These mice harbor a "knockout" mutation of the \textit{Sepp1} (selenoprotein P, plasma, 1) gene and may be useful for studying selenium transport/metabolism/deficiency in neurology (progressive neurological dysfunction), reproductive biology (sperm development), and immunology (such as type 2 cytokine-associated myeloid cells, IL-10-dependent inflammatory responses, cirrhosis, and Crohn's disease).

Donating Investigator
Raymond F. Burk, Vanderbilt University
Mice heterozygous for this targeted mutation are viable and fertile. No RNA or selenoprotein P (Se-P) protein expression from the targeted gene is observed in plasma. Homozygous (Sepp1-deficient) mice are viable with altered selenium metabolism rendering them intolerant of low dietary selenium intake and resulting in significantly shortened life span. Homozygotes have lower brain selenium concentrations and develop progressive neurological dysfunction (impaired movement and coordination); the progression of which is preventable (but not reversible) with dietary selenium supplement. Homozygous females are fertile but have difficulty producing and raising pups. Homozygous males have sharply reduced fertility due to flagellar structural defects ("kinked sperm") which, unlike the neurological phenotype, are not prevented with dietary selenium supplement. Sepp1-deficient mice, supplemented with dietary selenium and infected with an African Trypanosomiasis parasite, exhibit increased tissue injury associated with increased production of reactive oxygen species and increased apoptosis in the liver immune cells, reduced parasite clearance capacity of myeloid cells, and decreased survival. These mutant mice may be useful for studying selenium transport/metabolism/deficiency in neurology (progressive neurological dysfunction), reproductive biology (sperm development), and immunology (such as type 2 cytokine-associated myeloid cells, IL-10-dependent inflammatory responses, cirrhosis, and Crohn's disease).

Development

Control Suggestions

Selected References

Genetics

Selenop<sup>tm1Rfb</sup>
Breeding Considerations

When maintaining a live colony, heterozygous mice may be bred. Homozygous males have sharply reduced fertility (sperm defect) and homozygous females have difficulty producing and raising pups (presumably due to neurological phenotype). Addition of selenium to the diet prevents progression of neurological dysfunction and may allow homozygous females to be used for breeding. Dietary selenium supplement does not prevent the homozygous male sperm defect.

Additional Breeding and Husbandry Support

Citation

When using the B6.129-Selenop<sup>tm1Rfb</sup>/J mouse strain in a publication, please cite the originating article(s) and include JAX stock #008201 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

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

<table>
<thead>
<tr>
<th>SERVICE/PRODUCT</th>
<th>DESCRIPTION</th>
<th>PRICE</th>
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<tr>
<td>Frozen Mouse Embryo</td>
<td>B6.129-Selenop&lt;sup&gt;tm1Rfb&lt;/sup&gt;/J Frozen Embryo</td>
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### CRYORECOVERY - DOMESTIC PRICING

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<td>Cryo Recovery</td>
<td>Heterozygous or Wild-Type forSepp1&lt;sup&gt;tm1Rfb&lt;/sup&gt;</td>
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### PAYMENT TERMS AND CONDITIONS

Terms are granted by individual review and stated on the customer invoice(s) and account statement. These transactions are payable in U.S. currency within the granted terms. Payment for services, products, shipping containers, and shipping costs that are rendered are expected within the payment terms indicated on the invoice or stated by contract. Invoices and account balances in arrears of stated terms may result in The Jackson Laboratory pursuing collection activities including but not limited to outside agencies and court filings.

### 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.

### ADDITIONAL USE RESTRICTIONS APPLY

Use of MICE by companies or for-profit entities requires a license prior to shipping.

### LICENSING INFORMATION

Phone: 207-288-6470
Email: TechTran@jax.org
## Related Strains

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