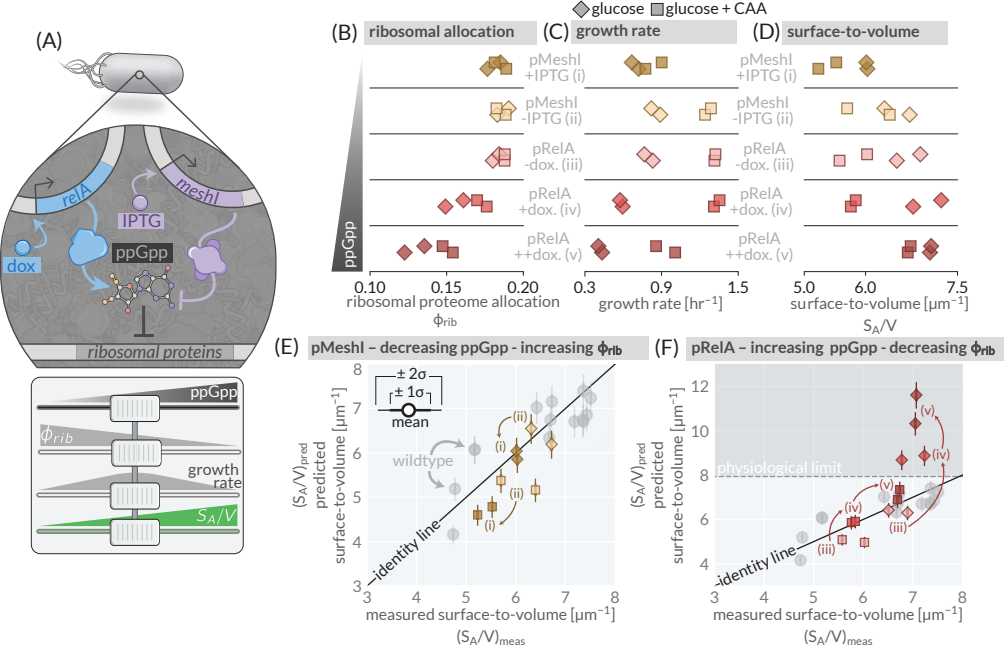
(A)
relA
meshI
IPTG
dox
ppGpp
ribosomal proteins
ppGpp
ϕ_{rib}
growth rate
S_A/V
glucose
glucose + CAA
(B) ribosomal allocation
(C) growth rate
(D) surface-to-volume
pMeshI +IPTG (i)
pMeshI -IPTG (ii)
pRelA -dox. (iii)
pRelA +dox. (iv)
pRelA ++dox. (v)
ppGpp
0.10
0.15
0.20
ribosomal proteome allocation
ϕ_{rib}
0.3
0.9
1.5
growth rate [hr^{-1}]
5.0
6.0
7.5
surface-to-volume [μm^{-1}]
S_A/V
(E) pMeshI – decreasing ppGpp - increasing ϕ_{rib}
± 2σ
± 1σ
mean
wildtype
identity line
$(S_A/V)_{pred}$
predicted surface-to-volume [μm^{-1}]
measured surface-to-volume [μm^{-1}]
$(S_A/V)_{meas}$
(F) pRelA – increasing ppGpp - decreasing ϕ_{rib}
physiological limit
identity line
$(S_A/V)_{pred}$
predicted surface-to-volume [μm^{-1}]
measured surface-to-volume [μm^{-1}]
$(S_A/V)_{meas}$