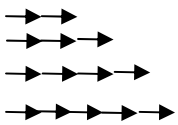
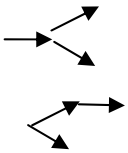
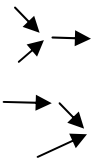
Supplemental Table 1: List of network motifs and activity motifs that we tested.
The set of wiring motifs consists of all network subgraph types consisting of 2 or 3 enzymes, as well as longer chains. For each wiring pattern , the set of activity patterns is created by combining two features for each enzyme: (1) timing order pattern, and (2) activation/repression. The timing patterns for each network motif contains all onset configurations that are strongly ordered (for a chain relation) or weakly ordered (for forks and joins) (see **Methods**). The activation/repression pattern required that all genes are either activated or repressed.
For example, for a chain of length 4 four activity motifs are defined, created by combining one of two options for On/Off and on of two options for forward/backward.

Name	size	Wiring patterns	Activity patterns	
Chain	2 3 4 5		**{Forward, Backward}x {OnOff, OffOn}** ForwardOnOff, BackwardOnOff, ForwardOffOn, BackwardOffOn	16
Fork-2	2		**{Same Time, Different Time} x {OnOff,OffOn}** SameOnOff, SameOffOn DifferentOnOff, DifferentOffOn	4
Fork-3	3		**{All Same Time, Different Time, Forward+Same, Backward+Same} x {OnOff,OffOn}** SameOnOff, SameOffOn DifferentOnOff, DifferentOffOn SameFwdOnOff, SameFwdOffOn SameBwdOnOff, SameBwdOffOn	16
Multi-Fork	3		**{All Same Time, Different Time} x {OnOff,OffOn}** SameOnOff, SameOffOn DifferentOnOff, DifferentOffOn	4
Funnel-2	2		**Same Time x {OnOff,OffOn}** SameOnOff, SameOffOn DifferentOnOff, DifferentOffOn	4
Funnel-3	3		**{All Same Time, , Different Time Forward+Same, Backward+Same} x {OnOff,OffOn}** SameOnOff, SameOffOn DifferentOnOff, DifferentOffOn SameFwdOnOff, SameFwdOffOn SameBwdOnOff, SameBwdOffOn	16
Multi-Funnel	3		**{All Same Time, Different Time} x {OnOff,OffOn}** SameOnOff, SameOffOn DifferentOnOff, DifferentOffOn	4
				64