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

Recording data for X-linked lines

As the procedure does not allow recording of hemizygous males specifically, hemizygous males should be recorded as homozygotes.

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

simpleParameter

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

---

Total embryos IMPC_EVP_004_001 | v1.0

simpleParameter

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

---

Total embryos heterozygous IMPC_EVP_005_001 | v1.0

simpleParameter

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

---

Total embryos homozygous IMPC_EVP_006_001 | v1.0

simpleParameter

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

---

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

simpleParameter

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

Total gross defect at dissection (alive or dead) WT IMPC_EVP_012_001 | v1.2

simpleParameter

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

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

simpleParameter

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

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

simpleParameter

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

---

Number of reabsorptions IMPC_EVP_015_001 | v1.0

simpleParameter

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

---

Average Litter Size IMPC_EVP_016_001 | v1.0

simpleParameter

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

---

% embryos WT IMPC_EVP_017_001 | v1.6

simpleParameter

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

Unit Measured: %

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

% embryos heterozygous IMPC_EVP_018_001 | v1.5

simpleParameter

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

Unit Measured: %

Derivation: div('IMPC_EVP_005_001', 'IMPC_EVP_004_001')

% embryos homozygous IMPC_EVP_019_001 | v1.5

simpleParameter

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

Unit Measured: %

Derivation: div('IMPC_EVP_006_001', 'IMPC_EVP_004_001')

Time of dark cycle start IMPC_EVP_020_001 | v1.0

procedureMetadata

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

---

Time of dark cycle end IMPC_EVP_021_001 | v1.0

procedureMetadata

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

Embryo medium IMPC_EVP_022_001 | v1.0

procedureMetadata

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

Options: Warm PBS, Ice, no medium,

Total embryos WT IMPC_EVP_023_001 | v1.0

simpleParameter

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

---

Total live embryos IMPC_EVP_024_001 | v1.0

simpleParameter

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

---

Total live heterozygous IMPC_EVP_025_001 | v1.0

simpleParameter

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

---

Total live WT IMPC_EVP_026_001 | v1.0

simpleParameter

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

---

Total live homozygous IMPC_EVP_027_001 | v1.0

simpleParameter

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

---