Supplementary Figure 1

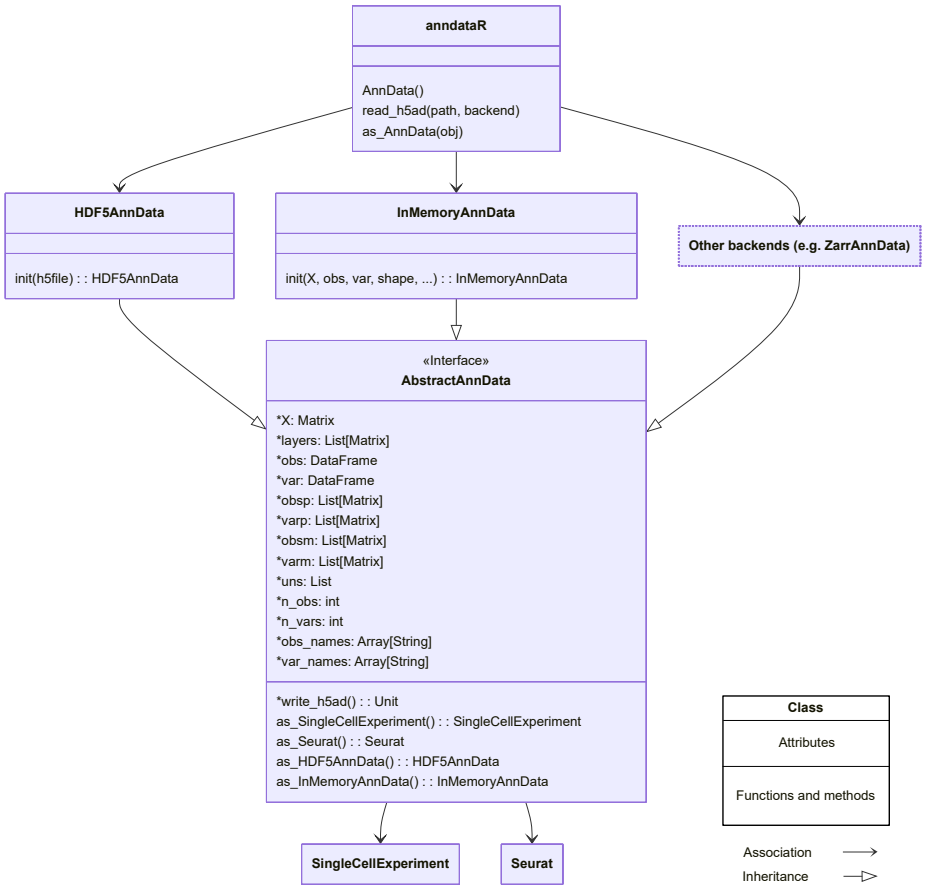

Figure 1: Schematic class diagram of anndataR.

