



	Experiment title: Plant small heat shock proteins: soaking experiments on wheat HSP16.9	Experiment number: LS1810
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Report:

The small heat shock proteins (sHSPs) protect cells from stress by binding unfolding proteins. They are involved in a variety of processes, including the prevention of uncontrolled protein aggregation, cytoskeletal protein dynamics and cell death. Human sHSPs have been implicated in neurodegenerative diseases such as Alzheimer, Parkinson, muscle diseases, and cataract formation. In plants sHSPs can reach extremely high levels of expression during heat stress. sHSPs have a monomeric size of 12-30 kDa and consist of a conserved C-terminal domain, homologous to α -crystallin, and a highly variable N-terminal arm. They generally form large assemblies of 200-800 kDa, which differ in quaternary structure. We have recently solved the structure of wheat HSP16.9 by a multiple anomalous dispersion (MAD) experiment on selenomethionine substituted protein which was carried out at BM14 (ESRF, Grenoble). To investigate the binding mechanism of sHSPs we try to bind different substrate analogs to HSP16.9. During this experiment we have collected data on crystals soaked with 5mM 1,1'-bi(4-anilino)naphthalene-5,5'-disulfonic acid (bis-ANS), 1-anilinonaphthalene-8-sulfonic acid (1,8 ANS) and adenosine triphosphate (ATP) respectively. Unfortunately, difference Fourier maps showed that none of the compounds had bound to the protein. In addition, we tested very small crystals of human HSP27, however, the diffraction pattern clearly showed that these crystals were not protein crystals.