

**Table S9. Spearman correlation of participation coefficient for orthologs between species.**

| networks 1 and 2           | $\rho$      | p-val   | empirical p-val |
|----------------------------|-------------|---------|-----------------|
| <b>Fly and Human-all</b>   | <b>0.19</b> | $9e-04$ | $< 0.001$       |
| <b>Yeast-hq and Athal</b>  | 0.18        | 0.2     | 0.090           |
| <b>Yeast-all and Athal</b> | 0.15        | 0.1     | 0.043           |
| <b>Athal and Human-all</b> | 0.09        | 0.2     | 0.105           |
| <b>Athal and Human-hq</b>  | 0.11        | 0.2     | 0.093           |
| <b>Yeast-hq and Fly</b>    | 0.03        | 0.8     | 0.391           |
| <b>Yeast-all and Fly</b>   | -0.03       | 0.8     | 0.395           |
| <b>Athal and Fly</b>       | 0.02        | 0.9     | 0.436           |

Participation coefficient correlation analysis for hubs in pairs of networks: Spearman’s rho, corresponding p-value, empirical p-value for 1000 random permutations of participation coefficient values among hubs. Correlations with absolute value above 0.1 and both p-values  $< 0.05$  are shown in bold. See main text and **Materials and methods** for details.