

AN MBG FOCUS TALK

hosted by Section for Structural Biology
Dept. Molecular Biology & Genetics, Aarhus University



Tuesday 3 February 2015 at 10:15-11:00

The conference room (3130-303), 3. floor, Gustav Wieds Vej 10C, Aarhus

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Structural basis for transport and regulation in the POT family of peptide/nitrate transporters

The POT or PTR/NRT1 family of plasma membrane transporters play important roles in cellular nitrogen acquisition. Whereas mammals and bacteria obtain the bulk of their nitrogen through the uptake of peptides from the external environment, in plants the POT family has evolved to recognise and transport peptides, nitrate and glucosinylate seed defence compounds. A unique feature of the POT family is the remarkable promiscuity observed within the binding site that enables such a broad range of transported molecules to be moved across the cellular membrane. In humans PTR family transporters are also responsible for the uptake of important drug molecules from the intestinal tract, including beta-lactam antibiotics and peptide based pro-drug therapeutics.

Recently we determined the crystal structure of the NRT1.1 transporter from the model plant *Arabidopsis thaliana*, which has evolved to recognise nitrate in place of small peptides and is uniquely regulated by phosphorylation. In response to falling nitrate levels in the soil NRT1.1 can switch into a 'high affinity' state, thereby negating the immediate effects of sudden falls in soil nitrate concentrations.

In this talk I will present our current research on the bacterial and eukaryotic POT family and discuss our current understanding of the structural and molecular basis for transport in this remarkable and biologically important transporter family.

Host:

Poul Nissen, Dept. Molecular Biology & Genetics, Aarhus University