Chiara Herzog, PhD

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EDUCATION

University of Edinburgh, Edinburgh, UK

- Ph.D. in Neuroscience — Oct 2015 – Apr 2019
  - Thesis: Molecular and cellular mechanisms of microglia-mediated neuroprotection
  - Supervisor: Dr. Leah Herrgen
  - Focus: Molecular and cellular biology, gene expression analysis using RNA-seq and qRT-PCR, computational analysis, statistics
- M.Sc. by Research in Integrative Neuroscience — Sep 2014 – Aug 2015
  - Graduated with distinction
  - Thesis: Molecular characterisation of the synaptic Disks large (Dlg)-associated signalling complex in *Drosophila melanogaster*
  - Supervisor: Prof. Seth Grant
  - Focus: Biochemistry and proteomics

Innsbruck Medical University, Innsbruck, AT

- B.Sc. in Molecular Medicine — Oct 2011 – Jul 2014
  - Graduated with distinction
  - Relevant courses: oncology, genetics and epigenetics, genomics, bioinformatics, biostatistics, general medicine
  - Thesis: Morphological analysis of hair follicles in Nogo receptor knockout mice
  - Supervisor: Prof. Christine Bandtlow

Meinhardinum, Stams, AT

- Matura (A-levels) — Jul 2011
  - Graduated with distinction and a grade average of 1.0 aged 16
  - Subjects: Physics, Chemistry, Mathematics, English, Latin

EXPERIENCE

University of Innsbruck, Innsbruck, AT

- Postdoctoral research fellow, EUTOPS Institute — Jul 2020 – present
  - Study co-lead of a clinical trial investigating the effects of lifestyle changes (intermittent fasting, smoking cessation) on health status, focusing on predicting changes in cancer risk for women's cancers based on DNA methylation
  - Computational analysis of smoking- and hormone exposure-related DNA methylation changes and their association with cancer risk
  - Development of novel DNA methylation-based classifier algorithms
  - Authored clinical study protocol and data analysis and management plan; spearheading organisation/setup, computational analysis, and public communication strategy of the study

BioClavis, LTD, Glasgow, UK

- Associate Business Development Manager — Aug 2019 – Jun 2020
  - Scientific liaison for academic and clinical research collaborations in the space of cancer research at precision diagnostics company
  - Authored scientific support materials for high-throughput 'omics assay and created a new company website
  - Spearheaded communication strategy and effectively managed customer and collaborator projects from conceptualisation to data delivery

University of Edinburgh, Edinburgh, UK

- Postdoctoral research fellow, Centre for Discovery Brain Sciences — Mar 2019 – Aug 2019
  - Project title: Investigation of microglial-derived signalling factors in prevention of secondary neuronal cell death
  - Supervisor: Dr. Leah Herrgen
  - Focus: Molecular signalling pathways, gene expression analysis, data analysis, CRISPR/Cas9.
  - Investigated immune-derived signalling factors involved in neuroprotection identified from RNA-seq dataset using laboratory and computational methods (R gene expression analysis), resulting in a first-author publication
  - Supervision of Master's student
- PhD student, Centre for Discovery Brain Sciences — Oct 2015 – Apr 2019
  - Project: Molecular and cellular mechanisms of microglia-mediated neuroprotection
  - Supervisors: Dr. Leah Herrgen, Prof. Catherina Becker
  - Focus: Molecular and cellular biology (including RNA-seq, qRT-PCR), *in vivo* fluorescence confocal timelapse imaging, data analysis using R, Matlab, and GraphPad
  - Primary research investigating the role of the immune system in central nervous system repair using a variety of molecular and cellular tools

- Launched successful project from scratch as the first PhD student in a newly established lab and published two first-author manuscripts
- Award of a travelling fellowship for two-month visit to collaborating research institution, and selection for presentation at scientific conference (only PhD student to present among senior postdocs and group leaders)

▪ Master's student, Centre for Clinical Brain Sciences — Sep 2014 – Aug 2015
- Project: Molecular characterisation of the synaptic Disks large (Dlg)-associated signalling complex in *Drosophila melanogaster*
- Supervisor: Prof. Seth Grant
- Focus: Biochemistry and proteomics
- Extensive biochemical analysis of evolutionary conservation of large molecular protein complexes at the synapse, comparing *Drosophila*, human and mouse using co-immunoprecipitation, blue native-PAGE, and western blotting

Innsbruck Medical University, Innsbruck, AT

▪ Research Assistant, Division of Neurobiochemistry — Apr 2014 – Sep 2014
- Supervisor: Prof. Christine Bandtlow
- Focus: Genotyping by PCR, dissection, immunohistochemistry & microscopy, statistical analysis, biochemistry
- Analysis of Nogo receptor knockout effects on dorsal root ganglia innervation using immunohistochemistry and image analysis

▪ Undergraduate project, Division of Neurobiochemistry — Jan 2014 – Apr 2014
- Project: Morphological analysis of hair follicles in Nogo receptor knockout mice
- Supervisor: Prof. Christine Bandtlow
- Focus: Genotyping by PCR, dissection, immunohistochemistry & microscopy, image analysis, statistical analysis, biochemistry; Identified a critical role for the Nogo receptor in innervation of hairy skin, resulting in the creation of a follow-up PhD project

▪ Voluntary Internships — Jun 2012 – Sep 2013
- Division of Neurobiochemistry (Supervisor: Prof. Christine Bandtlow), Jul 2013 - Sep 2013
- Division of Cell Biology (Supervisor: Prof. Lukas Huber), Jun 2012 - Aug 2012

PUBLICATIONS

JOURNALS

C. Herzog, D. Greenald, J. Larraz, M. Keatinge, and L. Herrgen. "RNA-seq analysis and compound screening highlight multiple signalling pathways regulating secondary cell death after acute CNS injury *in vivo*," *Biology Open*, vol. 9, bio050260, May 2020, *doi.org/10.1242/bio.050260*.

