Rémi Gau

Languages: French, English, German (basics)

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CURRENT POSITION

Post-doctoral fellow in the Crossmodal perception and plasticity laboratory at the universite catholique de Louvain la Neuve (Belgium)

ACADEMIC QUALIFICATIONS

- **2012-2019** **PhD in Neuroscience** Unfinished due to a clerical error

  Laboratories:
  Computational Cognitive Neuroimaging Laboratory, School of psychology, University of Birmingham, UK
  registered at the *International Max Planck Research School*, Graduate training centre of neuroscience, Tübingen, Germany

  Supervisor: Pr. Dr. MD. Uta Noppeney Email: u.noppeney@bham.ac.uk

- **2006-2010:** **PhD in neuroscience** Defended in September 2010

  University Pierre et Marie Curie, Paris, France
  Doctoral School « Cerveau, Cognition, Comportement »
  first class honours

  Thesis title: Serotonergic neurons of the lateral paragigantocellular nucleus: roles in pain modulation and baroreflex inhibition

  Laboratory: Psychiatry and Neurosciences Center

  Supervisor: Dr. MD. Jean-François Bernard

Graduate qualifications

- **2005-2006:** **Master of Integrative Biology and Physiology: Neurosciences**
  University Pierre et Marie Curie, Paris, France
- **2004-2005:** **Master of Neuropsychology**
  University Paul Sabatier, Toulouse, France
- **2003-2004:** **Master of Cellular Biology and Animal Physiology**
  McGill university,Montréal, Canada, through the CREPUQ exchange program with the University of Montpellier II, France

Undergraduate qualifications

- **2002-2003:** **License of Cellular Biology and Animal Physiology**
  University of Montpellier II, France
- **2001-2003:** **Diplôme d'Etudes Universitaires Générales of Psychology**
  University Paul-Valéry, Montpellier, France
- **2000-2002:** **Diplôme d'Etudes Universitaires Générales of Biochemistry and Physiology**
  University of Montpellier II, France

SCIENTIFIC CONTRIBUTIONS

peer reviewed papers

• Levitis E, Gould van Praag C D, **Gau R**, Heunis S, et al.; Centering inclusivity in the design of online conferences - An OHBM-Open Science perspective, *GigaScience*, 2021; doi:10.1093/gigascience/giab051

• **Gau R**, Noble S, Heuer K, Bottenhorn K L, Bilgin I P, Yang Y, et al; Brainhack: developing a culture of open, inclusive, community-driven neuroscience, *Neuron*, 2021
doi:10.31234/osf.io/rytjq ;

• Botvinik-Nezer R, et al; Variability in the analysis of a single neuroimaging dataset by many teams, *Nature*, 2020
doi:10.1038/s41586-020-2314-9 ; Code and results contributed to the study:

• **Gau R**, Bazin PL, Trampel R, Turner R, Noppeney U; Resolving multisensory and attentional influences across cortical depth in sensory cortices, *eLife*, 2018
doi:10.7554/eLife.46856 ;

• **Gau R**, Noppeney, U; How prior expectations shape multisensory perception, *Neuroimage*, 2016
doi:10.1016/j.neuroimage.2015.09.045 ;

• **Gau R**, Sevoz-Couche C, Hamon M, Bernard JF; Noxious stimulation excites serotonergic neurons: a comparison between the lateral paragigantocellular reticular and the raphe magnus nuclei, *Pain*, 2013
doi:10.1016/j.pain.2012.09.012

• **Gau R**, Sevoz-Couche C, Laguzzi R, Hamon M, Bernard JF; Inhibition of Baroreflex by Nociception: A Key Role for Lateral Paragigantocellular Serotonergic Cells, *Pain*, 2009
doi:10.1016/j.pain.2009.09.018

• Bernard JF, Netzer F, **Gau R**, Hamon M, Laguzzi R, Sevoz-Couche C; Critical role of B3 serotonergic cells in baroreflex inhibition during the defense reaction triggered by dorsal periaqueductal gray stimulation, *Journal of comparative anatomy*, 2008
doi:10.1002/cne.21532

preprint

• Clement P., Castellaro M, Okell T. W., Thomas D. L. , et al.; ASL-BIDS, the Brain Imaging Data Structure Extension for Arterial Spin Labeling., *PsyArXiv*, 2021; doi:10.31234/osf.io/e87y

