

Supplemental Table 1. Genes that were up- or down regulated in liver of offspring of dams fed a protein-restricted diet compared to controls

Gene Name	Gene Identifier	Ratio	Direction
UDP glucuronosyltransferase precursor	J02589	26.94	Down
Interferon-inducible GTPase	NM_001024884	20.71	Up
UDP glycosyltransferase 2 family, polypeptide B	NM_031533	17.28	Down
Cyclin B3	XM_228779	4.53	Down
Olfactory receptor 1326	NM_001000474	3.89	Down
Unknown	TC558741	3.64	Down
Unknown	TC563179	3.61	Down
Unknown	XM_223906	3.5	Up
Nebulin	XM_229925	3.38	Up
Periostin, osteoblast specific factor	XM_342245	3.37	Up
Solute carrier family 13 (sodium/sulfate symporters), member 1	NM_031651	3.33	Down
Centaurin, alpha 1	NM_133567	3.29	Up
Signal peptide, CUB domain, EGF-like 3	XM_228030	3.25	Down
Gap junction membrane channel protein alpha 7	XM_001081521	3.2	Up
3-oxoacid CoA transferase 1	XM_001073523	3.14	Up
Fc receptor, IgE, low affinity II, alpha polypeptide	NM_133550	3.11	Up
Unknown	AW142860	3.08	Down
Mucin 13	AI044457	3.02	Down
Adenylate kinase 5 isoform 1	XM_001080050	3.01	Up
Chemokine (C-X-C motif) ligand 14	NM_001013137	3	Down
60S RIBOSOMAL PROTEIN L29	XM_346055	3	Up
Lysozyme (1,4-beta-N-acetylmuramidase)	TC544848	3	Down
Unknown	BI302848	2.98	Up
RIKEN cDNA 1700019M22	XM_576989	2.94	Up
Carbonic anhydrase VB, mitochondrial	NM_001005551	2.94	Up
Mitogen activated protein kinase kinase kinase 10	XM_218368	2.92	Down
Purinergic receptor P2Y, G-protein coupled 2	NM_017255	2.9	Down
Q6PK32 ANK1 protein,	TC521018	2.89	Up
ELAV (embryonic lethal, abnormal vision, Drosophila)-like 3 (Hu antigen C)	NM_172324	2.88	Up

5-nucleotidase, cytosolic IA	XM_233494	2.85	Up
ATP-binding cassette transporter sub-family A member 9	BQ198742	2.84	Up
SOX2 protein	XM_574919	2.82	Up
Olfactory receptor 1702	NM_001001374	2.81	Up
Unknown	AW142962	2.81	Down
5-3 exoribonuclease 1	XM_217233	2.8	Down
Cytochrome P450 2C25	TC559595	2.77	Down
Solute carrier family 2 (facilitated glucose transporter), member 3 (Slc2a3)	NM_017102	2.76	Up
Unknown	BE104359	2.74	Up
Unknown	BF555507	2.73	Down
Unknown	AA875015	2.73	Up
Unknown	BI395739	2.73	Up
Tetratricopeptide repeat domain 4	NM_001013214	2.72	Down
CDS, putative nuclear protein	XM_233316	2.71	Up
NOGO-interacting mitochondrial protein	XM_228392	2.71	Down
Unknown	TC558907	2.66	Up
PR domain containing 1, with ZNF domain	XM_228320	2.65	Up
Unknown	BQ203009	2.65	Up
Unknown	AI179957	2.64	Up
Grp94 neighboring nucleotidase	XM_001079794	2.62	Up
Aldehyde oxidase structural homolog 2	NM_001008523	2.61	Up
POU domain, class 5, transcription factor 1	NM_001009178	2.61	Up
Unknown	TC562886	2.58	Up
Unknown	TC529016	2.58	Up
Galanin-like peptide precursor	NM_022633	2.57	Up
Junctophilin 3; junctophilin type 3; trinucleotide repeat containing 22	XM_224184	2.57	Up
Rab14_predicted. RAB, member of RAS oncogene family-like 4	BF406174	2.56	Up
Unknown	AI171288	2.55	Up
Unknown	BM386916	2.55	Down
T cell receptor V-alpha J-alpha	XM_224048	2.55	Up
Unknown	TC554792	2.55	Down
Tankyrase 1 binding protein 1	XM_215763	2.55	Up

Potassium voltage-gated channel, shaker-related subfamily, member 2	NM_012970	2.55	Up
Unknown	BF413704	2.54	Up
Chromosome 9 open reading frame 79	XM_001071792	2.53	Up
KIAA0953 protein	XM_233942	2.53	Up
Unknown	TC567675	2.52	Up
Cadherin 17	NM_053977	2.51	Up
Thyroid hormone receptor beta	NM_012672	2.51	Down
Amiloride-sensitive cation channel 2, neuronal	NM_024154	2.51	Up
Tumor necrosis factor alpha induced protein 6	XM_001065494	2.5	Up
Neurocalcin delta	AI101330	2.5	Up
Unknown	TC542830	2.5	Down
High mobility group AT-hook 2	NM_032070	2.5	Up
Unknown	CV102938	2.5	Up
Spatial-delta	XM_001055117	2.49	Up
Brain-enriched guanylate kinase-associated	NM_024163	2.48	Up
Unknown	BM386413	2.48	Up
40S ribosomal protein S2	XM_344182	2.47	Up
Unknown	XM_001074636	2.47	Up
Unknown	BG375928	2.47	Up
Coiled-coil domain containing 32	NM_001024245	2.46	Up
CD6 antigen	NM_175577	2.46	Up
Unknown	AI137143	2.45	Up
Spetex-2F protein	XM_001060719	2.44	Up
Ly-49 stimulatory receptor 3	NM_153726	2.44	Down
Kallikrein 7	XM_218649	2.44	Up
Hypothetical protein FLJ14642	XM_233381	2.43	Up
Unknown	BF391695	2.43	Up
G protein-coupled receptor 119	NM_181770	2.42	Up
Unknown	BQ211218	2.42	Up
Unknown	BI303276	2.42	Up
RIKEN cDNA 493055I21	NM_001025772	2.42	Up
60S ribosomal protein L19	XM_346139	2.42	Up
RATUDPB Rat UDP glucuronosyltransferase-21	M33747	2.41	Up
Fibrillin 2	NM_031826	2.41	Up

Microtubule-associated protein 2	NM_013066	2.41	Up
Unknown	AI010279	2.4	Up
Unknown	AA900736	2.39	Up
Hypothetical protein FLJ30525	NM_001037655	2.39	Down
Chromosome condensation protein G	XM_223468	2.39	Up
Unknown	AA892319	2.39	Up
Regulating synaptic membrane exocytosis 4	NM_170666	2.38	Up
Unknown	AA900738	2.37	Up
Transmembrane glycoprotein A33 antigen	XM_341149	2.37	Up
ATPase, H transporting, lysosomal V1 subunit B1 Ac2-032.	XM_232119	2.35	Up
	AY321326	2.35	Up
PROHIBITIN (B-CELL RECEPTOR ASSOCIATED PROTEIN 32)	XM_228515	2.34	Up
Unknown	CB547648	2.34	Up
ATP-binding cassette, sub-family B (MDR/TAP), member 1A	NM_133401	2.33	Down
Hypothetical protein LOC689285	XM_001070258	2.31	Up
Novel protein CG5882-PA	XM_219988	2.31	Up
Unknown	AW531000	2.3	Up
Wingless related MMTV integration site 9B	XM_221015	2.3	Up
Glutamate receptor, ionotropic, AMPA1 (alpha 1)	NM_031608	2.29	Up
Unknown	AI409065	2.28	Up
Unknown	BF283449	2.28	Up
Unknown	AA900517	2.27	Up
Unknown	AA945994	2.27	Up
Hypothetical LOC298658	XM_238433	2.27	Up
Nuclear protein in the AT region	XM_001072137	2.27	Down
Unknown	TC561031	2.27	Down
RVL10034 Wackym-Soares normalized rat vestibular cDNA library cDNA 5,	DV719302	2.26	Down
G protein-coupled receptor 123	XM_219468	2.26	Up
Apoptosis facilitator Bcl-2-like protein 14	NM_001024338	2.26	Up
Hypothetical protein KIAA0555	XM_001057645	2.26	Up
Plexin A3	XM_219723	2.26	Up
EGF-like-domain, multiple 4[	XM_341803	2.25	Down

