

# elizabethlevitis

PhD Candidate



## contact

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llevitis

LevitisLiza

## languages

english native speaker,

russian native speaker,

basic spanish

## programming

Python, R, Bash, PHP,

MATLAB, Javascript,

SQL, LaTeX, etc.

## soft skills

problem solving,

teaching, leadership

## education

- 2020 – now **Ph.D. candidate** in Neuroscience University College London, London, United Kingdom |  
NIMH, Bethesda, MD, USA  
UCL-NIMH Joint Doctoral Training Program in Neuroscience - supervised by  
Armin Raznahan (NIMH) and Daniel Alexander (UCL)
- 2018 – 2020 **M.Sc.** in Neuroscience McGill University, Montreal, QC  
Thesis work supervised by Alan C. Evans and Yasser Iturria-Medina on a project  
entitled:  
Application of an Epidemic Spreading Model to Characterize Amyloid Beta Ac-  
cumulation in Autosomal Dominant Alzheimer's Disease Mutation Carriers.
- 2013 – 2017 **B.A&Sc** in Cognitive Science McGill University, Montreal, QC  
Thesis work was supervised by Veronique Bohbot on a project entitled:  
Personality Measures Associated with Spatial and Response Learning Strategies  
in Virtual Navigation
- 2019 **ReproNim Instructor Training** ReproNim  
Running workshops on reproducible neuroimaging.

## experience

### Research Experience

- 07/20 – now **Section on Developmental Neurogenomics, National Institute of Mental Health** Bethesda, MD  
*Software Developer & Researcher*  
Applied best practices for reproducible neuroimaging to make existing datasets  
be Brain Imaging Data Structure compliant and processed multiple modalities  
with open-source image processing pipelines. Thesis work focuses on charac-  
terizing and predicting multimodal imaging phenotypes in individuals with sex  
chromosome aneuploidies.
- 05/17 – 05/20 **McGill Centre for Integrative Neuroscience (MCIN)** Montreal, QC  
*Software Developer & Researcher*  
Involved in the ongoing development of a Quality Control module for imaging  
and behavioral data, along with a standalone RESTful API for automatic struc-  
tural MRI quality control. Duties include developing new features for the Infant  
Brain Imaging Study project. For thesis work I have contributed to the develop-  
ment of APPIAN, an automatic PET processing pipeline. My central thesis project  
focused on determining how sporadic and autosomal dominant Alzheimer's dis-  
ease differ with regard to observed spreading patterns of amyloid beta.
- 05 – 08/16 **Breast Cancer Informatics Group, McGill University** Montreal, QC  
*Research Assistant*  
Continued development of a supervised machine learning algorithm in R to pre-  
dict breast cancer patients' intrinsic subtypes across distinct subtyping schemes  
using microarray data.

- 01/15 – 06/15 **Department of Biology, McGill University** Montreal, QC  
*Work-Study Research Assistant*  
 Assisted with behavioral analysis of Zebra finch directed and undirected song between an adult and juvenile. Gained histology experience using a sliding microtome to section brain tissue and mount slices onto slides.
- 09/14 – 12/14 **Department of Psychology, McGill University** Montreal, QC  
*Work-Study Research Assistant*  
 Carried out neuron quantification via cFos activation in chick brains' slices using the software Stereo Investigator. Performed microscopy work to determine neural density in coronal slices.
- 10/13 – 04/15 **Department of Languages, Literature, and Culture, McGill University** Montreal, QC  
*Work-Study Research Assistant*  
 Worked with a professor of Russian literature - tasks included translating Russian text and assisting with cross-referencing.