Supplementary Figure 2

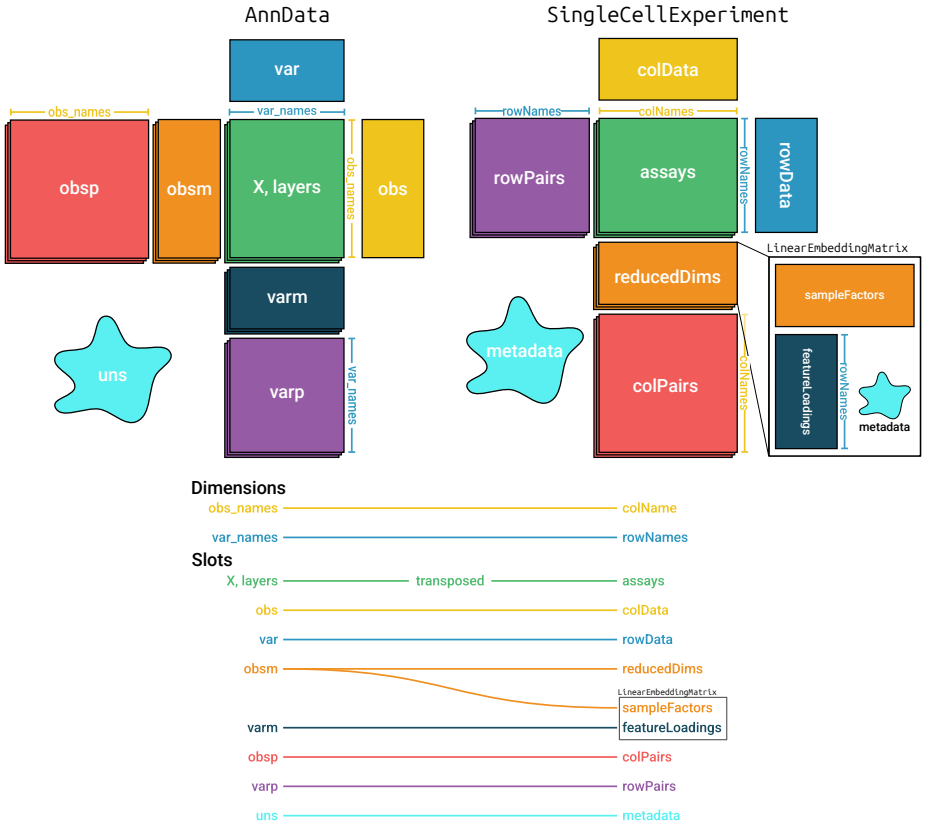

Figure 2: Schematic overview of the default conversion to and from AnnData and SingleCellExperiment objects.

Supplementary Figure 3

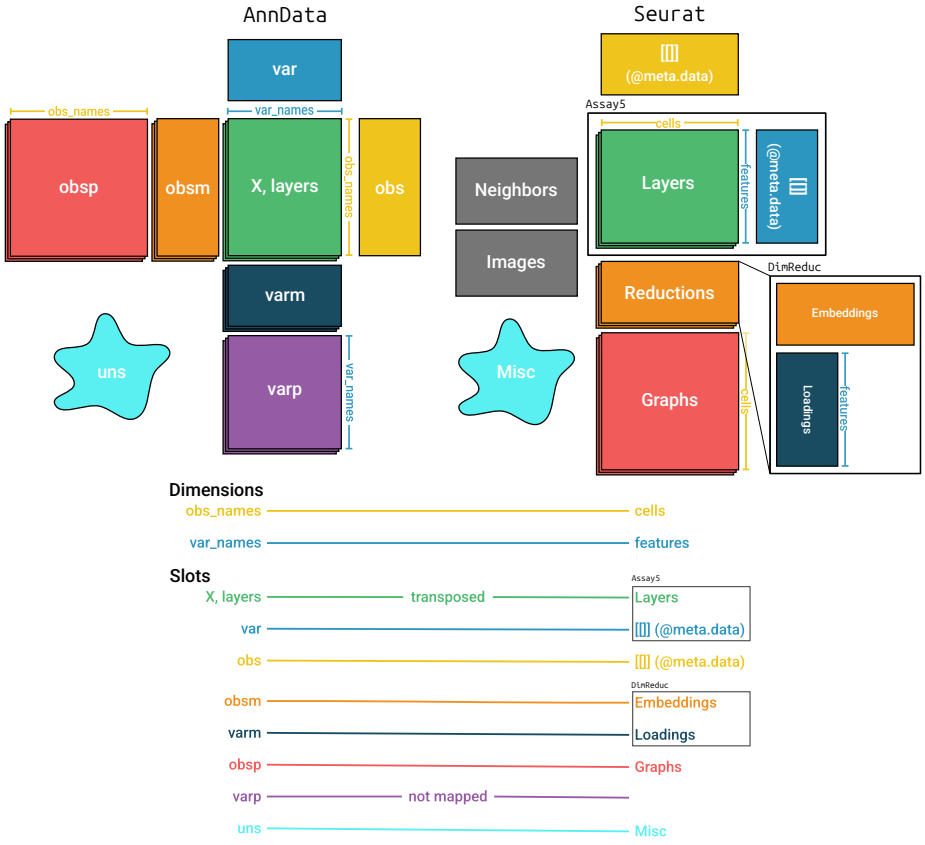

Figure 3: Schematic overview of the default conversion to and from AnnData and Seurat objects. Note that by default, the AnnData `varp` slot will not be converted.

