

J U L Y 2 0 2 6

BIOMEDICAL GENETICS SECTION

QUARTERLY NEWSLETTER | ISSUE 19

New Hires!



My name is Emma Steele, and I am the new Administrative & Research Assistant for the Biomedical Genetics Section. I assist anyone in the section that needs help: Dr. Farrer, faculty, staff, and students. My responsibilities include ordering supplies, scheduling meetings/appointments, updating the website, and more.

I graduated with my BS in Public Health from the University of Washington a few years ago and plan to pursue my MS in Epidemiology in the future.

Section Updates

Congratulations to Marlene Tejeda, Oluwatosin Olayinka, Zainab Khurshid, and Tong Tong on their thesis defenses!

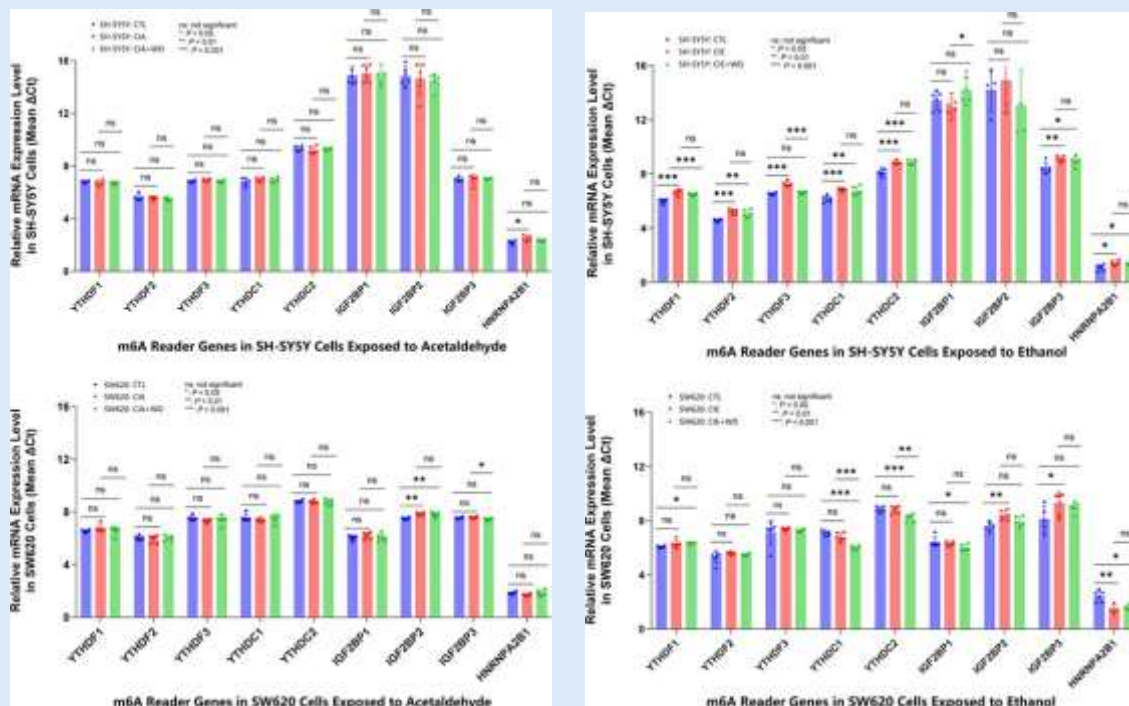
Check out some photos from the celebrations below!



