

## Employment

2019–present **Postdoctoral fellow**, DQBM, University of Zurich.

## Education

2015–2019 **Computational Biology, PhD**, EMBL-EBI, University of Cambridge.

2012–2015 **Molecular Biotechnology, M.Sc.**, University of Heidelberg, Grade: 1.0.

2009–2012 **Molecular Biotechnology, B.Sc.**, University of Heidelberg, Grade: 1.1.

## Projects

**Postdoc** *Profiling the emergence of cellular heterogeneity in breast cancer organoids.*

Supervisor Bernd Bodenmiller, Single cell systems biology of cancer, DQBM, University of Zurich

Description My postdoctoral work focuses on understanding the emergence of phenotypic heterogeneity in breast cancer and how this relates to treatment efficiency. I choose breast cancer organoids as model system to capture spatial expression patterns during organoid formation.

**PhD** *Quantifying expression variability in single-cell RNA sequencing data.*

Supervisor John Marioni, Single-cell and computational biology, EMBL-EBI and CRUK CI, Cambridge

Description During my PhD I focused on quantifying and understanding the functional role of transcriptional variability in immune responses and development. For this, I developed a statistical approach to correct the confounding effect of mean expression on transcriptional variability.

**M.Sc.** *Characterization of programmed cell death modalities induced by piperlongumine and artesunate in pancreatic cancer cells.*

Supervisor Dr. Anne Hamacher-Brady, Lysosomal Systems Biology, DKFZ, Heidelberg

**B.Sc.** *Modelling the Nrf2-Keap1 signalling pathway in human pancreatic carcinoma cells.*

Supervisor Dr. Nathan Brady, Systems Biology of cell death mechanisms, DKFZ, Heidelberg

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## Research Experience

### Internships

- 2013–2014 **Research Internship**, THE GARVAN INSTITUTE OF MEDICAL RESEARCH, Sydney, Australia.  
Defining the role of Sirtuin 1 in the onset of Pancreatic Ductal Adenocarcinoma.
- 2012 **Research Internship**, THE SCRIPPS RESEARCH INSTITUTE, La Jolla, CA.  
Activation of CD8<sup>+</sup> T cells *in vitro* as well as *in vivo* in order to specifically target pancreatic tumors in 8–14 week old mice.
- 2011 **Industrial Internship**, MERCK KGAA, Darmstadt, Germany.  
Proliferation induction in human cancer stem cells using different cytokines.
- 2009 **Research Internship**, UNIVERSITY OF DUISBURG-ESSEN, Duisburg, Germany.  
Collaboration with the SulfoSYS project in order to analyse the central carbohydrate metabolism of *S. solfataricus*.
- 2005 **High School Intern**, EVONIK GOLDSCHMIDT GMBH, Essen, Germany.  
Characterisation of polyurethane foam properties.

### Research Assistances

- 2012–2014 **Research Assistant**, Max Planck Institute for Medical Research.  
DJANGO/MYSQL based website development to process spatially annotated electron imaging data.
- 2011–2012 **Research Assistant**, Complex biological systems group, IWR, Heidelberg.  
ODE based modelling of the chemotactic pathway of *E. coli*.
- 2010–2011 **Research Assistant**, Signal transduction in cancer and metabolism, DKFZ, Heidelberg.  
Using *D. melanogaster* as model organism for analysing caloric restriction and the Akt/mTOR signalling pathway.

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## Selected publications

- 2021 *An end-to-end workflow for multiplexed image processing and analysis*, Windhager, J.\*, Bodenmiller, B., Eling, N.\*, *bioRxiv*, \*Corresponding author.
- 2020 *cytomapper: an R/Bioconductor package for visualisation of highly multiplexed imaging data*, Eling, N.\*, Damond, N., Hoch, T., Bodenmiller, B., *Bioinformatics*, \*Corresponding author.
- 2019 *Challenges in measuring and understanding biological noise*, Eling, N., Michael Morgan, John Marioni, *Nature Reviews Genetics*.
- 2019 *Staged developmental mapping and X chromosome transcriptional dynamics during mouse spermatogenesis*, Ernst, C.\*, Eling, N.\* et al., *Nature Communications*, \*Co-first authors.
- 2018 *Correcting the mean-variance dependency for differential variability testing using single-cell RNA sequencing data*, Eling, N. et al., *Cell Systems*.
- 2018 *Whole-Body Single-Cell Sequencing Reveals Transcriptional Domains in the Annelid Larval Body*, Achim, K.\*, Eling, N.\* et al., *Molecular Biology and Evolution*, \*Co-first authors.

- 2017 *Aging increases cell-to-cell transcriptional variability upon immune stimulation*, Martinez-Jimenez, C.P.\*, Eling, N.\* et al., *Science*, \*Co-first authors.
- 2015 *Identification of artesunate as a specific activator of ferroptosis in pancreatic cancer cells*, Eling, N. et al., *Oncoscience*, 2(5), 517-532.

## Scholarships and awards

- 2021-today Marie Skłodowska-Curie Actions Individual Fellowship
- 2019-2020 EMBO Long-Term Fellowship
- 2017 Kurt Hahn Award for German nationals in Cambridge
- Since 2015 EMBL international PhD fellowship
- 2011-2015 Scholar of the foundation of German business
- 2011-2015 Scholar of e-fellows.net

## Conferences and workshops

### Talk

- 2021 Frontline Genomics, Single Cell & Spatial Omics ONLINE (invited)
- 2021 University of Sydney, Statistical Bioinformatics Seminar Series (invited)
- 2018 Francis Crick institute artificial intelligence seminar (invited)
- 2018 EBI Sanger Cambridge PhD Symposium
- 2017 EMBL Lab Day
- 2015 EMBL PhD Symposium

### Poster

- 2021 AACR
- 2020 Systems biology of cancer: promises of artificial intelligence
- 2020 BioC 2020
- 2015-2017 Single Cell Genomics
- 2016 Single Cell Biology
- 2016 Quantitative Genomics

### Workshop

- 2021 EMBO Lab Leadership (attendee)
- 2021 BioC 2021 (presenter)
- 2021 Indiana O'Brien Center Microscopy Workshop (invited presenter)
- 2016-2017 Academy for PhD Training in Statistics (attendee)
- 2015 Statistics and Computing in Genome Data Science (attendee)

### Conference organiser

- 2018 Quantitative Genomics
- 2017 Science and Society: Gut feeling
- 2016 Science and Society: Rewriting the Code of Life
- 2015 EBI Sanger Cambridge PhD Symposium

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## Hackathon

- 2020 Hack Zurich
- 2017 Human Cell Atlas
- 2017 MLH Prime
- 2017 Hack Cambridge Recurse

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## Teaching and supervision

### Teaching

- 2020 DQBM online course: Introduction to data analysis
- 2016 EMBL: Bioinformatics Teaching Module
- 2015 Machine Learning for Personalised Medicine summer school (assistant)

### Supervision

- 2022 Computational rotation student
- 2021 Experimental rotation student (SEMP and PROMOS awardee)
- 2020 Computational Master student
- 2020 Experimental Master student (co-supervisor)
- 2020 Computational rotation student

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## Technical skills

- Basic Matlab, C++
- Intermediate Python, html/css, JavaScript
- Advanced R, git,  $\text{\LaTeX}$ , bash

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## Languages

- German Mother tongue
- English Advanced *Conversationally and scientifically fluent*
- French Basic *Basic words and phrases*

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## Interests

Rowing, Hiking, Diving, Travelling, Bouldering