Eye Morphology IMPC_EYE_002

Purpose

To detect abnormalities in eye morphology.

Experimental Design

- Minimum number of animals: 7M + 7F
- Age at test: Week 15
- Sex: We do not expect the results of this test to show sexual dimorphism

Procedure

- 1. Examine the anterior of both eyes (e.g. with slit lamp) and record any abnormalities
- 2. Test the iris/pupil light response
- 3. Image abnormal eyes as a minimum or all eyes if capacity permits
- 4. Dilate both eyes
- 5. Examine the anterior and posterior of both dilated eyes (e.g. with slit lamp and ophthalmoscope) and record any abnormalities
- 6. Image abnormal eyes as a minimum or all eyes if capacity permits

OCT:

- 1. Turn on the OCT and start the database
- 2. Anaesthetize mouse
- 3. Prepare mouse eyes with drops and place contact lens (focal length 10 mm) on the right eye
- 4. Enter mouse data in the "Create new patient file" area and switch to the "Acquisition" window
- 5. Move the OCT camera to the right position and activate measurement modus
- Place mouse collaterally to the OCT camera on the right side of a platform that is fixed in front of the OCT lens
- 7. Search the contact lens in the live picture of the fundus image field and place the pupil of the mouse eye in the centre of the window
- 8. Move the OCT camera such that OCT lens and contact lens touch each other
- 9. Focus the fundus picture by slightly moving up/down or forward/backward
- 10. Save fundus images
- 11. Set the "Ref.Arm" ruler such that the section of the retina is placed in the centre of the blue rectangle
- 12. Set the mode of measurement on "vertical, horizontal line"
- 13. Move the blue horizontal line in the fundus image field to the optic nerve level
- 14. Save images of retinal sections
- 15. Move the OCT camera to the left position

16. Repeat measurement procedure for the left eye

Scheimpflug Imaging:

- 1. Turn on the Pentacam and start the patient data management
- 2. Apply one drop 0.5% Atropine to each mouse eye for pupil dilation
- 3. Enter mouse data in the "Patient" group box and switch to the Scan menu
- 4. Activate the "1 Picture" modus in the "Image Options" area
- 5. Move Pentacam to the right position
- 6. Hold the mouse on a platform such that the vertical LED 475 nm light slit is orientated in the center of the right eye ball
- 7. Guarantee optimal focus by using the fine adjustment software tool in the adjustment window
- 8. Start imaging manually by pressing the "Start Scan" button
- 9. Scheimpflug images are saved automatically
- 10. Move Pentacam to the left position
- 11. Repeat measurement procedure for the left eye

Notes

- As a minimum, all abnormalities should be imaged.
 - Where capacity permits, all mice can be imaged
- Majority of parameters can be analysed using the standard approach for assessing categorical data. To increase power for analysis purposes, where an abnormality is detected in the left, right or both eyes, the data may be combined to generate one "abnormal" category.

Data QC

Image QC is typically performed during data collection to ensure high quality images are captured whilst eyes are dilated etc.

Parameters and Metadata

Left inner nuclear layer IMPC_EYE_069_001 | v1.2

simpleParameter

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

Unit Measured: um

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Left corneal thickness IMPC_EYE_066_001 | v1.2

simpleParameter

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

Unit Measured: um

Lens Opacity IMPC_EYE_017_001 | v1.0

simpleParameter

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

Options: absent, present left eye, present right eye, no data left eye, present right eye, no data right eye, present left eye, no data left eye, present both eyes, no data for both eyes, no data right eye,

Lacrimation IMPC_EYE_086_001 | v1.0

simpleParameter

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

Options: present both eyes, no data right eye, no data for both eyes, present left eye, no data left eye, no data left eye, present right eye, present right eye, absent,

Min right eye lens density IMPC_EYE_057_001 | v1.1

simpleParameter

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

Unit Measured: %

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Ophthalmoscope Lens Model IMPC_EYE_089_001 | v1.1

procedureMetadata

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

Bulging eye IMPC_EYE_002_001 | v1.0

simpleParameter

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

Options: no data left eye, present both eyes, no data left eye, present right eye, present right eye, no data right eye, present left eye, no data right eye, present left eye, absent, no data for both eyes,

