

# Gross Morphology Embryo E12.5 IMPC\_GEM\_002

## Purpose

To assess visible morphological defects in E12.5 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**: E12.5
- 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  $\geq 2$  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, LacZ 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

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\_GEM\_001\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Description: alive

Options: yes, no,

---

### **Scored** IMPC\_GEM\_002\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Description: scored

Options: yes, no,

---

### **Cardiovascular System** IMPC\_GEM\_003\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

**Description:** cardiovascular\_system

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

---

## **Cardiovascular Development** IMPC\_GEM\_004\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** cardiovascular\_development

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

---

## **Vascular Development** IMPC\_GEM\_005\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** vascular\_development

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

---

## **Outflow tract development** IMPC\_GEM\_006\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** outflow\_tract\_development

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

---

## **Pericardium Morphology** IMPC\_GEM\_007\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** pericardium\_morphology

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

---

## **Craniofacial** IMPC\_GEM\_009\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** craniofacial

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

---

## **Craniofacial Development** IMPC\_GEM\_010\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** craniofacial\_development

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

---

## **Embryogenesis Phenotype** IMPC\_GEM\_011\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** embryogenesis\_phenotype

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

---

## **Extraembryonic tissue morphology** IMPC\_GEM\_012\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** extraembryonic\_tissue\_morphology

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

---

## **Allantois Morphology** IMPC\_GEM\_013\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** allantois\_morphology

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

---

## **Vitelline vasculature morphology** IMPC\_GEM\_014\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** vitelline\_vasculature\_morphology

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

---

## **Vitelline vein morphology** IMPC\_GEM\_015\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** vitelline\_vein\_morphology

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

---

## **Visceral yolk sac morphology** IMPC\_GEM\_017\_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\_GEM\_018\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** chorioallantoic\_fusion

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

---

## Embryo Size IMPC\_GEM\_019\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** embryo\_size

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

---

## Hearing/Vestibular/Ear Phenotype IMPC\_GEM\_020\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: hearing\_vestibular\_ear\_phenotype

Options: normal, abnormal, unobservable,

---

## Ear Morphology IMPC\_GEM\_021\_001 | v1.1

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: abnormal\_ear\_morphology

Options: normal, abnormal, unobservable,

---

## Ear Development IMPC\_GEM\_022\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: ear\_development

Options: normal, abnormal, unobservable,

---



## **Integument** IMPC\_GEM\_023\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** integument

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

---

## **Skin Appearance** IMPC\_GEM\_024\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** skin\_appearance

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

---

## **Limb Bud Morphology** IMPC\_GEM\_027\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** limb\_bud\_morphology

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

---

## Limb Plate Morphology IMPC\_GEM\_028\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: limb\_plate\_morphology

Options: normal, abnormal, unobservable,

---

## Tail Morphology IMPC\_GEM\_029\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: tail\_morphology

Options: normal, abnormal, unobservable,

---

## Liver/Biliary IMPC\_GEM\_030\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: liver\_biliary

Options: normal, abnormal, unobservable,

---

## Liver Morphology IMPC\_GEM\_031\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: liver\_morphology

Options: normal, abnormal, unobservable,

---

## Liver Size IMPC\_GEM\_032\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: liver\_size

Options: normal, abnormal, unobservable,

---

## Nervous System IMPC\_GEM\_035\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: nervous\_system

Options: normal, abnormal, unobservable,

---

## Neural Tube Closure IMPC\_GEM\_036\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: neural\_tube\_closure

Options: normal, abnormal, unobservable,

---

## Forebrain development IMPC\_GEM\_037\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: forebrain\_development

Options: normal, abnormal, unobservable,

---

## Midbrain development IMPC\_GEM\_038\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: midbrain\_development

Options: normal, abnormal, unobservable,

---

## Hindbrain development IMPC\_GEM\_039\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: hindbrain\_development

Options: normal, abnormal, unobservable,

---

## Vision/Eye IMPC\_GEM\_040\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: vision\_eye

Options: normal, abnormal, unobservable,

---

## Eye Morphology IMPC\_GEM\_041\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: eye\_morphology

Options: normal, abnormal, unobservable,

---

## Eye Size IMPC\_GEM\_042\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** eye\_size

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

---

## Failure heart looping IMPC\_GEM\_045\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** failure\_heart\_looping

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

---

## Gastrulation IMPC\_GEM\_046\_001 | v1.1

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** abnormal\_gastrulation

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

---

## Head shape IMPC\_GEM\_047\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** head\_shape

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

---

## Comment on image IMPC\_GEM\_048\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Description:** comment\_on\_image

---

## Images IMPC\_GEM\_049\_001 | v1.0

seriesMediaParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Description:** images

**Increments:** Minimum 1

---

## Experimenter ID IMPC\_GEM\_050\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: experimenter\_id

---

## Equipment ID IMPC\_GEM\_051\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: equipment\_id

---

## Equipment Manufacturer IMPC\_GEM\_052\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: equipment\_manufacturer

---

## Equipment Model IMPC\_GEM\_053\_001 | v1.0

procedureMetadata



Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: equipment\_model

---

## **Fixative** IMPC\_GEM\_054\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: fixative

---

## **Time of Dissection** IMPC\_GEM\_055\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: time\_of\_dissection

---

## **Somite Stage** IMPC\_GEM\_056\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Description: somite\_stage

---

## Time of dark cycle start IMPC\_GEM\_057\_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\_GEM\_058\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: time\_of\_dark\_cycle\_end

---

## Date equipment last calibrated IMPC\_GEM\_059\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Description: date\_equipment\_last\_calibrated

---

## **Pale yolk sac** IMPC\_GEM\_016\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** pale\_yolk\_sac

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

---

## **Pallor** IMPC\_GEM\_025\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** pallor

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

---

## **Blebs** IMPC\_GEM\_026\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** blebs

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

---

## Pale Liver IMPC\_GEM\_033\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** pale\_liver

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

---

## Microphthalmia IMPC\_GEM\_043\_002 | v2.3

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** microphthalmia

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

---

## Anophthalmia IMPC\_GEM\_044\_002 | v2.2

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** anophthalmia

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

---

## Severely Dysmorphic IMPC\_GEM\_060\_001 | v1.2

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: no, yes, unobservable,

---

## Absent Heartbeat IMPC\_GEM\_008\_002 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: yes, no, unobservable,

---

## Gastroschisis (herniated abdominal wall) IMPC\_GEM\_034\_002 | v1

.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: yes, no, unobservable,

---