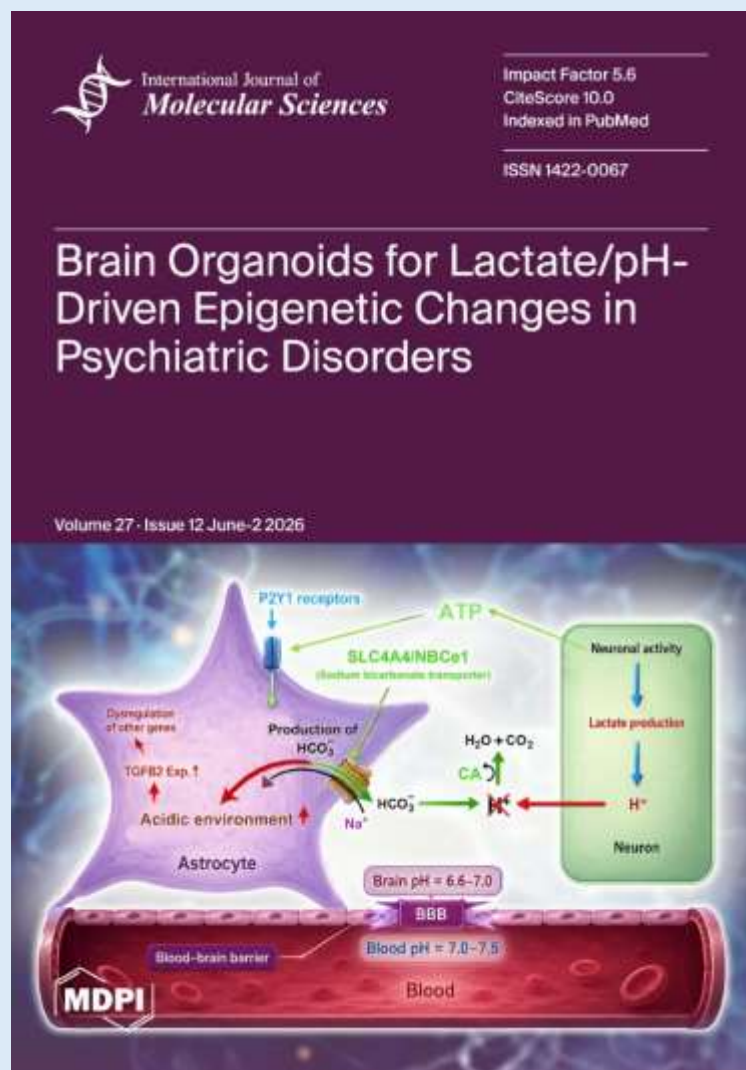
New publication from Dr. Huiping Zhang, PhD:

Ji Sun Koo, Qiansheng Zhan, Huiping Zhang, *m⁶A RNA methylation regulatory gene expression in response to ethanol and acetaldehyde exposure and withdrawal*, *Environmental Epigenetics*, Volume 12, Issue 1, 2026, dvag011, <https://doi.org/10.1093/eep/dvag011>

Abstract: ⁶-methyladenosine (m⁶A) RNA methylation, regulated by writer, eraser, and reader proteins, modulates mRNA stability, splicing, and translation, thereby influencing key cellular processes. Environmental stressors, such as alcohol, may disrupt this epitranscriptomic machinery and contribute to disease vulnerability. In this study, we investigated how chronic exposure to ethanol, its toxic metabolite acetaldehyde, and subsequent withdrawal affect the expression of m⁶A regulatory genes. Neuron-like (SH-SY5Y) and non-neuronal (SW620) cells were exposed for 3 weeks to ethanol (40 mM) or acetaldehyde (30 μ M) (concentrations comparable to blood levels after heavy drinking), followed by a 24-h withdrawal period. Gene expression of seven writers (*KIAA1429*, *METTL3*, *METTL4*, *METTL14*, *RBM15*, *RBM15B*, and *WTAP*), two erasers (*ALKBH5*, *FTO*), and nine readers (*YTHDF1/2/3*, *YTHDC1/2*, *IGF2BP1/2/3*, and *HNRNPA2B1*) was quantified by RT-qPCR. Concurrently, RNA-seq data from eight reward-related brain regions of 24 individuals of European ancestry (12 with alcohol use disorder [AUD] and 12 controls) were analyzed for AUD-associated expression changes in m⁶A regulatory genes. In cell models, ethanol broadly suppressed the expression of most m⁶A regulatory genes, whereas withdrawal largely restored their levels. Acetaldehyde induced subtler gene expression changes, likely reflecting its lower exposure concentration and rapid metabolism. Postmortem brain analysis revealed trends toward altered expression of m⁶A regulatory genes across multiple brain regions in individuals with AUD. Collectively, these findings suggest that chronic alcohol exposure dysregulates m⁶A regulatory gene expression and may impact downstream RNA regulatory pathways involved in AUD pathophysiology. Further studies are warranted to elucidate the mechanisms by which alcohol-induced dysregulation of m⁶A regulators influences AUD risk.