• Norgaard M., Matheson G. J., Hansen H. D., Thomas A., et al.; PET-BIDS, an extension to the brain imaging data structure for positron emission tomography, *BioRxiv*, 2021; doi:10.1101/2021.06.16.448390

• Appelhoff S, Bates JF, Ghosh S et al.; BIDS and the NeuroImaging Data Model (NIDM), *F1000Research*, 2019; doi:10.7490/f1000research.1117650.1

talks

Conference presentations

• CPP BIDS: a lightweight toolbox for behavioral experiments to help you with good data management practices; Young researchers' day of the institute of Neuroscience of the université catholique de Louvain, Virtual, 18 November 2020

• Symposium on the Neuroimaging Analysis Replication and Prediction Study: From the eyes of an analysis team; Annual Meeting of the Organization for Human Brain Mapping, Virtual, June 2020

• Laminar profiles dissociate attentional and crossmodal influences in sensory cortices; Brain in Depth, Magdeburg (Germany), 31^{rst} May 2018

• Implication du groupe sérotoninergique B3 dans le contrôle des circuits de la douleur et des réactions neurovégétatives associées; 10th congress of the French society for the study and treatment of pain, Marseille (France), 18th November 2010

Invited talks

• BIDS: a cookbook; ACCS and OHBM Webinar and Workshop Series, Virtual, 12 October 2021,

• Open science: what is it? why do it?; Dutch Neuroscience meeting 2021, Virtual, 10 June 2021,

• New Trends in Open Science: Code and Data Sharing; BAPS 2021 - Junior day, Virtual, 27 May 2021,

• eCobidas: because methods writing is too important (and boring) to let humans do it!; Repronim webinars, Virtual, 8 January 2021,

• Things I wish I knew when I started coding; Brainhack Ankara, Virtual, 12 December 2020

• The Brain Imaging Data Structure (BIDS) as an example of data organization; Louvain bionics, Université cahtoloque de Louvain, Belgium Virtual, 09 October 2020

Internal talks

• More brain droppings on the replication crisis in psychology; talk given at a brown bag meeting at the department of psychology of the université catholique de Louvain la Neuve; 11th April 2019

• Brain droppings on the replication crisis in psychology; talk given at the post-graduate seminar of the School of Psychology at the University of Birmingham (UK); 24th November 2016

open-science

Contributions to Open Source Scientific Projects

• **Brain Imaging Data Structure**: organizing neuroimaging data and metadata to facilitate

analysis and sharing.

Role Member of the team of maintainers of the specification, starter-kit, validator.

- Code:

- **bids-matlab**: a Matlab and Octave toolbox to work with BIDS datasets.

Role: Lead developper and maintainer

- Code:

- **eCobidas**: a webapp to facilitate transparent accurate methods reporting in neuroimaging

Role: Lead developper and maintainer

- Code: • doi:0.17605/osf.io/anvqy • Prototype:

- **CPP SPM**: high-level functions to create MRI analysis pipeline of BIDS datasets using SPM

Role: Lead developper and maintainer

- Code:

- **ARTEM-IS**:

Role: Infracture support

Hackathon projects

- **eCobidas**:
  - Brainhack Global Marseille 2021 (virtual)
  - Brainhack Global Donostia 2021 (virtual)
  - OpenMR Benelux 2020 (Rome, Nijmegen)
  - OHBM 2019 hackathon (Rome, Italy)
- **pre-registration template for MRI and M/EEG research**:
  - SIPS 2019 (Rotterdam, Netherlands)

posters

• **Gau R**, Abraham SA, Gould van Praag C, Sjoerds Z, Wiebels K, Moreau D, Ghosh S, Nichols TE; eCOBIDAS: a webapp checklist to improve neuroimaging methods and results reporting, Annual Meeting of the Organization for Human Brain Mapping, Virtual, 2020;

