Supplementary Table 5 Genes upregulated in ASIP overexpressing males of GO category "sterol and cholesterol biosynthesis" belonging to Biological Processes

Ensembl ID	UniProtKB ID	Gene name	Protein name	Function UniProtKB/Swiss-Prot	Link to human orthologue in GeneCards database	Associated keywords
ENSDARG00000042641	CYP51_DANRE	Lanosterol 14-alpha demethylase (LDM) (EC 1.14.14.154) (Cytochrome P450 family member 51) (CYP51) (Sterol 14-alpha demethylase)	cyp51	FUNCTION: Catalyzes C14-demethylation of lanosterol; it transforms lanosterol into 4,4'-dimethyl cholesta-8,14,24-triene-3-beta-ol.	CYP51A1 Gene - GeneCards | CP51A Protein | CP51A Antibody	Cholesterol biosynthesis;Cholesterol metabolism;Endoplasmic reticulum;Heme;Iron;Lipid biosynthesis;Lipid metabolism;Membrane;Metal-binding;Monooxygenase;Oxidoreductase;Reference proteome;Steroid biosynthesis;Steroid metabolism;Sterol biosynthesis;Sterol metabolism;Transmembrane;Transmembrane helix
ENSDARG00000044642	F1QG97_DANRE	Sterol-C5-desaturase	sc5d sc5dl	Catalyzes a dehydrogenation to introduce C5-6 double bond into lathosterol in cholesterol biosynthesis	SC5D Gene - GeneCards | SC5D Protein | SC5D Antibody	Membrane;Reference proteome;Transmembrane;Transmembrane helix
ENSDARG00000052734	A0A2R8QHL5_DANRE	3-hydroxy-3-methylglutaryl-coenzyme A reductase (EC 1.1.1.34)	hmgcra	Catalyzes the conversion of (3S)-hydroxy-3-methylglutaryl-CoA (HMG-CoA) to mevalonic acid, the rate-limiting step in the synthesis of cholesterol and other isoprenoids, thus plays a critical role in cellular cholesterol homeostasis	HMGCR Gene - GeneCards | HMDH Protein | HMDH Antibody	Cholesterol biosynthesis;Cholesterol metabolism;Endoplasmic reticulum;Lipid biosynthesis;Lipid metabolism;Membrane;NADP;Oxidoreductase;Peroxisome;Reference proteome;Steroid biosynthesis;Steroid metabolism;Sterol biosynthesis;Sterol metabolism;Transmembrane;Transmembrane helix
ENSDARG00000079532	F1R9J8_DANRE	Zgc:194242	zgc:194242	Putative methyltransferase		Reference proteome

