

Tilieduunta/Osasto — Fakultet/Sektion		Laitos — Institution	
		Institute of Biotechnology	
Tekijä — Författare			
Tambet Teesalu			
Työn nimi — Arbets titel			
Regulation of the HSP150 gene of <i>Saccharomyces cerevisiae</i> by heat and nitrogen starvation			
Oppiaine — Läroämne			
Genetics			
Työn laji — Arbets art		Aika — Datum	Sivumäärä — Sidoantal
Pro gradu		October, 1992	61
Tilvistelmä — Referat			
<p>The expression of the yeast <u><i>Saccharomyces cerevisiae</i></u> heat shock gene HSP150 increases upon transferring the cells from physiological temperature (24°C) to heat shock conditions (37°C).</p> <p>In my work I investigated the dynamics of the HSP150 mRNA level during heat shock after shift of cells from 24°C to 37°C, and during recovery from heat shock after return of cells from 37°C to 24°C, using Northern blot analysis. In response to elevated temperatures the HSP150 mRNA level increased within 15 minutes to its maximum, and stayed there at least for 6 hours. Upon shift to normal temperature the steady state amount of HSP150 mRNA decreased in 30 minutes to preshock level. Similar kinetics of increase and decrease of the mRNA level was seen also in the case of fusion mRNAs, where the 3'-untranslated region of HSP150 was replaced by a terminator of a heat-insensitive yeast gene. This showed that the 3'-untranslated region of HSP150 mRNA is not responsible for the decrease of the mRNA level after return of cells from 37°C to 24°.</p> <p>The HSP150 promoter region contains several heat shock element-resembling regions. In the current study I studied the role of these regions in the heat regulation of the HSP150 gene by using Northern and Western blot analyses of HSP150 promoter deletion mutants. One heat shock element downstream from the TATA box, or a sequence overlapping it, proved to serve as an upstream activation sequence of HSP150.</p> <p>I showed here that the expression of HSP150 is induced in addition to heat, also by nitrogen starvation. Northern blot analysis and immunoprecipitation experiments revealed a pronounced increase in levels of both HSP150 mRNA and the corresponding protein under conditions of nitrogen starvation. Using yeast strains defective in two enzymes of cAMP pathway I showed that the nitrogen starvation induction probably occurs via a mechanism bypassing cAMP.</p>			
Avein sanat — Nyckelord			
Yeast, heat shock gene, transcription, gene expression			
Säilytyspaikka — Förvaringsställe			
The library of Department of Genetics			
Muuta tietoa — Övriga uppgifter			