Jérémy FOREST

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EDUCATION

2014-2018 **Lyon Neuroscience Research Center** **Lyon, France**
PhD in Neurosciences

2013-2014 **Claude Bernard Lyon 1 University** **Lyon, France**
Graduate studies: Master 2, research-oriented in Neuroscience

2012-2013 **University of Calgary** **Calgary, Canada**
Graduate studies: Master 1: Integrative biology: Physiology and Neuroscience, in the framework of an exchange partnership between Claude Bernard University and the University of Calgary

2009-2012 **Claude Bernard Lyon 1 University** **Lyon, France**
Undergraduate studies: Bachelor of Science, specialized in Physiology

RESEARCH EXPERIENCES

Sept 2014 - Jan 2018 **Lyon Neuroscience Research Center** **Lyon, France**
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.

April-June 2017 **Computational Physiology Lab (CPL) – Cornell University** **Ithaca, USA**
Mobility during my PhD (3 months), under the supervision of Dr Christiane Linster.
The purpose was to implement adult neurogenesis process in a biologically-contraint *integrate and fire* neuronal network model of the olfactory bulb.

January-July 2014 **Lyon Neuroscience Research Center** **Lyon, France**
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.

October 2012-May 2013 **Hotchkiss Brain Institute** **Calgary, Canada**
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

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**, L.Chalençon, 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 a complex olfactory environment in mice.

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. Short-term availability of adult-born neurons for memory encoding underlies a one neuron-for-one memory principle.

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 imputs 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."*[traduction : Importance of big data in Neurosciences]*. Conference. Organizing committee. Lyon, France

TEACHING

Bachelor level

Literature research (Spring 2014)

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

Preparation to paramedical exam (Winter 2016)

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 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 interprete 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.