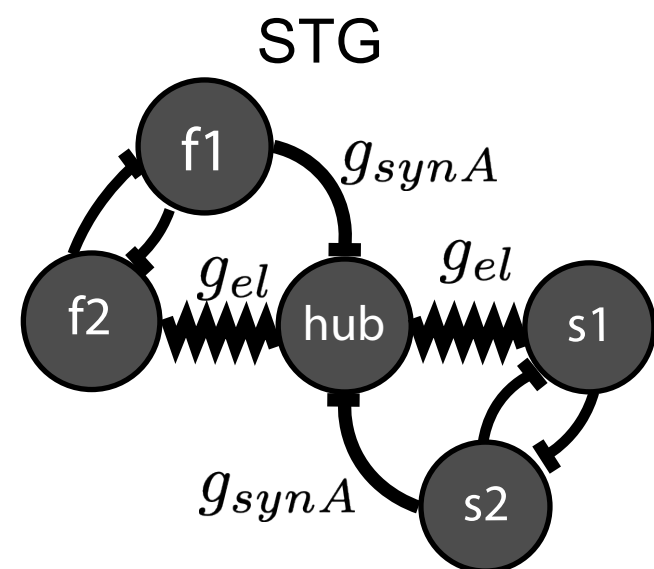
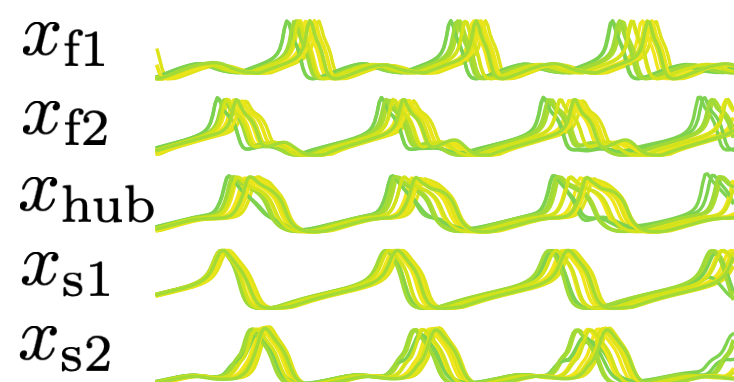
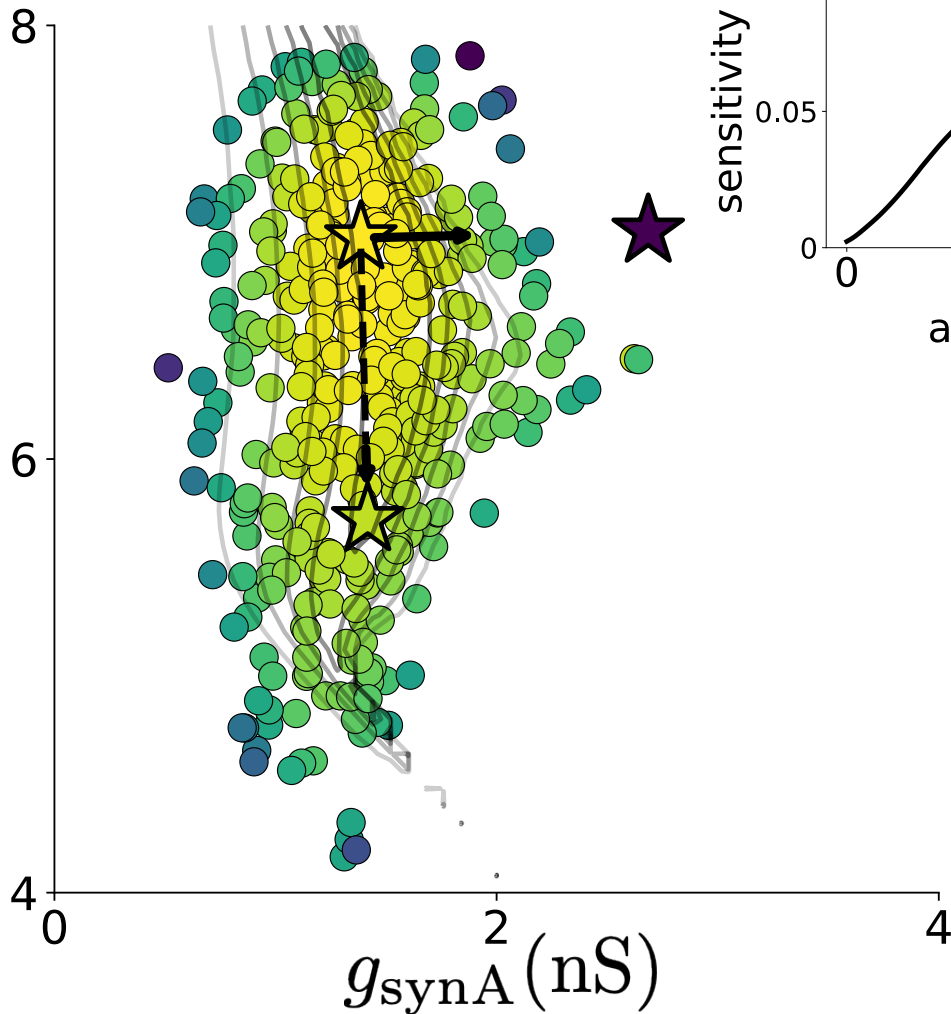
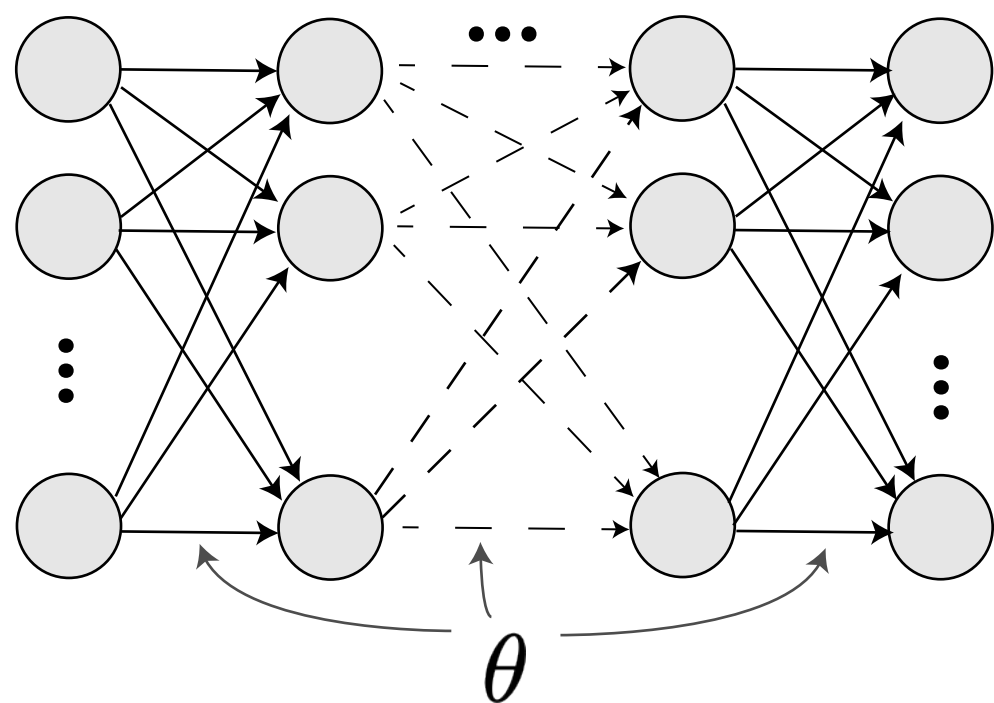


A
biological model

network syncing
emergent property

Emergent property inference (EPI)
B
 $g_{el} \text{ (nS)}$

 x_{f1}
 x_{f2}
 x_{hub}
 x_{s1}
 x_{s2}
synced
synced
unsynced
C
deep probability distribution
random input samples
 $\omega \sim q_0$

inferred distribution samples
 $z \sim q_{\theta}$
D

$$\operatorname{argmax}_{q_{\theta} \in \mathcal{Q}} H(q_{\theta}(z))$$

$$\text{s.t. } \underbrace{E_{z \sim q_{\theta}}}_{\text{model parameter samples}} \left[\underbrace{E_{x \sim p(x|z)}}_{\text{model simulations}} \left[\underbrace{T(x)}_{\text{emergent property statistics}} \right] \right] = \underbrace{\mu}_{\text{emergent property values}}$$