

J-DOMAIN PROTEINS IN TOMATO AND STRAWBERRY THAT ARE HEAT SHOCK PROTEINS AND ARE EXPRESSED IN REPRODUCTIVE TISSUES

Janet Slovin, USDA-ARS-PSI, Fruit Laboratory, Beltsville, MD 20705

Eucaryotes have a large number of proteins containing a conserved J-domain, corresponding to the N-terminal 75 amino acids of *E. coli* heat stress protein, DnaJ. DnaJ homologues in eucaryotes are also referred to as Hsp40. In plants, J-domain proteins have been implicated as molecular chaperones in responses to a wide range of environmental stimuli. They appear to have additional, unknown, functions however, and there are 89 J-domain containing proteins belonging to 51 distinct sub-families in Arabidopsis (Miernyk, 2001). A full-length cDNA (leDJA1) from tomato encoding a 46.8 kD protein with over 70% amino acid identity to known plant Hsp40 sequences was identified. Low levels of leDJA1 transcript were seen in seedlings, young leaves, and stems during normal plant growth. In comparison, leDJA1 mRNA is present in great abundance in fruit from early immature green stage and continuing throughout ripening, and increases upon heat treatment of young leaves. Antibodies specific to a highly conserved domain or the carboxyl (variable) region of leDJA1 were raised. Preliminary experiments with these antibodies showed that in strawberry, as in tomato, specific J-domain proteins are highly expressed in reproductive structures beginning early in floral bud development. We are working to identify genes encoding the reproductive structure J-domain proteins and the heat induced Hsp40s in tomato and strawberry in order to understand the mechanisms by which the plant cell uses the conserved J-domain motif for such apparently diverse functions.