

Apr 10, 2024

3D printed stereotax multimodal imaging compatibility assessment

DOI

<https://dx.doi.org/10.17504/protocols.io.j8nlk85edl5r/v1>

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Protocol Citation: Isabela Zimmermann Rollin, Lucy Liang, David J Schaeffer 2024. 3D printed stereotax multimodal imaging compatibility assessment. **protocols.io** <https://dx.doi.org/10.17504/protocols.io.j8nlk85edl5r/v1>

Manuscript citation:

Liang, L., Zimmermann Rollin, I., Alikaya, A., Ho, J.C., Santini, T., Bostan, A.C., Schwerdt, H.N., Stauffer, W.R., Ibrahim, T.S., Pirondini, E., Schaeffer, D.J., 2024. An open-source MRI compatible frame for multimodal presurgical mapping in macaque and capuchin monkeys. *BioRxiv* <https://doi.org/10.1101/2024.02.17.580767>

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Protocol status: Working

We use this protocol and it's working

Created: March 26, 2024

Last Modified: May 31, 2024

Protocol Integer ID: 97401

Keywords: ASAPCRN, stereotax multimodal imaging compatibility assessment pet, printed stereotax multimodal imaging compatibility assessment pet, source mri compatible frame for multimodal presurgical mapping, mri for multimodal image compatibility, multimodal presurgical mapping, multimodal image compatibility, mri, source mri, macaque, capuchin monkey, 3d

Funders Acknowledgements:

Aligning Science Across Parkinson's

Grant ID: ASAP-020519

Abstract

PET/CT and MRI for multimodal image compatibility.

This protocol is supplementary to the manuscript:

Liang, L., Zimmermann Rollin, I., Alikaya, A., Ho, J.C., Santini, T., Bostan, A.C., Schwerdt, H.N., Stauffer, W.R., Ibrahim, T.S., Pirondini, E., Schaeffer, D.J., 2024. An open-source MRI compatible frame for multimodal presurgical mapping in macaque and capuchin monkeys. *BioRxiv* <https://doi.org/10.1101/2024.02.17.580767>

Guidelines

The FDG doses are for proof of concept, and even smaller doses of a radioligand may suffice for practical use, depending on exposure and technical considerations.

Materials

Imaging Equipment

- Small preclinical PET/CT scanner (Si78; Bruker BioSpin GmbH, Ettlingen, Germany)
- Paravision-360 software package (version 3.2; Bruker BioSpin Corp, Billerica, MA, RRID: SCR_001964)

Materials

- 3D printed stereotaxic eye and ear bars (<https://github.com/SchaefferLab/Macaque-Stereotax>)
- [18F] fluorodeoxyglucose (FDG)
- MRI-compatible nylon screw
- small gauge syringe

PET/CT and MRI for multimodal image compatibility

- 1 Preparation of eye bars and ear bars: With a syringe, fill the ear and eye bars with a small dose (0.05 MBq ear bar, 1.54 MBq eye bar) of [18F] fluorodeoxyglucose (FDG) and seal the chamber with a MRI-compatible nylon screw. Note that these doses are for proof of concept, and even smaller doses of a radioligand may suffice for practical use, depending on exposure and technical considerations.



- 2 PET Imaging: Place the ear and eye bars in a small preclinical PET/CT scanner (here we used the Si78; Bruker BioSpin GmbH, Ettlingen, Germany) and use the Paravision-360 software package (version 3.2; Bruker BioSpin Corp, Billerica, MA, RRID: SCR_001964) for image acquisition.
- 3 CT Acquisition: Acquire a CT scan using the same PET/CT scanner equipped with a Low Dose 1 mm aluminum filter. Here we used a “step and shoot” method with a 0.6-degree gantry step for image acquisition.
- 4 Image Reconstruction: Reconstruct the CT images using the filtered back projection algorithm.



Protocol references

3D printable stereotaxic frame: <https://github.com/SchaefferLab/Macaque-Stereotax>

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