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 >=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

**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

**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

simpleParameter

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

---

**Total dead WT**  IMPC_EVP_008_001 | v1.0

simpleParameter

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

---

**Total dead heterozygous** IMPC_EVP_009_001 | v1.0

simpleParameter

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

---

**Total dead homozygous** IMPC_EVP_010_001 | v1.0

simpleParameter

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

**simpleParameter**

<table>
<thead>
<tr>
<th>Req. Analysis</th>
<th>Req. Upload</th>
<th>Is Annotated</th>
</tr>
</thead>
<tbody>
<tr>
<td>false</td>
<td>false</td>
<td>false</td>
</tr>
</tbody>
</table>

### Average Litter Size

**IMPC_EVP_016_001 | v1.0**

**simpleParameter**

<table>
<thead>
<tr>
<th>Req. Analysis</th>
<th>Req. Upload</th>
<th>Is Annotated</th>
</tr>
</thead>
<tbody>
<tr>
<td>false</td>
<td>false</td>
<td>false</td>
</tr>
</tbody>
</table>

### % embryos WT

**IMPC_EVP_017_001 | v1.6**

**simpleParameter**

<table>
<thead>
<tr>
<th>Req. Analysis</th>
<th>Req. Upload</th>
<th>Is Annotated</th>
</tr>
</thead>
<tbody>
<tr>
<td>false</td>
<td>false</td>
<td>false</td>
</tr>
</tbody>
</table>

**Unit Measured:** %

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

### % embryos heterozygous

**IMPC_EVP_018_001 | v1.5**

**simpleParameter**

<table>
<thead>
<tr>
<th>Req. Analysis</th>
<th>Req. Upload</th>
<th>Is Annotated</th>
</tr>
</thead>
<tbody>
<tr>
<td>false</td>
<td>false</td>
<td>false</td>
</tr>
</tbody>
</table>
% embryos homozygous  IMPC_EVP_019_001 | v1.5

simpleParameter

Unit Measured: %
Derivation: \( \text{div}('IMPC\_EVP\_005\_001', 'IMPC\_EVP\_004\_001') \)

Time of dark cycle start  IMPC_EVP_020_001 | v1.0

procedureMetadata

Unit Measured: %
Derivation: \( \text{div}('IMPC\_EVP\_006\_001', 'IMPC\_EVP\_004\_001') \)

Time of dark cycle end  IMPC_EVP_021_001 | v1.0

procedureMetadata

Unit Measured: %
Derivation: \( \text{div}('IMPC\_EVP\_006\_001', 'IMPC\_EVP\_004\_001') \)
**Embryo medium** IMPC_EVP_022_001 | v1.0


Options: Warm PBS, Ice, no medium,

---

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

simpleParameter


---

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

simpleParameter


---

**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