# Clara FONTENEAU

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### **EDUCATION**

Université Claude Bernard Lyon 1, France

2015-2018 PhD, Neurosciences – Lyon Neuroscience Research Center

2012-2014 MSc, Neurosciences

2010-2012 Bachelor, Biology and Physiology

# **ACADEMIC POSITIONS**

2014-2018 PSYR2 Team, Centre de Recherche en Neurosciences de Lyon (CRNL)

Lyon, France

CRNL / INSERM / CNRS / UCBL1 / CH Le Vinatier

PhD in Neuroscience

Impact of a single frontal transcranial direct current stimulation on the dopaminergic network in healthy subjects

Supervisor: Dr M.F. Suaud-Chagny

Grant: Hospital/Research engineer – CH Le Vinatier

Missions

• Transcranial stimulation in healthy humans (tDCS, rTMS)

o Impact of bifrontal tDCS on the **dopaminergic** transmission using **PET** imaging

 Neurophysiological impact of fronto-temporal tDCS using a multimodal PET-MRI approach (PET dopamine, fMRI, ASL, DTI)

• Pathophysiology and transcranial stimulation in patients with schizophrenia: **DTI**, **MRS** and **IRMf** data analysis (Impact of transcranial stimulation on structural (**DTI**) and functional connectivity (**MRS**, rs-**fMRI**) in patients with schizophrenia with and without hallucinations).

2014 DYCOG Team, Centre de Recherche en Neurosciences de Lyon (CRNL)

Lyon, France

(5 months) CRNL / INSERM / CNRS / UCBL1

**MSc Neurosciences** 

Mecanisms of attentional preparation in the auditory cortex

Supervisors: Dr A. Bidet-Caulet & Dr O. Bertrand

<u>Missions</u>: Electrophysiological recordings (**intracranial EEG**, evoked potential and time-frequency)

Helen Wills Neurosciences Institute, UC Berkeley

Berkeley, USA

(6 weeks) Bachelor, Biology and Physiology, Neurosciences

Neurophysiological mechanisms of auditory attention in humans

Supervisors: Pr R. Knight & Dr A. Bidet-Caulet

Missions: Electrophysiological recordings (scalp EEG) in patients with frontal lesions and healthy controls

2012 DYCOG Team, Centre de Recherche en Neurosciences de Lyon (CRNL) (5 weeks) CRNL/INSERM/CNRS/UCBL1

**Research Assistant** 

Attentional preparation and distractibility: a scalp EEG study

Supervisors: Dr A. Bidet-Caulet & Dr O. Bertrand

2011 Institut des sciences cognitives (ISC), UMR 5229

Lyon, France

Lyon, France

(2 months) Research Assistant

Decision making and Reward - An fMRI study

Supervisors: Dr J.C. Dreher

CRNL / INSERM / CNRS / UCBL1

(1 month) IMPACT Team, Centre de Recherche en Neurosciences de Lyon (CRNL)

Lyon, France

**Research Assistant** 

Visuo-spatial representation – Visual attention and Heminegligence

Supervisors: Dr L. Pisella

### **HONORS AND AWARDS**

- 2017 Poster presentation 1<sup>st</sup> place - Non Invasive Brain stimulation techniques (NIBS) for psychiatric disorders, Germany Young Investigator Travel Award, 2<sup>nd</sup> International Brain Stimulation conference, Barcelona, Poster presentation 2<sup>nd</sup> place, Non-Invasive brain stimulation techniques (NIBS) for psychiatric disorders, Belgium 2015

### RESEARCH FUNDING

- 2015 Fondation Neurodis, Dr Suaud-Chagny (PI), 30/06/2015 – 2018: €48,000 COMBISTIM. Role: Co-I
- 2014 CSR, Dr Brunelin (PI), 18/02/2015 – 11/07/2016: €38,505 DOPASTIM. Role: Co-I

