

Recoil wobbler 3 Jackson, a remutation on proximal Chromosome 10

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Mutation (allele) symbol: $Grm1^{rcw-3J}$

Mutation (allele) name: recoil wobbler 3 Jackson

Gene symbol: $Grm1$

Strain of origin: C57BL/6J

Current strain name: C57BL/6J- $Grm1^{rcw-3J}$ /GrsrJ

Stock #005521 (jaxmice.jax.org)

Phenotype categories: Neurological: motor capabilities/coordination/movement

Abstract

We have identified a new remutation to recoil wobbler (rcw) by a direct test for allelism. The new neurological spontaneous mutation named recoil wobbler 3 Jackson causes the same phenotype, described below, as the original rcw mutation and the $rcw-2J$ allele.

Origin and Description

The recoil wobbler 3 Jackson mutation was discovered by Daniel Myrick in a production colony of C57BL/6J at the Jackson Laboratory in 2004. This spontaneous mutation has recessive inheritance and homozygous mutants are recognized at 2 weeks of age by their slightly smaller body size and wobbly gait. Like rcw/rcw mice, the rcw^{3J}/rcw^{3J} mutants often lose their balance when walking and constantly wobble back and forth. The original rcw/rcw mutants also have the slightly smaller body size. Homozygous mutant females breed moderately, but males are very poor breeders. The colony is maintained by homozygous mutant x heterozygote, or by heterozygote x heterozygote matings. Mutant mice live normal life spans.

Genetic Analysis

This mutation has recessive inheritance as shown by mating a C57BL/6J- rcw^{3J}/J homozygous female mouse to an unrelated $+/+$ male of the CAST/Ei strain. The F1 progeny from this mating were unaffected, but affected animals were observed in the F2 progeny.

A direct test for allelism was set up by mating C57BL/6J- rcw^{3J} females heterozygous for this new mutation with B6.129X1- Bax^{tm1sjk}/J - rcw^{2J}/J heterozygous males. This mating produced 3 affected progeny out of 11 born, confirming that the two mutations are allelic.

Pathology

In a routine pathological screening of two homozygous mutants at 12 weeks of age, no gross lesions were observed.

Hearing as assessed by Auditory Brainstem Response testing in two homozygous, one heterozygous and one control littermate at 10 weeks of age was normal.

The eyes of two homozygous mutants were examined with an ophthalmoscope and were found to be normal. An electroretinogram (ERG) test of two homozygous mutants was also normal.

Discussion

A direct test for allelism confirmed that this mutation is allelic with recoil wobbler (*rcw*). This remutation is available from JAX[®] Mice and the JAX DNA Resource. Sperm are being cryopreserved.

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References

Mouse Genome Database (MGD) Mouse Genome Informatics Project, The Jackson Laboratory, Bar Harbor, Maine. (informatics.jax.org)