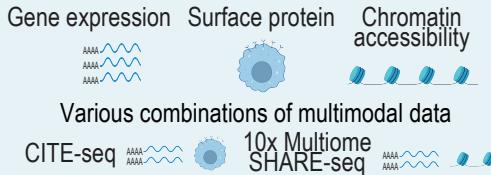


## Diverse multimodal single-cell data



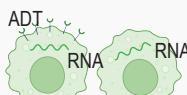
Single dataset & multimodalities



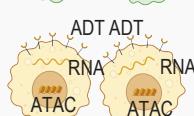
Multiple datasets & non-overlapping multimodalities



Multiple datasets & overlapping multimodalities

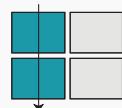


Multiple datasets & fully matched multimodalities

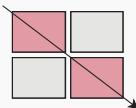


## Lead to different integration strategies

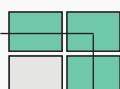
Vertical



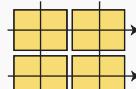
Diagonal



Mosaic



Cross



## Multitask benchmark

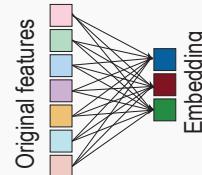
MultiBench



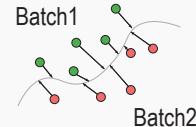
[github.com/PYangLab/scMultiBench/](https://github.com/PYangLab/scMultiBench/)  
[shiny.maths.usyd.edu.au/scMultiBench/](https://shiny.maths.usyd.edu.au/scMultiBench/)

## Lead to different analytical tasks

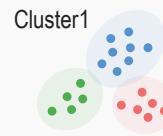
1 Dimension reduction



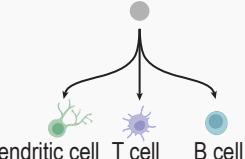
2 Batch correction



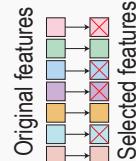
3 Clustering



4 Classification



5 Feature selection



6 Imputation



7 Spatial registration

