

iSEEu - modes and custom panels for iSEE

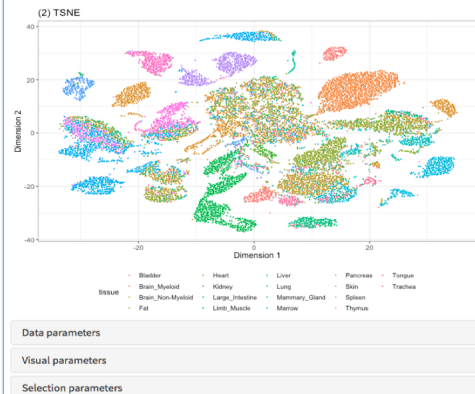
Bioc Dev Forum, Dec 2019

> iSEE(sce)

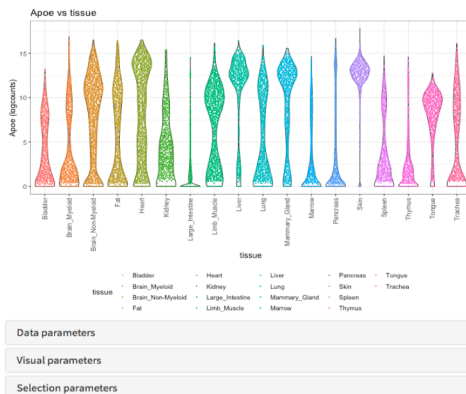
iSEE - Interactive SummarizedExperiment Explorer v1.3.8



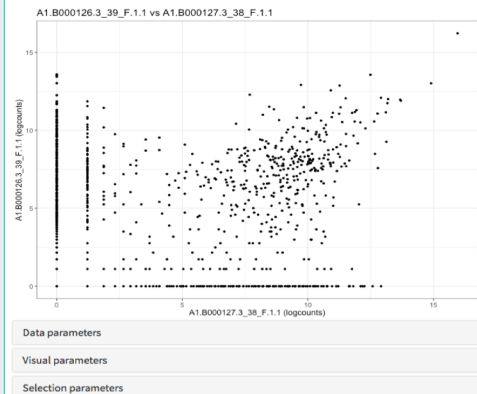
Reduced dimension plot 1



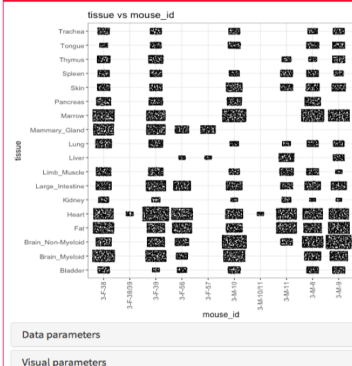
Feature assay plot 1



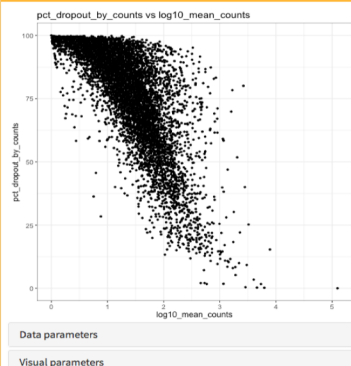
Sample assay plot 1



Column data plot 1



Row data plot 1



Column statistics table 1

Show 10 entries

Search:

cell	plate_barcode	mouse_
A1.B000126.3_39_F.1.1	A1.B000126.3_39_F.1.1	B000126 3-F-39
A1.B000127.3_38_F.1.1	A1.B000127.3_38_F.1.1	B000127 3-F-38
A1.B000167.3_56_F.1.1	A1.B000167.3_56_F.1.1	B000167 3-F-56
A1.B000168.3_57_F.1.1	A1.B000168.3_57_F.1.1	B000168 3-F-57
A1.B000412.3_56_F.1.1	A1.B000412.3_56_F.1.1	B000412 3-F-56
A1.B000610.3_56_F.1.1	A1.B000610.3_56_F.1.1	B000610 3-F-56
A1.B000633.3_56_F.1.1	A1.B000633.3_56_F.1.1	B000633 3-F-56
A1.B000634.3_56_F.1.1	A1.B000634.3_56_F.1.1	B000634 3-F-56
A1.B000636.3_56_F.1.1	A1.B000636.3_56_F.1.1	B000636 3-F-56
A1.B000826.3_39_F.1.1	A1.B000826.3_39_F.1.1	B000826 3-F-39

Showing 1 to 10 of 53,760 entries

Row statistics table 1

Show 10 entries

Search:

ID	Symbol	is_feature_control
0610005C13Rik	0610005C13Rik	false
0610007C21Rik	0610007C21Rik	false
0610007L01Rik	0610007L01Rik	false
0610007N19Rik	0610007N19Rik	false
0610007P08Rik	0610007P08Rik	false
0610007P14Rik	0610007P14Rik	false
0610007P22Rik	0610007P22Rik	false
0610008F07Rik	0610008F07Rik	false
0610009B14Rik	0610009B14Rik	false
0610009B22Rik	0610009B22Rik	false

