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EDUCATION

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- Ph.D., Neuroscience** (Presidential Fellow; Deans Award for Outstanding Dissertation Research) February 2021  
SUNY Buffalo, Jacobs School of Medicine & Biomedical Sciences GPA: 3.90  
Advisor: Dr. Zhen Yan  
Thesis Title: Synaptic and Molecular Mechanisms in 16p11.2 Copy Number Variations  
& Advancement of Behavioral Assays for Sociability in Mice
- B.S., Psychology/Biology** (Presidential Honors Scholar; *Summa Cum Laude*; Phi Beta Kappa) May 2016  
West Virginia University GPA: 3.97  
Advisor: Dr. Daniel McNeil  
Thesis Title: Evaluation of an Avatar-Based Training Program to Promote  
Suicide Prevention Awareness in a College Setting.

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PEER-REVIEWED PUBLICATIONS

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18. **Rein, B<sup>#</sup>** (*in review*). Leveraging TikTok for public engagement with science: an analysis of in-app video metrics. *Neuroscience*.
17. **Rein B\***, Jones E\*, Tuy S, Boustani C, Johnson J, Malenka RC, Smith ML (2022). Protocols for the social transfer of pain and analgesia in mice. *STAR Protocols*. \*Equal contribution
16. **Rein B<sup>#</sup>** (2022). Harnessing social media to challenge scientific misinformation. *Cell*.
15. Conrow-Graham M, Williams J, Martin J, Zhong P, Qing C, **Rein B**, Yan Z (2022). A convergent mechanism of high risk factors ADNP and POGZ in neurodevelopmental disorders. *Brain*.
14. Wang W, Tan T, Cao Q, Zhang F, **Rein B**, WM Duan, Yan Z (2022). Histone deacetylase inhibition restores behavioral and synaptic function in a mouse model of 16p11.2 deletion. *International Journal of Neuropsychopharmacology*.
13. Belin S, Maki BA, Catlin J, **Rein B**, Popescu GK (2022). Membrane stretch gates NMDA receptors. *Journal of Neuroscience*.
12. Rapanelli M, Williams J, Ma K, Yang F, Zhong P, Patel R, Kumar M, Qin L, **Rein B**, Wang ZJ, Kassim B, Javidfar B, Couto L, Akbarian S, Yan Z (2022). Targeting histone demethylase LSD1 for treatment of deficits in autism mouse models. *Molecular Psychiatry*.
11. **Rein B**, Conrow-Graham M, Frazier A, Cao Q, Yan Z (2021). Inhibition of histone deacetylase 5 ameliorates abnormalities in 16p11.2 duplication mouse model. *Neuropharmacology*.
10. Catlin J, Marziali LN, **Rein B**, Yan Z, Feltri ML, Tooley CS (2021). Age-related neurodegeneration and cognitive impairments of NRMT1 knockout mice are preceded by misregulation of RB and expansion of the neural stem cell population. *Cell Death & Disease*.
9. Wang ZJ, **Rein B**, Zhong P, Williams J, Cao Q, Yang F, Zhang F, Ma K, Yan Z (2021). Autism risk gene KMT5B deficiency in prefrontal cortex induces synaptic dysfunction and social deficits via alterations of DNA repair and gene transcription. *Neuropsychopharmacology*. 46, 1617-1626.
8. Yan Z & **Rein B** (2021). Mechanisms of synaptic transmission dysregulation in the prefrontal cortex: Pathophysiological implications. *Molecular Psychiatry*. (Epub ahead of print).
7. Zhang F\*, **Rein B\***, Zhong P, Wang ZJ, Conrow-Graham M, Shwani T, Yan Z (2021). Synergistic inhibition of histone modifiers produces therapeutic effects in adult Shank3-deficient mice. *Translational Psychiatry*. 11 (99). \*Equal contribution
6. **Rein B**, Ma K, Yan Z (2020). A Standardized Social Preference Protocol for Measuring Social Deficits in Mouse Models of Autism. *Nature Protocols*. 15, 3464-3477.
5. **Rein B<sup>#</sup>**, Yan Z<sup>#</sup> (2020). 16p11.2 Copy Number Variations and Neurodevelopmental Disorders. *Trends in Neurosciences*. 43(11), 886-901. <sup>#</sup> Corresponding author

