MicroCT E18.5 IMPC_EMA_002

Purpose
To assess morphological defects in E18.5 embryos from lethal or subviable strains with MicroCT.

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.
- Collect embryos at E18.5 with 3 minimum homozygous and 1 littermate control
- Ensure embryos are bleed as much as possible.
- Reconstruct the scans according to manufacturer's instructions.

Procedure

1. Set up timed mating with heterozygous animals. Dissect and collect >=3 homozygote embryos.
2. Process the embryos using the centre’s staining and embedding protocol. Centre-specific methods are recorded within a document
3. Scan and generate reconstructions of embryos.

Notes
Embryos may be processed for Histopathology.

Parameters and Metadata

**Embryo reconstruction** IMPC_EMA_001_001 | v1.1

<table>
<thead>
<tr>
<th>seriesMediaParameter</th>
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</thead>
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Increments: Minimum 1

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**Experimenter ID** IMPC_EMA_002_001 | v1.0
procedureMetadata

**Equipment ID** IMPC_EMA_003_001 | v1.0

procedureMetadata

**Equipment Manufacturer** IMPC_EMA_004_001 | v1.0

procedureMetadata

**Equipment Model** IMPC_EMA_005_001 | v1.0

procedureMetadata

**Equipment Version** IMPC_EMA_006_001 | v1.0

procedureMetadata

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

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**Image Pixel Size**  
IMPC_EMA_007_001 | v1.0  
procedureMetadata  

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

**Unit Measured:** µm

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**E18.5 MicroCT Preparation protocol**  
IMPC_EMA_008_001 | v1.0  
procedureMetadata  

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

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**Date equipment last calibrated**  
IMPC_EMA_009_001 | v1.0  
procedureMetadata  

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

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**Date of Sacrifice**  
IMPC_EMA_010_001 | v1.0  
procedureMetadata  

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

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**Date Preparation Finished**  
IMPC_EMA_011_001 | v1.0
**Date of Scan** IMPC_EMA_012_001 | v1.0

**Source Voltage** IMPC_EMA_013_001 | v1.0

**Source Current** IMPC_EMA_014_001 | v1.1

**Object to Source** IMPC_EMA_015_001 | v1.0
procedureMetadata

**Camera to Source** IMPC_EMA_016_001 | v1.1

procedureMetadata

**Screenshots** IMPC_EMA_017_001 | v1.1

seriesMediaParameter

**Limb digits** IMPC_EMA_018_001 | v1.0

simpleParameter

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**Unit Measured:** mm

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**Unit Measured:** mm

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**Unit Measured:** mm

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**Increments:** Minimum 1

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**Options:** present, absent, abnormal, unobservable, ambiguous, imageOnly,
**Tail** IMPC_EMA_019_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Limbs** IMPC_EMA_020_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Pinna** IMPC_EMA_021_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Vibrissa** IMPC_EMA_022_001 | v1.0

simpleParameter

**Edema**  IMPC_EMA_023_001 | v1.0

*simpleParameter*

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

*Options:* yes, no, unobservable,


**Embryo size**  IMPC_EMA_024_001 | v1.0

*simpleParameter*

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

*Options:* present, absent, abnormal, unobservable, ambiguous, imageOnly,


**Spinal Cord**  IMPC_EMA_025_001 | v1.0

*simpleParameter*

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

*Options:* present, absent, abnormal, unobservable, ambiguous, imageOnly,
Spine curvature  IMPC_EMA_026_001 | v1.0
simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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Craniofacial morphology  IMPC_EMA_027_001 | v1.0
simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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Hindbrain subarachnoid space  IMPC_EMA_028_001 | v1.0
simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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Midbrain roof plate  IMPC_EMA_029_001 | v1.0
simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
**Midbrain** IMPC_EMA_030_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Cerebellum** IMPC_EMA_031_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Cerebral cortex** IMPC_EMA_032_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Thalamus** IMPC_EMA_033_001 | v1.0

simpleParameter
Corpus striatum IMPC_EMA_034_001 | v1.0

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
**Pineal gland** IMPC_EMA_037_001 | v1.0

*simpleParameter*

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

*Options:* present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Pons** IMPC_EMA_038_001 | v1.0

