Dispersed white hair (*Dwh*): a new dominant mutation on Chromosome 2 affecting hair color

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Source of Support:The research was supported by NIH/NCRR grant RR01183 to the Mouse Mutant Resources (M. T. Davisson PI) and Cancer Center Core Grant CA34196

Mutation (allele) symbol: *Dwh*

Mutation (allele) name: dispersed white hair

Gene symbol: *Dwh*

Strain of origin: B6C3Fe *a*/*a*-*Large*^{myd}/J

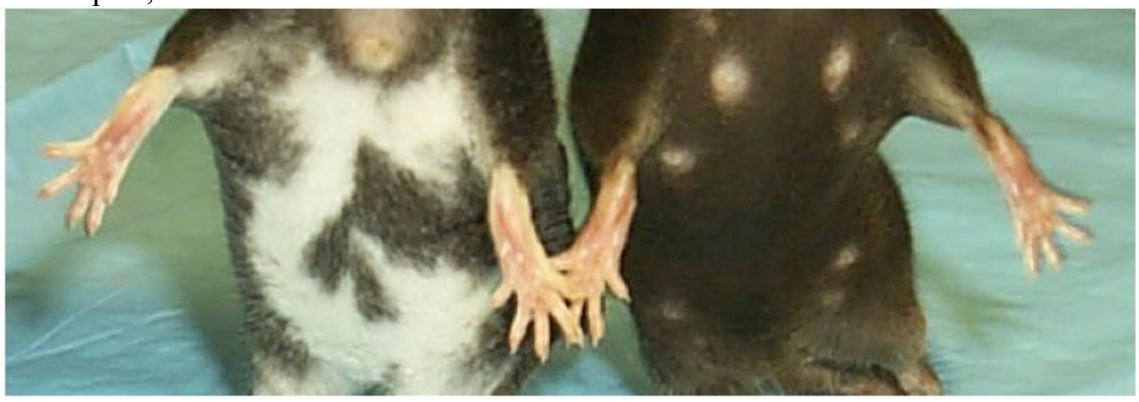
Current strain name: B6.Cg-*Dwh*/GrsrJ

Stock #006429 (jaxmice.jax.org)

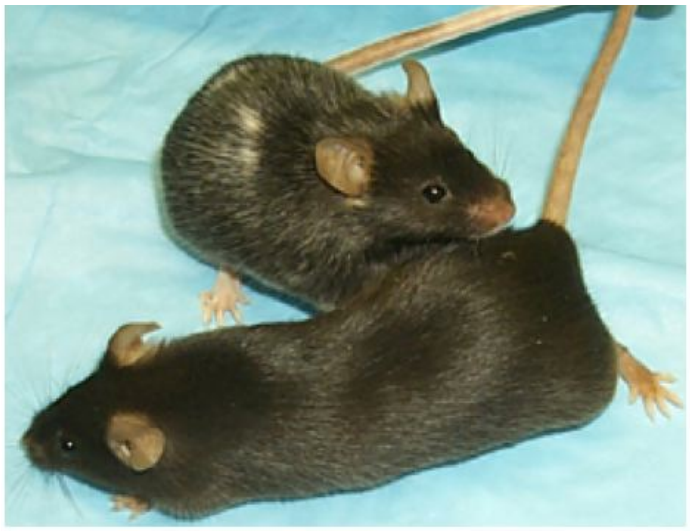
Phenotype categories: coat color

Abstract
A new spontaneous, dominant mutation affecting hair color patterning has been discovered and characterized in the Mouse Mutant Resource. The dispersed white hair (*Dwh*) mutation causes affected mice to have white hairs dispersed throughout the normally black coat and a concentrated patch of white located on the back or belly in variable locations.

Origin and Description
Mice carrying the *Dwh* mutation were discovered by Dr. Patsy Nishina in her research colony of B6C3Fe *a*/*a*-*Large*<*myd*>/J mice at the Jackson Laboratory in June of 2005. Heterozygous mice affected by this dominant mutation are recognized by white hairs and white spots, which can be observed as soon as the first coat of hair comes in.



A ventral view of a mouse heterozygous for the Dwh mutation is shown on the left and a C57BL/6J control is shown on the right. Both about 6 months of age.



A mouse heterozygous for the Dwh mutation (6 months of age) is shown above a C57BL/6J control (6.5 months of age)

Genetic Analysis
Using the standard mapping protocols of The Mouse Mutant Resource, two *Dwh*/+ females were mated to a CAST/Ei male. The offspring from these matings were backcrossed to C57BL/6J mice. The backcross generated 62 mice affected with the *Dwh* mutation that were utilized for linkage analysis. The *Dwh* mutation was determined to be on Chromosome 2 by linkage with *D2Mit124.* The *Dwh* mutation maps between *D2Mit3* (NCBI 36 position 7.6 Mb) and *D2Mit157* (NCBI 36 position 58.9 Mb). There is no recombination with the following nine Mit markers: *D2Mit360*, *D2Mit6*, *D2Mit79*, *D2Mit295*, *D2Mit64*, *D2Mit7*, *D2Mit320*, *D2Mit322*, and *D2Mit72* which range from 14.6 Mb-49.1 Mb. This unusually large area lacking recombination may be due to a chromosome rearrangement, or perhaps the CAST/Ei mice used for the linkage cross may be causing recombination suppression.

Pathology
Hearing as assessed by auditory brainstem response (ABR) testing on three mutants at three weeks of age revealed no hearing loss.

The eyes of three mutants at 19 weeks of age were examined with an ophthalmoscope and determined to be normal.

A pathological screen of 2 mutants at 4 weeks of age and 1 mutant at 45 weeks of age revealed no gross abnormalities. Hair samples taken from a *Dwh* mutant were normal. All hair types (guard, awl, auchene, and zigzag) were present.

Acknowledgements
The authors wish to thank Chantal Longo-Guess for hearing assessment, Norm Hawes for the eye examinations, and Coleen Marden for excellent histopathological skills.