

# Gross Morphology Embryo E18.5 IMPC\_GEP\_002

## Purpose

To assess visible morphological defects in E18.5 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**: E18.5 and Older
- 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, 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\_GEP\_001\_001 | v1.0

simpleParameter

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

Description: alive

Options: yes, no,

---

**Scored** IMPC\_GEP\_002\_001 | v1.0

simpleParameter

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

Description: scored

Options: yes, no,

---

**Behavior/neurological** IMPC\_GEP\_003\_001 | v1.0

simpleParameter

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

**Description:** behavior\_neurological

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

---

## Cardiovascular System IMPC\_GEP\_006\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** cardiovascular\_system

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

---

## Cardiovascular Development IMPC\_GEP\_007\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** cardiovascular\_development

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

---

## Heart Development IMPC\_GEP\_008\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** heart\_development

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

---

## Outflow tract development IMPC\_GEP\_009\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** outflow\_tract\_development

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

---

## Heart Morphology IMPC\_GEP\_010\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** heart\_morphology

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

---

## Blood Vessel Morphology IMPC\_GEP\_013\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** blood\_vessel\_morphology

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

---

## **Craniofacial** IMPC\_GEP\_014\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** craniofacial

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

---

## **Head shape** IMPC\_GEP\_015\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** head\_shape

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

---

## **Head size** IMPC\_GEP\_016\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** head\_size

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

---

## Facial Morphology IMPC\_GEP\_017\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** facial\_morphology

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

---

## Digestive/alimentary IMPC\_GEP\_020\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** digestive\_alimentary

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

---

## Digestive System Morphology IMPC\_GEP\_021\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** digestive\_system\_morphology

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

---

## Embryo Size IMPC\_GEP\_022\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** embryo\_size

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

---

## Embryo weight IMPC\_GEP\_023\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** embryo\_weight

---

## Body wall morphology IMPC\_GEP\_024\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** body\_wall\_morphology

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

---

## Hearing/Vestibular/Ear IMPC\_GEP\_025\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** hearing\_vestibular\_ear

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

---

## Outer ear morpholgy IMPC\_GEP\_026\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** outer\_ear\_morpholgy

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

---

## Ear Development IMPC\_GEP\_027\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** ear\_development

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

---

## Homeostasis/metabolism IMPC\_GEP\_028\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** homeostasis\_metabolism

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

---

## Integument IMPC\_GEP\_032\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** integument

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

---

## Vibrissa Morphology IMPC\_GEP\_033\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** vibrissa\_morphology

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

---

## Skin Appearance IMPC\_GEP\_034\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** skin\_appearance

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

---

## Skin Coloration IMPC\_GEP\_036\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** skin\_coloration

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

---

**Limb Morphology** IMPC\_GEP\_037\_001 | v1.0

simpleParameter

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

Description: limb\_morphology

Options: normal, abnormal, unobservable,

---

**Tail Morphology** IMPC\_GEP\_038\_001 | v1.0

simpleParameter

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

Description: tail\_morphology

Options: normal, abnormal, unobservable,

---

**Liver/Biliary** IMPC\_GEP\_040\_001 | v1.0

simpleParameter

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

Description: liver\_biliary

Options: normal, abnormal, unobservable,

---

## Liver Morphology IMPC\_GEP\_041\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** liver\_morphology

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

---

## Liver Size IMPC\_GEP\_042\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** liver\_size

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

---

## Muscle IMPC\_GEP\_043\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** muscle

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

---

# Diaphragm Morphology IMPC\_GEP\_044\_001 | v1.0

simpleParameter

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

Description: diaphragm\_morphology

Options: normal, abnormal, unobservable,

---

# Nervous System IMPC\_GEP\_045\_001 | v1.0

simpleParameter

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

Description: nervous\_system

Options: normal, abnormal, unobservable,

---

# Brain Development IMPC\_GEP\_046\_001 | v1.0

simpleParameter

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

Description: brain\_development

Options: normal, abnormal, unobservable,

---

## Renal/Urinary IMPC\_GEP\_050\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** renal\_urinary

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

---

## Kidney IMPC\_GEP\_051\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** kidney

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

---

## Respiratory System IMPC\_GEP\_052\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** respiratory\_system

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

---

## Lung Morphology IMPC\_GEP\_053\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** lung\_morphology

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

---

## Lung Development IMPC\_GEP\_054\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** lung\_development

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

---

## Vision/Eye IMPC\_GEP\_056\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** vision\_eye

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

---

## Eye Morphology IMPC\_GEP\_057\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: eye\_morphology

Options: normal, abnormal, unobservable,

---

## Eye Size IMPC\_GEP\_058\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: eye\_size

Options: normal, abnormal, unobservable,

---

## Number of cervical vertebrae IMPC\_GEP\_062\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: number\_of\_cervical\_vertebrae

