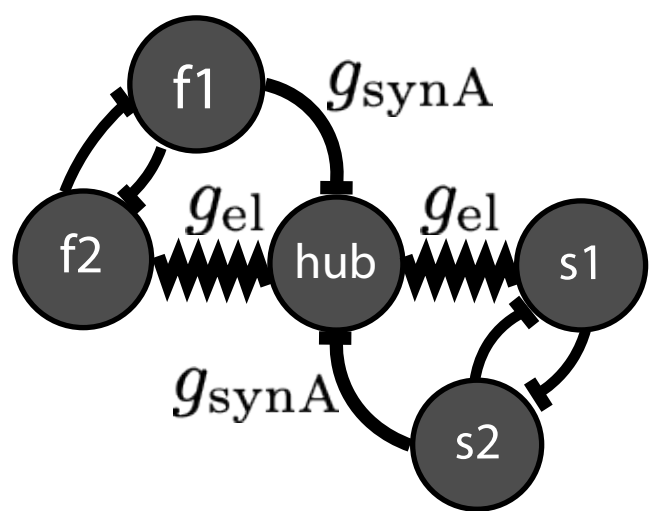


**A****Biological model:**

STG

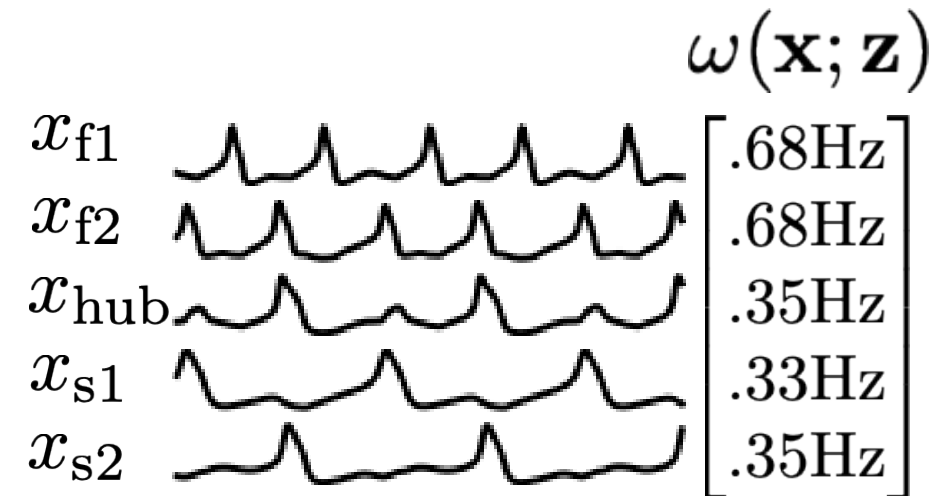


$$\mathbf{z} = \begin{bmatrix} g_{el} \\ g_{synA} \end{bmatrix} \quad \mathbf{x} = \begin{bmatrix} x_{f1} \\ x_{f2} \\ x_{hub} \\ x_{s1} \\ x_{s2} \end{bmatrix}$$

$$C_m \frac{d\mathbf{x}}{dt} = -h(\mathbf{x}; \mathbf{z}) + d\mathbf{B}$$

**B****Emergent property statistic:**

spiking frequency

**C****Emergent property:**

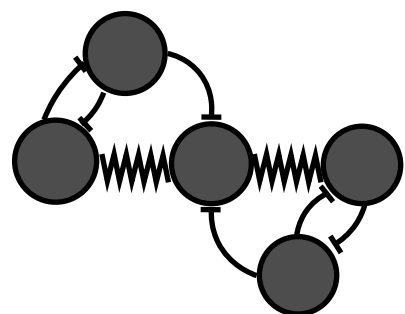
intermediate hub frequency

$$\mathbb{E}_{\mathbf{z}, \mathbf{x}} [\omega_{hub}(\mathbf{x}; \mathbf{z})] = 0.55\text{Hz}$$

