
ELINA A. K. JACOBS

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RESEARCH INTERESTS

- ❖ State dependent modulation of neural physiology and behaviour
- ❖ Effects of developmental perturbations such as stress on neural circuit maturation

EDUCATION

University College London

PhD, Neuroscience

Wellcome Trust 4 year Neuroscience PhD Programme

September 2013 to September 2018

University of Edinburgh

BSc Honours, Biological Sciences (Neuroscience), First Class

September 2009 to June 2013

University of New South Wales

Sydney, Australia

International Exchange, July 2011 to June 2012

EMPLOYMENT

Johannes Gutenberg Medical University Mainz

Postdoctoral Researcher in the Ryu Lab

Current Position (March 2021 to December 2022)

Guest Researcher in the Schuman Lab, Max Planck Institute for Brain Research Frankfurt, (Oct – Dec 2021)

Sainsbury Wellcome Centre for Neural Circuits and Behaviour, University College London

Postdoctoral Research Fellow in the Isogai Lab and in collaboration with the Meyer Lab at King's College London

January 2019 to December 2020

PUBLICATIONS

- ❖ **Elina A. K. Jacobs** & Soojin Ryu (2023). Larval zebrafish as a model for studying individual variability in translational neuroscience. *Frontiers in Behavioural Neuroscience*, *17*, 1143391.
- ❖ **Elina A. K. Jacobs**, Nicholas A. Steinmetz, Andrew J. Peters, Matteo Carandini, Kenneth D. Harris (2020). Cortical state fluctuations during sensory decision-making. *Current Biology*, *30*, 4944-4955.
- ❖ Lisa J. Knoll, Annie Gaule, Alberto Lazari, **Elina A. K. Jacobs**, Sarah-Jayne Blakemore (2020). Neural correlates of social influence on risk perception during development. *Social Neuroscience*, *15*, 355-367.
- ❖ Christopher P. Burgess, Armin Lak, Nicholas A. Steinmetz, Peter Zátka-Haas, Charu Bai Reddy, **Elina A. K. Jacobs**, Jennifer F. Linden, Joseph J. Paton, Adam Ranson, Sofia Soares, Sylvia Schröder, Miles J. Wells, Lauren E. Wool, Kenneth D. Harris, Matteo Carandini (2017). High-yield methods for accurate two-alternative visual psychophysics in head-fixed mice. *Cell Reports*, *20*, 2513-2524.
- ❖ Nicholas A. Steinmetz, Christina Buetfering, Jerome Lecoq, Christian R. Lee, Andrew J. Peters, **Elina A. K. Jacobs**, Philip Coen, Douglas R. Ollerenshaw, Matthew T. Valley, Saskia E. J. De Vries, Marina Garrett, Jun Zhuang, Peter A. Groblewski, Sahar Manavi, Jesse Miles, Casey White, Eric Lee, Fiona Griffin, Joshua D. Larkin, Kate Roll, Sissy Cross, Thuyanh V. Nguyen, Rachael Larsen, Julie Pendergraft, Tanya Daigle, Bosiljka Tasic, Carol L. Thompson, Jack Waters, Shawn Olsen, David J. Margolis,

Hongkui Zeng, Michael Hausser, Matteo Carandini, Kenneth D. Harris (2017). Aberrant neocortical activity in certain GCamp6-expressing transgenic mice. *eNeuro*, 0207-17.2017.

- ❖ **Elina Jacobs**, James D. Mills, Michael Janitz (2012). The Role of RNA Structure in Posttranscriptional Regulation of Gene Expression, *Journal of Genetics and Genomics*, 39, 535-543.

