

Table S6. Z-score analysis of various semantic similarity methods (BMA) for estimating the functional similarity among human-mouse orthologs

IEA	GO	ASV ^a	HRSS	simGIC	simUI	Resnik	Jiang	Lin	RSS
Including	BP	Observed ^b	0.45	0.76	0.79	2.95	0.89	0.92	0.79
		Mean. randomized ^c	0.04	0.05	0.10	0.86	0.19	0.36	0.41
		Stdev. Randomized ^d	0.0003	0.0007	0.0010	0.0055	0.0020	0.0023	0.0014
		Z-score ^e	1341.01	1100.88	727.86	381.64	349.16	246.14	273.49
		CC	Observed	0.30	0.81	0.86	1.85	0.97	0.97
	Mean. Randomized	0.05	0.13	0.28	0.63	0.55	0.58	0.54	
	Stdev. Randomized	0.0005	0.0015	0.0017	0.0038	0.0026	0.0027	0.0014	
	Z-score	528.09	465.02	348.29	322.54	159.10	147.01	169.36	
	MF	Observed	0.46	0.85	0.87	2.32	0.94	0.94	0.79
		Mean. Randomized	0.06	0.05	0.11	0.47	0.28	0.33	0.34
		Stdev. Randomized	0.0006	0.0013	0.0014	0.0042	0.0029	0.0029	0.0020
		Z-score	643.27	615.01	566.87	436.91	227.51	210.96	230.78
Excluding		BP	Observed	0.31	0.48	0.52	1.77	0.58	0.71
	Mean. Randomized		0.04	0.04	0.08	0.55	0.06	0.27	0.36
	Stdev. Randomized		0.0003	0.0008	0.0010	0.0035	0.0015	0.0018	0.0014
	Z-score		861.73	547.18	451.77	347.74	349.43	246.00	206.08
	CC		Observed	0.25	0.58	0.67	1.29	0.75	0.83
	Mean. Randomized	0.04	0.13	0.27	0.47	0.31	0.45	0.53	
	Stdev. Randomized	0.0005	0.0017	0.0019	0.0030	0.0030	0.0026	0.0014	
	Z-score	423.44	269.83	210.94	272.64	149.10	145.80	142.33	
	MF	Observed	0.40	0.60	0.64	1.72	0.79	0.82	0.68
		Mean. Randomized	0.05	0.05	0.11	0.35	0.31	0.36	0.29
		Stdev. Randomized	0.0006	0.0015	0.0017	0.0039	0.0026	0.0027	0.0023
		Z-score	592.07	357.11	307.03	355.88	188.14	167.54	169.02

^a To measure the functional similarity of a list of orthologous protein pairs in general, an average value was calculated from the similarity values (ASV) of the orthologs.

^b ASV value calculated from the observed set of human-mouse orthologs, i.e., $ASV_{observed}$.

^c Mean ASVs calculated from 1000 randomized sets of orthologs, i.e., $mean(ASV_{random})$.

^d Standard deviation (stdev.) of ASVs from 1000 randomized sets of orthologs, i.e.,

$stdev(ASV_{random})$.

^e Z-score was calculated as $(ASV_{observed} - mean(ASV_{random})) / stdev(ASV_{random})$. The maximum Z-score for each ontology is in bold.