

Jérémy FOREST

Address: 26 rue Turbil, 69003 Lyon

Birthdate: 04.01.1991 Nationality: French

phone: +33 651206131 / @: jerem.forest@gmail.com

website: <https://jeremyforest.github.io/>



Post-doctoral position

EDUCATION

2014-2017	Lyon Neuroscience Research Center <u>PhD</u> in Neurosciences	Lyon, France
2013-2014	Claude Bernard Lyon 1 University <u>Graduate</u> studies: Master 2, research-oriented in Neuroscience	Lyon, France
2012-2013	University of Calgary <u>Graduate</u> studies: Master 1: Integrative biology: Physiology and Neuroscience, in the framework of an exchange partnership between Claude Bernard University and the University of Calgary	Calgary, Canada
2009-2012	Claude Bernard Lyon 1 University <u>Undergraduate</u> studies: Bachelor of Science, specialized in Physiology	Lyon, France

RESEARCH EXPERIENCES

Sept 2014 - Dec 2017	Lyon Neuroscience Research Center PhD in Neurosciences under the supervision of Dr Nathalie Mandairon and Pr Anne Didier. In my Phd work entitled “Impact of adult neurogenesis versus preexisting neurons on olfactory perception in complex or changing environment”, we worked toward a better understanding of the cellular and network modifications underlying perceptual olfactory learning in mice. We investigated learning-dependent modifications at the level of adult-born neurons as well as preexisting neurons (adult-born neurons survival, neuronal morphology, functional implication) in perceptual learning tasks that varied in complexity (number of learnings) or changed over time.	Lyon, France
April- June 2017	Computational Physiology Lab (CPL) – Cornell University Mobility during my PhD (3 months), under the supervision of Dr Christiane Linster. The purpose was to implement adult neurogenesis process in a biologically-constraint <i>integrate and fire</i> neuronal network model of the olfactory bulb.	Ithaca, USA
January- July 2014	Lyon Neuroscience Research Center Internship (6 months) at the CRNL under the supervision of Dr Nathalie Mandairon and Pr Anne Didier. We started the first set of experiments that was later expended on during my thesis work.	Lyon, France
October 2012- May 2013	Hotchkiss Brain Institute Internship (8 months, part time) in the Lukowiak’s lab under the supervision of Dr. Kenneth Lukowiak. This work consisted on behavioral studies investigated how different kind of stressors	Calgary, Canada

influence learning and memory abilities in *Lymnaea stagnalis*, a pond-water snail. I also learned the basics of current-clamp electrophysiology.

RESEARCH PAPERS

Published

- 1- N.Mandairon, N.Kuczewski, F.Kermen, **J.Forest**, M.Midroit, M.Richard, J.Sacquet, C.Linster, A.Didier. Opposite regulation of inhibition by adult-born granule cells in response to implicit versus explicit olfactory learning. *eLife*. February 2018. doi:10.7554/eLife.34976
- 2- H.Sunada; T.Watanabe; D.Hatakeyama; S.Lee; **J.Forest**; M.Sakakibara; E.Ito; K. Lukowiak. Pharmacological manipulation of cannabinoid on learning and memory in *Lymnaea*. *Journal of Experimental Biology* 220(Pt 17):3026-3038. September 2017. doi:10.1242/jeb.159038
- 3- **J.Forest**, H.Sunada, S.Dodd, and K.Lukowiak. Training *Lymnaea* in the Presence of a Predator Scent Results in a Long-Lasting Ability to Form Enhanced Long-Term Memory. *Journal of Comparative Physiology A* 202 (6): 399–409. June 2016. doi:10.1007/s00359-016-1086-z
- 4- K.Florence, M.Midroit, N.Kuczewski, **J.Forest**, M.Thévenet, J.Sacquet, C.Benetollo, M.Richard, A.Didier, and N.Mandairon. Topographical Representation of Odor Hedonics in the Olfactory Bulb. *Nature Neuroscience* 19: 876-878. June 2016. doi:10.1038/nn.4317

In revision

- 1- **J.Forest**, M.Midroit, C.Terrier, I.Caillé, J.Sacquet, K.Martin, M.Richard, A.Didier, N.Mandairon, Role of adult-born versus preexisting neurons in olfactory perception in complex olfactory environment.

Submitted

- 1- M.Midroit, L.Chalençon, M.Thevenet, J.Sacquet, **J.Forest**, M.Richard, A.Milton, A.Didier, D.W.Wilson, N.Mandairon, The reward system supports spontaneous attraction to odorants.
- 2- **J.Forest**, M.Moreno, A.Ziessel, M.Cavelus, J.Sacquet, M.Richard, A.Didier, N.Mandairon. Adult-born neurons underlie competition between transience and persistence of olfactory perceptual memory.

In preparation

- 1- C.Linster, Y.Thennaisie, M.Midroit, X.Yin, **J.Forest**, M.Richard, A.Didier, N.Mandairon. Stabilization of olfactory learning by bulb noradrenergic modulation.
- 2- C.Terrier, X.Yin, M.Midroit, **J.Forest**, J.Sacquet, M.Thevenet, N.Mandairon, A.Didier, M.Richard. Investigating role of noradrenaline in olfactory discrimination during aging.
- 3- J.Forest, K.Zimmerman, A.Didier, N.Mandairon, C.Linster. A model of adult-neurogenesis in the olfactory bulb.

