

## Duoxa2 (MUHN; EPD0899\_5\_A06)

**Allele:** *Duoxa2*<sup>tm1b(KOMP)Wtsi</sup>

Embryonic stem cell targeted: JM8A3.N1

Embryonic stem cell origin: C57BL/6N-A<sup>tm1Brd/a</sup>

Background used for Germ Line Transmission: C57BL/6N

Subsequent backcross background: C57BL/6N and inter cross from within Colony

Genetic background: C57BL/6N; C57BL/6N-A<sup>tm1Brd/a</sup>

### Coat Colour Information:

Black and Agouti

### Breeding Performance and Lifespan:

- Generally heterozygous mice from this colony conform to normal expectations of the background strain.  
For maintenance of our colonies we pay particular attention to the age of the mating pairs and the resulting litters. In our experience the C57BL/6N substrain used to establish and progress this colony has shown some characteristics such as poor breeding, high pre-weaning mortality rates and failure to breed beyond three litters. We believe disturbance of litters has a detrimental effect on the mating pair. For our core and mutant colonies we have actively reduced our intervention with the mice. Daily observations, health checks, cleaning and cage movement is minimised in litters under 14 days of age.
- Our Preferred breeding strategy is Heterozygous x Heterozygous.
- Homozygous Viable.
- We have observed that homozygous mice presented with severe growth retardation at normal weaning age. Weaning homozygous mice at P21 was associated with a failure to thrive and a number of premature deaths. Our preferred breeding strategy includes removing the stud male from the breeding cage before a litter is born (when the female is showing signs of pregnancy). Homozygous pups are kept with their mother until they are 5-6 weeks of age, floor food and a long water spout is provided once the mice reach 3 weeks of age to encourage independent feeding. The Homozygous pups are assessed at weaning; some continue to require floor food and long water spouts after weaning.
- For welfare reasons, homozygous fertility has not been assessed.

### Bedding:

Aspen Chip derived from a Baltic supply – Supplier B&K Universal

### Diet:

Autoclavable Mouse Breeder Diet 5021 – A controlled constant-nutrient diet formulated to compensate for nutrient losses that occur during steam sterilization. Supplier Lab Diet [www.labdiet.com](http://www.labdiet.com)

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### **Husbandry:**

Cleaning frequency is based against cage occupancy and technician assessed level of soiling. Base changing is performed in a HEPA filtered change station which remains positive to the room environment. Gloved hands are disinfected between each cage. Diet is fed ad-libitum.

### **Housing System:**

Individual Ventilated Cages maintained at positive pressure to the room with an average of 60 HEPA filtered air changes per hour.

### **Further Information**

Whilst all reasonable effort is made to verify the mouse line and verify the individual mouse genotype at shipment, we recommend this is confirmed by the recipient.

The homozygous genotype for this strain has phenotypic observations noted on the following:

- Recessive Lethal Study
- Weight Curves
- Neurological Assessment
- Grip Strength
- Dysmorphology
- Indirect Calorimetry
- Glucose Tolerance (ip)
- Auditory Brainstem Response
- Body Composition (DEXA)
- X-ray Imaging
- Plasma Chemistry
- Haematology Terminal
- PBL Terminal
- Heart Weight
- Mesenteric Lymph Node

General Observations - Homozygous mice presented with severe grow retardation at normal weaning age. Some homozygous mice weaned at the normal age had to be culled due to health concerns. The weaning strategy was changed so that homozygous mice were allowed to remain with the dam until 5-6 weeks of age and floor food and long water spouts were provided

Sanger MGP mutant mouse lines are mouse lines in development; information about breeding and phenotyping characteristics may be incomplete.

As the mutant mouse strains progress through the Sanger MGP primary phenotypic characterisation, the information gathered may be viewed through the International Mouse Phenotyping Consortium (IMPC; [www.mousephenotype.org](http://www.mousephenotype.org)).

Information supplied here is current as of the date indicated below.

Please consult the IMPC for progressive updates on colony information such as Viability at weaning, Fertility, General Observations.

