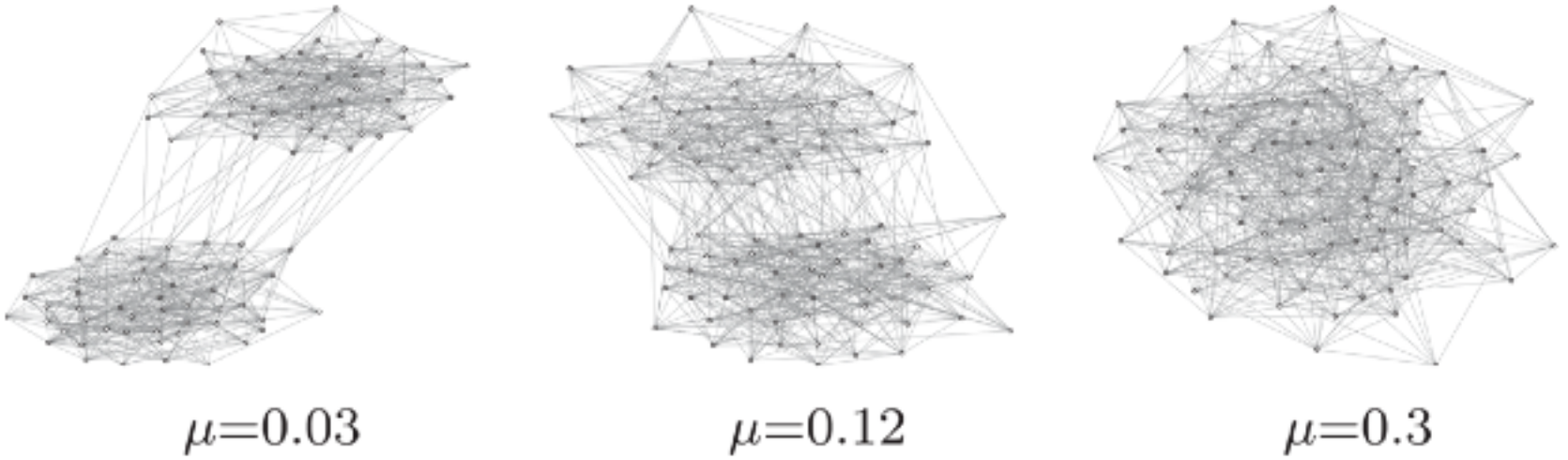
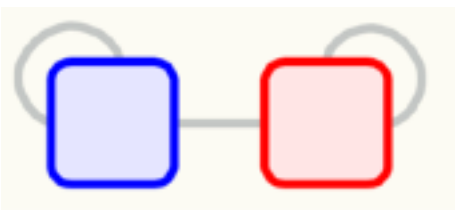
21

