

# Gross Morphology Embryo E9.5 IMPC\_GEL\_002

## 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  $\geq 2$  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

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

### **Alive** IMPC\_GEL\_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\_GEL\_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\_GEL\_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\_GEL\_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\_GEL\_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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## 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,

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## Embryogenesis Phenotype IMPC\_GEL\_009\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: embryogenesis\_phenotype

Options: normal, abnormal, unobservable,

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## Abnormal Gastrulation IMPC\_GEL\_010\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: abnormal\_gastrulation

Options: normal, abnormal, unobservable,

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## 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,

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## Extraembryonic tissue morphology IMPC\_GEL\_013\_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\_GEL\_014\_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\_GEL\_015\_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\_GEL\_016\_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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## 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,

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## 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,

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## Developmental Patterning IMPC\_GEL\_020\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: developmental\_patterning

Options: normal, abnormal, unobservable,

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## Left-right axis patterning IMPC\_GEL\_021\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: left\_right\_axis\_patterning

Options: normal, abnormal, unobservable,

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## Direction of heart looping IMPC\_GEL\_022\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: direction\_of\_heart\_looping

Options: normal, abnormal, unobservable,

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## Somite development IMPC\_GEL\_023\_001 | v1.0

simpleParameter

Req. Analysis: false

Req. Upload: false

Is Annotated: true

Description: somite\_development

Options: normal, abnormal, unobservable,

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## 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,



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## Neural fold mophology IMPC\_GEL\_025\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** neural\_fold\_mophology

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

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## Neural tube morphology/development IMPC\_GEL\_026\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** neural\_tube\_morphology\_development

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

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## 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,

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## Forebrain IMPC\_GEL\_028\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** forebrain

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

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## Midbrain IMPC\_GEL\_029\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** midbrain

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

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## Hindbrain IMPC\_GEL\_030\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** hindbrain

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

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## Spinal cord IMPC\_GEL\_031\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** spinal\_cord

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

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## 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,

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## 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,

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## **Integument** IMPC\_GEL\_034\_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\_GEL\_035\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** skin\_appearance

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

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## **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,

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## **Vision/Eye** IMPC\_GEL\_039\_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 development** IMPC\_GEL\_040\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** eye\_development

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

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## **Hearing/Vestibular/Ear** IMPC\_GEL\_041\_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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## 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,

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## Comment on image IMPC\_GEL\_043\_001 | v1.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** false

**Description:** comment\_on\_image

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## Images IMPC\_GEL\_044\_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\_GEL\_045\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: experimenter\_id

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## Equipment ID IMPC\_GEL\_046\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: equipment\_id

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## Equipment Manufacturer IMPC\_GEL\_047\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: equipment\_manufacturer

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## Equipment Model IMPC\_GEL\_048\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: equipment\_model

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## Fixative IMPC\_GEL\_049\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: fixative

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## Time of Dissection IMPC\_GEL\_050\_001 | v1.0

procedureMetadata

Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: time\_of\_dissection

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## Somite Stage IMPC\_GEL\_051\_001 | v1.0

procedureMetadata



Req. Analysis: false

Req. Upload: true

Is Annotated: false

Description: somite\_stage

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## 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

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## 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

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## 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

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## Failure heart looping IMPC\_GEL\_007\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** failure\_heart\_looping

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

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## Absent heartbeat IMPC\_GEL\_008\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** absent\_heartbeat

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

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## Incomplete embryo turning IMPC\_GEL\_012\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** incomplete\_embryo\_turning

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

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## **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,

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## **Pallor** IMPC\_GEL\_036\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** pallor

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

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## **Blebs** IMPC\_GEL\_037\_002 | v2.0

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** blebs

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

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## Severely Dysmorphic IMPC\_GEL\_055\_001 | v1.2

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

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

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