UMKC's SEARCH Undergraduate Grant Committee awarded the following students each a \$1,000 grant in October 2009. Each grant funds a student's single-semester project.

**Nichola Fell**  
“Examination of the Drosophila Ortholog of TRIM32 in Muscle Function”  
**Dr. Erika Geisbrecht,**  
faculty mentor

**Robert Harper**  
“Analysis of Leading Edge Border Cells in Drosophila Melanogaster Ovaries”  
**Dr. Leonard Dobens,**  
faculty mentor

**Kipper Kuang**  
“Purification and Crystallization of Human Semenogelin 2 Fragment”  
**Dr. Marilyn Yoder,**  
faculty mentor

**Tyler Musto**  
“The Inhibition of Pectase Lyase C Function of Degradation on Plant Cell Walls”  
**Dr. Marilyn Yoder,**  
faculty mentor

**Courtney Hammond**  
“Effect of Telethonin Knockout on Titin, Alpha-Actinin and Overall Sarcomeric Assembly in Xenopus laevis Microfibrils”  
**Dr. Michael Ferrari,**  
faculty mentor

**Matthew Kelly**  
“Analysis of the Role of CGS961 in Drosophila muscle development”  
**Dr. Erika Geisbrecht,**  
faculty mentor

**Joe Mercado**  
“Investigation for the Structural Basis for Zinc Sensing Function of MTF-1 Involving Zinc Finger DNA Binding Domain”  
**Dr. John Laity,**  
faculty mentor

**Reshana Rampersaud**  
“Role of Telethonin C-terminus in Myocyte Defects Analyzed in Vivo”  
**Dr. Michael Ferrari,**  
faculty mentor



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## New research funding

### *NATIONAL INSTITUTES OF HEALTH*

Honigberg, S. "Gene Regulatory Codes and Signal/Regulatory Element Interactions in IME2." \$44,930. August 2009.

Price, J. "Novel Circadian Mutant of *Drosophila*." 365,640. December 2009.

Yu, X. "C-Type Lectins in Innate Immune Responses of *Anopheles gambiae* and *Manduca sexta*." \$242,624. July 2009.

### *NATIONAL SCIENCE FOUNDATION*

Dobens, L. "Coordination of Replication and Migration in an Epithelial Sheet." \$125,000. August 2009.

Idnurm, A. "The Molecular Genetics of Light-Sensing in Fungi." \$196,216. July 2009.

Plamann, M. "Long-term support from the LSC program for the operation of the Fungi Genetics." \$312,089. August 2009.

### *UNIVERSITY OF MISSOURI RESEARCH BOARD*

Geisbrecht, E. "Characterization of the Conserved CDM Pathway in *Drosophila*." \$44,600. August 2009.

### *DARTMOUTH COLLEGE*

Plamann, M. "Functional Analysis and Systems Biology of Filamentous Fungi." \$64,872. April 2009.

### *UNIVERSITY OF NEW MEXICO*

Huang, C. "Alcohol and Cerebellar Circuits." \$74,500. July 2009.