Embryo LacZ IMPC_ELZ_001

Purpose

To stain mutant and control embryos for bacterial beta-galactosidase (LacZ) activity in order to assess the embryonic gene expression of IKMC alleles at embryonic day 12.5 (E12.5).

Description: Whole-mount or sections of stained E12.5 embryos are scored for presence of LacZ staining. Intensity of staining is not required but can be reported. Anatomical terms to localize staining to the structure or substructure will use standard EMAP ontology terms.

Experimental Design

Outcrosses (Het x WT) or intercrosses (Het x Het) may be used for the protocol.

For outcrosses, genotype confirmation should be performed if no embryos display positive staining.

For intercrosses, genotype confirmation must be performed on ALL samples to distinguish heterozygous and homozygous stained embryos.

Mutants:

- Embryos are harvested, fixed, processed, and stained according to centre-specific protocols
- Embryos with staining are scored and imaged, concurrent with genotyping to determine zygosity and to identify controls
- Minimum number of animals: 1 mutant of any sex
- Age at test: E12.5

Controls:

- Wild type littermate E12.5 embryos that do not exhibit any endogenous mammalian beta-galactosidase activity are used as controls. C57BL/6N litters can be stained at each centre’s discretion.

Procedure

1. Embryos are stained in whole-mount according to centre-specific protocols. Centre-specific methods will be provided and be on file and linked to the data for each mutant line
2. If there is no staining, all embryos are genotype confirmed.
3. When positive staining is found, a representative image will be taken and uploaded for each mutant line. If heterozygous and homozygous embryos are stained, a representative image of each can be uploaded. The image will have a sizing reference bar.

4. The metadata collected for embryonic litter will be associated with the image

5. Annotations will derive from the heterozygous embryo only.

6. For each embryo the scoring system will be: “Expression” (specific staining), “No Expression” (no staining), “Ambiguous” (non-specific, not clear), “imageOnly”. or "tissue not available"

If capturing images please attempt to capture left, right, front, and back views of the embryo.

Notes

Data QC

Quality control for each centre’s processes and annotation will be established by that centre’s staff and published as part of their detailed protocol

Parameters and Metadata

**Showcase image** IMPC_ELZ_087_001 | v1.0

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procedureMetadata

<table>
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**Free ontology annotation reason** IMPC_ELZ_066_001 | v1.1

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simpleParameter

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**Bit depth** IMPC_ELZ_081_001 | v1.1

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procedureMetadata

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Rib pre-cartilage condensation  IMPC_ELZ_057_001 | v1.0

simpleParameter

Options: expression, tissue not available, ambiguous, no expression, imageOnly,

Date of staining  IMPC_ELZ_089_001 | v1.3

procedureMetadata

Trunk mesenchyme  IMPC_ELZ_015_001 | v1.0

simpleParameter

Options: expression, imageOnly, ambiguous, no expression, tissue not available,
**Nose** IMPC_ELZ_052_001 | v1.0

*simpleParameter*

**Req. Analysis:** false  
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**Options:** ambiguous, no expression, imageOnly, expression, tissue not available,

**Pixels per millimeter after processing** IMPC_ELZ_086_001 | v1.1

*procedureMetadata*

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**Cranium** IMPC_ELZ_059_001 | v1.0

*simpleParameter*

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**Options:** imageOnly, no expression, expression, tissue not available, ambiguous,

**Lung** IMPC_ELZ_033_001 | v1.1

*simpleParameter*

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Forebrain IMPC_ELZ_043_001 | v1.1

simpleParameter


Options: ambiguous, expression, imageOnly, tissue not available, no expression,

Skin IMPC_ELZ_017_001 | v1.0

simpleParameter


Options: tissue not available, no expression, expression, ambiguous, imageOnly,

Forearm IMPC_ELZ_004_001 | v1.0

simpleParameter


Options: no expression, imageOnly, expression, tissue not available, ambiguous,
**Gut**  IMPC_ELZ_023_001 | v1.1

simpleParameter


Options: ambiguous, expression, tissue not available, imageOnly, no expression,

**Free text comment**  IMPC_ELZ_067_001 | v1.0

simpleParameter


**Hindbrain**  IMPC_ELZ_092_001 | v1.1

simpleParameter


Options: imageOnly, expression, tissue not available, no expression, ambiguous,

**Stomach**  IMPC_ELZ_026_001 | v1.0

simpleParameter


Options: tissue not available, expression, no expression, ambiguous, imageOnly,
**Spinal cord**  IMPC_ELZ_046_001 | v1.0

simpleParameter

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**Options:** no expression, tissue not available, imageOnly, expression, ambiguous,

