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Non-imaged based method for matching brains in a common anatomical space for cellular imagery

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Highlights

- A vectors field method for matching experimental brain sections in a reference atlas
- Registration method based on plotted objects
- Method applicable to any species and adapted for all cellular labeling
- Method requiring equipment routinely used in laboratories and free software

ABSTRACT

Background

Cellular imagery using histology sections is one of the most common techniques used in Neuroscience. However, this inescapable technique has severe limitations due to the need to delineate regions of interest on each brain, which is time consuming and variable across experimenters.

New Method

We developed algorithms based on a vectors field elastic registration allowing fast, automatic realignment of experimental brain sections and associated labeling in a brain atlas with high accuracy and in a streamlined way. Thereby, brain areas of interest can be finely identified without outlining them