Unknown	AI058435	2.25	Up
Kyphoscoliosis	XM_236571	2.24	Down
Suppressor of cytokine signaling 5	XM_575987	2.24	Up
Hypothetical protein C230069C04	XM_345161	2.24	Up
Prostaglandin E receptor 2, subtype EP2	NM_031088	2.24	Up
Unknown	BE100578	2.24	Up
Unknown	BI293639	2.24	Up
Ataxin-1 (Spinocerebellar ataxia type 1 protein homolog)	XM_344897	2.23	Up
Unknown	CB547307	2.23	Up
Splicing coactivator subunit SRm300	XM_001077322	2.23	Up
Calmodulin Binding Transcription. Activator 1	BE098382	2.22	Up
Glutamine-fructose-6-phosphate transaminase 2	NM_001002819	2.22	Up
Gonadotropin releasing hormone receptor	NM_031038	2.22	Up
Steroid 5 alpha-reductase 1	NM_017070	2.22	Down
Immunoglobulin superfamily, member 2	XM_227554	2.22	Up
Unknown	BI278605	2.22	Up
Unknown	TC560661	2.21	Up
Elongin A; transcription elongation factor B (SIII), polypeptide 3 (110kD); ...	XM_344552	2.21	Up
Ellis van Creveld gene homolog	XM_001056511	2.21	Up
ATPase, aminophospholipid transporter (APLT), class I, type 8A, member 1	XM_223390	2.21	Down
Unknown	BQ782259	2.2	Up
Unknown	TC527530	2.2	Down
Poly(rC) binding protein 2	XR_009264	2.2	Up
ADP-ribosylation factor-like 10	NM_207165	2.2	Up
Zinc finger, CCHC domain containing 3 (LOC682483), MITF-2B protein	XM_001061691	2.2	Up
Heterogeneous nuclear ribonucleoprotein A1 (Helix- destabilizing protein)[	XM_001075698	2.19	Up
Olfactory receptor 1362	NM_001006598	2.19	Down
Lactate dehydrogenase A-like 6B	NM_183334	2.19	Up
G protein-coupled receptor 1	NM_012961	2.19	Up
Unknown	BQ210233	2.18	Up
Phosphodiesterase 3A	NM_017337	2.18	Up

Spectrin beta 4	XM_218364	2.18	Up
Unknown	TC548508	2.18	Down
Unknown	AI145882	2.18	Up
Synaptotagmin XIII	NM_030839	2.18	Up
POU domain, class 3, transcription factor 4	NM_017252	2.18	Up
Unknown	TC526864	2.17	Up
Hypothetical protein	XM_233287	2.17	Up
Unknown	BE104800	2.17	Down
MacroH2A2	XM_342138	2.17	Up
Interleukin 10	NM_012854	2.17	Down
Wingless-related MMTV integration site 7A, transcript variant 2	XM_342723	2.16	Up
Unknown	BG380737	2.16	Up
Unknown	AA955691	2.15	Up
Unknown	AW529441	2.15	Up
ATPase, Ca ⁺⁺ transporting, type 2C, member 2	NM_134462	2.15	Up
Unknown	AA964871	2.15	Up
Cyclin-dependent kinase inhibitor 1A	NM_080782	2.15	Up
Unknown	AI231571	2.14	Up
Purinergic receptor P2X, ligand-gated ion channel, 5	NM_080780	2.14	Up
Hypothetical LOC289729	XM_237925	2.14	Up
Hairless homology	NM_024364	2.14	Up
Plexin A2	XM_001070296	2.11	Down
Unknown	BI295563	2.11	Up
Calcium channel, voltage-dependent, P/Q type, alpha 1A subunit	NM_012918	2.1	Up
Guanine nucleotide binding protein, alpha	NM_017327	2.1	Up
Unknown	AI228129	2.09	Up
STELLA	XM_576274	2.09	Up
Unknown	TC525953	2.09	Up
Kinesin family member 5A	BF408765	2.08	Up
Hmgb1 protein	XR_008396	2.08	Up
Galanin	NM_033237	2.08	Down
Nuclear factor kappa B	AA858801	2.07	Up
Unknown	BQ201365	2.07	Up

F-box and leucine-rich repeat protein 16	NM_001009504	2.07	Up
CD84 leukocyte antigen	XM_577290	2.06	Up
Prominin 2	NM_138857	2.05	Up
Ring finger protein 29	NM_001012218	2.05	Up
Nitric oxide synthase 1, neuronal	NM_052799	2.05	Up
Tissue inhibitor of metalloproteinase 1	AA874884	2.04	Up
Discs, large homolog 4	NM_019621	2.04	Up
Cornichon homolog 2	NM_001025132	2.04	Up
Unknown,	TC526201	2.04	Up
Hypothetical protein FLJ12242	XM_217075	2.03	Up
Methylenetetrahydrofolate dehydrogenase	XM_223282	2.03	Down
Doublesex and mab-3 related transcription factor 8.1 isoform a	XM_001055549	2.03	Up
Tensin 4	NM_001024881	2.03	Up
Unknown	BE117009	2.03	Up
Solute carrier family 2 (facilitated glucose transporter), member 6	XM_238321	2.02	Up
RIKEN cDNA C230093N12	XM_345273	2.02	Up
FCH domain only 1	XM_214313	2.02	Up
Src homology three (SH3) and cysteine rich domain	XM_343491	2.01	Up
Bcl2-like 1 (Bcl2l1), transcript variant 2,	NM_031535	2	Up
Oligodendrocyte transcription factor 1	NM_021770	2	Down
S-phase kinase-associated protein 1A isoform b; .	XM_344771	1.99	Up
Olfactory receptor 276	NM_001000227	1.99	Down
Receptor accessory protein 6	NM_001013218	1.99	Down
Unknown	TC544660	1.99	Up
Tumor necrosis factor (TNF superfamily, member 2)	NM_012675	1.98	Up
Hypothetical protein DKFZp434J1015.1	XM_221915	1.98	Up
Olfactory receptor 1735	NM_001001397	1.98	Up
Transcription elongation factor B polypeptide 3 binding protein 1	XM_227148	1.98	Up
Glutamate receptor, ionotropic, AMPA1 (alpha 1)	NM_031608	1.97	Up
CD79B antigen	NM_133533	1.97	Up
Leucine rich repeat containing 27 (), transcript variant 2	XM_001056081	1.96	Down
ATP-binding cassette transporter sub-family A member 9	XM_221101	1.96	Up

Unknown	AI175447	1.94	Up
I-branching beta-1,6-acetylglucosaminyltransferase	BI289859	1.94	Up
RAB6,	BG666908	1.94	Up
Cell division cycle 2-like 6	AA899160	1.93	Up
Autoimmune regulator (autoimmune polyendocrinopathy candidiasis ectodermal dystrophy	XM_228067	1.93	Up
v-mos moloney murine sarcoma viral oncogene homolog	NM_020102	1.93	Up
Axomer-4.	AB097854	1.92	Up
Solute carrier family 9 (sodium/hydrogen exchanger), member 3	NM_012654	1.92	Up
Natural cytotoxicity triggering receptor 3	NM_181822	1.91	Down
GTP binding protein 5.	BI292232	1.91	Up
RIKEN cDNA 1700019P01	XM_235557	1.91	Up
Rous sarcoma oncogene	NM_031977	1.9	Down
Unknown	AI412231	1.9	Up
Hypothetical protein LOC500846	XM_576237	1.89	Up
Unknown	AI454044	1.89	Up
Hypothetical protein FLJ22527	XM_237386	1.89	Up
μ -crystallin,	AI233209	1.89	Up
Tissue inhibitor of metalloproteinase 3	NM_012886	1.88	Down
KIAA0157 gene product is novel.	XM_219441	1.88	Down
UDP glycosyltransferase 2 family, member 3	NM_153314	1.88	Down
Glial cell line derived neurotrophic factor	NM_019139	1.87	Down
Crossveinless 2 CG15671-PA	XM_576652	1.86	Up
Acidic nuclear phosphoprotein 32 family, member B	NM_131911	1.86	Down
Olfactory receptor 827	NM_001000902	1.86	Down
Unknown	BM388083	1.85	Up
Unknown	TC550079	1.85	Down
Anti-Mullerian hormone type 2 receptor	NM_030998	1.85	Up
Hypothetical protein MGC33309	NM_001014003	1.83	Up
Unknown	AI144777	1.82	Up
ATP-binding cassette, sub-family A (ABC1), member 13	XM_223625	1.81	Up
Unknown	DV717733	1.81	Up
Jumonji domain containing 4	XM_220561	1.81	Down
Cytochrome P450, 3a18	NM_145782	1.81	Up

Serine (or cysteine) peptidase inhibitor, clade E, member 1	NM_012620	1.81	Up
Olfactory receptor 1587	NM_001000913	1.8	Up
Unknown	BI296619	1.8	Down
Unknown	DV728183	1.8	Down
Unknown	TC565815	1.79	Down
Butyrylcholinesterase	NM_022942	1.77	Down
Unknown	BM389915	1.77	Up
Hypothetical protein FLJ38663	XM_573395	1.76	Down
Unknown	XM_001063963	1.75	Up
Olfactory receptor 86	NM_001000747	1.75	Up
Unknown	AI113011	1.75	Up
Solute carrier family 4, member 4	NM_053424	1.75	Down
Unknown	AA924473	1.74	Down
ATPase, class I, type 8B, member 4	XM_001055184	1.74	Down
Unknown	AI105089	1.74	Up
Unknown	TC563594	1.74	Up
GLI-Kruppel family member GLI1	XM_001056128	1.73	Up
Unknown	XM_344992	1.72	Down
Hypothetical protein FLJ34512	XM_220252	1.71	Up
Unknown	DV717235	1.71	Up
Unknown	AA943129	1.71	Down
Hypothetical protein FLJ11305	XM_341465	1.71	Down
Unknown	AA901307	1.7	Down
Unknown	AA963278	1.7	Up
T cell receptor V delta 6	XM_001081630	1.69	Up
RIKEN cDNA 4930434E21	XM_001067264	1.69	Down
Leucine rich repeat containing 3	NM_145679	1.68	Up
Bcl2-like 1	NM_031535	1.66	Up
Phosphorylase kinase (EC 2.7.1.38) beta chain,	NM_001014152	1.65	Down
Endothelin 3	XM_001072605	1.65	Up
Coatomer gamma-2 subunit (Gamma-2 coat protein)	XM_217496	1.64	Down
Unknown	BF394236	1.63	Up
JNK/SAPK-inhibitory kinase	NM_001024254	1.63	Down
UDP-glucuronosyltransferase 2 family, member 5	NM_001007264	1.63	Down