*simpleParameter*

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

*Options:* present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Medulla oblongata** IMPC_EMA_039_001 | v1.0

*simpleParameter*

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

*Options:* present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Lateral ventricles** IMPC_EMA_040_001 | v1.0

*simpleParameter*

- **Req. Analysis:** false
- **Req. Upload:** true
- **Is Annotated:** true
Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Lateral ventricle choroid plexus  IMPC_EMA_041_001 | v1.0
simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

4th ventricle choroid plexus  IMPC_EMA_042_001 | v1.0


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
**Cerebral aqueduct** IMPC_EMA_044_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

**Median sulcus** IMPC_EMA_045_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

**3rd ventricle** IMPC_EMA_046_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

**Olfactory lobe** IMPC_EMA_047_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
**Trigeminal ganglion**  IMPC_EMA_048_001  |  v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Pituitary gland**  IMPC_EMA_049_001  |  v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Spinal cord cervical region**  IMPC_EMA_050_001  |  v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Dorsal root ganglion**  IMPC_EMA_051_001  |  v1.0

simpleParameter
Cochlea IMPC_EMA_052_001 | v1.0

Nasal septum IMPC_EMA_053_001 | v1.0

Nasal cavity IMPC_EMA_054_001 | v1.0
**Nasopharynx** IMPC_EMA_055_001 | v1.0

*simpleParameter*


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Vomeronasal organ** IMPC_EMA_056_001 | v1.0

*simpleParameter*


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Oropharynx** IMPC_EMA_057_001 | v1.0

*simpleParameter*


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Oral cavity** IMPC_EMA_058_001 | v1.0

*simpleParameter*

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Optic nerve IMPC_EMA_059_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Intraretinal space IMPC_EMA_060_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Hyaloid cavity IMPC_EMA_061_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
**Cornea** IMPC_EMA_062_001 | v1.0

`simpleParameter`

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

**Options:** present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Lens** IMPC_EMA_063_001 | v1.0

`simpleParameter`

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

**Options:** present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Eyelids** IMPC_EMA_064_001 | v1.0

`simpleParameter`

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

**Options:** present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Temporal bone** IMPC_EMA_065_001 | v1.0

`simpleParameter`

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

**Options:** present, absent, abnormal, unobservable, ambiguous, imageOnly,
Pharyngo-tympanic tube  IMPC_EMA_066_001  | v1.0
simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Palate  IMPC_EMA_067_001  | v1.0
simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Epiglottis  IMPC_EMA_068_001  | v1.0
simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Tongue  IMPC_EMA_069_001  | v1.0
simpleParameter
Mandible  IMPC_EMA_070_001 | v1.0

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Lower jaw molar  IMPC_EMA_071_001 | v1.0

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Upper jaw molar  IMPC_EMA_072_001 | v1.0

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
Sphenoid bone IMPC_EMA_073_001 | v1.0


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Thyroid gland IMPC_EMA_074_001 | v1.0


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Submandibular gland IMPC_EMA_075_001 | v1.0


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Brown fat IMPC_EMA_076_001 | v1.0

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Vertebrae** IMPC_EMA_077_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Esophagus** IMPC_EMA_078_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Clavicle** IMPC_EMA_079_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
Scapula IMPC_EMA_080_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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Ulna IMPC_EMA_081_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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Humerus IMPC_EMA_082_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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Arytenoid cartilage IMPC_EMA_083_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
Cricoid cartilage  IMPC_EMA_084_001 | v1.0
simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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Trachea  IMPC_EMA_085_001 | v1.0
simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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Carotid artery  IMPC_EMA_086_001 | v1.0
simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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Thymus  IMPC_EMA_087_001 | v1.0
simpleParameter
**Sternum** IMPC_EMA_088_001 | v1.0

simpleParameter

**Rib** IMPC_EMA_089_001 | v1.0

simpleParameter

**T1 rib** IMPC_EMA_090_001 | v1.0

simpleParameter
**Vena cava** IMPC_EMA_091_001 | v1.0

`simpleParameter`

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

**Options:** present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Inferior vena cava** IMPC_EMA_092_001 | v1.0

`simpleParameter`

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

**Options:** present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Superior vena cava** IMPC_EMA_093_001 | v1.0

`simpleParameter`

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

**Options:** present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Jugular vein** IMPC_EMA_094_001 | v1.0

`simpleParameter`

- **Req. Analysis:** false
- **Req. Upload:** false
- **Is Annotated:** true
**Ductus arteriosus** IMPC_EMA_095_001 | v1.0

