

EXPANSINS AND THEIR ROLES IN REGULATING PLANT GROWTH

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Expansins are a group of proteins that were initially isolated from cell walls of cucumber hypocotyls and were capable of inducing cell wall extension *in vitro*. Expansin proteins loosen cell walls in an unconventional way by weakening glucan-glucan interactions between wall polymers. Since cell wall loosening is one of the key factors that determine the rate of cell elongation and expansion, expansins are believed to be important for regulating plant growth. Expression of expansin genes in many plant species is closely associated with the cell elongation/expansion process. A molecular genetics approach has provided direct evidence that expansins are capable of controlling cell expansion and thus plant size. Increasing evidence has indicated that expansins are involved in other processes in plants presumably also through softening the cell walls. These functions include seed germination, pollination and fruit ripening. Potential application of using expansin proteins, such as increasing plant growth and controlling fruit quality, will be discussed.