Knockout mouse lines presenting with welfare issues affecting their survival (abnormal survival [MP:0010769]) are processed through a bespoke sub-pipeline known as the "sick mouse procedure" (SMP) to maximise information collected on that mouse line. Matched wild-type controls are also processed to identify phenotypic abnormalities arising from the targeted allele.

Gmnc$^{<tm1b(EUCOMM)Wtsi>}$

Geminin coiled-coil domain containing

Genetic Background: C57BL/6N;C57BL/6NTac

ES Cell Clone: EPD0660_3_A06

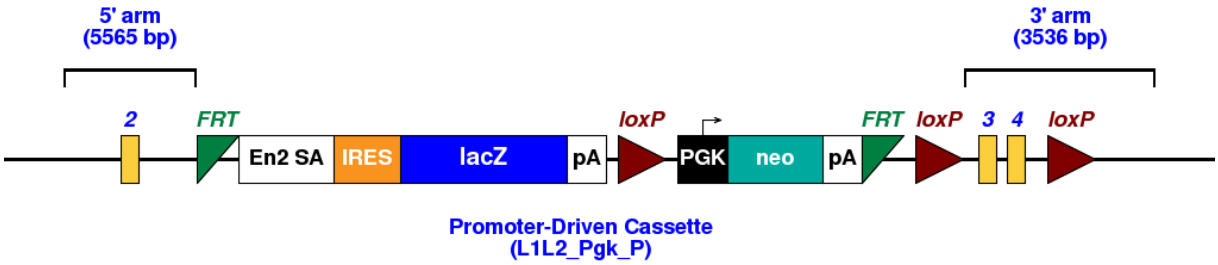


Image shows the Tm1a allele design. The Tm1b phenotyped in this report was generated by use of cell-permeable Cre recombinase, which collapses the loxP sites and removes the Neo cassette.

Affected genotypes: Homozygous

Alternative breeding strategy

Following initial welfare observations, wild-type x heterozygous mating strategy was employed to complete phenotyping work in standard pipeline using heterozygous mice only.

Heterozygous mice showed no significant phenotypic findings on the primary screen.

Welfare observations

Homozygous mice of both sexes exhibit:

- Malformed head 12/19 (63.2%).
- Hydrocephalus 4/19 (21.1%).
- Abnormal survival, 11/19 (57.9%) found dead or culled due to welfare concerns.

Homozygous Viability:

All genotyped mice from het x het intercross considered. When at least 28 mice are available, viability is calculated. *[>13% = Homozygous viable; >0% and <13% = Sub-viable; 0% = Lethal]*

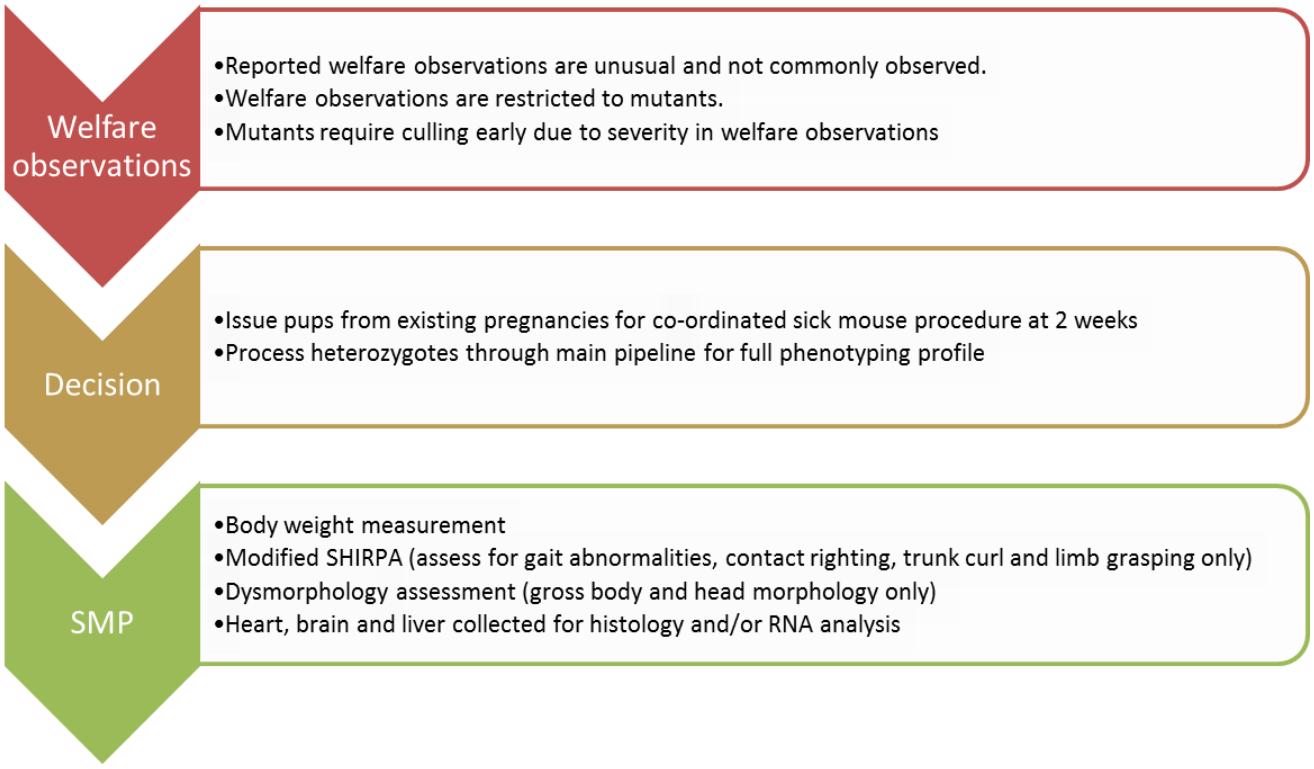
- **Viable** : 19 Homs / 112 Total = 16.96 %

