Recently there has been a lot of interest in having bio-plastics replace petrochemical plastics. This interest is driven by the world’s declining petroleum resources and the desire to create economical and earth-friendly bio-plastics. Polyhydroxybutyrate (PHB), one such bio-plastic, can be produced and degraded by microorganisms naturally. To produce this biodegradable PHB more efficiently, the PHB synthesis genes have been inserted into the natural bioproduction environment of *E. coli*.

I am working on modeling the bioproduction of PHB in *E. coli* cells through the tools of flux balance analysis. The goal of this research is to optimize the bioproduction of PHB in *E. coli* by modifying the metabolic pathways of the cell.

The primary objective of this work is to contribute to the development of cost effective industrial PHB production.