The recent paper from Dr. Sam Thiagalingam, PhD was featured on the cover of the International Journal of Molecular Sciences!



Abstract: Gene expression analyses of postmortem brains have identified hundreds of dysregulated genes in schizophrenia (SCZ) and bipolar disorder (BD). Lactate accumulation and reduced brain pH are also consistently reported in these disorders. As increased *TGFB* expression has been implicated in major psychiatric diseases and lactic acid induces *TGFB2* upregulation in metabolic diseases, we hypothesized that lactate-induced brain acidosis may drive widespread gene dysregulation through *TGFB2* activation. In our previous microarray studies, increased *TGFB2* expression was observed in postmortem brains of SCZ and BD patients, while pathway analyses suggested a key role for *TGFB2* in the dysregulation of other genes, particularly astrocytic genes. *TGFB2* itself also exhibited promoter DNA hypomethylation in postmortem brains of these patients. Here, while brain pH was lower in SCZ and BD

patients, we investigated the effects of pH alteration on the expression and promoter DNA methylation of *TGFB2* and *TGFB2*-correlated genes in iPSC-derived neurons, astrocytes, and brain organoids (brainoids). Cultures were treated with lactic acid, HCl, bicarbonate, or NaOH to alter culture medium pH by ± 0.4 units, and gene expression and promoter DNA methylation were evaluated by qPCR analyses. In our reanalysis of postmortem brain microarray data, nearly 80% of dysregulated genes, together with *TGFB2*, exhibited inverse correlations with brain pH. Lactic acid treatment induced increased expression and promoter DNA hypomethylation of *TGFB2* and several correlated genes in astrocytes and brainoids, whereas bicarbonate and NaOH treatments showed opposite effects. These findings suggest that lactate-mediated brain acidosis may contribute to *TGFB2* upregulation and widespread gene dysregulation implicated in SCZ and BD pathogenesis. Therapeutic interventions targeting lactic acid accumulation or *TGFB2* hyperexpression may mitigate disease-associated brain gene dysregulation.

BUMD News and Events

A new food kiosk is open on campus:

Citra
a fresh cafe

Citra Kiosk will
OPEN
JUNE 9th
In the lobby of
700 Albany Street

We look forward
to serving you
MON-FRI
9AM TO 3PM

Federal Research Funding Alert: OMB proposes new revisions to Uniform Guidance

*****There will not be any immediate impact on research activities*****

In May, the US Office of Management and Budget (OMB) published a rewrite of the Uniform Guidance, the framework governing NIH, NSF, and other federal research grants. Some notable revisions include political appointee review of awards prior to being issued, broader authority to terminate or suspend grants, and new restrictions on international research collaborations. This rule change is open for public comment until July 13, 2026, with a target date of October 1, 2026. For more real-time information, please refer to the BU site [here](#).

New HR Portal!

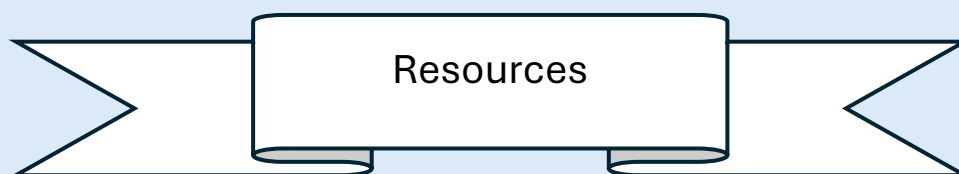
BUHR has launched a new HR Support Portal, which is designed to be a centralized location to ask questions and receive information related to benefits, payroll, and more.

There is a [brief video demonstrating the portal](#) as well as [helpful instructions for creating cases](#) available for your reference.

Staff Advisory Council Summer Fair – August 6th, 2026 on Talbot Lawn at BUMC

We'll be on the BU Medical campus from 3pm-5pm hosting our Summer Fair! See you there!

[Register here](#)



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](#)!

Hope everyone is enjoying their summer, and please remember to be safe in the heat!

