Viability E14.5-E15.5 Secondary Screen IMP C_EVO_001

Purpose
To assess the viability, sub-viability, and lethality of homozygous embryos at E14.5 or E15.5

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 E14.5 or E15.5
- 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)**

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_EVO_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_EVO_002_001 | v1.0

*simpleParameter*

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

**Options:** Attempt to Image, Nothing to Image, Go to E9.5, Go to E18.5,
Comment on Decision (in English) IMPC_EVO_003_001 | v1.0

Total embryos IMPC_EVO_004_001 | v1.1

Total embryos WT IMPC_EVO_005_001 | v1.0

Total embryos heterozygous IMPC_EVO_006_001 | v1.0
Total embryos homozygous IMPC_EVO_007_001 | v1.0


Total dead embryos IMPC_EVO_008_001 | v1.0


Total dead WT IMPC_EVO_009_001 | v1.0


Total dead heterozygous IMPC_EVO_010_001 | v1.0


Total dead homozygous IMPC_EVO_011_001 | v1.0

Total gross defect at dissection (alive or dead) embryos IMPC_EVO_012_001 | v1.2

Total gross defect at dissection (alive or dead) WT IMPC_EV013_001 | v1.3

Total gross defect at dissection (alive or dead) heterozygous IMPC_EVO_014_001 | v1.4
Total gross defect at dissection (alive or dead) homozygous IMPC_EVO_015_001 | v1.2


Number of reabsorptions IMPC_EVO_016_001 | v1.1


Average Litter Size IMPC_EVO_017_001 | v1.0


% embryos WT IMPC_EVO_018_001 | v1.2


Unit Measured: %

Derivation: div('IMPC_EVO_005_001', 'IMPC_EVO_004_001')
% embryos heterozygous IMPC_EVO_019_001 | v1.2

*simpleParameter*

Required Analysis: false  
Required Upload: false  
Is Annotated: false  

Unit Measured: %  
Derivation: \( \text{div('IMPC_EVO_006_001', 'IMPC_EVO_004_001')} \)

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% embryos homozygous IMPC_EVO_020_001 | v1.2

*simpleParameter*

Required Analysis: false  
Required Upload: false  
Is Annotated: false  

Unit Measured: %  
Derivation: \( \text{div('IMPC_EVO_007_001', 'IMPC_EVO_004_001')} \)

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Time of dark cycle start IMPC_EVO_021_001 | v1.0

*procedureMetadata*

Required Analysis: false  
Required Upload: true  
Is Annotated: false

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Time of dark cycle end IMPC_EVO_022_001 | v1.1
**Embryo medium**  IMPC_EVO_023_001 | v1.0

**Options:** Warm PBS, Ice,

**Total live embryos**  IMPC_EVO_024_001 | v1.0

**Total live heterozygous**  IMPC_EVO_025_001 | v1.0

**Total live WT**  IMPC_EVO_026_001 | v1.0
Total live homozygous IMPC_EVO_027_001 | v1.0