

P010 The stressosome: molecular architecture of a signalling hub
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The stressosome co-ordinates the response of *Bacillus subtilis* to the imposition of a variety of physical and environmental, insults. These stresses include fluctuations in salt concentration, the presence of ethanol, changes in pH and even the level of UV light. Despite the obvious and significant differences between these quite different physico-chemical stimuli, the result is the same – the stressosome is phosphorylated by a key kinase to initiate the δ B cascade. The phosphorylation of the stressosome initiates a signal transduction system that up-regulates the expression of stress-responsive genes so that the *Bacillus* can survive the imposition of stress. Hence the stressosome acts as a hub, receiving manifold different stimuli to effect a single outcome. By the single particle analysis of cryo-electron micrographs, we have been able to reconstruct a series of molecular envelopes of the stressosome. These maps have been interpreted at near-atomic resolution with crystal structures of the individual components of the stressosome, to provide the first visualisation of this unique signalling hub. The macromolecular structure provides the signalling cascade with co-operative behaviour, which we have measured in living bacteria, indicating that the response of *B. subtilis* to stress is tuned relative to the magnitude of the insult.