

### SC3.1 - Genome-Scale Metabolic Model of *Chromochloris* , an Emerging Model Organism for Sustainable Fuel Production

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One of the main challenges of developing alternative energy sources is the ability to compete economically with fossil fuels. One approach to make bioproduction more economical is to engineer organisms which can produce fuels as well as value added molecules. *Chromochloris zofingiensis*, a green alga, can accumulate up to 40% of their dry weight as triacylglycerols making it an excellent candidate for biofuels production. It also accumulates high amounts of astaxanthin, a high value ketocarotenoid that can be used as a pharmaceutical, nutraceutical, cosmetic, or as food or feed supplements<sup>1-3</sup>. Naturally derived astaxanthin has a market price of approximately \$7,000 per kilogram. The co-production of this molecule product makes the economic feasibility of biodiesel production by *C. zofingiensis* much more attainable. In order to investigate the metabolic capacity of this organism for both fuel and astaxanthin production, we have reconstructed the metabolic network from the published genome. We will present our work to date and results of simulations to maximize the production of both products. (Research supported by grant DE-SC0018301 from the Department of Energy.)

#### References

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