

Benjamin A. Rein, Ph.D.
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EDUCATION

Ph.D.: Neuroscience SUNY Buffalo, Jacobs School of Medicine & Biomedical Sciences Advisor: Dr. Zhen Yan	February 2021
B.S.: Psychology/Biology West Virginia University <i>Summa Cum Laude</i> (GPA: 3.97), Phi Beta Kappa, Presidential Honors Scholar	May 2016

RESEARCH EXPERIENCE

Postdoctoral Fellow; Stanford University Dr. Robert Malenka Laboratory	April 2021 - present
Ph.D. Student; SUNY University at Buffalo Dr. Zhen Yan Laboratory <i>Thesis Title:</i> Synaptic and Molecular Mechanisms in 16p11.2 Copy Number Variations & Advancement of Behavioral Assays for Sociability in Mice	Aug 2016-Feb 2021
Undergraduate Research Assistant; West Virginia University Dr. Daniel W. McNeil Laboratory <i>Thesis Title:</i> Evaluation of an Avatar-Based Training Program to Promote Suicide Prevention Awareness in a College Setting.	Aug 2015-May 2016
Dr. George Spirou Laboratory	Jan 2016-May 2016
Dr. Steven Kinsey Laboratory	Dec 2014–May 2015
Dr. Hawley Montgomery-Downs Laboratory	Aug 2014–Dec 2014

PEER-REVIEWED PUBLICATIONS

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*.

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*.

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.

Yan Z & **Rein B** (2021). Mechanisms of synaptic transmission dysregulation in the prefrontal cortex: Pathophysiological implications. *Molecular Psychiatry*. (Epub ahead of print).

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

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.

Rein B[#], Yan Z[#] (2020). 16p11.2 Copy Number Variations and Neurodevelopmental Disorders. *Trends in Neurosciences*. 43(11), 886-901. [#] Corresponding author

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.

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.

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

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.

HONORS/AWARDS

Society/Foundation Awards

AAAS: Finalist: Early Career Award for Public Engagement with Science	February 2022
<i>Mind Science Foundation</i> : 1 st Place Winner: BrainStorm Neuroscience Pitch Competition	August 2021
<i>Society for Neuroscience</i> : Trainee Professional Development Award	December 2020
<i>Northeastern Association of Graduate Schools</i> : Finalist: International 3MT Competition	April 2020
<i>Sigma Xi</i> : “Companions in Zealous Research” Award`	May 2020

Ph.D.; SUNY Buffalo

Deans Award for Outstanding Dissertation Research	May 2021
Beverly Petterson Bishop and Charles W. Bishop Neuroscience Doctoral Thesis Award	May 2021
Excellence in Research, Scholarship and Creativity Award	May 2020
1st Place Winner ; 2020 Three Minute Thesis Competition	March 2020
“Best Poster Award”; SUNY Buffalo Neuroscience Research Day	October 2019
Beverly Petterson Bishop and Charles W. Bishop Neuroscience Travel Award	October 2018/2019
Presidential Fellowship	March 2016–Feb 2021

B.S.; West Virginia University

<i>Summa Cum Laude</i> Honors	May 2016
Robert F. Munn Library Scholars Award for the Outstanding Undergraduate Thesis	May 2016
Quin Curtis Award for the Outstanding Undergraduate Student in Psychology	March 2016
Dean’s List (>3.5 semesterly GPA)	Spring 2016
President’s List (4.0 semesterly GPA)	Fall 2013–Fall 2015
SfN Annual Meeting Travel Award; WVU Neuroscience Club	October 2014
George W. Jackson Endowment for the Arts & Sciences	Aug. 2014–May 2016
Blue & Gold Scholarship	Aug. 2013–May 2016

GRANT SUPPORT

Mind Science Foundation

BrainStorm Neuroscience Pitch Competition Winner (1 year; \$30,000)	2021-2022
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PROFESSIONAL ABSTRACTS

Conference Proceedings

Rein B, Ma K, Yan Z. A Standardized Social Preference Protocol for Measuring Social Deficits in Mouse Models of Autism. **Digital Poster**; SfN Global Connectome, January 2021.

**Recipient of Society for Neuroscience 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*. **Nanosymposium**; Annual Society for Neuroscience meeting, Chicago, IL, October 2019.

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. **Poster**; Annual Society for Neuroscience meeting, San Diego, CA, November 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. **Oral Presentation**; Tri-State Psychology Research Conference, Marshall University, April 2016.

University Proceedings

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*. **Digital Poster**; 2020 Celebration of Academic Excellence, SUNY Buffalo, October 2019.

