**Poster Presentation**

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*Structural insight into the glycerophosphocholine binding protein of ABC transporter*

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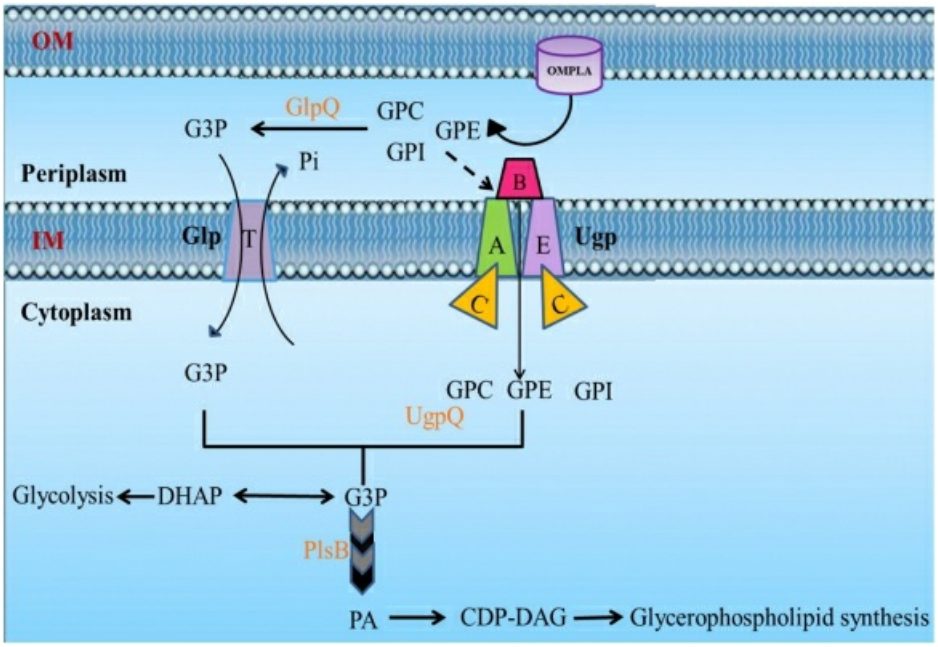
Glycerophospholipid is a major component of membrane phospholipid and is biosynthesized through de novo pathway using the byproducts such as glycerol-3-phosphate (G3P), glycerophosphocholine (GPC), glycerophosphoethanolamine (GPE), etc. of glycerophospholipid metabolism. During glycerophospholipid biosynthesis, these byproducts are actively transported inside the cell by two major classes of transporters namely ABC (ATP-Binding Cassette) and MFS (Major Facilitator Superfamily). The UgpABCE transporter is a member of ABC transporter superfamily, known for uptake of G3P and GPC. UgpB is a periplasmic component of UgpABCE transporter which shows homology with periplasmic sugar binding proteins. Thus, several periplasmic proteins belonging to UgpABCE transporter have been annotated as sugar binding proteins; one of such genes is TTHA0379 from Thermus thermophilus HB8. In this study, we have characterized TTHA0379 as a UgpB protein which binds to GPC. In addition, we determined the crystal structure of TTHA0379 in its apo form. The crystals diffracted to 2.0 Å resolution and belonged to primitive monoclinic space group P21. To the best our knowledge, this is the first crystal structure of UgpB protein from a thermophilic organism. Moreover, isothermal titration calorimetry (ITC) experiments exhibit that GPC strongly (Kd = ~140 µM) binds to TTHA0379. Furthermore, other putative ligands such as G3P and maltose show no binding to TTHA0379. Thus, in this study, we designate TTHA0379 as a GPC binding protein belonging to the UgpABCE transporter.

[1] Jiang, D. et al. (2014). FEBS J. 281, 331-341.
[2] Wuttge, M. et al. (2014). Mol. Microbiol. 86, 908-920.

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