C. Herzog, L. Pons Garcia, M. Keatinge, D. Greenald, C. Moritz, F. Peri, L. Herrgen. "Rapid clearance of cellular debris by microglia limits secondary neuronal cell death after brain injury *in vivo*," *Development*, vol. 146, dev174698, May 2019, *doi.org/10.1242/dev.174698*.

CONFERENCE TALKS

C. Herzog and L. Herrgen. "Microglia limit secondary cell death following brain injury," at *Macrophages Satellite Symposium*, Edinburgh, UK, May 2018.

C. Herzog, D. Greenald and L. Herrgen. "Towards identifying mechanisms of inflammatory neuroprotection," at *Cardiovascular Sciences-Neuroscience Network Launch*, Edinburgh, UK, Feb 2018.

C. Herzog and L. Herrgen. "Microglia limit secondary cell death following brain injury," at *Centre for Integrative Physiology - Centre for Neuroregeneration Symposium*, Edinburgh, UK (winner of runner-up best talk), Jul 2017.

C. Herzog and L. Herrgen. "Microglia limit secondary cell death following brain injury," at *ImmuneFish*, Edinburgh, UK, Jan 2017.

AWARDS & SCHOLARSHIPS

▪ Falling Walls Lab Austria Winner — Sep 2020
Winner of Falling Walls Lab Scientific idea competition (Austria)

▪ University of Edinburgh PhD Scholarship — Oct 2015 – Sep 2018
Highly competitive full tuition scholarship

▪ Runner up Student Publication of the Year — May 2018
Awarded by the Scottish Newspaper Society to the Edinburgh University Science magazine, of which I was editor and president at the time

▪ FASEB Journal Travelling Fellowship — Sep 2017
Competitive travelling fellowship awarded for attendance of the ENABLE symposium in Barcelona

▪ Best Short Talk (Runner Up) — May 2017
Awarded at Centre for Integrative Physiology - Centre for Neuroregeneration symposium amongst 20 participants

- Company of Biologists Travelling Fellowship — Oct 2016
  Competitive travelling fellowship to enable a new collaborative project and fund a two-month exchange to collaborator's institution

MAIN AREAS OF & RESEARCH

My research focus throughout my doctoral education has been in neuroimmunology but I have a background in molecular medicine translating basic research to patient care improvements, with a wide-ranging skill set in bioinformatic, statistical and computational analysis, cellular and molecular biology, and microscopy. In my PhD, I established a novel model for brain injury allowing for visualisation of early cellular and molecular reactions following in an injury *in vivo* using computational analysis of time-lapse fluorescence confocal microscopy, leading to the discovery of a neuroprotective role for immune cells in the aftermath of an injury (Herzog et al., 2019), and identification of neuroprotective transcripts from microglia/macrophages following injury via RNA-seq, qRT-PCR, and CRISPR/Cas9 (Herzog et al., 2020). I recently transitioned to the field of cancer research, joining Prof Widschwendter's research group, with a particular interest in applying DNA methylation-based risk prediction tools for individual cancer risk screening. I am jointly leading a clinical study with Prof. Widschwendter investigating the impacts of lifestyle-based intervention on health in a systems biology approach, with my main focus being on bioinformatic and statistical analysis of methylation data.

OTHER EXPERIENCE & ACTIVITIES

University of Edinburgh, Edinburgh, UK

- Laboratory Demonstrator — Sep 2018 – Mar 2019
  - Supervision and scientific training of undergraduate students in Cardiovascular Sciences and Medical Microbiology practicals

Edinburgh University Science Magazine, Edinburgh, UK

- President — May 2018 – May 2019
  - Representation and management of the student-run science magazine
- Editor — Oct 2016 – May 2018
  - Authored new articles, including on topics such as personalised medicine and medical ethics, and edited incoming articles
  - Contributed to idea conceptualisation for new issues

Cactus Communications

- Freelance editor (premium) — Nov 2018 – Mar 2019
  - Edited and reviewed scientific manuscripts in the area of molecular genetics and biomedical research for publication under tight deadlines

Pint of Science UK

- Team leader (Beautiful Mind) — Sep 2016 – May 2017
  - Approached key scientists in the field to present their work to a lay audience as part of the Pint of Science festival
  - Demonstrated excellent team management skills, and all events were sold out under my leadership

SKILLS

LABORATORY

DNA, RNA, and protein extraction; PCR, qRT-PCR, RNA-seq, molecular cloning, CRISPR/Cas9, FACS, immunohistochemistry, *in vivo* confocal microscopy, SDS-PAGE, BN-PAGE, western blotting (list non-exhaustive)

COMPUTATIONAL

Statistical analysis and bioinformatics (R) including methylation and RNA-seq analysis, Git, computational image analysis (Matlab), TeX, HTML/CSS, Adobe Illustrator, Microsoft Office

LANGUAGES

German (native), English (fluent, as native), Italian (intermediate), French (basic)