The Jackson Laboratory

SWR.129X1(B6)-*Apob*$^{tm1.1Zc}$/J
Stock No: **007679**
Congenic, Targeted Mutation

Typically mice are recovered in 10-14 weeks. Contact Customer Service to place an order or for more information.

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advanced non-alcoholic fatty liver diseases (NAFLD), and atherosclerosis. In addition, all three congenic apoB38.9 strains (Stock No. 007679, Stock No. 007682, and Stock No. 007683) may be useful in conjunction with other apoB mutant mice, including Stock No. 002053 (apoB70), Stock No. 002876 (apoB48-only), and Stock No. 002877 (apoB100-only).

Donating Investigator

Gustav Schonfeld, Washington University School of Medicine

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GENETIC OVERVIEW

Genetic Background	Generation

Apob$^{tm1.1Zc}$

Allele Type	Gene Symbol	Gene Name
Targeted (Humanized sequence)	*Apob*	apolipoprotein B

VIEW GENETICS

RESEARCH APPLICATIONS

Research Tools
Metabolism Research
Mouse/Human Gene Homologs
Reproductive Biology Research
Cardiovascular Research
Diabetes and Obesity Research
Internal/Organ Research

VIEW ALL RESEARCH APPLICATIO

BASE PRICE

Starting at:

$2,854.50 Domestic price Cryo Recovery

VIEW PRICE LIST

Details

Detailed Description

Mice homozygous for this apoB38.9 allele (apoB$^{38.9/38.9}$) are viable with impaired fertility, bearing a premature stop codon at residue 1767 of the targeted gene. As a result, homozygous plasma shows a truncated apoB38.9 as the sole apoB protein. Plasma from heterozygous (apoB$^{+/38.9}$) mice have reduced apoB100 and apoB48 compared to wildtype, with apoB38.9 representing 20% of total circulating apoB. This apoB38.9 truncation affects both apoB100 and apoB48 metabolism in mice, and mimics human Familial Hypobetalipoproteinemia (FHBL). Homozygous and, to a lesser extent, heterozygous mice exhibit symptoms of FHBL due to impaired lipoprotein export system/VLDL secretion, including elevated hepatic triglyceride (TG), cholesterol and free fatty acids (FFA), with decreased plasma TG and cholesterol. Because plasma and liver lipid profiles range from mild to severe in populations of heterozygous apoB38.9 mice on a mixed (C57BL/6J;129X1/SvJ) genetic background, apoB$^{+/38.9}$ congenic mice were generated on three different inbred strains with characterized differences in liver fat: SWR/J (low liver TG strain, ~40mg/dL), C57BL/6J (medium liver TG, ~140mg/dL), and BALB/cByJ (high liver TG strain, ~200 mg/dL). All three apoB$^{+/38.9}$ congenic strains exhibit significantly impaired hepatic TG secretion compared to their respective genetic backgrounds, with significant interactions observed between genetic background and apoB genotype for liver TG and FFA. BALB/cByJ-apoB38.9 mice (Stock No. 007683) exhibit the greatest hepatic TG and FFA increase (probably due to elevated hepatic TG synthesis rate). Despite having the lowest degree of hepatic steatosis among the three apoB$^{+/38.9}$ congenic strains, SWR/J-apoB38.9 mice (Stock No. 007679) show insulin resistance, with BALB/cByJ-apoB38.9 mice exhibiting intermediate and C57BL/6J-apoB38.9 mice (Stock No. 007682) exhibiting the greatest insulin resistance. Additional comparisons between the three congenic strains reveal that C57BL/6J-apoB38.9 mice have significant increase of fatty acid synthesis rate compared to the other two congenic strains, while SWR/J-apoB38.9 mice show dynamic feedback regulation of fatty acids and TG synthesis and beta-oxidation in response to excessive hepatic TG accumulation. Gender dimorphism is observed; while BALB/cByJ-apoB38.9 males have reduced plasma cholesterol levels compared to wildtype males, females from all three apoB$^{+/38.9}$ congenic strains have reduced plasma cholesterol compared to wildtype females. Male BALB/cByJ-apoB38.9 and C57BL/6J-apoB38.9 mice have significant reduction of liver TG synthesis compared to wildtype males, while SWR/J-apoB38.9 females show the same significant reduction. These apoB38.9 mutant mice may be useful to study the genetic and molecular mechanism of apoB defects and lipid metabolism/liver fat accumulation, the relationship between hepatic steatosis and insulin resistance, the progression of advanced non-alcoholic fatty liver diseases (NAFLD), and atherosclerosis. These apoB38.9 mutant mice may also be useful in conjunction with other apoB mutant mice, including Stock No. 002053 (apoB70), Stock No. 002876 (apoB48-only), and Stock No. 002877 (apoB100-only).

Development

Control Suggestions

Selected References

Genetics

Apob$^{tm1.1Zc}$

Disease/Phenotype

Disease Terms

Research Areas By Phenotype

Mammalian Phenotype Terms by Genotype

References

Technical Support

CONTACT TECHNICAL SUPPORT

Genotyping Protocols

Genotyping resources and troubleshooting

Breeding Considerations

When maintaining a live colony, heterozygotes are bred to wildtype siblings or to SWR/J inbred mice (see Stock No. 000689). The donating investigator reports that homozygous mice are produced in reduced rates and are probably infertile.

Additional Breeding and Husbandry Support

Citation

When using the SWR.129X1(B6)-*Apob*$^{tm1.1Zc}$/J mouse strain in a publication, please cite the originating article(s) and include JAX stock #007679 in your Materials and Methods section.

Animal Health Reports

Facility Barrier Level Descriptions

Production of mice from cryopreserved embryos or sperm occurs in a maximum barrier room, G200

Pricing & Availability

Cryo Recovery

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Pricing effective for USA, Canada and Mexico shipping destinations

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SERVICE/PRODUCT	DESCRIPTION	PRICE
Cryo Recovery	Heterozygous or Wild-Type for Apob<tm1.1Zc>	$2,854.50

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THE JACKSON LABORATORY'S GENOTYPE PROMISE

The Jackson Laboratory has rigorous genetic quality control and mutant gene genotyping programs to ensure the genetic background of JAX® Mice strains as well as the genotypes of strains with identified molecular mutations. JAX® Mice strains are only made available to researchers after meeting our standards. However, the phenotype of each strain may not be fully characterized and/or captured in the strain data sheets. **Therefore, we cannot guarantee a strain's phenotype will meet all expectations.** To ensure that JAX® Mice will meet the needs of individual research projects or when requesting a strain that is new to your research, we suggest ordering and performing tests on a small number of mice to determine suitability for your particular project. We do not guarantee breeding performance and therefore suggest that investigators order more than one breeding pair to avoid delays in their research.

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