

Fluorescence labeling of proteins involved in pyoverdine-dependent iron uptake pathway in *Pseudomonas aeruginosa*

Laurent Guillon

Biotechnology and Cellular Signaling (BSC), France

Iron is a trace element essential for almost all living organisms. Microorganisms acquire this poorly soluble metal by secreting and then reabsorbing siderophores, low molecular mass compounds with a very high affinity for iron ions. Siderophores, and the access to iron they provide, are crucial for the infection of animals and plants by bacteria. *Pseudomonas aeruginosa*, a gram-negative bacterium responsible for severe infections in immuno-compromised patients or suffering from cystic fibrosis, secretes a major fluorescent siderophore, the pyoverdine. The genomic data and the spectral properties of this siderophore helped to identify and characterize the proteins involved in both its biosynthesis and the acquisition of the ferric pyoverdine complex. Proteins located in all three compartments of the bacteria are involved. Despite the knowledge of their individual functions, very little is known concerning the overall organization as well as the dynamics of these complex membrane protein machines that span the outer and the inner bacterial membranes.

We constructed mutant strains expressing, in a native context, proteins involved in pyoverdine biosynthesis or uptake chromosomally fused with fluorescent proteins. We checked, using biochemical approaches, that the fusion proteins retained their wild type activities. Fluorescent techniques (fluorescence microscopy, FRAP) allowed gaining insights on the protein localizations and dynamics. We observed different protein mobilities that are related to the subcellular localization, but also dependent on the function of the labeled protein.

Biography

Laurent Guillon has completed his Ph.D. at the age of 26 years from the Ecole Polytechnique (France). He is performing postdoctoral studies at Strasbourg University in Isabelle Schalk's laboratory "Transport Membranaire Bactérien" (BSC-UMR7242). His research interest is in siderophore-dependent iron uptake in *Pseudomonas aeruginosa*. He has published 10 papers in reputed journals.

laurent.guillon@unistra.fr