

Noah Emery Pollak Milman

1831 SE Ladd Ave Portland, OR | 650-387-6002 | milman@ohsu.edu

O Objective

I am driven to explore the neural mechanisms by which sleep quality informs susceptibility or resilience in neurodevelopmental and neurodegenerative disorders. My current research investigates social phenotypes in developmentally sleep disrupted prairie voles and quantitative features of brain connectivity during sleep in older humans.

E Education

Oregon Health and Science University | Portland, OR

PhD student, Behavioral and Systems Neuroscience

09/2021 –

Northeastern University | Boston, MA

BS, Behavioral Neuroscience

01/2017 – 05/2021

University College Dublin | Dublin, Ireland

Semester Abroad

09/2016 – 12/2016

FG Fellowships and Grants

NIA T32, OHSU

07/2022 –

Characterizing slow wave connectivity across the lifespan and in neurodegenerative disorders

Pilot Grant, BENFRA OHSU

09/2022 –

Quantitative EEG signatures of *Centella asiatica* in Aged Mice

A Awards

Oregon Health and Science University

- Achievement Rewards for College Scientist (ARCS) Foundation Scholar 2021-2023
- Behavioral Neuroscience Ashworth-Thomason Travel Award
- Vole BASE Conference Travel Award 2023
- Tartar Trust Foundation Scholarship 2022
- International Society of Developmental Psychobiology (ISDP) Trainee Travel Award 2022

Northeastern University

- Alexander Skavenski Excellence in Neuroscience Award

P Publications

* these authors contributed equally.

L. S. Bueno-Junior, C. E. Jones-Tinsley, **N. E. P. Milman**, P. T. Wickham, B. O. Watson, M. M. Lim. Early-life sleep disruption impairs subtle social behaviours in prairie voles: A pose-estimation study (2023). Royal Society Open Science.

N. E. P. Milman, C. E. Jones-Tinsley, R. M. Raju, M. M. Lim. Loss of sleep when it is needed most – consequences of persistent developmental sleep disruption: A scoping review of rodent models (2022). *Neurobiology of Sleep and Circadian Rhythms*, Special Issue: Development of Sleep and Circadian Rhythms. <https://doi.org/10.1016/j.nbscr.2022.100085>.

C. E. Jones-Tinsley, R. J. Olson, M. Mader, P. T. Wickham, K. R. Gutowsky, C. Wong, S. Chu, **N. E. P. Milman**, H. Cao, M. M. Lim. Early life sleep disruption has long lasting, sex specific effects on later development of sleep in prairie voles (2022). *Neurobiology of Sleep and Circadian Rhythms*.

*D. Chan, *HJ Suk, *B. Jackson, ***N. Milman**, D. Stark, E.B. Klerman, ...S. Whitfield-Gabrieli, E.N. Brown, E.S. Boyden, B. Dickerson, L.H. Tsai. Gamma frequency sensory stimulation in mild probable Alzheimer's dementia patients: results of feasibility and pilot studies (2022). *PLOS ONE* 17(12): e0278412. <https://doi.org/10.1371/journal.pone.0278412>

Chan, D., Suk, H. J., Jackson, B., **Milman, N. P.**, Stark, D., Beach, S. D., & Tsai, L. H. (2021). Induction of specific brain oscillations may restore neural circuits and be used for the treatment of Alzheimer's disease. *Journal of internal medicine*, 290(5), 993–1009. <https://doi.org/10.1111/joim.13329>

Barker, S. J*, Raju, R. M*, **Milman, N.**, Wang, J., Davila-Velderrain, J., Gunter-Rahman, F., Parro, C. C., Bozzelli, P. L., Abdurrob, F., Abdelaal, K., Bennett, D. A., Kellis, M., & Tsai, L. H. (2021). MEF2 is a key regulator of cognitive potential and confers resilience to neurodegeneration. *Science Translational Medicine*, 13(618), eabd7695. <https://doi.org/10.1126/scitranslmed.abd7695>

