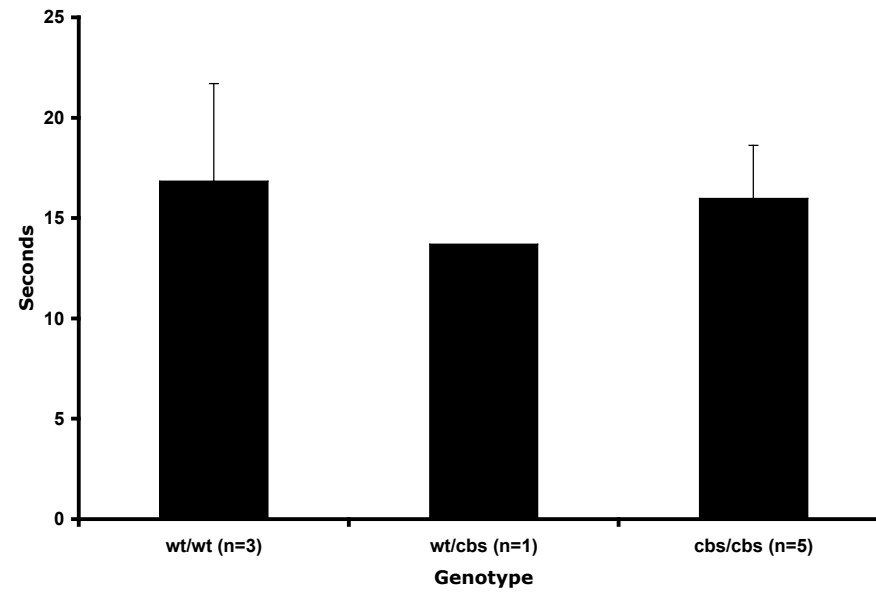


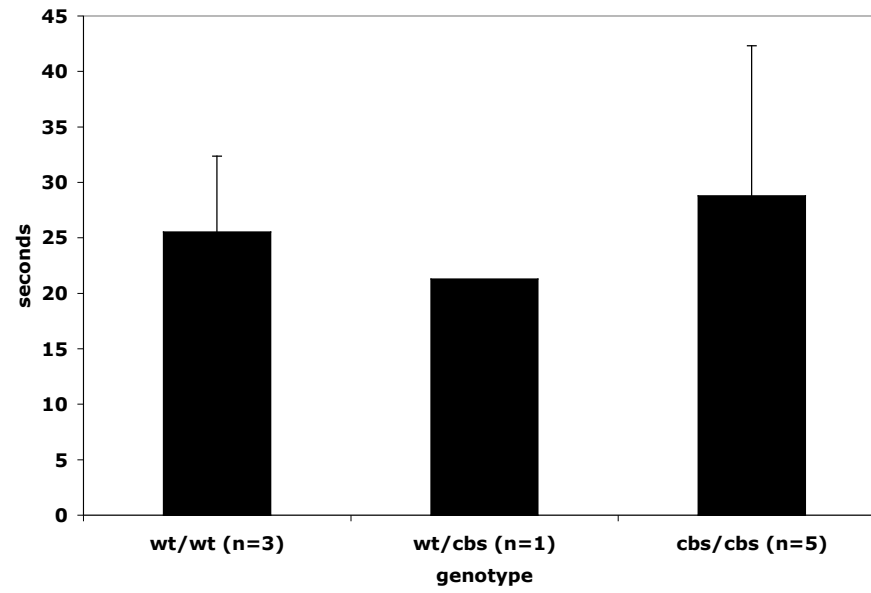
## Supplemental Figure Legends

Supplemental Figure 1. Prothrombin and activated partial thromboplastin time in Tg-*I278T Cbs*<sup>-/-</sup> and control mice. (A) Prothrombin times. The *Cbs* genotype and the number of animals tested is shown on the X-axis. Error bars show standard deviation. (B). Activated partial thromboplastin time.

A.



B.