DNA primase, p49 subunit	NM_001008768	1.61	Down
Tudor domain containing 3	NM_001012043	1.61	Down
Cell division cycle associated 8	NM_001025050	1.6	Down
MrsG protein,	TC526428	1.58	Down
Unknown	CB606387	1.58	Down
Unknown	BF290004	1.58	Down
Hepatocyte growth factor	NM_017017	1.56	Down
Neurotrophic tyrosine kinase, receptor, type 1	NM_021589	1.55	Up
Scavenger receptor type A SR-A	XM_573919	1.54	Down
Pleckstrin homology domain containing, family B (eectins) member 1	NM_172033	1.54	Up
Unknown	DV728362	1.54	Down
Olfactory receptor MOR202-8	XM_221683	1.53	Up
Angiotensin II receptor, type 1	NM_030985	1.52	Down
Unknown	AW916954	1.52	Down
Guanine nucleotide binding protein, alpha 11	NM_031033	1.52	Down
Thyroglobulin	NM_030988	1.51	Down
Olfactory receptor 1434 N	NM_001000013	1.51	Down
Retinol dehydrogenase 11	NM_001012193	1.51	Down
MASK-4E-BP3 protein	XM_001063844	1.5	Down

The ratio is calculated as the average ratio in expression levels between PR (*n* 6) and Control offspring (*n* 6). Direction indicates whether the change in expression between PR and Control offspring is increased or decreased. All genes showed a significant change in expression between PR and Control offspring with a $P < 0.05$. P-values which were calculated using the Wilcoxon ranking feature with the Benjamini and Hochberg correction.

Supplemental Table 2. Genes that were up- or down regulated in liver of the offspring of dams fed a protein-restricted diet supplemented with folic acid compared to controls.

Gene Name	Gene Identifier	Ratio	Direction
UDP glucuronosyltransferase precursor, gene	J02589	22.61	Down
UDP glycosyltransferase 2 family, polypeptide B	NM_031533	11.35	Down
Casein kinase II, alpha 1	BF551036	8.13	Down
Anterior pharynx defective 1a homolog	NM_001014255	5.92	Down
E74-like factor 2 (Elf2), transcript variant 2	NM_001012181	5.18	Down
Copine IV	XM_001070003	4.54	Down
RIKEN cDNA 4932415L06 gene	XM_237289	3.94	Down
Chemokine (C-C motif) ligand 11	NM_019205	3.72	Down
Class VI alcohol dehydrogenase	S79716	3.53	Down
Olfactory receptor 1337	NM_001000480	3.51	Down
Small nuclear ribonucleoprotein D3	XM_001079870	3.26	Down
Carnitine acetyltransferase	NM_001004085	3.19	Up
Growth hormone 1	NM_001034848	2.93	Down
Sema domain, transmembrane domain (TM), and cytoplasmic domain, (semaphorin) 6A	XM_341612	2.91	Down
B-box and SPRY domain containing	NM_022261	2.89	Up
Zinc finger, MYND domain containing 19	NM_198770	2.88	Down
Unknown	BF552300	2.84	Down
Unknown	BQ196294	2.79	Down
Unknown	BF550568	2.68	Up
Jumonji domain containing 4	XM_220561	2.58	Down
Unknown	TC524589	2.55	Down
Fibrous sheath-interacting protein 1	XM_215818	2.54	Down
Leucine rich repeat containing 27	XM_001056081	2.52	Down
Thyroid hormone receptor beta	NM_012672	2.51	Down
DEAH (Asp-Glu-Ala-His) box polypeptide 35A	XM_342565	2.5	Up
ADP-ribosyltransferase 2b	NM_198735	2.46	Up
Phospholipase A2 precursor (Phosphatidylcholine 2-acylhydrolase)	XR_007343]	2.46	Up
Zinc finger CCCH type containing 6	XM_001081128	2.43	Down
KIAA1052 protein	XM_343383	2.42	Down

G protein-coupled receptor 21	XM_231251	2.42	Down
Unknown	BE109129	2.4	Down
RIKEN cDNA 1200015N20	XM_228362	2.4	Down
Unknown	AI502122	2.39	Down
Cytochrome P450, family 39, subfamily a, polypeptide 1	XM_236983	2.36	Down
Splicing factor, arginine/serine-rich 5	NM_019257	2.35	Up
Unknown	TC551473	2.34	Down
Serine/threonine-protein kinase ATR (Ataxia telangiectasia and Rad3-related protein)	XM_001062084	2.32	Down
Unknown	TC556438	2.32	Down
Unknown	AA999167	2.32	Down
Olfactory receptor 130	NM_001001272	2.32	Down
3-oxoacid CoA transferase 2A	NM_001012221	2.3	Down
Hypothetical protein Dd25	NM_199403	2.3	Up
Arylacetamide deacetylase-like 1	XR_008069	2.3	Up
PERQ amino acid rich, with GYF domain 1	XM_237365	2.29	Down
Ubiquitin specific protease 24 A	XM_233260	2.27	Down
Unknown	TC554403	2.25	Down
Heat shock protein 4	NM_153629	2.25	Down
Unknown	TC526532	2.23	Up
Unknown	AW142860	2.22	Down
Unknown	CA339579	2.22	Up
U6 snRNA-associated Sm-like protein LSm6, transcript variant 3	XM_001070871	2.21	Down
Interleukin enhancer binding factor 3	AW142773	2.2	Up
Syntrophin, acidic 1	XM_342548	2.2	Up
Dynein, axonemal, heavy polypeptide 9	XM_213354	2.2	Down
Unknown	TC527065	2.19	Down
NYD-SP28 protein	NM_001014203	2.18	Down
ALANYL-TRNA SYNTHETASE	TC526229	2.18	Down
Olfactory receptor 1385	NM_214833	2.18	Down
Unknown	AA925833	2.18	Up
CD8 antigen, alpha chain	NM_031538	2.18	Up
Nuclear receptor subfamily 2, group F, member 2	NM_080778	2.17	Up
Unknown	BF286478	2.15	Down

Unknown	BQ781810	2.14	Up
Ankyrin repeat domain 13c	XM_001062165	2.14	Down
Olfactory receptor 276	NM_001000227	2.14	Down
Dynamin 1	NM_080689	2.14	Down
Bromodomain and WD repeat domain containing 2	XM_219377	2.13	Down
Complement component 5	XM_345342	2.12	Down
Lin-9 homolog (LOC685393),	XM_001063618	2.12	Down
Olfactory receptor 848	NM_001000402	2.11	Down
Alpha-3 type IX collagen	XM_342599	2.05	Up
Procollagen, type XIV, alpha 1	XM_235308	2.04	Down
CD36	AI102873	2.03	Down
Unknown	CB547883	2.02	Up
F-box and WD-40 domain protein 11	XM_001063835	2.02	Down
Putative homeobox protein	XM_228242	2.01	Down
Disco-interacting protein 2 homolog, transcript variant 2	XM_001070526	1.99	Up
Chimerin 1	NM_032083	1.98	Down
Acetoacetyl-CoA synthetase	NM_023104	1.98	Up
Unknown	AA964691	1.97	Down
High mobility group box 1	NM_012963	1.96	Down
Unknown	AY383712	1.96	Down
Reticulocalbin 1	BF281577	1.96	Down
Docking protein 5 (Downstream of tyrosine kinase 5)	XM_001053057	1.95	Down
Glyceraldehyde-3-phosphate dehydrogenase	XM_232601	1.95	Down
Epithelial V-like antigen 1	XM_236197	1.95	Down
Hypothetical protein FLJ20276	XM_001070679	1.95	Down
Unknown	BF548061	1.95	Down
Mesoderm development candiate 2	NM_001008345	1.93	Down
Ssplicing factor, arginine/serine-rich 5	NM_019257	1.92	Up
Mmelatonin receptor 1B	XM_345899	1.92	Up
Bbutyrylcholinesterase	NM_022942	1.92	Down
Rous sarcoma oncogene	NM_031977	1.91	Down
Cullin 5	NM_022683	1.9	Down
Unknown	BF560252	1.9	Down
Neuraminidase 3	NM_054010	1.9	Down
Unknown	AA818657	1.9	Up

