Viability E12.5 Secondary Screen IMPC_EV M_001

Purpose
To assess the viability, sub-viability, and lethality of homozygous embryos at E12.5

Experimental Design

- Set up timed matings with heterozygous mice
- Day 0 is defined as the midpoint of the prior dark cycle following the identification of a copulation plug.
- Collect embryos at E12.5
- Collect tissue and genotype embryos.

Procedure

1. Set up timed mating with heterozygous animals. Aim to dissect and collect >=28 alive embryos, otherwise lethal and subviable calls cannot be made. If more than three homozygous pups are produced before 28 pups are genotyped, a viable call can be made.
2. Collect tissue for genotyping and (OPTIONAL) score Gross Morphology and/or process for Histopathology and/or Imaging.
3. Genotype all embryos and
   a. Strains that produce NO existing homozygous embryos will be considered LETHAL (complete embryonic lethality [MP:TBC]).
   b. Strains that produce NO live (absence of heartbeat) homozygous embryos will be considered LETHAL (complete embryonic lethality [MP:TBC]).
   c. Strains that produce live homozygous embryos but with an obvious defect will be left to the discretion of the center with the decision and reason recorded in the parameters.
   d. X-linked strains that produce NO live hemizygous male embryos from female carriers will be considered LETHAL (complete embryonic lethality [MP:TBC]).
4. Flag strains that produce less than normal numbers of homozygous/hemizygous male progeny
   a. Strains that produce <50% expected homozygous progeny will be annotated as partial embryonic lethality [MP:TBC].
   b. X-linked strains that produce <50% expected male hemizygous progeny from female carriers will be considered partial embryonic lethality [MP:TBC].

Notes

Data QC
All genotypes should be collected using validated assays.

Y chromosome assay required for X-linked lethal strains.

**Data Analysis, annotation and display (+statistics)**

Preliminary: No analysis required as it is a line level procedure. This could change with additional data about the procedure.

See E12.5 Gross Morphology protocol for MP calls of specific phenotypes at this time point.

Total Embryos: All, WT, Het, Hom
- Alive, dead, and defect (all genotyped)
Total Dead: All, WT, Het, Hom

Total Defect (Alive or Dead): All, WT, Het, Hom
- Abnormal and dead embryos
Litter size: all genotyped embryos
- Ignore partials and reabsorptions.

**Parameters and Metadata**

**Outcome** IMPC_EVM_001_001 | v1.1

| simpleParameter |


**Options:** Homozygous - Viable, Homozygous - Lethal, Homozygous - Subviable, Insufficient numbers to make a call, Hemizygous - Lethal, Hemizygous - Viable,

**Decision** IMPC_EVM_002_001 | v1.1

| simpleParameter |


**Options:** Go to E9.5, Go to E14.5, Go to E15.5, Go to E18.5, Go to E14.5 and E18.5, No further data available,
Comment on Decision (in English) IMPC_EVM_003_001 | v1.2

Total embryos WT IMPC_EVM_004_001 | v1.0

Total embryos heterozygous IMPC_EVM_005_001 | v1.0

Total embryos homozygous IMPC_EVM_006_001 | v1.0

Total dead embryos IMPC_EVM_007_001 | v1.0
Total dead WT  IMPC_EVM_008_001  |  v1.0

Total dead heterozygous  IMPC_EVM_009_001  |  v1.0

Total dead homozygous  IMPC_EVM_010_001  |  v1.0

Total gross defect at dissection (alive or dead) embryos  IMPC_EVM_011_001  |  v1.2
**Total gross defect at dissection (alive or dead) WT** IMPC_EVM_012_001 | v1.2

simpleParameter


**Total gross defect at dissection (alive or dead) heterozygous** IMPC_EVM_013_001 | v1.2

simpleParameter


**Total gross defect at dissection (alive or dead) homozygous** IMPC_EVM_014_001 | v1.3

simpleParameter


**Number of reabsorptions** IMPC_EVM_015_001 | v1.0

simpleParameter

% embryos WT  IMPC_EVM_016_001  | v1.3

simpleParameter


Unit Measured: %

Derivation: \( \text{div('IMPC_EVM_004_001', 'IMPC_EVM_023_001')} \)

% embryos heterozygous  IMPC_EVM_017_001  | v1.3

simpleParameter


Unit Measured: %

Derivation: \( \text{div('IMPC_EVM_005_001', 'IMPC_EVM_023_001')} \)

% embryos homozygous  IMPC_EVM_018_001  | v1.3

simpleParameter


Unit Measured: %

Derivation: \( \text{div('IMPC_EVM_006_001', 'IMPC_EVM_023_001')} \)

Average Litter Size  IMPC_EVM_019_001  | v1.0
**Time of dark cycle start**  IMPC_EVM_020_001 | v1.0

**Embryo medium**  IMPC_EVM_022_001 | v1.0

**Total embryos**  IMPC_EVM_023_001 | v1.0

**Options:** Warm PBS, Ice,
**Total live embryos**  IMPC_EVM_024_001 | v1.0

simpleParameter


**Total live heterozygous**  IMPC_EVM_025_001 | v1.0

simpleParameter


**Total live WT**  IMPC_EVM_026_001 | v1.0

simpleParameter


**Total live homozygous**  IMPC_EVM_027_001 | v1.0

simpleParameter