Supplemental Table 1  
Pathways upregulated in *Tg-I278T Cbs<sup>-/-</sup>* mice

| KEGG pathway                                        | Genes upregulated                                                           | Enrichment                      |
|-----------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------|
| Cytokine-cytokine receptor interaction <sup>A</sup> | Acvr1b; Il8rb; Ftl1; Ptir; Ccl25; Ccl6; Vegfa; Il28ra; Il17rb; Ccl24; Cxcl4 | O=11; E=2.84; R=3.87; P=1.53e-4 |
| Metabolism of xenobiotics by cytochrome P450        | Adh1; Cyp2b10; Cyp2b13; Cyp2b9; Gstm1; Mgst3; Aldh3b1                       | O=7; E=0.69; R=10.2; P=5.65e-6  |
| Focal adhesion <sup>A</sup>                         | Iga9; Col5a2; Ftl1; Igf1; Itgb6; Thbs1; Vegfa                               | O=7; E=2.26; R=3.09; P=8.05e-3  |
| Arachidonic acid metabolism                         | Cbr3; Cbr1; Cyp2b10; Cyp2b13; Cyp2b9; Cyp4a14; Cyp4f16                      | O=7; E=0.81; R=8.62; P=1.71e-5  |
| Fructose and mannose metabolism <sup>B</sup>        | Akr1b7; Fbp2; Pfkfb2; Gmds; Pfkp                                            | O=5; E=0.59; R=8.46; P=3.06e-4  |
| Pyrimidine metabolism                               | Aicda; Pnp; Rpo1-4; Umpps; Dctd                                             | O=5; E=1.01; R=4.95; P=3.47e-3  |
| TGF-beta signaling pathway                          | Acvr1b; Smad3; Smad5; Myc; Thbs1                                            | O=5; E=1.01; R=4.95; P=3.47e-3  |
| Chronic myeloid leukemia                            | Acvr1b; Runx1; Cdkn1a; Smad3; Myc                                           | O=5; E=0.91; R=5.49; P=2.22e-3  |
| Glycolysis / Gluconeogenesis                        | Adh1; Fbp2; Pfkp; Aldh3b1                                                   | O=4; E=0.66; R=6.02; P=4.41e-3  |
| Glycine, serine and threonine metabolism            | Psat1; Chdh; Phgdh; Abp1                                                    | O=4; E=0.58; R=6.92; P=2.66e-3  |
| Tyrosine metabolism                                 | Adh1; Aldh3b1; Prmt3; Abp1                                                  | O=4; E=0.62; R=6.5; P=3.34e-3   |
| mTOR signaling pathway                              | Igfl1; Vegfa; Frap1; Ddit4                                                  | O=4; E=0.59; R=6.77; P=2.87e-3  |
| Pentose phosphate pathway                           | Fbp2; G6pdx; Pfkp                                                           | O=3; E=0.30; R=10.2; P=3.09e-3  |
| Histidine metabolism                                | Aldh3b1; Prmt3; Abp1                                                        | O=3; E=0.41; R=7.39; P=7.69e-3  |
| Glycan structures - degradation                     | Arsb; Ids; Neu3                                                             | O=3; E=0.32; R=9.38; P=3.90e-3  |
| C21-Steroid hormone metabolism <sup>C</sup>         | Akr1c18; Cyp17a1                                                            | O=2; E=0.15; R=13.5; P=9.19e-3  |
| <b>Biocarta pathway</b>                             | <b>Genes upregulated</b>                                                    | <b>Enrichment</b>               |
| CTCF: First Multivalent Nuclear Factor              | Smad5; Myc; Frap1                                                           | O=3; E=0.22; R=13.5; P=1.32e-3  |

<sup>A</sup>pathways showing common behavior in both mice models; <sup>B</sup> pathways showing contrast behavior; <sup>C</sup> different genes showed upregulation and downregulation within the same pathway; O, observed gene number in particular pathway; E, expected number of genes in a specific pathway for an interesting gene set; R, ratio of enrichment (O/E); P, significance of enrichment calculated from hypergeometric test.

Supplemental Table 2  
Pathways downregulated in *Tg-1278T Cbs<sup>-/-</sup>* mice

| KEGG pathway                                  | Genes downregulated                                           | Enrichment                     |
|-----------------------------------------------|---------------------------------------------------------------|--------------------------------|
| PPAR signaling pathway <sup>A</sup>           | Cyp8b1; Fabp2; Hmgcs2; Pltp; Scd1; Sorbs1; Acsf6; Fads2       | O=8; E=0.65; R=12.3; P=2.93e-7 |
| Neuroactive ligand-receptor interaction       | Npffr2; Gabrb3; Ghr; Grid1; Grin3b; Mtnr1a; Hcrtr2; Griia3    | O=8; E=2.77; R=2.89; P=7.12e-3 |
| MAPK signaling pathway <sup>A</sup>           | Bdnf; Caena1d; Gadd45a; Fgf12; Fgf9; Ntrk2; Dusp14; Map3k7ip2 | O=8; E=2.51; R=3.19; P=3.96e-3 |
| Adipocytokine signaling pathway <sup>A</sup>  | Acacb; G6pc; Acsf6; Adipor2                                   | O=4; E=0.67; R=5.98; P=4.59e-3 |
| Androgen and estrogen metabolism <sup>B</sup> | Hsd3b2; Hsd3b4; Hsd3b5; Bcdo2                                 | O=4; E=0.33; R=12.1; P=3.23e-4 |
| Phosphatidylinositol signaling system         | Pik3c2g; Pip5k3; Fn3K; Plce1                                  | O=4; E=0.65; R=6.15; P=4.14e-3 |
| Nicotinate and nicotinamide metabolism        | Aox1; Bcdo2; Fn3k; Nmnat3                                     | O=4; E=0.35; R=11.5; P=4.01e-4 |
| Methionine metabolism                         | Bhmt; Cbs; Mat2a                                              | O=3; E=0.18; R=16.8; P=7.19e-4 |
| C21-Steroid hormone metabolism <sup>C</sup>   | Hsd3b2; Hsd3b4; Hsd3b5                                        | O=3; E=0.11; R=26.5; P=1.71e-4 |
| Benzoate degradation via CoA ligation         | Pnpla3; Acot11; Fn3k                                          | O=3; E=0.25; R=11.8; P=2.05e-3 |
| Valine, leucine and isoleucine degradation    | Pnpla3; Aox1; Hmgcs2                                          | O=3; E=0.41; R=7.24; P=8.26e-3 |

