# Kenza KADRI

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Open Science Framework: github

## RESEARCH INTERESTS

My research interest lies in different areas of neuroscience, particularly those at the interface between psychology, biology, and modeling. In my PhD, I am focusing on (1) the neural substrates implicated in decision making (2) how these substrates are perturbed in the case of pathologies such as addiction (3) the modeling of these perturbations (4) and finally in new techniques to causally manipulate theses disturbed networks.

## ACADEMIC POSITIONS

**Demonstrator in Research Methods in Practice** | Plymouth University (UK) | January – May 2023
P-Investigator: Claire Walsh
*Supervising undergraduate students through a 12-week workshop aiming to build an experiment, collect the data and analyze it. The workshop emphasizes on reproductible and open science.*

**Visiting Student** | Oxford University (UK) | October – December 2021
P-investigator: Miriam Klein-Flügge
*Linking addiction biomarkers to the connectivity profile of striatum subdivision using resting-state functional MRI (rs-fMRI) as well as questionnaires from the Human Connectome Project database (n=510)*

**Research Assistant** | Plymouth University (UK) | February – August 2020
P-investigator: Elsa Fouragnan
*Collection of preliminary behavioural and fMRI data on healthy participants while they learn to assign credit to different environmental stimuli, including faces, cars and tools. Computational models were used to infer key elements of learning and we used those models estimates to inform behavioral analyses.*

**Research Assistant** | Montreal University (Canada) | May – July 2019
P-investigator: Christian Casanova
*Modeling of the cortico-pulvino-cortical network implicated in sight with a spiking neurons simulator. Experimental data analysis (single cell recording) and scientific poster creation.*

## EDUCATION

**PhD in Computational Psychology** | Plymouth University (UK) | October 2020 –
*Study the neural mechanisms of reward anticipation and reward delivery, two fundamental aspects of decision-making and learning. Our team tests the hypothesis that these mechanisms are different in addiction. Thus, our purpose will be to compare the neural systems mediating reward anticipation and reward delivery in people who previously suffered from alcohol abuse to people that did not, to help diagnosis and treatment.*

**MA in Integrative Biology and Physiology** | Sorbonne University (Paris VI, France) **|** 2018 - 2020
*Study and practice of the mechanism implied in the physiological and pathological functions from the cell to the organism. Scientific modeling applied to neuroscience (with Python, R and MATLAB).*

**BA in Health biology (with distinction)** | University of Tours (France) **|** 2015 - 2018
*Study and practice of fundamental concepts of biology including: Neurobiology of mental illness, Development of Nervous system, Functional and Comparative neuroanatomy, Endocrinology and Behavioral studies, Psychopharmacology.*

**BA in Psychology (with distinction)** | University of Tours (France) | 2013 - 2016
*Theoretical and methodological knowledge in disciplinary fields of psychology (cognitive, developmental, clinical, social, pathological and biological psychology) General education of neuropsychology with courses about imaging, genetics epigenetics of mental illness.*

## TRAINING & AWARDS

2022 Computational Psychiatry Summer school, Neuroscience School of Advanced Studies (1 week, Venice, Italy)
2020 ERASMUS traveling fellowship (Sorbonne University) (2,250 EUR)
2019 Selected for Interdisciplinary tutor in neuroscience (Sorbonne University (Paris) – Ecole Normale Supérieure, Paris)
2019 FSDIE traveling fellowship (Sorbonne University) (1,600 EUR)
2018 University of Montreal Exchange program (Canada) with fellowship from FSDIE of University of Tours (3,200 EUR)

## MANUSCRIPT IN PREPARATION

**Kadri, K.,** Scholl, J., Jensen, D., Klein-Flugge, M., Fouragnan, E. (in preparation) Toward a new dimensional approach to addiction: Linking Addiction Markers to the Connectivity Profiles of Striatum Subdivisions

**Kadri, K.,** Scholl, J., Fouragnan, E. (in preparation) Linking transdiagnostic biomarkers to credit assignment impairment in Humans

