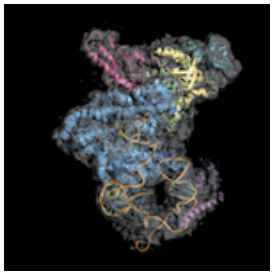

Contribution ID : **27** Type : **not specified**

# Keynote 10 - Functional characterisation of the first primary active magnesium transporter

*Wednesday, 21 November 2018 11:10 (40)*

Three classes of Magnesium transporters have been identified in Bacteria; CorA, MgtE and MgtA/MgtB [1]. While CorA and MgtE are both magnesium channels. Active influx is believed to mediated by MgtA The magnesium transporter A (MgtA) is a specialized P-type ATPase, that import Mg(II) into the cytoplasm. In both Salmonella typhimurium and Escherichia coli. This study demonstrates, for the first time, that MgtA is highly depended on anionic phospholipids and in particular, cardiolipin, the in vitro kinetic experiments performed on detergent solubilized MgtA suggest that cardiolipin act as a magnesium chaperone. We further show that MgtA is highly sensitive to free Mg(II) (Mg(II) free) levels in the solution. MgtA is activated when the Mg(II)free concentration is reduced below 10 uM and is strongly inhibited above 1 mM, indicating that Mg(II) free acts as product inhibitor. Colocalization studies confirm that MgtA is found in the cardiolipin lipid rafts in the membrane. Combined, our findings indicate that MgtA may act as a sensor as well as a transporter of Mg(II) [2]. With the present functional data, we now hypothesize that regulation of ion transport in the MgtA might be fundamentally equivalent to that of the Na+/K+ -ATPase. The discovery that MgtA acts as a receptor in addition to being an ion transporter, is a major breakthrough.

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