<sup>A</sup> pathways showing common behavior in both mice models; <sup>B</sup> pathways showing contrast behavior; <sup>C</sup> different genes showed upregulation and downregulation within the same pathway; O, observed gene number in particular pathway; E, expected number of genes in a specific pathway for an interesting gene set; R, ration of enrichment (O/E); P, significance of enrichment calculated from hypergeometric test.

Supplemental Table 3  
Pathways upregulated in *Tg-hCBS Cbs<sup>-/-</sup>* mice

| KEGG pathway                                                                | Genes upregulated                        | Enrichment                     |
|-----------------------------------------------------------------------------|------------------------------------------|--------------------------------|
| Cytokine-cytokine receptor interaction <sup>A</sup>                         | Flt1; Ghr; Hgf; Cxcl10; Ifng; Cxcl13     | O=6; E=0.94; R=6.39; P=3.83e-4 |
| Calcium signaling pathway                                                   | Phka2; Pln; D830007F02Rik; Avpr1a; Phkg2 | O=5; E=0.70; R=7.16; P=7.14e-4 |
| Focal adhesion <sup>A</sup>                                                 | Birc4; Arhgap5; Flt1; Hgf; D830007F02Rik | O=5; E=0.75; R=6.69; P=9.66e-4 |
| Leukocyte transendothelial migration                                        | Arhgap5; Cldn1; Thy1; Cxcl13             | O=4; E=0.45; R=8.87; P=1.12e-3 |
| Huntington's disease                                                        | Ncor1; Cltc                              | O=2; E=0.10; R=18.9; P=5.00e-3 |
| Androgen and estrogen metabolism <sup>B</sup>                               | Hsd3b4; Hsd3b5                           | O=2; E=0.14; R=14.1; P=8.94e-3 |
| C21-Steroid hormone metabolism <sup>B</sup>                                 | Hsd3b4; Hsd3b5                           | O=2; E=0.05; R=41.1; P=1.05e-3 |
| <b>Biocarta pathway</b>                                                     | <b>Genes upregulated</b>                 | <b>Enrichment</b>              |
| Rho cell motility signaling pathway                                         | Arhgap5; D830007F02Rik                   | O=2; E=0.07; R=27.4; P=2.40e-3 |
| Erk and PI-3 Kinase Are Necessary for Collagen Binding in Corneal Epithelia | Arhgap5; D830007F02Rik                   | O=2; E=0.08; R=25.9; P=2.68e-3 |

<sup>A</sup>pathways showing common behavior in both mice models; <sup>B</sup>pathways showing contrast behavior; O, observed gene number in particular pathway; E, expected number of genes in a specific pathway for an interesting gene set; R, ratio of enrichment (O/E); P, significance of enrichment calculated from hypergeometric test.

Supplemental Table 4  
Pathways downregulated in *Tg-hCBS Cbs<sup>-/-</sup>* mice

