Kathleen Jacquerie

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Education

2018 · 2023 PhD in Computational Neuroscience | University of Liege, BE
· FRS-FNRS research fellow
· Thesis title: Modeling sleep-dependent memory consolidation
· Supervisor: Prof. Guillaume Drion

2016 · 2018 Master in Electrical Engineering | University of Liege, BE
· Summa cum Laude (score: 88%)
· Master Thesis: "Sensitivity and robustness analysis of thalamic neuron models at the
· cellular and network levels", supervised by Prof. Guillaume Drion (score: 90%)

2018 · Ap-Au Erasmus Exchange | Technical University Munich, GE
· Studies in the neuro-engineering department (score: 89%)

2018 · Ja-Ma Internship in the Control Group | University of Cambridge, UK
· Title: Reduced models of thalamic neurons (score: 90%)
· Supervisors: Prof. Timothy O'Leary and Prof. Rodolph Sepulchre

2013 · 2016 Bachelor in Engineering |University of Liege, BE

Work experience

2023 · Now BAEF Postdoctoral Fellow | Brandeis University, USA
· Fellowship by the Belgian American Educational Foundation (BAEF)
· Supervisor: Prof. Eve Marder

2019 · 2023 FRS-FNRS Research Fellow | University of Liege, BE
· PhD fellow funded by a national grant in the lab of Prof. Guillaume Drion

2022 · Aug Teaching assistant | Marine Biological Laboratory, USA
· In a one-month summer school 'Methods in Computational Neuroscience'
· ✓ Supervising PhD projects and improving my teaching skills

2018 · Now Teaching assistant | University of Liege, BE
· In Signals and Systems: exercises sessions in class, Q&A and exam redaction (2018 · Now)
· In Linear Control Systems: exercises sessions in class and project coaching (2018 · 2019)

2016 · 2018 Undergraduate teaching assistant | University of Liege, BE
· In Linear Control Systems, Signals and Systems, Electrical Circuits, Analog Electronics and Digital · Electronics

Publications

· Jacquerie K, Minne C, Ponnet J, Benghalem N, Sacre P, Drion G (2022). Switches to rhythmic brain activity lead to a plasticity-induced reset in synaptic weights.
Biorxiv preprint doi:10.1101/2022.07.15.500198

· Jacquerie K, Drion G (2021). Robust switches in thalamic network activity require a timescale separation between sodium and T-type calcium channel activations.
PLoS Computational Biology. doi:10.1371/journal.pcbi.1008997

· Jehasse K, Jacquerie K, de Froidmont A, Lemoine C, Grisar T, Stouffs K, Lakaye B, Seutin V (2021). Functional analysis of the F337C mutation in the CLCN1 gene associated with dominant myotonia congenita reveals an alteration of the macroscopic conductance and voltage dependence. *Molecular Genetics and Genomic Medicine*, 1588. doi:10.1002/mgg3.1588

· Jacquerie K, Drion G (2021). Introduction aux signaux et systèmes : Fascicule d'exercices. *Pre-print ULiege server*.

Fellowship & Awards

2023 · 2024 Belgian American Educational Foundation (BAEF) Postdoctoral Fellowship
2023 · 2024 Wallonie Bruxelles International (WBI) World Excellence Scholarship
2023 · 2024 Fulbright Postdoctoral Fellowship (declined)
2018 · 2023 FNRS Research fellowship
2023 · May · Presenter award at the European Neuroscience Conference by Doctoral Students (ENCODS) in Faro, Portugal
2022 · Nov · Trainee Professional Development Award (TPDA) at the Society for Neuroscience (SfN) in San Diego, USA
2022 · Sep Presenter Travel Award for the Bernstein Conference 2022 in Berlin, Germany
2022 · Mar Presenter Travel Award for the annual meeting of COSYNE 2022 in Lisbon, Portugal
2019 · Jul · Scholarship award from Marine Biological Laboratory (MBL) in Woods Hole, USA to participate as a student at the summer school 'Methods in Computational Neuroscience'
2018 · Oct Best Master Thesis in Electrical Engineering by the University of Liege in Liege, Belgium
2013 · Oct Pisart Entrance Scholarship from the University of Liege in Faculty of Engineering
2013 · Jul Mathematical High School Award by the Athénée Royale Air Pur in Liege, Belgium

Conferences

2023 · Washington · · Jacquerie K, Kellens E, Magis J, Sacré P, Drion G. Unraveling the role of collective bursting neurons, quiet waking, and structural plasticity in memory consolidation using a computational approach. Poster, Society for Neuroscience (SfN)

2023 · Leipzig · · Jacquerie K, Tyulmankov D, Sacré P, Drion G. Memory consolidation through combined burst-induced homeostatic reset and structural plasticity. Poster, Organization for Computational Neuroscience (OCNS)

2023 · Faro · Jacquerie K, Cabral J. Modeling the brain: From single neurons to the whole brain. Workshop, European Neuroscience Conference by Doctoral Students (ENCODS)

2023 · Faro · · · Kathleen Jacquerie, Danil Tyulmankov, Pierre Sacré, Guillaume. Switching from tonic firing to bursting: implications on learning and memory. Poster and Oral presentation, European Neuroscience Conference by Doctoral Students (ENCODS)