4. **Rein B**, Tan T, Yang F, Wang W, Williams J, Zhang F, Mills A, Yan Z. (2020). Reversal of Synaptic and Behavioral Deficits in a 16p11.2 Duplication Mouse Model via Restoration of the GABA Synapse Regulator *Npas4*. *Molecular Psychiatry*. 26: 1967-1979.
3. **Rein B**, Yan Z, Wang ZJ. (2019). Diminished Social Interaction Incentive Contributes to Social Deficits in Mouse Models of Autism Spectrum Disorder. *Genes, Brain and Behavior*. 19(1): e12610.
2. Wang W\*, **Rein B\***, Zhang F, Tan T, Zhong P, Yan Z. (2018) Chemogenetic Activation of Prefrontal Cortex Rescues Synaptic and Behavioral Deficits in a Mouse Model of 16p11.2 Deletion Syndrome. *Journal of Neuroscience*. 38(26): 5939-5948. \*Equal contribution
1. **Rein B**, McNeil DW, Hayes AR, Hawkins TA, Ng HM, Yura CA. (2018) Evaluation of an Avatar-Based Training Program to Promote Suicide Prevention Awareness in a College Setting. *Journal of American College Health*. 66(5): 401-411.

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#### OTHER PUBLICATIONS / WRITINGS

OpenMind Magazine: <a href="#">Serotonin and Depression: A Controversy that Never Was</a>	2023
Rolling Stone Magazine: <a href="#">An Open Letter to Spotify</a>	2022
Business Fit Magazine: <a href="#">The importance of sleep for brain function</a>	2021

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#### HONORS, SCHOLARSHIPS & AWARDS

• Pulitzer Center on Crisis Reporting: Truth Decay Grant	2023
• Vlogbrothers; Sponsorship for Educationally Minded Online Video Channels	2022
• Stanford University; Postdoc Justice, Equity, Diversity, Inclusivity (JEDI) Champion Award	2022
• National Institutes of Health (NIH); LRP Award	2022
• AAAS; Finalist: Early Career Award for Public Engagement with Science	2022
• Mind Science Foundation; BrainStorm Neuroscience Pitch Competition (1 <sup>st</sup> Place)	2021
• SUNY Buffalo; Deans Award for Outstanding Dissertation Research	2021
• SUNY Buffalo; Beverly P. Bishop and Charles W. Bishop Neuroscience Doctoral Thesis Award	2021
• Society for Neuroscience; Trainee Professional Development Award	2020
• Sigma Xi; Companions in Zealous Research Award	2020
• Northeastern Association of Graduate Schools; International Finalist: 3MT Competition	2020
• SUNY Buffalo; Three Minute Thesis Competition (1 <sup>st</sup> Place)	2020
• SUNY Buffalo; Excellence in Research, Scholarship and Creativity Award	2020
• SUNY Buffalo Neuroscience Research Day; Best Poster Award	2019
• SUNY Buffalo; Beverly Petterson Bishop and Charles W. Bishop Neuroscience Travel Award	2018/2019
• SUNY Buffalo; Presidential Fellowship	2016–2021
• WVU; <i>Summa Cum Laude</i>	2016
• WVU; Robert F. Munn Library Scholars Award for the Outstanding Undergraduate Thesis	2016
• WVU Psychology Department: Quin Curtis Award for the Outstanding Undergraduate Student	2016
• WVU; Dean’s List (>3.5 semesterly GPA)	2016
• WVU; President’s List (4.0 semesterly GPA)	2013- 2015
• WVU Neuroscience Club: SfN Annual Meeting Travel Award	2014
• WVU; George W. Jackson Endowment for the Arts & Sciences	2014–2016
• WVU; Blue & Gold Scholarship	2013–2016

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#### INVITED PRESENTATIONS

##### Scientific Lectures

• Stanford Health Care, Interventional Platform	2023
• Psychedelics as Medicine Conference; Reykjavik, Iceland	2023
• Microdose X, Amsterdam, Netherlands	2023
• University of San Diego, Department of Psychological Sciences (San Diego, CA)	2022
• Mind Science Foundation: An Evening with Ben Rein, PhD (San Antonio, TX)	2022
• WSKG Science Pub (Online webinar)	2022
• Neuroscience & Yoga Conference NYC (Online conference)	2022
• Science and Medicine in Action (Zoom)	2020