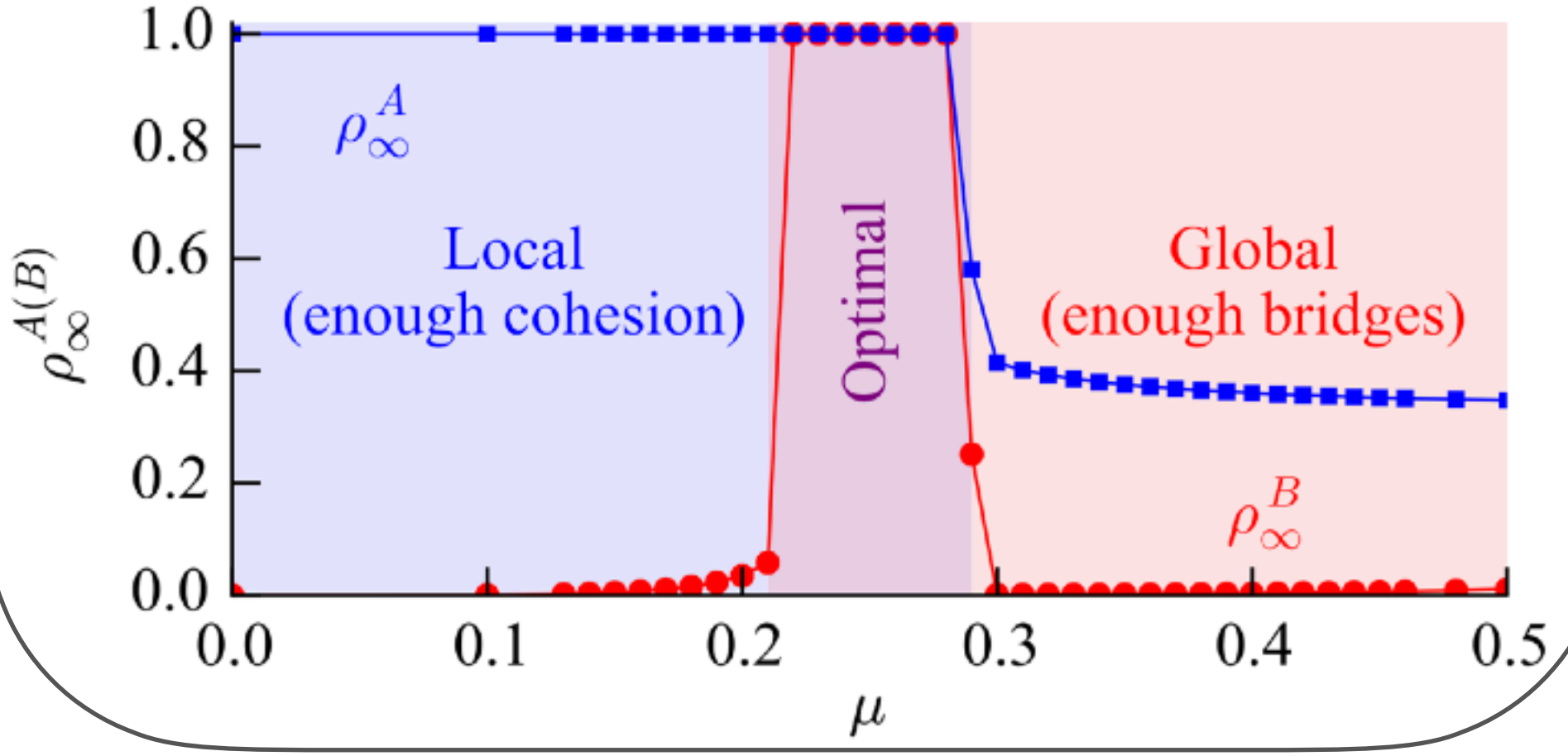
[1] Phys. Rev. Lett. 113, 088701 (2014)

