Adult LacZ IMPC_ALZ_001

**Purpose**

To stain adult mutant and control tissues for bacterial beta-galactosidase (LacZ) activity in order to assess the adult organ, tissue, substructure and cell type of gene expression of IKMC alleles utilizing a LacZ reporter.

**Description:** Adult mouse tissues are scored for presence of LacZ staining which is distinct from either nonspecific staining observed in wildtype control mice, or is too faint to score as present. Intensity of staining is not required but can be reported. Anatomical terms to localize staining to the organ, structure, substructure, or cell type will use standard mouse anatomy ontology terms.

**Experimental Design**

Mutants:

- **Minimum number of animals:** 1M or 1F heterozygote
- Age will depend upon the logistics of each center, but all mice will be within ±7 days of the age stipulated in the center-specific protocols, and all mice will be > 50 days of age;
- The tissues in the agreed parameter list will be stained and annotated for each mutant

Controls:

- A minimum of one control mouse will be stained and annotated for every 10 mutants
- The tissues in the agreed parameter list will be stained and annotated for each control

**Procedure**

Center-specific methods will be provided and be on file and linked to the data for each mutant line.

For each mouse, for each tissue, the scoring system will be: + (specific staining), - (no staining), NS (non-specific staining), or NA (tissue not available)

*Where positive, specific, staining is found:*

A. A representative image will be taken and uploaded for each mutant line. The image will have a sizing reference bar and optional center-specific watermark embedded into the image.

B. The metadata collected for each mouse will be associated with the image.

C. Each image will have a substructure field for additional annotation provided by that center.

**Notes**
Tables of results for each tissue from each HET or HOM mouse scored for: presence/absence/non-specific/tissue not-available as defined above.

Representative images for positive staining tissues.

Additional annotation to provide anatomical substructure & cell specificity.

Database of non-specific staining and presentation of images representative of non-specific staining.

Data QC

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

A database of control non-specific staining will be maintained by the Data Coordination Center and updated periodically to indicate the frequency of non-specific staining found in wildtype mice by each center. Representative images of non-specific staining will be linked to the data for each mutant line.

Parameters and Metadata

**Adrenal gland** IMPC_ALZ_001_001 | v1.2

*Description*: adrenal

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

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**Lower Urinary Tract** IMPC_ALZ_002_001 | v1.0

*Description*: adrenal

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

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

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**Brain** IMPC_ALZ_003_001 | v1.0

simpleParameter

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

**Description:** brain

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

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**Eye** IMPC_ALZ_004_001 | v1.0

simpleParameter

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

**Description:** eye

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

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**Heart** IMPC_ALZ_005_001 | v1.0

simpleParameter

**Req. Analysis:** false  **Req. Upload:** true  **Is Annotated:** true
Description: heart
Options: imageOnly, expression, no expression, ambiguous, tissue not available,

Kidney IMPC_ALZ_006_001 | v1.0

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

Liver IMPC_ALZ_007_001 | v1.0

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

Lymph Node IMPC_ALZ_008_001 | v1.0
Description: lymph_node

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

Mammary gland  IMPC_ALZ_009_001 | v1.0

simpleParameter


Description: mammary_gland

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

Ovary  IMPC_ALZ_010_001 | v1.0

simpleParameter


Description: ovary

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

Oviduct  IMPC_ALZ_011_001 | v1.0

simpleParameter
Description: oviduct

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

Skin IMPC_ALZ_012_001 | v1.1

Description: skin_with_mg

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

Stomach IMPC_ALZ_013_001 | v1.2

Description: stomach

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

Testis IMPC_ALZ_014_001 | v1.1

Description: testis

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

Thymus IMPC_ALZ_015_001 | v1.0

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

Trachea IMPC_ALZ_016_001 | v1.0

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

Uterus IMPC_ALZ_017_001 | v1.0

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

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

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**Large Intestine**  IMPC_ALZ_018_001 | v1.0

simpleParameter

Description: large_intestine

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

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**Esophagus**  IMPC_ALZ_019_001 | v1.0

simpleParameter

Description: esophagus

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

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**Spinal cord**  IMPC_ALZ_020_001 | v1.0
simpleParameter

