Purpose

To assess visible morphological defects in E9.5 embryos from lethal strains

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.
- **Minimum number of animals**: 1 mutant of any sex
- **Age at test**: E9.5 and Younger
- Capture gross images (optional)
- Collect tissue and genotype embryos.

Procedure

1. Set up timed mating with heterozygous animals. Dissect at a consistent time and collect >=2 homozygote embryos. Coordination with viability screen is at the centres discretion.
2. Score embryos as live or dead if possible.
3. Assess embryos according to Gross Morphology parameters.
4. Generate gross images of embryos (optional) with scored defects and control embryos.
5. Collect tissue for genotyping
6. Process embryos for Histopathology, or other imaging (OPTIONAL - depending on center pipeline)
7. Scores will be shown per embryo and split by zygosity.

If capturing images please attempt to capture left, right, front, and back views of the embryo but if this is not possible left, right is sufficient. Feel free to take higher magnification views to show morphologies of interest.

Notes

Tam somite method for counting somites should be adopted:
Tam scoring system uses a forelimb range of 8 to 15 somite pairs resulting in E9.5 embryos ranging between 25 to 26 somite pairs.

All genotypes should be collected using validated assays.

Y chromosome assay required for X-linked lethal strains.

Embryos may be processed for Histopathology or 3D Imaging

Parameters and Metadata

**Alive** IMPC_GEL_001_001 | v1.0

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

- **Description:** alive  
- **Options:** yes, no,

**Scored** IMPC_GEL_002_001 | v1.0

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

- **Description:** scored  
- **Options:** yes, no,
Cardiovascular System  IMPC_GEL_003_001  |  v1.0

**simpleParameter**

**Description:** cardiovascular_system

**Options:** normal, abnormal, unobservable,

Cardiovascular Development  IMPC_GEL_004_001  |  v1.0

**simpleParameter**

**Description:** cardiovascular_development

**Options:** normal, abnormal, unobservable,

Vascular Development  IMPC_GEL_005_001  |  v1.0

**simpleParameter**

**Description:** vascular_development

**Options:** normal, abnormal, unobservable,
**Pericardium Morphology** IMPC_GEL_006_001 | v1.0

*simpleParameter*

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

**Description:** pericardium_morphology

**Options:** normal, abnormal, unobservable,

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**Failure heart looping** IMPC_GEL_007_001 | v1.0

*simpleParameter*

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

**Description:** failure_heart_looping

**Options:** normal, abnormal, unobservable,

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**Absent heartbeat** IMPC_GEL_008_001 | v1.0

*simpleParameter*

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

**Description:** absent_heartbeat

**Options:** normal, abnormal, unobservable,
**Embryogenesis Phenotype** IMPC_GEL_009_001 | v1.0

**simpleParameter**

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

Description: embryogenesis_phenotype

Options: normal, abnormal, unobservable,

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**Abnormal Gastrulation** IMPC_GEL_010_001 | v1.0

**simpleParameter**

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

Description: abnormal_gastrulation

Options: normal, abnormal, unobservable,

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**Embryo turning** IMPC_GEL_011_001 | v1.0

**simpleParameter**

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

Description: embryo_turning

Options: normal, abnormal, unobservable,
Incomplete embryo turning IMPC_GEL_012_001 | v1.0

simpleParameter


Description: incomplete_embryo_turning

Options: normal, abnormal, unobservable,

Extraembryonic tissue morphology IMPC_GEL_013_001 | v1.0

simpleParameter


Description: extraembryonic_tissue_morphology

Options: normal, abnormal, unobservable,

Allantois Morphology IMPC_GEL_014_001 | v1.0

simpleParameter


Description: allantois_morphology

Options: normal, abnormal, unobservable,
**Vitelline vasculature morphology**  IMPC_GEL_015_001 | v1.0

**simpleParameter**

**Description:** vitelline_vasculature_morphology

**Options:** normal, abnormal, unobservable,

**Vitelline vein morphology**  IMPC_GEL_016_001 | v1.0

**simpleParameter**

**Description:** vitelline_vein_morphology

**Options:** normal, abnormal, unobservable,

**Pale yolk sac**  IMPC_GEL_017_001 | v1.0

**simpleParameter**

**Description:** pale_yolk_sac

**Options:** normal, abnormal, unobservable,
Visceral yolk sac morphology  IMPC_GEL_018_001 | v1.0

simpleParameter


Description: visceral_yolk_sac_morphology

Options: normal, abnormal, unobservable,

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Chorioallantoic fusion  IMPC_GEL_019_001 | v1.0

simpleParameter


Description: chorioallantoic_fusion

Options: normal, abnormal, unobservable,

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Developmental Patterning  IMPC_GEL_020_001 | v1.0

simpleParameter


Description: developmental_patterning

Options: normal, abnormal, unobservable,
**Left-right axis patterning** IMPC_GEL_021_001 | v1.0

