HEINRICH WIELAND PRIZE

SYMPOSIUM SPEAKER 2026 | PROFILE

Professor Dr Petra Schwille
Max Planck Institute of Biochemistry, Martinsried, Germany
Photo: MPI of Biochemistry

Petra Schwille has made fundamental contributions to single-molecule biophysics and bottom-up synthetic biology. She developed dual-colour fluorescence cross-correlation spectroscopy (FCCS) with one- and two-photon excitation, enabling ultrasensitive quantitative measurements of molecular dynamics, interactions, and concentration gradients in living cells. She applied these methods to cell and membrane biology, and established the giant unilamellar vesicle (GUV) model as an important platform for quantitative studies of lipid domain organisation and protein–lipid interactions. She pioneered the field of bottom-up synthetic biology for the “de novo” design of core functions of life and has since pursued the construction of minimal synthetic cells capable of autonomous division. Recently her group accomplished the autonomous mid-cell positioning and constriction of a division ring in vesicle-based systems with a minimal set of self-organizing and self-assembling proteins.

Petra Schwille studied Physics and Philosophy at the Universities of Stuttgart and Göttingen and completed her PhD in 1996 at Braunschweig University of Technology and the MPI for Biophysical Chemistry in Göttingen. She conducted postdoctoral research at Cornell University in Ithaca. In 2002, she was appointed Full Professor of Biophysics at the BIOTEC Centre of the Dresden University of Technology. Since 2011, she has been Director at the Max Planck Institute of Biochemistry in Martinsried, and Honorary Professor at LMU Munich since 2012. Her work has been recognised with many awards, including the Gottfried Wilhelm Leibniz Prize, the Otto Warburg Medal, and the Federal Cross of Merit. She is a member of the Academia Europaea, EMBO, acatech, the Berlin-Brandenburg Academy of Sciences and Humanities, and the Leopoldina.

Boehringer Ingelheim Stiftung