

# Characterization Of Extra-large G Proteins XLGs In Arabidopsis Thaliana


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**Summary :** Free characterization of extra-large g proteins xlgS in arabidopsis thaliana pdf download - heterotrimeric g proteins are present in plants and participate in regulation of plant cell division and cell signaling in the genome of the model plant species arabidopsis thaliana in addition to gpa1 the sole prototypical g protein alpha subunit gene there exist three genes encoding extra-large gtp-binding proteins xlgS xlg1 at2g23460 xlg2 at4g34390 and xlg3 at1g31930 the three xlg proteins have similar structural features at the carboxy-termini of the xlgS are galpha domains that are homologous to gpa1 while their amino-termini each contain a putative nuclear localization signal nls and a cysteine-rich region xlgS are unconventional g proteins the hypothesis that xlgS may function as galpha subunits in arabidopsis was evaluated gene expression pattern analysis indicates that like gpa1 all three xlg genes are expressed in almost all organs examined and mainly in vascular tissues root and shoot meristems and lateral root primordia results from biolistic bombardment of 35S gfp-xlgS and 35S xlgS-gfp indicate that all three xlgS localize to the nucleus implying that xlgS unlike gpa1 may function in the nucleus despite a lack of phenotype in any single loss-of-function xlg mutant dark-grown xlg1-5 xlg2-2 xlg3-2 triple mutant plants show significantly increased primary root growth relative to wild type whereas the gpa1 mutants have only slightly longer primary roots than wild type the primary root phenotype in the xlg triple mutant can be completely or partially complemented by introduction of the wild type cDNA of any of the xlg genes depending on individual complementation lines confirming that this primary root phenotype is caused by mutations of the three xlg genes there is only one gbeta subunit agb1 in arabidopsis however no correlation was found in this research between xlgS and agb1 in terms of mutant phenotype physical interaction and subcellular localization these data suggest that xlgS unlike gpa1 may function independently of agb1 as negative regulators of cell division xlgS modulate growth and development of primary roots in darkness based on phenotypical analyses of the xlg1-5 xlg2-2 xlg3-2 triple mutant xlgS also negatively regulate growth of lateral roots in response to high temperature 29 C or mechanical stimulation as plant specific proteins regulatory mechanisms of xlgS may differ from those of conventional galphas

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# PDF CHARACTERIZATION OF EXTRA-LARGE G PROTEINS XLGS IN ARABIDOPSIS THALIANA

**arabidopsis extra-large g proteins (xlgs) regulate root ...** - arabidopsis extra-large g proteins (xlgs) ... the arabidopsis thaliana genome has three extra-large gtp-binding ... functional characterization of the three xlg ...

**g-protein  $\alpha$ -subunit (gpa1) regulates stress, nitrate and ...** - keywords arabidopsis thaliana · g-protein ·  $g\alpha$  ... it has been shown that extra-large g-proteins (xlgs) partner with  $g\beta\gamma$  to mediate ... gpa1 mutant characterization