

## 128. Quantitative Metabolic Modeling at Fuel Synthesis Division (JBEI)

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**Project Goals :** The goal of the Quantitative Metabolic Modeling directorate at Fuels Synthesis at the Joint BioEnergy Institute (JBEI) is to develop models of metabolism which are both quantitative and predictive, in order to improve biofuel production in a rationally directed fashion. We use experimental, computational and mathematical tools to achieve this goal.

Our efforts are divided into three main areas: Flux-based models of metabolism: We have developed a method to use <sup>13</sup>C carbon labeling experimental data to constrain fluxes for genome-scale models. The measurement of fluxes for comprehensive genome-scale metabolic model allows us to improve the yield of fatty-acid derived biofuels in *S. cerevisiae*.

Data mining of high-throughput -omics data: We are using the data coming from high-throughput proteomics experiments to adjust promoter strength and improve production of limonene and bisabolene. Development of web-based tools for -omics data visualization and storage: We have created two tools: the Experiment Data Depot (EDD) and the Multiomics Visualization Tool (MvT). The EDD provides not only a storage site for metabolic data but also a visualization tool and an easy way to download data in SBML format, which can be used for flux analysis and integrated with (e.g.) the DOE KBase. MvT allows for the visualization of metabolic maps at different scales of resolution using an interactive interface.