Sick Mouse Procedure (SMP)

Initial welfare observations were reported when the first homozygotes were born during the breeding and expansion stage. Homozygotes were not viable when issued to the phenotyping pipelines at 4 weeks.

Welfare observations in homozygotes described above was sufficient to initiate SMP (see schematic below) on the final litter of mice. Six male and 1 female homozygotes were processed alongside 3 male and 6 female heterozygotes and 2 male and 2 female littermate wild-types. No further homozygotes were phenotyped due to the aforementioned alternative breeding strategy employed to reduce further welfare implications.

Schematic Outline of Bespoke SMP Pipeline



Phenotyping Heat Map

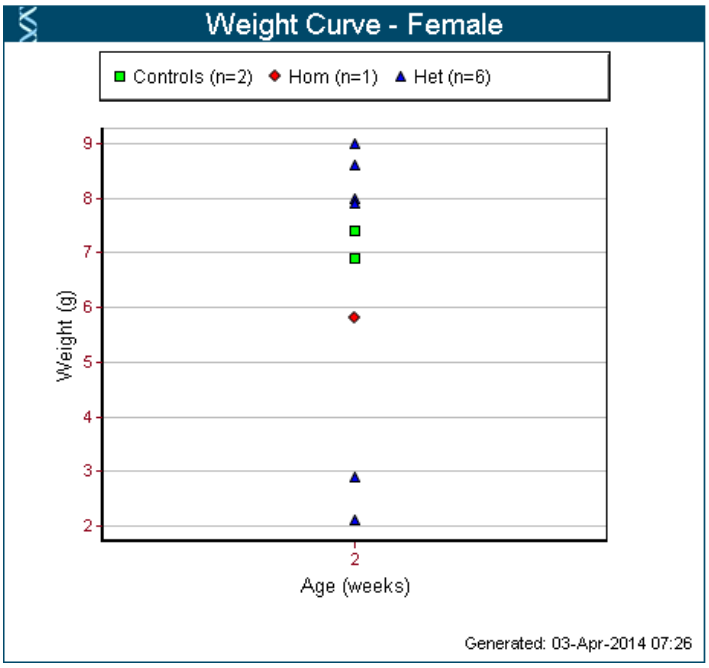
Colony Prefix	Allele Name	Genotype	Weight Curves	Modified SHIRPA	Dysmorphology	Tissue Biobank
MUCY	Gmnc^{<tm1b(EUCOMM)Wtsi>}	Homozygous				

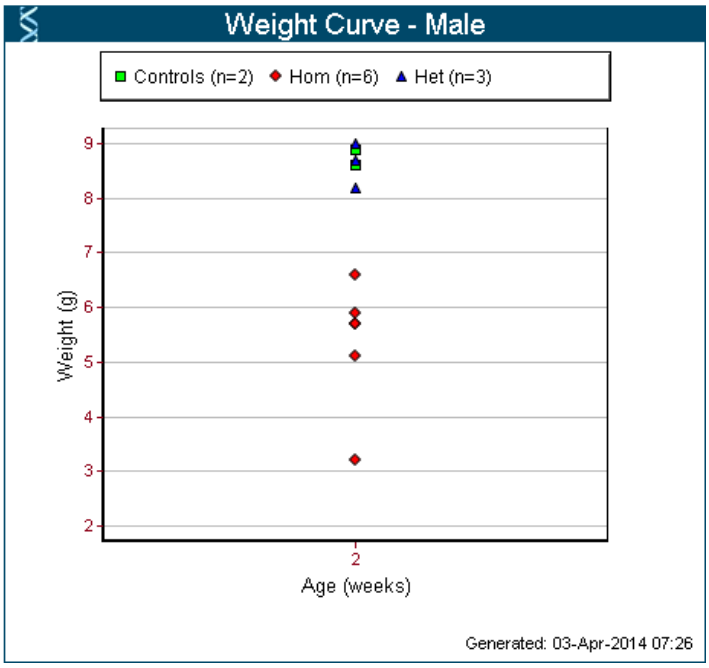
Significant / Interesting
Not significant
Resources available

