

P061 The role of scavenger decapping enzymes in surviving cellular stress

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Control of mRNA decay is a key stage in the regulation of gene expression. The eukaryotic “scavenger” decapping enzyme plays an important role in this process, catalysing the cleavage of short, capped oligoribonucleotide fragments left over from 3'-5' and 5'-3' decay pathways. Scavenger decapping enzymes are dimers; in yeast, existing as two forms: a homodimer of Dcs1 or a heterodimer of Dcs1 and Dcs2. Previous work determined that Dcs2 inhibits the catalytic activity of Dcs1 in the heterodimer state. Upon various stresses such as glucose starvation, Dcs1 and Dcs2 expression is up-regulated and Dcs2 localises to P-bodies. Viability assays also reveal that Dcs1 and Dcs2 are important in the cellular resistance to heat, salt and DNA damaging agents. To investigate the role of Dcs1/2 during diauxie and other types of stress, microarray analyses were performed, comparing the transcriptomes of wildtype and deletion mutants grown in different conditions. An interesting set of transcripts were altered in the mutant strains, including those encoding mating, cell wall metabolism, carbohydrate metabolism and stress resistance genes. Experiments are ongoing to determine whether these changes are due to changes in mRNA stability or transcription rates.