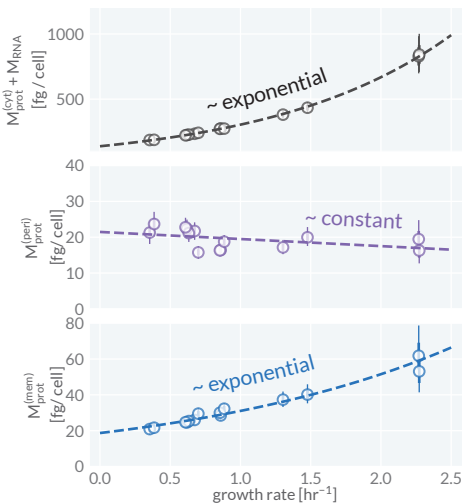
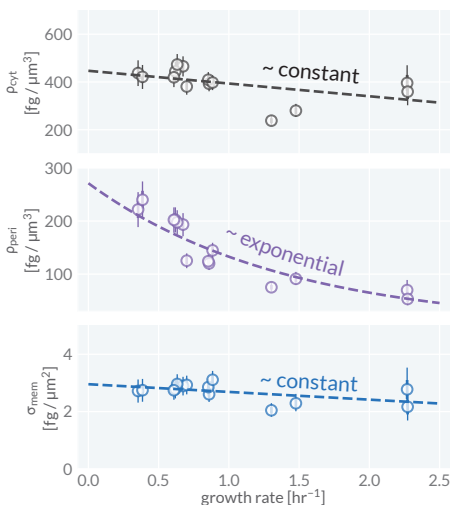


(A) compartment biomass load



(B) compartment biomass density



(C) density maintenance theory

$$\frac{S_A}{V} = \frac{\text{cytoplasm-membrane density ratio} \cdot \kappa \phi_{\text{mem}}}{2(1 + \beta \phi_{\text{rib}} - \phi_{\text{mem}} - \phi_{\text{peri}})}$$

Legend:

- S_A : surface area
- V : volume
- $\frac{S_A}{V}$: surface-to-volume ratio
- κ : cytoplasm-membrane density ratio
- $\beta \phi_{\text{rib}}$: RNA-protein ratio
- ϕ_{mem} : membrane proteome fraction
- ϕ_{peri} : periplasmic proteome fraction

