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

Recording data for X-linked lines

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

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

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

simpleParameter

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

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

simpleParameter

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

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% embryos homozygous IMPC_EVL_020_001 | v1.3

simpleParameter

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

Unit Measured: %

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

Outcome IMPC_EVL_001_001 | v1.1

simpleParameter

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

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

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Total dead embryos IMPC_EVL_010_001 | v1.0

simpleParameter

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

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Time of dark cycle start IMPC_EVL_004_001 | v1.0

procedureMetadata

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

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Total dead heterozygous IMPC_EVL_012_001 | v1.0

simpleParameter

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

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Average Litter Size IMPC_EVL_021_001 | v1.0

simpleParameter

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

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% embryos WT IMPC_EVL_003_001 | v1.5

simpleParameter

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

Unit Measured: %

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

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

simpleParameter

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

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Number of reabsorptions IMPC_EVL_018_001 | v1.1

simpleParameter

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

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Total embryos homozygous IMPC_EVL_009_001 | v1.0

simpleParameter

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

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Total embryos IMPC_EVL_002_001 | v1.0

simpleParameter

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

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% embryos heterozygous IMPC_EVL_019_001 | v1.3

simpleParameter

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

Unit Measured: %

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

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

simpleParameter

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

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

simpleParameter

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

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Total embryos WT IMPC_EVL_007_001 | v1.0

simpleParameter

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

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Total live homozygous IMPC_EVL_027_001 | v1.0

simpleParameter

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

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Total embryos heterozygous IMPC_EVL_008_001 | v1.0

simpleParameter

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

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Total dead WT IMPC_EVL_011_001 | v1.0

simpleParameter

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

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Decision IMPC_EVL_005_001 | v1.0

simpleParameter

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

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

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Total dead homozygous IMPC_EVL_013_001 | v1.0

simpleParameter

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

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Embryo medium IMPC_EVL_023_001 | v1.1

procedureMetadata

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

Options: Warm PBS, Ice,

Total live WT IMPC_EVL_026_001 | v1.0

simpleParameter

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

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Total live heterozygous IMPC_EVL_025_001 | v1.0

simpleParameter

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

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Total live embryos IMPC_EVL_024_001 | v1.0

simpleParameter

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

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Time of dark cycle end IMPC_EVL_022_001 | v1.1

procedureMetadata

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

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