# RyanVThorpe

ryan_thorpe@brown.edu github.com/rythorpe google scholar
computational neuroscientist | neural dynamics ↔ sensory processing

## education

2019 → present **PhD** in Neuroscience — Brown University
ICoN T32 Trainee. GPA: 4.0. Advisors: S. R. Jones & C. I. Moore.

2020 **Certificate** in Reflective Teaching — The Sheridan Center, Brown University
critical reflection, inclusive classroom communication, rhetorical practice, and active learning design

2017 → 2019 **ScM** in Biomedical Engineering — Brown University
Thesis: *Charcterizing M/EEG measures of pain through biophysically-principled neuromodeling and spectral event analysis.* GPA: 3.5. Advisors: D. A. Borton & S. R. Jones.

2011 → 2016 **BS** in Bioengineering — Walla Walla University
Minor in Physics. GPA: 3.4. Advisor: J. L. McKenzie.

## publications

### neural dynamics of innocuous vs noxious somatosensory processing

**Distinct neocortical mechanisms underlie human SI responses to median nerve and laser evoked peripheral activation**
**Thorpe, R.V.**, Black, C.J., Borton, D.A., Hu, L., Saab, C.Y., & Jones, S.R. *bioRxiv*, 2021

### spectral-event analysis

**Age-related differences in transient gamma band activity during working memory maintenance through adolescence**
McKeon, S.D., Calabro, F., **Thorpe, R.V.**, ... Jones, S.R., & Luna, B. *NeuroImage*, 2023

**Fronto-central resting-state 15-29 Hz transient beta events change with therapeutic transcranial magnetic stimulation for posttraumatic stress disorder and major depressive disorder**
Morris, A.T., Temereanca, S., Zandvakili, A., **Thorpe, R.**, ... & Jones, S.R. *Scientific Reports*, 2023

**Pain phenotypes classified by machine learning using electroencephalography features**
Levitt, J., Edhi, M.M., **Thorpe, R.V.**, ... Borton, D.A., Jones, S.R., & Saab, C.Y. *NeuroImage*, 2020

## presentations

2022 **poster** — Society for Neuroscience Annual Meeting, San Diego, California
*HNN-core: an open-source Python interface to the Human Neocortical Neurosolver (HNN) software for cellular and microcircuit interpretation of human MEG and EEG signals*, by **Thorpe, R.V.**, Jas, M., Tolley, N., Bailey, C.J., Caldwell, B., Cheng, H., Sherif, M.A., Hämäläinen, M. & Jones, S.R.

2022 **tutorial** — BIOMAG International Conference, University of Birmingham
*Hands-on workshop on Human Neocortical Neurosolver: a new tool for cell and circuit level interpretation of MEG/EEG signals*, by Jones, S.R., Jas, M., Tolley, N., & **Thorpe, R.V.**

2022 **tutorial*** — BRAINSTORM Data Challenge event, Carney Institute for Brain Science, Brown University
*Using Spectral Event Analysis to characterize shifts in resting-state neural timeseries data*, by **Thorpe, R.V.**

2021 **poster** — Society for Neuroscience Annual Meeting (virtual)
*Distinct neocortical mechanisms underlie human SI responses to median nerve and laser evoked peripheral activation examined with the Human Neocortical Neurosolver modeling tool*, by **Thorpe, R.V.**, Black, C.J., Borton, D.A., Hu, L., Saab, C.Y., & Jones, S.R.

2021 **tutorial** CuttingEEG Annual Symposium, Le Cube Université Aix-Marseille (virtual)
*Human Neocortical Neurosolver (HNN)* workshop, by Jones, S.R., Jas, M., **Thorpe, R.V.**, & Tolley, N.

2018 **poster** Society for Neuroscience Annual Meeting, San Diego, California
*Characterization of circuit mechanisms underlying discriminatory EEG neural markers for pain perception in somatosensory cortex*, by **Thorpe, R.V.**, Black, C.J., Neymotin, S.A., Saab, C.Y., Borton, D.A., & Jones, S.R.