Sterile alpha motif domain containing 14	NM_001024966	1.89	Down
Unknown	CB545206	1.88	Down
Potassium inwardly-rectifying channel, subfamily J, member 15	NM_133321	1.88	Down
Unknown	AI230744	1.87	Down
Unknown	AI236741	1.87	Up
Similar to RN49018	XM_236654	1.87	Up
Unknown	BE121268	1.87	Up
EDA protein homolog	XM_228582	1.86	Down
Unknown	AI176543	1.85	Down
Unknown	TC559862	1.85	Down
39S ribosomal protein L40, mitochondrial precursor	XM_224354	1.84	Down
Anterior pharynx defective 1a homolog	NM_001014255	1.83	Down
Putative membrane steroid receptor	NM_001014099	1.83	Down
Unknown	AW918776	1.83	Down
T-complex-associated testis expressed 1	XM_236941	1.82	Up
RNA binding motif protein 22	NM_001025676	1.82	Down
Nuclear receptor subfamily 1, group I, member 3	NM_022941	1.81	Down
Solute carrier family 10 (sodium/bile acid cotransporter family), member 5	NM_001025280	1.81	Down
KIAA0467 protein	XM_342892	1.8	Down
Heat shock 70kDa protein 4-like	XM_001063049	1.8	Down
Unknwon	XM_001055055	1.8	Up
Protein tyrosine phosphatase, receptor type, f polypeptide (PTPRF), interacting protein, alpha	XM_238162	1.78	Down
Ras GTPase-activating-like protein IQGAP2	TC529469	1.78	Down
Hypothetical protein LOC689710	XM_001071742	1.77	Down
UDP-GlcNAc:betaGal beta-1,3-N-acetylglucosaminyltransferase 1	XM_223674	1.77	Down
Rat nucleolin gene	M55017	1.77	Down
XK-related protein 4	NM_001011971	1.77	Down
Neogenin	XM_001074913	1.76	Up
Guanine nucleotide binding protein, alpha 12	NM_031034	1.76	Up
Unknown	BM986662	1.76	Down
Phosphodiesterase 4A, cAMP specific	NM_013101	1.74	Up

Chloride channel 3	NM_053363	1.74	Down
Acyl-CoA thioesterase 4 (Peroxisomal acyl coenzyme A thioester hydrolase Ib)	XM_001057693	1.74	Up
Vacuolar protein sorting 4a	NM_145678	1.73	Down
Aldehyde oxidase 2	NM_001008522	1.73	Down
Unknown	BF394683	1.72	Down
Phospholipid scramblase 4	XM_576448	1.72	Down
Unknown	DV728362	1.72	Down
KIAA0157 gene product	XM_219441	1.71	Down
Unknown	TC540533	1.7	Down
Chondroitin beta1,4 N-acetylgalactosaminyltransferase	XM_001070654	1.7	Down
Unknown	TC544844	1.69	Down
U2af1-rs2	XM_217612	1.69	Down
Microtubule associated serine/threonine kinase 2	XM_233782	1.69	Up
Tumor endothelial marker 5 precursor	XM_240449	1.69	Down
Aminoacylase 1	XM_346293	1.69	Down
Pperoxisomal long chain acyl-CoA thioesterase Ia	XM_234399	1.68	Up
Unknown	BG376471	1.68	Up
Natural cytotoxicity triggering receptor 3	NM_181822	1.68	Down
Unknown	TC523511	1.68	Down
Polybromo-1	XM_240329	1.68	Up
Transmembrane glycoprotein A33 antigen	XM_341149	1.67	Up
Neural precursor cell expressed, developmentally down-regulated gene 4A	AI407482	1.66	Down
RAB30	XM_218916	1.66	Up
Unknown	BF409042	1.66	Up
Urocanase domain containing 1 A	XM_001054337	1.66	Down
MutS homolog 3	XM_001065837	1.66	Down
Unknown	AW143339	1.66	Down
PHD finger protein 14 isoform 1	XM_575385	1.65	Down
Activated leukocyte cell adhesion molecule	NM_031753	1.65	Down
Kinesin family member 1C	NM_145877	1.64	Down
KIAA0564 protein	XM_214237	1.64	Up
LUC7-like	NM_001024269	1.64	Down
Laforin (Lafora PTPase)	XM_001070057	1.64	Down

Tudor domain containing 3	NM_001012043	1.64	Down
Amino acid transporter	NM_001003705	1.63	Down
RT1 class Ib, locus S3	XM_215303	1.63	Down
Unknown	AA946250	1.62	Down
Fibulin 2, transcript variant 2	XM_232197	1.6	Down
Chromosome 10 open reading frame 6	XM_001062922	1.6	Down
High mobility group 1 protein	XM_224783	1.59	Down
Hect (homologous to the E6-AP (UBE3A) carboxyl terminus) domain and RCC1 (CHC1)-like domain	XM_236362	1.59	Down
Solute carrier family 4, member 4	NM_053424	1.59	Down
Hypothetical protein FLJ38663	XM_573395	1.59	Down
Unknown	TC522968	1.59	Down
E74-like factor 2 (Elf2), transcript variant 2	NM_001012181	1.58	Down
Spetex-2D protein	NM_001011701	1.58	Down
Expressed sequence AI850305 (LOC314660)	XM_234947	1.57	Down
HMG-1	XM_343876	1.56	Down
Follicular lymphoma variant translocation 1	XM_341106	1.55	Down
Unknown	BM392264	1.55	Up
Olfactory receptor 1565	NM_001000908	1.55	Down
Unknown	CF109359	1.55	Down
RIKEN cDNA 4921537P18 (LOC311106)	XM_230011	1.54	Up
Unknown	BF567892	1.54	Up
ABC transporter ATP-binding protein	TC539913	1.53	Down
Unknown	BU759576	1.53	Down
Unknown	BG375795	1.53	Down
RIKEN cDNA 5730509K17 gene	XM_001055728	1.53	Down
Unknown	AW913982	1.53	Up
Transcription elongation factor A (SII), 2	NM_057098	1.53	Down
Unknown	BF550875	1.52	Down
Septin 10 isoform 1	NM_001014033	1.51	Down
RAB32	AW915417	1.5	Down

The ratio is calculated as the average ratio in expression levels between the offspring of dams fed a protein-restricted diet supplemented with folic acid (PRF, *n* 6) and Control offspring (*n* 6).

Direction indicates whether the change in expression between PRF and Control offspring is

increased or decreased. All genes showed a significant change in expression between PRF and Control offspring with a $P < 0.05$. P-values which were calculated using the Wilcoxon ranking feature with the Benjamini and Hochberg correction.

Supplemental Table 3. Genes that were up- or down regulated in liver of offspring of dams fed a protein-restricted diet supplemented with folic acid compared to those fed a protein-restricted diet

Gene Name	Gene Identifier	Ratio	Direction
RT1 class Ib	AW142896	11.86	Down
Camello-like 3	XM_575585	5.75	Down
Cyclin B3	XM_228779	4.9	Up
X-linked gene	NM_019203	4.68	Up
ATPase, H ⁺ transporting, V0 subunit D, isoform 2	NM_001011972	4.57	Down
Q96AL3 PHA4 protein	TC522828	4.27	Up
Unknown	TC525504	3.95	Up
Similar to Eph receptor A4	XM_244186	3.9	Up
Unknown	TC558494	3.77	Up
Copine IV	XM_001070003	3.74	Down
Phosphorylase kinase gamma 1	NM_031573	3.38	Down
Unknown	TC557723	3.29	Down
Chemokine (C-C motif) ligand 11	NM_019205	3.21	Down
N-acetyltransferase 8	NM_022635	3.2	Down
Unknown	TC544566	3.18	Down
Protein tyrosine phosphatase, receptor type, J	NM_017269	3.16	Up
Hypothetical protein FLJ10901	XM_213984	3.14	Up
Q8R4C3 (Q8R4C3) Csr1,	TC560462	3.11	Down
Rho/rac guanine nucleotide exchange factor (GEF) 18	XM_221775	3.11	Up
RNAJ3232 mRNA for MHC class II RT1-D beta1 chain haplotype k	AJ003232	3.1	Up
Unknown	TC568477	2.97	Up
Mucin 13	AI044457	2.93	Up
Nebulin	XM_229925	2.9	Down
Unknown	TC533179	2.85	Up
Unknown	TC530834	2.84	Up
MHC class II antigen RT1.B-1 -chain	AI228153	2.83	Down
Unknown	AA892313	2.82	Up