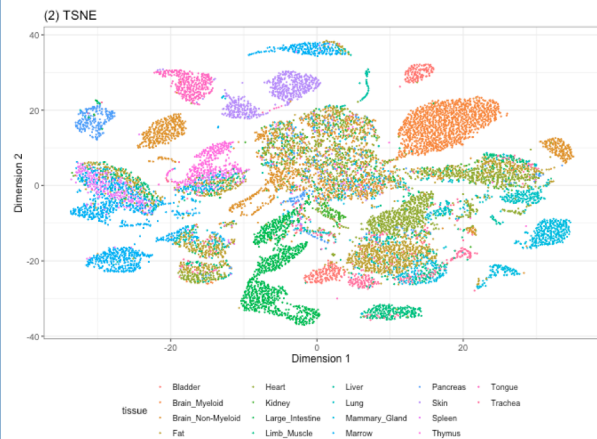
Showing 1 to 10 of 23,432 entries

What if we want this?

iSEE - interactive SummarizedExperiment Explorer v1.3.8



Reduced dimension plot 1

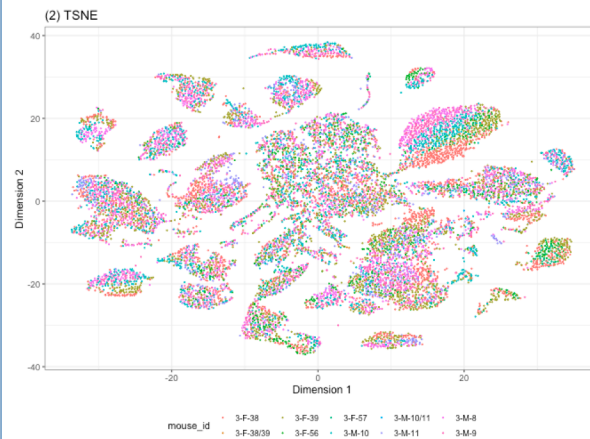


Data parameters

Visual parameters

Selection parameters

Reduced dimension plot 2

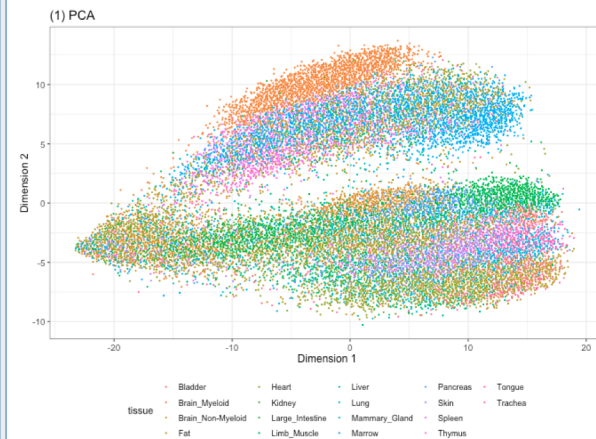


Data parameters

Visual parameters

Selection parameters

Reduced dimension plot 3



Data parameters

Visual parameters

Selection parameters

Panel settings

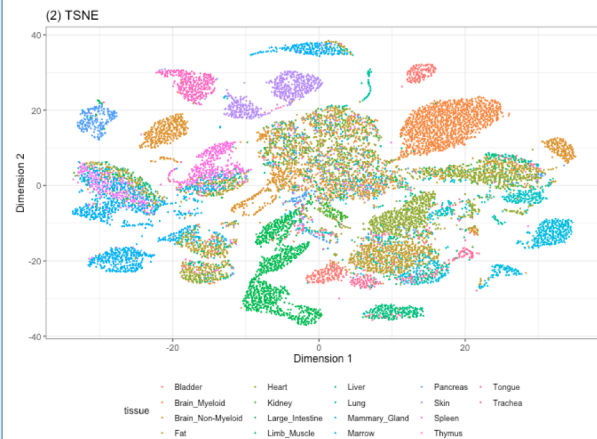
```
14 redDimPlotArgs[['SelectAlpha']] <- c(0.1, 0.1, 0.1, 0.1, 0.1)
15 redDimPlotArgs[['SelectColor']] <- c("#FF0000", "red", "red", "red", "red")
16
17 tmp <- vector('list', 5)
18 redDimPlotArgs[['BrushData']] <- tmp
19
20 tmp <- vector('list', 5)
21 redDimPlotArgs[['MultiSelectHistory']] <- tmp
22 redDimPlotArgs[['SelectMultiType']] <- c("Active", "Active", "Active", "Active", "Active")
23 redDimPlotArgs[['SelectMultiSaved']] <- c(0L, 0L, 0L, 0L, 0L)
24
25 tmp <- vector('list', 5)
26 tmp[[1]] <- "Color"
27 tmp[[2]] <- "Color"
28 tmp[[3]] <- "Color"
29 tmp[[4]] <- "Color"
30 tmp[[5]] <- "Color"
31 redDimPlotArgs[['VisualChoices']] <- tmp
32 redDimPlotArgs[['PointSize']] <- c(1, 1, 1, 1, 1)
33 redDimPlotArgs[['PointAlpha']] <- c(1, 1, 1, 1, 1)
34 redDimPlotArgs[['Downsample']] <- c(FALSE, FALSE, FALSE, FALSE, FALSE)
35 redDimPlotArgs[['SampleRes']] <- c(200, 200, 200, 200, 200)
36 redDimPlotArgs[['FontSize']] <- c(1, 1, 1, 1, 1)
37 redDimPlotArgs[['LegendPosition']] <- c("Bottom", "Bottom", "Bottom", "Bottom", "Bottom")
38
39 tmp <- vector('list', 5)
40 redDimPlotArgs[['ZoomData']] <- tmp
41
42 tmp <- vector('list', 5)
43 redDimPlotArgs[['LassoData']] <- tmp
44 redDimPlotArgs[['ContourAdd']] <- c(FALSE, FALSE, FALSE, FALSE, FALSE)
45 redDimPlotArgs[['ContourColor']] <- c("#0000FF", "blue", "blue", "blue", "blue")
