

Supplementary Table 5. Sperm phosphoproteins with (with) and without Y phosphorylation (without) in human probands: average evolutionary rates at phosphosites (pS, pT, pY) and non-phosphorylated counterparts (S, T, Y) and the ratio of both rates (α)

Protein	Y phos- phory- lation	pS	pT	pY	S	T	Y	α S	α T	α Y
ACADS	without	0.394	0.000	-	0.865	0.870	-	0.455	0.000	-
ACRBP	with	-	-	0.000	-	-	0.122	-	-	0.000
ACTA2	with	-	-	0.000	-	-	0.000	-	-	-
AK8	without	0.967	0.463	-	1.125	1.748	-	0.860	0.265	-
ANXA1	with	-	-	0.000	-	-	0.598	-	-	0.000
APEH	without	0.278	0.329	-	0.584	1.064	-	0.475	0.309	-
CAPZA1	with	-	-	0.000	-	-	0.000	-	-	-
CAPZB	without	0.154	0.000	-	0.000	0.000	-	-	-	-
CRISP1	without	2.800	2.660	-	1.530	3.664	-	1.830	0.726	-
DNAJB11	with	-	-	0.000	-	-	0.000	-	-	-
ECI1	with	-	-	0.000	-	-	1.934	-	-	0.000
ENO1	without	0.437	1.182	-	0.499	0.449	-	0.877	2.635	-
GDI2	without	0.128	0.209	-	0.174	0.240	-	0.735	0.869	-
GK2	without	0.560	0.409	-	0.863	0.895	-	0.648	0.457	-
GLUL	without	0.507	0.000	-	0.310	0.234	-	1.634	0.000	-
GOT1	without	0.560	0.560	-	0.544	0.756	-	1.029	0.740	-
GSTM3	with	-	-	0.394	-	-	1.182	-	-	0.333

Protein	Y phos- phory- lation	pS	pT	pY	S	T	Y	α S	α T	α Y
HIBADH	with	-	-	0.000	-	-	0.128	-	-	0.000
HSPA1L	with	-	-	0.000	-	-	0.103	-	-	0.000
HSPA9	without	0.059	0.180	-	0.048	0.204	-	1.221	0.884	-
HSPD1	without	0.089	0.000	-	0.000	0.330	-	-	0.000	-
IDH3A	without	0.174	0.000	-	0.081	0.288	-	2.148	0.000	-
LAP3	without	0.394	0.247	-	0.532	0.634	-	0.741	0.390	-
LZTFL1	without	0.177	0.000	-	0.322	1.034	-	0.550	0.000	-
MPST	with	-	-	1.520	-	-	0.519	-	-	2.929
NME5	without	0.000	-	-	0.322	0.000	-	0.000	-	-
NME7	without	0.273	0.000	-	0.338	0.754	-	0.808	0.000	-
ODF1	without	0.385	0.000	-	0.268	0.912	-	1.437	0.000	-
PARK7	with	-	-	0.000	-	-	0.507	-	-	0.000
PCYT2	without	0.276	0.322	-	0.489	0.378	-	0.565	0.854	-
PDHB	without	0.000	0.000	-	0.153	0.580	-	0.000	0.000	-
PHB	without	0.000	0.000	-	0.000	0.000	-	-	-	-
PPP1CB	without	0.000	0.000	-	0.000	0.000	-	-	-	-
PRDX4	without	0.000	0.000	-	0.102	0.404	-	0.000	0.000	-
PSMA1	without	0.000	0.000	-	0.000	0.105	-	-	0.000	-
PSMA6	without	0.000	0.000	-	0.000	0.000	-	-	-	-
PSMB2	without	0.000	0.000	-	0.136	0.343	-	0.000	0.000	-

Protein	Y phos- phory- lation	pS	pT	pY	S	T	Y	α S	α T	α Y
PSMB3	without	0.000	0.000	-	0.000	0.255	-	-	0.000	-
PSMC2	without	0.000	0.000	-	0.000	0.000	-	-	-	-
PSMD11	with	-	-	0.000	-	-	0.000	-	-	-
PSMD13	without	0.000	0.000	-	0.201	0.136	-	0.000	0.000	-
PSMD14	with	-	-	0.000	-	-	0.000	-	-	-
ROPN1	with	-	-	0.000	-	-	0.000	-	-	-
SDHA	with	-	-	0.000	-	-	0.057	-	-	0.000
SPAG6	without	0.259	0.000	-	0.223	0.273	-	1.165	0.000	-
TEKT1	with	-	-	0.367	-	-	1.460	-	-	0.251
TUBA1A	without	0.000	0.273	-	0.000	0.041	-	-	6.641	-
TUBB2A	without	0.523	0.000	-	0.564	0.313	-	0.928	0.000	-
TUBB2C	with	-	-	0.000	-	-	0.000	-	-	-
UQCRC1	with	-	-	0.000	-	-	0.426	-	-	0.000
YWHAZ	without	0.000	0.000	-	0.000	0.000	-	-	-	-

Average evolutionary rates were inferred across six mammalian orthologs, each.