**Spinal cord**

**Description:** spinal_cord

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

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**Thyroid gland** IMPC_ALZ_021_001 | v1.1

simpleParameter

**Description:** thyroid

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

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**Pituitary gland** IMPC_ALZ_022_001 | v1.1

simpleParameter

**Description:** pituitary

**Options:** imageOnly, expression, no expression, ambiguous, tissue not available,
**Skeletal Muscle**  IMPC_ALZ_023_001  |  v1.0

*simpleParameter*

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

**Description:** skeletal_muscle

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

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**Small Intestine**  IMPC_ALZ_024_001  |  v1.0

*simpleParameter*

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

**Description:** small_intestine

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

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**White Adipose Tissue**  IMPC_ALZ_025_001  |  v1.0

*simpleParameter*

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

**Description:** white_adipose_tissue

**Options:** imageOnly, expression, no expression, ambiguous, tissue not available,
**Lung** IMPC_ALZ_026_001 | v1.1

*simpleParameter*

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

**Description:** lungs

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

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**Aorta** IMPC_ALZ_027_001 | v1.0

*simpleParameter*

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

**Description:** aorta

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

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**Pancreas** IMPC_ALZ_028_001 | v1.0

*simpleParameter*

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

**Description:** pancreas

**Options:** imageOnly, expression, no expression, ambiguous, tissue not available,
Prostate gland IMPC_ALZ_029_001 | v1.1

**simpleParameter**

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

**Description:** prostate

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

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Spleen IMPC_ALZ_030_001 | v1.0

**simpleParameter**

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

**Description:** spleen

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

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Brainstem IMPC_ALZ_031_001 | v1.0

**simpleParameter**

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

**Description:** brainstem

**Options:** imageOnly, expression, no expression, ambiguous, tissue not available,
**Cartilage tissue** IMPC_ALZ_032_001 | v1.1

*simpleParameter*


Description: cartilage

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

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**Cerebral Cortex** IMPC_ALZ_033_001 | v1.0

*simpleParameter*


Description: cerebral_cortex

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

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**Cerebellum** IMPC_ALZ_034_001 | v1.0

*simpleParameter*


Description: cerebellum

Options: imageOnly, expression, no expression, ambiguous, tissue not available,
**Hippocampus** IMPC_ALZ_035_001 | v1.0

simpleParameter

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

**Description:** hippocampus

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

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**Hypothalamus** IMPC_ALZ_036_001 | v1.0

simpleParameter

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

**Description:** hypothalamus

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

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**Olfactory Lobe** IMPC_ALZ_037_001 | v1.1

simpleParameter

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

**Description:** olfactory_lobe

**Options:** imageOnly, expression, no expression, ambiguous, tissue not available,
Peripheral Nervous System  IMPC_ALZ_038_001 | v1.0

**simpleParameter**

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

Description: peripheral_nervous_system

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

Peyers Patch  IMPC_ALZ_039_001 | v1.0

**simpleParameter**

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

Description: peyers_patch

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

Striatum  IMPC_ALZ_040_001 | v1.1

**simpleParameter**

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

Description: straiatum

Options: imageOnly, expression, no expression, ambiguous, tissue not available,
Vascular System  IMPC_ALZ_041_001 | v1.0

simpleParameter


Description: vascular_system

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

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Urinary bladder  IMPC_ALZ_042_001 | v1.1

simpleParameter


Description: urinary bladder

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

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Bone  IMPC_ALZ_043_001 | v1.0

simpleParameter


Description: bone

Options: imageOnly, expression, no expression, ambiguous, tissue not available,
**Cecum** IMPC_ALZ_044_001 | v1.0  
simpleParameter

