



The University of Alabama at Birmingham

Department of Genetics

# QUARTERLY GENETICS UPDATE SUMMER 2022

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**Methylation of tRNA-derived fragments regulates gene-silencing activity in bladder cancer**



**Anindya Dutta, MBBS, Ph.D.**, and colleagues have described a novel form of gene regulation that is altered in bladder cancer, leading to the boosting of a gene pathway that helps the cancer cells survive during rapid growth.

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## **A refined microbiome “fingerprint” method tracks sub-strain variants of a single gut microbe strain**



Casey D. Morrow, Ph.D., professor emeritus in the Department of Cell, Developmental and Integrative Biology, and **Hyunmin Koo, Ph.D.**, bioinformatician in the Department of Genetics, refined the fingerprint method to include looking for single-nucleotide variants in KEGG metabolic pathways of a particular strain. These variants can identify sub-strains of a single strain identified by WSS. To look at sub-strains of a *Bacteroides vulgatus* strain, for example, Morrow and Koo examined 23 different KEGG metabolic pathways present in that bacteria.

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## Researchers pioneering long-read sequencing studies explain why long reads matter



“Long reads can generate more accurate assemblies than short-read technologies, especially when there is no reference genome to check against or in repetitive sections of the genome and regions with complex genetic rearrangements,” said **Zechen Chong, Ph.D.**, assistant professor in the UAB Marnix E. Heersink School of Medicine Department of Genetics. “The downside of long-read sequencing is higher error rates and a lack of effective tools for accurately evaluating assembly results.”

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## Researchers studying proposed targeted delivery of multimodal therapy to reduce prostate cancer disparity



**Runhua Liu, M.D., Ph.D.**, associate professor in the Department of Genetics, and her lab team have been focusing on developing new targeted therapeutics to improve the treatment of patients with advanced prostate cancer, including African American patients who have a particularly worse prognosis and whose tumors harbor more of an inflammatory and immune signature.

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### Department Spotlight: **Starlette Dabbs, Executive Administrator**



Since she came to UAB in 2004, **Starlette Dabbs** has earned the reputation as a true financial and administrative professional who gets things done because of her broad knowledge of her profession, her relationships across UAB, and her personal initiative and work ethic.

Starlette has capably fulfilled administrative and financial roles in various departments and in the School of Medicine Dean's Office. Currently, Starlette serves as executive administrator (EA) for Genomics, Genetics,

and Precision Medicine. Starlette acts as a strategic partner to the department chair, institute director, chief genomics officer, and other key leaders. She works collaboratively with intra- and interdepartmental staff on project writing development, personnel management, space planning, fiscal issues, and infrastructure. Starlette is valued as a team member who helps senior leadership achieve their mission-specific goals through the clear organization of processes and the implementation of timelines. Click the link below to learn more about Starlette and her role in the department.

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### **How T cell-derived interleukin-22 promotes antibacterial defense of colonic crypts**

In a study published in the journal *Immunity*, Carlene L. Zindl, Ph.D., and Casey T. Weaver, M.D., of the University of Alabama at Birmingham Department of Pathology show how two types of immune cells — one a part of the innate immune system and the other a part of the adaptive immune system — play distinct and indispensable roles to defend that barrier. **Min Gao, Zongliang Yue, Karen M. Janowski, Trenton R. Schoeb and Jake Y. Chen**, from the Department of Genetics, are co-authors on this study.

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## Department retreat a great success

The first retreat of the UAB Department of Genetics after the arrival of Dutta was held at the UAB Hilton on Wednesday, May 25. It was well attended by faculty and administrators from all divisions. Organized with the assistance of Dr. Jean Ann Larson and the Leadership Development Office, the morning was devoted to discussing how to improve communications based on the DISC assessments of the various players in the department and how to resolve/avoid conflicts and improve collaboration.

The afternoon session took a deep dive into team building and the strengths and weaknesses of the department in doing collaborative research. Some concrete suggestions emerged that will be followed up on in the coming year. The day ended with a reception promoting non-agenda driven interactions between the members of the department.

Based on the positive feedback from many participants, the event was very successful in re-introducing ourselves to each other after the COVID-induced hiatus in social interactions and highlighted our collective strengths, enabling all of us to see how much can be gained by collaborations among ourselves on the academic front.

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## Recent Faculty Publications

Weng Z, Yue Z, Zhu Y, **Chen JY**. DEMA: a distance-bounded energy-field minimization algorithm to model and layout biomolecular networks with quantitative features.

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Yue Z, Slominski R, Bharti S, **Chen JY**. PAGER Web APP: An Interactive, Online Gene Set and Network Interpretation Tool for Functional Genomics. Front Genet. 2022 Apr 12;13:820361. doi: 10.3389/fgene.2022.820361. eCollection 2022.

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## Recent Faculty Grant Awards

PI: Deeann Wallis

Sponsor: NIH-R01

Title: Loss of NF1 drives Hormone Dependent Mammary Carcinogenesis in a Rat Model with Intact Immune System

Amount: \$2,735,915

Dates: 7-1-2022 to 06-30-27

PI: Deeann Wallis

Sponsor: Gilbert Family Foundation

Title: Development of a Peptide That Restores the Mutant NF1-Ras Interaction

Amount: \$566,305

Dates: 1-1-2022 to 12-31-22

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## Department Acknowledgements

**Kevin Dybvig, Ph.D.**, named professor emeritus.

**Bruce Korf, M.D., Ph.D.**, was elevated to Distinguished Professor.

**Bruce Korf, M.D., Ph.D.**, distinguished professor, was elected to the American Association of Physicians.

**Yulong Fu, Ph.D.**, assistant professor, named director of the Medical Genomics Laboratory.

## Welcome to the Department

**New Staff**

Tanya Hsiung  
Logan Jordan  
Lakshmi  
Bhargavi Paruchuru  
Amanda Rafferty  
Laxmi Swami  
Haiyan Yu

**New Students**

Logan Brewer  
Afsane Esmaeli  
Tapasya Katta  
Violet Morin

**New Genetic**

**Counselors**  
Hannah Walter  
Katherine Sleckman  
Manoor Asif



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