Unknown	AW144003	2.79	Up
Eph receptor A3	NM_031564	2.78	Up
Unknown	TC550365	2.77	Up
Lymphocyte antigen 6 complex, locus A	XM_343263	2.77	Up
Unknown	TC557578	2.75	Up
Hypothetical LOC362870	XM_347084	2.73	Up
Beta-catenin	AF486617	2.72	Up
Unknown	AI179520	2.72	Down
Squalene epoxidase	NM_017136	2.72	Up
Solute carrier family 44, member 4	NM_212541	2.7	Down
Neural cell adhesion molecule 1	NM_031521	2.7	Down
Chromosome 13 open reading frame 18	XM_224403	2.69	Up
Unknown	NM_001012352	2.68	Up
KIAA1751 protein	XM_233707	2.65	Down
Ly6-B antigen gene	XM_216959	2.63	Up
Chemokine (C-X-C motif) ligand 14	NM_001013137	2.6	Up
Carcinoembryonic antigen-related cell adhesion molecule 3	XM_218392	2.6	Down
E74-like factor 2 (Elf2), transcript variant 2	NM_001012181	2.58	Down
Unknown	BF406860	2.58	Down
Sin3A associated protein 130	XM_226078	2.58	Up
TRAF2 binding protein	NM_001014044	2.57	Up
Unknown	TC544469	2.53	Up
ADP-ribosylation factor-like 10	NM_207165	2.51	Down
B-box and SPRY domain containing	NM_022261	2.5	Up
Unknown	TC561327	2.47	Up
Elongin A; transcription elongation factor B (SIII), polypeptide 3	XM_344552	2.46	Down
Signal peptide, CUB domain, EGF-like 3	XM_228030	2.46	Up
Neural cell adhesion molecule 1	NM_031521	2.45	Down
Zinc finger and SCAN domain-containing protein 2	XM_001066602	2.45	Down
Protein kinase, lysine deficient 1	NM_053794	2.44	Down
Indoleamine-pyrrole 2,3 dioxygenase	NM_023973	2.44	Down
PC-LKC gene product	XM_001070261	2.43	Down

Membrane-associated DHHC17 zinc finger protein	NM_001039340	2.43	Up
Protease, serine, 8	XM_001078839	2.43	Up
Unknown	TC541828	2.41	Up
Angiotensin receptor 1b	NM_031009	2.34	Up
Unknown	AI144936	2.33	Up
Unknown	BG381596	2.33	Up
Hypothetical protein LOC681047	XM_001060083	2.33	Up
Transforming growth factor beta 1 induced transcript 4	BC059146	2.32	Up
DEAH (Asp-Glu-Ala-His) box polypeptide 35	XM_342565	2.32	Up
Coiled-coil domain containing 32	NM_001024245	2.31	Down
Splicing factor, arginine/serine-rich 5	NM_019257	2.31	Up
Fibroblast growth factor 21	NM_130752	2.3	Up
60S ribosomal protein L19	XM_346139	2.3	Down
Proprotein convertase subtilisin/kexin type 9	NM_199253	2.29	Up
Unknown	AW140877	2.29	Down
Hypothetical LOC301230	XM_238575	2.28	Down
Solute carrier family 2 (facilitated glucose transporter), member 3	NM_017102	2.27	Down
Butyrophilin, subfamily 2, member A2	XM_225366	2.27	Down
Solute carrier organic anion transporter family, member 2a1	NM_022667	2.27	Down
Monoamine oxidase B	AA955510	2.25	Down
SAPORF183 Orf183 7]	TC561947	2.25	Up
Unknown	TC566914	2.25	Up
Fascin (Singed-like protein), transcript variant 1	XM_001064232	2.25	Down
Protein kinase C, mu	XM_234108	2.25	Down
Unknown	AA859351	2.25	Down
ELAV (embryonic lethal, abnormal vision, Drosophila)-like 3 (Hu antigen C)[	NM_172324	2.24	Down
Aldehyde oxidase structural homolog 2	NM_001008523	2.24	Down
Mitogen activated protein kinase kinase kinase 10	XM_218368	2.24	Up
60S RIBOSOMAL PROTEIN L29 (P23)	XM_346055	2.24	Down

Ac2-032	AY321326	2.23	Down
Unknown	AW920588	2.23	Up
Unknown	AI145882	2.23	Down
Butyrophilin-like 8	NM_212489	2.22	Up
Visinin-like 1	NM_012686	2.22	Down
Camello-like 5	XM_001060616	2.22	Down
Q8YRD7 (Q8YRD7) Two-component sensor histidine kinase,	TC567098	2.21	Down
Unknown	AA900984	2.21	Down
Lymphocyte cytosolic protein 2	NM_130421	2.21	Down
HSPC314 (LOC360808)	XM_341080	2.2	Up
Unknown	BF564613	2.2	Down
Q984N5 (Q984N5) Transcriptional regulator, partial (6%)	TC530605	2.2	Up
Unknown	AI556794	2.2	Down
Myosin binding protein H	BG673684	2.19	Down
Unknown	AI547698	2.19	Down
Mitogen-activated protein kinase 8 interacting protein 3	XM_220232	2.19	Up
Unknown	BQ204201	2.19	Down
Unknown	AW916017	2.18	Up
Trans-acting transcription factor 5	XM_231003	2.18	Up
Unknown	CB557736	2.18	Up
Unknown[	AI144777	2.18	Down
Insulin 1	NM_019129	2.18	Up
Unknown	AI230939	2.17	Down
RIKEN cDNA 1700001F09 (predicted)	XM_223906	2.17	Down
Striated muscle-specific serine/threonine protein kinase	XM_343596	2.17	Down
Unknown	BF290729	2.16	Up
Unknown	TC527879	2.16	Up
Cell growth regulator with EF hand domain 1	NM_139087	2.16	Up
Rat MHC class I truncated cell surface antigen	M10094	2.16	Down
Unknown	TC549495	2.15	Up
Cell division cycle 7	XM_341183	2.15	Down

Apoptosis facilitator Bcl-2-like protein 14 [	NM_001024338	2.14	Down
DnaJ (Hsp40) homolog, subfamily C, member			
14		2.14	Up
Unknown	CB547648	2.14	Down
Unknown	BQ211264	2.14	Up
Spectrin beta 4	XM_218364	2.14	Down
Tripartite motif protein 2	XM_342268	2.13	Up
Grp94 neighboring nucleotidase	XM_001079794	2.13	Down
Unknown	BQ208953	2.13	Down
Spatial-delta	XM_001055117	2.13	Down
Pleckstrin homology domain containing, family			
A member 6	XM_341118	2.13	Up
Hypothetical protein	XM_233287	2.12	Down
Unknown	CB547307	2.12	Down
Unknown	BI278605	2.12	Down
Unknown	AA901214	2.12	Down
Poly(rC) binding protein 2	XR_009264	2.12	Down
Unknown	TC540533	2.11	Down
T cell receptor V-alpha J-alpha (LOC290094),	XM_224048	2.11	Down
Unknown	AA900391	2.11	Up
Unknown	BQ781810	2.11	Up
Unknown	TC565055	2.11	Up
Unknown	AI010279	2.11	Down
Hairless homolog	NM_024364	2.1	Down
Rous sarcoma oncogene	NM_031977	2.1	Down
Potassium channel, subfamily K, member 2	NM_172041	2.09	Up
Unknown	BE100578	2.09	Down
AI115348 protein (predicted)			
(RGD1311939_predicted),	XM_233838	2.09	Up
Fatty acid desaturase 2	NM_031344	2.09	Up
MEGF11 protein	XM_001076145	2.09	Up
Proacrosin-binding protein	D17573	2.08	Down
3-hydroxy-3-methylglutaryl-Coenzyme A			
synthase 1	NM_017268	2.08	Up
Unknown	TC558628	2.08	Up

Usherin isoform B	XM_001065756	2.07	Up
Adhalin	AI112095	2.06	Down
CD84 leukocyte antigen	XM_577290	2.06	Down
Farensyl diphosphate synthase	NM_031840	2.06	Up
3-hydroxy-3-methylglutaryl-Coenzyme A synthase 1	NM_017268	2.06	Up
Riken cDNA 2310066k23 (loc316333), Chromosome 4 clone RP31-108L19 strain	XM_237097	2.06	Up
Brown Norway, complete sequence	AC079436	2.06	Up
Splicing factor, arginine/serine-rich 5	NM_019257	2.05	Up
Angiotensin receptor 1b	NM_031009	2.05	Up
Glutamate receptor, ionotropic, AMPA1 (alpha 1)	NM_031608	2.05	Down
Alpha4-b protein	XM_578420	2.05	Down
Chromosome 6 open reading frame 80; chemokine C-C motif receptor-like 1 adjacent	XM_341732	2.05	Down
Prohibitin (b-cell receptor associated protein 32)	XM_228515	2.05	Down
Galactose-4-epimerase	NM_080783	2.04	Up
Unknown	AI171288	2.04	Down
Unknown	AI137930	2.04	Down
Cytochrome P450, family 8, subfamily b, polypeptide 1	NM_031241	2.04	Up
Acyl-CoA synthetase short-chain family member 2	XM_230773	2.04	Up
Ultraviolet B radiation-activated UV123	AI179567	2.03	Down
Testis-specific farnesyl pyrophosphate synthetase	XM_228802	2.03	Up
Chemokine (C-C motif) receptor 1-like 1	XM_236742	2.03	Down
Integrin alpha 5	XM_235707	2.03	Up
Unknown	AA858697	2.02	Down
Unknown	DV717235	2.02	Down
Farnesyl pyrophosphate synthetase	XM_227370	2.02	Up
Ephrin A1	NM_053599	2.01	Up
Metaxin 1	TC538280	2.01	Up
Melanoma antigen, family E, 1	XM_228531	2	Up

