

Bait Gene Name	Hit Gene Name	Protein Acc	Mascot Score	Total Peptides	Unique Peptides	Coverage (%)
ZNF598 (N-Flag)	ZNF598	NP_835461	2364	36	318	46.8
ZNF598 (N-Flag)	USP9X	NP_001034679	1686	31	58	15.8
ZNF598 (N-Flag)	GIGYF2	NP_056390	1490	27	56	22.9
ZNF598 (N-Flag)	EIF4E2/4EHP	NP_004837	381	7	13	38
GIGYF2 (N-Flag)	GIGYF2	NP_056390	2198	41	120	34
GIGYF2 (N-Flag)	EIF4E2	NP_004837	718	12	44	62.9
GIGYF2 (N-Flag)	ZNF598	NP_835461	404	6	10	9.3
4EHP-benzonase (N-Flag)	GIGYF2	NP_056390	1262	23	79	19
4EHP-benzonase (N-Flag)	ZNF598	NP_835461	755	11	26	15.3
4EHP-benzonase (N-Flag)	GIGYF1	NP_072096	525	9	32	13
4EHP-benzonase (N-Flag)	EIF4E2/4EHP	NP_004837	308	6	25	26.9
4EHP-benzonase (N-Flag)	EIF4ENIF1/4ET	NP_062817	294	5	10	6.8
4EHP (N-Flag)	GIGYF2	NP_056390	1525	30	88	27.8
4EHP (N-Flag)	ZNF598	NP_835461	555	9	14	19
4EHP (N-Flag)	EIF4E2	NP_004837	459	8	46	46.1
4EHP (N-Flag)	GIGYF1	NP_072096	113	3	3	6.1

**Supplementary Table 1:** Detailed mass spectrometric evidence for the protein-protein interactions. The indicated N-terminally FLAG-tagged protein was purified from a stable cell pool, and the interacting partners were identified by mass spectrometry. This table lists all the interactions which passed the following filters: Minimum number of unique peptides = 5; Minimum number of spectra = 10; Maximum frequency in a protein database of HEK293 AP-MS data generated in the Gingras lab (which contains > 2000 samples) = 22%. The interaction between 4EHP not treated with benzonase and GIGYF1 did not pass these filters, and is grayed out.