

Marx Lecture Brings World-renowned Geneticist: Roy Curtiss, III

Edgar and Margot Marx established the Bertram M. Marx Lectureship at UAB in 1985 in memory of Edgar's father, Bertram. Each year, the lectures, which are hosted by the UAB Microbiology Department, are given by top leaders in their respective fields. The 28th lecture was presented on March 15, 2016, by renowned scientist, Roy L. Curtiss, III.

Roy L. Curtiss, III, Ph.D., an internationally-recognized researcher, has solid ties to UAB. In 1972 he joined the faculty of the UAB Microbiology Department. He planned and started the Molecular Cell Biology Graduate Program, which was one of the first (if not the first) interdepartmental multidisciplinary graduate programs in the United States. He also initiated and led the Postdoctoral Genetics Training Program and the Infectious Diseases Postdoctoral Training Program. Then, in 1980, he founded and organized the Cystic Fibrosis Research Center, using a \$1.5 million grant from the CF Foundation and a \$2 million grant from the State of Alabama.

When Curtiss was inducted into the National Academy of Inventors in 2015, it was said that he has more than 100 patents being used worldwide in places such as Europe, Japan and South Africa. His first patent was filed in February 1976, while working at UAB. It was the first US patent issued for a genetically modified (micro)organism (c1776). He also holds the first patent on genetically engineered attenuated bacteria to deliver protective antigens as vaccines to prevent infectious diseases (invented at UAB) as well as the first patents (with Guy Cardineau – a UAB MCB graduate) on genetically modified plants expressing pathogen-derived protective antigens as vaccines against bacterial and viral pathogens.

In 1998, Curtiss' vaccine, Megan™Vac 1, made poultry products safer for consumers worldwide by pre-

venting Salmonella infection during the growing period of young chicks. It was the first live vaccine licensed in the United States for poultry.

Currently, Curtiss is a professor in the Department of Infectious Diseases and Pathology in the College of Veterinary Medicine at the University of Florida, where he is focusing on a vaccine against bacterial pneumonia that can be tolerated by newborn babies.

Dr. Curtiss is a member of the National Academy of Sciences and Fellow of the American Academy of Microbiology, the American Association for the Advancement of Science, the National Academy of Inventors, the St. Louis Academy of Sciences and the Arizona Arts, Science and Technology Academy.

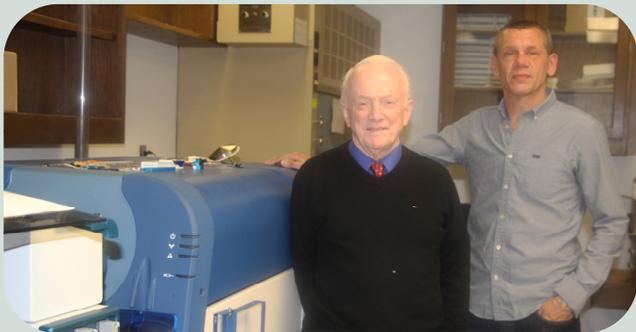


Drs. David Briles; Roy Curtiss, III and Frances Lund

Introducing ... Bachelor of Science in Immunology

In Fall 2016, UAB undergraduate students will have a new major to consider — the Bachelor of Science in Immunology. This program is an undergraduate major designed to develop graduates who are highly competitive for careers in medicine, the health-related professions, research, science education, policy and writing. Students will receive hands-on research experience in the immunology labs located in Beville and Shelby. For more information contact: [Louis Justement, Ph.D.](#) or [Vithal Ghanta, Ph.D.](#)

MALDI Mass Spectrometry at UAB



Microbiology's Dr. Janusz Kabarowski (right) and Dr. Steve Barnes (Director of the Targeted Metabolomics & Proteomics Laboratory at UAB) recently established the MALDI Imaging Mass Spectrometry method at UAB.

Matrix-assisted laser desorption ionization (MALDI) imaging mass spectrometry enables the spatial analysis of biomolecules and large organic molecules in tissues. This process is exactly what was needed when Drs. Janusz Kabarowski, Steve Barnes and Anupam Agarwal were seeking to identify early lipid changes in acute kidney injury.

Kabarowski and Barnes first used SWATH lipidomics to examine the levels of extracted lipids from injured mouse kidneys and ultimately determined the proximal tubules of the kidney as the place where the ether-linked phospholipids identified were concentrated. The proximal tubules are known to be most prone to developing ischemia-related injury.

