Mice heterozygous for a null Atp2a2 or SERCA2 allele exhibit a reduction in cardiac contractility, reduced blood pressure and squamous cell tumors of keratinized epithelial tissues (90% in aged mice). Homozygous embryos do not survive. This strain may be useful for studying heart disease and Darier-White disease (keratosis follicularis).

Donating Investigator
Gary E Shull, University of Cincinnati
**GENETIC OVERVIEW**

### Genetic Background

<table>
<thead>
<tr>
<th>Allele Type</th>
<th>Gene Symbol</th>
<th>Gene Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targeted (Null/Knockout)</td>
<td>Atp2a2</td>
<td>ATPase, Ca++ transporting, cardiac muscle, slow twitch 2</td>
</tr>
</tbody>
</table>

**RESEARCH APPLICATIONS**

- Cell Biology Research
- Cardiovascular Research
- Developmental Biology Research
- Cancer Research

**Details**

**Detailed Description**

*Atp2a2* or SERCA2 (Ca++ transporting ATPase, cardiac muscle, slow twitch 2) encodes an intracellular pump located in the sarcoplasmic or endoplasmic reticula of muscle cells. This ATPase is involved in the cardiac contraction/relaxation cycle and in calcium translocation. Mutations in ATP2A2 are associated with Darier-White disease (keratosis follicularis). Mice heterozygous for this allele are viable and fertile. Homozygous embryos do not survive. Heterozygotes exhibit a reduction in cardiac contractility, reduced blood pressure, susceptibility to cardiac disease in response to pressure overload, and a reduced force-frequency response in heart. Approximately 90% of aging (50+ weeks) heterozygotes develop squamous cell tumors of keratinized epithelial tissues (including stomach, esophagus, tongue, oral mucosa, and skin). This strain may be useful for studying heart disease and Darier-White disease.

**Development**

**Control Suggestions**

**Selected References**

**Genetics**

- **Atp2a2tm1Ges**

**Disease/Phenotype**
Genotyping Protocols
Standard PCR: Atp2a2<sup>tm1Ges</sup>
Standard PCR: Generic Neo Melt Curve Analysis
Probe: Generic Neo Melt Curve Analysis
Genotyping resources and troubleshooting

Breeding Considerations
While maintaining a live colony, these mice are bred as heterozygotes. Mice homozygous for the mutation are not viable.

Additional Breeding and Husbandry Support

Citation
When using the FVB.129X1(Cg)-Atp2a2<sup>tm1Ges</sup>/Mmjax mouse strain in a publication, please cite the originating article(s) and include MMRRC stock #36806 in your Materials and Methods section.

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

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Related Strains

- All
- By Allele
- By Gene