Supplementary Figure 4

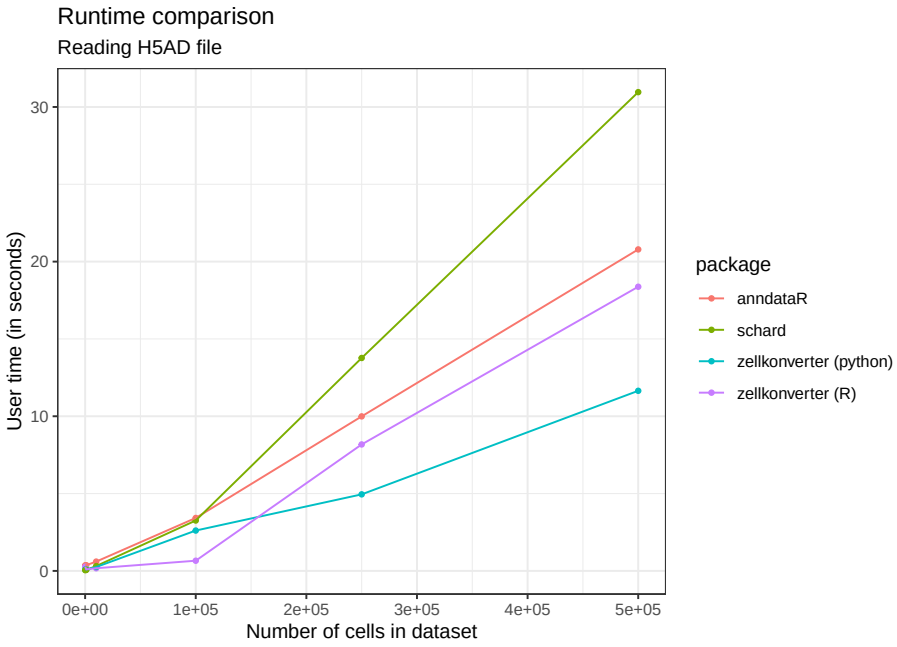

Figure 4: Results of a benchmark performed to compare runtime of reading an H5AD file. We compared anndataR against 3 other approaches: the two other packages using a native HDF5 reader (schard and zellkonverter with the native reader option) and a popular tool, zellkonverter with the python reader. The benchmark was performed using datasets containing 20 000 genes, and 100, 1000, 10 000, 100 000, 250 000 and 500 000 cells, with a density of 5%.

Supplementary Table 1

Table 1: This table indicates whether a software tool (anndataR, schard and zellkonverter with the native R reader option) provides certain functionality. For each allowed data type for each AnnData slot, we detail whether the software is capable of 1) representing the data type in R, 2) converting it to an appropriate SingleCellExperiment or Seurat object slot and 3) writing the data type back to an H5AD file.
Legend:
`x`: the software tool can represent, convert, or write this data type
`/`: the software tool can not represent, convert, or write this data type
`-`: the specific data type is not supported in a SingleCellExperiment or Seurat object.

		anndataR (this paper)				**schard**				**zellkonverter (native R reader)**			
slot	**datatype**	**in R**	**to SCE**	**to Seurat**	**to H5AD**	**in R**	**to SCE**	**to Seurat**	**to H5AD**	**in R**	**to SCE**	**to Seurat**	**to H5AD**
X	integer_matrix	x	x	x	x	/	x	x	/	/	x	/	/
	integer_csparse	x	x	x	x	/	x	x	/	/	x	/	/
	integer_rsparse	x	x	x	x	/	x	x	/	/	x	/	/
	float_matrix	x	x	x	x	/	x	x	/	/	x	/	/
	float_csparse	x	x	x	x	/	x	x	/	/	x	/	/
	float_rsparse	x	x	x	x	/	x	x	/	/	x	/	/
	float_matrix_nas	x	x	x	x	/	x	x	/	/	x	/	/
	float_csparse_nas	x	x	x	x	/	x	x	/	/	x	/	/
	float_rsparse_nas	x	x	x	x	/	x	x	/	/	x	/	/
layers	integer_matrix	x	x	x	x	/	/	/	/	/	x	/	/
	integer_csparse	x	x	x	x	/	/	/	/	/	x	/	/
	integer_rsparse	x	x	x	x	/	/	/	/	/	x	/	/
	float_matrix	x	x	x	x	/	/	/	/	/	x	/	/
	float_csparse	x	x	x	x	/	/	/	/	/	x	/	/
	float_rsparse	x	x	x	x	/	/	/	/	/	x	/	/
	float_matrix_nas	x	x	x	x	/	/	/	/	/	x	/	/
	float_csparse_nas	x	x	x	x	/	/	/	/	/	x	/	/
	float_rsparse_nas	x	x	x	x	/	/	/	/	/	x	/	/
	float_matrix_3d	x	-	-	x	/	-	-	/	/	-	-	/
	integer_matrix_3d	x	-	-	x	/	-	-	/	/	-	-	/
obs & var	categorical	x	x	x	x	/	/	/	/	/	x	/	/
	categorical_ordered	x	x	x	x	/	/	/	/	/	x	/	/
	categorical_nas	x	x	x	x	/	/	/	/	/	x	/	/
	categorical_ordered_nas	x	x	x	x	/	/	/	/	/	x	/	/
	string_array	x	x	x	x	/	x	x	/	/	x	/	/
	dense_array	x	x	x	x	/	x	x	/	/	x	/	/
	integer_array	x	x	x	x	/	x	x	/	/	x	/	/

