

Nathan Edward Tolbert Endowed Lectureship Dr. Alan Jones University of North Carolina at Chapel Hill

Thursday, April 17, 2008
11:30 a.m.
101 Biochemistry

A novel receptor-GAP in Arabidopsis G protein cycling

Research in the Jones Laboratory

Heterotrimeric G-protein signaling is important for cell-proliferative and glucose-sensing signal transduction pathways in the model plant organism *Arabidopsis thaliana*. AtRGS1 is a seven-transmembrane, RGS-domain containing protein that is a putative membrane receptor for D-glucose. D-glucose alters the interaction between AtGPA1 and AtRGS1 *in vivo* and *in vitro* reconstitution experiments. AtGPA1 is a unique heterotrimeric G-protein alpha (G α) subunit that is constitutively GTP bound given its high spontaneous nucleotide exchange coupled with slow GTP hydrolysis. Biochemical and genetic analyses indicate that regulation of AtGPA1 GTP hydrolysis mediates sugar signal transduction during *Arabidopsis* development, in contrast to animals where nucleotide exchange is the limiting step in the heterotrimeric G-protein nucleotide cycle.

References

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