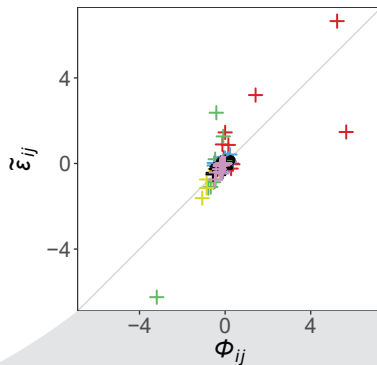Effective interaction averaged across backgrounds

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

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

Bottom panels (left to right): E. coli fitness (R2 = 0.43); Above−ground plant biomass (R2 = 0.87); Phytoplankton biomass (R2 = 0.58); Bacterial xylose oxidation (R2 = 0.59); Bacterial starch hydrolysis (R2 = 0.46); Bacterial butyrate secretion (R2 = 0.00); Bacterial pyoverdine secretion (R2 = 0.00)