MALDI tissue imaging is a powerful tool now available to researchers at UAB. "The opportunities to integrate this into an existing UAB research core center to facilitate innovative research and promote new research grants is immense," Kabarowski said. "It can be utilized to study and form of tissue damage and inflammation. For drugs that can be imaged with MALDI imaging mass spectrometry, you can tell where exactly in the tissue the drug gets to, with obvious implications for testing candidate therapeutic agents in cancer research too. We can capture — at the molecular level — a moment in time."

Read More:

[Early lipid changes in acute kidney injury using SWATH lipidomics coupled with MALDI tissue imaging](#)
[UAB Tissue Imaging Mass Spectrometry detects early lipid changes in acute kidney injury](#)



Researchers Identify Step in the Pathway that Leads to Asthma

A team of UAB researchers including microbiology department assistant professor Beatriz León, Ph.D., and her husband, Andre Ballesteros-Tato, Ph.D., (Clinical Immunology and Rheumatology) have identified a previously unknown step in the pathway that leads to asthma. The results of their study are published online, ahead of print, in "[T follicular helper cell plasticity shapes pathogenic T helper 2 cell-mediated immunity to inhaled house dust mite.](#)"

"This finding really changes the way we might think about treating allergic diseases and also has important implications when thinking about how young children are first exposed and sensitized to allergens," said Frances Lund, Ph.D., professor and chair of the microbiology department and a co-author.

Read More:

[New model: how asthma develops from exposure to house dust mites](#)
[Researchers Look at Dust Mites and Potential Links to Allergies and Asthma](#)

Department Events

April 19

Dr. Eckard Wimmer, Stony Brook University, NY, USA, "Recoding viral RNA genomes through chemical synthesis: Biological consequences"

April 26

Dr. Brian Parks, Department of Nutritional Sciences, College of agricultural & Life Sciences, University of Wisconsin

May 10

Dr. Jens Kuhn, NIH/NIAID Integrated Research Facility at Fort Detrick



Burrows Is Professor Emeritus

Congratulations to Peter Burrows, Ph.D., who was appointed Professor Emeritus of Microbiology in the School of Medicine. The Board of Trustees approved Burrows' appointment during its February 5, 2016 meeting.

Burrows received his bachelor's degree in zoology from the University of Massachusetts in Amherst. He completed his Ph.D. studies in microbiology/immunology at the University of Alabama at Birmingham, and then spent four years as an Assistant Scientist at the Max Planck Institute in Tübingen, Germany. In fall 1983, Burrows returned to UAB, ultimately becoming Professor of Microbiology and Genetics. He was director of the Microbiology Department graduate program and the first director of the GBS Immunology Theme graduate program. He is a member of the Comprehensive Cancer Center, the Comprehensive Arthritis, Musculoskeletal and Autoimmunity Center and the Center for AIDS Research.



Bedwell Named Biochemistry Interim Chair

Congratulations to micro's David Bedwell, Ph.D., who was named interim department chair for the department of Biochemistry. He is a long-time faculty member and leader at UAB, joining the faculty in 1988. "I am confident he will be an outstanding department leader and strong member of the School of Medicine leadership, working closely with other department chairs and members of my senior leadership team," said Dr. Selwyn M. Vickers, M.D., F.A.C.S., Senior Vice President and Dean of SOM.



Kearney Receives AAI-BioLegend Herzenberg Award

The American Association of Immunologists (AAI) has named microbiology professor John Kearney, Ph.D., the [2016 AAI-BioLegend Herzenberg Award](#) for his outstanding research contributions to the field of immunology in the area of B cell biology.

Kearney came to UAB in 1973 and has been a full professor in the [UAB Department of Microbiology](#) since 1983. He is an internationally recognized expert in monoclonal antibodies and their source: immune cells known as B cells that produce the antibodies necessary to fight off infections and other immune threats. His work has brought worldwide recognition to UAB. In addition to his primary faculty appointment in the microbiology department, Kearney holds several other appointments at UAB including senior scientist in the [UAB Comprehensive Cancer Center](#) and UAB Center for Disease Preparedness, as well as a professor in the Division of Developmental and Clinical Immunology.

Kearney will be recognized at the AAI annual meeting on May 12-17 in Seattle, Washington.



The [AAI-BioLegend Herzenberg Award](#) was established in 2014 by AAI, in partnership with BioLegend Inc., a provider of antibodies and reagents for biomedical research.

Useful Links

[Annual Retreat](#)
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[Faculty Directory](#)

[Department Calendar](#)
[Microbiology Newsfeed](#)
[Giving Opportunities](#)

[Conference Rooms Schedule](#)
[Trainee Career Opportunities](#)
[Microbiology Seminar Series](#)



Gonzalez-Juarbe Postdoc Research Day Winner

Congratulations to Norberto Gonzalez-Juarbe (Orihuela lab)

who won First Place in Session 4 for his oral presentation, "Pore-Forming Toxins Induce Macrophage Necroptosis During Acute Bacterial Pneumonia," at the 2016 UAB Postdoc Research Day.