*simpleParameter*

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

**Options:** present, absent, abnormal, unobservable, ambiguous, imageOnly,
**Dorsal aorta** IMPC_EMA_098_001 | v1.0

**Simple Parameter**

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

**Options:** present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Ductus venosus** IMPC_EMA_099_001 | v1.0

**Simple Parameter**

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

**Options:** present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Aorta** IMPC_EMA_100_001 | v1.0

**Simple Parameter**

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

**Options:** present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Aortic valve** IMPC_EMA_101_001 | v1.0

**Simple Parameter**

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

**Options:** present, absent, abnormal, unobservable, ambiguous, imageOnly,
Heart atrium  IMPC_EMA_102_001 | v1.0

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simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
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Heart ventricle  IMPC_EMA_103_001 | v1.0

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simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
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Tricuspid valve  IMPC_EMA_104_001 | v1.0

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simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
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Mitral valve  IMPC_EMA_105_001 | v1.0

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simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
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**Interventricular septum** [IMPC_EMA_106_001 | v1.0]

**Pericardial cavity** [IMPC_EMA_107_001 | v1.0]

**Pericardium** [IMPC_EMA_108_001 | v1.0]
**Main bronchus** IMPC_EMA_109_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

**Bronchus** IMPC_EMA_110_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

**Right lung cranial lobe** IMPC_EMA_111_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

**Right lung middle lobe** IMPC_EMA_112_001 | v1.0

simpleParameter

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Right lung caudal lobe  IMPC_EMA_113_001  | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Right lung accessory lobe  IMPC_EMA_114_001  | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Left lung  IMPC_EMA_115_001  | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
Diaphragm IMPC_EMA_116_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Peritoneal cavity IMPC_EMA_117_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Liver IMPC_EMA_118_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Liver left lobe IMPC_EMA_119_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
Liver right lobe IMPC_EMA_120_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Liver caudate lobe IMPC_EMA_121_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Gallbladder IMPC_EMA_122_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Liver lobar interzone IMPC_EMA_123_001 | v1.0

simpleParameter
Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Pancreas IMPC_EMA_124_001 | v1.0

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Stomach IMPC_EMA_125_001 | v1.0

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

Pyloric antrum IMPC_EMA_126_001 | v1.0

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
**Stomach fundus** IMPC_EMA_127_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Stomach lumen** IMPC_EMA_128_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Small intestine** IMPC_EMA_129_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Hindgut** IMPC_EMA_130_001 | v1.0

simpleParameter

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Midgut** IMPC_EMA_131_001 | v1.0

simpleParameter

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

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Hip joint** IMPC_EMA_132_001 | v1.0

simpleParameter

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

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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**Femur** IMPC_EMA_133_001 | v1.0

simpleParameter

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

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
Fibula  IMPC_EMA_134_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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Tibia  IMPC_EMA_135_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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Adrenal gland  IMPC_EMA_136_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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Kidney  IMPC_EMA_137_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
**Renal calyx**  IMPC_EMA_138_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

**Bladder**  IMPC_EMA_139_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

**Rectum**  IMPC_EMA_140_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

**Spleen**  IMPC_EMA_141_001 | v1.0

simpleParameter
Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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Ovary IMPC_EMA_142_001 | v1.0

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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Testes IMPC_EMA_143_001 | v1.0

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

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Penis IMPC_EMA_144_001 | v1.0

Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,
**Circumventricular organ** IMPC_EMA_145_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

**Hyoid** IMPC_EMA_146_001 | v1.0

simpleParameter


Options: present, absent, abnormal, unobservable, ambiguous, imageOnly,

**Severely dysmorphic** IMPC_EMA_147_001 | v1.0

simpleParameter


Options: yes, no, unobservable,

**Delayed embryonic development** IMPC_EMA_148_001 | v1.0

simpleParameter

Options: yes, no, unobservable,