Reeler 8 Jackson: a remutation in the *Reln* gene.

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Mutation (allele) symbol: *Reln*$^{rl\text{-}8J}$

Mutation (allele) name: reeler 8 Jackson

Gene symbol: *Reln*

Strain of origin: C57BL/6J

Current strain name: STOCK-*Reln*$^{rl\text{-}8J}$/J

Stock #008764 (jaxmice.jax.org)

Phenotype categories: neurological

Origin and Description

The new reeler 8 Jackson mutation was induced by ENU mutagenesis of C57BL/6J mice at The Jackson Laboratory and was discovered in the laboratory of Dr. Simon John. The breeding prior to identification of the mutation involved C3Fe.Cg-*Rw* and C3Fe.Cg-*Hm* +/+ *Rw* so the strain background includes C57BL/6J, C3HeB/FeJ, C3H/HeH and 101/H. Mice homozygous for the reeler 8 Jackson mutation are recognized at two weeks of age by their unsteady gait. Mutants are unable to keep their hindquarters upright and frequently fall over on their sides when walking or running. Homozygous mice die at around 3 weeks of age. The *rl-8J* colony is maintained by breeding hosts of homozygous ovarian transplanted mice to +/? sibling male mice and then intercrossing the heterozygous offspring.

Genetic Analysis

In order to determine the mode of inheritance of this mutation, the ovaries of a reeler 8 Jackson homozygote were transplanted into a carrier mouse and this transplanted mouse was then mated to a CAST/EiJ mouse. The F1 hybrid mice produced from this mating showed a normal looking phenotype, proving that this mutation has recessive inheritance. Based on phenotypic similarities to the previously described *Reln*^{rl} mutation, a direct test for allelism was performed by mating mice heterozygous for this new mutation to a heterozygous C57BL/6J-*Reln*$^{rl\text{-}7J}$ mouse. This mating produced 20 progeny, of which 6 pups had the *Reln*$^{rl\text{-}7J}$ mutant phenotype proving allelism.

The original *Reln*^{rl} allele comprises, minimally, a 150 kd deletion between *D5Mit61* and *D5Mit72* [MGI Ref ID J:24458]. Sequencing data has not been generated for the *rl-8J* mutation.

Pathology
A routine pathological examination of one homozygous mouse at 3.5 weeks of age showed neuropathology identical to the original reeler mutation (MGD 2008). The *rl-8J* mutant expressed scrambled layering in the cortex. Neurons of the hippocampal gyrus are scattered in irregular wavy layers, and the cerebellum is small with scrambled Purkinje and granule cells.

The eyes of two homozygous mutant mice at 2 months of age were tested by electroretinogram (ERG) and were determined to be normal and histology performed on the same 2 mice showed no significant abnormalities. One heterozygote tested by ERG was normal.

Hearing, as assessed by auditory brainstem response testing (ABR), on two mutant mice at 3 weeks of age showed normal hearing.

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