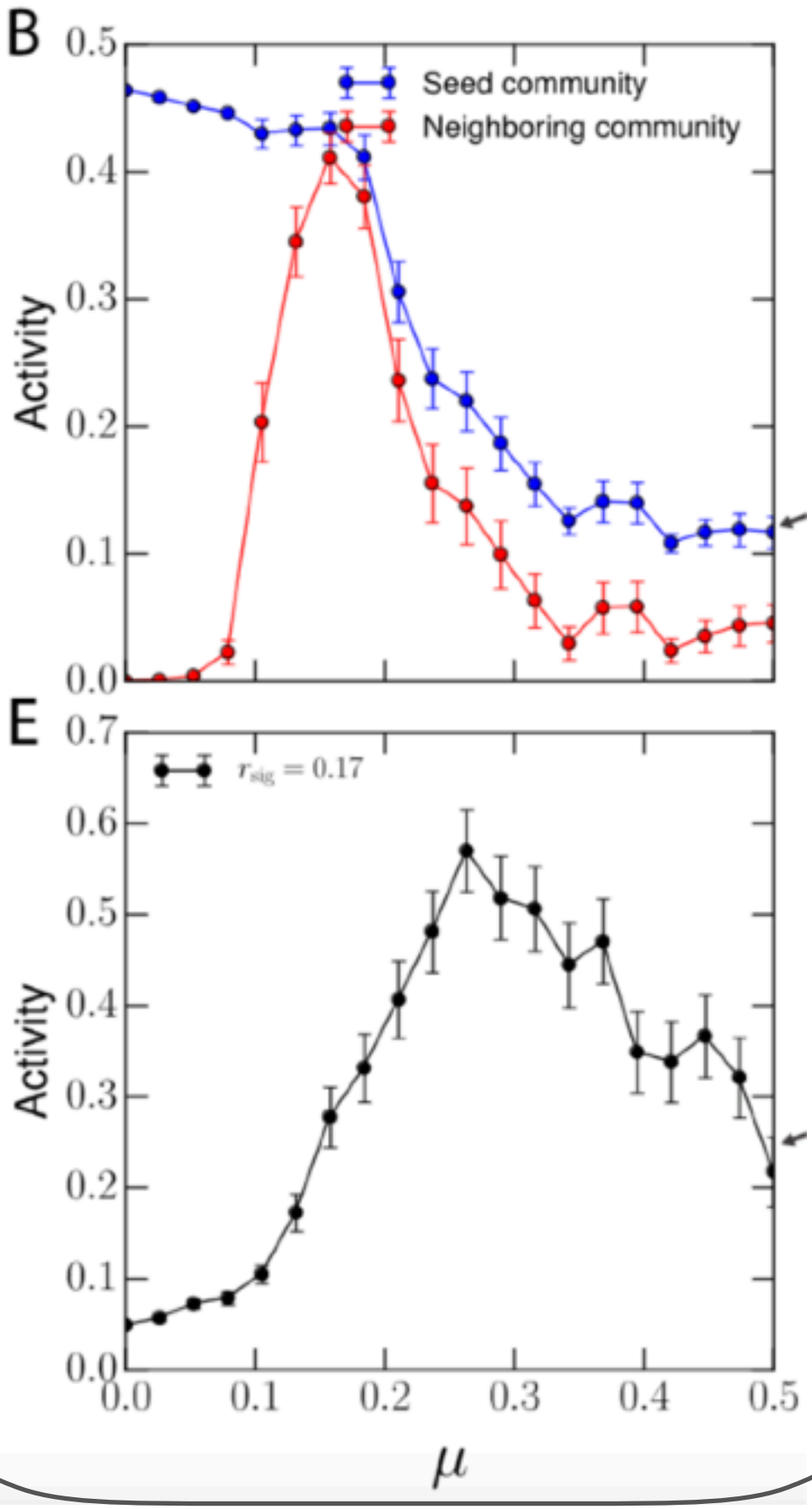
[2] Netw. Neurosci. 3, 551–566 (2019)