**Workshop:** “Communicating to a Lay Audience: Turning Your Research into a Compelling Message”

- Stanford University, BioSci Careers & Scientists Speak Up 2022
- University of Minnesota Graduate School 2022
- Johns Hopkins University, Phutures, Office of the Provost 2022

**Presentations / Q&As for Student Groups**

- ComSciCon Atlanta, SciComm Through Soundwaves (panelist) 2023
- ComSciCon Atlanta, Create-A-Thon Contest (reviewer) 2023
- Fordham University, Science Club 2023
- Unleash Your PhD Annual Summit 2022
- San Jose State University 2022
- Doctors of Tomorrow 2022
- Stanford University, Scientists Speak Up, Panel: “Debunking on Social Media” (panelist) 2022
- Duquesne University, Tri-Beta Biology Honors Society 2022
- Northeastern University, Genetic Counseling Interest Group; “Science Communicators” (panelist) 2022
- Johns Hopkins University; “Designing a Career as a Communicator” (panelist) 2021
- Stuyvesant High School, GYLTL 2021
- California State University Channel Islands, Neuroscience Society 2021
- Kansas University Nu Rho Psi 2021
- Medical Leaders of Tomorrow 2021
- Andover Neuroscience Club 2021

CONFERENCE PRESENTATIONS

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**Oral Presentations**

Rein B, Tan T, Yang F, Wang W, Williams J, Zhang F, Mills A, Yan Z. Reversal of Synaptic and Behavioral Deficits in a 16p11.2 Duplication Mouse Model via Restoration of the GABA Synapse Regulator *Npas4*. Annual Society for Neuroscience meeting, Chicago, IL, October 2019

Rein B, Yan Z, Wang Z-J. Diminished Social Interaction Incentive Contributes to Social Deficits in Mouse Models of Autism Spectrum Disorder. Brain & Behavioral Sciences Symposium, SUNY Buffalo, May 2019.

Rein B, Tan T, Wang W, Yang F, Williams J, Yan Z. Phenotypic and Mechanistic Characterization of a Mouse Model of 16p11.2 Duplication Syndrome. Neuroscience Research Day, SUNY Buffalo, October 2018.

Rein B, McNeil DW, Hayes AR, Hawkins TA, Ng HM, Yura CA. Evaluation of an Avatar-Based Training Program to Promote Suicide Prevention Awareness in a College Setting. Tri-State Psychology Research Conference, Marshall University, April 2016.

**Poster Presentations**

Rein B. Leveraging Social Media for Public Engagement with Science: An Analysis of In-App Data. Society for Neuroscience Annual Meeting, November 2022.

Tuy S, Jones E, Boustani C, Rein B, Smith ML. Olfactory Cues Mediate the Rapid Social Transfer of Pain in Mice. Society for Neuroscience Annual Meeting, November 2022.

Rein B, Ma K, Yan Z. A Standardized Social Preference Protocol for Measuring Social Deficits in Mouse Models of Autism. SfN Global Connectome, January 2021. \**SfN Trainee Professional Development Award*

Rein B, Tan T, Yang F, Wang W, Williams J, Zhang F, Mills A, Yan Z. Reversal of Synaptic and Behavioral Deficits in a 16p11.2 Duplication Mouse Model via Restoration of the GABA Synapse Regulator *Npas4*. 2020 Celebration of Academic Excellence, SUNY Buffalo, October 2019.

Rein B, Tan T, Yang F, Wang W, Williams J, Zhang F, Mills A, Yan Z. Reversal of Synaptic and Behavioral Deficits in a 16p11.2 Duplication Mouse Model via Restoration of the GABA Synapse Regulator *Npas4*. Neuroscience Research Day, SUNY Buffalo, October 2019. \* *Best Poster Award*

Rein B, Wang W, Zhang F, Tan T, Zhong P, Yan Z. Chemogenetic Activation of Prefrontal Cortex Rescues Synaptic and Behavioral Deficits in a Mouse Model of 16p11.2 Deletion Syndrome. Annual Society for Neuroscience meeting, San Diego, CA, November 2018.