*simpleParameter*

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

**Description**: left_right_axis_patterning

**Options**: normal, abnormal, unobservable,

**Direction of heart looping** IMPC_GEL_022_001 | v1.0

*simpleParameter*

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

**Description**: direction_of_heart_looping

**Options**: normal, abnormal, unobservable,

**Somite development** IMPC_GEL_023_001 | v1.0

*simpleParameter*

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

**Description**: somite_development

**Options**: normal, abnormal, unobservable,
**Branchial arch morphology**  IMPC_GEL_024_001 | v1.0

*simpleParameter*


Description: branchial_arch_morphology

Options: normal, abnormal, unobservable,

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**Neural fold morphology**  IMPC_GEL_025_001 | v1.0

*simpleParameter*


Description: neural_fold_morphology

Options: normal, abnormal, unobservable,

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**Neural tube morphology/development**  IMPC_GEL_026_001 | v1.0

*simpleParameter*


Description: neural_tube_morphology_development

Options: normal, abnormal, unobservable,
Neural tube closure IMPC_GEL_027_001 | v1.0

simpleParameter


Description: neural_tube_closure

Options: normal, abnormal, unobservable,

 Forebrain IMPC_GEL_028_001 | v1.0

simpleParameter


Description: forebrain

Options: normal, abnormal, unobservable,

Midbrain IMPC_GEL_029_001 | v1.0

simpleParameter


Description: midbrain

Options: normal, abnormal, unobservable,
Hindbrain  IMPC_GEL_030_001  | v1.0

simpleParameter


Description: hindbrain

Options: normal, abnormal, unobservable,

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Spinal cord  IMPC_GEL_031_001  | v1.0

simpleParameter


Description: spinal_cord

Options: normal, abnormal, unobservable,

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Embryo Size  IMPC_GEL_032_001  | v1.0

simpleParameter


Description: embryo_size
Options: normal, abnormal, unobservable,

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**Tail bud morphology**  IMPC_GEL_033_001 | v1.0

simpleParameter


Description: tail_bud_morphology

Options: normal, abnormal, unobservable,

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**Integument**  IMPC_GEL_034_001 | v1.0

simpleParameter


Description: integument

Options: normal, abnormal, unobservable,

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**Skin Appearance**  IMPC_GEL_035_001 | v1.0

simpleParameter


Description: skin_appearance
Options: normal, abnormal, unobservable,

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**Pallor**  IMPC_GEL_036_001  |  v1.0

*simpleParameter*


Description: pallor

Options: normal, abnormal, unobservable,

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**Blebs**  IMPC_GEL_037_001  |  v1.0

*simpleParameter*


Description: blebs

Options: normal, abnormal, unobservable,

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**Limb Bud Morphology**  IMPC_GEL_038_001  |  v1.0

*simpleParameter*

**Description:** limb_bud_morphology

**Options:** normal, abnormal, unobservable,

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**Vision/Eye** IMPC_GEL_039_001 | v1.0

*simpleParameter*

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

**Description:** vision_eye

**Options:** normal, abnormal, unobservable,

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**Eye development** IMPC_GEL_040_001 | v1.0

*simpleParameter*

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

**Description:** eye_development

**Options:** normal, abnormal, unobservable,

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**Hearing/Vestibular/Ear** IMPC_GEL_041_001 | v1.0

*simpleParameter*

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

Options: normal, abnormal, unobservable,

Otic vesicle morphology  IMPC_GEL_042_001 | v1.0


Description: otic_vesicle_morphology

Options: normal, abnormal, unobservable,

Comment on image  IMPC_GEL_043_001 | v1.0


Description: comment_on_image

Images  IMPC_GEL_044_001 | v1.0

Description: images

Increments: Minimum 1

Experimenter ID  IMPC_GEL_045_001 | v1.0
procedureMetadata


Description: experimenter_id

Equipment ID  IMPC_GEL_046_001 | v1.0
procedureMetadata


Description: equipment_id

Equipment Manufacturer  IMPC_GEL_047_001 | v1.0
procedureMetadata


Description: equipment_manufacturer
**Equipment Model**  IMPC_GEL_048_001 | v1.0

- **Description:** equipment_model

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**Fixative**  IMPC_GEL_049_001 | v1.0

- **Description:** fixative

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**Time of Dissection**  IMPC_GEL_050_001 | v1.0

- **Description:** time_of_dissection

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**Somite Stage**  IMPC_GEL_051_001 | v1.0
procedureMetadata

**Description:** somite_stage

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**Time of dark cycle start**  
IMPC_GEL_052_001 | v1.0

procedureMetadata

**Description:** time_of_dark_cycle_start

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**Time of dark cycle end**  
IMPC_GEL_053_001 | v1.0

procedureMetadata

**Description:** time_of_dark_cycle_end

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**Date equipment last calibrated**  
IMPC_GEL_054_001 | v1.1

procedureMetadata

**Description:**
Description: date_equipment_last_calibrated