TE Teaching Experience

OHSU, 1st year Neuroscience PhD coursework

Teaching Assistant 10/2022 – 12/2022

NEUS627: Systems Neuroscience

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Lewis and Clark College

Guest Lecturer 03/2022 -

Spring 2022: PSY280: Brain and Behavior: *Sleep and Circadian Rhythms*

Spring 2023: PSY280: Brain and Behavior: *Research Methods in Neuroscience, Sleep and Circadian Rhythms*

University of Portland

Guest Lecturer 10/2023 -

Integrative Health and Wellness Elective: *Intrinsic and Extrinsic Factors that Impact Sleep Quality*

Portland State University

Guest Lecturer 2/2024 – 03/2024

Upper Level Neuroscience Elective: *Plasticity on Multiple Scales: Neurodevelopment (6 courses)*

Refurbish used bikes and assist with high school employees in the shop, Assistant Teacher for Bike Institute (Spring 2021)

Kids 4 Coding

Instructor

07/2017 – 08/2017

Led 7-12 year old students in week long courses on drones, robotics, Scratch, and Microsoft Kodu game lab lessons

Squashbusters Youth Enrichment

Volunteer

02/2017 – 06/2017

Tutoring juniors for the SAT in math and English, reviewing mistakes on previous practice tests

Saint Columbanus National School

Volunteer

10/2016 – 12/2016

Individually taught middle school children in computer science lessons as part of service learning

SM Student Mentor:

OMT Outreach and Mentoring

Ologies with Allie Ward (Podcast)

Field Trip: An Airport Full of Neuroscientists
03/02/2023

NEURONS Neuroscience Club

Vice-President

08/2019 – 05/2021

One-on-one mentoring of underclassmen and organization of outreach events: Brain Awareness Week and weekly speaking engagements

NEPTUN Science Outreach

Student Teacher, Northeastern

Fall 2018 – Spring 2021

Taught classes to interested local high-schoolers – previously lectured on sleep, performance anxiety and the gut-microbiome

Bikes Not Bombs

Volunteer Mechanic

Winter 2020 – Spring 2021

Jasmine Loeung, Portland State University, now OHSU RA

Undergraduate student trainee in my lab, we work together on manual and automated scoring of vole behavior and molecular experiments

03/2023 – present

Jonah Stickney, OHSU

GSO and BEHN peer mentor, helping navigate rotations and first year coursework.

09/2022 – present

Allie Cauchon, Northeastern University

Peer mentor through undergraduate neuroscience club, NEURONS. Now, research assistant Brenhouse lab.

09/2019 – 06/2021

IT Invited Talks

NW Noggin Neuroscience Outreach

NogginFest Student Speaker

06/18/2023

“Early life sleep as a window into later social behavior: lessons from prairie voles”

VETERANS AFFAIRS MENTAL ILLNESS RESEARCH, EDUCATION and CLINICAL CENTER (MIRECC):

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04/02/2023

“Low-frequency event detections during sleep and emerging ideas about the importance of REM sleep”

UNIVERSITY OF CALIFORNIA IRVINE

08/08/2022

“Gamma ENtrainment Using Sensory Stimuli (GENUS) in humans, actigraphy findings from a Phase 2a clinical trial”

UNIVERSITY OF MICHIGAN

01/17/2024

“Contribution of early-life sleep and sensory environment on the development of affiliation”

JUNGERS RESEARCH CENTER

03/19/2024

“Contribution of early-life sleep and sensory environment on the development of affiliative touch”

C Conference Oral Presentations

N. E.P. Milman, J.L. Loeung, N. McGuire, M. M. Lim. Contribution of early-life sleep and sensory environment on the development of affiliation. Oral session presented at: Pacific Northwest Sleep and Circadian Network; 2024 April 12-13; Portland, OR