Rein B, Wang W, Zhang F, Tan T, Zhong P, Yan Z. Chemogenetic Activation of Prefrontal Cortex Rescues Synaptic and Behavioral Deficits in a Mouse Model of 16p11.2 Deletion Syndrome 2018 Celebration of Student Academic Excellence, SUNY Buffalo, April 2018

**Social Media:**

[TikTok](#) (700,000+ followers); [Instagram](#) (115,000+ followers); [Bilibili](#) (100,000+ followers; partnership with platform to promote science popularization in China); [Snapchat](#) (Verified show: “Make it Brain”); [Twitter](#); [YouTube](#); [Ibble](#) (Partnership to promote discussion between scientists and the general public)

**News Articles (selected):**

Popular Mechanics: [3 astonishing brain facts that will blow your mind, according to a neuroscientist](#)  
Stanford Medicine: [We Are Stanford Med: #ThisIsMyWhy with Ben Rein](#)  
Popular Mechanics: [Lucid dreaming is a mystery we’re starting to crack](#)  
University of Miami, Scientifica Magazine: [The power of social media to promote science](#)  
Popular Mechanics: [Why some people conjure terrifying ‘sleep paralysis demons,’ according to a neuroscientist](#)  
Popular Mechanics: [Your dreams may be practice for real life, according to a neuroscientist](#)  
Beyond Science Magazine: [Issue 42, September 2022: Dr. Ben Rein](#)  
Popular Mechanics: [3 Brain hacks to boost your memory and problem-solving as you age](#)  
Medical News Today: [How ‘random noise’ could enhance human cognition and learning potential](#)  
Popular Mechanics: [5 simple tricks to reduce your risk of depression, according to a neuroscientist](#)  
Popular Mechanics: [3 Common myths about your brain that need to be dispelled](#)  
Spectrum News: [The autism researcher firing up TikTok: A Q&A with Ben Rein](#)  
Entertainment Tonight: [Expert says Bob Saget’s death could have been prevented](#)  
LA Times: [Spotify’s biggest problem isn’t Joe Rogan. It’s ambition](#)  
Rolling Stone: [Doctors demand Spotify put an end to COVID lies on ‘Joe Rogan Experience’](#)  
SUNY Buffalo Jacobs School of Medicine: [Yan’s former researchers thriving in new positions](#)  
New York Post: [Scientists reveal ‘Jennifer Aniston neuron’](#) (Also in [Grazia Magazine](#), etc.)  
Good Morning America: [Neuroscientist reveals the truth about the third eye](#) (Also in [ABC News](#), [Yahoo!](#), etc.)  
Startups San Antonio: [Mind Science awards \\$30,000 to Brainstorm Pitch Winner from Stanford University](#)  
ABC News: [What is the science behind colorblindness?](#)  
UB Spectrum: [From zero to millions: UB students find success on TikTok](#)  
LabTAG: [Research Spotlight: Ben Rein, SUNY Buffalo](#)  
Medical XPress: [Powerful drug discovery protocol for autism accelerates the development of new treatments](#)  
Futurum Careers; [I woke up from a nightmare and decided to study neuroscience](#)  
WKBW: [University at Buffalo student uses TikTok to spread educational science videos](#) (Also in: [Yahoo!](#) & [MSN](#))  
Ex Libris: [WVU Libraries selects 2016 Robert F. Munn Undergraduate Library Scholars](#)

