

# Mouse Resource for Lipid Metabolism and Atherogenesis

Component 5 of BayGenomics project is led by [Dr. Stephen G. Young](#) (Senior Investigator at Gladstone and a Professor of Medicine at UCSF) and Dr. Karen Reue (Professor of Medicine at UCLA). Component 5 selects several gene-trap ES cell lines per year to produce knockout mice, with an eye toward identifying novel genes that affect lipid metabolism or susceptibility to atherosclerosis.

During the few years, Drs. Young and Reue have generated and characterized knockout mice from many different BayGenomics ES cell lines. These include:

1. *Ptdss2* (phosphatidylserine synthase II) (KST314). Multiple high-percentage chimeras, germline transmission. Homozygous mice are viable. Expression is highest in brown fat, neurons, and the Sertoli cells of the testes. Tissues exhibit a striking deficiency in phosphatidylserine synthase activity. (Bergo MO, Gavino BJ, Steenbergen R, Sturbois B, Parlow AF, Sanan DA, Skarnes WC, Vance JE, Young SG. (2002) Defining the importance of phosphatidylserine synthase 2 in mice. *J. Biol. Chem.* **277**:47701–47708.)
2. *Lmnb1* (lamin B1) (XA130, XA152, XA206). Multiple high-percentage chimeras, germline transmission. Heterozygous knockout mice viable; homozygous mice die late in embryonic development. The nuclei of embryonic fibroblasts are misshapen.
3. *Vsp4b* (vacuolar sorting protein 4b) (XA158). Multiple high-percentage chimeras, germline transmission. Homozygous mice die during embryonic development; heterozygous mice have increased body weight on a high-fat diet.
4. *Slc25a17*, solute carrier family 25 (peroxisomal membrane protein, 34 kDa, also called PMP34) (XB686). Multiple high-percentage chimeras, germline transmission. Currently being characterized by Dr. Paul Van Veldhoven.
5. ATP citrate lyase (NPX98). Multiple high-percentage chimeras, germline transmission. Heterozygotes phenotypically normal; homozygotes die early during embryonic development.
7. Choline kinase,  $\alpha$ -chain (XB453, XH252). Multiple high-percentage chimeras, germline transmission from both cell lines.

8. SREBF2. Multiple high-percentage chimeras, germline transmission. Homozygotes die during development, manifest cyclopia phenotype at day 12 of embryonic development.
9. Agpat6 (DTM030). Multiple high-percentage chimeras, germline transmission. Expressed highly during embryonic development. Homozygotes viable.
10. Pon2, paraoxonase 2 (XE661). Multiple high-percentage chimeras, germline transmission. Homozygotes viable, characterized in association with Dr. Jake Lusis at UCLA.
11. Nmt1, N-myristoyltransferase 1 (XB400). Multiple high-percentage chimeras, germline transmission. Homozygotes die early during embryonic development.
12. Man1. Multiple high-percentage chimeras, germline transmission (XST167).
13. Man1. Multiple high-percentage chimeras, germline transmission (RRD145).
14. Agpat4 (TEA009). Multiple high-percentage chimeras, germline transmission. Expressed highly during embryonic development. Homozygotes viable.
15. Agpat4 (RRF360). Multiple high-percentage chimeras, germline transmission. Expressed highly during embryonic development. Homozygotes viable.
16. PRMT1 (XB820, XD060). Multiple high-percentage chimeras, germline transmission.
17. SCG10 (RRA14). Multiple high-percentage chimeras, germline transmission.
18. Fatty acid binding protein 3 (XC705). Multiple high-percentage chimeras, germline transmission.
19. SREBP1 (XC354). Multiple high-percentage chimeras, germline transmission.
20. Dual specificity phosphatase (RRE076). Multiple high-percentage chimeras.
21. RIKEN cDNA 2610033C09 (RST6464). Multiple high-percentage chimeras.
22. Splicing factor YT521-B. Multiple high-percentage chimeras.