Abstract
The targeting of proteins to cell organelles and membranes, or of proteins destined to secretion, is coordinated by signal sequences located at the 5´-end of their respective genes. A signal sequence trap system was envisaged in which a truncated version of the yeast acid phosphatase pho5 gene lacking the start codon and signal sequence could serve as a reporter gene. A fraction enriched in 5´-end fragments obtained by PCR from a potato guard-cell cDNA library was cloned in frame to the acid phosphatase gene and the acid phosphatase activity was assayed directly in yeast colonies grown on selective medium. Putative signal sequences targeting the acid phosphatase to the membrane or to the outside of the cell were used to screen the cDNA bank in order to recover the original full-size sequence which gave rise to the signal sequence. Two unknown sequences displaying marked tissue-specific expression were retrieved, one of them (YE139) with a higher expression level in green buds and stem cells, and the other one (YE290) with a higher expression level in androceum, gynceceum, and roots. The limitations of the system are further analyzed using other sequences as control.

Keywords
signal sequences, potassium channel, yeast acid phosphatase, library screening.