**Inner Ear**  IMPC_ELZ_050_001 | v1.0

simpleParameter

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

**Options:** no expression, expression, ambiguous, imageOnly, tissue not available,

**Pharynx**  IMPC_ELZ_024_001 | v1.0

simpleParameter

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

**Options:** ambiguous, tissue not available, expression, imageOnly, no expression,
Thoracic vertebral cartilage condensation  IMPC_ELZ_058_001 | v1.1

simpleParameter


Options: ambiguous, no expression, tissue not available, imageOnly, expression,

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Detector equipment model IMPC_ELZ_073_001 | v1.1

procedureMetadata


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Midbrain IMPC_ELZ_044_001 | v1.1

simpleParameter


Options: tissue not available, imageOnly, expression, no expression, ambiguous,

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Mesonephros of male IMPC_ELZ_031_001 | v1.0

simpleParameter

Options: ambiguous, no expression, tissue not available, imageOnly, expression,
**Heart ventricle** IMPC_ELZ_040_001 | v1.1

*simpleParameter*

**Required Analysis:** false  **Required Upload:** false  **Is Annotated:** true

**Options:** tissue not available, imageOnly, no expression, expression, ambiguous,

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**Head** IMPC_ELZ_002_001 | v1.0

*simpleParameter*

**Required Analysis:** false  **Required Upload:** true  **Is Annotated:** true

**Options:** tissue not available, no expression, imageOnly, expression, ambiguous,

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**Colorspace** IMPC_ELZ_082_001 | v1.0

*procedureMetadata*

**Required Analysis:** false  **Required Upload:** false  **Is Annotated:** false

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**Trachea** IMPC_ELZ_034_001 | v1.0

*simpleParameter*

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**Tail**  IMPC_ELZ_060_001 | v1.1

*simpleParameter*


Options: ambiguous, no expression, expression, tissue not available, imageOnly,

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**Detector equipment manufacturer**  IMPC_ELZ_072_001 | v1.0

*procedureMetadata*


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**Outflow tract**  IMPC_ELZ_038_001 | v1.0

*simpleParameter*


Options: imageOnly, no expression, tissue not available, expression, ambiguous,
**Brain** IMPC_ELZ_042_001 | v1.1

**simpleParameter**

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

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**Date Microscope last calibrated** IMPC_ELZ_071_001 | v1.0

**procedureMetadata**

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

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**Upper arm** IMPC_ELZ_006_001 | v1.0

**simpleParameter**

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**Orientation** IMPC_ELZ_084_001 | v1.0

**procedureMetadata**

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**Placenta** IMPC_ELZ_093_001 | v1.0

simpleParameter


Options: ambiguous, no expression, tissue not available, imageOnly, expression,

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**Upper leg** IMPC_ELZ_012_001 | v1.0

simpleParameter


Options: imageOnly, tissue not available, ambiguous, no expression, expression,

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**Atrium** IMPC_ELZ_037_001 | v1.0

simpleParameter


Options: expression, tissue not available, imageOnly, ambiguous, no expression,

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**Meckel's cartilage** IMPC_ELZ_021_001 | v1.0

simpleParameter
Pericardium IMPC_ELZ_039_001 | v1.0

Tail somite group IMPC_ELZ_061_001 | v1.2

Sample preparation stain name IMPC_ELZ_079_001 | v1.0
**Date of image capture** IMPC_ELZ_091_001 | v1.2

**Femur pre-cartilage condensation** IMPC_ELZ_013_001 | v1.0

**Nasal septum** IMPC_ELZ_053_001 | v1.0

**Sample preparation reference impc** IMPC_ELZ_080_001 | v1.1
Vibrissa  IMPC_ELZ_018_001 | v1.1

simpleParameter


Options: expression, no expression, imageOnly, ambiguous, tissue not available,

Radius-ulna pre cartilage condensation  IMPC_ELZ_005_001 | v1.0

simpleParameter


Options: ambiguous, tissue not available, expression, no expression, imageOnly,

Eye  IMPC_ELZ_051_001 | v1.0

simpleParameter


Options: tissue not available, imageOnly, ambiguous, expression, no expression,

Umbilical artery embryonic part  IMPC_ELZ_035_001 | v1.0
simpleParameter


Options: ambiguous, no expression, imageOnly, tissue not available, expression,

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Date of annotation IMPC_ELZ_090_001 | v1.2
procedureMetadata


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Pixels per millimeter before processing IMPC_ELZ_085_001 | v1.0
procedureMetadata


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Fronto-nasal process IMPC_ELZ_054_001 | v1.0
simpleParameter