---

## Comment on image IMPC\_GEP\_063\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Description: comment\_on\_image

---

## Images IMPC\_GEP\_064\_001 | v1.0

seriesMediaParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Description: images

Increments: Minimum 1

---

## Experimenter ID IMPC\_GEP\_065\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: experimenter\_id

---

## Equipment ID IMPC\_GEP\_066\_001 | v1.0

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Description:** equipment\_id

---

## Equipment Manufacturer IMPC\_GEP\_067\_001 | v1.0

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Description:** equipment\_manufacturer

---

## Equipment Model IMPC\_GEP\_068\_001 | v1.0

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Description:** equipment\_model

---

## Fixative IMPC\_GEP\_069\_001 | v1.0

procedureMetadata

**Req. Analysis:** false

**Req. Upload:** true

**Is Annotated:** false

**Description:** fixative

---

**Time of Dissection** IMPC\_GEP\_070\_001 | v1.0

procedureMetadata

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

**Description:** time\_of\_dissection

---

**Somite Stage** IMPC\_GEP\_071\_001 | v1.1

procedureMetadata

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

**Description:** somite\_stage

---

**Time of dark cycle start** IMPC\_GEP\_072\_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\_GEP\_073\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: time\_of\_dark\_cycle\_end

---

## Date equipment last calibrated IMPC\_GEP\_074\_001 | v1.1

procedureMetadata

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Description: date\_equipment\_last\_calibrated

---

## Spontaneous movement IMPC\_GEP\_004\_002 | v2.2

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: false

Description: no\_spontaneous\_movement

Options: yes, unobservable, no,

---

## Responsive to tactile stimuli IMPC\_GEP\_005\_002 | v2.2

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Description:** unresponsive\_to\_tactile\_stimuli

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

---

## Hemorrhage IMPC\_GEP\_011\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** hemorrhage

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

---

## Skin Hemorrhage IMPC\_GEP\_012\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** skin\_hemorrhage

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

---

## Facial Cleft IMPC\_GEP\_018\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** facial\_cleft

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

---

## Cleft Palate IMPC\_GEP\_019\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** cleft\_palate

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

---

## Cyanosis IMPC\_GEP\_029\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** cyanosis

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

---

## Edema IMPC\_GEP\_030\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** edema

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

---

## Hydrops fetalis (fetal adema) IMPC\_GEP\_031\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** hydrops\_fetalis\_fetal\_adema

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

---

## Pallor IMPC\_GEP\_035\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** pallor

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

---

## Polydactyly IMPC\_GEP\_039\_002 | v2.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: polydactyly

Options: yes, unobservable, no,

---

## Exencephaly IMPC\_GEP\_047\_002 | v2.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: exencephaly

Options: yes, unobservable, no,

---

## Holoprosencephaly IMPC\_GEP\_048\_002 | v2.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: holoprosencephaly

Options: yes, unobservable, no,

---

## spina bifida IMPC\_GEP\_049\_002 | v2.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: spina\_bifida

Options: yes, unobservable, no,

---

## Respiratory Failure IMPC\_GEP\_055\_002 | v2.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: respiratory\_failure

Options: yes, unobservable, no,

---

## Microphthalmia IMPC\_GEP\_059\_002 | v2.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: microphthalmia

Options: yes, unobservable, no,

---

## Anophthalmia IMPC\_GEP\_060\_002 | v2.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: anophthalmia

Options: yes, unobservable, no,

---

## Failure of Eyelid Fusion IMPC\_GEP\_061\_002 | v2.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: failure\_of\_eyelid\_fusion

Options: yes, unobservable, no,

---

## Severely Dysmorphic IMPC\_GEP\_075\_001 | v1.2

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Options: no, yes, unobservable,

---

