

Supplemental Table 1. Number of unique peptides and emPAI values of parental samples (M, F) in total hair

Protein name	Matches	Accession num	MW (AMU)	Cell Loc	Total Hair Shaft		
					D	S	M
KRT86 Keratin type II cuticular Hk	1	IPI00182655	53,481.90	Ker	86	86	90
KRT33B Keratin, type I cuticular Hk	2	IPI00031423,IPI	46,195.50	Ker	48	43	56
KRT85 Keratin type II cuticular Hk	1	IPI00032541	55,784.00	Ker	42	45	38
KRT82 Keratin type II cuticular Hk	1	IPI00300053	56,635.30	Ker	21	15	11
KRT35 keratin 35	1	IPI00294649	50,342.90	Ker	19	13	13
DSP Isoform DPI of Desmoplakin	1	IPI00013933	331,763.40	Mem	16	19	10
KRT31 51 kDa protein	1	IPI00796364	50,650.00	Ker	15	15	19
KRT32 Keratin, type I cuticular Hk	1	IPI00291540	50,300.30	Ker	10	9	10
KRT34 keratin 34	2	IPI00292715,IPI	49,405.60	Ker	15	19	15
VSIG8 V-set and immunoglobulin	1	IPI00376274	43,871.80	Mem	8	4	5
HIST1H2BL Histone H2B type 1-L	11	IPI00018534,IPI	13,934.70	His	5	3	4
JUP JUP protein	1	IPI00789324	81,709.90	Mem	11	9	6
HIST1H4H;HIST1H4I;HIST1H4J;HIST1H4K	1	IPI00453473	11,349.70	His	6	5	3
KRT81 Keratin type II cuticular Hk	1	IPI00760863	54,952.80	Ker	5	5	6
DSG4 Isoform 2 of Desmoglein-4	2	IPI00428691,IPI	115,434.70	Mem	5	7	7
ENSP00000381495 (KRTAP2-2)	2	IPI00455354,IPI	13,507.10	Ker	13	13	11
SFN Isoform 1 of 14-3-3 protein s	1	IPI00013890	27,756.80	Cyt	6	3	3
KRT40 type I hair keratin KA36	1	IPI00552959	48,120.60	Ker	6	3	4
H2AFX Histone H2A.x	1	IPI00219037	15,127.10	His	6	6	6
PKP1 Isoform 2 of Plakophilin-1	2	IPI00071509,IPI	82,844.70	Mem	2	0	2
KRT83 Keratin type II cuticular Hk	1	IPI00297795	54,195.90	Ker	9	5	2
KRT39 type I hair keratin KA35	1	IPI00741855	55,633.40	Ker	10	13	7
KRTAP11-1 Keratin-associated pr	1	IPI00216711	17,065.90	Ker	4	4	3
ENSP00000375147 (KRTAP analo	1	IPI00791014	53,888.60	Ker	3	3	2
SELENBP1 Selenium-binding prot	2	IPI00012303,IPI	52,374.00	Cyt	6	4	3
S100A3 Protein S100-A3	1	IPI00016752	11,695.30	Cyt	5	4	4
CALML3 Calmodulin-like protein	1	IPI00216984	16,872.80	Cyt	0	2	2
HSPA2 Heat shock-related 70 kDa	1	IPI00007702	70,005.00	Cyt	0	0	0
KRTAP24-1 Keratin-associated pr	1	IPI00414750	27,700.90	Ker	0	0	0
KRTAP4-9 Keratin-associated pro	1	IPI00105153	22,383.90	Ker	10	9	5
GAPDH Glyceraldehyde-3-phosph	1	IPI00219018	36,035.30	Cyt	4	4	2
TGM3 Protein-glutamine gamma	1	IPI00300376	76,615.00	Cyt	3	0	3
LRR15 Leucine-rich repeat-cont	1	IPI00152871	64,380.40	Mem	0	2	3
