

# Physiology News

January-April 2024 Volume 7 Issue 1

Dear Colleagues and Friends,

As I reflect on the challenges and rewards of our journey, I keep coming back to the importance of belonging, of being a part of something bigger than our individual self. That sense of being an appreciated and valued member of the team is something I wholeheartedly wish to instill in each and every one of our members, from faculty to staff. No achievement, no success story, of any of our team members is the result of a solo flight. For each grant, published paper, successful lecture, or podium presentation, the contributions of those around us make it possible for us to shine. And it is that short moment in time, often a single person's moment in the limelight, that should be our reminder that we are what we are because of the support we receive from those that show up for us. As Eden Gallegos finished her oral presentation at the APS Summit last week, a colleague from a different institution came up to me and said, "she is a star!", to which I proudly replied, "yes she is, but she is only one star in the milky way that our Physiology Department is!" That is how I feel.

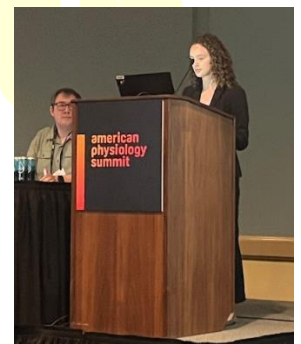
Even though at times we may feel eclipsed and forgotten, know that YOU matter, that YOU are important, that YOU are valued, and that we would not be the same if YOU were not part of this team! As we face the last stretch before the end of the semester, I ask that you take a minute to tell someone around you how much their contributions mean to you.

I wish you the best and look forward to seeing you all shine!

Sincerely,

Patricia

*Patricia*



## Inside this edition

Editor, Liz Simon

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## Unlocking the Potential of Artificial Intelligence

Nicholas Harris, MD/PhD candidate



Nick at Interlaken, Switzerland.

One does not have to look far to see examples of artificial intelligence (AI) in the media, from its first portrayal in the 1927 German film *Metropolis*, to the 1968 classic *2001: A Space Odyssey*, and the 1990's hit *The Matrix*. While the near-sentient artificial intelligence portrayed in these films is still in the realm of science fiction, today, AI is being implemented in all facets of life. Some current uses include AI-powered chatbots for customer service which can handle customer inquiries, resolve issues, and provide personalized assistance without the wait of a real customer service agent; and enhancing cybersecurity through detecting anomalies and identifying threats. AI is used in the arts to help artists generate unique artworks, explore new styles, and push creative boundaries.

*But how can we, as scientists, leverage AI to enhance our daily lives and advance our research?*

First, I want to go over how I use AI in my day-to-day life. As a student, I use AI to test my knowledge before exams or presentations. Using a service like **OpenAI's ChatGPT** or **Microsoft's Copilot**, I ask the AI to create personalized questions based on a certain topic. For example, while studying for my qualifying exam, I asked ChatGPT to create an open-ended essay question based on specific physiological concepts. This helped me identify gaps in my knowledge to better prepare for the exam.

For my research, I mainly use AI to help find journal articles related to my research area or journal manuscripts that use a specific technique. Once I have a manuscript that includes the relevant information, I use another program called "**Litmaps**" to find manuscripts that were cited in that manuscript, and manuscripts that cited the specific manuscript. Additionally, Litmaps has an explore tool to search for related manuscripts. Using this technique, finding journal manuscripts relevant to a topic is quick and efficient.

Finally, I often use AI to help in writing to ensure my intended message is both precise and clear. For example, the previous sentence originally read "Finally, I often use AI to help in writing to make the point that I am trying to make clearer and more precise." AI often helps exclude redundancy in my writing and reword/shorten sentences to be concise and to help be within the requirements of the page limit.