| KEGG pathway                                       | Genes downregulated                                                     | Enrichment                      |
|----------------------------------------------------|-------------------------------------------------------------------------|---------------------------------|
| MAPK signaling pathway <sup>A</sup>                | Cacna1d; Mknk2; Gadd45b; Ntrk1; Ntrk2; Dusp8; Hspa1a; Rasgrp2; Cacna2d2 | O=9; E=1.83; R=4.90; P=1.07e-4  |
| PPAR signaling pathway <sup>A</sup>                | Cd36; Cpt1a; Cyp4a10; Cyp4a14; Mod1; Plip; Pparg; Scd1                  | O=8; E=0.48; R=16.8; P=2.70e-8  |
| Insulin signaling pathway                          | Acab; Fasn; Mknk2; Slc2a4; Socs2                                        | O=5; E=0.91; R=5.49; P=2.29e-3  |
| Adipocytokine signaling pathway <sup>A</sup>       | Acab; Cd36; Cpt1a; Slc2a4                                               | O=4; E=0.49; R=8.17; P=1.50e-3  |
| Pyruvate metabolism                                | Acab; Akr1b7; Mod1; Acss2                                               | O=4; E=0.28; R=14.14; P=1.84e-4 |
| Type II diabetes mellitus                          | Cacna1d; Slc2a4; Socs2                                                  | O=3; E=0.31; R=9.66; P=3.72e-3  |
| Glycerolipid metabolism                            | Agpat6; Pnpla3; Akr1b7                                                  | O=3; E=0.31; R=9.66; P=3.72e-3  |
| Fructose and mannose metabolism <sup>B</sup>       | Akr1b7; Pfkfb3; Pnm1                                                    | O=3; E=0.33; R=9.06; P=4.47e-3  |
| Fatty acid metabolism                              | Cpt1a; Cyp4a10; Cyp4a14                                                 | O=3; E=0.26; R=11.45; P=2.29e-3 |
| Fatty acid biosynthesis                            | Acab; Fasn                                                              | O=2; E=0.034; R=58; P=4.68e-4   |
| <b>Biocarta pathway</b>                            | <b>Genes downregulated</b>                                              | <b>Enrichment</b>               |
| Nuclear Receptors in Lipid Metabolism and Toxicity | Abcb1a; Pparg; Abcd2                                                    | O=3; E=0.21; R=14; P=1.27e-3    |

<sup>A</sup>pathways showing common behavior in both mice models; <sup>B</sup> pathways showing contrast behavior; O, observed gene number in particular pathway; E, expected number of genes in a specific pathway for an interesting gene set; R, ration of enrichment (O/E); P, significance of enrichment calculated from hypergeometric test.

Supplemental Table 5  
Commonly upregulated genes in *Tg-hCBS Cbs<sup>-/-</sup>* and *Tg-I278T Cbs<sup>-/-</sup>* mice

| S. No | Gene Symbol       | Gene Name                                        | Log FC<br>( <i>Tg-hCBS Cbs<sup>-/-</sup></i> ) | Log FC<br>( <i>Tg-I278T Cbs<sup>-/-</sup></i> ) |
|-------|-------------------|--------------------------------------------------|------------------------------------------------|-------------------------------------------------|
| 1     | Cdh1              | cadherin 1                                       | 1.35                                           | 1.42                                            |
| 2     | Cdh9              | cadherin 9                                       | 1.17                                           | 1.40                                            |
| 3     | Cldn1             | claudin 1                                        | 1.03 <sup>A</sup>                              | 1.60                                            |
| 4     | Prnp1             | prion protein interacting protein 1              | 1.51                                           | 1.46                                            |
| 5     | Flt1              | FMS-like tyrosine kinase 1                       | 1.63                                           | 1.35                                            |
| 6     | H2-B1             | histocompatibility 2, blastocyst                 | 2.73 <sup>A</sup>                              | 1.85 <sup>A</sup>                               |
| 7     | Meox1             | mesenchyme homeobox 1                            | 1.65                                           | 1.55 <sup>A</sup>                               |
| 8     | Mep1b             | mepriin 1 beta                                   | 1.05                                           | 1.97                                            |
| 9     | Mobp              | myelin-associated oligodendrocytic basic protein | 1.90                                           | 1.43                                            |
| 10    | Pln               | phospholamban                                    | 1.91                                           | 1.81                                            |
| 11    | Sftpb             | surfactant associated protein B                  | 1.24                                           | 1.83                                            |
| 12    | Syn1              | synapsin I                                       | 1.02                                           | 1.32                                            |
| 13    | AW456874 (Ptpdc1) | Protein tyrosine phosphatase domain containing 1 | 1.11                                           | 1.04                                            |
| 14    | Zik1              | zinc finger protein interacting with K protein 1 | 1.005 <sup>A</sup>                             | 1.02                                            |
| 15    | 2610207105Rik     | RIKEN cDNA 2610207105 gene                       | 1.56                                           | 1.09                                            |
| 16    | Asns              | asparagine synthetase                            | 2.45                                           | 3.86                                            |



|    |                       |                                                                          |      |      |
|----|-----------------------|--------------------------------------------------------------------------|------|------|
| 17 | Ablim3                | actin binding LIM protein family, member 3                               | 1.09 | 1.17 |
| 18 | Ccdc66                | coiled-coil domain containing 66                                         | 1.02 | 1.26 |
| 19 | Flrt1                 | fibronectin leucine rich transmembrane protein 3                         | 1.46 | 1.06 |
| 20 | 1810033M07Rik (Erp27) | Endoplasmic reticulum protein 27                                         | 2.16 | 1.11 |
| 21 | Serpinh12             | serine (or cysteine) peptidase inhibitor, clade B (ovalbumin), member 12 | 1.23 | 1.16 |
| 22 | Ppp1r14c              | protein phosphatase 1, regulatory (inhibitor) subunit 14c                | 1.69 | 1.41 |
| 23 | Atp11b                | ATPase, Class VI, type 11B                                               | 1.45 | 1.65 |

