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## BIOGRAPHICAL SKETCH

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NAME: Olivier Pertz

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POSITION TITLE: Associate Professor for Cellular Dynamics

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INSTITUTION AND LOCATION	DEGREE	Completion Date MM/YYYY	FIELD OF STUDY
University of Lausanne, CH	Diploma	1995	Biology
University of Basel, CH	PhD	1999	Biophysics
Scripps Research Institute, CA, USA	Postdoc	2004	Cell Biology
University of California San Diego, CA, USA	Staff scientist	2007	Cell Biology
University of Basel, CH	Assistant Prof	2015	Cell Biology
University of Bern	Associate Prof	Since 2016	Cell Biology

### A. Personal Statement

My research focusses on the spatio-temporal signaling events that regulate Cell Morphogenesis and Fate Decisions. The main hypothesis relevant to our research is that these signaling events are highly dynamic, are precisely regulated in time and space, and can be highly heterogeneous within distinct cells of a population. An important current limitation in our field is that this spatio-temporal resolution of signaling is missed in classic biochemical methods that average populations of thousands of cells, or that rely on the analysis of static, steady-states. To address these challenges, we devise novel quantitative approaches to measure/manipulate signaling dynamics at biologically relevant time/length scales. This includes the development of multiplexed biosensor systems to image signaling dynamics at the single cell level, the development of optogenetic and microfluidic actuators to manipulate single cells with unprecedented spatio-temporal resolution, computer vision approaches to automate image analysis of large datasets, statistical analysis and mathematical modelling to make sense of the large datasets we produce. Our research provides new insights to target oncogenic signaling during cancer, as well as aberrant morphogenetic processes such as cell migration and invasion, and neuronal development and regeneration.

### 5 recent representative publications:

Dessauges C., Mikelson J., Dobrzyński M., Jacques M.A., Frismantiene A., Gagliardi P.A., Khammash M., **Pertz O.** An optogenetic actuator/biosensor circuit for large-scale interrogation of ERK dynamics identifies sources of MAPK signaling robustness. In press at Molecular Systems Biology.

Gagliardi P.A., Dobrzyński M., Jacques M-A., Dessauges C., Ender P., Blum Y., Hughes R.M., Cohen A.R., **Pertz O.** Collective ERK/Akt activity waves orchestrate epithelial homeostasis by driving apoptosis-induced survival. *Developmental Cell*. 2021 May 28:S1534-5807(21)00436-6.

Jacques M-A, Dobrzyński M., Gagliardi P.A., Sznitman R. and **Pertz O.** CODEX, a neural network approach to explore signaling dynamics landscapes. *Mol Syst Biol* (2021)17:e10026

Blum Y.\*, Mikelson J.\*, Dobrzynski M.\*, Ryu H., Jacques M.A., Jeon N.L., Khammash M., **Pertz O.** Temporal perturbation of ERK dynamics reveals network architecture of FGF2/MAPK signaling. *Mol Syst Biol*. 2019 Nov;15(11). \*Authors contributed equally.

Ryu H., Chung M., Dobrzyński M., Fey D., Blum Y., Lee S.S., Peter M., Kholodenko B.N., Jeon N.L., **Pertz O.** Frequency modulation of ERK activation dynamics rewires cell fate. *Mol Syst Biol*. 2015 Nov 27;11(11):838.

## **B. Positions and Honors**

12/2015: Best paper of the year award, Dept. of Biomedicine, University of Basel  
03/2005: Special symposium award at Roche Symposium for leading bioscientists  
07/2004-06/2006: Philip Morris External Research Program Postdoctoral Fellowship  
07/2002-06/2004: Swiss National Science Foundation Advanced Postdoctoral Fellowship  
07/2001-06/2002: Roche Research Foundation and Novartis Postdoctoral Fellowships  
01/2000-06/2001: Swiss National Science Foundation Postdoctoral Fellowship

## **C. Contributions to Science**

Lab website: <https://www.pertzlab.net/>

Google scholar ID : <https://scholar.google.ch/citations?user=dYonf8AAAAJ&hl=en&oi=ao>

ORCID ID: <https://orcid.org/0000-0001-8579-4919>

Publications: 55 (pubmed)

Citations: 6127, H-index: 33, i10-index: 44