Viability E18.5 Secondary Screen IMPC_EVP_001

Purpose
To assess the viability, sub-viability, and lethality of homozygous embryos at E18.5

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 E18.5
- Collect tissue and genotype embryos.

Procedure

1. Set up timed mating with heterozygous animals. Aim to dissect and collect \(\geq 28\) 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 E18.5 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  
- Dead call difficult can’t always see heart beating (E18.5)

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_EVP_001_001 | v1.0

*simpleParameter*

- **Req. Analysis:** false  
- **Req. Upload:** true  
- **Is Annotated:** true

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

**Decision** IMPC_EVP_002_001 | v1.0

*simpleParameter*

- **Req. Analysis:** false  
- **Req. Upload:** true  
- **Is Annotated:** false

**Options:** Attempt to Image, Go to E15.5, Appears normal, imaging, Go to E14.5, Go to E9.5,
Comment on Decision (in English) IMPC_EVP_003_001 | v1.0


Total embryos IMPC_EVP_004_001 | v1.0


Total embryos heterozygous IMPC_EVP_005_001 | v1.0


Total embryos homozygous IMPC_EVP_006_001 | v1.0

Total dead embryos IMPC_EVP_007_001 | v1.0

Total dead WT IMPC_EVP_008_001 | v1.0

Total dead heterozygous IMPC_EVP_009_001 | v1.0

Total dead homozygous IMPC_EVP_010_001 | v1.0
Total gross defect at dissection (alive or dead) embryos IMPC_EVP_011_001 | v1.2

Total gross defect at dissection (alive or dead) WT IMPC_EV P_012_001 | v1.2

Total gross defect at dissection (alive or dead) heterozygous IMPC_EVP_013_001 | v1.2

Total gross defect at dissection (alive or dead) homozygous IMPC_EVP_014_001 | v1.2

**Number of reabsorptions** IMPC_EVP_015_001 | v1.0


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**Average Litter Size** IMPC_EVP_016_001 | v1.0


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**% embryos WT** IMPC_EVP_017_001 | v1.6


Unit Measured: %

Derivation: div('IMPC_EVP_023_001', 'IMPC_EVP_004_001')

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**% embryos heterozygous** IMPC_EVP_018_001 | v1.5

% embryos homozygous IMPC_EVP_019_001 | v1.5
simpleParameter


Time of dark cycle start IMPC_EVP_020_001 | v1.0
procedureMetadata


Time of dark cycle end IMPC_EVP_021_001 | v1.0
procedureMetadata

**Embryo medium** IMPC_EVP_022_001 | v1.0

*procedureMetadata*


Options: Warm PBS, Ice, no medium,

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**Total embryos WT** IMPC_EVP_023_001 | v1.0

*simpleParameter*


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**Total live embryos** IMPC_EVP_024_001 | v1.0

*simpleParameter*


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**Total live heterozygous** IMPC_EVP_025_001 | v1.0

*simpleParameter*

Total live WT | IMPC_EVP_026_001 | v1.0


Total live homozygous | IMPC_EVP_027_001 | v1.0