<sup>A</sup> Average of two probes

Supplemental Table 6  
Commonly downregulated genes in *Tg-hCBS Cbs<sup>-/-</sup>* and *Tg-I278T Cbs<sup>-/-</sup>* mice

| S. No | Gene Symbol | Gene Name                                                           | Log FC<br>( <i>Tg-hCBS Cbs<sup>-/-</sup></i> ) | Log FC<br>( <i>Tg-I278T Cbs<sup>-/-</sup></i> ) |
|-------|-------------|---------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------|
| 1     | Acacb       | acetyl-Coenzyme A carboxylase beta                                  | -1.64                                          | -1.95                                           |
| 2     | Tmem98      | transmembrane protein 98                                            | -1.30                                          | -1.02                                           |
| 3     | Lrrc39      | leucine rich repeat containing 39                                   | -1.68 <sup>A</sup>                             | -1.21                                           |
| 4     | Gpr98       | G protein-coupled receptor 98                                       | -1.23                                          | -1.91 <sup>A</sup>                              |
| 5     | Pnpla3      | patatin-like phospholipase domain containing 3                      | -4.09                                          | -1.67                                           |
| 6     | Caena1d     | calcium channel, voltage-dependent, L type, alpha 1D subunit        | -1.01                                          | -1.37                                           |
| 7     | Camk2b      | calcium/calmodulin-dependent protein kinase II, beta                | -1.13                                          | -2.73                                           |
| 8     | Cbs         | cystathionine beta-synthase                                         | -2.03                                          | -2.24                                           |
| 9     | Dnase1      | deoxyribonuclease I                                                 | -1.16                                          | -1.34                                           |
| 10    | Lefty1      | left right determination factor 1                                   | -1.10                                          | -1.33                                           |
| 11    | H2-Q1       | histocompatibility 2, Q region locus 1                              | -2.01                                          | -3.24                                           |
| 12    | Elov16      | ELOVL family member 6, elongation of long chain fatty acids (yeast) | -1.94                                          | -1.45                                           |
| 13    | Ntrk2       | neurotrophic tyrosine kinase, receptor, type 2                      | -2.36 <sup>A</sup>                             | -2.33                                           |
| 14    | Pltp        | phospholipid transfer protein                                       | -1.98                                          | -1.09                                           |
| 15    | Robo1       | roundabout homolog 1 (Drosophila)                                   | -1.52                                          | -1.14                                           |
| 16    | Scd1        | stearoyl-Coenzyme A desaturase 1                                    | -1.59                                          | -2.81                                           |

|    |          |                                                                                    |                    |                     |
|----|----------|------------------------------------------------------------------------------------|--------------------|---------------------|
| 17 | Wdr67    | WD repeat domain 67                                                                | -1.03              | -1.08               |
| 18 | Tpm2     | tropomyosin 2, beta                                                                | -2.14 <sup>A</sup> | -1.23 <sup>A</sup>  |
| 19 | Ccdc37   | coiled-coil domain containing 37                                                   | -1.14              | -2.1 <sup>A</sup>   |
| 20 | Olfcr887 | olfactory receptor 887                                                             | -1.02              | -1.28               |
| 21 | Glt25d2  | glycosyltransferase 25 domain containing 2                                         | -1.134             | -1.65 <sup>A</sup>  |
| 22 | Omd      | osteonodulin                                                                       | -1.05              | -1.84               |
| 23 | Tnfrsf19 | tumor necrosis factor receptor superfamily, member 19                              | -1.08              | -1.61               |
| 24 | Rgs3     | regulator of G-protein signaling 3                                                 | -1.51 <sup>B</sup> | -1.42 <sup>B</sup>  |
| 25 | Gria3    | glutamate receptor, ionotropic, AMPA3 (alpha 3)                                    | -1.42              | -1.06               |
| 26 | Acss2    | acyl-CoA synthetase short-chain family member 2                                    | -1.02              | -1.00               |
| 27 | Hamp2    | hepcidin antimicrobial peptide 2                                                   | -1.87              | -1.50               |
| 28 | Wfdc2    | WAP four-disulfide core domain 2                                                   | -1.099             | -1.29               |
| 29 | Mogat1   | monoacylglycerol O-acyltransferase 1                                               | -2.33 <sup>B</sup> | -2.74 <sup>B</sup>  |
| 30 | Cgref1   | cell growth regulator with EF hand domain 1; CGR11                                 | -2.04              | -1.45               |
| 31 | Mllt3    | myeloid/lymphoid or mixed lineage-leukemia translocation to 3 homolog (Drosophila) | -2.64              | -1.10               |
| 32 | Osbpl3   | oxysterol binding protein-like 3                                                   | -1.44 <sup>A</sup> | -1.62               |
| 33 | Sulf2    | sulfatase 2                                                                        | -1.18 <sup>A</sup> | -1.59 <sup>A</sup>  |
| 34 | Mpped2   | metallophosphoesterase domain containing 2                                         | -1.94 <sup>A</sup> | -3.785 <sup>A</sup> |
| 35 | Tchh     | trichohyalin                                                                       | -1.28              | -1.09               |