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

Description: cecum

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

**Colon** IMPC_ALZ_045_001 | v1.0  
simpleParameter

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

Description: colon

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

**Duodenum** IMPC_ALZ_046_001 | v1.0  
simpleParameter

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

Description: duodenum

Options: imageOnly, expression, no expression, ambiguous, tissue not available,
**Ileum**  IMPC_ALZ_047_001 | v1.0

*simpleParameter*

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

**Description:** ileum

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

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**Jejunum**  IMPC_ALZ_048_001 | v1.0

*simpleParameter*

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

**Description:** jejunum

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

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**Gonadal fat pad**  IMPC_ALZ_049_001 | v1.1

*simpleParameter*

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

**Description:** adipose_gonad

**Options:** imageOnly, expression, no expression, ambiguous, tissue not available,
**Bone Marrow** IMPC_ALZ_050_001 | v1.0

*simpleParameter*

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

**Description:** bone_marrow

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

**Vas Deferens** IMPC_ALZ_051_001 | v1.0

*simpleParameter*

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

**Description:** vas_deferens

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

**Brown adipose tissue** IMPC_ALZ_052_001 | v1.1

*simpleParameter*

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

**Description:** adipose_brown

**Options:** imageOnly, expression, no expression, ambiguous, tissue not available,
**Mesenteric adipose tissue**  IMPC_ALZ_053_001  | v1.1

**simpleParameter**

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

**Description:** adipose_mesenteric

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

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**Blood**  IMPC_ALZ_054_001  | v1.1

**simpleParameter**

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

**Description:** blood_smear

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

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**Diaphragm**  IMPC_ALZ_055_001  | v1.0

**simpleParameter**

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

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

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**Gall Bladder** IMPC_ALZ_056_001 | v1.0

simpleParameter

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

**Description:** gall_bladder

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

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**Harderian Gland** IMPC_ALZ_057_001 | v1.1

simpleParameter

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

**Description:** hardarian_gland

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

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**Hindlimb** IMPC_ALZ_058_001 | v1.1

simpleParameter

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

**Description:** hind_limb

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

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**Quadriceps** IMPC_ALZ_059_001 | v1.1

*simpleParameter*

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

Description: muscle_quad

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

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**Parathyroid gland** IMPC_ALZ_060_001 | v1.1

*simpleParameter*

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

Description: parathyroid

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

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**Parotid gland** IMPC_ALZ_061_001 | v1.0

*simpleParameter*

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

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

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**Penis** IMPC_ALZ_062_001 | v1.0

simpleParameter


Description: penis

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

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**Stomach pyloric region** IMPC_ALZ_063_001 | v1.1

simpleParameter


Description: pylorus

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

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**Chest bone** IMPC_ALZ_064_001 | v1.1

simpleParameter

Description: ribcage

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

Sciatic nerve  IMPC_ALZ_065_001  | v1.1


Description: sciatic_nerve_quad

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

Cranium  IMPC_ALZ_066_001  | v1.1


Description: skull

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

Sublingual Gland  IMPC_ALZ_067_001  | v1.0

**Description:** sublingual_gland

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

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**Submandibular Gland** IMPC_ALZ_068_001 | v1.0

**simpleParameter**

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

**Description:** submandibular_gland

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

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**Tongue** IMPC_ALZ_069_001 | v1.0

**simpleParameter**

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

**Description:** tongue

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

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**Trigeminal V nerve** IMPC_ALZ_070_001 | v1.1

**simpleParameter**
Description: trigeminal_nerve
Options: imageOnly, expression, no expression, ambiguous, tissue not available,

Vagina IMPC_ALZ_071_001 | v1.0
Description: vagina
Options: imageOnly, expression, no expression, ambiguous, tissue not available,

Vesicular Gland IMPC_ALZ_072_001 | v1.0
Description: vesicular_gland
Options: imageOnly, expression, no expression, ambiguous, tissue not available,