Slit Lamp Equipment Manufacturer IMPC_EYE_031_001 | v1.2

procedureMetadata

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

Options: Haag-Streit, Topcon, MuLe, Zeiss, CSO, Phoenix Research Labs, Kowa,

Corneal mineralization IMPC_EYE_084_001 | v1.0

simpleParameter

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

Options: no data left eye, present right eye, present both eyes, no data right eye, present left eye, present right eye, present left eye, no data right eye, no data for both eyes, absent,

Retinal Blood Vessels Structure IMPC_EYE_025_001 | v1.0

simpleParameter

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

Options: no data left eye, both eyes abnormal, right eye abnormal, no data left eye, right eye abnormal, normal, left eye abnormal, no data right eye, no data for both eyes, no data right eye, left eye abnormal,

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Vitreous IMPC EYE 083 001 | v1.1

simpleParameter

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

Options: no data right eye, no data for both eyes, left eye abnormal, both eyes abnormal,
no data right eye, left eye abnormal, normal, no data left eye, right eye abnormal,
no data left eye, right eye abnormal,

Dilation Method IMPC_EYE_043_001 | v1.0

procedureMetadata

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

Options: Tropicamide+Phenylephrin, None, Phenylephrine hydrochloride, Tropicamide, Cyclopentolate hydrochloride+Phenylephrine hydrochloride, Cyclopentolate hydrochloride, Atropine sulphate, Atropine,

Pupil Dilation IMPC_EYE_013_001 | v1.0

simpleParameter

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

Options: no data right eye, left eye dilated, no data left eye, normal, no data for both eyes, both eyes dilated, no data right eye, right eye dilated, no data left eye, right eye dilated, left eye dilated,

Left anterior chamber depth IMPC_EYE_067_001 | v1.2

Req. Analysis: false	Req. Upload: false	Is Annotated: true
Unit Measured: um		
Iris transiluminatio simpleParameter	n impc_eye_082_001 v1.	.1
Req. Analysis: false	Req. Upload: false	Is Annotated: true
		mal, right eye abnormal, normal, yes abnormal, no data left eye,
Sheimpflug Lens d	escription IMPC_EYE_	052_001 v1.1
Req. Analysis: false	Req. Upload: false	Is Annotated: false
Date Ophthalmosc 47_001 v1.1 procedureMetadata	ope equipment last	calibrated IMPC_EYE_0
Req. Analysis: false	Req. Upload: false	Is Annotated: false

Left vitreous humour thickness IMPC_EYE_088_001 | v1.0

simpleParameter

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

Unit Measured: um

Right eye diameter IMPC_EYE_090_001 | v1.0

simpleParameter

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

Unit Measured: mm

Corneal vascularization IMPC_EYE_009_001 | v1.0

simpleParameter

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

Options: no data for both eyes, no data right eye, absent, no data right eye, present left eye, present both eyes, no data left eye, present right eye, no data left eye, present right eye, present left eye,

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VIP of left eye IMPC_EYE_079_001 | v1.1

seriesMediaParameter

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

Optic Disc IMPC_EYE_023_001 | v1.0

simpleParameter

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

Options: both eyes abnormal, left eye abnormal, right eye abnormal, normal, no data right eye, no data left eye, right eye abnormal, no data for both eyes, no data left eye, no data right eye, left eye abnormal,

Pupil Shape IMPC_EYE_012_001 | v1.0

simpleParameter

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

Options: no data right eye, left eye abnormal, normal, no data left eye, right eye abnormal, no data for both eyes, left eye abnormal, no data right eye, both eyes abnormal, no data left eye, right eye abnormal,

Synechia IMPC_EYE_019_001 | v1.0

simpleParameter

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

Options: no data left eye, present right eye, present both eyes, present left eye, no data right eye, no data right eye, present left eye, no data left eye, no data for both eyes, absent, present right eye,

Iris Pigmentation IMPC_EYE_015_001 | v1.0

simpleParameter

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

Options: no data left eye, right eye abnormal, no data right eye, no data for both eyes, both eyes abnormal, normal, no data left eye, left eye abnormal, no data right eye, left eye abnormal, right eye abnormal,

Images Slit Lamp IMPC_EYE_051_001 | v1.1

seriesMediaParameter

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

Mean left eye lens density IMPC_EYE_056_001 | v1.1

simpleParameter

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

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Eye Hemorrhage or Blood Presence IMPC_EYE_003_001 | v1.0

simpleParameter

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

Options: no data right eye, no data left eye, present right eye, present right eye, present left eye, no data left eye, absent, no data for both eyes, no data right eye, present left eye, present both eyes,