<sup>A</sup> Average of two probes; <sup>B</sup> Average of three probes

Supplemental Table 7  
Metabolic profiling of serum

| Metabolite                 | µM               |                                           |                                            | One way ANOVA |                    | Tukey's Multiple Comparison Test                  |                                                    |                                                                             |                                                                             |
|----------------------------|------------------|-------------------------------------------|--------------------------------------------|---------------|--------------------|---------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------|
|                            | Control<br>(n=7) | <i>Tg-hCBS Cbs<sup>-/-</sup></i><br>(n=6) | <i>Tg-I278T Cbs<sup>-/-</sup></i><br>(n=7) | p value       | p value<br>summary | Control<br><i>Tg-hCBS Cbs<sup>-/-</sup></i><br>vs | Control<br><i>Tg-I278T Cbs<sup>-/-</sup></i><br>vs | <i>Tg-hCBS Cbs<sup>-/-</sup></i><br><i>Tg-I278T Cbs<sup>-/-</sup></i><br>vs | <i>Tg-hCBS Cbs<sup>-/-</sup></i><br><i>Tg-I278T Cbs<sup>-/-</sup></i><br>vs |
| Phosphoserine <sup>A</sup> | 4.18 ± 0.99      | 3.68 ± 1.36                               | 5.35 ± 2.16                                | 0.2234        | ns                 | p>0.05                                            | p>0.05                                             | p>0.05                                                                      | p>0.05                                                                      |
| Taurine                    | 422 ± 99.2       | 323 ± 150                                 | 558 ± 303                                  | 0.148         | ns                 | p>0.05                                            | p>0.05                                             | p>0.05                                                                      | p>0.05                                                                      |
| Phosphoethanolamine        | 12.8 ± 4.18      | 8.71 ± 4.91                               | 15.2 ± 8.27                                | 0.1929        | ns                 | p>0.05                                            | p>0.05                                             | p>0.05                                                                      | p>0.05                                                                      |
| Urea                       | 10620 ± 352      | 9300 ± 1190                               | 9296 ± 1576                                | 0.0789        | ns                 | p>0.05                                            | p>0.05                                             | p>0.05                                                                      | p>0.05                                                                      |
| Asp <sup>B</sup>           | 11.4 ± 1.94      | ND                                        | 14.5 ± 2.72                                | 0.1828        | ns                 |                                                   |                                                    |                                                                             |                                                                             |
| Thr                        | 142 ± 20.5       | 156 ± 7.37                                | 228 ± 48.4                                 | 0.0002        | ***                | p>0.05                                            | p<0.001                                            | p<0.01                                                                      | p<0.01                                                                      |
| Ser                        | 117 ± 32         | 104 ± 13.8                                | 172 ± 39.3                                 | 0.0023        | **                 | p>0.05                                            | p<0.05                                             | p<0.01                                                                      | p<0.01                                                                      |
| Asn                        | 62 ± 17.5        | 53.1 ± 9.34                               | 74.7 ± 35.2                                | 0.2866        | ns                 | p>0.05                                            | p>0.05                                             | p>0.05                                                                      | p>0.05                                                                      |
| Glu                        | 33.9 ± 10.2      | 24.5 ± 11.2                               | 41.7 ± 15.1                                | 0.0703        | ns                 | p>0.05                                            | p>0.05                                             | p>0.05                                                                      | p>0.05                                                                      |
| Gln                        | 930 ± 86.2       | 835 ± 113                                 | 1105 ± 236                                 | 0.0229        | *                  | p>0.05                                            | p>0.05                                             | p>0.05                                                                      | p<0.05                                                                      |
| Sarcosine                  | 14.9 ± 1.7       | 14 ± 1.41                                 | 14.9 ± 4.37                                | 0.8321        | ns                 | p>0.05                                            | p>0.05                                             | p>0.05                                                                      | p>0.05                                                                      |
| Gly                        | 247 ± 44.6       | 210 ± 54.3                                | 229 ± 55.1                                 | 0.4686        | ns                 | p>0.05                                            | p>0.05                                             | p>0.05                                                                      | p>0.05                                                                      |
| Ala                        | 264 ± 42.8       | 228.4 ± 31                                | 436 ± 221                                  | 0.0259        | *                  | p>0.05                                            | p>0.05                                             | p>0.05                                                                      | p<0.05                                                                      |

