# 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 >=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,

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### **Scored** IMPC_GEP_002_001 | v1.0

simpleParameter

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

**Description:** scored

**Options:** yes, no,

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### **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,

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## 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,

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## 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,

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## 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,

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## 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,

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## 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,

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## 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,

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## 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,

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## 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,

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## 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,

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## 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,

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## 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,

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## 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,

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## Embryo weight IMPC_GEP_023_001 | v1.0

simpleParameter

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

**Description:** embryo_weight

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## 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,

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## 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,

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## 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,

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## 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,

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## 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,

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## Integument IMPC_GEP_032_001 | v1.0

simpleParameter

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

**Description:** integument

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

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## 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,

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## 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,

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## 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,

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## 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,

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## 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,

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## 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,

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## 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,

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## Muscle IMPC_GEP_043_001 | v1.0

simpleParameter

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

**Description:** muscle

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

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## 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,

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## 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,

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## 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,

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## 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,

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## Kidney IMPC_GEP_051_001 | v1.0

simpleParameter

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

**Description:** kidney

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

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## 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,

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## 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,

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## 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

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## Comment on image IMPC_GEP_063_001 | v1.0

simpleParameter

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

**Description:** comment_on_image

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## Images IMPC_GEP_064_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_GEP_065_001 | v1.0

procedureMetadata

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

**Description:** experimenter_id

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## Equipment ID IMPC_GEP_066_001 | v1.0

procedureMetadata

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

**Description:** equipment_id

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## Equipment Manufacturer IMPC_GEP_067_001 | v1.0

procedureMetadata

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

**Description:** equipment_manufacturer

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## Equipment Model IMPC_GEP_068_001 | v1.0

procedureMetadata

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

**Description:** equipment_model

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## Fixative IMPC_GEP_069_001 | v1.0

procedureMetadata

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

**Description:** fixative

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## Time of Dissection IMPC_GEP_070_001 | v1.0

procedureMetadata

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

**Description:** time_of_dissection

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## Somite Stage IMPC_GEP_071_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_GEP_072_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_GEP_073_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_GEP_074_001 | v1.1

procedureMetadata

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

**Description:** date_equipment_last_calibrated

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## 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,

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## 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,

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## Cyanosis IMPC_GEP_029_002 | v2.0

simpleParameter

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

**Description:** cyanosis

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

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## Edema IMPC_GEP_030_002 | v2.0

simpleParameter

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

**Description:** edema

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

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## 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,

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## Pallor IMPC_GEP_035_002 | v2.0

simpleParameter

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

**Description:** pallor

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

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## Polydactyly IMPC_GEP_039_002 | v2.0

simpleParameter

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

**Description:** polydactyly

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

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## 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,

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## 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,

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## Severely Dysmorphic IMPC_GEP_075_001 | v1.2

simpleParameter

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

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

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