Fusion between cornea and lens IMPC_EYE_018_001 | v1.0

simpleParameter

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

Options: no data left eye, present right eye, present both eyes, present right eye, no data for both eyes, present left eye, absent, no data right eye, present left eye, no data right eye, no data left eye,

Optical Coherence Tomography Equipment Manufacturer

IMPC_EYE_038_001 | v1.2

procedureMetadata

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

Options: Bioptigen, Heidelber	g Engineering,	
Left posterior chan simpleParameter	nber depth IMPC_EYE_	_071_001 v1.2
Req. Analysis: false	Req. Upload: false	Is Annotated: true
Unit Measured: um		
Max right eye lens simpleParameter	density IMPC_EYE_058	_001 v1.1
Req. Analysis: false	Req. Upload: false	Is Annotated: true
Unit Measured: %		
B-scan of left cornorseriesMediaParameter	ea and lens IMPC_EYE	E_077_001 v1.1
Req. Analysis: false	Req. Upload: false	Is Annotated: false

Mean right eye lens density IMPC_EYE_059_001 | v1.1

simpleParameter

Req. Analysis: false Req. Upload: false Is Annotated: true Unit Measured: % Right anterior chamber depth IMPC_EYE_061_001 | v1.2 simpleParameter Req. Analysis: false Req. Upload: false Is Annotated: true Unit Measured: um Ophthalmoscope Observation IMPC_EYE_029_001 | v1.1 simpleParameter Req. Analysis: false Req. Upload: false Is Annotated: false

Slit Lamp Equipment Model IMPC_EYE_032_001 | v1.2

procedureMetadata

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

Options: SL 990, SL-7E, BQ 900 LED/IM-900, SL30, Micron III slit lamp extension, S350, SL130, 30 SL-M, SL 139, SL-15, Retinal Blood Vessels Pattern IMPC EYE 026 001 | v1.0 simpleParameter Req. Analysis: false Req. Upload: false Is Annotated: true **Options:** no data right eye, normal, no data for both eyes, right eye abnormal, left eye abnormal, no data left eye, no data left eye, right eye abnormal, both eyes abnormal, no data right eye, left eye abnormal, Images Ophthalmoscopy IMPC_EYE_050_001 | v1.1 seriesMediaParameter

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

Lens IMPC_EYE_016_001 | v1.0

simpleParameter

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

	ta for both eyes, right eye abr	bnormal, no data right eye, normal, normal, no data left eye,
Min left eye lens simpleParameter	density IMPC_EYE_054	4_001 v1.2
Req. Analysis: false	Req. Upload: false	Is Annotated: true
Unit Measured: %		
B-scan of right c	ornea and lens IMP	C_EYE_076_001 v1.1
Req. Analysis: false	Req. Upload: false	Is Annotated: false

Eyelid morphology IMPC_EYE_004_001 | v1.0

simpleParameter

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

Options: left eye abnormal, no data left eye, no data for both eyes, no data right eye, left eye abnormal, both eyes abnormal, right eye abnormal, no data right eye, no data left eye, right eye abnormal, normal,

Scheimpflug description IMPC_EYE_053_001 | v1.0

simpleParameter

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

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Iris/Pupil IMPC_EYE_010_001 | v1.0

simpleParameter

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

Options: no data left eye, no data right eye, left eye abnormal, no data left eye, right eye abnormal, both eyes abnormal, left eye abnormal, no data for both eyes, normal, right eye abnormal, no data right eye,

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General Anesthetic IMPC_EYE_045_001 | v1.1

procedureMetadata

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

Options: Isoflurane, Euthatal, Ketamine+Medetomidine, Zoletil, No anesthesia,

Ketamine+Xylazine, Avertin,

Right posterior chamber depth IMPC_EYE_065_001 | v1.2

simpleParameter

Req. Analysis: false Req. Upload: false Is Annotated: true Unit Measured: um Left eye diameter IMPC_EYE_091_001 | v1.0 simpleParameter Req. Analysis: false Req. Upload: false Is Annotated: true Unit Measured: mm Left outer nuclear layer IMPC_EYE_070_001 | v1.2 simpleParameter Req. Analysis: false Req. Upload: false Is Annotated: true Unit Measured: um

