

**P011** Analysis of the substrate specificity of PAT amino acid transporters and their interplay with other transporters in *Drosophila* S2 cells and *Xenopus* oocytes

**Bruno P. Reynolds, Shubana Kazi, Margrét H. Ögmundsdóttir, Clive Wilson, C. A. Richard Boyd, Deborah C. I. Goberdhan**

*Department of Physiology, Anatomy & Genetics, University of Oxford, South Parks Road, Oxford OX1 3QX*

We have recently shown a novel role for the proton-assisted (PAT) amino acid transporter family in regulating TOR-mediated growth in flies. Here we show that S2 cells express at least four of the eleven *Drosophila* PAT genes, including the characterised PAT transporter PATH. Transport of the characterised PAT substrates, alanine, glycine and proline is stimulated by acidification under sodium-free conditions. These substrates mutually inhibit each other. Analysis of the transport properties of S2 cells is consistent with the presence of more than one proton-coupled transporter system. Selective targeting of PAT transporters with RNAi knockdown suggests that PATs exhibit different substrate selectivity and transport other amino acids in addition to alanine, proline and glycine. We have also extended our analysis of PAT transporter properties to *Xenopus* oocytes. We will discuss our findings and initial studies characterising the interplay between the PATs and other amino acid transporters, such as CD98. These data may ultimately help to design strategies to block PAT function and modulate TOR activity in major human diseases such as cancer and neurodegenerative disorders.