ENSDARG00000079946	F1QDN5_DANRE	Squalene monooxygenase (EC 1.14.14.17)	sqlea	Catalyzes the stereospecific oxidation of squalene to (S)-2,3-epoxysqualene, and is considered to be a rate-limiting enzyme in steroid biosynthesis.	SQLE Gene - GeneCards | ERG1 Protein | ERG1 Antibody	Endoplasmic reticulum;FAD;Flavoprotein;Membrane;Oxidoreductase; Reference proteome;Transmembrane;Transmembrane helix
ENSDARG00000099336	A0A0R4ICC6_DANRE	Diphosphomevalonate decarboxylase (EC 4.1.1.33)	mvda	Catalyzes the ATP dependent decarboxylation of (R)-5-diphosphomevalonate to form isopentenyl diphosphate (IPP). Functions in the mevalonate (MVA) pathway leading to isopentenyl diphosphate (IPP), a key precursor for the biosynthesis of isoprenoids and sterol synthesis.	MVD Gene - GeneCards | MVD1 Protein | MVD1 Antibody	ATP-binding;Cholesterol biosynthesis;Cholesterol metabolism;Lipid biosynthesis;Lipid metabolism;Lyase;Nucleotide-binding;Proteomics identification;Reference proteome;Steroid biosynthesis;Steroid metabolism;Sterol biosynthesis;Sterol metabolism
ENSDARG00000103226	A0A2R8QAT3_DANRE	7-dehydrocholesterol reductase	dhcr7	Delta7-Dehydrocholesterol reductase (DHCR) is a membrane-bound enzyme that catalyzes the final step of cholesterol biosynthesis (the reduction of the C7-8 double bond in 7-dehydrocholesterol to form cholesterol), using NADPH as a cofactor	DHCR7 Gene - GeneCards | DHCR7 Protein | DHCR7 Antibody	Cholesterol biosynthesis;Cholesterol metabolism;Lipid biosynthesis;Lipid metabolism;Membrane;Oxidoreductase;Reference proteome;Steroid biosynthesis;Steroid metabolism;Sterol biosynthesis;Sterol metabolism;Transmembrane;Transmembrane helix
ENSDARG00000030616	B3DGS0_DANRE	Endoplasmic reticulum membrane sensor NFE2L1	nfe2l1	Endoplasmic reticulum membrane sensor that translocates into the nucleus in response to various stresses to act as a transcription factor Constitutes a precursor of the transcription factor NRF1. Able to detect various cellular stresses, such as cholesterol	NFE2L1 Gene - GeneCards | NF2L1 Protein | NF2L1 Antibody	Activator;Cholesterol metabolism;Coiled coil;DNA-binding;Endoplasmic reticulum;Glycoprotein;Lipid metabolism;Lipid-binding;Membrane;Nucleus;Reference proteome;Repressor;Signal-anchor;Steroid metabolism;Sterol metabolism;Transcription;Transcription regulation;Transmembrane;Transmembrane helix

				excess, oxidative stress or proteasome inhibition		
ENSDARG00000053068	F1QIJ9_DANRE	Cytochrome P450, family 8, subfamily B, polypeptide 1 (Fragment)	cyp8b1	The cytochrome P450 proteins are monooxygenases which catalyze many reactions involved in drug metabolism and synthesis of cholesterol, steroids and other lipids.	CYP8B1 Gene - GeneCards | CP8B1 Protein | CP8B1 Antibody	Cholesterol metabolism;Endoplasmic reticulum;Heme;Iron;Lipid metabolism;Membrane;Metal-binding;Monooxygenase;Oxidoreductase;Proteomics identification;Reference proteome;Steroid metabolism;Sterol metabolism;Transmembrane;Transmembrane helix
ENSDARG00000089369	E7FB58_DANRE	NADPH:adrenodoxin oxidoreductase, mitochondrial (EC 1.18.1.6)	fdxr	Serves as the first electron transfer protein in all the mitochondrial P450 systems including cholesterol side chain cleavage in all steroidogenic tissues, steroid 11-beta hydroxylation in the adrenal cortex, 25-OH-vitamin D3-24 hydroxylation in the kidney, and sterol C-27 hydroxylation in the liver. {ECO:0000256|ARBA:ARBA00003133}.	FDXR Gene - GeneCards | ADRO Protein | ADRO Antibody	FAD;Flavoprotein;Mitochondrion;NADP;Oxidoreductase;Proteomics identification;Reference proteome
ENSDARG00000097556	X1WEZ3_DANRE	Cytochrome P450, family 8, subfamily B, polypeptide 2 (Fragment)	cyp8b2	The cytochrome P450 proteins are monooxygenases which catalyze many reactions involved in drug metabolism and synthesis of cholesterol, steroids and other lipids.	CYP8B1 Gene - GeneCards | CP8B1 Protein | CP8B1 Antibody	Cholesterol metabolism;Endoplasmic reticulum;Heme;Iron;Lipid metabolism;Membrane;Metal-binding;Monooxygenase;Oxidoreductase;Reference proteome;Steroid metabolism;Sterol metabolism;Transmembrane;Transmembrane helix

Ensembl ID terms were retrieved with Uniprot (Retrieve / ID mapping (uniprot.org) in order to gain potential functionality of upregulated genes. Links to the human gene database GeneCards (GeneCards - Human Genes | Gene Database | Gene Search) are also provided. Gene functions were obtained from UniProtKB/Swiss-Prot database. All genes were upregulated during cholesterol biosynthesis but only those with blue background were upregulated in the sterol biosynthetic pathway/Go term.