# Gross Morphology Embryo E9.5 IMPC_GEL_003

## 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

### 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,

---

### 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,

---

## Allantois Morphology IMPC_GEL_014_001 | v1.0

simpleParameter

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

**Description:** allantois_morphology

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

---

## Vitelline vasculature morphology IMPC_GEL_015_001 | v1.0

simpleParameter

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

**Description:** vitelline_vasculature_morphology

**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,

---

## 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,

---

## Branchial arch morphology IMPC_GEL_024_001 | v1.0

simpleParameter

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

**Description:** branchial_arch_morphology

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

---

## Neural tube closure IMPC_GEL_027_001 | v1.0

simpleParameter

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

**Description:** neural_tube_closure

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

## Forebrain IMPC_GEL_028_001 | v1.0

simpleParameter

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

**Description:** forebrain

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

---

## Midbrain IMPC_GEL_029_001 | v1.0

simpleParameter

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

**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,

---

## Embryo Size IMPC_GEL_032_001 | v1.0

simpleParameter

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

**Description:** embryo_size

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

---

## 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,

---

## 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,

## 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,

---

## Comment on image IMPC_GEL_043_001 | v1.0

simpleParameter

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

**Description:** comment_on_image

---

## Images IMPC_GEL_044_001 | v1.0

seriesMediaParameter

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

**Description:** images

**Increments:** Minimum 1

---

## Experimenter ID IMPC_GEL_045_001 | v1.0

procedureMetadata

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

**Description:** experimenter_id

---

## Equipment ID IMPC_GEL_046_001 | v1.0

procedureMetadata

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

**Description:** equipment_id

---

## 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

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

**Description:** equipment_model

---

## Fixative IMPC_GEL_049_001 | v1.0

procedureMetadata

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

**Description:** fixative

---

## Time of Dissection IMPC_GEL_050_001 | v1.0

procedureMetadata

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

**Description:** time_of_dissection

---

## Somite Stage IMPC_GEL_051_001 | v1.0

procedureMetadata

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

**Description:** somite_stage

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

procedureMetadata

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

**Description:** time_of_dark_cycle_start

---

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

procedureMetadata

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

**Description:** time_of_dark_cycle_end

---

## Date equipment last calibrated IMPC_GEL_054_001 | v1.1

procedureMetadata

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

**Description:** date_equipment_last_calibrated

---

## Pale yolk sac IMPC_GEL_017_002 | v2.0

simpleParameter

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

**Description:** pale_yolk_sac

**Options:** yes, unobservable, no,

---

## Pallor IMPC_GEL_036_002 | v2.0

simpleParameter

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

**Description:** pallor

**Options:** yes, unobservable, no,

---

## Blebs IMPC_GEL_037_002 | v2.0

simpleParameter

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

**Description:** blebs

**Options:** yes, unobservable, no,

---

## Severely Dysmorphic IMPC_GEL_055_001 | v1.2

simpleParameter

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

**Options:** no, yes, unobservable,

---

## Edema IMPC_GEL_056_001 | v1.1

simpleParameter

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

**Options:** no, yes, unobservable,

---

## Heart looping IMPC_GEL_057_001 | v1.1

simpleParameter

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

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

---

## Heart morphology IMPC_GEL_058_001 | v1.2

simpleParameter

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

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

---

## Hemorrhage IMPC_GEL_059_001 | v1.1

simpleParameter

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

**Options:** no, yes, unobservable,

---

## Neural tube morphology IMPC_GEL_060_001 | v1.1

simpleParameter

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

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

---

## Optic vesicle morphology IMPC_GEL_061_001 | v1.1

simpleParameter

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

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

## CRL IMPC_GEL_062_001 | v1.1

simpleParameter

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

**Unit Measured:** mm

---

## Delayed embryonic development IMPC_GEL_063_001 | v1.2

simpleParameter

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

**Options:** no, yes, unobservable,

---

## Somite Morphology IMPC_GEL_064_001 | v1.0

simpleParameter

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

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

---

## Left-right axis patterning IMPC_GEL_065_001 | v1.2

simpleParameter

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

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

---

## Vascular morphology IMPC_GEL_066_001 | v1.0

simpleParameter

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

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

---