**Podcasts / Shows (selected):**

Knowing Neurons: [Science Communication and Outreach Mini-Series #1 with Ben Rein](#)  
Intellifluence: [Dr. Ben Rein Influencer Spotlight](#)  
Meru Health: [Men’s Mental Health](#)  
Beyond the Heart Podcast: [Changing the Medical Industry Through Social Media](#)  
Unlock Hope: [Our Brains are a Wonderland with Dr. Ben Rein](#)  
The Brain Health Revolution Podcast: [Autism, Behavior and Science Miscommunication with Ben Rein, PhD](#)  
Stanford Medicine: We Are Stanford Med: [#ThisIsMyWhy, Ben Rein](#)  
Redefining Yoga Podcast: [The Complexity of the Brain with Dr. Benjamin Rein](#)  
Max Planck Society: ‘The Offspring’ Podcast: [Autism, Neuroscience of Empathy and Pain, and Placebo Effect](#)  
The Adversity Advantage Podcast: [How to Improve your Brain Health and Avoid Burnout w/ Dr. Ben Rein](#)  
Max Planck Society: ‘The Offspring’ Podcast: [How to Become a Successful Science Communicator](#)  
Chit Chatting and Questioning the World: [Dreams; Mysterious Phenomena](#)  
Kati Morton YouTube Channel: [How do Antidepressants Work?](#)  
Ask Kati Anything Podcast: [Episode 101 with Ben Rein, Ph.D.](#)  
The Genomics Lab Podcast: [Neuroscience Meets Epigenetics with Dr. Ben Rein](#)  
John Tesh Radio Show: Intelligence For Your Life  
REN TV: [The Second Universe](#)  
Caerus Careers: [Interview with a Neuroscientist](#)  
Reacteria: [Scientist vs. Scientist – Is Evolution Real?](#)  
What’s Not Being Said: [Discussing the Mystery of our Brain](#)  
A Glass Mind Podcast: [Dr. Ben Rein](#)  
Here’s the Thing Podcast: [How They Got Here – Dr. Ben Rein](#)  
European Animal Research Association: [“Let’s Talk SciComm” with Dr. Ben Rein](#)  
Here’s The Thing Podcast: [“I Met Them on Tiktok – Ben Rein”](#)  
A<sup>2</sup> the Show: [“Episode 101: Ben Rein”](#)  
Ibble App: [“Conversations with Creators: Ben Rein”](#)  
The We Don’t Know Show: [Episode 2: Autism](#)

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## TEACHING

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University of Minnesota Graduate School – 3MT Consulting Individual consulting sessions for graduate students competing in 3MT competition	2022
University of Minnesota Graduate School – Course Instructor <i>Course Title:</i> Communicating Research to a Lay Audience (offered through the graduate school)	2022
Johns Hopkins University Office of the Provost – Workshop Instructor <i>Workshop Title:</i> Communicating Research to a Lay Audience (offered through the graduate school)	2022
SUNY Buffalo Jacobs School of Medicine; NRS 602 – Course Lecturer <i>Lecture Title:</i> Autism Spectrum Disorder and Activity-Dependent Synapse Formation	2020
Society for Neuroscience; Western New York Brain Bee - Course Lecturer <i>Lecture Title:</i> Introduction to Neuroscience	2020
Varsity Tutors - Academic Tutor <i>Curriculum:</i> Statistics, neuroscience, biology	2017-2020
West Virginia University Department of Athletics - Academic Tutor <i>Curriculum:</i> Statistics, psychology, biology, English	2014-2015

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## CONSULTING / ADVISING

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### Scientific Advising:

- Roon; Mendi; Arrived AI; Brazen Bio

### Scientific Consulting:

- Avion Tequila; Entertainment Tonight; REN TV; AMADEHAUS; SickBird Productions; Noonchi  
Big If True; Cleo Abram; Tyler Csatori Media; Gary Chattaway

### Social Media Consulting:

- Super App; Qwarke App; Ibble App; Retreat App; Goodself App

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## GRANT SUPPORT

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<b>Pulitzer Center on Crisis Reporting:</b> Truth Decay Grant Initiative Grant awarded for a collaboration project with OpenMind Magazine and Scientific American to create in-depth media stories covering science misinformation, science denial, and the spread of pseudoscience.	2023
<b>National Institutes of Health:</b> Loan Repayment Program (NIH LRP) Eunice Kennedy Shriver National Institute of Child Health & Human Development (NICHD) Title: <i>Characterizing the impact of early-life social experience and isolation on PFC development in mice</i> Amount: \$10,436.53 in loan repayment	2022-2024
<b>Mind Science Foundation:</b> Tom Slick Research Award in Consciousness 1 <sup>st</sup> Place Winner: Brainstorm Neuroscience Pitch Competition Title: <i>Practice makes perfect: how does social experience in early life shape brain development?</i> Amount: \$30,000 in research funds (+\$1,500 travel stipend)	2021-2022