46 redDimPlotArgs[['ColorBy']] <- c("None", "None", "None", "None", "None")
47 redDimPlotArgs[['ColorByDefaultColor']] <- c("#000000", "black", "black", "black", "black")
48 redDimPlotArgs[['ColorByColData']] <- c("NREADS", "NREADS", "NREADS", "NREADS", "NREADS")
49 redDimPlotArgs[['ShapeBy']] <- c("None", "None", "None", "None", "None")
50 redDimPlotArgs[['ShapeByColData']] <- c("driver_1_s", "driver_1_s", "driver_1_s", "driver_1_s", "driver_1_s")
51 redDimPlotArgs[['SizeBy']] <- c("None", "None", "None", "None", "None")
```

> modeRedDim(sce)

ISEE - interactive SummarizedExperiment Explorer v1.3.8



Reduced dimension plot 1

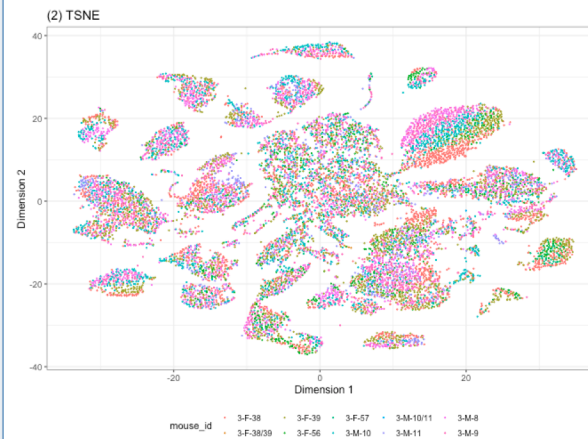


Data parameters

Visual parameters

Selection parameters

Reduced dimension plot 2



Data parameters

Visual parameters

Selection parameters

Reduced dimension plot 3



Data parameters

Visual parameters

Selection parameters

The iSEE universe (iSEEU)

<https://github.com/csoneson/iSEEU>

The screenshot displays the GitHub repository page for `csoneson / iSEEU`. At the top, there are interaction buttons: Unwatch (4), Star (1), and Fork (1). Below these are navigation tabs for Code, Issues (0), Pull requests (2), Actions, Projects (0), Wiki, Security, Insights, and Settings. The repository name is followed by the URL <https://csoneson.github.io/iSEEU/> and an Edit button. A 'Manage topics' section is present below. A statistics bar shows 34 commits, 5 branches, 0 packages, 0 releases, 1 environment, and 3 contributors, with a View license link. Below the statistics are buttons for 'New pull request', 'Create new file', 'Upload files', 'Find file', and 'Clone or download'. The file list shows a recent merge pull request #5 from `csoneson/kra-pkg` with the latest commit 74a0037 from 3 hours ago. The file list includes folders `R`, `inst`, `man`, and `vignettes`, and files `.Rbuildignore`, `.travis.yml`, `CODE_OF_CONDUCT.md`, and `DESCRIPTION`.

