Viability E9.5 Secondary Screen IMPC_EVL_001

**Purpose**

To assess the viability, sub-viability, and lethality of homozygous embryos at E9.5

**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 E9.5
- 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 E9.5 Gross Morphology protocol for MP calls of specific phenotypes at this time point.

Yolk sacs that have no visible embryos are counted as dead embryos.

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_EVL_001_001 | v1.1

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,

**Total embryos**  
IMPC_EVL_002_001 | v1.0

SimpleParameter

- **Req. Analysis:** false  
- **Req. Upload:** true  
- **Is Annotated:** false
% embryos WT  IMPC_EVL_003_001 | v1.5

simpleParameter


Unit Measured: %

Derivation: div('IMPC_EVL_007_001', 'IMPC_EVL_002_001')

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Time of dark cycle start  IMPC_EVL_004_001 | v1.0

procedureMetadata


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Decision  IMPC_EVL_005_001 | v1.0

simpleParameter


Options: Attempt to Image, Nothing to Image, Go to E8.5, Go to E12.5, Go to E18.5,

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Comment on Decision (in English)  IMPC_EVL_006_001 | v1.0

simpleParameter
Total embryos WT  IMPC_EVL_007_001 | v1.0

Total embryos heterozygous  IMPC_EVL_008_001 | v1.0

Total embryos homozygous  IMPC_EVL_009_001 | v1.0

Total dead embryos  IMPC_EVL_010_001 | v1.0
Total dead WT  IMPC_EVL_011_001 | v1.0


Total dead heterozygous  IMPC_EVL_012_001 | v1.0


Total dead homozygous  IMPC_EVL_013_001 | v1.0


Total gross defect at dissection (alive or dead) embryos  IMPC_EVL_014_001 | v1.2

Total gross defect at dissection (alive or dead) WT IMPC_EVL_015_001 | v1.2
simpleParameter


Total gross defect at dissection (alive or dead) heterozygous IMPC_EVL_016_001 | v1.2
simpleParameter


Total gross defect at dissection (alive or dead) homozygous IMPC_EVL_017_001 | v1.2
simpleParameter


Number of reabsorptions IMPC_EVL_018_001 | v1.1
simpleParameter

% embryos heterozygous  IMPC_EVL_019_001 | v1.3

simpleParameter


Unit Measured: %

Derivation: div('IMPC_EVL_008_001', 'IMPC_EVL_002_001')

% embryos homozygous  IMPC_EVL_020_001 | v1.3

simpleParameter


Unit Measured: %

Derivation: div('IMPC_EVL_009_001', 'IMPC_EVL_002_001')

Average Litter Size  IMPC_EVL_021_001 | v1.0

simpleParameter


Time of dark cycle end  IMPC_EVL_022_001 | v1.1
**Embryo medium** IMPC_EVL_023_001 | v1.1

**Options:** Warm PBS, Ice,

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**Total live embryos** IMPC_EVL_024_001 | v1.0

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**Total live heterozygous** IMPC_EVL_025_001 | v1.0

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**Total live WT** IMPC_EVL_026_001 | v1.0
Total live homozygous IMPC_EVL_027_001 | v1.0