7th BigBrain Workshop: Challenges of big data integration



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MicroDraw multilayer: a web application to annotate multi-resolution multimodal data

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Brain histology provides unique information on the cellular structure of the brain. However, high resolution datasets are challenging to visualise, analyse, register and segment. MicroDraw (https://microdraw.pasteur.fr) is our online tool for visualising and collaboratively annotating high resolution histology data such as the BigBrain. MicroDraw allows users to segment regions and annotate them based on common ontologies in a collaborative way. However, the ability to visualise different data modalities concurrently, or to superpose data and atlases was missing thus far.

We will demonstrate a new extension of MicroDraw which allows us to superpose different data layers, enabling users to bring together several high resolution data modalities into one smooth view, such as cell body stained slices with the underlying myeloarchitecture or receptor architecture, or a combination of histological data with registered anatomical or diffusion MRI. The visibility of each layer, including data and labels, is configured with a simple graphical interface. This combined view should facilitate high resolution anatomical labelling informed by multi-modal tissue sources, and help verify the registration across modalities. The combination of multiple modalities and the possibility to superpose atlases should significantly facilitate the manual segmentation of structures using MicroDraw's vectorial annotation tools.

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