2016 **lecture** Walla Walla University Academic Symposium, College Place, Washington
*Design and optimization of machines for biomaterials and tissue engineering applications*, by **Thorpe, R.V.**, Stirling, R.L., & McKenzie, J.L.

2015 **poster** Murdock CSRP Conference, Vancouver, Washington
*Design and construction of a modular perfusion bioreactor for tissue culture*, by Hissong, T.B., **Thorpe, R.V.**, Stirling, R.L., & McKenzie, J.L.

## software contributions

**hnn-core** — neural simulator based on NEURON+Python [contributor/maintainer: 321 commits, 4,890 lines]
**hnn** — GUI-centric neural simulator based on NEURON+Python [contributor: 11 commits, 72 lines]
**SpectralEvents** — Matlab/Python toolbox for spectral event analysis [contributor/maintainer: 92 commits, 6,950 lines]

## teaching, mentorship, & leadership appointments

2023 → present **mentor** Jones Lab / INCF
Google Summer of Code: *Generalize parameter optimization routines* & *Develop IO Routines for HNN-core outputs*

2022 **teaching assistant** Dept. of Neuroscience, Brown University
*Mechanisms & Meaning of Neural Dynamics* course

2022 **mentor** Jones Lab / INCF
Google Summer of Code: *A GUI for HNN-core with ipywidgets and the calculation and visualization of CSD signals*

2022 **mentor** Carney Institute for Brain Science, Brown University
The Leadership Alliance Summer Research Program

2022 **section co-leader** Dept. of Neuroscience, Brown University
Neuroscience Graduate Program Neuropracticum

2021 → 2022 **peer mentor** Dept. of Neuroscience, Brown University
Neuroscience Graduate Program

2021 **guest lecturer** Dept. of Neuroscience, Brown University
*Mechanisms & Meaning of Neural Dynamics* course: *The circuit origin of neural gamma oscillations*

2020 **teaching assistant** Dept. of Neuroscience, Brown University
*Mechanisms & Meaning of Neural Dynamics* course

2020 **program co-organizer** Dept. of Neuroscience, Brown University
Neuroscience Graduate Program Fall Retreat

2018 → 2019 **peer mentor** School of Engineering, Brown University
Biomedical Engineering Master's Program

2018 **tutor** Hope High School, Providence, RI
high school math

2016 **teaching assistant** Dept. of Physics, Walla Walla University
*Principles of Physics* course (lab section)

2015 → 2016 **elected social club officer** Walla Walla University
Vice President of the Biology Club

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|---|---|---|
| 2015 | **college newspaper columnist**<br>Science & Technology section of *The Collegian* | Walla Walla University |
| 2013 → 2014 | **teacher**<br>5th and 6th grade, all subjects | Kosrae SDA School, Kosrae, Federated States of Micronesia |
| 2012 → 2013 | **teaching assistant**<br>middle school math | Rogers Adventist School, College Place, WA |
| 2011 → 2012 | **teaching assistant**<br>algebra II, pre-calculus, & calculus I | Dept. of Mathematics, Walla Walla University |

## awards & fellowships

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|---|---|---|
| 2021 → 2023 | **ICoN T32 Traineeship** [tuition/fees/stipend]<br>Interdisciplinary training in Computational, Cognitive, and Systems Neuroscience | Carney Institute for Brain Science, Brown University |
| 2022 | $1^{st}$ **place in BRAINSTORM Data Challenge** [$2,000] | Carney Institute for Brain Science, Brown University |
| 2011 → 2016 | **WWU Achievement Scholarship** [$36,000] | Walla Walla University |
| 2015 → 2016 | **Engineering Scholarship** [$750] | School of Engineering, Walla Walla University |
| 2012 → 2013 | **Stanley Lloyd Scholarship** [$1,000] | Walla Walla University |
| 2012 → 2013 | **NPUC Grant** [$600] | Walla Walla University |
| 2011 → 2012 | **Leadership Award** [$2,250] | Walla Walla University |

*invited presentation