## DISSERTATION

Cortes, N., **Kadri, K.**, Oliveira Ferreira de Souza, B., Casanova C., (2019) Pulvinar regulates spiking synchronization in two visual cortical areas. *MSc Dissertation (Sorbonne University/University of Montreal).*

## PRESENTATIONS

### Posters

**KADRI K,** Yaakub S, Scholl J, Hosking B, Komarnyckyj M, Rushworth M, Klein-Flugge M, Fouragnan E. FENS forum (Paris, France, 2022). Towards a new dimensional approach to addiction: linking addiction markers to the connectivity profiles of striatum subdivisions

**KADRI K,** Yaakub S, Scholl J, Hosking B, Komarnyckyj M, Rushworth M, Klein-Flugge M, Fouragnan E. Tenth Symposium on Biology of Decision-Making (Paris, France, 2021). Towards a new dimensional approach to addiction: linking addiction markers to the connectivity profiles of striatum subdivisions

**KADRI K,** Yaakub S, Scholl J, Hosking B, Komarnyckyj M, Rushworth M, Klein-Flugge M, Fouragnan E. NeuroFrance 2021 (Strasbourg, France, 2021). Towards a new dimensional approach to addiction: linking addiction markers to the connectivity profiles of striatum subdivisions

**KADRI K,** Cortes N, Casanova C. *The pulvinar activity modulation modify the neural synchronisation through the cortical hierarchy of visual areas.* Sorbonne University (Paris, France, 2019)

## SCIENTIFIC OUTREACH

**Computational Properties of the Prefrontal Cortex 2022**: Booklet and general organization assistant
The CPPC 7th workshop was held between the 23rd and the 26th of March 2022 in Oxford University (Oxford, UK). I oversaw the creation and design of the booklet. In addition, in collaboration with students from different university, we help with the general organization of the event.

Connectome in Science : Editor in Chief for “New technologie” topic ; Editor
*It is an association of students union, PhD, engineers and researchers that link the different actors of science. The purpose of this union is to share scientific knowledge in a wide range of disciplines! We have 3 major aims: create, share and educate. This growing network is already supported by Sorbonne University.*

## SERVICE

- Volonteer at NightLine Paris (2019): confidential and anonymous overnight listening, emotional support, information, and supplies services, run by students for students at universities around the world
- Private tutoring in mathematics, physics and life sciences from primary to senior high school (2014-2016)
- Former Secretary (2015) at “Etudiants Musulmans de France”. I was in charge of the organization of activities as debates and charity events and dinners for students with financial difficulties and distributed lunchboxes each month.
- Tutoring in physics for first year of BA in Health Biology student with the campus association B.E.S.T (for *Bureau des Eleves en Sciences et Technique*) (University of Tours, France) (2015)

## SKILLS

### Computational Modeling

- IA: Neural network, Bayesian network, multi-compartmental (neural) modelling
- Reinforcement learning models

- Machine learning: decision tree, SVM, EM algorithm, Logistic regression, semi-supervised and non-supervised algorithms
- Biologically based neural networks (python, MATLAB)

### Programming

- Language: Python, MATLAB, R, Latex, PCL
- Currently training in: CSS, HTML

### Software

- Adobe suite: Photoshop, Illustrator
- Software: Adobe suite, ImageJ, Inkscape, Zotero, Brackets, Mendeley, Presentation, PsychoPy, FSL, Workbench, DSI Studio

### Imaging

- Magnetic Resonance Imaging: Human MRI (healthy and participant with a psychiatric disorder), Analysis and visualisation
- Diffusion Tensor Imaging: Analysis and Visualisation

## REFERENCES

**Dr. Elsa Fouragnan**
Lecturer in Neuroscience
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**Pr. Christian Casanova**
Director and Professor, School of Optometry, Université de Montréal;
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**Dr. Nelson Cortes**
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**Pr. Hedi Soula**
Full professor in System Biology, Sorbonne University (Paris, France)
Head of Master 2 System Biology (as a part of Master in Integrative Biology and Physiology), Sorbonne University, Paris,
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