`csoneson / iSEEU` Unwatch 4 Star 1 Fork 1

<> Code Issues 0 Pull requests 2 Actions Projects 0 Wiki Security Insights Settings

The iSEE Universe <https://csoneson.github.io/iSEEU/> Edit

Manage topics

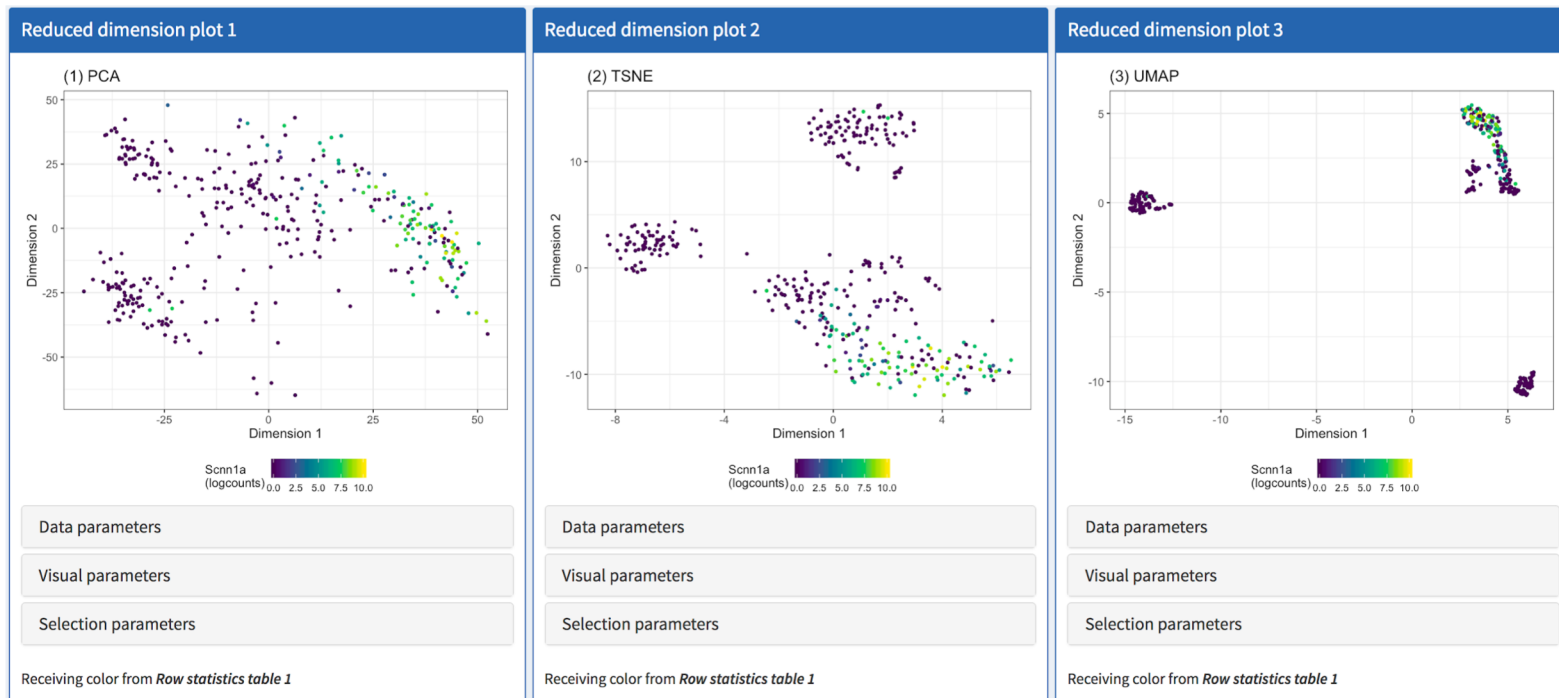
34 commits 5 branches 0 packages 0 releases 1 environment 3 contributors View license

Branch: master New pull request Create new file Upload files Find file Clone or download

`csoneson` Merge pull request #5 from `csoneson/kra-pkg` Latest commit 74a0037 3 hours ago

<code>R</code>	Change email address	3 hours ago
<code>inst</code>	Add a bit of info to the vignette	12 days ago
<code>man</code>	roxygenize...	3 hours ago
<code>vignettes</code>	short info on the instances	12 days ago
<code>.Rbuildignore</code>	Added pkgdown setup	13 days ago
<code>.travis.yml</code>	Travis	24 days ago
<code>CODE_OF_CONDUCT.md</code>	Added CoC and Rmd README	24 days ago
<code>DESCRIPTION</code>	Write a package-level documentation page.	6 days ago

> modeReducedDim(sce, colorBy = "Scnn1a")



Row statistics table 1

Show 10 entries

Search: Scnn1a

> modeDEbulk(sce)

ISEE - Interactive SummarizedExperiment Explorer v1.7.2

127.0.0.1

Reduced dimension plot 1

(1) PCA

Dimension 2

Dimension 1

SampleName

- baseMean
- baseVar
- allZero
- dispGeneEst
- dispGeneIter
- dispFI

Data parameters

Visual parameters

Selection parameters

Feature assay plot 1

ENSG00000000457 vs SampleName

ENSG00000000457 (normalized)

