Nils Eling

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 postodoctoral 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

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 $CD8^+$ 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.

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

2022   Cytométrie de Masse, 4e édition (invited)
2022   Centre for Computational Biomedicine, Harvard (invited)
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

2022   Applied Bioinformatics in Life Sciences
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

Hackathon

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

Teaching and supervision

Teaching

2022	ETH/UZH PhD Program in Cancer Biology Module B - Multiplexed image analysis
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

Technical skills

Basic	Matlab, C++
Intermediate	Python, html/css, JavaScript
Advanced	R, git, LaTeX, bash

Languages

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

Interests

Rowing, Hiking, Diving, Travelling, Bouldering