



## Erin Gibson

Assistant Professor of Psychiatry and Behavioral Sciences (Sleep Medicine)  
Psychiatry and Behavioral Sciences - Sleep Medicine

 Curriculum Vitae available Online

### Bio

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#### BIO

Erin Gibson received her Bachelors of Science from Duke University in 2005 majoring in Psychology/Neuroscience. She received her PhD under Dr. Lance Kriegsfeld at the University of California, Berkeley in 2011 studying the role of the circadian system in homeostatic processes, including neuroendocrine, immune and neural stem cell regulation. As a postdoctoral scholar in the lab of Dr. Michelle Monje at Stanford University, Dr. Gibson studied the effect of in vivo neuronal activity on myelin microstructure in health and disease such as the dysmyelinating disorder associated with chemotherapy-related cognitive impairment. Her lab focuses on understanding how glial cells modulate neural circuits throughout development and in diseases such as autism, multiple sclerosis, and chemotherapy-related cognitive impairment. The Gibson lab aims to discern how the circadian system influences glial form and function throughout life.

#### ACADEMIC APPOINTMENTS

- Assistant Professor, Psychiatry and Behavioral Sciences - Sleep Medicine
- Member, Bio-X
- Member, Wu Tsai Human Performance Alliance
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute
- Member, Wu Tsai Neurosciences Institute

#### ADMINISTRATIVE APPOINTMENTS

- Member, Center for Sleep and Circadian Sciences, (2021- present)

#### PROFESSIONAL EDUCATION

- Ph.D., University of California, Berkeley , Psychology/Neuroscience (2011)
- B.S., Duke University , Psychology/Neuroscience (2005)

#### LINKS

- My Lab Site: <https://gibson-lab.org/>

### Research & Scholarship

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#### CURRENT RESEARCH AND SCHOLARLY INTERESTS

The Gibson Lab studies the cellular and molecular mechanisms modulating glia. One molecular mechanism that affords cells a dynamical nature is the circadian clock. While much is known about how the circadian clock influences neurons and peripheral cells throughout the body, little is known about

how this core molecular mechanism regulates glia. We study how the circadian clock system regulates glial function to better understand diseases of the nervous system in which both circadian/sleep and glial dysfunction are prominent, such as autism, multiple sclerosis, and chemotherapy-related cognitive impairment.

- What cellular processes in glia are regulated by the circadian system?
- What is the function of the circadian clock system during myelination?
- How does the circadian clock machinery influence myelin-forming cell structure and function?
- How does disruption in the circadian clock affect diseases of dysregulated myelination?
- How do circadian disruptions mediated by environmental changes (i.e. jet lag, shift work, light at night) affect brain form and function in health and disease?

## Teaching

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### COURSES

#### 2025-26

- Neuroscience Journal Club and Professional Development Series: NEPR 280 (Aut, Win, Spr)

#### 2024-25

- Neuroscience Journal Club and Professional Development Series: NEPR 280 (Aut, Win, Spr)

#### 2023-24

- Neuroscience Journal Club and Professional Development Series: NEPR 280 (Aut, Win, Spr)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Lehi Acosta-Alvarez, Jessica Arozqueta Basurto, Madeline Cooper, Yoo Jin Genie Jung, Lauren Koepke, Karen Malacon, Ashley Moses, Kamsi Nwangwu, Nour Omar, Abigail Rogers

#### Orals Chair

Griffin Hartmann

#### Postdoctoral Faculty Sponsor

Rebecca Buchanan, Tess Dierckx, Daniela Rojo Capitanio, Molly (Xun) Tu

#### Doctoral Dissertation Advisor (AC)

Yohan Auguste, Jerry Cheng, Riley Merkel, Sarah Wilson

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Cancer Biology (Phd Program)
- Neurosciences (Phd Program)

## Publications

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### PUBLICATIONS

- **Disrupting BMAL1 enhances Temozolomide efficacy and abolishes circadian timing effects in pediatric high-grade gliomas**  
Nettlin, E., Garcia, C., Sayed, F., Guinle, M., Gibson, E., Prolo, L.  
OXFORD UNIV PRESS INC.2025: v340