## Teaching and Mentoring Experience

- 10/22 – 12/22 **University College London** London, England  
*Introduction to Machine Learning Teaching Assistant*  
 Led weekly laboratory sessions, provided support to students throughout the course, and assisted the instructor with exam grading.
- 10/21 – 04/22 **ACPS** Alexandria, VA  
*PATHS mentor*  
 Provided biweekly mentoring to a 9th grader in the Alexandria County Public Schools system.
- 09/20 – 04/22 **Florida International University** Miami, FL  
*ABCD-ReproNim Teaching Assistant*  
 Contributed directly throughout the virtual course by providing support to students during video presentations and answering questions in real-time via the website's chat feature and e-mail. Developed data exercises for weekly assignments, hosted weekly Q&A sessions for enrolled students, and provided mentorship to students during the final project week.
- 01/18 – 07/20 **McGill University, OHBM, ReproNim, Brainhack** Montreal, QC  
*Neuroinformatics Instructor*  
 Planning and teaching of workshops introducing neuroscientists and trainees to topics pertaining to reproducible neuroimaging and neuroinformatics.
- 09/18 – 05/19 **BrainReach** Montreal, QC  
 Neuroscience instructor for high school students & course content developer
- 05/16 – 07/16 **McGill University** Montreal, QC  
*Organic Chemistry Teaching Assistant*  
 Taught tutorials and helped grade exams for an intro to organic chemistry course.
- 09/15 – 12/16 **McGill University** Montreal, QC  
*Science Undergraduate Society Peer Tutor*  
 Tutored peers one-on-one in courses such as intro to computer science, intro to organic chemistry, and developmental economics.
- 07/15 – 08/15 **Hudson Guild** New York, NY  
*SHSAT Instructor*  
 Planned and taught a month-long course to prepare a group of students to ace the SHSAT, an exam taken to gain admittance to the top high schools in NYC. Assessed students' individual progress based on daily homework assignments and in-class participation.

## memberships & service

2021 – 2023	<b>OHBM Student Postdoc SIG</b> Treasurer	Minneapolis, MN
2019 – 2020	<b>OHBM Open Science SIG</b> Hackathon Co-Chair & Organizer with Dr. Remi Gau	Minneapolis, MN
2016 – 2017	<b>McGill University Bachelor of Arts &amp; Science Integrative Council</b> Vice President (Academic)	Montreal, QC
2015 – 2017	<b>Swimability</b> Special Needs Swimming Instructor	Montreal, QC
2015 – 2016	<b>McGill Cognitive Science Student Association</b> Vice President (External)	Montreal, QC
2015 – 2016	<b>McGill Science Undergraduate Society</b> Peer Tutor	Montreal, QC

## awards

2020-2024	<b>Pre-doctoral Intramural Research Training Award</b>	National Institute of Mental Health, Bethesda, MD, USA
2019	<b>Travel Award</b>	Quebec Bio-imaging Network, Montreal, QC
2019	<b>Instructor Training Fellowship</b>	Repronim, Worcester, MA
2017	<b>Dean's Undergraduate Multidisciplinary Research Award</b>	McGill University, Montreal, QC
2016	<b>Undergraduate Research Award</b>	McGill University, Montreal, QC
2016	<b>Tomlinson Engagement Award for Mentoring</b>	McGill University, Montreal, QC

## interests

**professional:** neuroscience, translational research, cognitive science, informatics, software design, machine learning, statistics. **personal:** dance, crossfit, cooking.

## publications

### pre-prints

1. The variegation of human brain vulnerability to rare genetic disorders and convergence with behaviorally defined disorders  
Elizabeth Levitis, Siyuan Liu, Ethan T. Whitman, Allysa Warling, Erin Torres, Liv S. Clasen, François Lalonde, Joelle Sarlls, Daniel C. Alexander, Armin Raznahan  
*bioRxiv* (2022).

### articles in peer-reviewed journals

1. A cross-species study of sex chromosome dosage effects on mammalian brain anatomy  
Elisa Guma, Antoine Beauchamp, Siyuan Liu, Elizabeth Levitis, Liv S. Clasen, Erin Torres, Jonathan Blumenthal, Francois Lalonde, Lily R. Qiu, Haley Hrnir, Allan J. MacKenzie-Graham, Xia Yang, Arthur P. Arnold, Jason P. Lerch, Armin Raznahan  
*The Journal of Neuroscience* (2023). Society for Neuroscience.

2. Differentiating amyloid beta spread in autosomal dominant and sporadic Alzheimer's disease

**Elizabeth Levitis\***, Jacob W. Vogel, Thomas Funck, Vladimir Halchinski, Serge Gauthier, Jonathan Voglein, Johannes Levin, Brian Gordon, Tammie Benzinger, Yasser Iturria-Medina, Alan C. Evans, Dominantly Inherited Alzheimer Network, Alzheimer's Disease Neuroimaging Initiative

*Brain Communications* (2022). Oxford University Press.

3. Centering inclusivity in the design of online conferences—An OHBM–Open Science perspective

**Elizabeth Levitis\***, Cassandra Gould van Praag\*, Remi Gau, Stephan Heunis, et al.

*Gigascience* (2021). Oxford University Press and the Beijing Genomics Institute.

