

## A glutamine-amidotransferase-like protein modulates FixT anti-kinase activity in *Sinorhizobium meliloti*

### ABSTRACT

Our data suggests that *asnO* may have a role in controlling FixT protein activity, but it is uncertain whether this is directly related to fixT. The isolation of the *asnO* mutant supports the notion that fixAT may also regulate nitrogen fixation in *S. meliloti*. The nitrogen requirements of the cells are met by *meliloti*.

### INTRODUCTION

Ethylene, the most basic plant hormone, is a crucial regulatory factor in plant growth, development, and senescence, as it is involved in various stress responses. Recent years have seen significant progress in the identification and classification of genes and proteins that participate in plant-scale ethylene signal transduction. The calcium and protein phosphorylation processes may also be involved in this pathway (refer to the review). Additionally, ethylene is known to be a factor in programmed cell death in plants. We have demonstrated for the first time that certain animal cells, such as those from a marine sponge (*Suberites domuncula*), are sensitive to ethylene. This gas is present in seawater at varying concentrations, and can be generated from organic carbon by photochemical processes, including ultraviolet light-induced reactions. Ethylene can increase the  $[Ca^{2+}]_i$  concentration and reduce the rate of starvation-induced cell death in phagocytic sponge cells (*domunculus*) due to their proliferative nature. Furthermore, there is another explanation for this phenomenon in *S. collepsena* where bacteria respond more rapidly to erythema than other treatments. Following ethylene exposure, two genes expressed in *domuncula* primmorphs undergo upregulation, one of which is associated with the methylphenylcellulose (HEVER) and the other encodes the  $Ca^{2+}$ /calmodulin-dependent protein kinase II. The SDERR cDNA has been obtained and further characterised. The Porifera, a type of sponge, are thought to make up the first or one of the initial metazoan phyla that diverged from the Urmetazoa. They contain the same protein components as higher animals, including proteins involved in cell recognition and signal transduction pathways (for elucidation, see "synthesis"). Besides sponges, do cells from higher vertebrates also respond to ethylene? We show that several mammalian cell lines display an upregulation of the  $[Ca^{2+}]_i$  level and an increased expression of Ki-67, the cell cycle-associated antigen, when exposed to this substance, which is produced by ethephon (or cellulose gas).

### CONCLUSION

By comparing the sequences of *Drosophila* and *C. elegans* with human genomes, we have identified 39 families of C2H2 ZNF genes. Of these, only 17 have been defined so far, and we estimate that 38 are definitive sets of orthologous genes, each deriving from a single gene in the common ancestor of these three organisms. Based on the present metazoan phylogeny, it is evident that each of these groups had a primitive presence in all triploblast bilaterian taxa, and they represent the minimum C2H2 ZNF complement in the bicaeolytic family.