TUBA1A Tubulin alpha-1A chain	1	IPI00180675	50,117.70	Cyt	2	3	3
KRT36 Keratin, type I cuticular Hk	1	IPI00008692	52,229.00	Ker	2	2	2
PRDX6 Peroxiredoxin-6	1	IPI00220301	25,018.10	Cyt	2	0	0
FAM26D Isoform 1 of Protein FAI	1	IPI00065530	35,042.60	Mem	0	0	0
LYG2 Lysozyme g-like protein 2 p	1	IPI00328398	23,480.70	Cyt	0	0	0
KRTAP3-1 Keratin-associated pro	1	IPI00011212	10,520.80	Ker	4	5	6
AHNAK Neuroblast differentiatio	1	IPI00021812	629,086.40	Mem	0	0	0
KRT38 Keratin, type I cuticular Hk	1	IPI00297641	50,472.00	Ker	8	5	4
EEF1A1 Elongation factor 1-alpha	2	IPI00396485,IPI	50,123.20	Cyt	0	0	0
KRTAP10-9 Keratin-associated pr	1	IPI00429312	29,954.60	Ker	0	0	0

TUBB2A Tubulin beta-2A chain	2	IPI00013475,IPI	49,889.10	Cyt	4	3	2
ACTB Actin, cytoplasmic 1	3	IPI00021439,IPI	41,719.80	Cyt	0	0	0
HEPHL1 hephaestin-like 1	1	IPI00848044	131,588.80	Mem	3	0	0
KRTAP13-2 Keratin-associated pr	1	IPI00373959	18,708.80	Ker	8	4	3
ANXA2 annexin A2 isoform 1	2	IPI00418169,IPI	40,395.30	Cyt	0	0	0
ATP5B ATP synthase subunit beta	1	IPI00303476	56,542.50	Cyt	2	2	2
KRT33A keratin 33A	1	IPI00419574	45,922.10	Ker	3	3	3
YWHAE 14-3-3 protein epsilon	1	IPI00000816	29,157.00	Cyt	2	2	0
UBB;UBC;RPS27A ubiquitin and ri	24	IPI00179330,IPI	17,947.60	Cyt	0	0	0
KRTAP9-3 Keratin-associated pro	1	IPI00011222	16,833.00	Ker	6	4	2
KRTAP10-11;KRTAP10-10 Keratin	1	IPI00394674	30,243.80	Ker	0	0	0
KRTAP1-5 Keratin-associated pro	1	IPI00011211	17,990.50	Ker	6	4	4
EEF2 Elongation factor 2	1	IPI00186290	95,322.10	Cyt	0	0	0
HIST1H1C Histone H1.2	1	IPI00217465	21,347.80	His	0	0	0
KRTAP10-12 Keratin-associated p	1	IPI00394683	25,086.00	Ker	0	0	0
LAP3 Isoform 1 of Cytosol amino	2	IPI00419237,IPI	56,149.70	Cyt	0	0	0
ATP5A1 ATP synthase subunit alp	1	IPI00440493	59,734.10	Cyt	0	2	0
PABPC1 Isoform 1 of Polyadenyla	2	IPI00008524,IPI	70,653.30	Cyt	0	0	0
ENO1 Isoform Alpha enolase	1	IPI00465248	47,152.20	Cyt	0	0	0
TPI1 Isoform 1 of Triosephosphat	2	IPI00465028,IPI	30,772.80	Cyt	0	0	0
LGALS3 Galectin-3	1	IPI00465431	26,170.80	Cyt	0	0	0
FABP4 Fatty acid-binding protein	1	IPI00215746	14,700.70	Cyt	0	0	0
KRTAP3-2 Keratin-associated pro	1	IPI00011214	10,388.60	Ker	2	3	3
CTNNB1 Isoform 1 of Catenin bet	1	IPI00017292	85,479.00	Mem	0	0	0
AIM1 Absent in melanoma 1 prot	1	IPI00294840	188,659.10	Cyt	0	0	0
KRTAP1-3;LOC728951 Keratin-as	2	IPI00439630,IPI	18,163.40	Ker	3	4	2
