

Data Collection

Fetching Expression Count Matrices

- GEO
- Allen Brain Map
- UCSC Browser
- ArrayExpress
- Github
- ...

$$\begin{bmatrix} 0. & \dots & .204 \\ \vdots & \ddots & \vdots \\ 0. & \dots & .374 \end{bmatrix} \xrightarrow{\text{scDenorm}} \begin{bmatrix} 0. & \dots & 1. \\ \vdots & \ddots & \vdots \\ 0. & \dots & 2. \end{bmatrix}$$

Normalized Raw

Conversion to h5ad



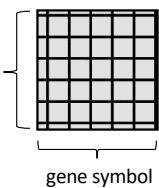
Seurat
Sceasy



Pandas
Scanpy
Anndata
Numpy

Curation of Metadata

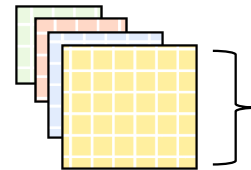
- Cell_ID
- Sample_type
- Brain_region
- Cell_Label
- Donor info
- ...



Adult
Fetal
Tumour
Organoid

Cell-Type Annotation

Reference (1, 2, 3, 4)



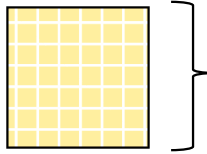
Original labels

Oligodendrocyte
CGE interneuron ...
Astrocyte ...

Label Transfer

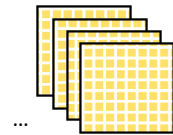
- ACTINN
- CHETAH
- scAnnot
- scArches
- ScMap
- scPred
- SingleCellNet
- SingleR

Query



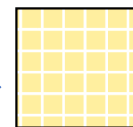
Cell Type Labels

Original cell annotation
Siletti_ACTINN
Siletti_CHETAH
Siletti_SCANVI
...



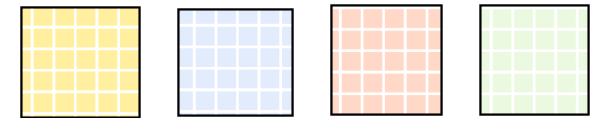
Downsampling

Merging



Integrative Atlas

Merged datasets



Integration & Removing batch effects



scvi-tools



harmony

4 Sub-Atlases