Congratulations Hiramoto Award Winners

Gwen Gunn (Bedwell lab), The Pathobiology of the Lysosome and Lysosomal Diseases Conference Clare College, Cambridge, UK—July 7-10, 2016

James Kizziah (Dokland lab), FASEB: Virus Structure and Assembly, Steamboat Springs, CO—July 16-29, 2016

Keith Manning (Dokland lab), FASEB: Virus Structure and Assembly, Steamboat Springs, CO—July 16-29, 2016

Public Defenses

Victor Y Du

"HIV-1 ADAPTATION TO T-CELL RESPONSES DURING INFECTION"

March 11, 2016

Mentor: Dr. Paul A. Goepfert

Committee Members: Dr. Randy Cron; Dr. Randall Davis; Dr. Sonya L. Heath; Dr. Zdenek Hel

Carson Moseley

"TRANSCRIPTIONAL REGULATION OF *INTERLEUKIN 10* IN CD4+ T CELLS"

March 23, 2016

Mentor: Casey Weaver

Committee Members: Dr. Scott Barnum; Dr. Ety Benveniste (committee chair);
Dr. Charles Elson; Dr. Robin Hatton; Dr. Louis Justement



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Our Twitter account is an easy way for faculty, trainees, and staff to keep up with department activities. If you have information to share via Twitter, send it to gunnin@uab.edu.

Prevelige and Yother Honored for Years of Service

Drs. Peter Prevelige (20 years) and Janet Yother (25 years) are among the more than 1,000 UAB employees to be honored during the annual Service Awards Program at the DoubleTree Hotel Heritage Banquet room on March 4.



Prevelige came to UAB in 1995 from Boston Biomedical Research Institute where he served as Staff Scientist. His work at UAB focuses on the virus assembly of *Salmonella typhimurium* bacteriophage P22 and HIV.

After receiving his Bachelor of Science degree from Lehigh University in Pennsylvania, he studied histone structure with Dr. G.D. Fasman at Brandeis University, obtaining his Ph.D. in 1985. His postdoctoral work, on virus capsid assembly, was done at MIT under the direction of Dr. J. King.



Yother joined the UAB faculty in 1991. Her work focuses on the genetics of capsule expression, the biochemical mechanisms of capsule synthesis, and the virulence properties associated with capsule production.

In 1980, after receiving her Bachelor of Science degree at UAB, she studied the genetics of *Yersinia pestis* virulence determinants at UAB and the University of Tennessee Center for the Health Sciences at Memphis. She received her Ph.D. in 1985 and returned to UAB for postdoctoral studies concerning the genetics of *Streptococcus pneumoniae*.

Welcome

Ali Kermani - Postdoc (Niederweis Lab)
 Chad Cheetham - Research Associate (Bedwell Lab)
 Lauren Dison - Research Technician (Zajac Lab)
 Maryna Akhrymuk - Research Assistant (Frolov Lab)
 Michael Gray - Assistant Professor
 Mikhail Shakhmatov - Research Associate (Bedwell Lab)
 Myung Kim - Research Assistant (Klug Lab)
 Natalia Ballesteros Benavides - Postdoc (Lund Lab)
 Ping Wang - Research Assistant (Jiang Lab)
 Sang-Sang Park - Postdoc (Briles Lab)
 Terry Brissac - Postdoc (Orihuela Lab)

Farewell

Ali Zamani - Postdoc (Luo Lab)
 Brittany McCracken - Student Assistant (Niederweis Lab)
 Ella Robinson - Program Coordinator II (Chair's Office)
 Fang Zhang - Visiting Scientist (Hu Lab)
 Manyu Li - Visiting Scientist (Luo Lab)
 Olga Viktorovskaya - Postdoc (Thompson Lab)
 Wei Li - Volunteer (Hu Lab)

We're on the web:

<http://www.uab.edu/microbiology>



Searching for Early Detection of AKI

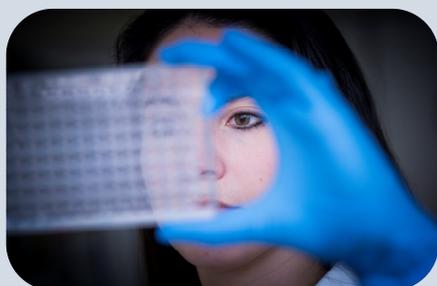
Undergraduate Kelly B. Walters worked with microbiology's Janusz Kabarowski, Ph.D., and others in reaching early lipid changes in acute kidney injury (AKI), the leading cause of hospital morbidity and mortality in critically ill patients. Using SWATH MS and MALDI-IMS, Walters identified and localized lipids in injured mouse kidneys. The results of her study are published in the [February 24 issue of American Journal of Physiology – Renal Physiology](#).



