

**P012** Uptake and distribution of radiolabelled amino acids fed to *Arabidopsis thaliana* leaves and whole plants via the transpiration stream

**Daniel Kinsman, Ben Palmer, Paul Quick**

*The University of Sheffield*

Xylem sap carries the supply of nitrogen from plant roots to shoots in the form of nitrate and a range of amino acids. This movement is driven by transpiration, resulting in the arrival of the sap to mature leaves despite the far higher requirement for nitrogen in 'sink' tissues such as developing leaves and fruits. In order to study uptake and translocation of amino acids from the transpiration stream, we have employed a high resolution autoradiography system to image their distribution after short duration pulse-chase feeding experiments. The radiolabel is introduced to the petiole of individual excised leaves, or to whole plants via cut roots to allow direct uptake into the root xylem. Nineteen different amino acids have been imaged to date, revealing characteristic patterns of uptake and distribution. These results will be discussed in relation to the *in vivo* function of amino acid transporters and xylem to phloem transfer of amino acids.