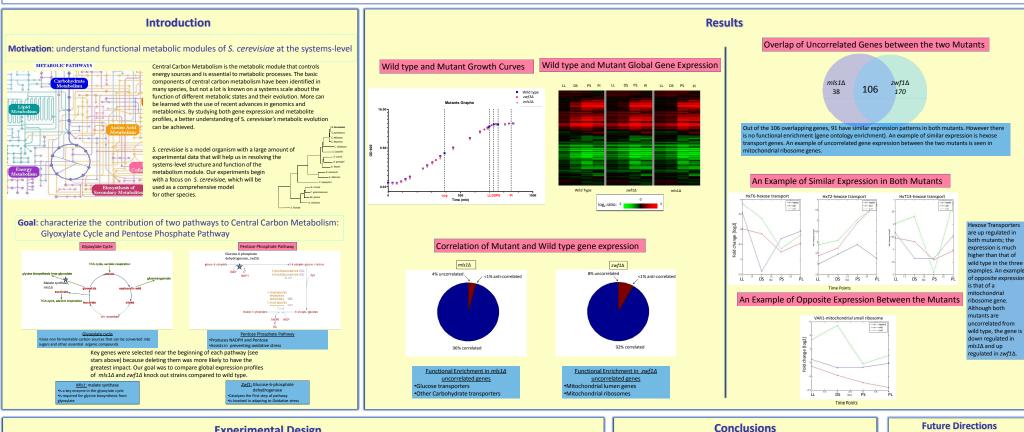
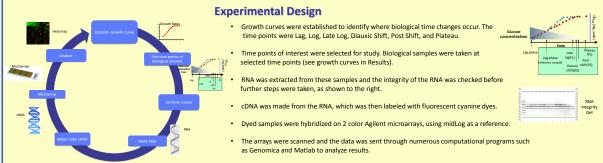
## **Functional Genomics Analysis of Yeast Metabolic Mutants:** The Glyoxylate Cycle and Pentose Phosphate Pathway

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Zwf1 is part of the oxidative branch of Pentose Phosphate Pathway and its reactions are critical for the generation of NADPH. NADPH is an essential cofactor of enzymes that defend the cell from oxidative damage, so inhibiting the Pentose Phosphate Pathway can affect oxidative stress protection. Oxygen free radicals are generated in the mitochondria causing oxidative stress, which may be why mitochondrial ribosome genes were up-regulated in order to recover from the stress. The Pentose Phosphate Pathway also produces sugars, which may explain why

By removing MIs1, the Glyoxylate Cycle is blocked and the cell tries to compensate by importing carbohydrates, explaining why hexose transporters were up-regulated. MIs1 also interacts with the TCA cycle, which is found in the mitochondria. If the cycle was inhibited by the absence of MIs1, this could explain why mitochondrial ribosome genes were down-regulated.

The overlap of gene expression in the different pathways is very interesting. The fact that 106 of the uncorrelated genes were common between the mutants reveals previously unexpected connectivity in the Glyoxylate Cycle and the Pentose Phosphate Pathway.

 Combining metabolite profiles with global expression profiles will allow us to formulate a higher resolution model of the metabolic module

•Test mutant strains affecting different pathways of Central Carbon Metabolism and/or different mutants in the two pathways studied

## **Literature Cited**

Saccharomyces Genome Database, http://www.ve

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