Seminar/Talk

Cryo-EM and functional studies on zinc transporter ZntB

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Zinc is an essential microelement to sustain all forms of life. However excess of zinc is toxic, and therefore organisms have developed complex systems for tight regulation of the zinc concentration using dedicated proteins for import, export and storage of zinc. In Enterobacteriaceae several membrane transporters are involved in zinc homeostasis and linked to virulence: the ABC transporter ZnuABC and ZIP-family transporter ZupT for import; and P-type ATPase ZntA and cation-diffusion facilitator YiiP transporter for export. In addition ZntB, a member of the MIT family, has been reported to be involved in the export of zinc, but the mechanism of zinc transport by ZntB is poorly understood and based mostly on experimental characterization of its distant homologue CorA, which is a magnesium channel.
In this talk I will describe the cryo-electron microscopy structure of full-length ZntB from Escherichia coli together with the results of isothermal titration calorimetry, radio-ligand uptake and fluorescent transport assays on ZntB reconstituted into liposomes. Our results clearly show that ZntB mediates Zn2+ uptake, stimulated by a pH gradient across the membrane, using a transport mechanism that does not resemble the one recently proposed by Matthies et al. for homologous CorA channels.

Tuesday, April 18, 2017 02:00pm - 03:00pm
Seminar Room, Lab Building East

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