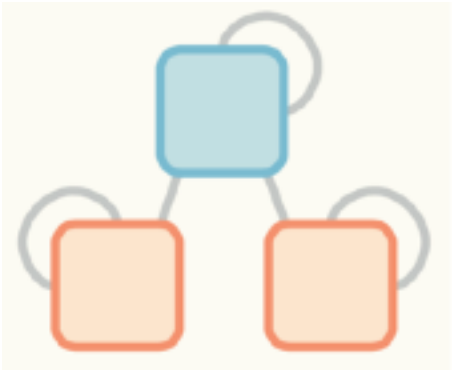
The importance of modular architecture

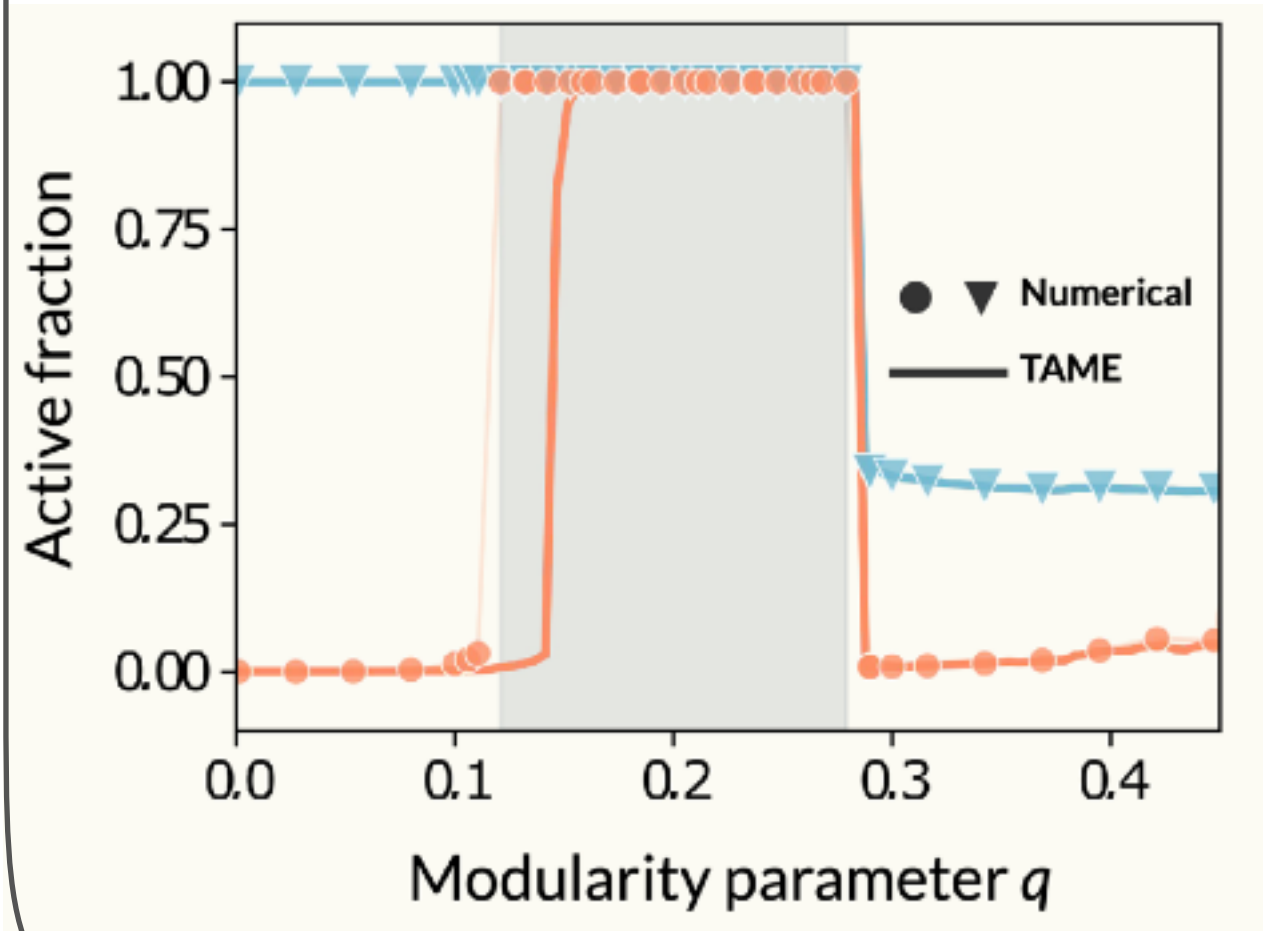

μ=0.03
μ=0.12
μ=0.3




1.0
0.8
0.6
0.4
0.2
0.0
$\rho_\infty^{A(B)}$
ρ_∞^A
Local
(enough cohesion)
Optimal
Global
(enough bridges)
ρ_∞^B
0.0
0.1
0.2
0.3
0.4
0.5
μ


B
Seed community
Neighboring community
Activity
0.0
0.1
0.2
0.3
0.4
0.5
E
$r_{sig} = 0.17$
Activity
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.0
0.1
0.2
0.3
0.4
0.5
μ




1.00
0.75
0.50
0.25
0.00
Active fraction
0.0
0.1
0.2
0.3
0.4
Modularity parameter q
Numerical
TAME