AWARDS & ACHIEVEMENTS

Wellcome Trust PhD Studentship 2013-2018

FENS, IBRO-PERC and The Brain Prize stipend, FENS Brain Conference 2016

British Neuroscience Association Undergraduate Award 2013

Neuroscience Honours Best Science Student 2013 (University of Edinburgh)

Edinburgh Award for Resident Assistants 2013 (University of Edinburgh)

UCL Graduate School Bursary to attend the Cheltenham Science Festival 2014

James Rennie Bequest Award (travel award) for participating in a Marine Conversation Expedition in Madagascar with Blue Ventures in 2010

UCLU Arts and Colours Award 2016, received for my exemplary contributions as treasurer (2014-15) and assistant member (2015-16) to the UCLU Salsa Society

“Elève méritant” Price, awarded to the best student of the school (Lycée Hubert-Clément Esch/Alzette, Luxembourg, 2008)

Prizes in Physics, German and English for being amongst the top students in the 2008 cohort of baccalaureate students in Luxembourg

INVITED TALKS

Society for Neuroscience Annual Meeting 2016, San Diego, USA

Nanosymposium: Visual Cognition – Decision Making

Widefield imaging of sensory cortices during visual and audio-visual behaviour in mice

Elina Jacobs, Michael Okun, Nicholas Steinmetz, Christopher Burgess, Daisuke Shimaoka, Matteo Carandini & Kenneth D. Harris

FENS (Federation of European Neuroscience Societies) Brain Conference 2016:

The Brain in Focus: New Approaches to Imaging Neurons and Neural Circuits

Short talk, April 2016, Rungstedgaard, Denmark

Wide-field imaging of genetically encoded calcium indicators during visual behaviour in mice.

Elina Jacobs, Nicholas A. Steinmetz, Michael Okun, Christopher P. Burgess, Daisuke Shimaoka, Matteo Carandini & Kenneth D. Harris

POSTER PRESENTATIONS

Neuromatch Conference 3.0 2020, online

Effects of the stress hormone cortisol on spontaneous activity in the larval zebrafish tectum. **Elina A K Jacobs**, Matthew J Harvey, Martin Meyer

Society for Neuroscience Annual Meeting 2019, Chicago, USA

Cortical states during sensory decision making. **Elina A K Jacobs**, Nicholas A Steinmetz, Andrew J Peters, Matteo Carandini & Kenneth Harris

UCL Neuroscience Symposium 2017, London, UK

Brain state dynamics during sensory decision making. **Elina A K Jacobs**, Nicholas A Steinmetz, Andrew J Peters, Matteo Carandini & Kenneth D Harris

OIST Computational Neuroscience summer school 2016, Okinawa, Japan

Widefield imaging of sensory cortex during visual behaviour in mice. **Elina A K Jacobs**, Michael Okun, Nicholas A Steinmetz, Christopher P Burgess, Matteo Carandini & Kenneth D Harris

Society for Neuroscience Annual Conference 2015, Chicago, USA

Midbrain dopamine stimulation enhances perceptual sensitivity. Lak A, Schröder S, **Jacobs E**, Soares S, Burgess C, Paton J, Harris KD, Carandini M

FURTHER POSTER CONTRIBUTIONS

Organisation for Human Brain Mapping Annual Meeting 2016

Neural and behavioural correlates of disagreement in risk perception in adolescents and adults. Lisa Knoll, Alberto Lazari, **Elina Jacobs**, Sarah-Jayne Blakemore

ACADEMIC TRAINING

PHD THESIS

Cortical state dynamics during sensory decision-making

Supervisors: Profs Kenneth D. Harris & Matteo Carandini

Viva examiners: Drs Nick Lesica (internal) & Nathalie Rochefort (external)

SUMMER SCHOOLS

Okinawa Institute of Science and Technology Graduate University, Japan

Computational Neuroscience Summer School 2016

FIRST YEAR PHD ROTATIONS

- ❖ **Optogenetic activation of reward pathways during decision making in mice.**
Cortical Processing Laboratory, Institute of Ophthalmology
Supervisors: Profs Matteo Carandini & Kenneth D. Harris
- ❖ **Investigating the neural basis of peer influence on risk perception using fMRI.**
Developmental Cognitive Neuroscience Laboratory, Institute of Cognitive Neuroscience
Supervisor: Prof Sarah-Jayne Blakemore
- ❖ **Epigenetic regulation of cortical development:** Establishing a structure to function relationship of chromodomain-helicase-DNA-binding protein 3 (CHD3)
Neural Development & Epigenetics Laboratory, Laboratory for Molecular and Cellular Biology
Supervisor: Dr Antonella Riccio

