(a) Protein complexes

Network	$\text{SRCC}_{\text{degree}}$	$\text{SRCC}_{\text{degree/size}}$	$\text{SRCC}_{\text{degree·size}}$
Direct	0.2725 (5e-08)	0.2283 (5e-06)	0.1859 (2e-04)
Pull-down	0.3335 (1e-11)	0.2612 (2e-07)	0.2471 (8e-07)
Full	0.3321 (2e-11)	0.2369 (2e-06)	0.2446 (1e-06)

(b) Filtered biological processes

Network	$\text{SRCC}_{\text{degree}}$	$\text{SRCC}_{\text{degree/size}}$	$\text{SRCC}_{\text{degree·size}}$
Direct	0.1777 (4e-04)	0.1780 (4e-04)	0.1897 (2e-04)
Pull-down	0.2366 (2e-06)	0.2500 (6e-07)	0.2596 (2e-07)
Full	0.1751 (5e-04)	0.1486 (3e-03)	0.1884 (2e-04)

Table S 4. Correlation between cross-talk (CT) degree and the fraction of essential proteins in the module for (a) protein complexes and (b) filtered biological processes. Module essentiality is defined as the fraction of essential proteins within a module. $\text{SRCC}_{\text{degree}}$ gives the SRCC between the cross-talk degree of a module and its fraction of essential proteins. $\text{SRCC}_{\text{degree/size}}$ gives the SRCC between the normalized cross-talk degree (i.e., the cross-talk degree of the module divided by the module size) and essentiality fraction. $\text{SRCC}_{\text{degree·size}}$ gives the partial SRCC between cross-talk degree and essentiality fraction when controlling for the module size. *P*-values for the SRCCs are shown within parentheses.