PPL Periplakin	1	IPI00298057	204,631.90	Mem	0	0	0
TXNRD1 Thioredoxin reductase 1	2	IPI00554786,IPI	54,689.30	Cyt	0	0	0
KRTAP12-1 Keratin-associated pr	1	IPI00375324	9,717.90	Ker	0	0	0
GNPMB Isoform 2 of Transmemb	2	IPI00001592,IPI	62,625.20	Mem	0	0	0
SERPINB5 Serpin B5 precursor	1	IPI00783625	42,122.10	Cyt	0	0	0
HSPA5 HSPA5 protein	1	IPI00003362	72,405.60	Cyt	0	0	0
EIF4A1 Eukaryotic initiation facto	3	IPI00025491,IPI	46,137.30	Cyt	0	0	0
PLEC1 Isoform 1 of Plectin-1	9	IPI00014898,IPI	531,707.90	Mem	0	0	0
HSD17B4 Peroxisomal multifunct	1	IPI00019912	79,670.40	Cyt	0	0	0
RPLP2 60S acidic ribosomal prote	1	IPI00008529	11,647.40	Cyt	0	0	0
HSP90AB1 Heat shock protein HS	1	IPI00414676	83,249.30	Cyt	0	0	0
ACADVL Isoform 1 of Very long-c	2	IPI00028031,IPI	75,192.90	Cyt	0	0	0
ATG9B Autophagy-related protei	1	IPI00465328	101,002.60	Cyt	0	0	0
ARF1 ADP-ribosylation factor 1	2	IPI00215914,IPI	20,679.60	Cyt	0	0	0
KRTAP4-7 Keratin-associated pro	1	IPI00260838	22,469.20	Ker	2	0	2
HSP90AA1 heat shock protein 90	3	IPI00382470,IPI	98,147.10	Cyt	0	0	0
EEF1G Elongation factor 1-gamm	2	IPI00000875,IPI	50,101.40	Cyt	0	0	0

· shaft and cross-linked (insoluble) fractions; D and S are samples from affected offspring.

des	emPAI values				emPAI Norm	Cross-Linked Number of Unique Peptides				emPAI values				emPAI Norm
	M	F	Ave			D	S	M	F	M	F	Ave		
87	426.67	301.52	364.1	36.213	27	31	36	26	7.46	3.23	5.345	6.314		
39	123.28	36.22	79.75	7.932	17	23	24	14	4.34	1.23	2.785	3.29		
45	79.88	84.5	82.19	8.1747	16	13	18	16	6.83	5.27	6.05	7.147		
17	2.35	4.2	3.275	0.3257	31	22	27	32	8.02	9.63	8.825	10.42		
15	5.35	6.18	5.765	0.5734	22	16	20	22	9.39	7.64	8.515	10.06		
23	0.11	0.25	0.18	0.0179	51	43	48	34	0.53	0.3	0.415	0.49		
16	74.79	46.2	60.495	6.0169	5	9	8	6	4.83 *		2.42	2.859		
10	4.26	3.94	4.1	0.4078	18	15	15	13	16.98	8.14	12.56	14.84		
13	30.15	15.67	22.91	2.2787	4	6	9	5	4.76	1.55	3.155	3.727		
6	0.24	0.42	0.33	0.0328	16	10	10	18	1.85	2.09	1.97	2.327		
4	1.4	1.99	1.695	0.1686	8	6	7	4	3.63	0.93	2.28	2.693		
5	0.42	0.26	0.34	0.0338	18	16	16	12	0.66	0.53	0.595	0.703		
4	0.7	1.88	1.29	0.1283	9	6	7	5	5.37	3.89	4.63	5.469		
7	228.38	204.06	216.22	21.506	2	0	2	0						
6	0.21	0.18	0.195	0.0194	14	13	11	6	0.32	0.09	0.205	0.242		
12	7.83	9.77	8.8	0.8753	4	5	3	3	0.81 *		0.405	0.478		
2	0.25	0.12	0.185	0.0184	10	11	10	11	4.26	3.63	3.945	4.66		
4	0.56	0.56	0.56	0.0557	6	5	6	7	0.66	0.89	0.775	0.915		
