Supplementary Tables

Table S1. Semen parameters in Control (fertile donors) and idiopathic infertile patients (IIP).

Parameter	WHO	Fertile (N=43)	Infertile (N=57)	p Value
Volume (mL)	> 1.5	3.23 ± 0.61	3.1 ± 0.69	>0.05
pH	7.2–8.0	7.31 ± 0.18	7.34 ± 0.11	>0.05
Sperm Motility (%)	> 40	51.98 ± 10.89	37.89 ± 9.57	p < 0.05
Sperm Concentration (Million/ml)	> 15	122.46 ± 26.57	88.65 ± 39.29	p < 0.05
Sperm Viability (%)	> 58	66.78 ± 8.19	53.57 ± 10.21	p < 0.05
Sperm Morphology (%)	> 4	85.2 ± 7.94	78.12 ± 20.71	p < 0.05
Age	< 35	28.86 ± 4.19	30.54 ± 4.54	p = 0.1201

Table S2. List of 61 spermatozoa lysine acetylated proteins associated with idiopathic infertile patients with respect to control (fertile donors).

Sl. No.	Protein FDR Confidence: Combined	Accession	Gene Name	log2 fold Change	pValue
1.	High	P52209	PGD	4.256191762	5.94E-05
2.	High	Q96J94	PIWIL1	2.679191115	0.00060977
3.	High	P22492	H1-6	2.492856646	0.00095937
4.	High	P48147	PREP	2.440087522	0.00156825
5.	High	O14520	AQP7	2.341455425	0.000455379
6.	High	Q6NUT2	DPY19L2	1.770550027	0.007592917
7.	High	Q13733	ATP1A4	1.667362297	0.008208244
8.	Medium	Q8IWB6	TEX14	1.641381853	0.043911425
9.	High	Q9Y277	VDAC3	1.485430776	0.012078702
10.	High	P23634	ATP2B4	1.359640946	0.01646376
11.	High	Q6UXG2	ELAPOR1	1.253302509	0.030530666
12.	High	P80188	LCN2	1.201902045	0.017077919
13.	High	Q5JQC9	AKAP4	1.078397486	0.037360737
14.	High	P48047	ATP5PO	0.946286444	0.023437074

15.	High	P78527	PRKDC	0.886882395	0.015038486
16.	High	P04040	CAT	0.874561034	0.048875111
17.	High	P36969	GPX4	0.719660988	0.014290688
18.	High	P51659	HSD17B4	0.663237791	0.022398858
19.	High	P21810	BGN	0.642886633	0.023653858
20.	High	P02794	FTH1	0.551903055	0.027889294
21.	High	P35613	BSG	0.520217415	0.025507442
22.	High	P15121	AKR1B1	0.345672629	0.04762866
23.	High	P38646	HSPA9	0.19972737	0.047144885
24.	High	Q9NX62	BPNT2	0.157444518	0.04800982
25.	High	Q92692	NECTIN2	0.036165141	0.049469507
26.	High	P47985	UQCRFS1	-0.01140692	0.049852308
27.	Medium	Q07817	BCL2L1	-0.083762393	0.049154978
28.	High	P49810	PSEN2	-0.118559887	0.048365341
29.	High	O75569	PRKRA	-0.129501919	0.048164826
30.	High	P17612	PRKACA	-0.204778381	0.046927824
31.	High	O75602	SPAG6	-0.272529706	0.045665432
32.	High	P34932	HSPA4	-0.287828032	0.015262641
33.	High	P22748	CA4	-0.294390936	0.015700549
34.	High	Q9BS86	ZPBP	-0.341021333	0.045273658
35.	High	P07737	PFN1	-0.393384325	0.041585799
36.	High	O15296	ALOX15B	-0.39468525	0.04827126
37.	High	Q9BY14	TEX101	-0.421807214	0.039900991
38.	High	P09211	GSTP1	-0.475504682	0.036877605
39.	High	Q04760	GLO1	-0.622049078	0.024320173
40.	High	P11717	IGF2R	-0.684854644	0.014229879
41.	High	Q9GZP4	PITHD1	-0.712644453	0.025322497
42.	High	P30041	PRDX6	-0.717601444	0.016777685

43.	High	P07099	EPHX1	-0.74049007	0.024232458
44.	High	Q8N1V2	CFAP52	-0.966317579	0.010146135
45.	High	P62258	YWHAE	-1.052902618	0.0406287
46.	High	P00390	GSR	-1.089511235	0.046711246
47.	High	P01116	KRAS	-1.139539421	0.040159516
48.	High	P05067	APP	-1.148682523	0.013785452
49.	High	P52565	ARHGDIA	-1.169828737	0.041209324
50.	High	P02649	APOE	-1.187998035	0.046650134
51.	High	P81605	DCD	-1.307503814	0.020469942
52.	High	P54727	RAD23B	-1.428189538	0.038895801
53.	High	P26641	EEF1G	-1.617545386	0.01574704
54.	High	P37837	TALDO1	-1.644965601	0.019575986
55.	High	O95831	AIFM1	-1.650273384	0.020314328
56.	High	P05787	KRT8	-2.305379748	0.01166444
57.	High	Q8NEH6	MNS1	-2.355083297	0.040525886
58.	High	O43236	SEPTIN4	-2.516527485	0.00324634
59.	High	P07864	LDHC	-2.752456425	0.003187312
60.	High	P00441	SOD1	-2.917318536	0.019394523
61.	High	Q99497	PARK7	-4.323231262	3.11E-05