UNDERGRADUATE RESEARCH WORK

- ❖ **Honours Dissertation at University of Edinburgh**
Laboratory Project in Developmental Neurobiology
The role of polycystic kidney disease (PKD) genes in central nervous system myelination in zebrafish.
Supervisor: Prof David Lyons
- ❖ **Third Year Biomolecular Science Laboratory Project (Advanced) at UNSW**
RNA integrity and its effect on mRNA expression in healthy and Alzheimer's Disease subjects.
Supervisor: Dr Michael Janitz

NON-ACADEMIC RESEARCH EXPERIENCE

- ❖ **Blue Ventures, Madagascar**
Volunteer on a marine conservation expedition. June – August 2010
- ❖ **Emergency Hospital Cruz Verde Sur, Guadalajara, Mexico**
Volunteer and Trainee. March – May 2009

SEMINAR PRESENTATIONS

UCL Sainsbury Wellcome Centre London, UK, May 2018

University Medical Centre Ryu Lab Meeting Mainz, Germany, November 2017

KCL Meyer Lab Meeting London, UK, October 2017

UCL Institute of Neurology Sobell Department Open Day London, UK, November 2016

UCL Central Auditory Meeting London, UK, July 2016, November 2015

UCL Institute of Neurology London, UK, December 2015

CONFERENCE ATTENDANCES (NON-PRESENTING)

Computational and Systems Neuroscience (Cosyne) Lisbon, Portugal 2022; online, February 2021; Denver, USA, March 2018

UCL Neuroscience Symposium London, UK, June 2019, 2015, 2014

Society for Neuroscience Annual Conference Washington DC, USA, November 2014

UCL Biosciences PhD Symposium London, UK, November 2014

BNA Christmas Symposium: The Musical Brain London, UK, December 2013

Edinburgh Neuroscience Day Edinburgh, UK, March 2013

Neuroscience to Neurology Undergraduate Conference Edinburgh, UK, January 2013

No Mind Left Behind – Social Brain 3

An international conference on autism, ADHD and other early onset neurodevelopmental disorders.
Volunteer. Glasgow UK, March 2011

REVIEWING ACTIVITY

Journals

Current Biology (2021, in conjunction with Prof Soojin Ryu)

Conferences

Cosyne (2021, 2022)

Neuromatch Academy

Reviewed student applications for the 2021, 2022 & 2023 online summer schools (Computational Neuroscience, Deep Learning)

PROFESSIONAL DEVELOPMENT

UCL Career Development Workshops

Get that Grant (online, 2020)

Academic Career Planning (2020)

Academic Applications (2020)

Managing your digital footprint (2019)

BBSRC Briefing on funding opportunities (2019)

UCL postgraduate courses

UCL Graduate School Philosophy of Science Workshops (2016)

UCL Grand Challenges Graduate Summer School on Cross-disciplinary Research (2015)

Neuro-informatics (2015)

Computational Psychiatry (2014 & 2015)

Online learning

Machine Learning (2019) – offered on Coursera by Stanford University

Computational Neuroscience (2015) – offered on Coursera by the University of Washington

Calculus One (2016) – offered on Coursera by the Ohio State University

RESEARCH SKILLS

LABORATORY SKILLS

In-vivo physiology

Widefield and 2-photon imaging of genetically encoded calcium indicators in mice and zebrafish, optogenetics, mouse behaviour and psychophysics, mouse neurosurgery

Molecular biology

Cryostat sectioning, PCR, immunohistochemistry, FISH (smFish & MerFish)

DATA ANALYSIS SKILLS

Programming proficiency

MATLAB, Python, Colab, R

Applications

Analysis pipeline development, image processing, spectral analysis, analysis of high-dimensional data (widefield imaging, 2-photon, neuropixels, mouse and zebrafish behaviour, pupil dynamics), basic machine learning (regression, classification, dimensionality reduction)

SOFT SKILLS

Organisational

Project management, taking initiatives and showing leadership

Interpersonal

Teamwork and team building, communication, mentoring

TEACHING ACTIVITY & ACADEMIC ROLES

Neuromatch Academy Online Computational Neuroscience Summer School

Lead Teaching Assistant, July 2023

Group project Mentor, July 2021 & July 2022

Teaching Assistant, July 2020

UCL MSc Neuroscience

Co-supervisor for Julia Yin's thesis "Machine learning approach to studying social behaviour", 2019-20.

