

Jean-David Rochaix — Biography

Jean-David Rochaix is an internationally distinguished molecular biologist and one of the pioneering figures in the molecular genetics of photosynthesis and chloroplast biology. Trained initially in physics at the University of Lausanne (1963–1968), he earned his Ph.D. in Biophysics from Harvard University in 1972 and subsequently conducted postdoctoral research at Yale University as a Fogarty NIH Fellow. He joined the University of Geneva in 1974, became Professor in the Departments of Molecular Biology and Plant Biology in 1981, and twice served as Chair of Molecular Biology. He is now Professor Emeritus.

Over more than five decades, Jean-David has made fundamental contributions to understanding how the photosynthetic apparatus is assembled, regulated, and remodeled in response to environmental change. His laboratory was instrumental in establishing the green alga *Chlamydomonas reinhardtii* as a premier experimental model for the molecular genetics of photosynthesis. By combining genetics, molecular biology, biochemistry, and biophysics, his group helped define mechanisms controlling chloroplast gene expression, RNA stability and translation, photosynthetic-complex assembly, and communication between the nuclear and chloroplast genomes. Jean-David and colleagues pioneered the use of chloroplast transformation and site-directed mutagenesis to dissect photosynthetic reaction-center proteins, providing important molecular insights into Photosystem I and the amino-acid environment governing its electron-transfer cofactors.

Among his most influential accomplishments was the identification and characterization of the Stt7 thylakoid protein kinase, a central regulator of photosynthetic state transitions. This work helped establish the molecular mechanism by which photosynthetic organisms sense changes in electron transport and dynamically redistribute light-harvesting capacity between Photosystems II and I. His laboratory also developed innovative repressible chloroplast gene-expression systems, enabling functional analysis of essential plastid genes that are difficult to investigate through conventional knockout approaches.

Jean-David has authored more than 300 scientific publications, received over 20,000 citations, and has a reported h-index exceeding 100 in some bibliometric databases. He was elected to EMBO (1981) and Academia Europaea (2002) and has provided extensive leadership to the international photosynthesis and molecular biology communities. His numerous honors include the Friedrich-Miescher Prize

(1980), Gilbert Morgan Smith Medal (1991), International Society of Photosynthesis Research Lifetime Achievement Award (2016), and Photosynthesis Bridge Award (2024). Through his discoveries, mentorship, and international scientific leadership, Jean-David has had an enduring influence on modern understanding of photosynthetic regulation, chloroplast biogenesis, and environmental acclimation.