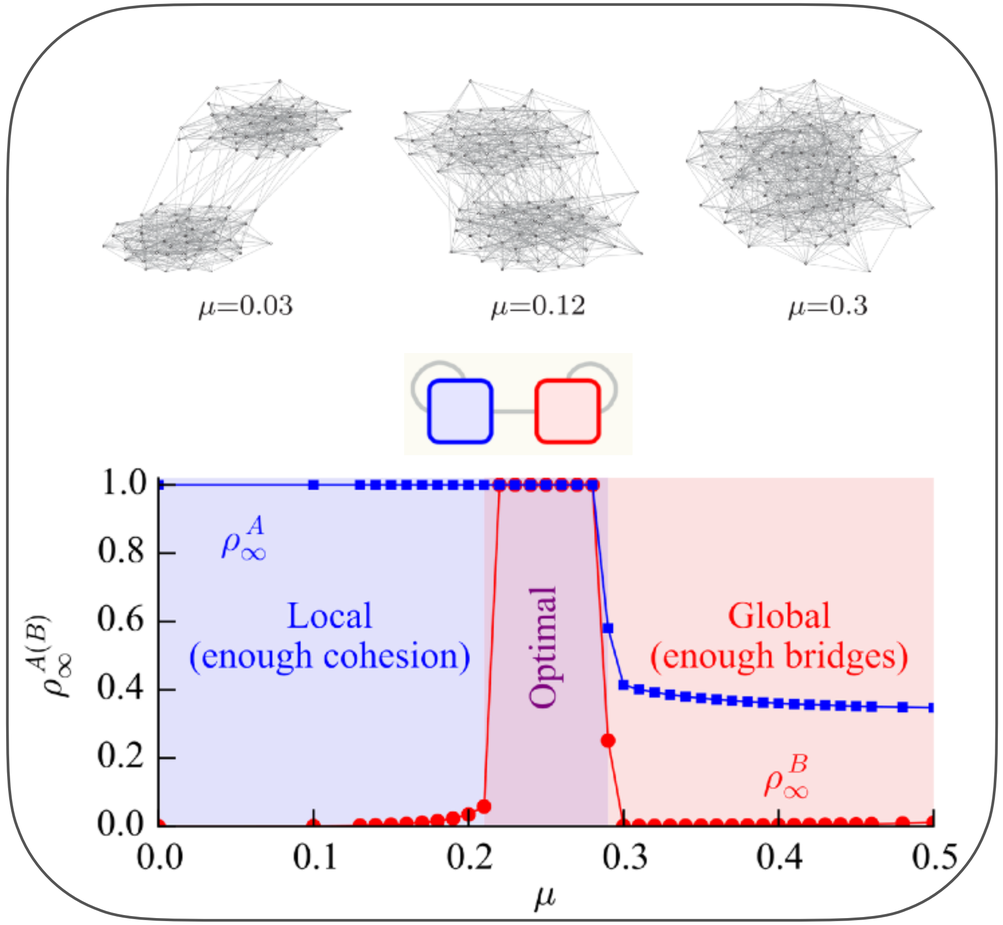
The modular architecture has a major influence of several dynamical processes.

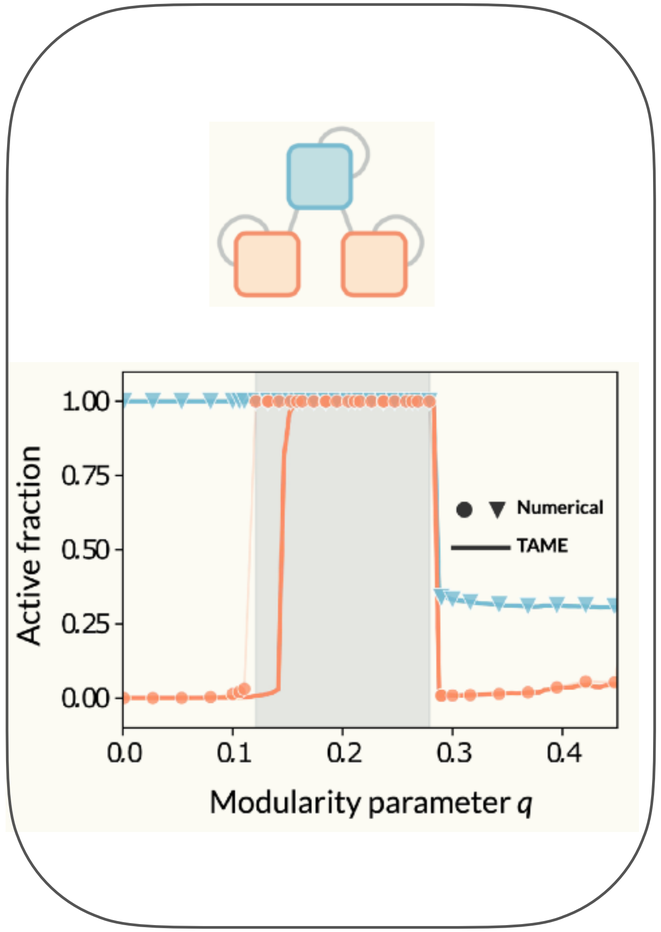
- information diffusion [1]
- neural dynamics and memory performance [2]
- ...