4. Brainhack: developing a culture of open, inclusive, community-driven neuroscience

Remi Gau\*, Stephanie Noble\*, Katja Heuer\*, Katherine Bottenhorn\*, Isil Poyraz Bilgin\*, Yu-Fang Yang\*, Julia Huntenburg\*, Johanna Margarete Marianne Bayer\*, Richard Bethlehem\*, Shawn A Rhoads, Cristoph Vogelbacher, Valentina Borghesani, **Elizabeth Levitis**, et al.

*Neuron* (2021). Cell Press.

5. Spread of pathological tau proteins through communicating neurons in human Alzheimer's disease

J. W. Vogel, Y. Iturria-Medina, O.T. Strandberg, R. Smith, **E. Levitis**, A. C. Evans, O. Hannsson

*Nature Communications* (May 2020). Nature Publishing Group.

## invited talks & organized workshops

1. Parsing gene dosage effects on human brain organization through multimodal neuroimaging of multiple chromosomal aneuploidies

(June 2023), Organization for Human Brain Mapping, Presentation.

2. Epidemic Spreading Models For Characterization of Misfolded Protein Spread in Autosomal Dominant and Sporadic Alzheimer's Disease

(Apr. 2022), Washington University of Saint Louis, Presentation.

3. Visualization in Python

(Dec. 2021), Brainhack Global DC, Workshop.

4. Hackathons: A new space for collaborative projects and learning

*Open Science Special Interest Group Symposium* (June 2020), Organization for Human Brain Mapping, Symposium and presentation.

5. OHBM Annual BrainHack & TrainTrack

*Open Science Special Interest Group* (June 2020), Organization for Human Brain Mapping, Workshop.

6. Managing your Reproducible Experiments with Datalad and Boutiques

*ReproNim* (Feb. 2020), McGill University, Workshop.

7. Introduction to Scientific Software Development and Machine Learning

*Healthy Brains for Healthy Lives* (Feb. 2019), McGill University, Workshop.

## conference posters

1. Characterizing multimodal phenotypes in chromosomal aneuploidies.

**Elizabeth Levitis**, Ethan T. Whitman, Siyuan Liu, Allysa Warling, Erin Torres, Liv S. Clasen, Francois M. Lalonde, Joelle Sarlls, Daniel C. Alexander, Armin Raznahan

*Flux Congress* (Sept. 2021).

2. ABCD-ReproNim: A free online course providing training for reproducible analyses of Adolescent Brain Cognitive Development (ABCD) Study data.  
Jessica E. Bartley, James D. Kent, **Elizabeth Levitis**, Dustin Moraczewski, Kristina M. Rapuano, Adam Richie-Halford, Taylor Salo, Jean-Baptiste Poline, Satrajit S. Ghosh, David N. Kennedy, Angela R. Levitis 2018 deepqc poster Laird  
*Flux Congress* (Sept. 2021).
3. Characterizing multimodal phenotypes in sex chromosome aneuploidies.  
**Elizabeth Levitis**, Ethan T. Whitman, Siyuan Liu, Allysa Warling, Erin Torres, Liv S. Clasen, Francois M. Lalonde, Joelle Sarlls, Daniel C. Alexander, Armin Raznahan  
*NIH GPP Research Symposium* (Feb. 2021).
4. Differentiating epicenters of amyloid-beta spread in autosomal dominant and sporadic Alzheimer's disease.  
**Elizabeth Levitis**, Jacob Vogel, Thomas Funck, Gregory Kiar, Yasser Iturria-Medina, Alan C. Evans  
*Organization for Human Brain Mapping* (June 2020).
5. Application of an Epidemic Spreading Model to Characterize Amyloid Beta Accumulation in Autosomal Dominant Alzheimer's Disease Mutation Carriers  
**Elizabeth Levitis**, Jacob Vogel, Gregory Kiar, Thomas Funck, Yasser Iturria-Medina, Alan C. Evans  
*Human Amyloid Imaging* (Jan. 2020).
6. Structural Brain Connectivity Predicts Longitudinal Amyloid Beta Deposition in Autosomal Dominant Alzheimer's Disease Mutation Carriers  
**Elizabeth Levitis**, Jacob Vogel, Gregory Kiar, Thomas Funck, Yasser Iturria-Medina, Alan C. Evans  
*Integrated Program in Neuroscience Retreat* (Sept. 2019).
7. DeepQC: A RESTful API for Automatic MRI QC  
**Elizabeth\* Levitis**, Andrew Doyle, Armin Taheri, Leigh MacIntyre, Samir Das, Alan C. Evans  
*Organization for Human Brain Mapping* (June 2018).

## published code

For an up-to-date list of published code projects, please visit my GitHub profile at <https://github.com/llevitis>.