Chang Accepted at Harvard

Undergraduate Bliss Chang, a former trainee in Dr. Jamil Saad's lab, has been accepted to Harvard's Pathways M.D. Program, entering in August 2016.

Examining Workforce Sustainability



Statistics indicate that after receiving their Ph.D. many young scientists are forgoing postdoctoral training and seeking careers outside of academe. Currently, many academic institutions are structured to rely on postdoctoral trainees for much of their labor force. This change in workforce trends has

leaders in academe, industry and health advocacy examining the future of biomedical science in the United States.

In February 2016, the American Society for Biochemistry and Molecular Biology (ASBMB) hosted a summit of key leaders in the biomedical field to discuss ways to improve workforce sustainability. Microbiology professor Louis Justement, Ph.D. was one of the group participants.

The summit developed an advocacy platform for the scientific community to use in implementing changes in the workforce that will

allow sustainability. Several progressive ideas were discussed at the summit including:

- increasing the role of staff scientists to offset dependence on graduate students and postdocs;
- capping the period of appointment for postdocs to 5 years;
- providing better preparation for graduate students and postdocs for nonacademic careers; and
- aligning the academic community with industry and patient advocacy groups to increase funding.

Read more at: <http://www.sciencemag.org/careers/2016/02/summit-proposes-steps-toward-biomedical-workforce-sustainability>



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Publications | January—March 2016

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Chaudhary SC, Kuzynski M, Bottini M, Beniash E, **Dokland T**, Mobley CG, Yadav MC, Poliard A, Kellerman O, Millán JL, Napierala D. [Phosphate induces formation of matrix vesicles during odontoblast-initiated mineralization in vitro](#). Matrix Biol. 2016 Feb 13. pii: S0945-053X(16)30014-2. doi: 10.1016/j.matbio.2016.02.003. [Epub ahead of print] Review. PMID: 26883946

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Kuruganti S, Miersch S, Deshpande A, Speir JA, Harris BD, Schriewer JM, Buller RM, Sidhu SS, **Walter MR**. [Cytokine Activation by Antibody Fragments Targeted to Cytokine-Receptor Signaling Complexes](#). J Biol Chem. 2016 Jan 1;291(1):447-61. doi: 10.1074/jbc.M115.665943. Epub 2015 Nov 6. PMID: 26546677

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Xie X, Wang X, Mick GJ, **Kabarowski JH**, Shay Wilson L, Barnes S, Walcott GP, Luo X, McCormick K. [Effect of n-3 and n-6 Polyunsaturated Fatty Acids on Microsomal P450 Steroidogenic Enzyme Activities and In Vitro Cortisol Production in Adrenal Tissue from Male Yorkshire Boars](#). Endocrinology. 2016 Feb 18:en20151831. [Epub ahead of print] PMID: 26889941

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Zimmerman KA, Xing D, Pallero MA, Lu A, Ikawa M, Black L, Hoyt KL, **Kabarowski JH**, Michalak M, Murphy-Ullrich JE. [Calreticulin Regulates Neointima Formation and Collagen Deposition following Carotid Artery Ligation](#). J Vasc Res. 2016 Feb 25;52(5):306-320. [Epub ahead of print] PMID: 26910059

Grants and Contracts January 1 – March 31, 2016

Frolov, Ilya V.

National Institute of Allergy and Infectious Diseases/NIH/DHHS — *Single Round Infection Chikungunya Virus as a New Vaccine Candidate*

Jiang, Mengxi

PML CONSORTIUM — *Mechanisms of JC Polyomavirus Penetration of the Blood-Brain Barrier*

Kearney, John F

American Heart Association (Southeast Affiliate) — *Role of Aryl Hydrocarbon Receptor in B Cell Development and Function*

National Institute of Health — *Regulation of B cell Clonal Diversity and Its Role in Disease*

Walter, Mark

Lupus Research Institute, Inc. — *Single-Cell Detection of IFN's in Lupus Patients*

JANSSEN RESEARCH & DEVELOPMENT, LLC — *Reagent Development (IFNe, IFNk) To Evaluate IFN Auto Antibodies in SLE Patient Samples*

Congratulations to John Kearney for the renewal of his NIH grant, Regulation of B cell Clonal Diversity and Its Role in Disease, making it the Longest running R01 at UAB. It is now in its 37th year and will go for 42yrs!