Modeling a Defined Mixed Culture for the Efficient Consumption of Glucose/Xylose Mixtures

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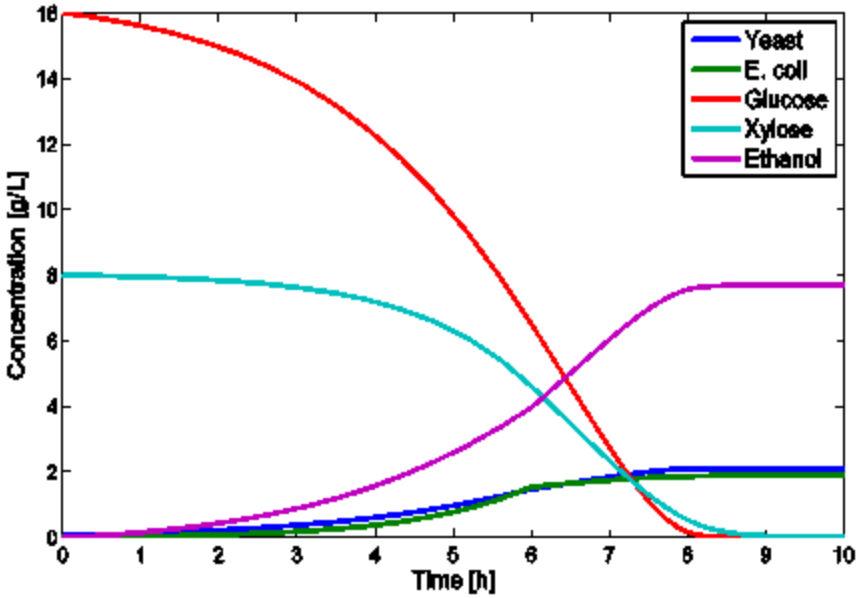

Dynamic flux balance prediction of cell biomass, sugar consumption, and ethanol production by the co-culture

Many engineered microbes exhibit sequential uptake of sugars when consuming mixed substrates. One way to avoid this problem is to co-culture microbes that are individually designed to consume one specific substrate. My research focuses on a case where glucose and xylose are metabolized by yeast and a mutant *E. coli* strain respectively.

Dynamic flux balance analysis was used to predict the uptake of the substrates and their conversion to ethanol by this consortium. The model assumes that both microbes grow optimally and consume their substrate without adversely affecting the other. Under these conditions, the mixed culture produces ethanol at twice the productivity of mono-cultures.

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