SampleName

baseMean

baseVar

allZero

dispGeneEst

dispGeneIter

dispFI

Data parameters

Visual parameters

Selection parameters

Receiving y-axis from Row statistics table 1

Row statistics table 1

Show 10 entries

Search:

	baseMean	baseVar	allZero	dispGeneEst	dispGeneIter	dispFI
All	All	All	All	All	All	All
ENSG000000000003	708.602169691234	21634.1277377552	false	1e-8	12	0.014602802733
ENSG0000000000419	520.29790052064	2230.21480854381	false	1e-8	1	0.0164413882781
ENSG0000000000457	237.163036796015	239.13726307265	false	1e-8	10	0.02470207162139
ENSG0000000000460	57.5326331250967	213.390966354948	false	0.04003996966124	6	0.07166500311341
ENSG0000000000938	0.31809837832895	0.398110891988712	false	1e-8	2	11.32706988524
ENSG000000000971	5817.35286765231	3120796.66934258	false	0.00414199166115549	7	0.01014110021285
ENSG000000001036	1282.10638546592	25460.6170991053	false	1e-8	2	0.01233019624436
ENSG000000001084	609.892091906969	18446.6215795612	false	0.038896551468436	6	0.0154250828722
ENSG000000001167	369.342807845239	9935.93290526991	false	1e-8	32	0.0192695416313
ENSG000000001460	183.237674249271	534.703520505961	false	0.0193934175226317	4	0.02916937129346

Showing 1 to 10 of 33,469 entries

Previous 1 2 3 4 5 ... 3347 Next

Selection parameters

Transmitting y-axis to Feature assay plot 1

Row data plot 1

DESeq2_dex_h1_vs_unrtlog2foldChange vs DESeq2_dex_h1_vs_unrtlog2_baseMean

DESeq2_dex_h1_vs_unrtlog2foldChange

DESeq2_dex_h1_vs_unrtlog2_baseMean

Data parameters

Visual parameters

Selection parameters

Row data plot 2

DESeq2_dex_h1_vs_unrtlog2_pval vs DESeq2_dex_h1_vs_unrtlog2foldChange

DESeq2_dex_h1_vs_unrtlog2_pval

DESeq2_dex_h1_vs_unrtlog2foldChange

Data parameters

Visual parameters

Selection parameters

Transmitting selection to Row statistics table 2

Row statistics table 2

Show 10 entries

Search:

	baseMean	baseVar	allZero	dispGeneEst
All	All	All	All	All
ENSG000000000003	708.602169691234	21634.1277377552	false	1e-8
ENSG0000000000419	520.29790052064	2230.21480854381	false	1e-8
ENSG0000000000457	237.163036796015	239.13726307265	false	1e-8
ENSG0000000000460	57.5326331250967	213.390966354948	false	0.04003996966124
ENSG0000000000938	0.31809837832895	0.398110891988712	false	1e-8
ENSG000000000971	5817.35286765231	3120796.66934258	false	0.00414199166115549
ENSG000000001036	1282.10638546592	25460.6170991053	false	1e-8
ENSG000000001084	609.892091906969	18446.6215795612	false	0.038896551468436
ENSG000000001167	369.342807845239	9935.93290526991	false	1e-8
ENSG000000001460	183.237674249271	534.703520505961	false	0.0193934175226317

Showing 1 to 10 of 33,469 entries

Previous 1 2 3 4 5 ... 3347 Next

Selection parameters

Receiving selection from Row data plot 2

Transmitting y-axis to Feature assay plot 2

Feature assay plot 2

ENSG000000000419 vs SampleName

ENSG000000000419 (normalized)