### **PUBLICATIONS**

# **Peer-Reviewed Research Articles**

- 1. Fonteneau Clara, Redouté Jérome, Haesebaert Frédéric, Le Bars Didier, Costes Nicolas, Suaud-Chagny Marie-Françoise, Brunelin Jérôme (2018) Frontal transcranial direct current stimulation induces dopamine release in the ventral striatum in human, Cerebral Cortex, Volume 28, Issue 7, 1 July 2018, Pages 2636-2646, https://doi.org/10.1093/cercor/bhy093
- Psomiades Marion, Mondino Marine, Fonteneau Clara, Bation Rémy, Haesebaert Fréderic, Suaud-Chagny Marie-Françoise, Brunelin Jérôme (2018) N-Acetyl-Aspartate in the dorsolateral prefrontal cortex in men with schizophrenia and auditory verbal hallucinations: A 1.5T Magnetic Resonance Spectroscopy Study; Scientific Report (2018) [accepted; SREP-17- 27645B]
- Psomiades Marion, Fonteneau Clara, Mondino Marine, Luck David, Haesebaert Frederic, Suaud-Chagny Marie-Françoise, Brunelin Jérôme (2016) Integrity of the arcuate fasciculus in patients with schizophrenia with and without auditory verbal hallucinations: A DTI-tractography study; NeuroImage: Clinical 12 (2016) 970–975 http://dx.doi.org/10.1016/j.nicl.2016.04.013
- Bidet-Caulet A, Bottemanne L, Fonteneau C, Giard M-H, Bertrand O (2014) Brain Dynamics of Distractibility: Interaction Between Top-Down and Bottom-Up Mechanisms of Auditory Attention. Brain Topography

# **Reviews, Chapters & Commentaries**

- 1. Psomiades Marion\*, Fonteneau Clara\*, Suaud-Chagny Marie-Françoise, Haesebaert Frédéric, Brunelin Jérôme (2015) Neurostimulation du cortex préfrontal dorsolatéral : quels effets sur la symptomatologie et les émotions dans la dépression et la schizophrénie?; Santé mentale au Québec; \*co-author
- Mondino Marine, Fonteneau Clara, Brunelin Jérôme (2015) Schizophrenia. Book Chapter in Transcranial Direct Current Stimulation in Neuropsychiatric Disorders: Clinical Principles and Management by Brunoni AR, Nitsche MA, Loo CK. Springer NY, USA

# Manuscripts under review or in preparation

- 1. Fonteneau Clara, Mondino Marine, Arns Martijn, Baeken Chris, Bikson Marom, Brunoni Andre R, Burke Matthew J, Neuvonen Tuomas, Padberg Frank, Pascual-Leone Alvaro, Poulet Emmanuel, Ruffini Giulio, Santarnecchi Emiliano, Sauvaget Anne, Schellhorn Klaus, Suaud-Chagny Marie-Francoise, Palm Ulrich, Brunelin Jérome; Sham tDCS: a hidden source of variability? Reflections for further blinded, controlled trials; Brain Stimulation; under review
- Fonteneau Clara, Merida Ines, Redouté Jérome, Haesebaert Frédéric, Le Bars Didier, Costes Nicolas, Brunelin Jérome, Suaud-Chagny Marie-Françoise; Neurophysiological impact of a fronto-temporal transcranial direct current stimulation (tDCS) in healthy humans: a simultaneous PET-MR approach (in preparation)

