Nils Eling

Employment

2023–present **Senior computational scientist**, *DQBM/IMHS*, *University of Zurich/ETH Zurich*

2019–2022 **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

Senior scientist *Computational approaches for highly multiplexed image analysis.*

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

Description My role involves the development of computational approaches for multiplexed image analysis, teaching and training, and data analysis as part of the IMMUcan project.

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. In parallel, I develop computational approaches and tools for analysing multiplexed imaging data.

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

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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

2021-2022 Marie Skłodowska-Curie Actions Individual Fellowship

2019-2020 EMBO Long-Term Fellowship

2017 Kurt Hahn Award for German nationals in Cambridge

2015-2019 EMBL international PhD fellowship

2011-2015 Scholar of the foundation of German business

2011-2015 Scholar of e-fellows.net

Conferences, workshops, certificates

Certificate

2023 EMBO Project Management

2021 EMBO Lab Leadership

2016-2017 Academy for PhD Training in Statistics

Talk

2023 Labex Signalife technological day (invited)

2022 ISSCR Spatial Transcriptomics (invited)

2022 Cytométrie de Masse, 4^{e} 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

2023 Spatial Omics meeting Lausanne

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

2022 EuroBioC 2022 (presenter)

2022 BioC 2022 (presenter)

2021 BioC 2021 (presenter)

2021 Indiana O'Brien Center Microscopy Workshop (invited presenter)

2015 Statistics and Computing in Genome Data Science (attendee)

Conference/meeting organiser

2023 Highly Multiplexed Tissue Imaging Computational Workshop

2023 Highly Multiplexed Imaging Developers Meeting

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

2023 Current Approaches in Single Cell Analysis - Spatial analysis of single cell data (BME327)

2023 Current Approaches in Single Cell Analysis - Single cell data extraction from multiplexed images (BME327)

2023 ETH/UZH PhD Program in Cancer Biology Module B - Multiplexed image analysis

2023 ETH/UZH PhD Program in Cancer Biology Module B - Multiplexed image analysis

2023 Highly Multiplexed Tissue Imaging Computational Workshop

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

Since 2022 Computational research assistant

2022 Computational Master student (co-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

Engagement

Societies

2021 DQBM JUSCOR

Scientific reviewer

2022 Bioconductor
2021 Bioinformatics

Technical skills

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

Languages

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