

# OCT reporting criteria for rodents

Dear colleagues,

Thank you very much for participating in our survey. With your support, we aim to achieve consensus on these recommendations by using a modified Delphi method, including a larger group of OCT scientists, in a formal procedure to review the consensus and develop level C evidence-based guidelines (GRADE criteria) for OCT reporting criteria in rodent research. The long-term goal is to improve the reproducibility and interoperability of OCT studies in preclinical research. If you have any questions or feedback, please contact me anytime (frederike-cosima.oertel@charite.de).

Sincerely,

Dr. Frederike C Oertel, MD/PhD  
*Junior Professor, Translational Neuroimmunology*  
Charité-Universitätsmedizin Berlin, Germany

Along with: Philipp Albrecht, MD  
*Professor, Neuroimmunologie*  
Heinrich Heine University, Düsseldorf, Germany  
Delphi Board for Rodent-OCT reporting guidelines

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\* Indicates required question

1. Email \*

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## PERSONAL INFORMATION

We will use your personal information only 1) to contact you for potential additional Delphi rounds, 2) to keep you updated about the publication of the guidelines and 3) to include you as contributor in the guidelines.

2. Your name \*

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3. Your e-mail address \*

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4. Your primary affiliation \*

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5. How many years of experience do you have with preclinical OCT research (mice, rats)? \*

*Mark only one oval.*

- ☐ none
- ☐ < 1 year
- ☐ 1 - 2 years
- ☐ 2 - 5 years
- ☐ > 5 years

## Study protocol

Please indicate how important you judge the reporting of the following items for preclinical OCT studies please rate your agreement from 1 (full disagreement) to 4 (full approval) that these should be reported in all manuscripts. You can add comments justifying your decision and providing suggestions for refinements.

6. 1.1 Report how many OCT devices, operating sites and graders were included. \*

*Mark only one oval.*

1	2	3	4		
<hr/>					
full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	full approval
<hr/>					

7. 1.1 Report how many OCT devices, operating sites and graders were included. (comments)

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8. 1.2 Report relevant information on the rodent strain (minimum: genetic background including sub-strain employing internal nomenclature, number of animals, litter mate controls, age, sex).

*Mark only one oval.*

1    2    3    4

full ( ☐ ☐ ☐ ☐ full approval

9. 1.2 Report relevant information on the rodent strain (minimum: genetic background including sub-strain employing internal nomenclature, number of animals, litter mate controls, age, sex). (comments)

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10. 1.3 Provide detailed reports of any therapeutic interventions tested in rodents, including route of administration, vehicle and dilution (this is of particular importance for intravitreal injections but should also be reported for i.p. and p.o. administrations).

*Mark only one oval.*

1	2	3	4		
<hr/>					
full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	full approval
<hr/>					

11. 1.3 Provide detailed reports of any therapeutic interventions tested in rodents, including route of administration, vehicle and dilution (this is of particular importance for intravitreal injections but should also be reported for i.p. and p.o. administrations). (comments)

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12. 1.4 Report the exact timeline of the OCT measurements (e.g. on which day before/after surgery or treatment, schedule of OCT measurements in case of longitudinal experiments).

*Mark only one oval.*

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full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	full approval
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13. 1.4 Report the exact timeline of the OCT measurements (e.g. on which day before/after surgery or treatment, schedule of OCT measurements in case of longitudinal experiments). (comment)

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14. 1.5 In case of limited word count, consider submitting the exact methodology as supplementary material.

*Mark only one oval.*

1    2    3    4

full approval ☐ ☐ ☐ ☐ full approval

15. 1.5 In case of limited word count, consider submitting the exact methodology as supplementary material. (comments)

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## OCT device

Please indicate how important you judge the reporting of the following items for preclinical OCT studies please rate your agreement from 1 (full disagreement) to 4 (full approval) that these should be reported in all manuscripts. You can add comments justifying your decision and providing suggestions for refinements.

16. 2.1 Report the device's type (e.g., time/spectral domain, swept-source, adaptive optics), manufacturer, model, and version. If a custom-made lab device is used, the specifications/parameters should be reported along with the software info to analyze the OCT data (e.g. beam diameter, laser power, oversampling rate, wavelength, axial and lateral resolution, adaptive optics).

