

Raphael Vallat

Research scientist (PhD)

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🌐 <https://raphaelvallat.com>
French nationality

Education

- 2018–pres Post-doctoral researcher, University of California Berkeley
Lab: Center for Human Sleep Science
Supervisor: Pr. Matthew Walker
- 2017 PhD in Neuroscience, *with honors*, Lyon 1 University
Lab: Lyon Neuroscience Research Center (CRNL)
Supervisor: Dr. Perrine Ruby
- 2014 Master degree in Neuroscience, *cum laude*, Lyon 1 University
- 2012 Bachelor degree of Cognitive Sciences, *ranked 1st*, Lyon 2 University
- 2009 Scientific baccalaureate, *cum laude*

Fellowship and awards

- 2014–17 Three-year PhD fellowship, from the French Ministry of Higher Education and Research
- 2012–14 Two-year merit scholarship, from the French Ministry of Education

Teaching

- 2015–pres Supervision of several undergraduate and master students
- 2014–17 Neurobiology / Neuroanatomy, 1st and 2nd year of Bachelor Degree
Social science, 1st year of Medicine
Neuroimaging, Master degree in Neuroscience

Skills

Software development

- 2017–pres Pingouin: an open-source statistical package in Python
EntroPy: complexity of EEG time-series in Python
YASA (*Yet Another Spindle Algorithm*): a sleep analysis toolbox in Python
Sleep: an open-source Python software for visualization, analysis and staging of sleep data

Neurosciences

- Methodology Polysomnography, ECG, actigraphy, fMRI, combined EEG-fMRI, behavior
- Analysis Signal processing, sleep scoring, circadian rhythm, statistics, machine-learning (*Scikit-learn*, *Keras*)
Functional and connectivity MRI analyses (*CONN*, *SPM*, *FSL*, *Nilearn*)
- Programming Python, R, Matlab, \LaTeX , HTML, Shell, Presentation

Formations

- 2016 fMRI course (3 days) organized by the Neuroscience and Cognition Doctoral School, Lyon, FR
- 2015 Second Brain Connectivity course (4 days) organized by the Grenoble Institute of Neuroscience, FR
- 2014 EEG-fMRI workshop (2 days) organized by Brain Products GmbH, Lyon, FR

Outreach

- 2016–pres Featured in several media articles about sleep science (e.g. New York Times, Discover Magazine)

2015 Organizer of a thematic week on neuroscience for high-school students

Languages

French Mother tongue

English Fluent

Publications

Peer-reviewed articles

2020 Vallat R., Nicolas A. & Ruby P. Brain functional connectivity upon awakening from sleep predicts inter-individual differences in dream recall frequency. *Sleep*.

Vallat R.*, Shah V., Redline S., Attia P. & Walker M. Broken sleep predicts hardened blood vessels. *PLoS Biology*. *Co-first authors

Ben Simon E.*, Vallat R.*, Barnes C. & Walker M. Sleep Loss and the Socio-Emotional Brain. *Trends In Cognitive Sciences*. *Co-first authors

2019 Vallat R. & Ruby P. Is it a good idea to cultivate lucid dreaming? *Frontiers in Psychology*.

Plailly J., Villalba M., Vallat R., ..., Nicolas A. & Ruby P. Incorporation of fragmented visuo-olfactory episodic memory into dreams and its association with memory performance. *Scientific Reports*.

Combrisson E., Vallat R., ..., & Jerbi K. Visbrain: A multi-purpose GPU-accelerated open-source suite for multimodal brain data visualization. *Frontiers in Neuroinformatics*.

Vallat R., Meunier D., Nicolas A. & Ruby P. Hard to wake up? The cerebral correlates of sleep inertia assessed using combined behavioral, EEG and fMRI measures. *NeuroImage*.

2018 Vallat R. Pingouin: statistics in Python. *Journal of Open Source Software*.

Vallat R., Eichenlaub J-N., Nicolas A. & Ruby P. Dream recall frequency is associated with medial prefrontal cortex white-matter density. *Frontiers in Psychology*.

Vallat R., Eskinazi M., Nicolas A. & Ruby P. Sleep and dream habits in a sample of French students. *Journal of Sleep Research*.

2017 Vallat R., ..., & Ruby P. (2017). Increased Evoked Potentials to Arousing Auditory Stimuli during Sleep: Implication for the Understanding of Dream Recall. *Frontiers in Human Neuroscience*.

Vallat R., Chatard B., Blagrove M. & Ruby P. Characteristics of the memory sources of dreams: a new version of the content-matching paradigm to take mundane and remote memories into account. *Plos One*.

Combrisson E.*, Vallat R.*, ..., & Jerbi K. Sleep: an open-source python software for visualization, analysis and staging of sleep data. *Frontiers in Neuroinformatics*. *Co-first authors

Oral presentations

2019 The neural correlates of sleep inertia. *WSC conference (Canada)*

2016 Brain functional connectivity upon awakening from sleep predicts between-subject differences in dream recall frequency. *IASD conference (USA)*

Interests

Music Guitar and string instruments (12 years, self-learner), music composition

Sports Swimming (10 years), martial arts (7 years), skiing, skateboarding, hiking, climbing

List of referees

Post-doc PI: Matthew Walker (mpwalker@berkeley.edu)

PhD supervisor: Perrine Ruby (perrine.ruby@inserm.fr)