Hypothetical protein 4930509O22 (LOC300308),	XM_235761	2	Down
Unknown	AW525326	2	Up
Tissue inhibitor of metalloproteinase 1	AA874884	2	Down
Immediate early response 5	AA800604	2	Up
LRRGT00157 mRNA, complete cds.	AY539908	2	Down
Unknown	AW531000	1.99	Down
Chimerin	NM_032083	1.99	Down
Unknown	TC562886	1.99	Down
Unknown	CO405369	1.99	Down
Hypothetical LOC310537 mRNA decapping enzyme.	XM_227284	1.99	Down
Neural proliferation, diff. and control gene 1	BI288131	1.99	Down
Unknown	AA900517	1.99	Down
Unknown	CK599643	1.99	Down
Unknown	BF289433	1.99	Up
cDNA clone IMAGE:7313591	BC090353	1.99	Up
Major histocompatibility complex class I Eu- like protein	NP798074	1.98	Down
Cell division cycle 2-like 6	AA899160	1.98	Down
Unknown	CB548450	1.98	Up
Glucosaminyl (N-acetyl) transferase 2, I- branching enzyme	NM_001001511	1.97	Down
Synaptogyrin 1	NM_019166	1.97	Up
Unknown	AI412231	1.97	Down
Nitric oxide synthase 1, neuronal	NM_052799	1.96	Down
Unknown	TC565879	1.96	Up
Farensyl diphosphate synthase	NM_031840	1.96	Up
Transcription elongation factor B polypeptide 3 binding protein 1	XM_227148	1.96	Down
RIKEN cDNA C230093N12	XM_345273	1.96	Down
Unknown	BE117009	1.96	Down
G protein-coupled receptor 1	NM_012961	1.96	Down
Spetex-2C protein	XM_573727	1.96	Down
Unknown	DV726956	1.96	Down
Chromosome condensation protein G	XM_223468	1.96	Down

RIKEN cDNA 1700081O22 (LOC363046)	XM_343374	1.96	Down
Sterol-C4-methyl oxidase-like	NM_080886	1.96	Up
F-box and leucine-rich repeat protein 14	XM_232330	1.95	Up
Tumor necrosis factor (TNF superfamily, member 2)	NM_012675	1.95	Down
G protein alpha subunit	TC540840	1.95	Up
Protein tyrosine kinase 2 beta	NM_017318	1.95	Up
Unknown	BI276762	1.94	Down
Testis-specific farnesyl pyrophosphate synthetase	XR_008813	1.94	Up
Src homology three (SH3) and cysteine rich domain	XM_343491	1.94	Down
Reproductive homeobox on chromosome X, 7	XM_001077586	1.93	Down
Progesterin and adipoQ receptor family member IX	XM_236503	1.93	Up
Unknown	AW251918	1.93	Down
Hypothetical protein FLJ10058	NM_001014165	1.92	Down
Microtubule-associated protein 2	NM_013066	1.92	Down
TCDD-inducible poly(ADP-ribose) polymerase	XM_227217	1.92	Up
Progesterone receptor membrane component 2	NM_001008374	1.92	Up
Nerve growth factor receptor (TNFR superfamily, member 16)	NM_012610	1.92	Down
U6 snRNA-associated Sm-like protein LSm6, transcript variant 3	XM_001070871	1.91	Down
Spermatogenesis associated, serine-rich 2	XM_001061947	1.91	Up
Docking protein 5 (Downstream of tyrosine kinase 5)	XM_001053057	1.91	Down
Transmembrane and immunoglobulin domain containing	XM_343944	1.91	Down
High mobility group box 1	NM_012963	1.91	Down
MITF-2B protein (LOC288951)	XM_222520	1.91	Down
F-box and leucine-rich repeat protein 16	NM_001009504	1.91	Down
Peroxisomal biogenesis factor 11A	NM_053487	1.91	Up
Protein phosphatase 2A, regulatory subunit B	XM_342405	1.9	Up
Unknown	AA893853	1.9	Down

Unknown	BQ201963	1.9	Down
Fatty acid desaturase 1	NM_053445	1.9	Up
Sema domain, transmembrane domain (TM), and cytoplasmic domain, (semaphorin) 6B	NM_053471	1.9	Down
Neuregulin 1	NM_031588	1.9	Up
Adipose differentiation-related protein	AA874941	1.89	Up
Stanniocalcin 1	NM_031123	1.89	Down
Elongation of very long chain fatty acids	XM_574001	1.88	Up
Unknown	CA506212	1.88	Up
Down syndrome critical region gene 1-like 1	NM_175578	1.88	Down
ATP-binding cassette, sub-family G (WHITE), member 2	NM_181381	1.88	Up
Hypothetical protein FLJ20276	XM_001070679	1.88	Down
Unknown	AA818078	1.88	Down
Unknown	AA963278	1.87	Down
Cyclin B2	NM_001009470	1.87	Up
Tumor necrosis factor, alpha-induced protein 1	NM_182950	1.87	Up
Unknown	BQ201365	1.87	Down
Unknown	AW143907	1.86	Up
Unknown	AI228129	1.86	Down
Unknown	TC543442	1.86	Down
Unknown	AA819409	1.85	Up
Interleukin 17 receptor	XM_232247	1.85	Up
Unknown	BG381256	1.85	Down
Olfactory receptor 859	NM_001000585	1.84	Down
Oxysterol-binding protein-like protein 8 isoform a	XM_243478	1.84	Up
B-cell translocation gene 3	NM_019290	1.84	Up
Unknown	AA892319	1.84	Down
UDP-glucose pyrophosphorylase 2	NM_001024743	1.83	Down
Lipid droplet associated protein (LOC501283)	XM_576698	1.83	Up
Solute carrier family 38, member 6	NM_001013099	1.83	Up
Unknown	AA955172	1.83	Down
Glutathione-S-transferase	AA819129	1.83	Down
Purinergic receptor P2Y, G-protein coupled 2	NM_017255	1.82	Up

U1 small nuclear ribonucleoprotein polypeptide			
A	XM_341857	1.82	Up
E2F transcription factor 6	XM_233986	1.82	Up
Unknown	AA858752	1.82	Down
Unknown	AI409065	1.82	Down
Unknown	BI294871	1.82	Down
Unknown	TC550990	1.82	Down
Potassium voltage-gated channel, shaker-related subfamily, beta member 1	NM_017303	1.82	Down
Protein kinase C, epsilon	NM_017171	1.82	Up
Kelch-like 22	XM_221268	1.82	Up
Unknown	NM_001014003	1.82	Down
Hypothetical protein DKFZp434J1015.	XM_221915	1.81	Down
Kinesin family member 5A	BF408765	1.81	Down
Glutamate receptor, ionotropic, AMPA1 (alpha 1)	NM_031608	1.81	Down
Unknown	AI012782	1.81	Down
Isopentenyl-diphosphate delta isomerase	NM_053539	1.8	Up
Q7S1L6 (Q7S1L6) Predicted protein	TC530295	1.8	Up
Frizzled homolog 7	XM_237191	1.8	Down
Adipose differentiation-related protein	XM_216438	1.8	Up
Unknown	TC545358	1.8	Up
Mevalonate (diphospho) decarboxylase	NM_031062	1.8	Up
Unknown	AW529441	1.79	Down
Plasminogen activator, urokinase receptor	NM_134352	1.79	Up
Unknown	TC563006	1.79	Up
Signal-induced proliferation-associated 1 like 3	NM_001013066	1.78	Down
Indian hedgehog homolog,	XM_001060415	1.78	Up
RIKEN cDNA 2310035C23 (LOC309053),	XM_219401	1.78	Up
Unknown	TC524514	1.78	Up
9630044O09Rik protein (RGD1308626),	NM_001014139	1.78	Up
Unknown	BE098844	1.78	Up
Unknown	AW917248	1.77	Up
Unknown	CB547883	1.77	Up
Procollagen-lysine, 2-oxoglutarate 5-	NM_053827	1.77	Up

dioxygenase 1			
Unknown	AI169161	1.77	Up
ALANYL-TRNA SYNTHETASE	TC526229	1.77	Down
Calmodulin Binding Transcription. Activator 1	BE098382	1.77	Down
Cytochrome P450, family 2, subfamily d, polypeptide 22	NM_138515	1.77	Down
UDP-glucose pyrophosphorylase 2	NM_001024743	1.77	Down
Actin, gamma 2,	XR_005722	1.76	Up
Unknown	AI231301	1.76	Down
Unknown	CF114236	1.76	Down
G protein-coupled receptor 115	XM_236958	1.76	Down
Abhydrolase domain containing 6	NM_001007680	1.76	Up
SH3-domain binding protein 4	NM_022693	1.75	Up
Unknown	TC548508	1.75	Up
45kDa protein which binds to heymann nephritis antigen gp330.	Z11995	1.75	Down
Glial cell line derived neurotrophic factor	NM_019139	1.74	Up
Guanine nucleotide binding protein, alpha 12	NM_031034	1.74	Up
Ring finger protein 125	XM_341581	1.74	Up
Acyl-CoA thioesterase 4	XM_001057693	1.74	Up
Unknown	BF288235	1.74	Down
Synaptosomal-associated protein 23	TC553470	1.74	Up
Unknown	AW143739	1.73	Up
Unknown	TC526864	1.73	Down
Germ cell-less protein-like 2	XM_228797	1.73	Down
Serine (or cysteine) proteinase inhibitor, clade G (C1 inhibitor), member 1	AA800318	1.73	Down
FK506 binding protein 1b	NM_022675	1.73	Down
Suppressor of Ty 6 homolog	XM_239258	1.72	Up
Sorting nexin 25	XM_224863	1.72	Up
Olfactory receptor 1102	XM_235620	1.72	Down
Malic enzyme 1	NM_012600	1.72	Up
24-dehydrocholesterol reductase	XM_216452	1.72	Up
Retinol dehydrogenase 11	NM_001012193	1.72	Up
Chondroitin beta1,4 N-	XM_001070654	1.72	Down

