

NOVEMBER 2023 | ISSUE 11

# BIOMEDICAL GENETICS SECTION

QUARTERLY NEWSLETTER

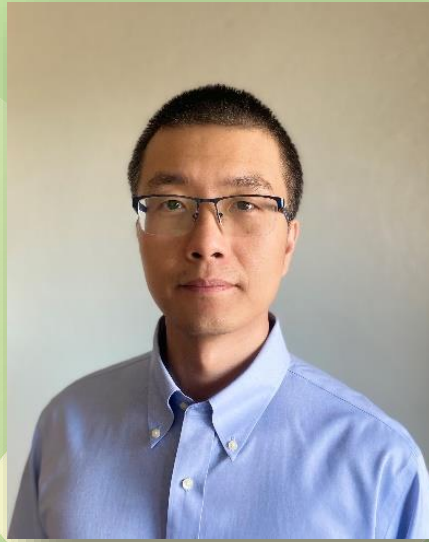
## Biomedical Genetics Section Updates



Please welcome to our newest staff member, Maria Dudek, who is the new FHS-BAP Program Manager!

WELCOME

## Meet the People – Lei Hou, PhD



Hi everyone, I'm Lei Hou, a new faculty member in our section of Biomedical Genetics. Before joining BUMC, I was a postdoc from Manolis Kellis lab at MIT.

During my Ph.D. years, I identified gene regulatory networks both impacted by dietary restriction and genetic perturbations which finally affect the lifespan of *C. elegans*, and with the network, we were able to design combinatorial approaches to extend the worm lifespan 3-fold, compared to 10-30% increase from a classical approach. From then on, genetic and environmental/lifestyle factors interplay through regulatory networks have been a central part of my research.

During my postdoc at MIT, I revealed tissue-specific/shared genetic variants' function by integrating QTLs of RNA modification, histone modification, and gene expression to understand disease genetics. I also worked on blood epigenomic data to reveal the immune component in bipolar disorder and patient subgroups. At BUMC, I would like to decipher the genetic/epigenetic regulation in Alzheimer's disease and focus more on gene-environment interplay with a multi-omics integrative/AI approach.

A bit more outside science: I am living with my wife Na (MIT graduate student), daughter Annie, son Bradley, and my imaginary dog Damao (should be a red shiba Inu girl 🐶). I'm the free Uber driver for my daughter after school, and soon for my son, that's why you can barely see me after 3PM. Besides playing basketball and running weekly, I love trying different things, hiking, bouldering, boxing, chess, meditation, reading, sometimes cooking, etc... )

Feel free to stop by my office E244A, or join me at lunchtime (usually 12:30-1) in our common area, and happy to talk more about my ongoing research or any fun topics.



## DNA from multiple viral species is associated with Alzheimer's disease risk

Marlene Tejeda and John Farrell developed an innovative method that utilized the “junk” data from whole genome and whole exome sequence data from blood and brain samples from the Alzheimer's Disease Sequencing Project. They took the reads that did not map to the human reference genome and mapped them to viral reference genomes. They then collated and quantified these reads within each species and tested them for association with AD using machine learning and regression-based methods.

