

# 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,

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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,

---

## **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,

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## 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

---

## 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,

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## 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,

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## **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,

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## 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,

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## 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,

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## **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,

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## **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,

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

simpleParameter

**Req. Analysis:** false

**Req. Upload:** false

**Is Annotated:** true

**Description:** microphthalmia

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

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## **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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