Winner of Sigma Xi “Companions in Zealous Research” Award (first place)

Winner of Excellence in Research, Scholarship and Creativity 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*. **Poster**; Neuroscience Research Day, SUNY Buffalo, October 2019.

Winner of “Best Poster” Award

Rein B, Yan Z, Wang Z-J. Diminished Social Interaction Incentive Contributes to Social Deficits in Mouse Models of Autism Spectrum Disorder. **Oral Presentation**; Brain & Behavioral Sciences Symposium hosted by 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. **Oral Presentation**; Neuroscience Research Day, SUNY Buffalo, October 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. **Poster**; 2018 Celebration of Student Academic Excellence, SUNY Buffalo, April 2018

PUBLIC ENGAGEMENT/SCIENCE COMMUNICATION

Sci-Comm / Social Media:

[TikTok](#) (650,000+ followers)

[Instagram](#) (26,000+ followers)

[Bilibili](#) (115,000+ subscribers; partnership to promote science popularization in China)

[Ibble](#) (Partnership to promote discussion between scientists and the general public)

News Articles (selected)

Business Fit Magazine: [The importance of sleep for brain function](#)

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.)

ABC News: [What is the science behind colorblindness?](#) (Also in: [Good Morning America](#), [Yahoo!](#) & [AOL](#))

Startups San Antonio: [Mind Science awards \\$30,000 to Brainstorm Pitch Winner from Stanford University](#)

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](#))

Podcasts / Shows (selected)

REN TV: [The Second Universe](#) (Expert commentary for documentary on the brain)

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”](#)

A² the Show: [“Episode 101: Ben Rein”](#)

The We Don’t Know Show: [Episode 2: Autism](#)

Invited Presentations / Lectures

Horizons Conference, Johns Hopkins University: <i>Designing a Career as a Communicator</i>	Dec 2021
Stuyvesant High School: <i>Guest Presenter</i>	May 2021
CSUCI Neuroscience Society: <i>Guest Presenter</i>	April 2021
Andover High School Neuroscience Club: <i>Guest Presenter</i>	April 2021
Kansas University Nu Rho Psi: <i>Guest Presenter</i>	April 2021
Medical Leaders of Tomorrow; <i>Guest Presenter</i>	January 2021
Science and Medicine in Action: Science Behind Autism W/ Ben Rein	November 2020

TEACHING/MENTORSHIP

Aspiring Scientists Coalition (ASC): Founder & President (www.ASCscience.com)

Founder of online organization designed to provide guidance and networking for students in science.

University at Buffalo; NRS 602 (Seminars in Neuroscience) February 2020
Topic: *Autism spectrum disorder and activity-dependent synapse formation*

Society for Neuroscience; Western New York Brain Bee February 2020
Introductory lecture for high school students competing in the WNY brain bee

West Virginia University; Department of Athletics Oct 2014–May 2015
Tutor: English, Statistics, Biology

PROFESSIONAL ASSOCIATIONS

Manuscript referee for:

<i>Bioengineered</i>	December 2021
<i>Neuropsychiatric Disease and Treatment</i>	September 2021
<i>Scientific Reports</i>	September 2020
<i>Journal of American College Health</i>	June 2020

Grant referee for:

<i>W.M. Keck Foundation</i>	August 2018
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American Association for the Advancement of Science (AAAS)

May 2020–present

Sigma Xi

May 2020–present

Phi Beta Kappa Society

May 2016–present

Psi Chi International Honor Society in Psychology

March 2015–present

Society for Neuroscience

November 2014–present

NSCS: National Society for Collegiate Scholars

September 2014–present

LEADERSHIP/VOLUNTEER POSITIONS

Society for Neuroscience: Social Media Ambassador for Global Connectome Event	January 2021
SUNY Buffalo Jacobs School of Medicine: <i>Student Ambassador/Team Leader</i>	Nov 2019 – Feb 2021
SUNY Buffalo Neuroscience Graduate Association: <i>Senator</i>	Sept 2017–May 2018
West Virginia University Student Mental Health Awareness Board: <i>Founding member</i>	Oct 2015–May 2016
West Virginia University Eberly College of Arts & Sciences: <i>Student Representative</i>	Aug/Oct 2015
West Virginia University Psychology Club & Psi Chi	
President	Aug 2015–May 2016
Vice President	Aug 2014–May 2015
Publicity Chair	Dec 2013–May 2014

TECHNICAL SKILLS/TRAINING

Slice Electrophysiology: Spontaneous and evoked 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

Behavior/Rodent Handling (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, emotional discrimination, juvenile interaction test, Barnes maze, intraperitoneal/subcutaneous injections, stereotactic injections, CFA paw injections, serial brain dissection, perfusion

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