	nullable_integer_array	x	x	x	x	/	/	/	/	/	x	/	/
	boolean_array	x	x	x	x	/	x	x	/	/	x	/	/
	nullable_boolean_array	x	x	x	x	/	/	/	/	/	x	/	/
obsm	integer_matrix	x	x	x	x	/	x	x	/	/	/	/	/
	integer_csparse	x	x	x	x	/	/	/	/	/	/	/	/
	integer_rsparse	x	x	x	x	/	/	/	/	/	/	/	/
	float_matrix	x	x	x	x	/	x	x	/	/	/	/	/
	float_csparse	x	x	x	x	/	/	/	/	/	/	/	/
	float_rsparse	x	x	x	x	/	/	/	/	/	/	/	/
	float_matrix_nas	x	x	x	x	/	x	x	/	/	/	/	/
	float_csparse_nas	x	x	x	x	/	/	/	/	/	/	/	/
	float_rsparse_nas	x	x	x	x	/	/	/	/	/	/	/	/
	dataframe	x	x	-	/	/	/	-	/	/	/	-	/
	float_matrix_3d	x	x	-	x	/	/	-	/	/	/	-	/
	integer_matrix_3d	x	x	-	x	/	/	-	/	/	/	-	/
varm	integer_matrix	x	x	x	x	/	/	/	/	/	x	/	/
	integer_csparse	x	x	x	x	/	/	/	/	/	x	/	/
	integer_rsparse	x	x	x	x	/	/	/	/	/	x	/	/
	float_matrix	x	x	x	x	/	/	/	/	/	x	/	/
	float_csparse	x	x	x	x	/	/	/	/	/	x	/	/
	float_rsparse	x	x	x	x	/	/	/	/	/	x	/	/
	float_matrix_nas	x	x	x	x	/	/	/	/	/	x	/	/
	float_csparse_nas	x	x	x	x	/	/	/	/	/	x	/	/
	float_rsparse_nas	x	x	x	x	/	/	/	/	/	x	/	/
	dataframe	x	-	-	/	/	-	-	/	/	-	-	/
	float_matrix_3d	x	x	-	x	/	/	-	/	/	/	-	/
	integer_matrix_3d	x	x	-	x	/	/	-	/	/	/	-	/
obsp	integer_matrix	x	x	x	x	/	/	/	/	/	/	/	/
	integer_csparse	x	x	x	x	/	/	/	/	/	x	/	/
	integer_rsparse	x	x	x	x	/	/	/	/	/	x	/	/
	float_matrix	x	x	x	x	/	/	/	/	/	/	/	/
	float_csparse	x	x	x	x	/	/	/	/	/	x	/	/
	float_rsparse	x	x	x	x	/	/	/	/	/	x	/	/
	float_matrix_nas	x	x	x	x	/	/	/	/	/	/	/	/
	float_csparse_nas	x	x	x	x	/	/	/	/	/	x	/	/
	float_rsparse_nas	x	x	x	x	/	/	/	/	/	x	/	/
	float_matrix_3d	x	x	-	x	/	/	-	/	/	/	-	/
	integer_matrix_3d	x	x	-	x	/	/	-	/	/	/	-	/
varp	integer_matrix	x	x	-	x	/	/	-	/	/	/	-	/
	integer_csparse	x	x	-	x	/	/	-	/	/	x	-	/
	integer_rsparse	x	x	-	x	/	/	-	/	/	x	-	/
	float_matrix	x	x	-	x	/	/	-	/	/	/	-	/
	float_csparse	x	x	-	x	/	/	-	/	/	x	-	/
	float_rsparse	x	x	-	x	/	/	-	/	/	x	-	/
	float_matrix_nas	x	x	-	x	/	/	-	/	/	/	-	/
	float_csparse_nas	x	x	-	x	/	/	-	/	/	x	-	/

	float_rsparse_nas	x	x	-	x	/	/	-	/	/	x	-	/
	float_matrix_3d	x	x	-	x	/	/	-	/	/	/	-	/
	integer_matrix_3d	x	x	-	x	/	/	-	/	/	/	-	/
uns	categoricals	x	x	x	x	/	/	/	/	/	x	/	/
	matrices	x	x	x	x	/	/	/	/	/	x	/	/
	scalars	x	x	x	x	/	/	/	/	/	x	/	/
	nested values	x	x	x	x	/	/	/	/	/	x	/	/
	nan	x	x	x	x	/	/	/	/	/	x	/	/
	None	x	x	-	/	/	/	-	/	/	/	-	/