• **Gau R**, Trampel R, Bazin PL, Turner R, Noppeney U; Layer-specific attentional modulation and multisensory interactions in sensory cortices, Annual Meeting of the Organization for Human Brain Mapping, Geneva (Switzerland), 2016
doi:10.13140/RG.2.2.32219.57124

• **Gau R**, Trampel R, Bazin PL, Turner R, Noppeney U; Effect of sensory modality and attention

on layer-specific activations in sensory cortices, Annual Meeting of the Organization for Human Brain Mapping, Hamburg (Germany), 2014
doi:10.13140/RG.2.2.18797.79846

• **Gau R**, Noppeney U; The left prefrontal cortex controls information integration by combining bottom-up inputs and top-down predictions, Annual meeting of the Society for neurosciences, San Diego, (California, USA), 2013
doi:10.13140/RG.2.2.12086.91207

• Bernard JF, Sevoz-Couche C, Hamon M, **Gau R**; Responses of lateral paragigantocellular and raphe magnus serotonergic neurons to noxious stimuli: a comparative reappraisal using juxta-cellular recording, 13th world congress on pain; International association for the study of pain; Montréal (Québec, Canada), 2010

• Bernard JF, Sevoz-Couche C, Hamon M, **Gau R**; Involvement of lateral paragigantocellular reticular serotonergic and non-serotonergic neurons in nociceptive processes, Annual meeting of the Society for neurosciences, Chicago, (Ilinois, USA), 2009

• **Gau R**, Sevoz-Couche C, Hamon M, Laguzzi R, Bernard JF; Inhibition of cardiac baroreflex by intense noxious stimuli: a serotonergic mechanism involving the lateral paragigantocellular reticular nuclei; Annual meeting of the Society for neurosciences, Washington (D.C., USA), 2008

• Bernard JF, Sevoz-Couche C, Hamon M, Laguzzi R, **Gau R**; Critical role of the B3 group in the baroreflex inhibition evoked by thermal noxious stimulation in the rat, Annual meeting of the Society for neurosciences, San Diego (California, USA), 2007

• Bernard JF, Netzer F, **Gau R**, Hamon M, Laguzzi R, Sevoz-Couche C; Serotonergic neurons of B3 group: critical role in baroreflex inhibition during the defense reaction in the rat; Annual meeting of the Society for neurosciences, Atlanta (Georgia, USA), 2006

PROFESSIONAL ACTIVITIES

Organizing

• **Brainhack global 2021**: - *Virtual-Hybrid* - **Nov–Dec 2021**

Member of the coordination team team

• **openMR benelux 2021**: - *Virtual* - **8–14 Jul 2020**

Member of the organising team

• **OHBM 2020 hackathon**: - *Virtual* - **16-18 June 2020**

Hackathon co-chair with Liza Levitis

• **openMR benelux 2020**: - *Donders Insitute, Nijmegen, Netherlands* - **21-23 January 2020**

Member of the organising team

Peer review

Journals

Journal of Experimental Neuroscience, Plos One, European Journal of Neuroscience, Frontiers in Neuroinformatics, Journal of Neuroscience Research

Conferences

Proceedings of the Annual Conference of the Cognitive Science Society

Internal

• 2021-2022 Data embassador of the institute of psychology of the Université catholique de Louvain

• 2017 Co-organizer of the EiF Journal Club on methodology and replicability in psychology at the University of Birmingham (UK)

Scientific Societies

• **Organization for Human Brain Mapping**:

2020 Best Practices Committee

2019-2020 Open Science Special Interest Group

• **International Neuroinformatics Coordination Facility**:

• **Society for the improvement of psychological science**:

• **Society for Neuroscience**:

Outreach

• Parapsychologie et crise de la réplication; Presentation given for the Skeptics in the Pub of Brussels (Belgium); 15th February 2020

• 2019-present: active member of the Comité belge pour l'analyse critique des parasciences

• Our brain, our senses, and us; Interactive presentation given at the children section of the Skeptics in the Pub of Gravesend (UK); 20th October 2015

TEACHING

• **November 2019:** Co-organizer and instructor at the first neuroimaging workshop at the University Catholique de Louvain of (Belgium)