|                            |             |             |             |         |     |         |        |         |
|----------------------------|-------------|-------------|-------------|---------|-----|---------|--------|---------|
| Citrulline                 | 56.8 ± 8.82 | 46.7 ± 4.09 | 64.1 ± 11   | 0.0084  | **  | p>0.05  | p>0.05 | p<0.01  |
| Val                        | 196 ± 17.2  | 174 ± 28.9  | 214 ± 46.4  | 0.1376  | ns  | p>0.05  | p>0.05 | p>0.05  |
| Met                        | 56.8 ± 4.16 | 69 ± 5.18   | 105 ± 36    | 0.0018  | **  | p>0.05  | p<0.01 | p<0.05  |
| Cystathionine <sup>C</sup> | 0.93 ± 0.40 | 2.92 ± 0.63 | 0.43 ± 0.09 | <0.0001 | *** | p<0.001 | p>0.05 | p<0.001 |
| Ile                        | 78.9 ± 7.44 | 72.3 ± 16   | 84.4 ± 19.2 | 0.3766  | ns  | p>0.05  | p>0.05 | p>0.05  |
| Leu                        | 140 ± 11.7  | 130 ± 18.7  | 174 ± 56.7  | 0.0863  | ns  | p>0.05  | p>0.05 | p>0.05  |
| Tyr                        | 74.5 ± 8.81 | 88.6 ± 21.6 | 93.6 ± 15.4 | 0.0921  | ns  | p>0.05  | p>0.05 | p>0.05  |
| Phe                        | 61.5 ± 3.68 | 62.2 ± 5.38 | 73.6 ± 21.7 | 0.2028  | ns  | p>0.05  | p>0.05 | p>0.05  |
| Ammonia                    | 245 ± 72.2  | 255 ± 57.1  | 262 ± 97    | 0.9224  | ns  | p>0.05  | p>0.05 | p>0.05  |
| Ornithine                  | 65.8 ± 16   | 53 ± 5.05   | 94.5 ± 20.8 | 0.0006  | *** | p>0.05  | p<0.01 | p<0.001 |
| Lys                        | 234 ± 22.9  | 192 ± 27.4  | 224 ± 73.8  | 0.3039  | ns  | p>0.05  | p>0.05 | p>0.05  |
| 1-Methyl-Histidine         | 9.37 ± 2.40 | 6.86 ± 1.67 | 11.2 ± 5.35 | 0.1316  | ns  | p>0.05  | p>0.05 | p>0.05  |
| His                        | 63.4 ± 5.37 | 51.6 ± 5.97 | 66.5 ± 22   | 0.1612  | ns  | p>0.05  | p>0.05 | p>0.05  |
| Arg                        | 93.1 ± 21.2 | 76 ± 4.72   | 99.4 ± 26.8 | 0.1392  | ns  | p>0.05  | p>0.05 | p>0.05  |
| Pro                        | 70.6 ± 17.6 | 69.3 ± 15.2 | 127 ± 49.2  | 0.0053  | **  | p>0.05  | p<0.05 | p<0.05  |

Values are represented in terms of Mean ± SD. ND, not done; ns, not significant. <sup>A</sup>Not detected in two controls and one *Tg-I278T Cbs<sup>-/-</sup>* mice. <sup>B</sup>Done only in three controls and three *Tg-I278T Cbs<sup>-/-</sup>* mice, unpaired t test was done instead of ANOVA. <sup>C</sup>Not detected in four *Tg-I278T Cbs<sup>-/-</sup>* mice. \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Supplementary Table 8  
Metabolic profiling of liver