acetylgalactosaminyltransferase			
Fibrous sheath-interacting protein 1 (LOC296074),	XM_215818	1.71	Down
Solute carrier family 9 (sodium/hydrogen exchanger), member 2	NM_012653	1.71	Down
Farnesyl diphosphate farnesyl transferase 1	NM_019238	1.71	Up
Unknown	AW141271	1.71	Down
Ribosomal large subunit pseudouridine synthase B	TC555668	1.71	Down
Collagen, type IV, alpha 5	XM_343778	1.71	Down
Peroxisomal biogenesis factor 11A	NM_053487	1.71	Up
Anti-Mullerian hormone type 2 receptor	NM_030998	1.71	Down
v-ets erythroblastosis virus E26 oncogene homolog 2	XM_001053903	1.7	Down
KIAA0892 protein (predicted) (RGD1308759_predicted),	XM_214306	1.7	Up
D11Bwg0280e protein (RGD1309256)	XM_214087	1.7	Up
Unknown	TC524444	1.7	Up
TSC22 domain family 3	NM_031345	1.7	Down
Q6TXI9 (Q6TXI9) LRRGT00010, partial (26%)	TC557877	1.69	Down
Unknown	BF556336	1.69	Up
Unknown	J01879	1.69	Up
Unknown	TC541160	1.69	Up
T-complex associated-testis-expressed 1-like	NM_001013228	1.68	Up
Xeroderma pigmentosum, complementation group C	XM_232194	1.68	Up
Pleckstrin homology-like domain, family A, member 2	XM_215132	1.68	Up
Homeobox protein (LOC294473),	XM_228242	1.68	Down
Fc receptor, IgE, low affinity II, alpha polypeptide	NM_001033924	1.68	Down
RAB11B, member RAS oncogene family	NM_032617	1.68	Up
Unknown	AW917246	1.68	Up
Unknown	TC556487	1.67	Down
Phosphodiesterase 4A, cAMP specific	NM_013101	1.67	Up

Zinc finger protein 692	XM_220455	1.67	Up
Q7TQ12 (Q7TQ12) Aa1114, partial (11%)			
[TC554792]	TC554792	1.67	Up
Protocadherin 1	XM_225997	1.67	Up
Peptidylprolyl isomerase D	BF409331	1.67	Down
Unknown	BF398611	1.66	Down
Serine hydrolase like protein, isoforms Serhl-2	XM_001077714	1.66	Down
Unknown	TC558217	1.66	Down
GLI-Kruppel family member	XM_001056128	1.66	Down
Neurexin 2	NM_053846	1.66	Down
Hypothetical protein MGC35169 (LOC498664),	NM_001017508	1.66	Down
Tnfaip2 protein	XM_216786	1.66	Up
Unknown	AW915944	1.66	Down
Unknown	TC544244	1.66	Down
Unknown	BM392264	1.65	Up
Mitogen-activated protein kinase 8	XM_341399	1.65	Up
F-box only protein 6b	NM_138917	1.65	Up
Unknown	BI295601	1.65	Down
Katanin p80 (WD40-containing) subunit B 1	NM_001024746	1.65	Up
CG11737-PA (RGD1309948),	NM_001013896	1.65	Up
Adrenergic receptor, beta 1	NM_012701	1.65	Down
Solute carrier family 2, member 9 isoform a	XM_577349	1.65	Up
Solute carrier 16 (monocarboxylic acid transporter), member 1.	AI145680	1.65	Up
Progesterone receptor membrane component 2	NM_001008374	1.65	Up
Unknown	CB606228	1.64	Up
Leucine rich repeat containing 3	NM_145679	1.64	Down
Unknown	AA925136	1.64	Down
Unknown	TC539813	1.64	Up
Protein kinase C, epsilon	NM_017171	1.64	Up
Hypothetical protein LOC680711	XM_001056892	1.64	Down
Dynamin 1	NM_080689	1.64	Down
Zinc finger protein 513	NM_001012110	1.63	Up
cDNA clone MGC:93233 IMAGE:7193526, complete cds.	BC085710	1.63	Down

Arginine vasopressin	NM_016992	1.63	Up
crystallin, lamda 1	NM_175757	1.63	Down
RT1 class Ib, locus S3	XM_215303	1.63	Down
Junctophilin 3; junctophilin type 3; trinucleotide repeat containing 22	XM_224184	1.63	Down
Unknown	AA892888	1.63	Down
Unknown	TC527982	1.63	Up
Similar to family with sequence similarity 40, member A	XM_342311	1.62	Up
Unknown	AA943129	1.62	Up
Ly6-C antigen gene (predicted) (RGD1565410_predicted),	XM_578686	1.62	Down
Methylenetetrahydrofolate dehydrogenase (NAD)	XM_223282	1.62	Up
ATP-binding cassette, sub-family A (ABC1), member 13	XM_223625	1.62	Down
Unknown	AI044569	1.61	Down
RGD1559432 (predicted) (RGD1559432_predicted),	XM_001074860	1.61	Down
RIKEN cDNA 8030451K01 (predicted) (RGD1565414_predicted)	XM_001054658	1.61	Up
Hypothetical protein FLJ10287 (MGC124992)	XM_001077253	1.61	Up
Nuclear RNA export factor 1	NM_021579	1.6	Up
P518 precursor protein	NM_198200	1.6	Down
Unknown	CF109359	1.6	Down
Q8NH31 (Q8NH31) Seven transmembrane helix receptor,	TC535593	1.6	Down
Opioid receptor, sigma 1	NM_030996	1.6	Up
Poly (ADP-ribose) polymerase family, member 16	NM_001014093	1.6	Up
Unknown	BF394236	1.6	Down
RIKEN cDNA 0610039G24 gene	XM_223542	1.6	Up
Unknown	CF109250	1.59	Down
DNA primase, p49 subunit	NM_001008768	1.59	Up
Unknown	CB545206	1.59	Down

Elongation protein 4 homolog	XM_001079792	1.58	Up
Beta-actin	XM_228468	1.58	Up
Unknown	TC559490	1.58	Up
Serum/glucocorticoid regulated kinase 2	XM_342570	1.58	Up
Unknown	AA955393	1.58	Down
Inhibin beta C	NM_022614	1.58	Up
Neural retina leucine zipper gene	XM_224189	1.58	Down
Unknown	TC560565	1.57	Down
RIKEN cDNA 1700019P01 (LOC315214)	XM_235557	1.57	Down
7-dehydrocholesterol reductase	NM_022389	1.57	Up
Unknown	AA819816	1.56	Up
Pleckstrin	NM_001025750	1.56	Up
Peptidoglycan recognition protein 1	NM_053373	1.56	Down
1-acylglycerol-3-phosphate O-acyltransferase 2	XM_231089	1.56	Up
Homeobox protein Hox-C11	XM_345881	1.55	Down
Primary protein 3 precursor	XM_001056871	1.55	Down
Elongation of very long chain fatty acids protein 1	XM_001053380	1.55	Up
20 S proteasome non-ATPase subunit	AA925183	1.55	Up
Prostaglandin E receptor 3 (subtype EP3)	NM_012704	1.55	Up
Abhydrolase domain containing 1	NM_001008520	1.55	Up
Glutaminase	NM_012569	1.54	Down
myc-like oncogene, s-myc protein	NM_021837	1.54	Up
RIKEN cDNA 3110043O21 (RGD1359108),	NM_001007702	1.54	Up
Cryptochrome 1 (photolyase-like)	NM_198750	1.54	Down
Glycosyltransferase 25 domain containing 2	XM_222718	1.54	Down
Unknown	CO561291	1.54	Up
Casein kinase 1, gamma 2	NM_023102	1.54	Up
6820428L09 protein (LOC305101),	XM_223116	1.54	Down
Autocrine motility factor receptor	XM_001062954	1.53	Up
Apoptosis-inducing factor (AIF)-like mitochondrion-associated inducer of death	XM_342137	1.53	Up
Q8R3V0 (Q8R3V0) Ris2 protein (Fragment)	TC522458	1.53	Up
R RT1 class II, locus Bb	NM_001004084	1.53	Up
s fem-1 homolog	XM_228396	1.53	Up

AHNAK nucleoprotein (desmoyokin), transcript variant 1	XM_001078032	1.53	Down
UDP glycosyltransferase 2 family, polypeptide B	NM_031533	1.52	Up
Scavenger receptor class B, member 1	NM_031541	1.52	Up
Unknown	BG375928	1.51	Down
Interferon regulatory factor 6	XM_344194	1.51	Up
ATP synthase, H ⁺ transporting, mitochondrial F1 complex, alpha subunit, isoform 1	NM_023093	1.51	Up
mKIAA0159 protein	XM_001065923	1.51	Up
Unknown	CO402545	1.51	Down
Elongation of very long chain fatty acids protein 1	XM_001053380	1.51	Up
Calponin 3, acidic	NM_019359	1.5	Down
F-box and WD-40 domain protein 5	NM_001025730	1.5	Up
Unknown	AW142579	1.5	Down
Unknown	BG667380	1.5	Down

The ratio is calculated as the average ratio in expression levels between the offspring of dams fed a protein-restricted diet supplemented with folic acid (PRF, *n* 6) and those fed a PR diet (*n* 6).

