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Iron uptake pathways in Pseudomonas aeruginosa: Targets for new antibiotics

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In aerobic environments, iron (III) is poorly soluble in water at physiological pH and its uptake by microorganisms requires the production of small molecules called siderophores. These molecules chelate iron in the extracellular medium with a high affinity and transport it into the cell via specific outer and inner membrane transporters. During infection, in order to get access to iron, *Pseudomonas aeruginosa* produces two major siderophores pyoverdine and pyochelin. In our group, we study these uptake machineries at the molecular level *in vivo* and *in vitro* and our recent progresses will be described and summarized. Inhibition of iron uptake pathways in bacteria, by either gene mutation or the use of inhibitors, affects seriously bacterial growth, illustrating that iron homeostasis can be an interesting target for new antibiotics. The potential of these iron uptake pathways to be targets for new antibiotics will be discussed.

Biography

Isabelle J. Schalk has completed her Ph.D. at the age of 25 years from University of Strasbourg (France) and postdoctoral studies from Scripps Research Institute (USA). She is the head of the department "Receptors and Membrane Proteins" at the University of Strasbourg. She has published more than 60 papers on iron homeostasis in bacteria. She is editor of the metalloprotein section at Amino Acids.

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