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Article 3 Report

This was a very interesting article. I liked the research and what they were trying to find. The point of the article was to find out if and how yeast modify their transcriptomes to help them cope with changing environments. There were many different conditions that the yeast were exposed to like heat shock, hydrogen peroxide, amino acid starvation, nitrogen source depletion, and progression into stationary phase. The amount of gene-expression was measured through microarray. In many cases the yeast responded in the same way to different environmental changes, but there were times where the transcription response was decreased or increased. The first figure was very helpful in graphically explaining what was happening to the yeast as they were experiencing each environment. From the figure it seemed that most of the environments produced a similar response from the yeast. The lettered arrows on the sides of the graph showed the similarities of transcription between the different environments. The width of the arrow corresponds to the common lengths of color that are seen on the graph. So for example arrow F is corresponding to the long band of green that is shown in the environments of nitrogen depletion, stationary phase, diauxic shift, diamide, amino acid starvation, variable temperature shocks, 37⁰C heat shock, continuous carbon sources, DTT, and hydrogen peroxide. Red indicates an increase of transcription, green indicates a decrease in transcription, black is where there was no detection, and grey is where data is missing. Figure 2 showed the average amount of change within the gene expression as the yeast were being exposed to heat shock. Before the steady state it is evident that there are drastic changes in both the increase and decrease of gene expression. Through experimenting with the yeast the researchers were able to find out key factors about the Environmental Stress Response (ESR). They noticed that the ESR was initiated when there were any abrupt changes in the environment. For example they noticed that when taking the yeast from a standard temperature environment and putting them in an extremely hot environment the ESR was initiated and finally leveled off and the yeast were normal. However when taking yeast that was grown at high temperatures and putting them in an extremely low temperature environment, the ESR was suppressed until the yeast gene expression leveled out and the yeast became use to the environment. From this they concluded that the ESR was an adaptive response to conditions that were not optimal to the yeast. I feel that the information in this paper can definitely explain robustness. Once again robustness was defined as the ability of an organism to adapt to the changes in its environment. This paper explains just that. It is actually exactly what the paper talks about. The data from this paper can be used to help in explaining ability of yeast and other organisms to survive stressful and unstable environments.