Mesenteric Lymph Node IMPC_ALZ_073_001 | v1.0
Description:
mesenteric_lymph_node

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

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**Oral epithelium** IMPC_ALZ_074_001 | v1.1

oral_epithelia

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

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**LacZ Images Section** IMPC_ALZ_075_001 | v1.1

lacz_images_section

Minimum 1

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**LacZ Images Wholemount** IMPC_ALZ_076_001 | v1.1

seriesMediaParameter

Description: lacz_images_wholemount
Increments: Minimum 1

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**Free Ontology** IMPC_ALZ_077_001 | v1.1

simpleParameter

Description: free_ontology

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**Free Ontology Annotation reason** IMPC_ALZ_078_001 | v1.1

simpleParameter

Description: free_ontology_annotation_reason

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**Free text comment** IMPC_ALZ_079_001 | v1.1

simpleParameter

Description: free_text_comment


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**Microscope equipment id**  IMPC_ALZ_080_001 | v1.0

*procedureMetadata*

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

Description: microscope_equipment_id

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**Microscope equipment manufacturer**  IMPC_ALZ_081_001 | v1.1

*procedureMetadata*

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

Description: microscope_equipment_manufacturer

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**Microscope equipment model**  IMPC_ALZ_082_001 | v1.1

*procedureMetadata*

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

Description: microscope_equipment_model
**Date Microscope last calibrated**  IMPC_ALZ_083_001  | v1.1

-procedureMetadata-


Description: date_microscope_last_calibrated

**Detector equipment manufacturer**  IMPC_ALZ_084_001  | v1.0

-procedureMetadata-


Description: detector_equipment_manufacturer

**Detector equipment model**  IMPC_ALZ_085_001  | v1.0

-procedureMetadata-


Description: detector_equipment_model

**Objective equipment company**  IMPC_ALZ_086_001  | v1.0

-procedureMetadata-
Objective equipment model  IMPC_ALZ_087_001 | v1.0

Objective magnification  IMPC_ALZ_088_001 | v1.0

Illumination source manufacturer  IMPC_ALZ_089_001 | v1.0
Illumination source model  IMPC_ALZ_090_001 | v1.0

procedureMetadata


Description: illumination_source_model

Sample preparation stain name  IMPC_ALZ_091_001 | v1.1

procedureMetadata


Description: sample_preparation_stain_name

Sample preparation reference impc  IMPC_ALZ_092_001 | v1.1

procedureMetadata


Description: sample_preparation_reference_impc
**Bit Depth** IMPC_ALZ_093_001 | v1.0
procedureMetadata

**Description:** bit_depth

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**Colorspace** IMPC_ALZ_094_001 | v1.0
procedureMetadata

**Description:** colorspace

---

**Experimental category** IMPC_ALZ_095_001 | v1.0
procedureMetadata

**Description:** experimental_category

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**Orientation** IMPC_ALZ_096_001 | v1.0
procedureMetadata

**Description:**
**Description:** orientation

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**Pixels per millimeter before processing** IMPC_ALZ_097_001 | v1.0

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procedureMetadata


Description: pixels_per_millimeter_before_processing
```

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**Pixels per millimeter after processing** IMPC_ALZ_098_001 | v1.1

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procedureMetadata


Description: pixels_per_millimeter_after_processing
```

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**Showcase image** IMPC_ALZ_099_001 | v1.0

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procedureMetadata


Description: showcase_image
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**Date of Sacrifice**  IMPC_ALZ_100_001 | v1.1

procedureMetadata

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

**Description**: date_of_sacrifice

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**Date of Perfusion**  IMPC_ALZ_101_001 | v1.2

procedureMetadata

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

**Description**: date_of_perfusion

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**Epididymis**  IMPC_ALZ_102_001 | v1.2

simpleParameter

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

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

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**Main olfactory bulb**  IMPC_ALZ_103_001 | v1.1

simpleParameter
Midbrain IMPC_ALZ_104_001 | v1.0
simpleParameter

Thalamus IMPC_ALZ_105_001 | v1.0
simpleParameter