N. E.P. Milman, L.B. Soares, M. Ruffins, C. E. Jones-Tinsley, P. T. Wickham, M. M. Lim. How to: Multiple Animal pose-estimation of socially interacting prairie voles. Oral session presented at: Vole Base Conference 2023; 2023 August 2-5; Boulder, CO

N.E.P. Milman, L.S. Soares-Junior, M. Ruffins, C.E. Tinsely, P.T. Wickham, M.M. Lim. How to: Multiple animal pose-estimation of socially interacting prairie voles. OHSU Research Week. 2023 May 3, Portland, OR

N. E.P. Milman, R. J. Olson, C. E. Jones-Tinsley, C. Wong, P. T. Wickham, K. R. Gutowsky, H. Cao, M. M. Lim. Persistent effects of early life sleep disruption in prairie voles on REM sleep time are sex specific and age dependent. Oral session presented at: International Society for Developmental Psychobiology 2022; 2022 November 9-12; San Diego, CA

C Conference Posters

presenting author

N. E.P. Milman, C. Reynolds, J. Dude, J. Boyd, M. Zangrilli, N. Recoder, Y.L. Ju, M. M. Lim. Low Frequency Event Coincidence Across Hemispheres during REM Sleep Differs According to Clinical Dementia Rating and Relates to Working Memory Performance in the WashU BASE Cohort. Poster session presented at: AAIC 2023 July 14-16; Amsterdam, Netherlands

N. E.P. Milman, R. J. Olson, C. E. Jones-Tinsley, C. Wong, P. T. Wickham, K. R. Gutowsky, H. Cao, M. M. Lim. Persistent effects of early life sleep disruption in prairie voles on REM sleep time are sex specific and age dependent. Poster session presented at: Society for Neuroscience 2022; 2022 November 12-16; San Diego, CA

N. Milman, C. Reynolds, N. Balba, P. Wickham, A. Tan, J. Gottshall, Y.E. Ju, M.M. Lim. EEG detected slow wave coincidence in NREM sleep declines with age and is associated with mild cognitive impairment. Poster session presented at: European Sleep Research Society 2022; 2022 September 28-30; Athens, Greece

N. Milman, K. Madden, C. Reynolds, N. Balba, T. Omar, M. Lim, Y.E. Ju. Actigraphy Based Measures of Sleep Disruption and Circadian Rhythms in the WashU Biomarkers of Alzheimer's Disease in the Sleep and EEG (BASE) Cohort. Poster session presented at: SLEEP 2022; 2022 June 5-8; Charlotte, NC

N. Milman, C. Reynolds, N. Balba, Y.E. Ju M. Lim. EEG Slow Wave Coherence is Related to PSG-Derived Measures of Sleep Fragmentation and Cognition in the WashU BASE Cohort. Poster session presented at: SLEEP 2022; 2022 June 5-8; Charlotte, NC

N.E.P. Milman, D. Chan, H.J. Suk, B. Jackson, S. Beach, D. Stark, V. Fernandez, C. Stearns, E.N. Boyden, E.S. Brown, L.H. Tsai. Bimodal stimulation in cognitively healthy individuals prompts widespread 40 Hz entrainment and global synchronization: A preliminary study of non-invasive stimulation for treating Alzheimer's disease. 2019 October 23 *Society for Neuroscience*, Chicago, IL

RE Research Experience

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MIT Picower Institute for Learning & Memory | Cambridge, MA

*Visiting Student, Research Associate: three
full time co-ops = 2.5 years*

07/2018 – 06/2021

TS Technical Skills

Collecting human EEG data with BioSemi software, Rodent EEG recording with BioPac, animal handling, rodent behavioral experiments (mice and prairie voles), rodent wired and wireless EEG surgery, DNA and RNA purification, tissue slicing, staining and imaging, gel electrophoresis, (q)PCR.

Software: MATLAB, EEGLab, RStudio, Python (proficient), GraphPad Prism, Actilife actigraphy suite, EndNote, Adobe Illustrator.