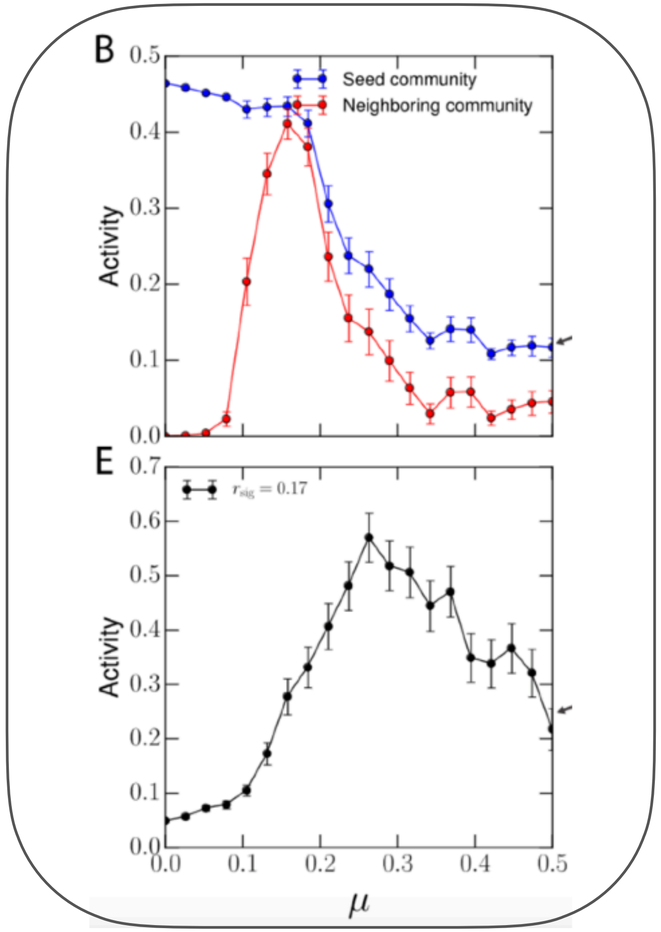
The importance of modular architecture

The modular architecture has a major influence of several dynamical processes.

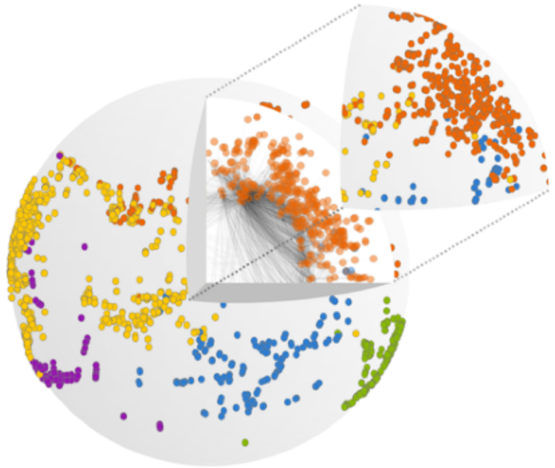
- ▷ information diffusion [1]
- ▷ neural dynamics and memory performance [2]
- ▷ ...







[1] Phys. Rev. Lett. 113, 088701 (2014)
[2] Netw. Neurosci. 3, 551–566 (2019)

A hyperbolic solution to modular architecture?

The $\mathbb{S}^1/\mathbb{H}^2$ models are easily generalizable to arbitrary dimensions.
This *extra space* allows for a rich modular architecture.