Optical Coherence Tomography Equipment Model IMPC_EYE

_039_001 | v1.2

procedureMetadata

Req. Analysis: true	Req. Upload: false	Is Annotated: false	
Options: Envisu R2200, Envis	suTM R-Series SDOIS, Spectra	alis,	
Left total retinal thi simpleParameter	ckness IMPC_EYE_068_	_001 v1.2	
Req. Analysis: false	Req. Upload: false	Is Annotated: true	
Unit Measured: um			
Ophthalmoscope E	Equipment ID IMPC_EY	/E_033_001 v1.2	
Req. Analysis: false	Req. Upload: false	Is Annotated: false	
Pupil Light Respon	ISE IMPC_EYE_014_001 v	<i>y</i> 1.0	
Req. Analysis: false	Req. Upload: false	Is Annotated: true	
Options: no data right eye, left eye abnormal, no data right eye, normal, left eye abnormal, no data for both eyes, right eye abnormal, no data left eye, right eye abnormal, no data left eye, both eyes abnormal,			

VIP of right fundus	IMPC EYE 074 001 v1.1	
seriesMediaParameter		
Req. Analysis: false	Req. Upload: false	Is Annotated: false
Slit Lamp Equipme	ent ID IMPC_EYE_030_001	1 v1.2
Req. Analysis: false	Req. Upload: false	Is Annotated: false
Optical Coherence 001 v1.1 procedureMetadata	Tomography Equip	oment ID IMPC_EYE_037_
Req. Analysis: false	Req. Upload: false	Is Annotated: false
Retina (combined) simpleParameter	IMPC_EYE_092_001 v1.0	
Req. Analysis: false	Req. Upload: false	Is Annotated: true

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Eyelid closure IMPC_EYE_005_001 | v1.0

simpleParameter

Req. Upload: false Is Annotated: true

Options: no data right eye, no data for both eyes, both eyes closed, normal, right eye closed, no data left eye, no data right eye, left eye closed, no data left eye, right eye closed, left eye closed,

Corneal opacity IMPC_EYE_008_001 | v1.0

simpleParameter

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

Options: present right eye, no data right eye, present left eye, present left eye, absent, no data right eye, no data for both eyes, no data left eye, present right eye, no data left eye, present both eyes,

Slit Lamp observation IMPC_EYE_028_001 | v1.1

simpleParameter

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

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Req. Analysis: false **Req. Upload:** false **Is Annotated:** true Unit Measured: um Right inner nuclear layer IMPC_EYE_063_001 | v1.2 simpleParameter Req. Analysis: false Req. Upload: false Is Annotated: true Unit Measured: um Corneal Sclerization IMPC_EYE_080_001 | v1.1 simpleParameter Req. Analysis: false Req. Upload: false Is Annotated: true Options: no data left eye, no data right eye, no data right eye, present left eye, no data for both eyes, present right eye, absent, present both eyes, present left eye, no data left eye, present right eye,

Date OCT equipment last calibrated IMPC_EYE_049_001 | v1.1

procedureMetadata

Req. Analysis: false	Req. Upload: false	Is Annotated: false
Right corneal thick simpleParameter	(ness impc_eye_060_00	1 v1.2
Req. Analysis: false	Req. Upload: false	Is Annotated: true
Unit Measured: um		
Date Slit Lamp equal.1 procedureMetadata	uipment last calibra	ted IMPC_EYE_046_001 v1
Req. Analysis: false	Req. Upload: false	Is Annotated: false
Pupil Position IMPC	_EYE_011_001 v1.0	
Req. Analysis: false	Req. Upload: false	Is Annotated: true
-	es, no data left eye, normal, right eye, right eye abnormal, no da abnormal,	

Max left eye lens density IMPC_EYE_055_001 | v1.1

simpleParameter

Reg. Analysis: false Reg. Upload: false Is Annotated: true Unit Measured: % **Eve** IMPC EYE 001 001 | v1.0 simpleParameter Req. Analysis: false Req. Upload: false Is Annotated: true **Options:** absent right eye, absent left eye, absent both eyes, present, Date Scheimpflug equipment last calibrated IMPC_EYE_048_001 | v1.1 procedureMetadata Req. Analysis: false Req. Upload: false Is Annotated: false

