

P 34

Expressed Sequence Tags from a Halophyte, *Leymus chinensis* cDNA Library

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Objectives

We constructed a alkali-treated cDNA library of *Leymus chinensis* and sequenced 921 randomly selected clones. The EST database and the associated DNA material can be a useful source for stress-tolerance study, such as alkali stress.

Materials and Methods

1. Materials: leaves of *Leymus chinensis* grown in alkali-treated soil.
2. Methods
 - construction of cDNA
 - EST sequencing
 - analysis of EST sequences using BLAST searches against GenBank.

Results and Discussion

A alkali-treated cDNA library of *Leymus chinensis* was constructed, and we sequenced 1,056 randomly selected clones. Out of 921 clones produced readable sequences, 541 sequences showed homology to previously identified gene products, and 380 matched unknown protein coding regions. By sequence analysis we identified 402 unique clones: 222 showed homology to previously identified genes, 180 matched unknown protein coding regions, 101 of which have been found before in other organism and 79 are completely novel. we classified 44 genes that may be related to stress tolerance of our collection into 8 main groups.

Table 1. Genes that may be related to stress tolerance in *Arabidopsis*

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|---|---|------------------------|---------------------|--|
| cytochrome P450 | Cell rescue, defense, cell death & ageing | Radical scavenging | Gong,Z.-Z. et al. | In press, Plant Physiology 2001 |
| metallothionein | Ion homeostasis | Homeostasis of cations | Gong,Z.-Z. et al. | In press, Plant Physiology 2001 |
| receptor-like protein kinase | Signal transduction | Receptor proteins | Gong,Z.-Z. et al. | In press, Plant Physiology 2001 |
| plasma membrane H ⁺ -ATPase gene | Transport facilitation | Transport ATPases | Harper, J.F. et al. | J. Biol. Chem. 265, 13601-13608 (1990) |
| salt-tolerance zinc finger protein | Cell growth, division & DNA synthesis | Cell growth | Lippuner, V. et al. | J. Biol. Chem. 271 (22), 12859-12866(1996) |
| putative receptor-like prote in kinase | Signal transduction | Receptor proteins | Gong,Z.-Z. et al. | In press, Plant Physiology 2001 |
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