- **Circadian rhythms in pediatric high-grade gliomas may contribute to treatment efficacy.** *Scientific reports*  
Nettnin, E. A., Garcia, C. A., Sayed, F. F., Schonfeld, E., Nguyen, T., Guinle, M. I., Petritsch, C. K., Gibson, E. M., Prolo, L. M.  
2025; 15 (1): 32010
- **The LncRNA MYRACL Regulates Human Oligodendrocyte Maturation and Myelination.** *Molecular therapy : the journal of the American Society of Gene Therapy*  
Tsarouchas, T. M., Vacante, F., Kazakou, N. L., Wagstaff, L., Bennett, M., Zoupi, L., Gibson, E. M., Baker, A. H., Williams, A.  
2025
- **Extended Amygdala Neural Circuits Linking Hormonal Influences on Body Temperature to Sleep and Circadian Rhythms**  
Bush, B., Sardar, H., Aloboudi, F., Hoang, I., Rogers, E., Morningstar, A., Ma, Y., Cengio, L., Buchanan, R., Gibson, E., Giardino, W.  
OXFORD UNIV PRESS INC.2025: A39
- **Enduring NREM sleep fragmentation following methotrexate chemotherapy in cancer-naïve mice.** *Sleep*  
Boyd, L., Berisha, A., Gomez, A. M., Gibson, E. M., Borniger, J. C.  
2025
- **Protocol for assessing myelination by human iPSC-derived oligodendrocytes in Shiverer mouse ex vivo brain slice cultures.** *STAR protocols*  
Tsarouchas, T. M., Zoupi, L., Williams, A., Gibson, E. M.  
2025; 6 (1): 103609
- **PEDIATRIC GLIOMAS EXPRESS CIRCADIAN GENES AND DEMONSTRATE CIRCADIAN REGULATION OF TEMOZOLOMIDE SENSITIVITY**  
Nettnin, E. A., Garcia, C. A., Schonfeld, E., Mehl, L. C., Guinle, M., Petritsch, C. K., Gibson, E. M., Prolo, L. M.  
OXFORD UNIV PRESS INC.2024
- **Precise timing of audiovisual stimulation conquers chemobrain.** *Trends in cancer*  
Mehl, L. C., Gibson, E. M.  
2024
- **Oligodendrocytes: Myelination, Plasticity, and Axonal Support.** *Cold Spring Harbor perspectives in biology*  
Simons, M., Gibson, E. M., Nave, K. A.  
2024
- **Next Directions in the Neuroscience of Cancers Arising outside the CNS.** *Cancer discovery*  
Amit, M., Anastasaki, C., Dantzer, R., Demir, I. E., Deneen, B., Dixon, K. O., Egeblad, M., Gibson, E. M., Hervey-Jumper, S. L., Hondermarck, H., Magnon, C., Monje, M., Na'ara, et al  
2024; 14 (4): 669-673
- **Review: therapeutic approaches for circadian modulation of the glioma microenvironment.** *Frontiers in oncology*  
Nettnin, E. A., Nguyen, T., Arana, S., Barros Guinle, M. I., Garcia, C. A., Gibson, E. M., Prolo, L. M.  
2023; 13: 1295030
- **CIRCADIAN REGULATION OF NEUROINFLAMMATION DRIVING CANCER THERAPY-RELATED COGNITIVE IMPAIRMENT**  
Mehl, L., Gibson, E.  
OXFORD UNIV PRESS INC.2023
- **BMAL1 loss in oligodendroglia contributes to abnormal myelination and sleep.** *Neuron*  
Rojo, D., Dal Cengio, L., Badner, A., Kim, S., Sakai, N., Greene, J., Dierckx, T., Mehl, L. C., Eisinger, E., Ransom, J., Arellano-Garcia, C., Gumma, M. E., Soyk, et al  
2023
- **Timing matters: A protective role of astrocyte reactivity in neurodegeneration.** *Neuron*  
Rojo, D., Gibson, E. M.  
2023; 111 (15): 2277-2279
- **Beyond the Symptom: The Biology of Fatigue.** *Sleep*  
Raizen, D. M., Mullington, J., Anaclet, C., Clarke, G., Critchley, H., Dantzer, R., Davis, R., Drew, K. L., Fessel, J., Fuller, P. M., Gibson, E. M., Harrington, M., Lipkin, et al  
2023

