

Proteomic profile of maternal aged blastocoel fluid suggests a novel role for ubiquitin system in blastocyst quality

Journal of Assisted Reproduction and Genetics

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Table S2: List of proteins identified in group A by a shotgun approach. Previous identification: in the Table the proteins previously identified in human blastocoel fluid (16, 17) are indicated with a capital X, while x indicates gene products previously experimentally detected at the protein level as secreted and/or present in extracellular region and/or in exosome and/or in microvesicles according to public available databases and dataset (www.neXtProt.org, www.exocarta.org, microvesicle.org, geneontology.org, www.proteinatlas.org, 29) or at the gene expression level from microarray data (16, 30) or at the transcription level in blastocystis or embryonic tissue according to <http://genomewidepdb.proteomix.org> or <https://www.ncbi.nlm.nih.gov/geoprofiles> databases. The table lists only the proteins present and quantified in at least 3 out of 5 technical repeats using a false positive rate of 0.05 and minimum peptide length 9 amino acids, reporting in a column the proteins identified with FDR 0.01.

Protein IDs	Protein names	Gene names	PEP	Razor + unique peptides	FDR 1%	Previous identification
P12273	Prolactin-inducible protein	PIP	5.24E-06	2	X	X
Q8NBJ4	Golgi membrane protein 1	GOLM1	0.018711	1	X	x
P01040	Cystatin-A	CSTA	1.22E-08	2	X	X
P20382	Pro-MCH;Neuropeptide-glycine-glutamic acid;	PMCH	0.002462	1	X	x
Q8TE76	MORC family CW-type zinc finger protein 4	MORC4	0.018241	1	X	x
Q8TE56	A disintegrin and metalloproteinase with thrombospondin motifs 17	ADAMTS17	0.022011	1	X	x
D6R956	Ubiquitin carboxyl-terminal hydrolase isozyme L1	UCHL1	0.004585	1		X
O95202	LETM1 and EF-hand domain-containing protein 1, mitochondrial	LETM1	0.028673	1		x
Q9UGM3	Deleted in malignant brain tumors 1 protein	DMBT1	0.006933	1	X	X
P31025	Lipocalin-1;Putative lipocalin 1-like protein 1	LCN1;LCN1P1	1.85E-55	2	X	X
Q6UWP8	Suprabasin	SBSN	0.000208	1	X	X
Q9BR77	Coiled-coil domain-containing protein 77	CCDC77	0.009722	1	X	x
Q96RW7	Hemicentin-1	HMCN1	0.024825	1	X	x
P31151	Protein S100-A7;Protein S100-A7A	S100A7;S100A7A	3.14E-51	4	X	X
H0Y7A7	Calmodulin	CALM2;CALM1	0.005618	1	X	x
Q6GMR7	Fatty-acid amide hydrolase 2	FAAH2	0.02707	1	X	x
P19021	Peptidyl-glycine alpha-amidating monoxygenase;	PAM	0.029696	1		x
O94788-3	Retinal dehydrogenase 2	ALDH1A2	0.026311	1		x
Q5VW26	Nuclear factor 1;Nuclear factor 1 B-type	NFIB	0.01383	1		x
Q9BV73	Centrosome-associated protein CEP250	CEP250	0.025154	1		X
Q9NZT1	Calmodulin-like protein 5	CALML5	8E-153	4	X	X
P81605	Dermcidin;Survival-promoting peptide;DCD-1	DCD	4.24E-08	2	X	X
Q6PGQ7	Protein aurora borealis	BORA;FLJ22624	0.03061	1	X	x
C9K0L2	Maestro heat-like repeat-containing protein family member 7	HEATR8	0.030121	1	X	x
P61626	Lysozyme C	LYZ	2.78E-23	1	X	X
Q8N8E3	Centrosomal protein of 112 kDa	CEP112	0.008359	1	X	x