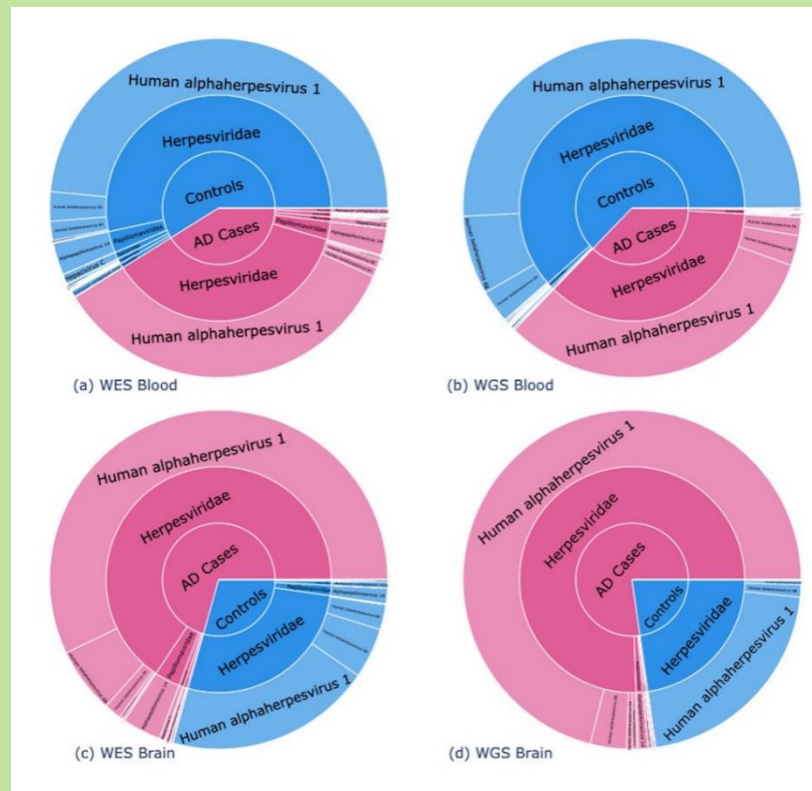


Figure 1

The most commonly observed species were from the Herpesvirus, Papillomavirus, and Torque Teno virus families (*Figure 1*). The prevalence of these viruses very closely matches the prevalence reported in the epidemiological literature. Quantity of DNA from individual species within those families, as well as the total number of reads from all species within these families were both associated with increased AD risk within various strata of the data, most strongly in whole exome blood samples. This work yielded several interesting findings, notably that DNA from Herpes simplex 1 virus, the virus that causes cold sores, was detected at high levels in blood. Although this virus is known to form reservoirs in the brain during the latent stage of infection, it was not thought to be present in blood when inactive. Although Torque Teno viruses are known to be common in humans, they have not been associated with any specific symptoms. The observed association between these viruses and AD is a novel finding.

[Read More in Alzheimer's and Dementia](#)



*This annual award recognizes outstanding academic achievement to a graduating Master's student in the Department of Biostatistics who has consistently demonstrated exemplary academic performance throughout the program. Selection is based on academic performance, rigor and breadth of coursework, and faculty recommendations.*

**We also want to congratulate Dr. Farrer and Dr. Sherva on the new U01 grant: the Genetic Studies of Alzheimer's Disease in Jewish and Arab Populations.**

**Grant Name**

U01-AG081230

**Total:** \$ 13,721,697

**Major Goals:** Perform whole genome sequencing of 2,000 AD cases and 2,000 cognitive healthy controls (3,000 Jews of Middle Eastern and North African descent, 1,000 Israeli Arabs), and identify associations of common and rare variants with AD risk and related traits.





## 2 veterans turned BU researchers are studying PTSD to find better treatments for their former comrades

James Whitworth deployed to Iraq, part of Operation Enduring Freedom and Operation Iraqi Freedom, along with nearly two million of his compatriots, all told. Just 21 years old and thrust into an unknown landscape with daily threats to his life, Whitworth says he exercised at his base to cope with the stressful situation...

As a young person in the late 1980s, Mark Logue registered for the US Army Reserve as a way to cover the cost of college and gain some worthwhile experience at basic training. It seemed like a fairly good deal: the reserves hadn't been activated in nearly 20 years, since the Vietnam War. That changed in 1990, however, when reservists were ordered to active duty to serve in the Gulf War.

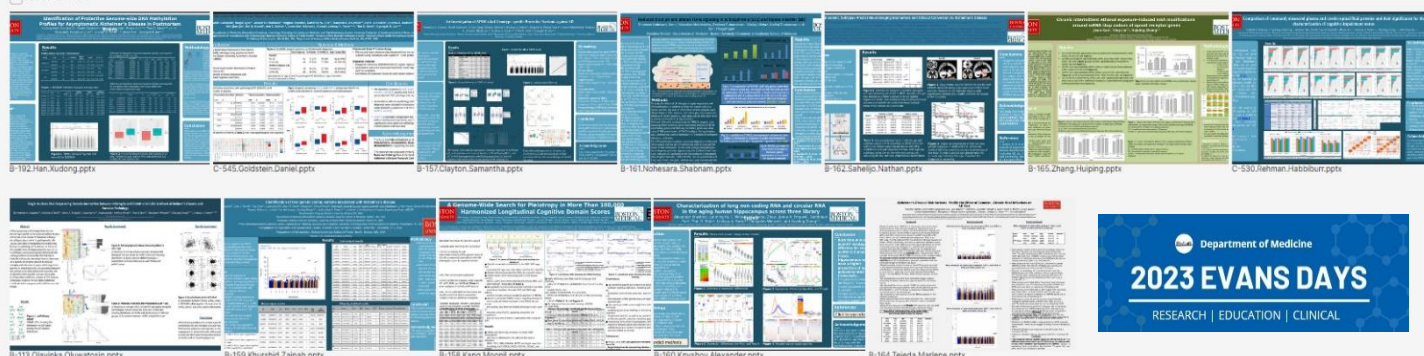
Logue, who worked in the reserves as a medical supply specialist, was sent to Stuttgart, Germany, to help expand a medical facility for combat soldiers wounded in the Gulf. Luckily, he says, the large-scale casualties his unit prepared for never materialized and, soon enough, Logue returned home, where his studies resumed. He remained in the US Army Reserve until 1997, when he was honorably discharged. Trained as a mathematician and statistician, Logue charted a course for a career in genetics during his doctoral program. He found he could apply his mathematical and programming skills to address real health problems, a deeply gratifying experience.

