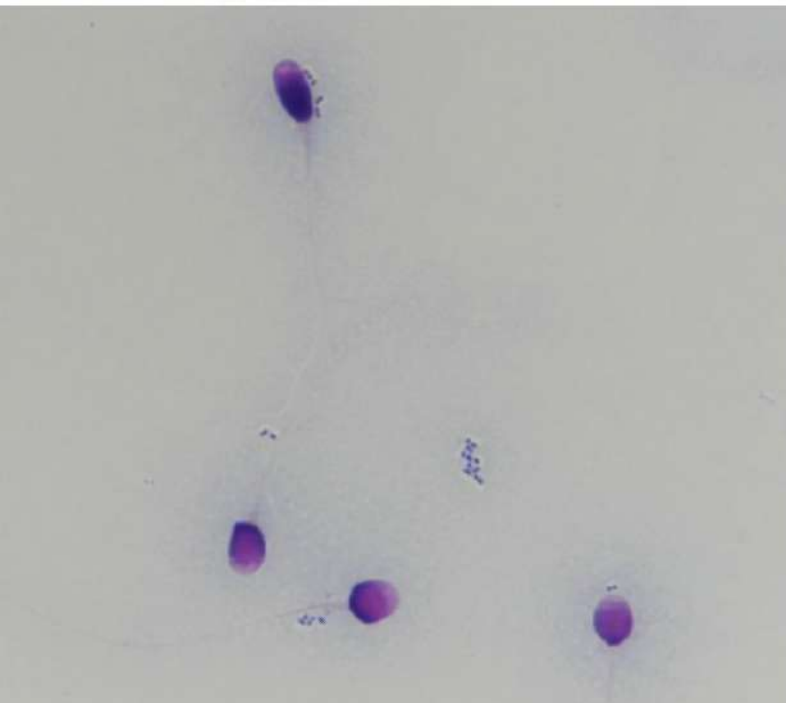


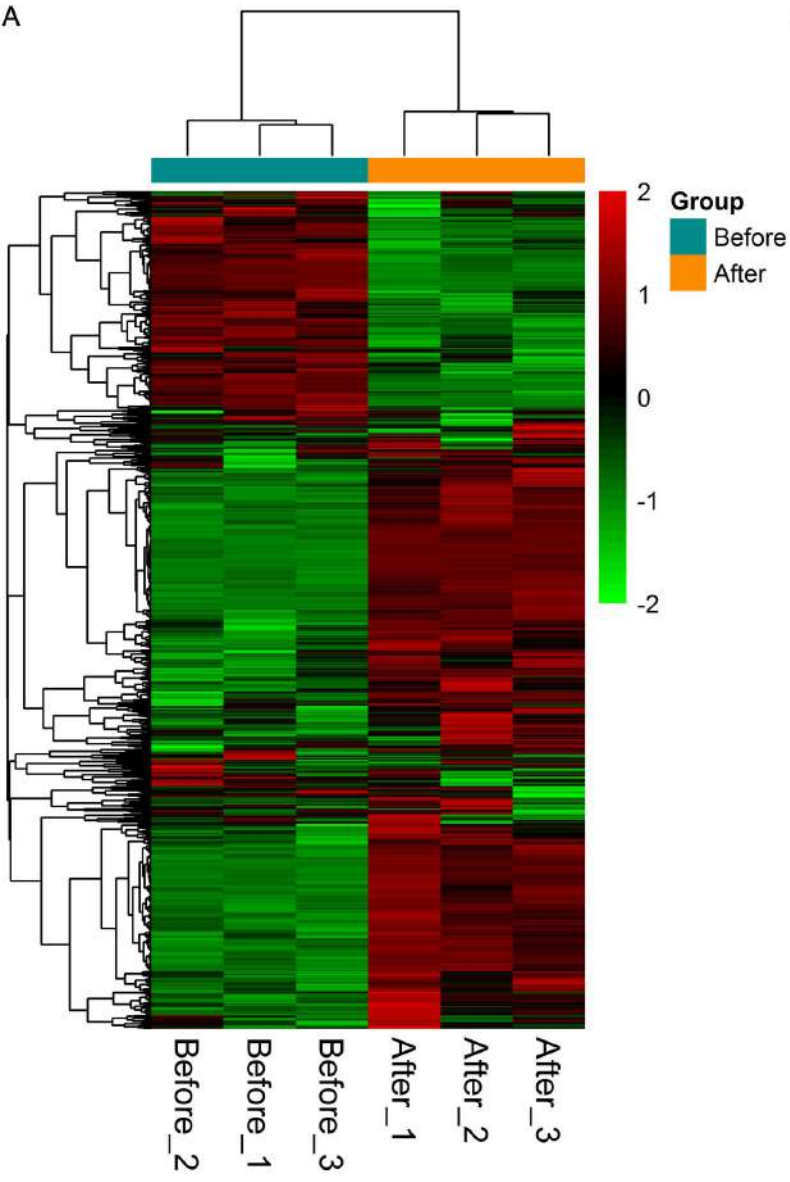
A. Before cryopreservation



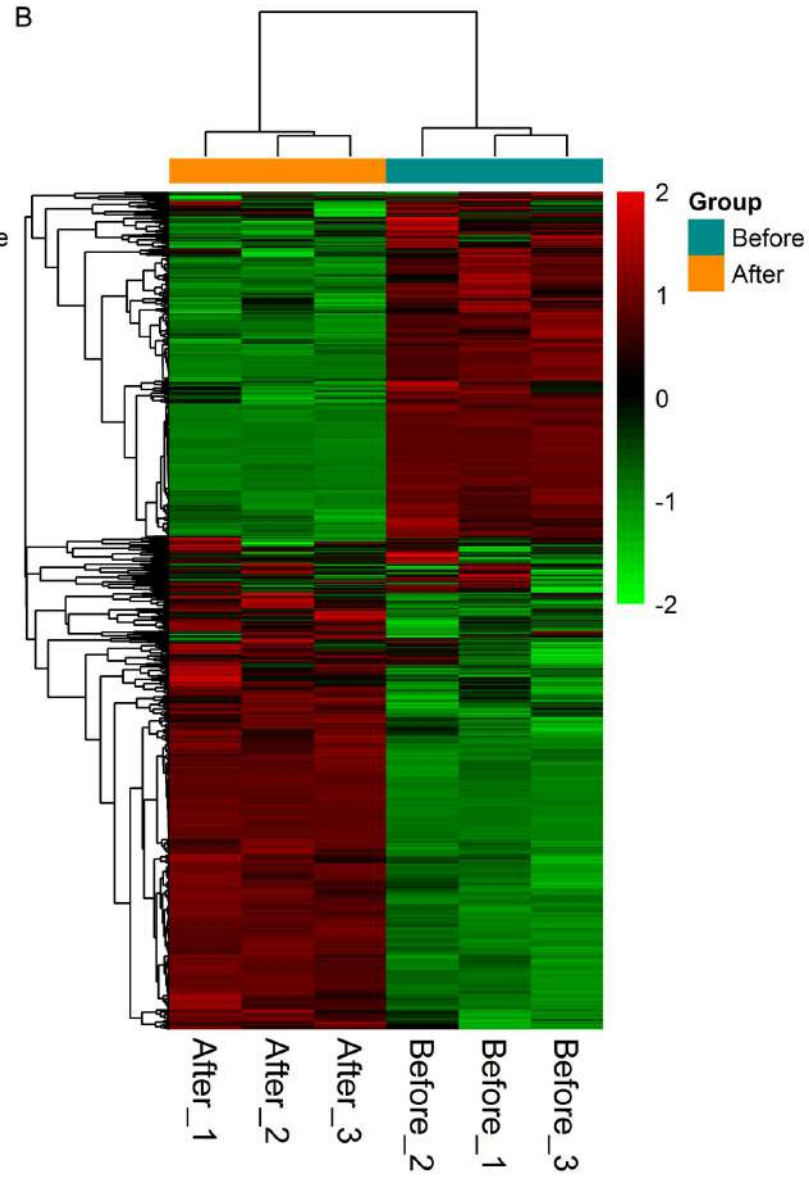
B. After cryopreservation



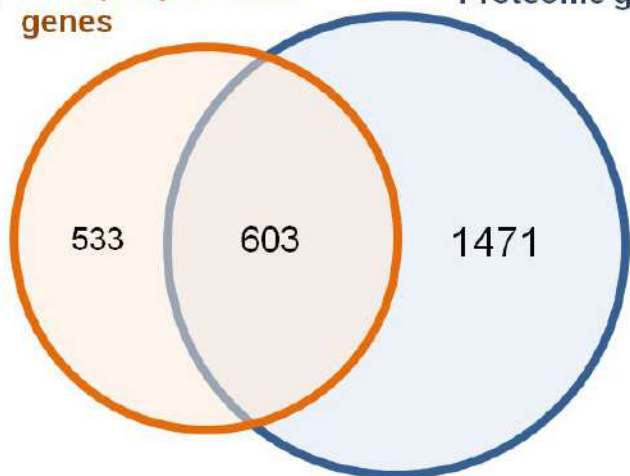
