1 Flux Balance Analysis Notes

1.1 Dynamic flux balance analysis for synthetic microbial communities

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DFBA → extension of FBA, allows dynamic effects of extracellular env. on microbial metabolism to be **predicted + optimized**. key reqs.:

- incorporation of individual species metabolic reconstructions
- formation of extracellular mass balances
- identification of substrate uptake kinetics
- numerical solution of the coupled linear program/differential equations
- model adaptation for common, suboptimal growth conditions and identified species interactions

FBA → stoichiometric cell models representing biochemical rxns. in a metabolic network

- list of metabolites (species)
- list of relevant intracellular rxns.
- stoichiometric coefficients for every species

* each intracellular metabolite is assumed to exhibit negligible accumulation s.t. the fluxes producing the metabolites are balanced by the fluxes consuming the metabolite