# Minreg: Inferring and Active Regulator Set for Molecular Pathways

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Regulatory relations between genes are an important component of molecular pathways. Here, we devise a novel global method that uses a set of gene expression profiles to find a small set of relevant active regulators and identifies the genes that they regulate. Our algorithm is capable of handling a large number of genes in a short time and is robust to a wide range of parameters.

We use our model to automatically provide functional annotation of regulators and identify the logic of regulation. Our global approach characterizes each regulator according to on significant properties of its set of regulatees. This global interpretation provides both statistical robustness and biological generalization.

We apply our method to a combined dataset of Saccharomyces cerevisiae expression profiles, and validate the resulting model of regulation by cross-validation and extensive biological analysis of the selected regulators and their derived annotations.