2022 · San Diego · · Jacquerie K, Minne C, Ponnet J, Drion G. Is the homeostatic reset an artefact or feature of synaptic plasticity rules for sleep-dependent memory consolidation? Poster, Society for Neuroscience (SfN)

2022 · Paris · · · Jacquerie K, Minne C, Ponnet J, Benghalem N, Drion G. Modeling neuromodulatory mediated modifications of calcium-based plasticity rules that prevent homeostatic reset during switches in firing activity. Poster, Federation of European Neuroscience Societies (FENS)

2022 · Paris · Jacquerie K, Minne C, Drion G. Neuromodulation alters synaptic plasticity rules to avoid homeostatic reset of synaptic weights during switches in neuronal rhythmic

activities.
Poster, European Neuroscience Conference by Doctoral Students (ENCODS)

2022 · Brussels — Jacquerie K, Minne C, Drion G. Neuromodulation of excitability and synaptic plasticity: an underestimated challenge for computational models.
Oral presentation, Belgian Society for Neuroscience (BSN)

2022 · Lisbon — Jacquerie K, Minne C, Drion G. Neuromodulation of synaptic plasticity rules avoids homeostatic reset of synaptic weights during switches in brain states.
Poster, COSYNE 2022

2021 · Virtual — Minne C, Jacquerie K, Drion G. Are synaptic plasticity rules compatible with memory consolidation during sleep?
Poster, Society for Neuroscience (SfN)

2021 · Virtual — Jacquerie K, Minne M, Drion G. Effect of switches in brain states on calcium-based plasticity rules: a computational study for sleep-dependent memory consolidation.
Poster, Society for Neuroscience (SfN)

2020 · Virtual — Jacquerie K, Drion G. Switches in brain states in memory consolidation: a computational approach.
Poster, Federation of European Neuroscience Societies (FENS)

2019 · Chicago — Jacquerie K, Drion G. Which cellular mechanism yields compatibility between brain states, synaptic plasticity, and neuromodulation?
Poster, Society for Neuroscience (SfN)

2019 · Lisbon — Jacquerie K, Drion G. A cellular mechanism makes switches in brain states compatible with synaptic plasticity.
Poster, COSYNE 2019

Training

2021 · 2022 — Advances in Neurosciences
Faculty of biomedical sciences, University of Liege, BE
✓ Two hours per week during one semester dedicated to cellular and molecular neurobiology of diverse pathologies in the nervous system.

2019 · Aug — Methods in Computational Neuroscience
Marine Biological Laboratory, USA
✓ One-month summer school dedicated to computational and mathematical techniques that used to address how the brain works.

2019 · Jan — Neuronal Excitability: Modeling, Control and Interconnection Principles
Supelec in Paris at the International Graduate School on Control
✓ 5-days course about computational neuroscience tools to study excitability.

Joint Projects

PhD thesis collaborations

2022 · Now — Columbia University, New York, USA, with Danil Tuylmankov (in Prof. Larry Abbott's lab)
'Memory consolidation through combined burst-induced homeostatic reset and structural plasticity'
✓ Develop memory tasks to test the plasticity rules found during my PhD project.

2021 · Now — GIGA Neurosciences, University of Liege, BE, with Prof. Seutin

· ‘Functional analysis of Nav1.4 channel mutation responsible of a paramyotonia congenita’
· ✓ Learn patch-clamp technique and experimental software.

2021 · Now Institute for Functional Genomics (IGF), Montpellier, FR with Prof. Lory
· ‘Functional modeling of the gain-of-function properties of CACNA1G mutations causing
· neurodevelopmental diseases’
· ✓ Implement electrophysiological properties and pharmacological action in a conductance-
· based model.

2020 · 2021 GIGA Neurosciences, University of Liege, BE with Prof. Seutin and Dr. Jehasse K
· ‘Functional modeling of CLCN1 channel mutations responsible of myotonia’
· ✓ Compare the dynamics of wild type and the mutant and computed the open probability.

Master thesis supervision

2022 · 2023 Justine Magis · Emmy Kellens
2021 · 2022 Nora Benghalem · Pauline Garcia, Juliette Ponnet, Nora Sautois
2020 · 2021 Caroline Minne · Chloé Marchal · Chloé Preud’homme.

Extra-curricular

2019 · Now Funder of Pot’Ingé | Liege
· Association raising awareness on ecological issues and managing a collective garden.
· ✓ Organize workshops or conferences, and promote seasonal and local products on the
· campus.

2016 · Aug Seeds For The Future at Huawei | Bejing and Shenzen, China
· 15 students selected among all Belgian and Luxembourg universities
· ✓ Spend two weeks at Huawei headquarters in China and learn basics on
· telecommunication.

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· 15 students selected among all Belgian and Luxembourg universities
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· telecommunication.

○○○ Others

Languages French: native · English: proficient · German: beginner
Computing Matlab · Julia · Python · Latex · Word · PowerPoint · Excel · Canva · Word · Quartus · Illustrator
Skills Creativity · Teamwork · Curiosity · Leadership · Teaching · Authenticity
Interests Aerial sports: silks, pole · Sport: running, hiking · Travel: as much as possible