

# Raphael Vallat

Research scientist (PhD)

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French nationality

## Education

### Diploma

- 2018–pres Post-doctoral position, 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 activities (200h)

- 2014–17 Neurobiology / Neuroanatomy, 1st and 2nd year of Bachelor Degree  
Social science, 1st year of Medicine  
Neuro-imaging, Master degree in Neuroscience  
Supervision of two master students (Research master in Neuroscience)  
Elected representative of the non-permanent members in CRNL council

## Skills

### Software development

- 2018–pres Pingouin: an open-source statistical package in Python  
EntroPy: complexity of EEG time-series in Python  
YASA (*Yet Another Spindle Algorithm*): a fast and robust sleep spindle detection algorithm.
- 2017–pres Sleep: an open-source Python software for visualization, analysis and staging of sleep data.

### Neurosciences

- Methodology Polysomnography, actigraphy, resting-state and task fMRI, combined EEG-fMRI, behavior
- Analysis Signal processing, sleep scoring, circadian rhythm, statistics, machine-learning  
Functional and connectivity MRI analyses (*CONN Toolbox*, *SPM*, *FSL*, *Nilearn*)
- Programming Python, Matlab,  $\text{\LaTeX}$ , HTML, Shell, R, 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

- 2019 Featured in several media articles about sleep science (e.g. New York Times, Discover Magazine)
- 2016 Organizer of the Doctoral Day of the Lyon Federative Research Structure in Health
- 2015 Featured speaker for a general public conference on sleep and dreams in Lyon city hall.  
Organizer of a thematic week on neuroscience for high-school students  
Organizer and chairman of "Les Saisons du CRNL" conference on neurosciences and society

## Languages

- French Mother tongue
- English Fluent

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## Publications

### Peer-reviewed articles

- 2020 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)*

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## Interests

- Music Guitar and string instruments (12 years, self-learner), music composition
- Sports Swimming (10 years), martial arts (7 years), ski, hiking, climbing

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## List of referees

- Post-doc PI: Matthew Walker (mpwalker@berkeley.edu)
- PhD supervisor: Perrine Ruby (perrine.ruby@inserm.fr)