Q9BY89	Uncharacterized protein KIAA1671	KIAA1671	0.012704	1		x
Q96F24	Nuclear receptor-binding factor 2	NRBF2	0.005732	1	X	x
E7ERA6	RING finger protein 223	RNF223	0.028835	1	X	
F8W8U3	Homeobox protein Meis1	MEIS1	0.031584	1		x
P0CG48	Polyubiquitin-C;Ubiquitin;Polyubiquitin-B	UBC;UBB	0.001463	1	X	X
Q6JVE6	Epididymal-specific lipocalin-10	LCN10	0.027122	1		x
Q9HCJ0	Trinucleotide repeat-containing gene 6C protein	TNRC6C	0.02214	1	X	x
F8W878	Brain-specific angiogenesis inhibitor 1-associated protein 2	BAIAP2	0.018041	1	X	x
P05109	Protein S100-A8	S100A8	3.51E-69	2	X	X
Q13635-4	Isoform S of Protein patched homolog 1	PTCH1	0.0054	1	X	x
Q8NBP5	Major facilitator superfamily domain-containing protein 9	MFSD9	0.024966	1	X	x
F8WCM5	Insulin;Insulin B chain;Insulin A chain	INS-IGF2;INS	6.49E-07	1	X	X
G8JLG2	Corneodesmosin	CDSN	0.018446	1		X
P01566	Interferon alpha-10;Interferon alpha-21;	IFNA10;IFNA21	0.03168	1	X	x
P22732	Solute carrier family 2, facilitated glucose transporter member 5	SLC2A5	0.028098	1		x
Q8TAL5	Uncharacterized protein C9orf43	C9orf43	0.028085	1		x
J3KNN1	Polypeptide N-acetylgalactosaminyltransferase 9	GALNT9	0.024813	1	X	
Q02413	Desmoglein-1	DSG1	2.58E-31	2	X	X
P14923	Junction plakoglobin	JUP	5.14E-15	2	X	X
Q8NI35-5	Isoform 5 of InaD-like protein	INADL	0.018277	1		x
G3V314	Ena/VASP-like protein	EVL	0.03031	1		x
Q12972-3	Isoform Gamma of Nuclear inhibitor of protein phosphatase 1	PPP1R8	0.031102	1		x
Q9HCE0	Ectopic P granules protein 5 homolog	EPG5	0.030831	1		x
Q76G19	PDZ domain-containing protein 4	PDZD4	5.95E-15	2	X	x
Q5T749	Keratinocyte proline-rich protein	KPRP	5.50E-12	5	X	X
H3BUN7	SH2B adapter protein 1	SH2B1	0.017553	1	X	x
H0YNB0	Unconventional myosin-Ie	MYO1E	0.022468	1		x
J3KMZ5	Serotonin N-acetyltransferase	AANAT	0.014783	1		x
P28290	Sperm-specific antigen 2	SSFA2	0.015064	1	X	x
Q6ZU67	BEN domain-containing protein 4	BEND4	0.029939	1		x
Q9H1N7	Adenosine 3-phospho 5-phosphosulfate transporter 2	SLC35B3	0.023363	1		x
P05060	Secretogranin-1;GAWK peptide;CCB peptide	CHGB	0.023689	1	X	x
Q9NZN9-5	Isoform 5 of Methionine adenosyltransferase 2 subunit beta	MAT2B	0.02745	1		x
Q9UHD9	Ubiquilin-2	UBQLN2	0.02898	1	X	x
Q96NH3-4	Protein broad-minded	BROMI;C6orf170	0.011429	1	X	x
P46060	Ran GTPase-activating protein 1	RANGAP1	0.020731	1		x
Q9H1K1-2	Isoform 2 of Iron-sulfur cluster assembly enzyme ISCU, mitochondrial	ISCU	0.029122	1		x
P04745	Alpha-amylase 1;Pancreatic alpha-amylase	AMY1A;AMY2A	0.016273	1		X
B4DIP4	Eukaryotic translation initiation factor 2-alpha kinase 1	EIF2AK1	0.024445	1		x
Q9NYL2-	Isoform 2 of Mitogen-activated protein	ZAK	0.010561	1		x