#### **Conference Presentations**

- 1. Fonteneau Clara, Neurophysiological impact of a fronto-temporal transcranial direct current stimulation (tDCS) in healthy humans: a simultaneous PET-MR approach; Talk in the symposium: Transcranial direct current stimulation for auditory hallucinations: evidence from clinical and neurophysiological studies, given at 3rd European Conference on Brain Stimulation in Psychiatry; Lyon, France, October 2018
- Fonteneau Clara, Mondino Marine, Arns Martijn, Baeken Chris, Bikson Marom, Brunoni Andre R, Burke Matthew J, Neuvonen Tuomas, Padberg Frank, Pascual-Leone Alvaro, Poulet Emmanuel, Ruffini Giulio, Santarnecchi Emiliano, Sauvaget Anne, Schellhorn Klaus, Suaud-Chagny Marie-Françoise, Palm Ulrich, Brunelin Jérome; Sham tDCS: a hidden source of variability? Reflections for further blinded, controlled trials; Poster presented at 3rd European Conference on Brain Stimulation in Psychiatry; Lyon, France, October 2018
- Intartaglia Bastien, ElShafei Hesham, Fonteneau Clara, Catenoix Hélène, Bonnefond Mathilde, Bertrand Olivier, Bidet-Caulet Aurélie; Brain oscillatory dynamics in the bottom-up/top-down balance of auditory attention: intracranial recordings; Poster presented at 2nd Salzburg Mind – Brain Annual Meeting, SAMBA 2018.
- Fonteneau Clara, Merida Inès, Redouté Jérome, Haesebaert Frédéric, Costes Nicolas, Brunelin Jérome, Suaud-Chagny Marie-Françoise; Neurophysiological impact of a fronto-temporal transcranial direct current stimulation in healthy subjects: a multimodal PET-MR imaging approach; Poster presented at Non Invasive Brain stimulation techniques (NIBS) for psychiatric disorders; Munich, Germany; October 2017 \*1st poster prize
- Merida Inés, Fonteneau Clara, Reilhac Anthonin, Redouté Jérôme, Irace Zacharie, Suaud-Chagny Marie-Françoise, Hammers Alexander, Costes Nicolas; Motion correction and multi-atlas attenuation correction applied to a simultaneous bolus/infusion

- PET-MR brain study; Talk given (by I. Merida) at 6th PET-MRI and SPECT-MRI (PSMR) Conference; Lisbon, Portugal, May 2017
- 6. Merida Inés, Hammers Alexander, Redouté Jérôme, McGinnity Colm, Fonteneau Clara, Suaud-Chagny Marie-Françoise, Reilhac Anthonin, Costes Nicolas; Attenuation correction with a multi-atlas method for brain PET-MR imaging: assessment with realistic simulated [11C]raclopride bolus-infusion PET data; Poster presented at 28th International Symposium on Cerebral Blood Flow, Metabolism and Function & 13th International Conference on Quantification of Brain Function with PET; Berlin, Germany, April 2017
- 7. **Fonteneau Clara**, Haesebaert Frédéric, Redouté Jérome, Le Bars Didier, Costes Nicolas, Brunelin Jérome, Suaud-Chagny Marie-Françoise; Online transcranial direct current stimulation of the frontal cortex induces dopamine release in the striatum a spatial and temporal analysis in healthy humans; Poster presented at 2<sup>nd</sup> International Brain Stimulation conference, Barcelona, Spain; March 2017
- 8. Reilhac Anthonin, Berrada Rania, Irace Zacharie, Merida Inés, <u>Fonteneau Clara</u>, Suaud-Chagny Marie-Françoise, Costes Nicolas; Développements d'une méthode de correction de mouvement en IRM-TEP cérébrale; Poster presented at *Recherche en Imagerie et Technologie pour la santé (RITS)*, Lyon, France, Mars 2017
- 9. **Fonteneau Clara**, Haesebaert Frédéric, Villien Marjorie, Redouté Jérome, Le Bars Didier, Costes Nicolas, Brunelin Jérome, Suaud-Chagny Marie-Françoise; Neurophysiological impact of a fronto-temporal transcranial direct current stimulation in healthy subjects: a multimodal PET-MR imaging approach; Poster presented at 11th International Symposium on Functional NeuroReceptor Mapping of the Living Brain, Boston, USA; July 2016
- 10. **Fonteneau Clara**, Haesebaert Frédéric, Redouté Jérome, Le Bars Didier, Costes Nicolas, Brunelin Jérome, Suaud-Chagny Marie-Françoise; Acute and subsequent effects of transcranial direct current stimulation on the dopaminergic transmission in healthy humans; Poster presented at 11th International Symposium on Functional NeuroReceptor Mapping of the Living Brain, Boston, USA; July 2016
- 11. <u>Fonteneau Clara</u>, Redouté Jérome, Le Bars Didier, Costes Nicolas, Brunelin Jérome, Suaud-Chagny Marie-Françoise; Impact of transcranial direct current stimulation on the dopaminergic transmission in healthy humans; Poster presented at *Non Invasive Brain stimulation techniques (NIBS) for psychiatric disorders* Ghent, Belgium; December 2015 \*2nd poster prize
- 12. Psomiades Marion\*, <u>Fonteneau Clara</u>\*, Haesebaert Frédéric, Suaud-Chagny Marie-Françoise, Brunelin Jérôme. Does prefrontal non invasive brain stimulation alleviating symptoms in depression and schizophrenia impact emotion processing?; Poster presented at *Non Invasive Brain stimulation techniques (NIBS) for psychiatric disorders* Ghent, Belgium; December 2015; \*co-author

