

(A) density maintenance theory

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

Labels for the equation components:

- S_A : surface area
- V : volume
- κ : cytoplasm-membrane density ratio
- ϕ_{mem} : membrane proteome fraction
- β : RNA-protein ratio
- ϕ_{rib} : ribosomal allocation
- ϕ_{peri} : periplasmic proteome fraction

