



**Figure S1. Performance degradation as interactions are removed, related to Figure 3B.** Performance degradation as more interactions of the indicated type (color) are cumulatively excluded. The mean degradation (point) and standard deviation (error bars) are calculated over 50 random sets of interactions.



**Table S1. Newly generated genetic interaction data, related to Figures 3C, D.** Calculated genetic interaction S-scores provided for 3 static and 3 differential conditions.

**Table S2. Curation of AtgO 2.0 term names, related to Figure 4.** Atg 2.0 term names were curated from prior knowledge to describe known biology underlying a term, if possible. Gene names, literature and comments are included here. See also **Figure 5**.

**Table S3. AtgO files, related to Figure 4 and Figure S2.** Full AtgO 2.0 and Atg 1.0 are provided in parent-child format. Each row represents an edge, where column 1 is the parent term, column 2 is the child term, column 3 is the relation type (term-term or gene) and column 4 indicates the data-derived gene similarity value at which the parent term was created.