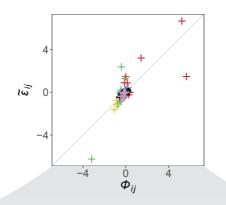
Effective interaction averaged across backgrounds

$$\widetilde{\varepsilon}_{ij} = \frac{\langle \varepsilon_{ij} \rangle \langle \Delta F_j \rangle_{B(i)}}{\sum_{k \neq i} \langle \Delta F_k \rangle_{B(i)}^2}$$

Effective interaction from one- and two-species communities

$$\Phi_{ij} = \frac{\varepsilon_{ij}(0) F_j(0)}{\sum_{k \neq i} F_k^2(0)}$$



Ecological data sets:

- Above-ground plant biomass
- + Phytoplankton biomass
- + Bacterial xylose oxidation
- + Bacterial starch hydrolysis
 + Bacterial butyrate secretion
 + Bacterial pyoverdine secretion

Genetic data set:

E. coli fitness