SampleName

baseMean

baseVar

allZero

dispGeneEst

dispGeneIter

dispFI

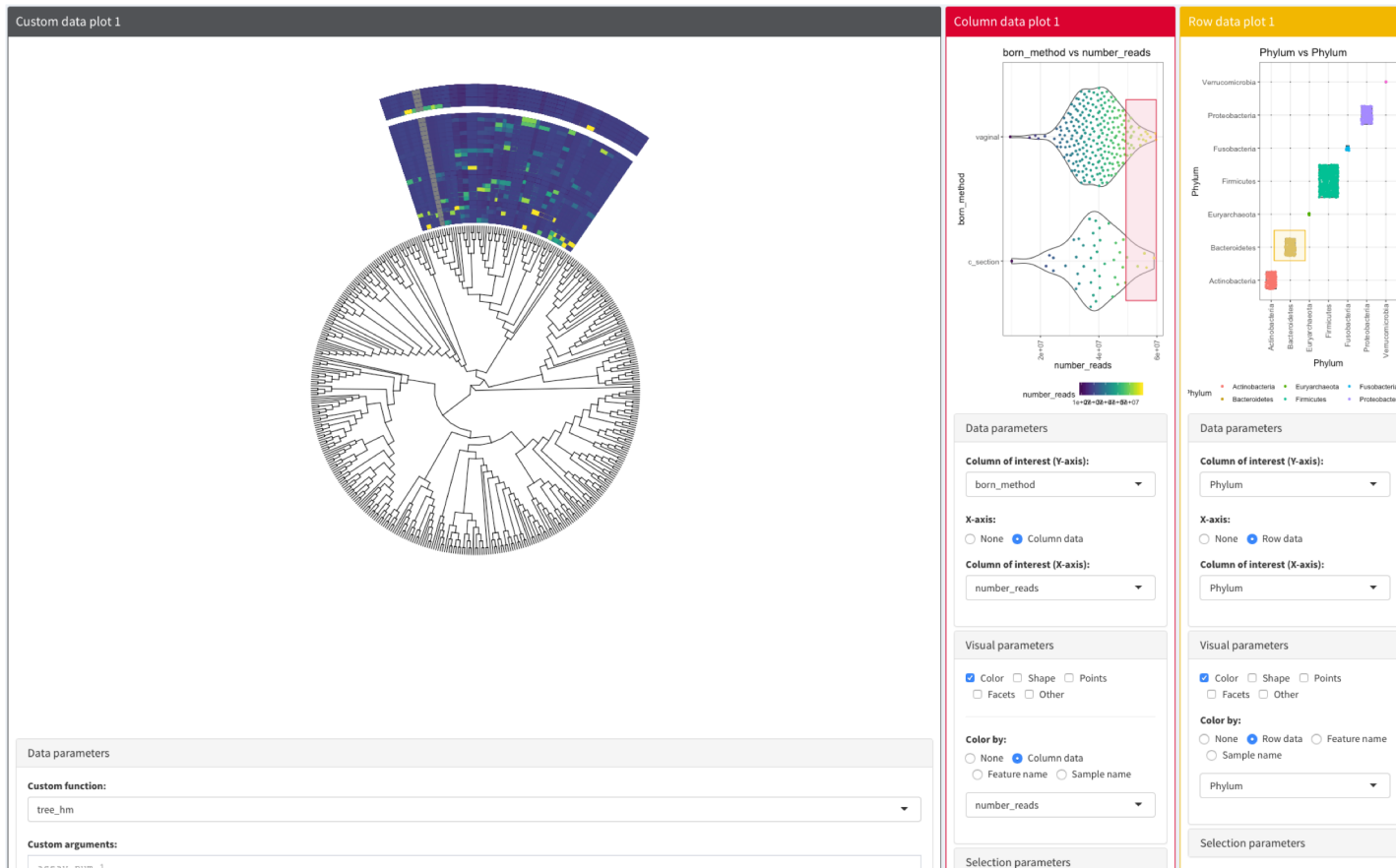
Data parameters

Visual parameters

Selection parameters

Receiving y-axis from Row statistics table 2

> modeTree(tse)

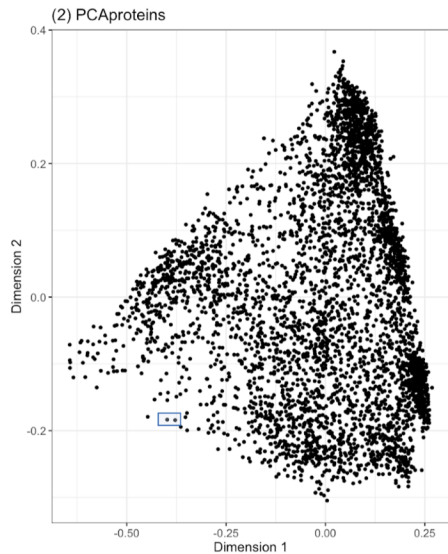


> modeProteomicsPCA(proteins, peptides)

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Reduced dimension plot 1



Data parameters

Visual parameters

Selection parameters

Custom data plot 1



Data parameters

Selection parameters

Receiving selection from *Reduced dimension plot 1*

Column statistics table 1

Show entries Search:

ProteinGroupAccessions ptype

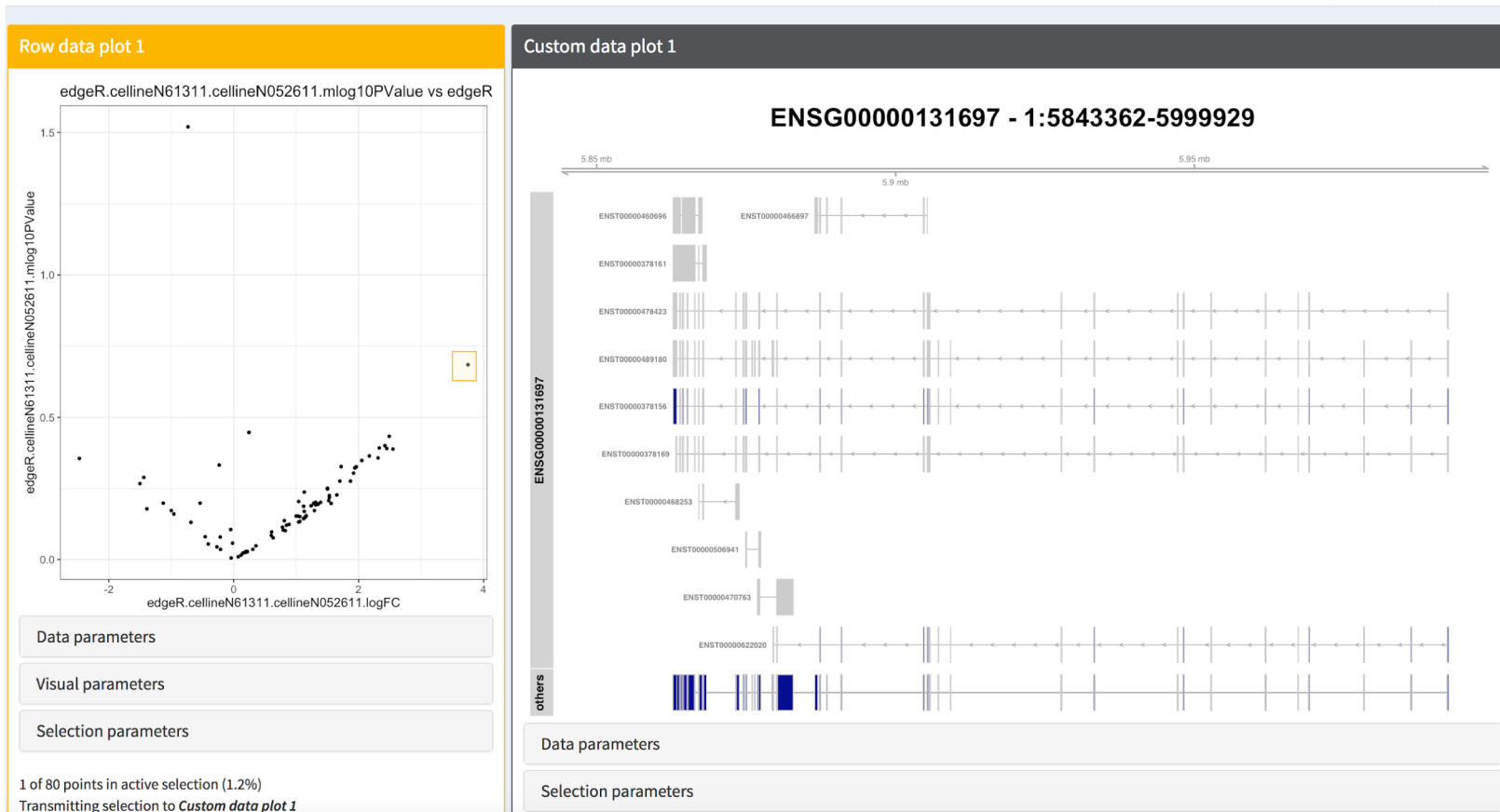
All All

A2A432	A2A432	protein
A2A4P0	A2A4P0	protein
A2A5R2	A2A5R2	protein
A2A6Q5-3	A2A6Q5-3	protein
A2A791	A2A791	protein
A2A7S8-2	A2A7S8-2	protein
A2A8L5	A2A8L5	protein
A2A8Z1	A2A8Z1	protein
A2AAJ9-2	A2AAJ9-2	protein
A2AF47	A2AF47	protein

Showing 1 to 10 of 31,072 entries

Previous 2 3 4 5 ... 3108 Next

> modeGviz(se)



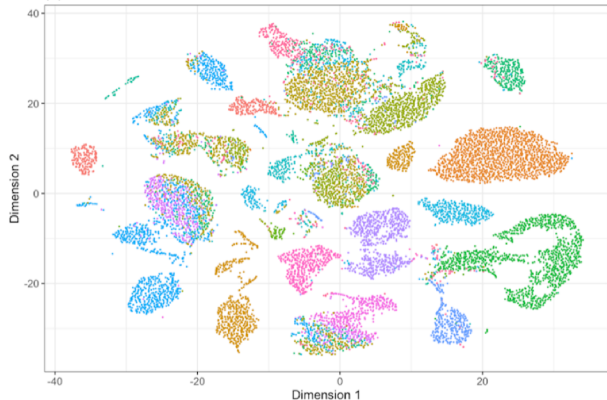
> modeSneakPeek(sce)

iSEE v1.3.8 - Tabula Muris smartseq data



Reduced dimension plot 1

(2) TSNE



Data parameters

Visual parameters

Selection parameters

Row statistics table 1

Show entries

Search:

ID	Symbol	ENSEMBL
<input type="button" value="All"/>	<input type="button" value="All"/>	<input type="button" value="All"/>
0610005C13Rik	0610005C13Rik	0610005C13Rik
0610007C21Rik	0610007C21Rik	0610007C21Rik
0610007L01Rik	0610007L01Rik	0610007L01Rik
0610007N19Rik	0610007N19Rik	0610007N19Rik
0610007P08Rik	0610007P08Rik	0610007P08Rik
0610007P14Rik	0610007P14Rik	0610007P14Rik
0610007P22Rik	0610007P22Rik	0610007P22Rik
0610008F07Rik	0610008F07Rik	0610008F07Rik
0610009B14Rik	0610009B14Rik	0610009B14Rik
0610009B22Rik	0610009B22Rik	0610009B22Rik
		ENSEMBL