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## RESEARCH EXPERIENCE

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<b>Dr. Robert Malenka Lab</b> , Stanford University, Dept. of Psychiatry and Behavioral Sciences Postdoctoral Scholar	2021-present
<b>Dr. Zhen Yan Lab</b> , SUNY University at Buffalo, Department of Physiology & Biophysics Ph.D. Student	2016-2021
<b>Dr. George Spirou Lab</b> , West Virginia University, Department of Neuroscience Undergraduate Research Assistant	2016
<b>Dr. Daniel W. McNeil Lab</b> , West Virginia University, Department of Psychology Undergraduate Research Assistant	2015- 2016

**Dr. Steven Kinsey Lab**, West Virginia University, Department of Neuroscience  
Undergraduate Research Assistant 2015- 2016

**Dr. Hawley Montgomery-Downs Lab**, West Virginia University, Department of Psychology  
Undergraduate Research Assistant 2014

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#### TECHNICAL SKILLS / TRAINING

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Slice Electrophysiology: Spontaneous and evoked whole-cell patch clamp recordings (in PFC pyramidal neurons)

Biochemistry: Chromatin Immunoprecipitation (ChIP), RNA isolation for qPCR & RNA-sequencing, Western blotting, cDNA synthesis, RT-qPCR, immunohistochemistry, confocal microscopy, nuclear/synaptosomal subcellular fractionation

Behavioral Assays (mouse): Three-chamber social preference, social withdrawal, temporal order recognition memory, novel object recognition memory, open field locomotion, self-grooming, marble burying, pre-pulse inhibition/startle response, elevated plus maze, forced swim test, Von Frey test, thermal place test, hot plate test, emotional discrimination, juvenile interaction test, Barnes maze, conditioned place preference (CPP), social CPP, social transfer of pain & analgesia

Mouse Handling/Surgical Procedures Handling: Stereotactic viral injections, intracranial cannulation, optogenetic fiber implantation, CFA paw injections, intraperitoneal/subcutaneous injections, serial brain dissection, perfusion

In vivo manipulations in mice: Optogenetic stimulation of neurons/terminals (ChR2); region-specific pharmacological experiments via intracranial cannula; chemogenetic (DREADD) stimulation of neuronal populations

Softwares: Ilastik, 3D Slicer, ZEISS ZEN, Graphpad Prism, ANY-maze, Canvas, Cytoscape, DAVID, ImageLab, ImageJ/FIJI, Endnote

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#### PROFESSIONAL ASSOCIATIONS

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**Manuscript referee for:**

JMIR Infodemiology; Frontiers in Neuroscience ; Journal of Medical Genetics; Scientific Reports  
Neuropsychiatric Disease and Treatment; Bioengineered; Journal of American College Health

**Grant referee for:**

W.M. Keck Foundation; Mind Science Foundation

**Professional Affiliations:**

Arrived; Social Council	2022-present
Public Goods Project; Health Influencer Council	2022-present
American Association for the Advancement of Science (AAAS)	2020-present
Sigma Xi	2020-present
Phi Beta Kappa Society	2016-present
Psi Chi International Honor Society in Psychology	2015-present
Society for Neuroscience	2014-present
NSCS: National Society for Collegiate Scholars	2014-present

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#### LEADERSHIP / VOLUNTEER POSITIONS

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Aspiring Scientists Coalition (ASC): Founder & President ( <a href="http://www.ASCscience.com">www.ASCscience.com</a> )	2020-present
Society for Neuroscience: Social Media Ambassador	2021
SUNY Buffalo Jacobs School of Medicine: Student Ambassador	2019 –2021
SUNY Buffalo Neuroscience Graduate Association: Senator	2017- 2018
WVU Student Mental Health Awareness Board: Founding Member	2015- 2016
WVU Eberly College of Arts & Sciences: Student Representative	2015
WVU Psychology Club & Psi Chi: President (2015), Vice President (2014) Publicity Chair (2013)	2013 - 2016