A



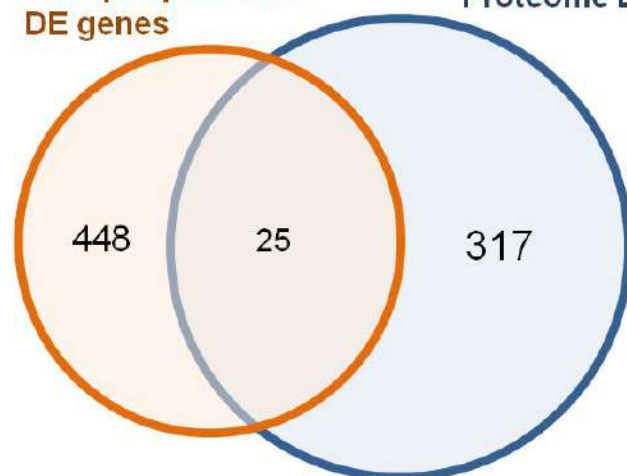
B

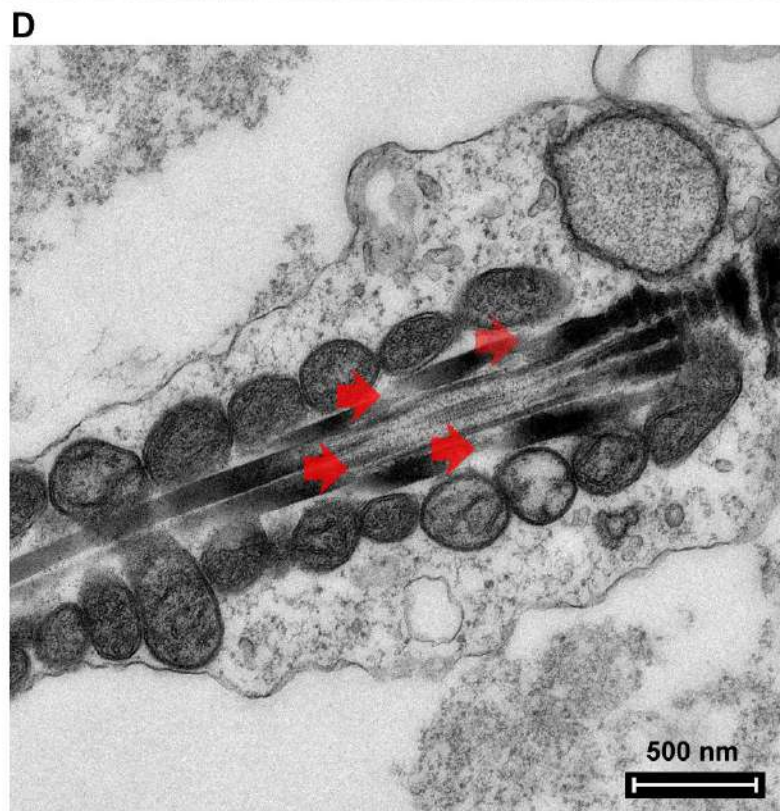
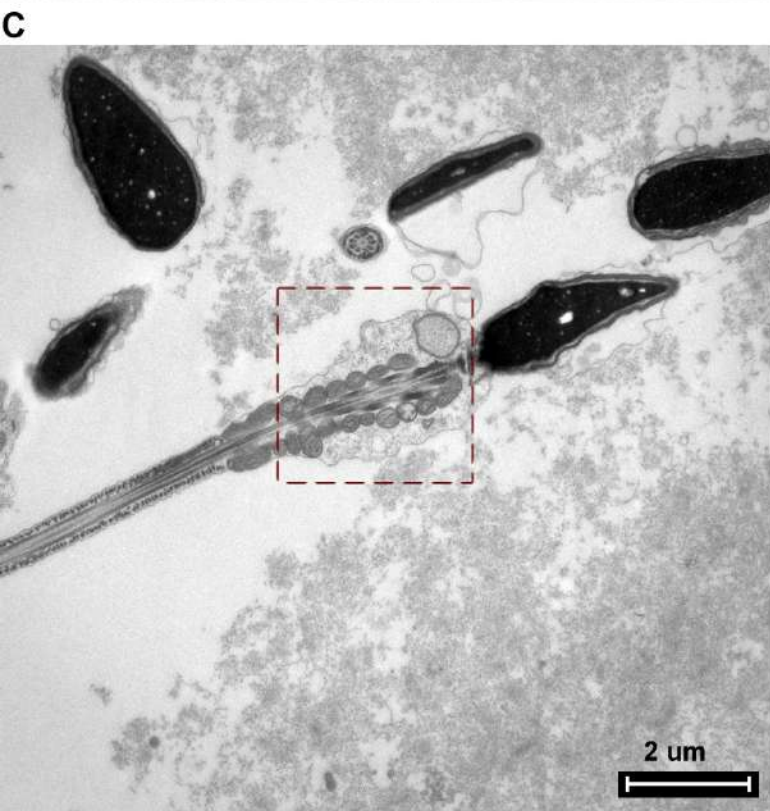
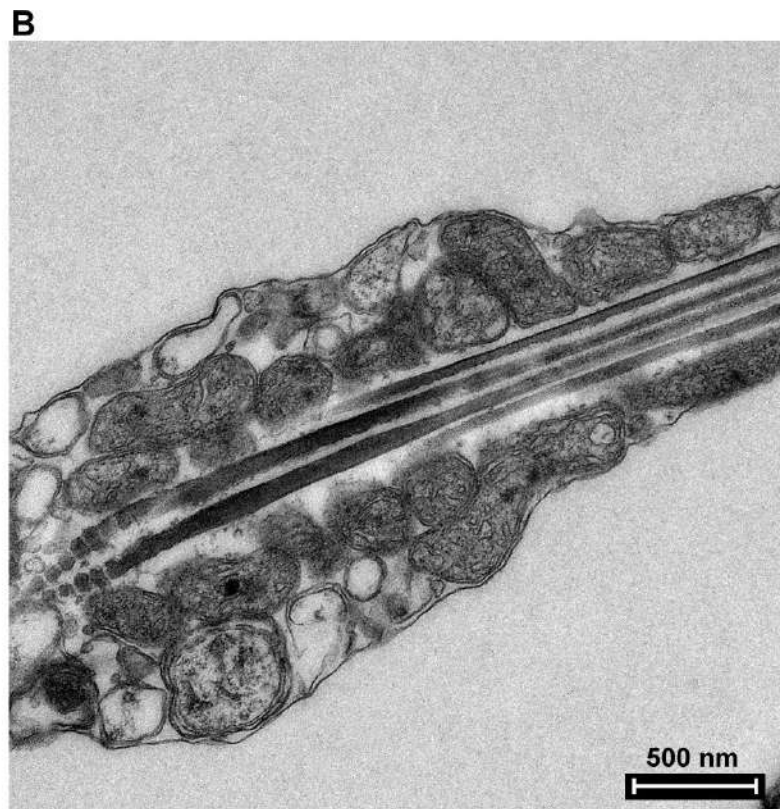
