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| **Author Checklist** | Manuscript Number: |
|  | NCOMMS-25-23244A |
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| **Please check the items below carefully and add a response in each row of the table to indicate the changes that you have made. Please also check through any additional marked-up edits we may have provided within the manuscript file.** |  |
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| **Abstract and editor's summary** |  |
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| We would like to propose a revised title to comply with our formatting requirements and improve the accessibility of your work:  Please take into account R2's comment about the title (paragraph 3)  Please edit the title in your manuscript files accordingly. Note that further minor changes may be made during the production process, and you will be able to check these in the proofs. | In accordance with the editor’s guidance and Reviewer #2’s comment regarding the emphasis on modularity, we have revised the title to:  **The ANTsX ecosystem for mapping the mouse brain**  which we believe accurately reflects the manuscript’s focus on reproducible, ANTsX-based workflows for mouse brain mapping. |
| Your paper will be accompanied by the following editor's summary. Please let us know if there are any inaccuracies: 'We request that you (the author) please supply a brief (~250 characters, including spaces) two-sentence summary of the main findings of the paper to be used on our website and in our e-alerts. The summary should be written in the third person in language suitable for a broad audience. The first sentence should describe an open question (i.e., the rationale/motivation for the present study), and the second sentence should describe what you found/demonstrated in your manuscript. The summary may be edited by the editors prior to publication. Example #1: The neural mechanisms that give rise to aperiodic EEG signals remain unclear. Here the authors characterize EEG signals generated by neural processes other than brain rhythms, demonstrating that certain drugs alter EEG signals in ways that confound traditional interpretation. Example #2: Encoding and downsampling images is key for visual prostheses. Here, the authors show that an actor-model framework using the inherent computation of the retinal network yields better performance in downsampling images compared to learning-free methods. ' | We have provided the following two-sentence summary:  Integrating molecular and anatomical data in the mouse brain requires flexible, reproducible mapping tools. Here the authors demonstrate ANTsX-based workflows for aligning MERFISH, fMOST, MRI, and LSFM data into shared coordinate frameworks. |
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| We do not edit Supplementary Information files; they will be uploaded with the published article as they are submitted with the final version of your manuscript. Any tracked changes should be removed from the file and the file should be provided as a PDF file. Supplementary Figures do not need to be provided separately. | No Supplementary Information files accompany this manuscript. All figures fully reproducible using the data and scripts provided in the public GitHub repository ([*https://github.com/ntustison/ANTsXMouseBrainMapping*](https://github.com/ntustison/ANTsXMouseBrainMapping)). |
| Please supply Source Data files for all data presented in graphs within the Figures. |  |
| Within the Source Data file, the relevant raw data from each figure or table (in the main manuscript and in the Supplementary Information) should be represented by a single sheet in an Excel document, or a single .txt file or other file type in a zipped folder. An example of the Source Data file is available demonstrating the correct format: https://www.nature.com/documents/ncomms-example-source-data.xlsx The file should be labelled 'Source Data', with the title and a brief description included in your response here, and should be mentioned in all relevant figure legends using the template text below: 'Source data are provided as a Source Data file.' A reference to the source data file should be added in the 'Data Availability' section, using the text: Source data are provided with this paper. | All data underlying the relevant figures are provided as .csv files within the public GitHub repository ([*https://github.com/ntustison/ANTsXMouseBrainMapping*](https://github.com/ntustison/ANTsXMouseBrainMapping)). |
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| **Main text** |  |
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| Please provide the source data used for generating figures as a single excel file (i.e., each figure should have its own separate sheet tab). If the manuscript includes data from both males and females, please disaggregate data points by sex in the source data file as detailed in the SAGER guidelines. | As specified previously and detailed in the manuscript, all the numerical data used to produce the relevant figures, as well as the scripts, are available in the GitHub repo associated with this manuscript. |
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