- **Circadian Control of Glial Cell Homeodynamics.** *Journal of biological rhythms*  
Rojo, D., Badner, A., Gibson, E. M.  
2022: 7487304221120966
- **Microglia in brain development and regeneration.** *Development (Cambridge, England)*  
Mehl, L. C., Manjally, A. V., Bouadi, O., Gibson, E. M., Leng Tay, T.  
2022; 149 (8)
- **NF1 mutation drives neuronal activity-dependent initiation of optic glioma.** *Nature*  
Pan, Y., Hysinger, J. D., Barron, T., Schindler, N. F., Cobb, O., Guo, X., Yalcin, B., Anastasaki, C., Mulinyawe, S. B., Ponnuswami, A., Scheaffer, S., Ma, Y., Chang, et al  
2021
- **Microglia in Cancer Therapy-Related Cognitive Impairment.** *Trends in neurosciences*  
Gibson, E. M., Monje, M.  
2021
- **How Support of Early Career Researchers Can Reset Science in the Post-COVID19 World.** *Cell*  
Gibson, E. M., Bennett, F. C., Gillespie, S. M., Guler, A. D., Gutmann, D. H., Halpern, C. H., Kucenas, S. C., Kushida, C. A., Lemieux, M., Liddelow, S., Macauley, S. L., Li, Q., Quinn, et al  
2020
- **Getting personal.** *Science (New York, N.Y.)*  
Gibson, E.  
2020; 367 (6475): 334
- **Treating cancer therapy-related cognitive impairment.** *Nature medicine*  
Gibson, E. M., Monje, M. n.  
2020
- **Emerging mechanistic underpinnings and therapeutic targets for chemotherapy-related cognitive impairment.** *Current opinion in oncology*  
Gibson, E. M., Monje, M.  
2019
- **Loss of Adaptive Myelination Contributes to Methotrexate Chemotherapy-Related Cognitive Impairment.** *Neuron*  
Geraghty, A. C., Gibson, E. M., Ghanem, R. A., Greene, J. J., Ocampo, A. n., Goldstein, A. K., Ni, L. n., Yang, T. n., Marton, R. M., Paşca, S. P., Greenberg, M. E., Longo, F. M., Monje, et al  
2019
- **How to tackle the childcare-conference conundrum** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Calisi, R. M., Working Grp Mothers Sci  
2018; 115 (12): 2845–49
- **Bad wrap: Myelin and myelin plasticity in health and disease** *DEVELOPMENTAL NEUROBIOLOGY*  
Gibson, E. M., Geraghty, A. C., Monje, M.  
2018; 78 (2): 123–35
- **Methotrexate Chemotherapy Induces Persistent Tri-gliial Dysregulation that Underlies Chemotherapy-Related Cognitive Impairment.** *Cell*  
Gibson, E. M., Nagaraja, S. n., Ocampo, A. n., Tam, L. T., Wood, L. S., Pallegar, P. N., Greene, J. J., Geraghty, A. C., Goldstein, A. K., Ni, L. n., Woo, P. J., Barres, B. A., Liddelow, et al  
2018
- **Myelin plasticity in the central nervous system.** *Neuropharmacology*  
Purger, D., Gibson, E. M., Monje, M.  
2016; 110: 563-573
- **Neuronal Activity Promotes Glioma Growth through Neuroligin-3 Secretion** *CELL*  
Venkatesh, H. S., Johung, T. B., Caretti, V., Noll, A., Tang, Y., Nagaraja, S., Gibson, E. M., Mount, C. W., Polepalli, J., Mitra, S. S., Woo, P. J., Malenka, R. C., Vogel, et al

2015; 161 (4): 803-816

- **Neuronal Activity Promotes Oligodendrogenesis and Adaptive Myelination in the Mammalian Brain** *SCIENCE*  
Gibson, E. M., Purger, D., Mount, C. W., Goldstein, A. K., Lin, G. L., Wood, L. S., Inema, I., Miller, S. E., Bieri, G., Zuchero, J. B., Barres, B. A., Woo, P. J., Vogel, et al  
2014; 344 (6183): 487-?
- **Effect of cancer therapy on neural stem cells: implications for cognitive function** *CURRENT OPINION IN ONCOLOGY*  
Gibson, E., Monje, M.  
2012; 24 (6): 672-678
- **Experimental 'Jet Lag' Inhibits Adult Neurogenesis and Produces Long-Term Cognitive Deficits in Female Hamsters** *PLOS ONE*  
Gibson, E. M., Wang, C., Tjho, S., Khattar, N., Kriegsfeld, L. J.  
2010; 5 (12): e15267
- **Proximate mechanisms driving circadian control of neuroendocrine function: Lessons from the young and old**  
Williams, W. P., Gibson, E. M., Wang, C., Tjho, S., Khattar, N., Bentley, G. E., Tsutsui, K., Kriegsfeld, L. J.  
OXFORD UNIV PRESS INC.2009: 519-37
- **Aging in the circadian system: Considerations for health, disease prevention and longevity**  
Gibson, E. M., Williams, W. P., Kriegsfeld, L. J.  
PERGAMON-ELSEVIER SCIENCE LTD.2009: 51-56
- **Age-related declines in exploratory behavior and markers of hippocampal plasticity are attenuated by prenatal choline supplementation in rats** *BRAIN RESEARCH*  
Glenn, M. J., Kirby, E. D., Gibson, E. M., Wong-Goodrich, S. J., Mellott, T. J., Blusztajn, J. K., Williams, C. L.  
2008; 1237: 110-123
- **Alterations in RFamide-related peptide expression are coordinated with the preovulatory luteinizing hormone surge** *ENDOCRINOLOGY*  
Gibson, E. M., Humber, S. A., Jain, S., Williams, W. P., Zhao, S., Bentley, G. E., Tsutsui, K., Kriegsfeld, L. J.  
2008; 149 (10): 4958-69
- **Prenatal choline availability modulates hippocampal neurogenesis and neurogenic responses to enriching experiences in adult female rats** *EUROPEAN JOURNAL OF NEUROSCIENCE*  
Glenn, M. J., Gibson, E. M., Kirby, E. D., Mellott, T. J., Blusztajn, J. K., Williams, C. L.  
2007; 25 (8): 2473-2482