

## Prof. Dr. Dominik Obrist

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## Education and Professional Career

1991-1997 Diploma in Mechanical Engineering, ETH Zurich, Switzerland  
1997-2000 PhD on hydrodynamic stability theory, Dept. of Applied Mathematics, University of Washington, Seattle, USA  
2001-2005 Cray Inc., Switzerland: pre-sales analyst, account manager  
2005-2013 Institute of Fluid Dynamics, ETH Zurich, Switzerland: senior researcher  
2012 Habilitation in Biofluidynamics, Dept. of Mechanical and Process Engineering, ETH Zurich, Switzerland  
since 2013 Professor for Cardiovascular Engineering, University of Bern

## Commitment, Appointments and Scientific Volunteer Jobs

Since 2010 Board member of the *SpeedUp Society* (Switzerland)  
Since 2011 Associate Editor for *Computation (MDPI)*  
Since 2015 Chair of the Commission for Biomedical Engineering of the Graduate School for Cellular and Biomedical Sciences (University of Bern)  
Since 2019 Member of the Proposal Review Commission of the Swiss Light Source (SLS) at PSI, Würenlingen, Switzerland  
Since 2020 Member of the Commission for *Gender Equality of the Medical Faculty* (University of Bern)  
2021 Co-founder and scientific advisor of *URODEA AG*: university spin-off for urogenital technology  
Since 2022 Associate Editor for *Frontiers in Physiology – Computational Physiology and Medicine*

## Most important Publications

- [1] Thirugnanasambandam M., Frey S., Rösch Y., Mantegazza A., Clavica F., Schwartz R.S., Cesarovic N., Obrist D. Effect of collateral flow on catheter-based assessment of cardiac microvascular obstruction, *Ann Biomed Eng*, doi: 10.1007/s10439-022-02985-2, 2022.
- [2] Mantegazza A., Ungari M., Clavica F., Obrist D. Effects of local and global blood flow modulation on the RBC partitioning and hematocrit distribution in an artificial microvascular network, *Front Physiol* 11:566273, doi: 10.3389/fphys.2020.566273, 2020.
- [3] Mantegazza A., Clavica F., Obrist D. In vitro investigations of red blood cell phase separation in a complex microchannel network, *Biomicrofluidics* 14(1), doi: 10.1063/1.5127840, 2020.
- [4] Schmid F., Barrett M. J. P., Obrist D., Weber B., Jenny P. Red blood cells stabilize flow in brain microvascular networks, *PLoS Comp Biol* 15(8): e1007231, doi: 10.1371/journal.pcbi.1007231, 2019.
- [5] Koch T., Flemisch B., Helmig R., Wiest R., Obrist D. A multi-scale sub-voxel perfusion model to estimate diffusive capillary wall conductivity in multiple sclerosis lesions from perfusion MRI data, *Int J Numer Meth Biomed Engng* 36:e3298, doi: 10.1002/cnm.3298, 2019.
- [6] Obrist D., Flow phenomena in the inner ear, *Ann Rev Fluid Mech* 51:487-510, doi: 10.1146/annurev-fluid-010518-040454, 2019.
- [7] Frey S., Cantieni T., Vuillemin N., Haine A., Kammer R., von Tengg-Koblighk H., Obrist D., Baumgartner I, Angioarchitecture and hemodynamics of microvascular arterio-venous malformations, *PLoS ONE* 13(9):e0203368, doi:10.1371/journal.pone.0203368, 2018.
- [8] Clavica F., Homsy A., Jeandupeux L., Obrist D., Red blood cell phase separation in symmetric and asymmetric microchannel networks: effect of capillary dilation and inflow velocity, *Sci Rep*, 6:36763; doi: 10.1038/srep36763, 2016.

- [9] Erb R. M., Obrist D., Chen P. W., Studer J., Studart A. R., Predicting sizes of droplets made by microfluidic flow-induced dripping, *Soft Matter*, 7, 8757-8761, doi: 10.1039/C1SM06231J, 2011.
- [10] Obrist D., Weber B., Buck A., Jenny P., Red blood cell distribution in simplified capillary networks, *Phil. Trans. R. Soc. A*, 368(1921), 2897-2918, doi: 10.1098/rsta.2010.0045, 2010.