

Metabolomic Analysis of Perturbed Organisms

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Insight into how an environmental or genetic perturbation affects an organism's biological pathways can be gained via comparison of the organism's metabolites produced under standard conditions versus perturbed conditions. We have utilized mass spectrometry for metabolic analysis in two separate projects. First, we sought to study the effects of lithium cobalt oxide (LCO) nanoparticles on *Daphnia magna*. LC-MS analysis of *D. magna* exposed to LCO versus unexposed exhibited marked changes in their metabolites, indicating a metabolic response of the organism to the nanoparticle. The aim of the second project is to discover novel natural products from *Streptomyces* strains. We created ribosome mutants of *S. coelicolor* by selecting antibiotic resistant colonies from six different antibiotics. The secreted secondary metabolites of the various mutants were examined by mass spectrometry. We are currently pursuing potential lead compounds to determine if they are newly produced natural products.