Options: ambiguous, no expression, expression, tissue not available, imageOnly,
**Head mesenchyme** IMPC_ELZ_014_001 | v1.0

simpleParameter


Options: ambiguous, expression, no expression, imageOnly, tissue not available,

**Umbilical vein embryonic part** IMPC_ELZ_041_001 | v1.0

simpleParameter


Options: imageOnly, ambiguous, expression, tissue not available, no expression,

**Microscope equipment manufacturer** IMPC_ELZ_069_001 | v1.0

procedureMetadata


**Metanephros** IMPC_ELZ_030_001 | v1.0

simpleParameter

**LacZ images wholemount** IMPC_ELZ_064_001 | v1.3

*seriesMediaParameter*

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

**Increments:** Minimum 1

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**Dorsal root ganglion** IMPC_ELZ_047_001 | v1.0

*simpleParameter*

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

**Options:** imageOnly, tissue not available, no expression, expression, ambiguous,

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**External ear** IMPC_ELZ_049_001 | v1.0

*simpleParameter*

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**Options:** no expression, ambiguous, tissue not available, expression, imageOnly,

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**Embryo**  IMPC_ELZ_001_001  | v1.0

simpleParameter


Options: ambiguous, expression, imageOnly, tissue not available, no expression,

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**Notochord**  IMPC_ELZ_016_001  | v1.0

simpleParameter


Options: ambiguous, imageOnly, tissue not available, expression, no expression,

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**Maxillary process**  IMPC_ELZ_022_001  | v1.1

simpleParameter


Options: ambiguous, no expression, expression, imageOnly, tissue not available,

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**Objective equipment model**  IMPC_ELZ_075_001  | v1.0

procedureMetadata
Tongue IMPC_ELZ_025_001 | v1.0

simpleParameter

Options: tissue not available, imageOnly, no expression, expression, ambiguous,

Objective magnification IMPC_ELZ_076_001 | v1.0

procedureMetadata

Intestine IMPC_ELZ_062_001 | v1.0

simpleParameter

Options: imageOnly, tissue not available, ambiguous, no expression, expression,

Axial skeleton IMPC_ELZ_056_001 | v1.0
simpleParameter

**Microscope equipment model** IMPC_ELZ_070_001 | v1.0

procedureMetadata

**Handplate** IMPC_ELZ_008_001 | v1.1

simpleParameter

**Hindlimb** IMPC_ELZ_009_001 | v1.0

simpleParameter
**Lower leg** IMPC_ELZ_011_001 | v1.0

simpleParameter

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

Options: tissue not available, expression, ambiguous, no expression, imageOnly,

**Liver** IMPC_ELZ_028_001 | v1.1

simpleParameter

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

Options: expression, ambiguous, imageOnly, no expression, tissue not available,

**Forelimb** IMPC_ELZ_003_001 | v1.0

simpleParameter

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

Options: tissue not available, ambiguous, imageOnly, no expression, expression,

**Oral cavity** IMPC_ELZ_019_001 | v1.1
simpleParameter

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

**Options:** ambiguous, imageOnly, no expression, tissue not available, expression,

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**Date of sacrifice** IMPC_ELZ_088_001 | v1.2

**procedureMetadata**

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

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**Pancreas** IMPC_ELZ_027_001 | v1.0

**simpleParameter**

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**Free ontology** IMPC_ELZ_065_001 | v1.1

**simpleParameter**

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Microscope equipment id IMPC_ELZ_068_001 | v1.0

procedureMetadata

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

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Footplate IMPC_ELZ_010_001 | v1.1

simpleParameter

Req. Analysis: false  
Req. Upload: true  
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Options: imageOnly, ambiguous, expression, no expression, tissue not available,

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Central nervous system ganglion IMPC_ELZ_045_001 | v1.1

simpleParameter

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

Options: ambiguous, no expression, imageOnly, tissue not available, expression,

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Experimental category IMPC_ELZ_083_001 | v1.0

procedureMetadata

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

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**Illumination source manufacturer** IMPC_ELZ_077_001 | v1.0

procedureMetadata


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**LacZ images section** IMPC_ELZ_063_001 | v1.2

seriesMediaParameter


Increments: Minimum 1

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**Ear** IMPC_ELZ_048_001 | v1.1

simpleParameter


Options: ambiguous, imageOnly, expression, no expression, tissue not available,

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**Heart** IMPC_ELZ_036_001 | v1.1

simpleParameter

Mandibular process  IMPC_ELZ_020_001 | v1.1

simpleParameter


Options: expression, imageOnly, no expression, ambiguous, tissue not available,

Mesonephros of female  IMPC_ELZ_032_001 | v1.0

simpleParameter


Options: ambiguous, tissue not available, no expression, imageOnly, expression,

Objective equipment company  IMPC_ELZ_074_001 | v1.0

procedureMetadata