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# ELINA A. K. JACOBS

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## EDUCATION

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### 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

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## ACADEMIC EMPLOYMENT

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### 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

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## PUBLICATIONS

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- ❖ Mathew D. Edwards, Ziwei Yin, Risa Sueda, Alina Gubanova, Chang S Xu, Virag Lakner, Megan Murchie, Chi-Yu Lee, Kristal Ng, Karolina Farrell, Rupert Faraway, Subham Ganguly, **Elina Jacobs**, Bogdan Bintu, Yoh Isogai (2024). Combined transcriptomic, connectivity, and activity profiling of the medial amygdala using highly amplified multiplexed in-situ hybridization (hamFISH). *BioRxiv*, <https://doi.org/10.1101/2024.09.14.613026>
- ❖ **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

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**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

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**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

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**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

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## ACADEMIC TRAINING

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### 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

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## SEMINAR PRESENTATIONS

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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)

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**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

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### 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

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### 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

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### 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, cross-cultural communication, mentoring

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## TEACHING ACTIVITY & ACADEMIC ROLES

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### **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.

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## SCIENCE COMMUNICATION & PUBLIC ENGAGEMENT

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### **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](http://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

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## LANGUAGE SKILLS

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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

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## CHARACTERISTICS AND HOBBIES

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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.

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## REFEREES

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### **Prof Kenneth D Harris**

UCL Institute of Neurology, London, UK  
kenneth.harris@ucl.ac.uk

### **Prof Tom Otis**

UCL Sainsbury Wellcome Centre, London, UK  
t.otis@ucl.ac.uk

### **Prof Matteo Carandini**

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

### **Prof Soojin Ryu**

Living Systems Institute, University of Exeter, UK  
S.Ryu@exeter.ac.uk