*Now that I have discussed how to implement AI on a personal level, what is being done on the national level to adopt AI into science?*

The NIH is no stranger to the use of AI. As part of their mission to make biomedical data findable, accessible, interoperable, and reusable (FAIR), the Office of Data Science Strategy at the NIH seeks to make data usable with AI and machine learning applications. To ensure its success, the NIH understands that scientists alone cannot tackle the implementation of AI. The NIH is planning for an interdisciplinary team to correctly implement AI because using biomedical data comes with concerns of privacy and confidentiality and also because of the ethical, legal, and social implications. As part of the initiative, the NIH is investing millions of dollars to accelerate the widespread use of AI by biomedical and behavioral research communities. The first of these programs is the Bridge to Artificial Intelligence (Bridge2AI) which aims to generate flagship data sets and best practices for the collection and preparation. An exciting project currently funded by the Bridge2AI program is using voice as a biomarker for disease to guide screening, diagnosis, and treatment. Voice changes can be indicative of vocal pathologies like laryngeal cancers, neurodegenerative disorders, mood and psychiatric disorders, respiratory disorders, and pediatric diseases like autism and speech delays. The project is being developed and integrated



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by the collaborative effort between clinicians, acoustic engineers, software and hardware engineers, and biostatisticians.

As part of the NIH's initiative toward diversity and inclusion, the AIM-AHEAD (Artificial Intelligence/Machine Learning Consortium to Advance Health Equity and Researcher Diversity) addresses the current lack of diversity among AI researchers and in the data available. Without a diverse dataset, there is the risk that harmful biases in algorithm development, training, and interpretation can lead to continued health disparities and inequities. AIM-AHEAD provides funding for the development of partnerships for underrepresented scientists, provide the infrastructure for individual institutions to operate large datasets that preserve privacy and autonomy, and provide data science training with a special interest in health disparities research.

To end this discussion, I wanted to cover an interesting project that I saw at the 2024 American Physiological Summit from Dr. Niranjana Karnik at the University of Illinois Chicago. He discussed a data science approach to screen for substance use in the hospital. During the COVID-19 pandemic, screening for substance use fell due to staff turnover and lack of training. With a goal of promoting early and universal screening to deploy treatment and prevention, Dr. Karnik developed a natural language processing model that can sift through medical records. A major problem of medical records is that they are not standardized and are written more like a narrative in plain language. Using the natural language processing model, clinicians were able to identify thirty to forty percent more patients at risk of substance use disorder than when compared to manual screening. This highlights how AI can be incorporated into clinical practice and research to benefit patient outcomes.

With this overview of artificial intelligence, I hope that you are able to incorporate it into your daily life and research. Thank you and feel free to reach out if you have any questions!

Nicholas R Harris

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Check out the links below to learn more about the NIH initiatives!

<https://www.nibib.nih.gov/science-education/science-topics/artificial-intelligence-ai#pid-8526>

<https://datascience.nih.gov/artificial-intelligence/initiatives>

<https://www.commonfund.nih.gov/bridge2ai>



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## Recognition

**Taylor Fitzpatrick-Schmidt** was awarded the 2023 Paul S. Roheim Excellence in Research Award along with a \$500 travel award in January 2024.

**Eden Gallegos** won the American Physiological Society (APS), 2024 Endocrinology and Metabolism Research Recognition Award

**Eden Gallegos** won the 2024 RSA HIV and Alcohol Satellite Meeting Trainee Travel Award

**Stephanie Lee** won the 2024 William Galey Scholarship Award of the APS.

**Patricia Molina** was recognized as the International Society for Biomedical Research on Alcoholism (ISBRA) Top Cited Author in the field of Immune Dysfunctions in AUD between 2014-2024

**Sydney Vita** was recognized for excellence in teaching in Medical and Nursing courses.

## Grants

The Medical Student Alcohol Research Internship **T35AA021097 (PI: Molina)** grant was renewed in March 2024 and 6 summer fellows have been carefully selected. L1 Medical Student and T35 Fellow **Drew Bookman (Edwards Lab)** will coordinate an unlimited summer flow of pizza and hummus as data fuel.

**Stephanie Lee** received a very promising initial score of 21 on her NIH/NIAAA F30 NRSA proposal (**Sponsors: Edwards, Gilpin, Molina**) and is preparing a resubmission for April.

## New Faces

**Johnny Stone** assumed charges as the Physiology Department Business Manager. Johnny brings nearly 10 years of experience in various roles (operations management, budget administration, and facilities management) within city government and three years of experience in fundraising and volunteer coordination in nonprofits. A Georgian by birth, New Orleans has been his home for just over 13 years.