Phenotyping data of interest (significant changes)

In life phenotyping

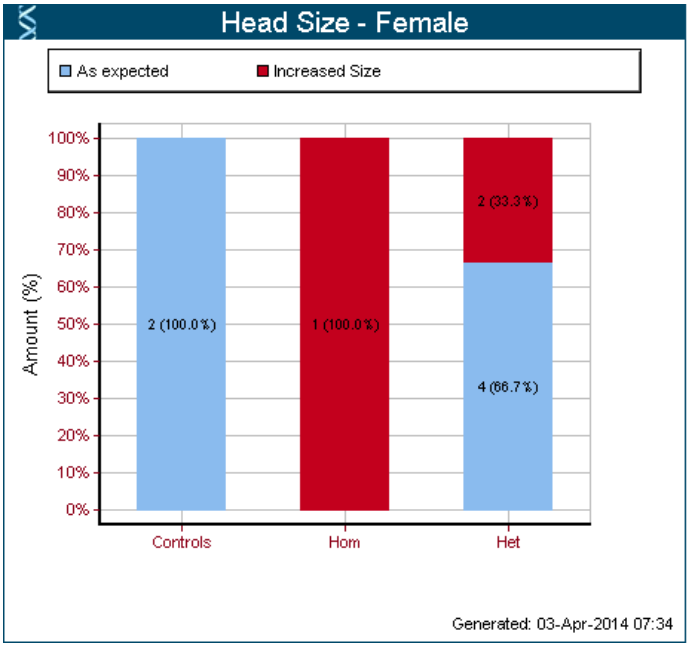
Body weight

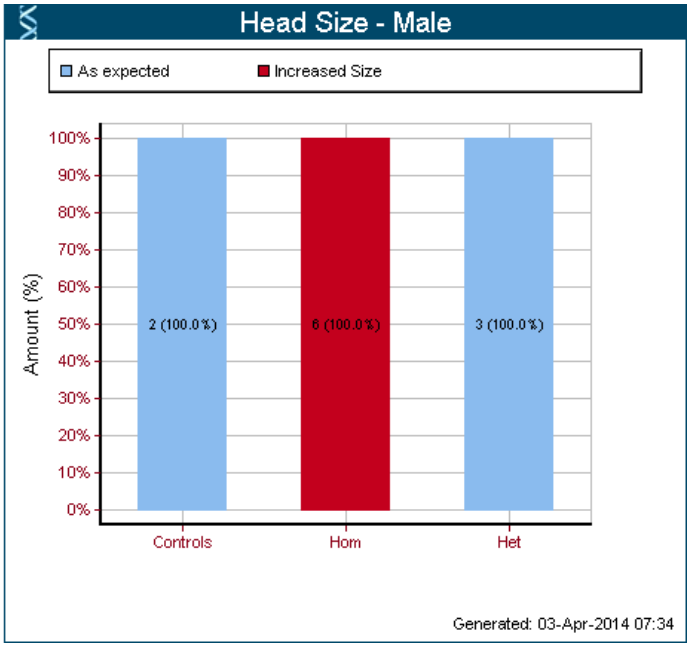


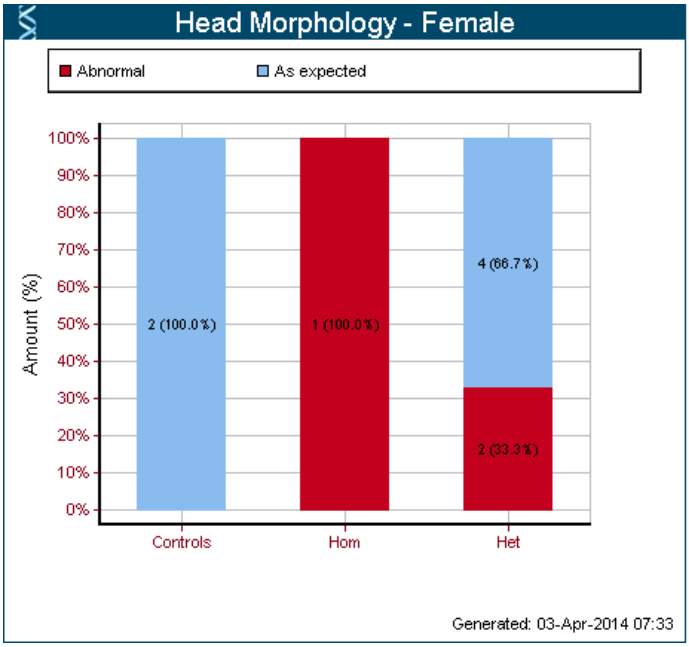


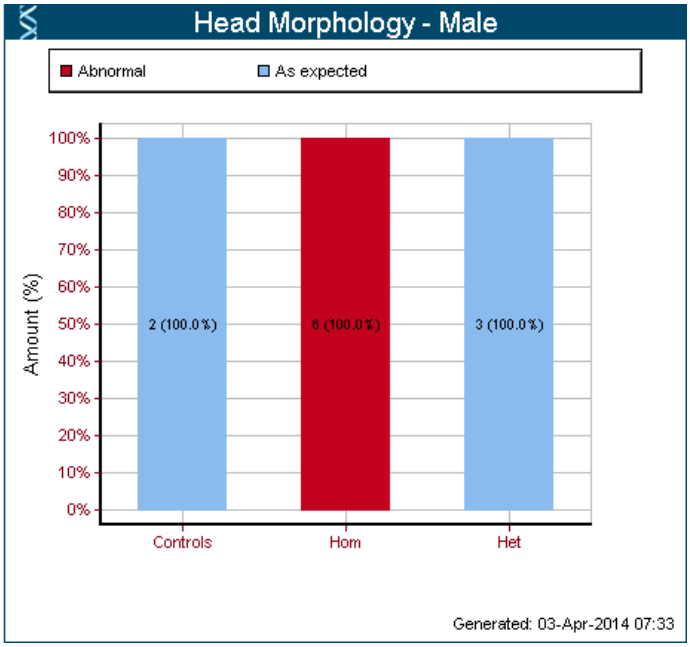
Males and females - Reduced body weight [MP:0001262]

