

Prof. Dr. Dominik Obrist

Professor of Cardiovascular Engineering
ARTORG Center for Biomedical Engineering Research
University of Bern
Freiburgstrasse 3
3010 Bern, Switzerland
Tel.: +41 31 632 7602 (direct)
Tel.: +41 31 632 7478
Email: dominik.obrist@unibe.ch

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 of 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] Bucciarelli A., Obrist D. Influence of Pericyte-like Vessel Dilation on RBC Flux in an In Vitro Microvascular Network, *Microvasc Res* 162:104846, doi:10.1016/j.mvr.2025.104846, 2025.
- [2] Milusev A., Rösch Y., Kuster Y., Wolint P., Ulmer J., Weisskopf M., Cesarovic N., Obrist D. Microdosing of alteplase resolves porcine and human microthrombi in an in vitro model of microvascular obstruction, *Sci Rep* 15:18114, doi: 10.1038/s41598-025-03060-1, 2025.
- [3] Amado P., Dillinger C., Hashemi Gheinani A., Obrist D., Burkhard F., Ahmed D., Clavica F. Ultrasound-Activated Cilia: A Bio-Inspired Strategy for Biofilm Control in Indwelling Medical Devices, *PNAS* 122(18):1-11, doi: 10.1073/pnas.2418938122, 2025.
- [4] Bucciarelli A., Häberlin A., Mantegazza A., Obrist D. Relation between hematocrit partitioning and red blood cell lingering in a microfluidic network, *Biophysical Journal* 123:1-11, doi:10.1016/j.bpj.2024.07.042, 2024.
- [5] Rösch Y., Stolte T., Weisskopf M., Frey S., Schwartz R., Cesarovic N., Obrist D. Efficacy of catheter-based drug delivery in a hybrid in-vitro model of cardiac MVO with porcine microthrombi, *Bioeng & Transl Med* 9:e10631, doi: 10.1002/btm2.10631, 2024.
- [6] Tsolaki E.*, Corso P.*, Zboray R., Avaro J., Appel Ch., Liebi M., Bertazzo S., Heinisch P. P., Carrel T. C., Obrist D., Herrmann I. Multiscale multimodal characterization and simulation of structural alterations in failed bioprosthetic heart valves, *Acta Biomaterialia* 169:138-154, doi:10.1016/j.actbio.2023.07.044, 2023.

- [7] Rösch Y., Eggenberger D., Kuster Y., Widmer L., Frey S., Schwartz R., Nef C., Ulmer J., Obrist D. Enhanced Drug Delivery for Cardiac Microvascular Obstruction with an Occlusion-Infusion-Catheter, *Ann Biomed Eng*, doi: 10.1007/s10439-023-03142-z, 2023.
- [8] 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.
- [9] 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.
- [10] 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.