*Mark only one oval.*

1	2	3	4
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full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<hr/>			
			full approval

17. 2.1 Report the device's type (e.g., time/spectral domain, swept-source, adaptive optics), manufacturer, model, and version. If a custom-made lab device is used, the specifications/parameters should be reported along with the software info to analyze the OCT data (e.g. beam diameter, laser power, oversampling rate, wavelength, axial and lateral resolution, adaptive optics). (comments)

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## Acquisition settings and modifications

Please indicate how important you judge the reporting of the following items for preclinical OCT studies please rate your agreement from 1 (full disagreement) to 4 (full approval) that these should be reported in all manuscripts. You can add comments justifying your decision and providing suggestions for refinements.

18. 3.1 Report on the holder used and/or the bedding/supportive devices (e.g. heat pad) of the rodent during examination.

*Mark only one oval.*

1	2	3	4	
full disagreement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	full approval

19. 3.1 Report on the holder used and/or the bedding/supportive devices (e.g. heat pad) of the rodent during examination. (comments)

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20. 3.2 Report the type, dosage, route, and duration of anesthesia. \*

*Mark only one oval.*

1	2	3	4	
full disagreement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	full approval

21. 3.2 Report the type, dosage, route, and duration of anesthesia. (comments)

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22. 3.3 Report, if the pupils were dilated before examination (yes/no) and if so, which drug was used.

*Mark only one oval.*

1    2    3    4

full ( ☐ ☐ ☐ ☐ full approval

23. 3.3 Report, if the pupils were dilated before examination (yes/no) and if so, which drug was used. (comments)

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24. 3.4 Report, if eye gel/drops were used for the examination (yes/no) and if so, from which manufacturer.

*Mark only one oval.*

1	2	3	4	
full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	full approval

25. 3.4 Report, if eye gel/drops were used for the examination (yes/no) and if so, from which manufacturer.(comments)

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26. 3.5 Report, if a contact lens was used (yes/no), and if so, report the specifications of the used lens.

*Mark only one oval.*

1	2	3	4	
full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	full approval

27. 3.5 Report, if a contact lens was used (yes/no), and if so, report the specifications of the used lens. (comments)

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28. 3.6 Report other modifications or set-ups, if used (e.g. adaptive optics, lenses on the OCT camera).

*Mark only one oval.*

1    2    3    4

full ( ☐ ☐ ☐ ☐ ) full approval

29. 3.6 Report other modifications or set-ups, if used (e.g. adaptive optics, lenses on the OCT camera). (comments)

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30. 3.7 Report how perpendicular alignment of the OCT beam on the retinal tissue was assured (e.g. live OCT imaging in vertical and horizontal planes).

*Mark only one oval.*

1	2	3	4	
full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	full approval

31. 3.7 Report how perpendicular alignment of the OCT beam on the retinal tissue was assured (e.g. live OCT imaging in vertical and horizontal planes). (comments)

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### Scanning protocol

Please indicate how important you judge the reporting of the following items for preclinical OCT studies please rate your agreement from 1 (full disagreement) to 4 (full approval) that these should be reported in all manuscripts. You can add comments justifying your decision and providing suggestions for refinements.

32. 4.1 Report the used scan type (e.g., circular scan, volume scan, star scan, line scan, other). 

*Mark only one oval.*

1	2	3	4	
full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	full approval

33. 4.1 Report the used scan type (e.g., circular scan, volume scan, star scan, line scan, other). (comments)

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34. 4.2 Report the scan location (e.g., optic nerve head). Report the scan location (e.g., optic nerve head). If automated image-processing approaches are included in the study, report how the optic nerve head location is decided.

*Mark only one oval.*

1    2    3    4

full ( ☐ ☐ ☐ ☐ full approval

35. 4.2 Report the scan location (e.g., optic nerve head). Report the scan location (e.g., optic nerve head). If automated image-processing approaches are included in the study, report how the optic nerve head location is decided. (comments)

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36. 4.3 Report the scan parameters (with or without eye tracking, follow-up function used) and how you corrected for breathing artifacts.

Minimum set of scan parameters:

Volume scans: size of scan (mm<sup>3</sup>), area and location of measurement (degrees or millimeters), number of B-scans and spacing between B-scans, alignment of B-scans, number of A-scans per B-scan.

