



BİLKENT UNIVERSITY
MOLECULAR BIOLOGY AND GENETICS
DEPARTMENTAL SEMINAR

“OMICS” characterization of microalgae: Implications for improved biochemicals production”

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The greatly minimized acreage estimates, high lipid or starch content, and biomass productivity rates surpassing those of terrestrial plants suggest that value added biochemicals produced by microalgae may circumvent many of the limitations ascribed to other organisms. The limited availability of genome sequences for non-model microalgae for biochemical production precludes the adoption of a rational approach to metabolic engineering-based feedstock optimization studies. To fill this knowledge gap, my group has applied bioprocess engineering, next generation DNA sequencing technologies, and computational biology tools to understand the molecular mechanisms responsible for high density triacylglycerol (TAG) production and synthesis of several value-added products in oleaginous microalgae. These systems biology based efforts have yielded massive amounts of quantitative gene expression and metabolomics data to explore the regulation of enzymes responsible for lipid synthesis and other value added chemicals under tested growth conditions. Results to be presented at this seminar will include the constructed metabolic pathways involved in the biosynthesis and catabolism of fatty acids in marine and freshwater microalgae as well as hypotheses for the mechanisms that oleaginous microalgae use to up-regulate lipid and terpenoid production under nutrient stress. Overall, high-throughput omics data provide a foundation for molecular genetics and functional genomics required to direct metabolic engineering efforts to enhance both quality and quantity of microalgae based products for food, energy, and pharmaceutical industries.

Date-Time : Wednesday, April 19, 2017 – at 15:40

Place : SBZ-14

Host : Murat Alper Cevher