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Making the multiscale organization of the human brain accessible to reproducible workflows using siibra-python

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Understanding the human brain requires access to experimental data that capture relevant aspects of brain organization across a broad range of scales and modalities, and typically originate from a plethora of resources. To make multimodal and multidimensional measures of brain organization accessible, they need to be integrated into a common reference framework and exposed via suitable software interfaces. This tutorial will introduce participants to siibra toolsuite, which provides access to a multilevel atlas of the human brain built from "big data". The atlas integrates brain reference templates at different spatial scales, complementary parcellation maps, and a wide range of multimodal data features. It links macroanatomical concepts and their inter-subject variability with measurements of the microstructural composition and intrinsic variance of brain regions, using cytoarchitectonic maps as a reference, and integrating the BigBrain model as microscopic reference template. The tool suite includes a web-based 3D viewer (siibra-explorer) and a Python library (siibra-python) to support a broad range of neuroscientific use cases. It makes use of EBRAINS as a data sharing platform and cloud infrastructure and implements interfaces to other neuroscience resources. The focus of this tutorial will be on building reproducible workflows with BigBrain data using the siibra-python library.

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