

# Gross Morphology Embryo E12.5 IMPC\_GEM\_001

## 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,

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Description:** scored

**Options:** yes, no,

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### **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,

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## **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,

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## **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,

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## **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,

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## **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,

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## **Absent heartbeat** IMPC\_GEM\_008\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** absent\_heartbeat

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

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** craniofacial

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

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## **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,

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## **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,

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## 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,

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## 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,

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## 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,

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## 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,

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## Pale yolk sac IMPC\_GEM\_016\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** pale\_yolk\_sac

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

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## 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,

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## 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,

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## 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,

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## 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,

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## 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,

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## 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,

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

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: integument

Options: normal, abnormal, unobservable,

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## 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,

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## Pallor IMPC\_GEM\_025\_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\_GEM\_026\_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\_GEM\_027\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: limb\_bud\_morphology

Options: normal, abnormal, unobservable,

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## 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,

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## 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,

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## 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,

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## 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,

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## 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,

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## Pale Liver IMPC\_GEM\_033\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: pale\_liver

Options: normal, abnormal, unobservable,

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## Gastroschisis (herniated abdominal wall) IMPC\_GEM\_034\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: gastroschisis\_herniated\_abdominal\_wall

Options: normal, abnormal, unobservable,

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## 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,

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## **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,

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## **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,

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## **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,

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## **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,

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## **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,

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## **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,

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## **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,

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## **Microphthalmia** IMPC\_GEM\_043\_001 | v1.3

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** microphthalmia

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

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## **Anophthalmia** IMPC\_GEM\_044\_001 | v1.2

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true



**Description:** anophthalmia

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

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## **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,

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** abnormal\_gastrulation

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

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## **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,

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Description:** comment\_on\_image

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## **Images** IMPC\_GEM\_049\_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\_GEM\_050\_001 | v1.0

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Description:** experimenter\_id

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

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Description:** equipment\_id

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

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Description:** equipment\_manufacturer

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

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Description:** equipment\_model

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

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Description:** fixative

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

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Description:** time\_of\_dissection

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

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Description:** somite\_stage

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## **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

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## 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

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## 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

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