Radial scans: size of scan area (degrees or millimeters), number of B-scans and/or angle between the two adjacent radial B-scans, alignment of B-scans, number of A-scans per B-scan.

Ring scans: diameter, A-scans/B-scan, number of B-scans averaged for a final B-scan, manual or automatic placement of ring.

Line scans: angle, location, number of A-scans.

*Mark only one oval.*

1    2    3    4

full approval ☐ ☐ ☐ ☐ full approval

37. 4.3 Report the scan parameters (with or without eye tracking, follow-up function used) and how you corrected for breathing artifacts.

Minimum set of scan parameters:

Volume scans: size of scan (mm<sup>3</sup>), area and location of measurement (degrees or millimeters), number of B-scans and spacing between B-scans, alignment of B-scans, number of A-scans per B-scan.

Radial scans: size of scan area (degrees or millimeters), number of B-scans and/or angle between the two adjacent radial B-scans, alignment of B-scans, number of A-scans per B-scan.

Ring scans: diameter, A-scans/B-scan, number of B-scans averaged for a final B-scan, manual or automatic placement of ring.

Line scans: angle, location, number of A-scans.

(comments)

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## Funduscopy imaging

Please indicate how important you judge the reporting of the following items for preclinical OCT studies please rate your agreement from 1 (full disagreement) to 4 (full approval) that these should be reported in all manuscripts. You can add comments justifying your decision and providing suggestions for refinements.

38. 5.1 Report on potential other imaging modalities you used in addition to OCT (e.g., funduscopy, confocal scanning laser ophthalmoscopy, retinal angiography, autofluorescence imaging, electroretinogram).

*Mark only one oval.*

1      2      3      4

Full ☐ ☐ ☐ ☐ Full approval

39. 5.1 Report on other imaging modalities you used in addition to OCT (e.g., funduscopy, confocal scanning laser ophthalmoscopy, retinal angiography, autofluorescence imaging). (comments)

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40. 5.2 Describe the acquisition protocol for all used imaging modalities, including (if applicable):

- Excitation wavelength
- Fluorophore (in genetically modified strains)
- Filter sets
- Number of frames averaged and/or manual z-stack with distance in diopters

*Mark only one oval.*

1      2      3      4

Full ☐ ☐ ☐ ☐ Full approval

41. 5.2 Describe the acquisition protocol for all used imaging modalities, including (if applicable):

- Excitation wavelength
- Fluorophore (in genetically modified strains)
- Filter sets
- Number of frames averaged and/or manual z-stack with distance in diopters

(comments)

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42. 5.3 Report device-specific features if utilized (e.g., enhanced depth imaging, swept-source OCT, adaptive optics).

*Mark only one oval.*

1    2    3    4

Full ☐ ☐ ☐ ☐ Full approval

43. 5.3 Report device-specific features if utilized (e.g., enhanced depth imaging, swept-source OCT, adaptive optics). (comments)

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## Postacquisition data selection and image data analyses

Please indicate how important you judge the reporting of the following items for preclinical OCT studies please rate your agreement from 1 (full disagreement) to 4 (full approval) that these should be reported in all manuscripts. You can add comments justifying your decision and providing suggestions for refinements.

44. 6.1 Report how scan quality was assessed, including if and how scans were selected for analysis or discarded providing a detailed description of your quality control criteria.

*Mark only one oval.*

	1	2	3	4	
Full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Full approval

45. 6.1 Report how scan quality was assessed, including if and how scans were selected for analysis or discarded providing a detailed description of your quality control criteria. (commer

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46. 6.2 Report on you postacquisition exclusions (percentage or number and criteria). \*

*Mark only one oval.*

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Full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Full approval

47. 6.2 Report on you postacquisition exclusions (percentage or number and criteria). (comments)

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48. 6.3 Report, how you selected eyes for analyses (if applicable). \*

*Mark only one oval.*

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Full ☐ ☐ ☐ ☐ Full approval

49. 6.3 Report, how you selected eyes for analyses (if applicable). (comments)

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50. 6.4 Report, which software was used for processing scans and for segmentation (might be different from the acquisition software) as well as additional potential postprocessing steps (e.g. denoising).

