129-Mcm2tm1(creERT2)Scpr/J

Stock No: 017611

Coisogenic, Targeted Mutation

PLACE ORDER

Typically mice are recovered in 10-14 weeks. Contact Customer Service to place an order or for more information.

These Mcm2ires-CreERT2 mice have Cre-ERT2 knocked into the minichromosome maintenance deficient 2 mitotin gene (Mcm2). Expression of Mcm2 is reduced, but not abolished. This strain may be useful for mediating inducible cre recombination in Mcm2-expressing tissues, as well as for studying the regulation of core DNA replication machinery.

Donating Investigator

Steven Pruitt, Roswell Park Cancer Institute

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<table>
<thead>
<tr>
<th>Genetic Background</th>
<th>Generation</th>
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<td>Mcm2tm1(creERT2)Scpr</td>
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<tr>
<th>Allele Type</th>
<th>Gene Symbol</th>
<th>Gene Name</th>
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<tbody>
<tr>
<td>Targeted (Recombinase-expressing, Inducible)</td>
<td>Mcm2</td>
<td>minichromosome maintenance complex component 2</td>
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VIEW GENETICS

Cell Biology Research
Research Tools

VIEW ALL RESEARCH APPLICATIONS

Starting at:
Details

Detailed Description

In this strain a Cre-estrogen receptor (Cre-ERT2) fusion protein is knocked into minichromosome maintenance deficient 2 mitotin (Mcm2) gene downstream of the stop codon. Mcm2 is a component of the DNA replication licensing complex expressed in stem/progenitor cells in a variety of regenerative tissues. Mcm2 plays an essential role in eukaryotic cell division as it marks DNA replication origins during G1 for use in the subsequent S-phase. Mcm2 prevents multiple rounds of replication from a single origin and suppresses endoreplication. Reduced expression results in highly penetrant early onset cancers and stem cell deficiencies. In these mutant mice, Mcm2 expression is reduced to 62% of normal in heterozygotes and 35% in homozygotes. Heterozygotes mice are viable, fertile, and normal in size. Homozygotes do not survive beyond 12 weeks age and exhibit thoracic thymomas. They have a severe stem cell deficiency in the subventricular zone of the brain, skeletal muscle, and the small intestinal crypt. They also display a hunched appearance, rapid shallow respiration, generalized muscle weakness, limited movement, loss of adipose tissue, frailty, and modest hair loss or slight graying. Many homozygous mice also exhibit enlarged spleens, and polyps in both the small intestine and colon. The Cre-ERT2 fusion protein is only active when it binds to the estrogen analog 4-hydroxytamoxifen (OHT). When these mice are bred with mice containing a loxP-flanked sequence, tamoxifen-inducible Cre-mediated recombination is expected to result in deletion of the floxed sequences in the Cre recombinase-expressing highly proliferative stem/progenitor cells of the offspring. For example, when bred to mice carrying the Tg(CAG-Bgeo/GFP)21Lbe transgene, tamoxifen-induced GFP expression is observed in 2% and 10% of stem/progenitor cells in a large number of tissues, including endodermal, mesodermal, and neuroectodermal derivatives. This strain may be useful for studying function and regulation of the core DNA replication machinery.

The Cre-ERT2 fusion protein consists of Cre recombinase fused to a triple mutant form of the human estrogen receptor which does not bind its natural ligand (17 β-oestradiol) at physiological concentrations but will bind the synthetic estrogen receptor ligands 4-hydroxytamoxifen (OHT or tamoxifen) and, with lesser sensitivity,ICI 182780. Restricted to the cytoplasm, Cre-ERT2 can only gain access to the nuclear compartment after exposure to tamoxifen. To counteract the mixed estrogen agonist effects of tamoxifen injections, which can result in late fetal abortions in pregnant mice, progesterone may be coadministered.

Development

Expression Data

Control Suggestions

Selected References

Genetics

Mcm2<sup>lmt1[cre/ERT2]lscr</sup>

Disease/Phenotype

Disease Terms

Research Areas By Genotype
Mammalian Phenotype Terms by Genotype

References

Technical Support

CONTACT TECHNICAL SUPPORT

Genotyping Protocols
Separated PCR: Mcm2^{tm1(cre/ERT2)Scpr}
Separated MCA: Mcm2^{tm1(cre/ERT2)Scpr}
Genotyping resources and troubleshooting

Breeding Considerations
When maintaining a live colony, heterozygotes mice may be bred to wildtype mice or to (Stock No. 002448). Homozygotes do not survive beyond 12 weeks age with a hunched appearance, rapid shallow respiration, generalized muscle weakness, limited movement, loss of adipose tissue, frailty, modest hair loss or slight graying, and thoracic thymomas.
Additional Breeding and Husbandry Support

Citation
When using the 129/017611 J mouse strain in a publication, please cite the originating article(s) and include JAX stock No.017611 in your Materials and Methods section.

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

Pricing & Availability

Typically mice are recovered in 10-14 weeks. Contact Customer Service to place an order or for more information.

<table>
<thead>
<tr>
<th>SERVICE</th>
<th>GENOTYPE</th>
<th>PRICE</th>
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<tbody>
<tr>
<td>Cryo Recovery</td>
<td>Heterozygous or wildtype for Mcm2^{tm1(cre/ERT2)Scpr}</td>
<td>$2,595.00</td>
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We will fulfill your order by providing at least two carriers for each strain ordered. The total number, sex, and genotypes provided will vary, although typically 8 or more animals are provided. Please check genotypes which will be recovered. While the genotypes of all animals produced will be communicated to you prior to scheduling shipment, the genotypes of animals provided may not reflect the mating scheme and genotypes described in the strain description. Animals are typically ready to ship in 11-14 weeks. If a second recovery is required to produce the minimum number of animals, then delivery time would increase to approximately 25 weeks. If we
fail to produce animals of the correct genotype, you will not be charged. We cannot guarantee the reproductive success of mice shipped to your facility. If the mice are lost after the first three days (post-arrival) or do not produce progeny at your facility, a new order and fee will be necessary.

Cryorecovery to establish a Dedicated Supply for greater quantities of mice. Mice recovered can be used to establish a dedicated colony to contractually supply you mice according to your requirements. Price by quotation.

<table>
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<tr>
<th>Related Products and Services</th>
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<tbody>
<tr>
<td>Frozen Mouse Embryo</td>
<td>$2,595.00 per straw or vial</td>
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