Contact [MGPEnquiries@sanger.ac.uk](mailto:MGPEnquiries@sanger.ac.uk)

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Phenotype enquiries may be made through the contact [MGPEnquiries@sanger.ac.uk](mailto:MGPEnquiries@sanger.ac.uk) .

Details of the colony quality control tests performed for a specific mouse line may be observed through the International Mouse Phenotyping Consortium (IMPC; [www.mousephenotype.org](http://www.mousephenotype.org)), searching for your gene and follow the link from 'Product Details' for the mouse strain of interest.

General Descriptions of the mouse strain quality control (QC) assays.  
[www.i-dcc.org/kb/25](http://www.i-dcc.org/kb/25)

General information about structure of IMPC alleles and their derivatives  
[www.mousephenotype.org/martsearch\\_ikmc\\_project/about/targeting-strategies](http://www.mousephenotype.org/martsearch_ikmc_project/about/targeting-strategies)

Guidelines for converting alleles  
[www.i-dcc.org/kb/entry/105](http://www.i-dcc.org/kb/entry/105)

International Mouse Phenotyping Consortium (IMPC) Mouse Resources  
[www.mousephenotype.org](http://www.mousephenotype.org)

IKMC Knowledgebase  
[www.i-dcc.org/kb](http://www.i-dcc.org/kb)

## Publications

Bradley A, Anastassiadis K, Ayadi A, Battey JF, Bell C, Birling M-C, Bottomley J, Brown SD, Bürger A, Bult CJ, Bushell W, Collins FS, Desaintes C, Doe B, Economides A, Eppig JT, Finnell RH, Fletcher C, Fray M, Friendewey D, *et al.* (2012) The mammalian gene function resource: the international knockout mouse consortium. *Mamm. Genome*, **23**, 580-586.

Liang,Q., Conte,N., Skarnes,W. C. and Bradley, A. (2008). Extensive genomic copy number variation in embryonic stem cells. *Proc. Nat. Acad. Sci.*, **105** (11), 17453-17456.

Pettitt SJ, Liang Q, Rairdan XY, Moran JL, Prosser HM, Beier DR, Lloyd KC, Bradley A & Skarnes WC (2009) Agouti C57BL/6N embryonic stem cells for mouse genetic resources. *Nature methods*, **6**, 493-495.

Ryder, E., Doe, B., Gleeson, D., Houghton, R., Dalvi, P., Grau, E., ... Ramirez-Solis, R. (2013). Rapid conversion of EUCOMM/KOMP-CSD alleles in mouse embryos using a cell-permeable Cre recombinase. *Transgenic research*. 23(1), 177–185.

Ryder E, Gleeson D, Sethi D, Vyas S, Miklejewska E, Dalvi P, Habib B, Cook R, Hardy M, Jhaveri K, Bottomley J, Wardle-Jones H, Bussell JN, Houghton R, Salisbury J, Skarnes WC; Sanger Mouse Genetics Project, Ramirez-Solis R. (2013). Molecular characterization of mutant mouse strains generated from the EUCOMM/KOMP-CSD ES cell resource. *Mamm. Genome*, **24**, 286–294.

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Skarnes, W.C., Rosen, B., West, A.P., Koutsourakis, M., Bushell, W., Iyer, V., Mujica, A.O., Thomas, M., Harrow, J., Cox, T. *et al.* (2011) A conditional knockout resource for the genome-wide study of mouse gene function. *Nature*, **474**, 337-342.

White, J. K., Gerdin, A.-K., Karp, N. A., Ryder, E., Buljan, M., Bussell, J. N., Salisbury, J., *et al.* (2013). Genome-wide Generation and Systematic Phenotyping of Knockout Mice Reveals New Roles for Many Genes. *Cell*, **154**(2), 452–464.

### **Additional Useful Publications**

Birling M.C., Gofflot F. and Warot X. (2009). Site-specific recombinases for manipulation of the mouse genome. *Methods Mol. Biol.*, **561**, 245-263. Review.

Farley FW, Soriano P, Steffen LS, Dymecki SM. (2000). Widespread recombinase expression using FLP<sub>eR</sub> (flipper) mice. *Genesis*, **28** (3-4), 106-110.

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