5 *		4.61	2.3	0.2288	5	6	6	7	3.58	3.63	3.605	4.258		
0					10	12	12	10	0.87	0.76	0.815	0.963		
11	69.81	110.53	90.17	8.9684	0	0	0	0						
8	0.48	0.65	0.565	0.0562	6	4	4	4	0.25	0.18	0.215	0.254		
5	0.65	1.31	0.98	0.0975	13	13	10	3	3.51	0.65	2.08	2.457		
2	0.18	0.18	0.18	0.0179	5	4	5	8 *		*				
7	0.2	0.52	0.36	0.0358	9	3	10	3	0.72	0.33	0.525	0.62		
3	3.34	3.34	3.34	0.3322	3	4	4	3	3.34	1.08	2.21	2.611		
2	0.44	0.44	0.44	0.0438	5	4	5	4	1.96	1.47	1.715	2.026		
0					9	5	6	7	0.31	0.37	0.34	0.402		
0	0.11	0.11	0.11	0.0109	2	0	2	2	0.11	0.24	0.175	0.207		
6	0.6	1.02	0.81	0.0806	0	0	0	0						
2	0.22	0.19	0.205	0.0204	3	3	4	4	0.49	0.54	0.515	0.608		
3	0.13	0.13	0.13	0.0129	5	4	6	5	0.28	0.18	0.23	0.272		
0					5	3	6	4	0.28	0.1	0.19	0.224		
3 *		0.21	0.105	0.0104	5	2	6	4	0.37 *		0.185	0.219		
2	0.93	1.17	1.05	0.1044	5	4	3	3	0.81	1.06	0.935	1.104		
0					2	5	4	6	0.45	0.86	0.655	0.774		
0					4	4	5	4	0.19	0.3	0.245	0.289		
0					5	3	3	0						
4	3.76	1.83	2.795	0.278	0	0	0	0						
0					9	0	2	2	0.01	0.01	0.01	0.012		
3	0.53	0.53	0.53	0.0527	0	0	0	0						
0					5	4	4	6	0.39	0.49	0.44	0.52		
0					2	2	0	3						

5	0.13	0.29	0.21	0.0209	3	0	4	0				
0					7	2	4	5	0.35	0.25	0.3	0.354
5					3	6	4	0				
2	0.6	0.37	0.485	0.0482	0	0	0	0				
0					5	2	4	0				
2	0.12	0.2	0.16	0.0159	4	5	5	2	0.25	0.22	0.235	0.278
3	63.84	26.04	44.94	4.4698	0	0	0	0				
2				0	3	3	0	4				
0	0.23	0.23	0.23	0.0229	3	2	3	3 *		1.1	0.55	0.65
4 *	*				0	0	0	0				
0					0	3	3	4	0.44	0.57	0.505	0.597
2	0.83	0.35	0.59	0.0587	0	0	0	0				
0					4	5	2	7	0.07	0.26	0.165	0.195
0					3	9	0	3				
0					0	2	2	3	0.24	0.55	0.395	0.467
0					2	3	4	6	0.2	0.27	0.235	0.278
0					2	4	3	0				
0					7	4	2	0				
0					3	3	3	0				
0					4	2	4	2	0.51	0.31	0.41	0.484
0					3	2	4	0				
0					0	2	2	2	0.85 *		0.425	0.502
2	1.85	1.2	1.525	0.1517	0	0	0	0				
0					2	4	4	2	0.2	0.12	0.16	0.189
0					3	3	3	3	0.03	0.03	0.03	0.035
0	0.35	0.16	0.255	0.0254	0	0	0	0				
0					5	3	0	0				
0					6	0	2	2 *		0.12	0.06	0.071
0					3	0	2	2	1.28 *		0.64	0.756
0					2	2	0	2				
0					3	3	3	2	0.52 *		0.26	0.307
0					4	2	4	0				
0					3	2	2	2	0.15	0.13	0.14	0.165
0					4	3	2	0				
0					3	4	2	2	0.08	0.08	0.08	0.095
0					4	2	0	3				
0					4	3	0	0				
0					2	2	2	0				
0					4	4	0	0				
0					2	2	0	0				
2	0.59	0.59	0.59	0.0587	0	0	0	0				
0					3	2	0	2				
0					0	0	2	4 *		0.21	0.105	0.124