• **June 2019:** Mini-lab leader for the workshop *Empirical Methods in Cognitive Linguistics 8* at the University of Tartu (Estonia);

• **2013 to 2016:** Teaching assistant for the *Advanced Brain Imaging* masters course at the University of Birmingham (UK)

Supervisor: Noppeney, U; Email: u.noppeney@bham.ac.uk

• **2009:** Teaching assistant for the *Human Evolution* class of the preparatory program to paramedical training at the University Pierre et Marie Curie (Paris, France)

Supervisors: Aurengo, A & Darribere, T; Tel: (+33) 1 40 77 95 77

• **2005:** Teaching assistant for the *Psychophysiology* undergraduate class of the psychology program of the University Mirail-Toulouse II (France)

Supervisor: Bretdibat JL; Email: bretdiba@univ-tlse2.fr

RESEARCH AND TECHNICAL SKILLS

• **Human neuroimaging**: design, implementation and analysis of structural and functional MRI studies, fMRI design efficiency optimization, preprocessing, mass univariate and multivariate pattern analysis, high-field structural and functional MRI analyses

• **Cognitive neuroscience**: design, implementation and analysis of psychophysics and eyetracking studies of multi-sensory integration

• **Information technology**:

Program	Area	Knowledge
Matlab	Programming	Excellent
SPM	Neuroimaging analysis	Excellent
Freesurfer	Neuroimaging analysis	Excellent
CBS tools	High-field neuroimaging analysis	Excellent
LIBSVM	Multivariate pattern analysis	Excellent
PsychToolBox	Stimulus presentation	Excellent
Presentation	Stimulus presentation	Excellent
Git/GitHub	Version control	Excellent
Bash scripting	Programming	Good
cvMANOVA	Multivariate pattern analysis	Good
Palamedes	Psychophysics data analysis	Good
Spike 2	Physiological data recordings	Good
SPSS	Statistical analysis	Good
LaTeX	Document production	Good
R	Programming	Basic
C/C++	Programming	Basic
FSL	Neuroimaging analysis	Basic
Pronto	Multivariate pattern analysis	Basic
TDT	Multivariate pattern analysis	Basic

• **Functional neuroanatomy**: direct online physiological parameters recording and analysis, use of neuroanatomical tracers (Phaseolus, TMR, fluorogold), functional c-fos expression experiments, stereotaxic local pharmacological neuroinactivation.

• **Electrophysiology**: *In vivo* extracellular recording combined to juxtacellular labeling in halothane anesthetized rats, LTP protocols and associated pharmacological modulation on rat brain slices using intracellular recording in current clamp or extracellular recording with a multi-electrodes array.

• **Microscopy & histology**: Total animal fixation with formalin & brain extraction, general histological techniques (Cresyl violet, thionin), double immunohistochemical and immunofluorescent

labeling, epifluorescent transmission and confocal microscope images acquisition and processing.

GRANTS

- **2009-2010:** Award from the French society for the study and treatment of pain
- **2006-2009:** Scholarship from the French ministry of research and technology

OTHER ACADEMIC APPOINTMENTS

Laboratory training

• **2003-2005**: Conducted the data analysis of a pilot study preliminary to a multicentric rehabilitation program for dyslexic children.

Laboratory: Neuroimaging and neurological handicaps
INSERM unit 825, Hôpital Purpan, Toulouse, France
Supervisor: Dr. MD. Demonet JF
Email: jean-francois.demonet@inserm.fr

• **2004:** Worked on electrophysiology experiments aimed at better understanding the effects of dopamine on the long term potentiation (LTP) of pyramidal neurons in slices of rat prefrontal cortex.

Laboratory: Laboratoire de biologie des processus adaptatifs
University Pierre et Marie Curie, Paris, France
Supervisor: Dr. Otani S
Email: satoru.otani@snv.jussieu.fr

• **2003:** Designed and applied a series of experiments examining the effects of prenatal stress or in-utero cocaine injection on learning in young rats and on hippocampic long term potentiation on rat brain slices.

Laboratory: Laboratoire de plasticité cérébrale
CNRS-UMR 5102, University of Montpellier II, France
Supervisor: Dr. Vignes M
Email: mvignes@univ-montp2.fr