SWC Python Beginners' Course ('PyStarters')

Teaching Assistant 2019.

SWC Postdoc Retreat

Retreat Head Organizer 2019.

UCL Postgraduate Teaching Assistant

Undergraduate Courses and Practicals taught:

- ❖ MBBS Year 2 Neuroscience and Behaviour: Vision practical; 2017, 2018
- ❖ PHOL2005 Year 2 Structure and Function of Nervous Systems: Vision practical; 2015, 2016, 2017
- ❖ MBBS Year 1 Fluids, Nutrition and Metabolism: Enzyme kinematics computer simulation; 2015
- ❖ BIOC1001 Year 1 Biochemistry and Molecular Biology Practical 1: Molecular Biology; 2014

Methods in Human Neuroimaging (Methods for Dummies)

I co-presented an introductory lecture on dynamic causal modelling for EEG & MEG in March 2014.

Edinburgh University Residence Life & Accommodation Services

Residents Assistant. Employed: September 2012 – May 2013

Edinburgh Tutors Ltd

Tutor in Biology, Human Biology, Chemistry, German and French. Employed: October 2010 – June 2011.

SCIENCE COMMUNICATION & PUBLIC ENGAGEMENT

BrainCamp Kosovo

BrainCamp Kosovo is run yearly by the XhM Foundation, which provides education for secondary school students in Kosovo in STEM. In April 2020, I participated as a teacher in the online 'Mini BrainCamp', which delivered live introductory Neuroscience lectures. These lectures are publicly available under:

www.crowdcast.io/xhmfoundation

Society for Neuroscience 2016 'Hot Topics'

I was invited to submit a lay language summary of my abstract for inclusion in SfN's 'Hot Topics' book, which SfN distributes to the media.

Cheltenham Science Festival

I won a bursary from the UCL Graduate School to participate at the Cheltenham Science Festival in June 2014, where I acted as a UCL ambassador and Festival Reviewer.

TES Article: The enigma of the teen brain.

I contributed to the writing of a neuroscience article that appeared in the general public education journal TES in May 2014. The online version of the article can be found at: <http://www.tes.co.uk/article.aspx/storycode=6430098>

Edinburgh International Science Festival

Front of House Assistant. Employed: April 2011

Ultimo Science Festival, Sydney, Australia

Volunteer. August 2011

LANGUAGE SKILLS

Native proficiency in Finnish

Bilingual proficiency in English, German, and Luxembourgish

Professional working proficiency in French

Conversational Spanish

Elementary proficiency in Russian and Latin

Beginner in Swedish

Basic comprehension of Estonian, Dutch, Flemish, Italian and Portuguese

CHARACTERISTICS AND HOBBIES

As a typical scientist, I enjoy learning and exploring new things. I strive to embrace challenges and to face them with **perseverance** and a **positive approach**. This attitude is apparent in my work ethic, but also expressed in my hobbies.

I grew up in Luxembourg, where I spent my free time at the “Conservatoire de Musique Esch/Alzette” and learned to play piano, flute, organ, sing as well as various aspects of music theory. I obtained several diplomas, and to this day **enjoy playing piano and singing** in my spare time. I was also part of my secondary school’s **drama group**, which helped me develop confidence in public speaking.

Pre-pandemic, I was an avid **traveller and dancer**. I love the outdoors and have travelled to over 50 countries, often solo-backpacking. During the pandemic, I took advantage of my time at home by fulfilling my life-long dream of getting a dog: I raised a wonderful **dog called Dali**, who helps me stay active and who reminds me to enjoy the simple pleasures in life.

After being struck down with chronic migraine, I learned to take life more easy and slow, and really deepened my yoga practice, and cultivated some at-home creative activities like knitting and writing.

My hobbies keep me level-headed and remind me of how fortunate I am to be pursuing a career in which I can follow my curiosity, keep learning and be creative.

REFEREES

Prof Kenneth D Harris

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Prof Tom Otis

UCL Sainsbury Wellcome Centre, London, UK
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Prof Matteo Carandini

UCL Institute of Ophthalmology, London, UK
matteo@cortexlab.net

Prof Soojin Ryu

Living Systems Institute, University of Exeter, UK
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