

Table 5: Genes with a gender differentiated expression pattern that were also affected in male rats treated with 17- α ethinyl-estradiol (EE).

UniGene	GBAccession	Gene Name	F/M	EE/untreated
Female predominant and up-regulated by ethinylestradiol				
Rn.40365	AA819200	hydroxysteroid sulfotransferase subunit	9.73	3.39
Rn.40124	AA819605	Rat hydroxysteroid sulfotransferase a (StA) mRNA, complete cds	9.17	3.13
Rn.2011	AA818134	Peroxiredoxin 3	8.75	4.34
Rn.2151	AA818024	Rat hydroxysteroid sulfotransferase mRNA, complete cds	7.53	3.93
Rn.53990	AJ302031	Rattus norvegicus mRNA for putative alpha 1B-glycoprotein (ORF1)	7.08	1.53
Rn.102325	AW917611	Similar to Kruppel-like factor 7 (ubiquitous)	5.41	1.50
Rn.2586	NM_031572	Rattus norvegicus Cytochrome P450 15-beta gene (Cyp2c12)	3.89	1.74
Rn.4000	X74402	R. norvegicus rab GDI alpha mRNA	2.38	1.77
Rn.1247	AA818043	cytochrome P450, 2c39	2.31	5.72
Rn.7245	AA858966	Rat cytochrome P450 PBI (PBI allele) mRNA	2.28	3.39
Rn.17105	AI029316	ESTs, Highly similar to tetrahydrofolylpolyglutamate synthase	1.88	3.74
Rn.32282	AI045872	R. norvegicus mRNA for VIa arginine vasopressin receptor	1.86	1.79
Rn.2382	AA964489	R. norvegicus mRNA for C-CAM2a isoform	1.79	3.47
Rn.13801	AW142659	Amphoterin induced gene and ORF 3	1.69	1.78
Rn.23741	AA900073	ESTs, Weakly similar to Ser/ Thr protein phosphatase 5	1.59	2.35
Female predominant and down-regulated by ethinylestradiol				
Rn.1292	AA858662	Tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide	2.20	0.18
Rn.756	AA859785	Rat alcohol dehydrogenase (ADH) mRNA, complete cds	1.88	0.61
Rn.19721	U73174	glutathione reductase mRNA	1.64	0.43
	X12367	glutathione peroxidase I	1.69	0.56
Male predominant and down-regulated by ethinylestradiol				
Rn.1647	AF037072	carbonic anhydrase III	0.06	0.06
Rn.37424	U09742	CYP3A2 (testosterone 6-Beta-hydroxylase)	0.12	0.39
Rn.106677	AA851893	Similar to nucleoporin 37	0.15	0.16
Rn.102461	X16417	beta-globin	0.21	0.66
Rn.107334	NM_013096	Hemoglobin, alpha I (HbA1)	0.24	0.64
Rn.107335	AW142257	2-alpha globin; alpha-2-globin chain; hemoglobin alpha chain	0.28	0.59
Rn.100762	XM_235562	platelet-derived endothelial cell growth factor I	0.42	0.33
Rn.7279	AF121345	peroxisomal phytanoyl-CoA hydroxylase (PHYH)	0.44	0.35
Rn.29771	AA900486	Rat ATP citrate-lyase mRNA, complete cds	0.46	0.32
Rn.15755	AW918421	EST	0.47	0.45
Rn.17644	AA817759	Peroxisomal Ca-dependent solute carrier-like protein	0.47	0.24
Rn.1086	AA817745	Adenylate kinase 4	0.52	0.57
Rn.5819	AA900928	Glutamic-oxaloacetic transaminase I, soluble	0.53	0.58
Rn.9486	X62888	fatty acid synthase (EC 2.3.1.85)	0.56	0.34
Rn.48821	NM_012624	pyruvate kinase (L-type)	0.61	0.48
Rn.106064	AW141056	Similar to another partner for ARF I	0.61	0.66
Rn.15739	M13508	apolipoprotein A - IV	0.62	0.53
Rn.10985	AW140851	choline kinase R; choline kinase R1	0.63	0.53
Rn.10389	AI058887	Rat p450Md mRNA for cytochrome P-450	0.65	0.54
Male predominant and up-regulated by ethinylestradiol				
Rn.66254	AA817793	Glucose-6-phosphatase catalytic subunit 3	0.68	1.55
Rn.888	AA819595	Hydroxysteroid dehydrogenase, 11 beta type I	0.12	3.17

Differentially expressed genes were defined using SAM statistics, with a 5% false discovery rate as cutoff. An additional criterion was for the gene to have a mean ratio of at least 1.5. The table shows UniGene ID, GenBank accession number, gene name, and the median expression ratio (female/male or EE/Control male).

of 27% of the male-enriched ones (Table 5). Again, few genes (less than 7% of the gender differentiated) were affected in the opposite direction by treatment with estrogen. This data strongly suggest that both estrogen and GH significantly contribute to the gender differences in adult rat liver. Although, as illustrated in Figure 1c, one week of continuous infusion with GH is more efficient than an

injection with 17-alpha-ethinylestradiol to feminize the adult male rat liver expression profile.

T3 and GH regulate lipogenic genes in liver

Both GH and T3 are required for longitudinal growth. Therefore, we expected these hormones to have some overlapping effects on liver gene expression. Nevertheless,