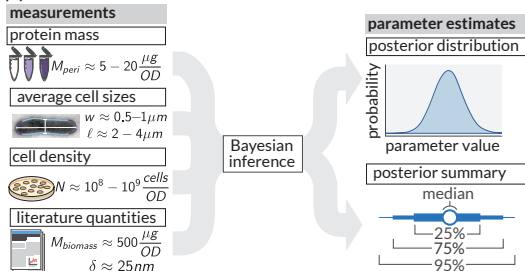


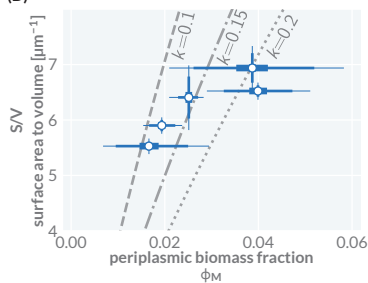
(B) density-dependent scaling of surface area to volume

$$\frac{S}{V} \sim \frac{\text{periplasmic biomass fraction}}{\text{biomass density ratio}} \frac{1}{\delta} = \frac{\phi_M}{k\delta}$$

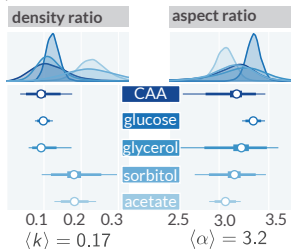
(C)



(D)



(E)



(F)

crowder model for control of cell-width

$$w \sim \frac{12\alpha\delta k}{3\alpha - 1} \frac{1}{\phi_M}$$

relative crowding coefficient

(G)