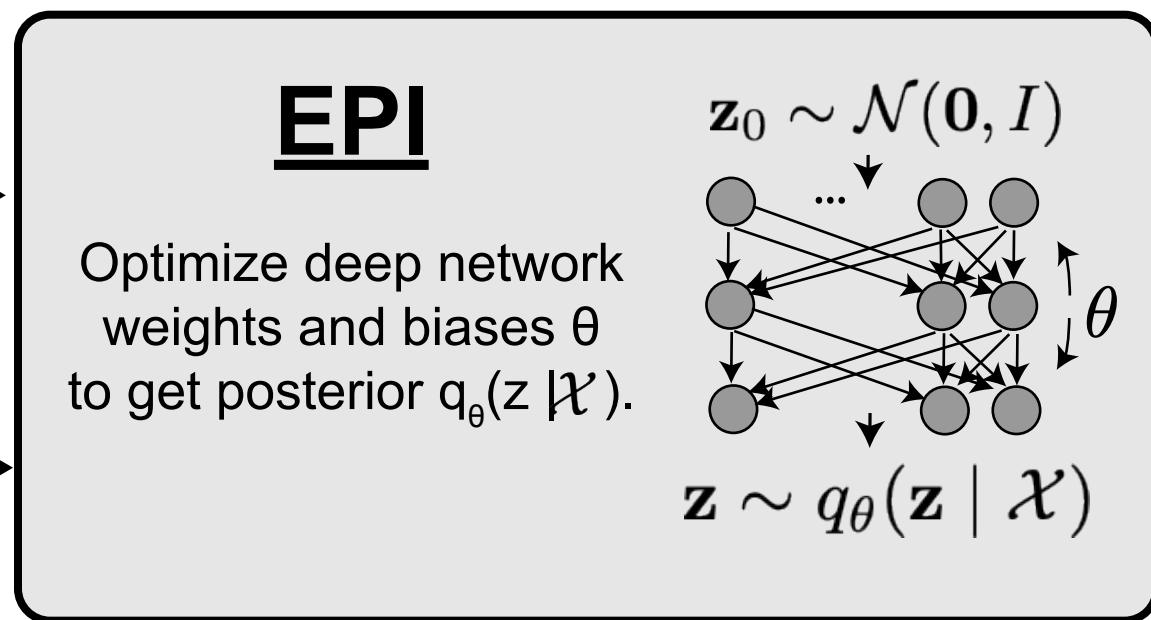
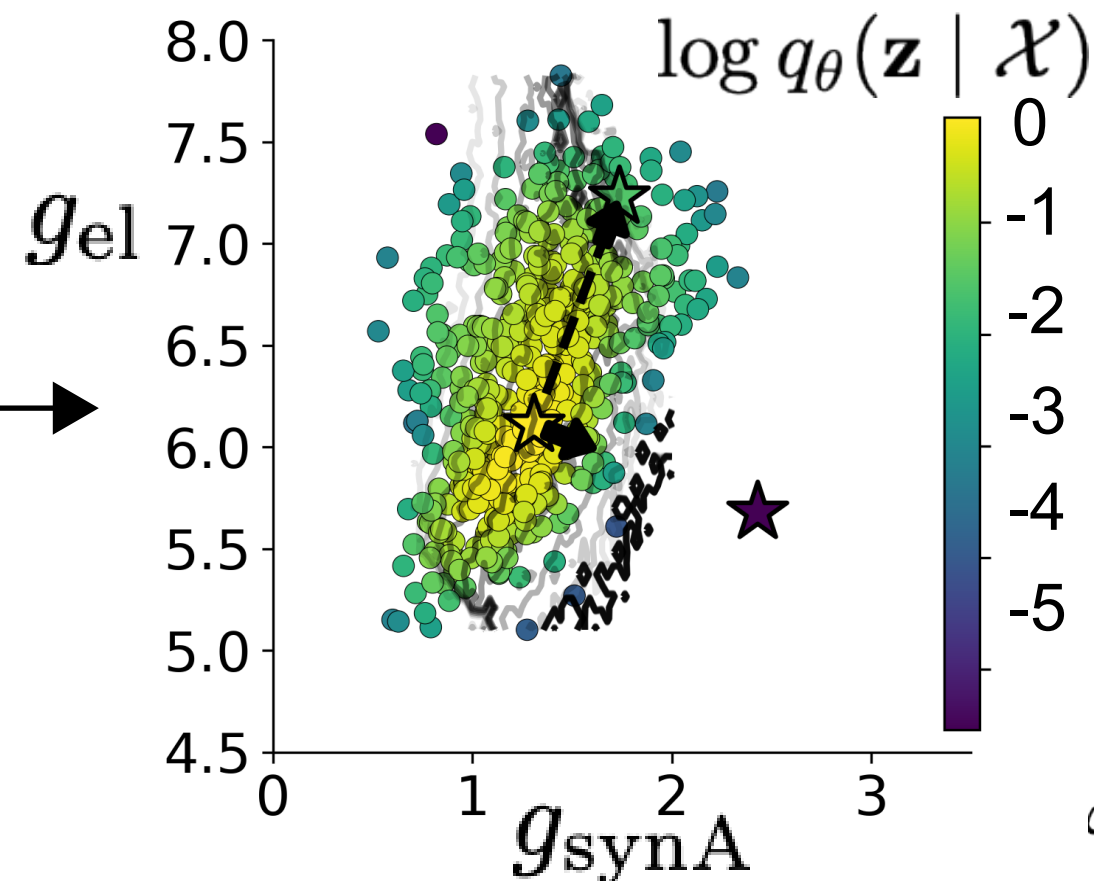
$$\text{Var}_{\mathbf{z}, \mathbf{x}} [\omega_{hub}(\mathbf{x}; \mathbf{z})] = 0.025^2\text{Hz}^2$$

**D****Emergent property inference**

biological model



emergent property

**E****EPI posterior****F****Posterior simulations**