**Emma Weiser** is the newest Research Associate in Dr. Rajani Maiya's lab. Coming from a marine biology background, she is excited to dive into researching the molecular mechanisms that underlie Alcohol Use Disorder. On the weekends, she loves to visit one of the many local farmer's markets.



## Professional services

**Eden Gallegos** was elected as Mentorship Chair on the national executive board of the American Physician Scientists Association for the 2024-2025 term.

## Publications

**Danielle E Levitt, Brianna L Bourgeois, Keishla M Rodríguez-Graciani, Patricia E Molina, Liz Simon.** Alcohol Impairs Bioenergetics and Differentiation Capacity of Myoblasts from Simian Immunodeficiency Virus-Infected Female Macaques. *Int J Mol Sci.* 2024. doi: 10.3390/ijms25042448.

## Presentations

**Scott Edwards** and **Amanda Pahng** presented their research at the 2024 Winter Conference on Brain Research (WCBR) in the *Sex Differences in Pain and Negative Affect and Implications for Alcohol and Opioid Use Disorder Risk* symposium in January 2024.

**Eden Gallegos** presented an oral talk "Characterizing MetALD in a nonhuman primate model using high fat and sucrose diet and chronic binge alcohol administration" at the APS Summit 2024. Long Beach, CA.

**Stephanie Lee** gave a talk on her latest alcohol-endocannabinoid system research at the 47th Annual Louisiana Neurosurgical Society (LANS) meeting in March 2024.

**Amanda Pahng** presented a talk titled "Sex differences in fentanyl reinforcement and activation of VTA neurons following fentanyl challenge in rats" at the Winter Conference on Brain Research in Breckenridge, Colorado, January 30, 2024.

**Sydney Vita** presented a talk titled "Alcohol exacerbates TBI-induced neuroinflammation" at



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GRC Alcohol and the Nervous System in Galveston, Texas, Feb 13, 2024.

**Sydney Vita** presented a guest lecture on navigating academia as a person from a disadvantaged background titled “*Through dangers untold & hardships unnumbered: How I fought my way to a PhD*” at the University of Utah, April 4, 2024.

## Posters

**Gallegos EM**, Chaudhary S, Greiffenstein P, Schoen J, Marr A, Stuke L, Hunt J, Shammassian B, **Smith A**. Perceptions about Organ Donation and Updated Brain Death Criteria: A Survey of Opinions from Critical Care Providers. Poster presentations. ASTS Winter Symposium 2024. Miami, FL.

**Lee S**, Romero LM, Klein JM, Edwards KN, Guidry JJ, Worthylake DK, **Edwards S**. Proteomics Analysis of Central Amygdala Systems Regulated by Mifepristone in the Context of Alcohol Dependence. Oral Presentation, 48<sup>th</sup> Louisiana Neurosurgical Society Annual Meeting. March 2024.

## Notable Events

**Robert Siggins** is a television star! Siggins gave an awesome interview on FOX 8 with Liz Reyes on March 19<sup>th</sup> about how lack of sleep can contribute to weigh gain. There was a trainee watch party! For those who missed it, here is the link. <http://my.tvey.es/e9XLd>.



Congratulations to **Scott Edwards** and **Stephanie Lee** for taking First Place (\$100) and Last Place (\$100) in the Physiology/School of Graduate Studies March Madness Pool.

**Taylor Fitzpatrick-Schmidt** and **Scott Edwards** dissected brains and spoke about responsible

alcohol use and MD/PhD careers at the 2024 Winter Conference on Brain Research (WCBR) outreach event at Summit High School in Breckenridge, Colorado in January.



WCBROutreach2024

**Eden Gallegos** is a running coach for Youth Run NOLA - a nonprofit organization for youth in our community to train, learn skills to build a healthy lifestyle, and run in races around the city. Eden helped finish off the 2024 season at the Crescent City Classic 10K where over 100 youth participated (free of cost!).

**Viewing the solar eclipse (04-08-2024)**. New Orleans had a fair share of eclipse watchers. Though not a total eclipse, the excitement was still there!



Featured in picture- Sarah Cohen, Stefany Primeaux, Patrick McTernan, and Janos Paloczi. Not featured are Elizabeth Avegno, Lauri Byerley, Maria Secci, and Alexandra Jacotte Simancas.



Physiology is fun!