Dysmorphology



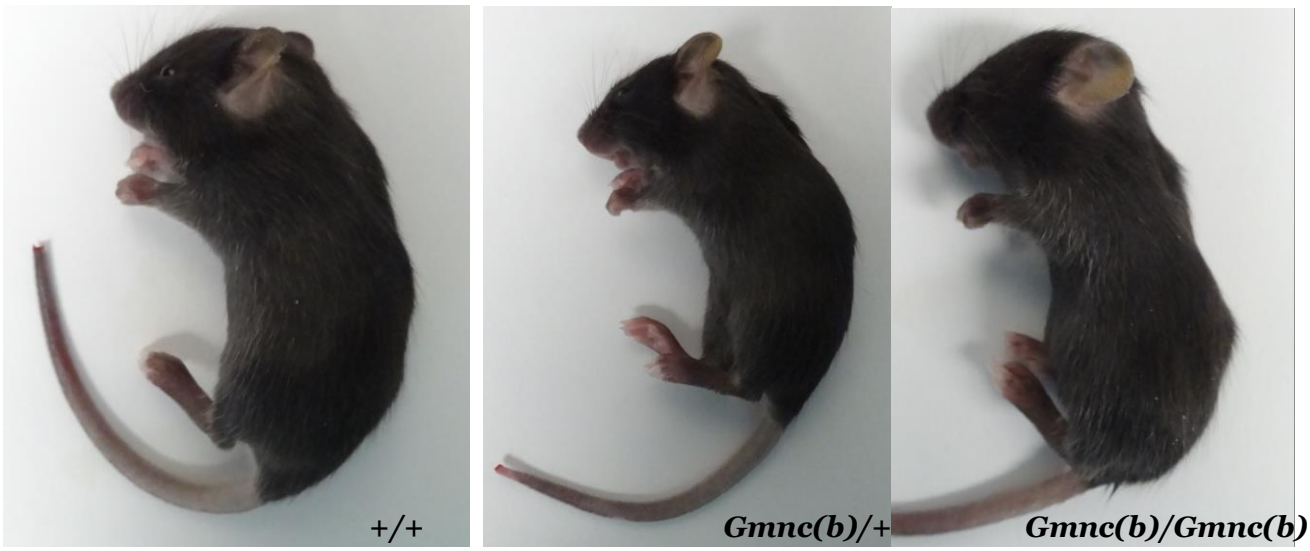






Males and females – Abnormal head morphology [MP:0000432]

Dysmorphology Images



a b

Figure 1. Lateral view of wild-type (a), heterozygote (b) and homozygote mice showing abnormality in head morphology (Abnormal head morphology [MP:0000432]) in homozygotes.