**Gross Morphology Embryo E9.5 IMPC_GEL_001**

**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,

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**Cardiovascular Development** IMPC_GEL_004_001 | v1.0

*simpleParameter*


**Description:** cardiovascular_development

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

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**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


Description: pericardium_morphology

Options: normal, abnormal, unobservable,

Failure heart looping IMPC_GEL_007_001 | v1.0

simpleParameter


Description: failure_heart_looping

Options: normal, abnormal, unobservable,

Absent heartbeat IMPC_GEL_008_001 | v1.0

simpleParameter


Description: absent_heartbeat

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

**Description:** embryogenesis_phenotype

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

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**Abnormal Gastrulation** IMPC_GEL_010_001 | v1.0

**Description:** abnormal_gastrulation

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

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**Embryo turning** IMPC_GEL_011_001 | v1.0

**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,

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**Extraembryonic tissue morphology** IMPC_GEL_013_001 | v1.0

simpleParameter

**Description:** extraembryonic_tissue_morphology

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

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**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**

- **Req. Analysis:** False  
- **Req. Upload:** False  
- **Is Annotated:** True

**Description:** visceral_yolk_sac_morphology

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

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### Chorioallantoic fusion

**IMPC_GEL_019_001 | v1.0**

**simpleParameter**

- **Req. Analysis:** False  
- **Req. Upload:** False  
- **Is Annotated:** True

**Description:** chorioallantoic_fusion

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

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### Developmental Patterning

**IMPC_GEL_020_001 | v1.0**

**simpleParameter**

- **Req. Analysis:** False  
- **Req. Upload:** False  
- **Is Annotated:** True

**Description:** developmental_patterning

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

simpleParameter


Description: left_right_axis_patterning

Options: normal, abnormal, unobservable,

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Direction of heart looping  IMPC_GEL_022_001 | v1.0

simpleParameter


Description: direction_of_heart_looping

Options: normal, abnormal, unobservable,

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Somite development  IMPC_GEL_023_001 | v1.0

simpleParameter


Description: somite_development

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

**Description:** branchial_arch_morphology

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

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Neural fold morphology  IMPC_GEL_025_001 | v1.0

**Description:** neural_fold_morphology

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

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Neural tube morphology/development  IMPC_GEL_026_001 | v1.0

**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,

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**Forebrain** IMPC_GEL_028_001 | v1.0

`simpleParameter`


Description: forebrain

Options: normal, abnormal, unobservable,

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**Midbrain** IMPC_GEL_029_001 | v1.0

`simpleParameter`


Description: midbrain

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

*simpleParameter*

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

**Description:** hindbrain

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

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**Spinal cord** IMPC_GEL_031_001 | v1.0

*simpleParameter*

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

**Description:** spinal_cord

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

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**Embryo Size** IMPC_GEL_032_001 | v1.0

*simpleParameter*

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

**Description:** embryo_size
**Tail bud morphology** IMPC_GEL_033_001 | v1.0
*simpleParameter*

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

Description: tail_bud_morphology

Options: normal, abnormal, unobservable,

**Integument** IMPC_GEL_034_001 | v1.0
*simpleParameter*

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

Description: integument

Options: normal, abnormal, unobservable,

**Skin Appearance** IMPC_GEL_035_001 | v1.0
*simpleParameter*

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

Description: skin_appearance
**Pallor** IMPC_GEL_036_001 | v1.0

simpleParameter

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

**Description:** pallor

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

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**Blebs** IMPC_GEL_037_001 | v1.0

simpleParameter

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

**Description:** blebs

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

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

simpleParameter

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

Options: normal, abnormal, unobservable,

Vision/Eye IMPC_GEL_039_001 | v1.0

simpleParameter


Description: vision_eye

Options: normal, abnormal, unobservable,

Eye development IMPC_GEL_040_001 | v1.0

simpleParameter


Description: eye_development

Options: normal, abnormal, unobservable,

Hearing/Vestibular/Ear IMPC_GEL_041_001 | v1.0

simpleParameter

**Description:** hearing_vestibular_ear

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

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**Otic vesicle morphology** IMPC_GEL_042_001 | v1.0

**simpleParameter**

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

**Description:** otic_vesicle_morphology

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

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**Comment on image** IMPC_GEL_043_001 | v1.0

**simpleParameter**

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

**Description:** comment_on_image

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**Images** IMPC_GEL_044_001 | v1.0

**seriesMediaParameter**

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

Increments: Minimum 1

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**Experimenter ID** IMPC_GEL_045_001 | v1.0

procedureMetadata

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

Description: experimenter_id

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**Equipment ID** IMPC_GEL_046_001 | v1.0

procedureMetadata

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

Description: equipment_id

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**Equipment Manufacturer** IMPC_GEL_047_001 | v1.0

procedureMetadata

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

Description: equipment_manufacturer
Equipment Model  IMPC_GEL_048_001 | v1.0

ProcedureMetadata

Description: equipment_model

Fixative  IMPC_GEL_049_001 | v1.0

ProcedureMetadata

Description: fixative

Time of Dissection  IMPC_GEL_050_001 | v1.0

ProcedureMetadata

Description: time_of_dissection

Somite Stage  IMPC_GEL_051_001 | v1.0
procedureMetadata

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

procedureMetadata

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

procedureMetadata

**Date equipment last calibrated**  IMPC_GEL_054_001  | v1.1
Description: date_equipment_last_calibrated