REVIEW PAPERS

Published

- 1- **J.Forest**, M.Midroit, N.Mandairon, La plasticité hors du commun du système olfactif. *Pollution atmosphérique*. N°234. Avril-Juin 2017. doi:10.4267/pollution-atmospherique.5247

TALKS AND POSTERS

Oral presentations

- 1- **J.Forest**, I.Caillé, J.Sacquet, M.Richard, A.Didier and N.Mandairon. Functional and structural plasticity of adult-born versus preexisting granule cells of the olfactory bulb during simple and complex perceptual learning in mice. Society for Neuroscience 47th annual meeting, Washington, USA, November 2017.
- 2- **J.Forest**. Neuronal plasticity in the olfactory bulb during simple and complex perceptual learning. Neurosciences and Cognition doctoral school. Lyon, France. September 2017.
- 3- **J.Forest**. Olfactory bulb plasticity during simple and complex learning – the central role of newborn neurons. CPL Team meeting. Cornell University, Ithaca, USA. April 2017.
- 4- **J.Forest**. Plasticité neuronale du bulbe olfactif lors d'apprentissage simple et complexe. Presentation in 180s. GDR Olfaction. Lyon, France. October 2016.
- 5- **J.Forest**, M.Richard, J.Sacquet, C.Benetollo, A.Didier, N.Mandairon. Neuronal plasticity in the olfactory bulb during simple and complex learning. Plasticity Workshop. Lyon, France. March 2016.
- 6- X.Yin, **J.Forest**, M.Midroit, J.Sacquet, N.Kuczewski, M.Richard, N.Mandairon, A.Didier. Olfactory perceptual learning shapes morphology of adult born granule cells and their inputs from locus coeruleus. Society for Neuroscience 45th annual meeting. Chicago, USA. October 2015.
- 7- N. Mandairon, M.Richard, M.Moreno, **J.Forest**, X.Yin, A.Didier. Top down control on adult-born neurons during olfactory learning. Association for Chemoreception Science, Fort Mayers, FL USA. April 2015.

Poster presentations

- 1- C.Terrier, X.Yin, M.Midroit, **J.Forest**, J.Sacquet, M.Thevenet, N.Mandairon, A.Didier, M.Richard. Investigating role of noradrenaline in olfactory discrimination during aging. Association for Chemoreception Science, Bonita Springs, FL, USA. April 2018.
- 2- **J.Forest**, M.Richard, J.Sacquet, C.Benetollo, A.Didier, N.Mandairon. Olfactory bulb plasticity during complex perceptual learning in mice. Society for Neuroscience 45th annual meeting, Chicago, USA. October 2015.
- 3- H.Sunada, **J.Forest**, M.Sakakibara, K.Lukowiak; Traumatic stress impairs learning and memory formation via an endocannabinoid system in *Lymnaea stagnalis*. 37th Annual Meeting of the Japan Neuroscience Society, Yokohama Japan. September 2014.
- 4- H.Sunada, **J.Forest**, M.Sakakibara, K.Lukowiak; Traumatic stress impairs learning and memory formation via an endocannabinoid system in *Lymnaea stagnalis*. 52nd Annual Meeting of the Biophysical Society of Japan. Sapporo, Japan. September 2014.

CONFERENCE AND WORKSHOP ORGANIZATION

2017	“Integrity in scientific research – where are we now?” Workshop. Organizing committee. Lyon, France
2016	Seasons of the CRNL – Winter season. “L’enjeu du big data en Neurosciences.” [<i>traduction : Importance of big data in Neurosciences</i>]. Conference. Organizing committee. Lyon, France

TEACHING

Bachelor level	<p>Literature research (Spring 2014)</p> <p>Project oriented course in which student chose a subject inside a broader given theme and are guided toward the redaction of a commented referencing paper. The goal is to present them multiple research supports (databases, internet searches, university library ...) and guide them to use them correctly and efficiently</p> <p>Preparation to paramedical exam (Winter 2016)</p> <p>Introduction to the physiology of the nervous system. This course focuses on imparting students with the required knowledge for the paramedical exam. Consist of teaching essential brain</p>
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mechanistic including brain organization, neuron-neuron communication, resting potential and action potential mechanisms, neuromuscular junction, reflexes and nerves. Classes also include QCM and exercise completions.

Neurosciences (Winter 2014, Spring 2014, Winter 2015, Spring 2015, Winter 2016)

Guided work within an introductory course in Neurosciences. The purpose was to introduce students to the scientific method and reasoning. During class they had to think about figures extracted from different papers and converse on how to properly analyze interpret and draw conclusion. They then had to write a short paper on that. Also they were task with doing group presentation (2-3 student/group) on a scientific article of their choice.

Neurophysiology (Spring 2014, Spring 2015)

Practice work within a broader course involving general neurophysiology which go into all the different sensory modalities as well as motor function and memory. Practice work consisted in the microscope histological observations of tissue samples from every modality were student were asked to draw and legend what they saw.

Master
level

Neurobiology of behavior (Spring 2014, Spring 2015)

This course is about different type of behavior and their underlying neuronal substrate, from place cells of the hippocampus to animal cognition. Practice work consisted of guiding the students through an animal experiment with mice over several days. Mice were performed on spatial and olfactory memory tasks with or without drug injection (norepinephrine agonist or antagonist). This was an opportunity to talk about experiment design or potential biases involved during an experiment. Student then wrote a paper on their experiment. Guided work was centered about a relevant scientific article analyzed during class with the students whom had to write on paper on it afterward.

STUDENTS SUPERVION

Bachelor
level

Killian Martin (2016), Kamela Nikolla (2016), Loic Richard (2015), Matthias Cavelus (2015), Merouann Kasa (2014)

Master
level

Barbara Labaune (2015)

GRANTS

2014 – 2017

Grant for PhD studies, delivered by the French government.

2014 – 2017

Grant for a teaching assistant (TA) position. 64H teaching per academic year.

AWARDS

2016

3rd place – 180s oral presentation. GDR Olfaction. Lyon, France.