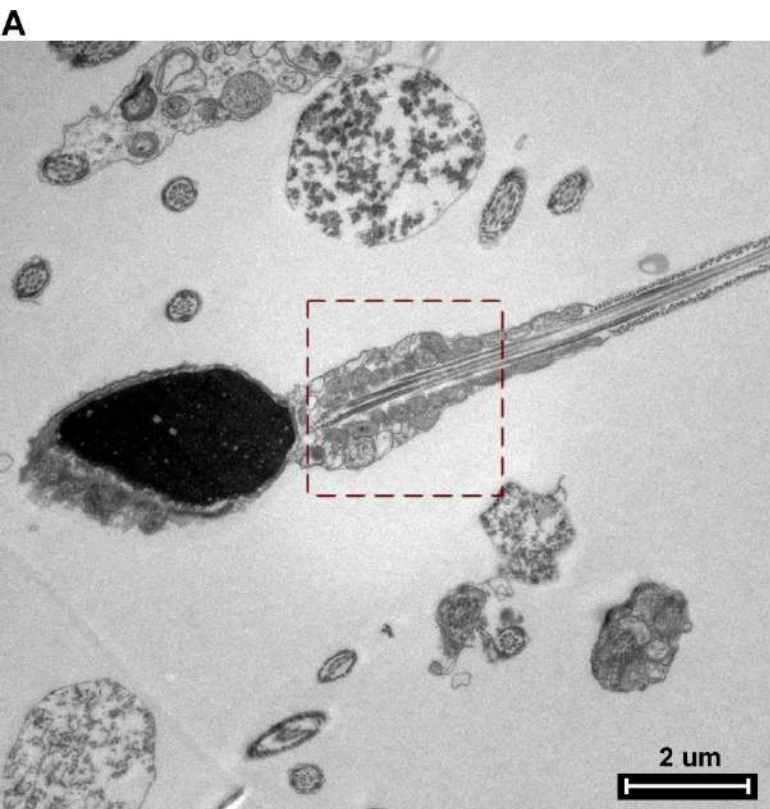


A Phosphoproteome genes Proteome genes



B Phosphoproteome DE genes Proteome DE genes





**Phosphoproteome DE genes:
Abnormal sperm motility**

HMGB2	CATSPER1	HOATZ
THEG	STK33	SLC26A8
LRGUK	PRKACA	PSME4
KCNU1	CFAP44	VPS13A
ASPM	PRM2	TALDO1
HSPA4L	CFAP157	DNAH8
SPATA20	ADAM7	TPPP2
DNAH1	H1-7	SPAG9
LDHC	LIPE	CATSPER4
GSK3A	SPACA1	TTC29
SPEM1	CCDC63	

36 genes
Enrichment FDR: 5.20E-19

**Proteome DE genes:
Abnormal sperm motility**

AKAP4	TEKT3	GAPDHS
GPX4	MNS1	CCDC136
ODF2	NUP210L	VDAC3
ATP2B4	ANO5	SPATA6
	SMCP	ODF1
	FAM170A	TEKT4
	TEKT2	CAPZA3
	CADM1	

19 genes
Enrichment FDR: 1.84E-06