Ophthalmoscope Equipment Model IMPC_EYE_035_001 | v1.2

procedureMetadata

Req. Analysis: true	Req. Upload: false	Is Annotated: false
· ·	, Genesis-DF, OMEGA 180 / S	ikon D5100 + 85 mm f/1.8 lens, uperfield NC, Sigma 150K,
procedureMetadata	ment Model IMPC_EY	·
Req. Analysis: true	Req. Upload: false	Is Annotated: false
Options: Pentacam,		
VIP of left fundus IN seriesMediaParameter	MPC_EYE_075_001 v1.1	
Req. Analysis: false	Req. Upload: false	Is Annotated: false
Corneal deposits IN	MPC_EYE_081_001 v1.1	

simpleParameter

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

Options: present right eye, present left eye, no data left eye, present right eye, no data right eye, present left eye, no data right eye, absent, no data for both eyes, present both eyes,				
Topical Anesthetic	C IMPC_EYE_044_001 v1.	1		
Req. Analysis: true	Req. Upload: true	Is Annotated: false		
Options: Atropine sulphate, Mydriacyl, Hydrochloride, Atropine, Oxybuprocain, Phenylephrine hydrochloride, No anesthesia,				
Scheimpflug Equi	pment Manufacture	F IMPC_EYE_041_001 v1.4		
Req. Analysis: true	Req. Upload: false	Is Annotated: false		
Options: Oculus GmbH,				
Scheimpflug Equipment ID IMPC_EYE_040_001 v1.1 procedureMetadata				
Req. Analysis: false	Req. Upload: false	Is Annotated: false		

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Ophthalmoscope v1.2 procedureMetadata	Equipment Manufac	Cturer IMPC_EYE_034_001
Req. Analysis: true	Req. Upload: false	Is Annotated: false
Options: Heine, Phoenix Re- Karl Storz / Nikon, Phoenix,	search Labs, Kowa, Heine / Vo	lk, Keeler LTD, Haag-Streit,
B-scan of right ret	ina IMPC_EYE_072_001	v1.1
Req. Analysis: false	Req. Upload: false	Is Annotated: false
B-scan of left retir	1a IMPC_EYE_073_001 v1	.1
Req. Analysis: false	Req. Upload: false	Is Annotated: false
Retinal Blood Ves	sels IMPC_EYE_024_001	v1.0

simpleParameter

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

Options: no data left eye, right eye abnormal, both eyes abnormal, normal, no data left eye, right eye abnormal, no data for both eyes, left eye abnormal, no data right eye, left eye abnormal, no data right eye,				
VIP of right eye IMPO seriesMediaParameter	C_EYE_078_001 v1.1			
Req. Analysis: false	Req. Upload: false	Is Annotated: false		
Corneal ulcer IMPC_E simpleParameter	EYE_085_001 v1.0			
Req. Analysis: false	Req. Upload: false	Is Annotated: true		
Options: present both eyes, no data for both eyes, no data present right eye,		ve, absent, present left eye, data left eye, no data right eye,		
Experimenter ID IMP procedureMetadata	PC_EYE_036_001 v1.1			
Req. Analysis: false	Req. Upload: true	Is Annotated: false		

Narrow eye opening IMPC_EYE_006_001 | v1.0

simpleParameter

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

Options: no data left eye, right eye abnormal, no data right eye, left eye abnormal, no data for both eyes, no data left eye, left eye abnormal, right eye abnormal, both eyes abnormal, no data right eye,

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Persistence of hyaloid vascular system IMPC_EYE_027_001 | v1.0

simpleParameter

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

Options: present right eye, present both eyes, present left eye, no data left eye, present right eye, no data right eye, present left eye, no data left eye, no data for both eyes, absent,

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Right outer nuclear layer IMPC_EYE_064_001 | v1.2

simpleParameter

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

Unit Measured: um

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Right vitreous humor thickness IMPC_EYE_087_001 | v1.0

simpleParameter

Req. Analysis: false	Req. Upload: false	Is Annotated: true
Unit Measured: um		

Cornea IMPC_EYE_007_001 | v1.0

simpleParameter

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

Options: no data left eye, left eye abnormal, normal, both eyes abnormal, right eye abnormal, no data for both eyes, no data right eye, left eye abnormal, no data left eye, right eye abnormal, no data right eye,