## NOTABLE INVITED TALKS

Neurophysiological impact of a fronto-temporal transcranial direct current stimulation (tDCS) in healthy subjects: a PET-MR multimodal imaging approach

NeuroImaging Journal Club, CRNL, Lyon Journée Scientifique LILI – IRM-TEP, Lyon

Online transcranial direct current stimulation of the prefrontal cortex induces dopamine release in the ventral striatum in humans

Annual Scientific Meeting, Doctoral School of Neuroscience and Cognition, Lyon

 $L'exploration \ des \ m\'ethodes \ de \ mod\'elisation \ TEP \ dans \ le \ cas \ de \ d\'eplacement \ par \ un \ neurotransmetteur endog\`ene (approche lp-ntPET)$ 

Journal Club CERMEP, Lyon

2016 Effets de la stimulation transcrânienne en courant continu sur la transmission dopaminergique chez le sujet sain

Partenariat Université Lyon 2 et Conseil scientifique de la recherche CH Le Vinatier, Lyon

Neurophysiological impact of transcranial direct current stimulation (tDCS) in healthy subjects Berenson-Allen Center for NonInvasive Brain Stimulation, Boston

Neurophysiological impact of a fronto-temporal transcranial direct current stimulation (tDCS) in healthy subjects: a multimodal imaging approach

Conseil scientifique de la fondation Neurodis, Lyon

# TEACHING AND SUPERVISION

2017-2018 **Co-supervisor** of Charline Magnin, MSc Clinical Neuroscience

2017 **Lecturer –** tDCS & Neuroimaging (STEP – Stimulation transcrânienne en Psychiatry, de la théorie à la pratique, Module 4 – Technique de neuromodulation – Effets cognitifs, biologiques et comportementaux) – Centre Hospitalier Le Vinatier

2016-2017 **Teaching Assistant –** Neurophysiology (Developmental histology) – Université Lyon 1

Co-supervisor of Julie Renaud, MSc

2015 **Co-supervisor** of Jeanne Monnier, MSc

2010-2013 **Tutor in English** at the Language center – Université Lyon 1

### PROFESSIONAL SERVICE

Memberships Society for Neuroscience, Stimulation transcrânienne en Psychiatry (STEP)

Peer Review Journal of Neurochemistry; Neuropsychopharmacology; Schizophrenia Bulletin

Lab services Co-organizer, Big Data in Neuroscience Conference (2016)

Invited guest speakers: Dr G. Varoquaux, Dr P-A Gourraud, Dr N. Lechopier

Organizer, PsyR2 Team Journal Club (2015-2018) Grant and Funding watch for PsyR2 Team (2015-2018)

Lab skills Research project design; Grant submission; Clinical trial management (ethics requirements (CPP, ANSM),

subject recruitement); Computer science (Windows/Mac/Linux, Bash); Data analysis (Python, Matlab, SPM, CONN, FSL, Minc Tool Kit, Turku, Niftireg, Mango, MedINRIA); Statistical analysis (R, SPSS, JASP); scalp EEG and intracranial EEG acquisition and analysis; PET acquisition and analysis; MRI acquisition and

analysis (ASL, DTI, resting-state fMRI); brain stimulation (tDCS, TMS)

Communication English bilingual, German conversation, Spanish proficient

#### **INTEREST**

Sports Rock climbing, Alpinism, Ski, Tennis Hobbies Photography, Cooking, Trekking, Cello

#### REFERENCES

Dr Marie-Françoise Suaud-Chagny

DR INSERM

 $Co\text{-}Director, PSYR2\ Team, CRNL, Lyon$ 

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