Logue, currently an associate professor of psychiatry and biomedical genetics at BU's medical school and of biostatistics at the University's School of Public Health, was working on genetic studies of anxiety disorders and dementia when he was approached by Mark W. Miller, a researcher in the US Department of Veterans Affairs' National Center for PTSD. Miller, a professor of psychiatry at BU's medical school, had asked for Logue's help in analyzing a set of genetic data from veterans.

Now, Logue and Whitworth both also work at the VA Medical Center in Boston's Jamaica Plain neighborhood. They're each seeking answers about PTSD by asking vastly different questions.

[Read More](#)





## Evans Days 2023

Our section had a great representation at the Evans Days poster events on October 19<sup>th</sup>. View all posters from the day [HERE](#).

## Biomedical Genetics Journal Club

**Dates & Time:** every other Wednesday 2-3PM  
The next meeting is scheduled for December 6<sup>th</sup>

**Location:** room E246, Evans building  
(Zoom connection is also available)



Biomedical Genetics journal club is a great resource for anyone who is interested in discovering new methods or trying to keep up with the latest technologies. Meetings are led by graduate students within the Biomedical Genetics Section, but everyone is encouraged to attend. We typically discuss topics related ongoing research in the Biomedical Genetics Section. (e.g. sequencing technologies, GWAS, machine learning).

Please email [sahelijo@bu.edu](mailto:sahelijo@bu.edu) for more information on upcoming talks in-person, or if you would like to join by Zoom.

## BUMC News and Events

### Welcome Message from President Kenneth W. Freeman, President Ad Interim



**August 1<sup>st</sup>, 2023**

*Dear Members of the Boston University Community:*

*I reach out as interim president to extend greetings to the BU community as we work together to sustain and build upon the momentum of the University. We have benefited from a period of unparalleled stability and progress during the presidency of Bob Brown and are grateful for his transformational leadership.*

*During the past two months, Bob Brown and other Boston University senior leaders have provided detailed briefings about our broad array of academic programs, the student experience, alumni relations, enrollment management, financial affairs, facilities, public safety, and more. My experience was in the corporate world before joining Boston University thirteen years ago. The management systems and processes in place here are comparable to the very best in the private sector. They provide a solid platform that will enable us to further advance implementation of the 2030 Strategic Plan, take advantage of new opportunities, and effectively address the inevitable challenges that arise.*

*My mandate as your interim president is to move the University forward, rather than to serve as a caretaker. We will further our efforts to provide an outstanding academic and student experience, elevate our research agenda, and advance a high-performing inclusive culture. We will continue to build a world-class faculty and staff and uphold the highest standards of academic quality.*

*It is a tremendous honor to serve as your interim president. We have a rich past spanning 184 years, and we have a bright future! [Read More](#)*



## Changes to Storage on BU Accounts



IS&T will be implementing a quota of 15 GB for all BU Google accounts beginning on Monday, January 8, 2024. IS&T encourages everyone to review their current data usage in your BU Google and/or Microsoft accounts, delete any documents, photos and emails that are no longer needed. If your Google storage use exceeds the 15 GB quota, please move some files to another storage option to be within your Google storage quota prior to January 8, 2024. [Read More.](#)

## Next BU President Announced



On October 4<sup>th</sup>, 2023, Boston University announced that they have chosen Dr. Melissa L. Gilliam to be the 11<sup>th</sup> president of the university. Dr. Gilliam is an esteemed and award-winning interdisciplinary researcher in medicine, public health, and the humanities. Dr. Gilliam will take over in July 2024. [Read More](#)

## New Fall Hours at Chequers Café



As of Monday, November 6<sup>th</sup>, Chequers Café (in the L building basement) is open the following times:

- Monday-Thursday: 7am-6pm
- Friday: 7am-3:30pm

[Order Online Here](#)

## AY2023 DoM Annual Report



In this annual report you can find a detailed look at the sections within the Department of Medicine, some of our unique programs, metrics, awards, and some leadership biographies.

Read the full report [HERE](#).





**RSVP**

**Biomedical Genetics Section**

# **HOLIDAY PARTY**



**Monday, December 11th  
12pm-2pm**

**Celebrate the holiday season  
with our section and join us for  
food, beverages & games in E201**

**Come dressed in your best ugly Christmas  
sweater or favorite holiday attire.**

**(The one voted "best dressed"  
will win a prize!)**



**RSVP to Vidriana ([vidriana@bu.edu](mailto:vidriana@bu.edu)) by December 1st**



## Resources

**Don't Forget-- Submit an *Announcement Request Form* and share your news in the next issue of the Biomedical Genetics Section Newsletter!**

Do you have exciting news that you want to share in the next issue of our quarterly Biomedical Genetics Section Newsletter? Submit an [Announcement Request Form](#), located on the Resources page of our [website](#)!



# HAPPY THANKSGIVING!