2	kinase kinase kinase MLT						
B4DYB5	cDNA FLJ53372	SPAG16	0.025535	1			
B7Z8Z7	RNA-binding protein 47	RBM47	0.02829	1			x
F5H1U9	Multiple PDZ domain protein	MPDZ	0.03135	1	X		x
P06454	Prothymosin alpha;Thymosin alpha-1	PTMA	0.001343	1	X		X
C9JH18	PERQ amino acid-rich with GYF domain-containing protein 2	GIGYF2	0.000158	2			x
C9JNL6	Electrogenic sodium bicarbonate cotransporter 4	SLC4A5	0.014409	1			x
C9JSC0	POU domain, class 6, transcription factor 2	POU6F2	0.029639	1			x
Q96BQ5	Coiled-coil domain-containing protein 127	CCDC127	0.031674	1	X		x
Q9NQ38	Serine protease inhibitor Kazal-type 5	SPINK5	0.001557	1	X		x
E7ENK3	Glutamate receptor, ionotropic kainate 1	GRIK1	0.027858	1			x
Q13201	Multimerin-1;Platelet glycoprotein Ia*;155 kDa platelet multimerin	MMRN1	0.024454	1	X		x
P02788	Lactotransferrin;Kaliocin-1;Lactoferroxin-A;Lactoferroxin-B;Lactoferroxin-C	LTF	0.004647	1	X		X
P04406	Glyceraldehyde-3-phosphate dehydrogenase	GAPDH	2.45E-07	3	X		X
P11532	Dystrophin	DMD	0.015725	1			x
E9PQB1	Serine/arginine repetitive matrix protein 5	SRRM5	0.015627	1	X		x
Q9UKR0	Kallikrein-12	KLK12	0.02885	1			x
F8WAU4	Elongation factor G, mitochondrial	GFM1	0.014496	1	X		x
F8WCP6	Kinesin-like protein KIF21A	KIF21A	0.029222	1			x
Q9P0W5-4	Schwannomin-interacting protein 1	SCHIP1	0.028326	1			x
H0Y3B9	BTB/POZ domain-containing protein KCTD2	KCTD2	0.027761	1	X		x
H0Y7H7	Dedicator of cytokinesis protein 4	DOCK4	0.030214	1			x
Q13535	Serine/threonine-protein kinase ATR	ATR	0.024667	1			x
Q6FIF0	AN1-type zinc finger protein 6	ZFAND6	0.030174	1			x
P14618	Pyruvate kinase isozymes M1/M2;Pyruvate kinase	PKM2	0.000118	2	X		X
J9JIC5	Protein Njmu-R1	C17orf75	0.031192	1	X		x
Q96DH6	RNA-binding protein Musashi homolog 2	MSI2	0.007825	1			x
K7EKM7	Small integral membrane protein 24	SMIM24	0.009651	1	X		x
M0QXR7	Leucine-rich repeat-containing protein 63	LRRC63	0.020219	1			
O00555	Voltage-dependent P/Q-type calcium channel subunit alpha-1A	CACNA1A	0.000283	2	X		x
O60320-2	Isoform 2 of Protein FAM189A1	FAM189A1	0.012422	1			x
O75556	Mammaglobin-B	SCGB2A1	0.030478	1			x
O76042	Putative uncharacterized protein C3orf51	C3orf51	0.01043	1	X		
P05089	Arginase-1	ARG1	0.000272	2	X		X
P06702	Protein S100-A9	S100A9	8.91E-09	3	X		X
P06733	Alpha-enolase	ENO1	2.54E-06	2			X
P11047	Laminin subunit gamma-1	LAMC1	0.029392	1			x
P15924	Desmoplakin	DSP	3.07E-21	7	X		X
P31944	Caspase-14;Caspase-14 subunit p19;Caspase-14 subunit p10	CASP14	3.99E-26	4	X		X
P51843	Nuclear receptor subfamily 0 group B member 1	NR0B1	0.013215	1			x

P52740	Zinc finger protein 132	ZNF132	0.002584	1	X	x
Q5VWC4	26S proteasome non-ATPase regulatory subunit 4	PSMD4	0.031718	1		x
Q00994-2	Isoform 2 of Protein BEX3	NGFRAP1	0.008688	1		x
Q01469	Fatty acid-binding protein, epidermal	FABP5	1.08E-24	2	X	X
Q08188	Protein-glutamine gamma-glutamyltransferase E;	TGM3	0.011907	1		X
Q08554	Desmocollin-1	DSC1	2.80E-06	3	X	X
Q12778	Forkhead box protein O1	FOXO1	0.007693	1		x
Q13164-4	Mitogen-activated protein kinase 7	MAPK7	0.027772	1	X	x
Q13422-4	DNA-binding protein Ikaros	IKZF1	0.021892	1		
Q13542	Eukaryotic translation initiation factor 4E-binding protein 2	EIF4EBP2	0.020583	1	X	x
Q14764	Major vault protein	MVP	1.25E-07	4	X	X
Q3SYA6	MAGEC3 protein	MAGEC3	0.027463	1		
Q5D862	Filaggrin-2	FLG2	0.000426	2	X	X
Q5GH76	XK-related protein 4	XKR4	0.008783	1	X	
Q5HYA8	Meckelin	TMEM67	0.010896	1		x
Q5HYK7	SH3 domain-containing protein 19	SH3D19	0.012887	1	X	x
Q5T2D2	Trem-like transcript 2 protein	TREML2	0.025847	1		x
Q5T750	Skin-specific protein 32	XP32	0.016572	1		X
Q5TA76	Late cornified envelope protein 3A	LCE3A	0.024214	1		
Q6TDP4	Kelch-like protein 17	KLHL17	0.024283	1		x
Q9UJQ4	Sal-like protein 4	SALL4	0.024516	1		x
Q86YZ3	Hornerin	HRNR	3.22E-10	2	X	X
Q8N139	ATP-binding cassette sub-family A member 6	ABCA6	0.014869	1	X	x
Q96B36-3	Isoform 3 of Proline-rich AKT1 substrate	AKT1S1	0.028634	1		x
Q9BSM1	Polycomb group RING finger protein 1	PCGF1	0.023367	1	X	x
Q9BTT4	Mediator of RNA polymerase II transcription subunit 10	MED10	0.003212	1	X	x
Q9H3U1	Protein unc-45 homolog A	UNC45A	0.011958	1		x