Direction indicates whether the change in expression between PR and PRF offspring is increased or decreased. All genes showed a significant change in expression between PR and PRF offspring with a $P < 0.05$. P-values which were calculated using the Wilcoxon ranking feature with the Benjamini and Hochberg correction.

Supplemental Table 4. Genes significantly altered in offspring of dams fed a protein-restricted diet compared to controls and in offspring of dams fed a protein-restricted diet supplemented with folic acid and those fed a protein-restricted diet

Gene Name	Gene Identifier	Ratio PR			
		Ratio PRF versus PR	Direction	versus control	Direction
Cyclin B3	XM_228779	4.9	Up	4.53	down
Mucin 13	AI044457	2.93	Up	3.02	down
Nebulin	XM_229925	2.9	Down	3.38	Up
Chemokine (C-X-C motif) ligand 14	NM_001013137	2.6	Up	3	down
ADP-ribosylation factor-like 10	NM_207165	2.51	Down	2.2	Up
Elongin A; transcription elongation factor B (SIII), polypeptide 3	XM_344552	2.46	Down	2.21	Up
Signal peptide, CUB domain, EGF-like 3	XM_228030	2.46	Up	3.25	down
Coiled-coil domain containing 32	NM_001024245	2.31	Down	2.46	Up
60S ribosomal protein L19	XM_346139	2.3	Down	2.42	Up
Solute carrier family 2 (facilitated glucose transporter), member 3	NM_017102	2.27	Down	2.76	Up
ELAV (embryonic lethal, abnormal vision, Drosophila)-like 3 (Hu antigen C)	NM_172324	2.24	Down	2.88	Up
Aldehyde oxidase structural homolog 2	NM_001008523	2.24	Down	2.61	Up
Mitogen activated protein kinase kinase kinase 10	XM_218368	2.24	Up	2.92	down
60S RIBOSOMAL PROTEIN L29	XM_346055	2.24	Down	3	Up
Ac2-032 mRNA, complete cds.	AY321326	2.23	Down	2.35	Up

Unknown	AI145882	2.23	Down	2.18	up	
Unknown	AI144777	2.18	Down	1.82	up	
RIKEN cDNA 1700001F09						
(predicted)	XM_223906	2.17	Down	3.5	Up	
Apoptosis facilitator Bcl-2-						
like protein 14	NM_0010243	38	2.14	Down	2.26	up
Unknown	CB547648	2.14	Down	2.34	up	
Spectrin beta 4	XM_218364	2.14	Down	2.18	up	
Grp94 neighboring						
nucleotidase	XM_0010797	94	2.13	Down	2.62	up
	XM_0010551					
Spatial-delta	17	2.13	Down	2.49	up	
Unknown	XM_233287	2.12	Down	2.17	up	
Unknown	CB547307	2.12	Down	2.23	Up	
Unknown	BI278605	2.12	Down	2.22	up	
Poly(rC) binding protein 2						
T cell receptor V-alpha J-	XR_009264	2.12	Down	2.2	up	
alpha	XM_224048	2.11	Down	2.55	up	
Unknown	AI010279	2.11	Down	2.4	Up	
Rous sarcoma oncogene						
Unknown	NM_031977	2.1	Down	1.9	down	
Unknown	BE100578	2.09	Down	2.24	up	
CD84 leukocyte antigen						
Glutamate receptor,	XM_577290	2.06	Down	2.05	up	
ionotropic, AMPA1	NM_031608	2.05	Down	1.97	up	
PROHIBITIN (B-CELL						
RECEPTOR ASSOCIATED						
PROTEIN 32)	XM_228515	2.05	Down	2.34	up	
Unknown	AI171288	2.04	Down	2.55	up	
Unknown	DV717235	2.02	Down	1.71	up	
Tissue inhibitor of						
metalloproteinase 1	AA874884	2	Down	2.04	up	
Unknown	AW531000	1.99	Down	2.3	up	
Unknown	TC562886	1.99	Down	2.58	up	
Neural proliferation, diff. and						
control gene 1	AA900517	1.99	Down	2.27	up	

Cell division cycle 2-like 6	AA899160	1.98	Down	1.93	up
Unknown	AI412231	1.97	Down	1.9	up
Nitric oxide synthase 1, neuronal ,	NM_052799	1.96	Down	2.05	up
Transcription elongation factor B polypeptide 3 binding protein 1	XM_227148	1.96	Down	1.98	up
RIKEN cDNA C230093N12	XM_345273	1.96	Down	2.02	up
Unknown	BE117009	1.96	Down	2.03	up
G protein-coupled receptor 1	NM_012961	1.96	Down	2.19	up
Chromosome condensation protein G	XM_223468	1.96	Down	2.39	up
Tumor necrosis factor (TNF superfamily, member 2) src homology three (SH3) and cysteine rich domain	NM_012675	1.95	Down	1.98	up
Microtubule-associated protein 2	XM_343491	1.94	Down	2.01	up
MITF-2B protein	NM_013066	1.92	Down	2.41	up
F-box and leucine-rich repeat protein 16	XM_222520	1.91	Down	2.2	up
Unknown	NM_0010095 04	1.91	Down	2.07	up
Membrane-associated ring finger (C3HC4) 3	AA963278	1.87	Down	1.7	down
Unknown	BQ201365	1.87	Down	2.07	up
Unknown	AI228129	1.86	Down	2.09	up
Unknown	AI409065	1.82	Down	2.28	up
Hypothetical protein MGC33309 (RGD1307172), Hypothetical protein	NM_0010140 03	1.82	Down	1.83	up
DKFZp434J1015.1	XM_221915	1.81	Down	1.98	up
Kinesin family member 5A. Glutamate receptor, ionotropic, AMPA1 (alpha 1)	BF408765	1.81	Down	2.08	up
Unknown	NM_031608	1.81	Down	1.97	up
Calmodulin Binding	AW529441	1.79	Down	2.15	up
	BE098382	1.77	Down	2.22	up

Transcription. Activator 1					
Unknown	TC548508	1.75	Up	2.18	down
Glial cell line derived					
neurotrophic factor	NM_019139	1.74	Up	1.87	down
Unknown	TC526864	1.73	Down	2.17	up
	NM_0010121				
Retinol dehydrogenase 11	93	1.72	Up	1.51	down
Anti-Mullerian hormone type					
2 receptor	NM_030998	1.71	Down	1.85	up
Q7TQ12 (Q7TQ12) Aa1114, partial (11%) [	TC554792	1.67	Up	2.55	down
GLI-Kruppel family member	XM_0010561				
GLI1	28	1.66	Down	1.73	down
Leucine rich repeat					
containing 3	NM_145679	1.64	Down	1.68	up
Junctophilin 3; junctophilin					
type 3; trinucleotide repeat					
containing 22	XM_224184	1.63	Down	2.57	up
Unknown	AA943129	1.62	Up	1.71	down
Methylenetetrahydrofolate					
dehydrogenase	XM_223282	1.62	Up	2.03	down
ATP-binding cassette, sub-					
family A (ABC1), member 13					
,	XM_223625	1.62	Down	1.81	up
Unknown	BF394236	1.6	Down	1.63	up
	NM_0010087				
DNA primase, p49 subunit	68	1.59	Up	1.61	down
RIKEN cDNA 1700019P01					
(LOC315214),	XM_235557	1.57	Down	1.91	up
Unknown	BG375928	1.51	Down	2.47	up

The ratio is calculated as the average ratio in expression levels between offspring of dams fed a protein-restricted diet (PR, *n* 6) compared to controls (*n* 6) and offspring of dams fed a PR diet supplemented with folic acid (PRF, *n* 6) and those fed a PR diet (*n* 6). Direction indicates whether the change in expression between control and PR or control versus PRF offspring is increased or

decreased. All genes showed a significant change in expression between control and PR or control and PRF offspring with a $P < 0.05$. P-values which were calculated using the Wilcoxon ranking feature with the Benjamini and Hochberg correction.