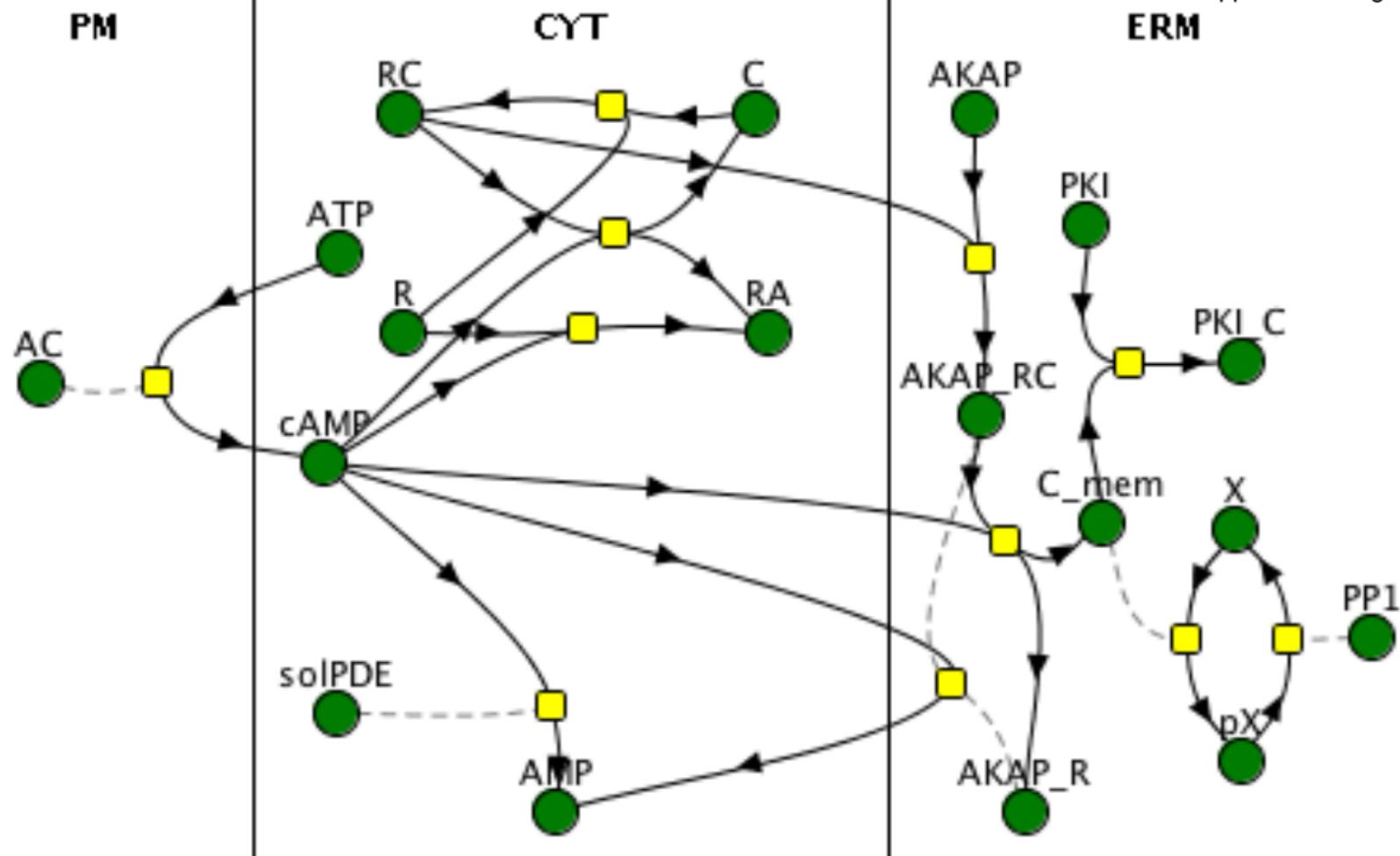
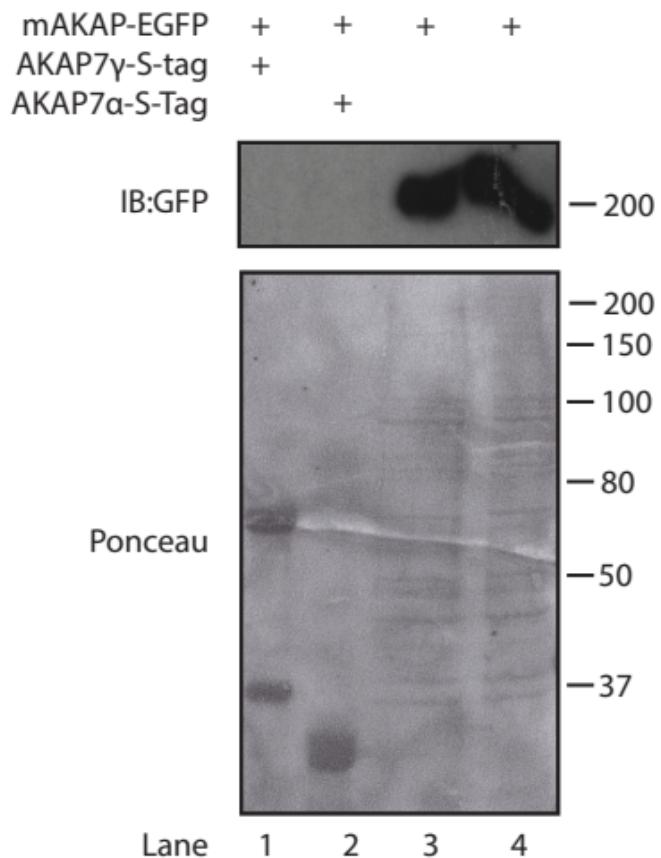


Reaction	Kinetics	kcat	Km	Kf	Kr	Reference
ATP --> cAMP	Henri-Michaelis-Menten	12 s ⁻¹	11 μm			BRENDA Database
X --> pX	General	22.6 s ⁻¹	65.2 molecules/μm ²			Masterson et. Al 2011
pX --> X	Henri-Michaelis-Menten	2.4 s ⁻¹	65.0 molecules/μm ²			BRENDA Database
cAMP --> AMP (cyt)	Henri-Michaelis-Menten	2.0 s ⁻¹	5.5 μm			BRENDA Database
cAMP --> AMP (mem)	Henri-Michaelis-Menten	0.098 s ⁻¹	5.5 μm			
R + cAMP --> RA	Mass Action			100 μm ⁻¹ s ⁻¹	2 s ⁻¹	
C + R --> RC	Mass Action			0.31 μm ⁻¹ s ⁻¹	0.00023 s ⁻¹	Diskar 2010
RC + cAMP --> C + RA	Mass Action			1 μm ⁻¹ s ⁻¹	0.177 μm ⁻¹ s ⁻¹	Diskar 2010
AKAP_RC + cAMP --> AKAP_R + C_mem	Mass Action			1 μm ⁻¹ s ⁻¹	0.177 μm ⁻¹ s ⁻¹	Diskar 2010
AKAP + RC --> AKAP_RC	Mass Action			1 μm ⁻¹ s ⁻¹	0.005 s ⁻¹	Herberg et. al. 2000
PKI + C_mem --> PKI_C	Mass Action			1 μm ⁻¹ s ⁻¹	0.01 s ⁻¹	



Supplemental Figure 2

A**B**