*Mark only one oval.*

	1	2	3	4	
Full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Full approval

51. 6.4 Report, which software was used for processing scans and for segmentation (might be different from the acquisition software) as well as additional potential postprocessing steps (e denoising). (comments)

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52. 6.5 Report, which retinal layers were segmented and included. \*

*Mark only one oval.*

	1	2	3	4	
Full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Full approval

53. 6.5 Report, which retinal layers were segmented and included. (comments)

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54. 6.6 Report the segmentation method (automated, semi-automated, or manual). Also report, how potential bias was addressed in the case of manual segmentation or manual correction of automated segmentation errors (e.g. blinding of raters).

*Mark only one oval.*

1    2    3    4

Full ☐ ☐ ☐ ☐ Full approval

55. 6.6 Report the segmentation method (automated, semi-automated, or manual). Also report, how potential bias was addressed in the case of manual segmentation or manual correction of automated segmentation errors (e.g. blinding of raters). (comments)

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56. 6.7 Report – if applicable – which grid was used for data extraction (include at least: size, shape, selected sections).

*Mark only one oval.*

	1	2	3	4	
Full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Full approval

57. 6.7 Report – if applicable – which grid was used for data extraction (include at least: size, shape, selected sections). (comments)

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58. 6.8 Report the pixel to millimeter ratio, if images were exported and, if not, how thickness values were obtained from device's proprietary software.

*Mark only one oval.*

	1	2	3	4	
Full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Full approval

59. 6.8 Report the pixel to millimeter ratio, if images were exported and, if not, how thickness values were obtained from device's proprietary software. (comments)

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### Qualitative and quantitative results

Please indicate how important you judge the reporting of the following items for preclinical OCT studies please rate your agreement from 1 (full disagreement) to 4 (full approval) that these should be reported in all manuscripts. You can add comments justifying your decision and providing suggestions for refinements.

60. 7.1 Report, which anatomical structures were analyzed (e.g., peripapillary retinal layers), optimally illustrated by an example image or figure.

*Mark only one oval.*

1    2    3    4

Full ☐ ☐ ☐ ☐ Full approval

61. 7.1 Report, which anatomical structures were analyzed (e.g., peripapillary retinal layers), optimally illustrated by an example image or figure. (comments)

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62. 7.2 Report the units of provided measurements (e.g., volume or thickness). \*

*Mark only one oval.*

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Full ☐ ☐ ☐ ☐ Full approval

63. 7.2 Report the units of provided measurements (e.g., volume or thickness). (comments)

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64. 7.3 Report the number of eyes presenting abnormalities on qualitative assessment as well as the abnormalities themselves (e.g. drusen).

*Mark only one oval.*

	1	2	3	4	
Full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Full approval

65. 7.3 Report the number of eyes presenting abnormalities on qualitative assessment as well as the abnormalities themselves (e.g. drusen). (comments)

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66. 7.4 Report the statistical models used for the analyses of OCT data relevant to the control and study design (contralateral/unaffected eye, naïve control group, placebo-treated control group etc.). Also report, whether data were analyzed by eye or by rodent (mean or correcting for within-subject inter-eye correlations).

*Mark only one oval.*

	1	2	3	4	
Full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Full approval



67. 7.4 Report the statistical models used for the analyses of OCT data relevant to the control and study design (contralateral/unaffected eye, naïve control group, placebo-treated control group etc.). Also report, whether data were analyzed by eye or by rodent (mean or correcting for within-subject inter-eye correlations). (comments)

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68. 7.5 Display individual data of eyes (or mean of both eyes) as single data point in graphs rather than mean values per group.

*Mark only one oval.*

1   2   3   4

Full ☐ ☐ ☐ ☐ Full approval

69. 7.5 Display individual data of eyes (or mean of both eyes) as single data point in graphs rather than mean values per group. (comments)

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70. 7.6 If relative changes in longitudinal measurements are presented, report how these correspond to absolute values (e.g., volume or thickness of specific layers).

*Mark only one oval.*

	1	2	3	4	
Full	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Full approval

71. 7.6 If relative changes in longitudinal measurements are presented, report how these correspond to absolute values (e.g., volume or thickness of specific layers). (comments)

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