| Metabolite                 | nmoles/ g wet weight |                |                          | One way ANOVA |         |         | Tukey's Multiple Comparison Test |                          |                                   |
|----------------------------|----------------------|----------------|--------------------------|---------------|---------|---------|----------------------------------|--------------------------|-----------------------------------|
|                            | Control              | <i>Tg-hCBS</i> | <i>Cbs<sup>-/-</sup></i> | p value       | p value | summary | Control                          | vs                       | vs                                |
|                            | (n=8)                | (n=4)          | (n=4)                    |               |         |         | <i>Tg-hCBS</i>                   | <i>Cbs<sup>-/-</sup></i> | <i>Tg-I278T Cbs<sup>-/-</sup></i> |
| Phosphoserine <sup>A</sup> | 72.5 ± 10.76         | 74.8 ± 13.5    | 57.9 ± 0.81              | 0.1198        | ns      |         | p>0.05                           | p>0.05                   | p>0.05                            |
| Taurine                    | 8467 ± 1772          | 8220 ± 583     | 7519 ± 1139              | 0.572         | ns      |         | p>0.05                           | p>0.05                   | p>0.05                            |
| Urea                       | 18690 ± 7046         | 11490 ± 3572   | 10050 ± 8574             | 0.1019        | ns      |         | p>0.05                           | p>0.05                   | p>0.05                            |
| Asp                        | 194 ± 41.5           | 334 ± 37.7     | 388 ± 94.3               | 0.0002        | ***     |         | p<0.01                           | p<0.001                  | p>0.05                            |
| Thr                        | 205 ± 46.2           | 240 ± 33       | 332 ± 69.4               | 0.0043        | **      |         | p>0.05                           | p<0.01                   | p>0.05                            |
| Ser                        | 119 ± 29.8           | 194 ± 28.4     | 310 ± 32.83              | <0.0001       | ***     |         | p<0.01                           | p<0.001                  | p<0.001                           |
| Asn                        | 238 ± 75             | 215 ± 13.1     | 282 ± 146                | 0.5646        | ns      |         | p>0.05                           | p>0.05                   | p>0.05                            |
| Glu                        | 497 ± 111            | 622 ± 162      | 1953 ± 860               | 0.0003        | ***     |         | p>0.05                           | p<0.001                  | p<0.01                            |
| Gln                        | 3864 ± 819           | 3991 ± 991     | 3396 ± 585               | 0.5541        | ns      |         | p>0.05                           | p>0.05                   | p>0.05                            |
| Gly                        | 1459 ± 322           | 1302 ± 137     | 1193 ± 421               | 0.395         | ns      |         | p>0.05                           | p>0.05                   | p>0.05                            |
| Ala                        | 3301 ± 506           | 3138 ± 340     | 3399 ± 766               | 0.7942        | ns      |         | p>0.05                           | p>0.05                   | p>0.05                            |
| Val                        | 229 ± 88             | 183 ± 22       | 246 ± 74.9               | 0.4858        | ns      |         | p>0.05                           | p>0.05                   | p>0.05                            |
| Met                        | 66.9 ± 15            | 62.6 ± 15.9    | 115 ± 12                 | 0.0002        | ***     |         | p>0.05                           | p<0.001                  | p<0.001                           |
| Cystathionine              | 8.82 ± 2.86          | 1.12 ± 0.53    | BD                       | <0.0001       | ***     |         | p<0.001                          | p<0.001                  | p>0.05                            |

|           |             |             |            |         |     |                  |                   |                   |
|-----------|-------------|-------------|------------|---------|-----|------------------|-------------------|-------------------|
| Ile       | 135 ± 54.9  | 102 ± 11.3  | 129 ± 69.7 | 0.6025  | ns  | p>0.05           | p>0.05            | p>0.05            |
| Leu       | 339 ± 81.3  | 288 ± 21.2  | 375 ± 113  | 0.3441  | ns  | p>0.05           | p>0.05            | p>0.05            |
| Tyr       | 110 ± 31.6  | 111 ± 17.5  | 138 ± 66.9 | 0.4882  | ns  | p>0.05           | p>0.05            | p>0.05            |
| β-Ala     | 126 ± 62.7  | 89.8 ± 14.4 | 186 ± 51   | 0.0643  | ns  | p>0.05           | p>0.05            | p>0.05            |
| Phe       | 135 ± 30.3  | 120 ± 8.75  | 134 ± 37.9 | 0.6788  | ns  | p>0.05           | p>0.05            | p>0.05            |
| Ammonia   | 990 ± 256   | 693 ± 127   | 805 ± 205  | 0.109   | ns  | p>0.05           | p>0.05            | p>0.05            |
| Ornithine | 145 ± 34    | 202 ± 60    | 308 ± 73.2 | 0.0008  | *** | p>0.05           | <u>p&lt;0.001</u> | <u>p&lt;0.05</u>  |
| Lys       | 325 ± 82.1  | 280 ± 16.8  | 363 ± 75.6 | 0.2933  | ns  | p>0.05           | p>0.05            | p>0.05            |
| His       | 288 ± 38.4  | 312 ± 27    | 333 ± 92.7 | 0.4143  | ns  | p>0.05           | p>0.05            | p>0.05            |
| Pro       | 172 ± 39    | 168 ± 39.1  | 300 ± 140  | 0.036   | *   | p>0.05           | <u>P&lt;0.05</u>  | p>0.05            |
| AdoHcy    | 88.3 ± 25.2 | 370 ± 130   | 789 ± 186  | <0.0001 | *** | <u>P&lt;0.01</u> | <u>P&lt;0.001</u> | <u>P&lt;0.001</u> |

Values are represented in terms of Means ± SD. BD, below detection; ns, not significant. <sup>A</sup>Not detected in one *Tg-I278T Cbs<sup>-/-</sup>* mice.  
 \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.