Showing 1 to 10 of 23,036 entries

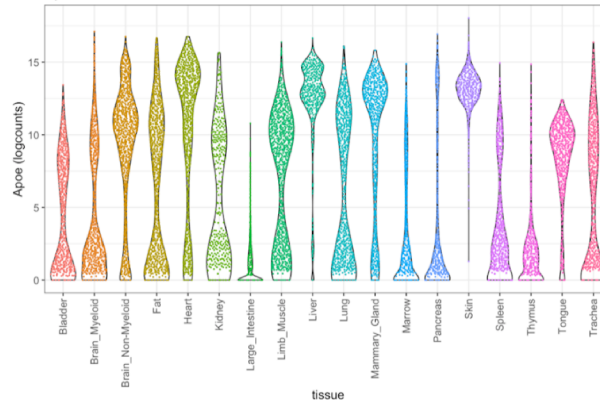
Previous 2 3 4 5 ... 2304

Next

Selection parameters

Feature assay plot 1

Apoe vs tissue



Data parameters

Visual parameters

Selection parameters

Want to contribute?

#iSEE slack channel

<https://github.com/csoneson/iSEEu>

iSEE 2.0 is coming

iSEE version 2.0

A & K

New architecture

Each panel type is now an S4 class:

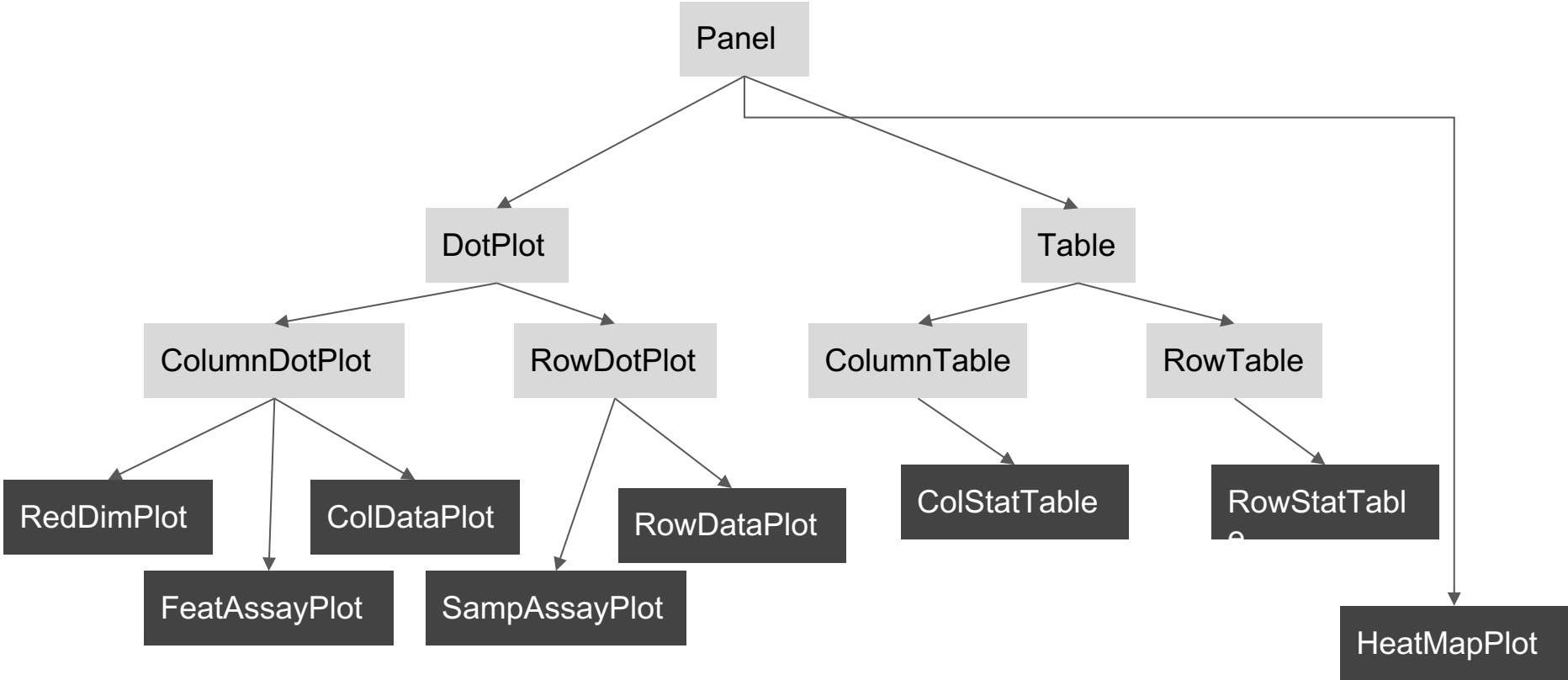
- Natural validity checks on input arguments
- Improved internal organization of UI, observers
- Improved efficiency during app initialization
- Easier extensibility

Tables can now transmit selections (based on search) to plots.

Plots can now transmit single choices to other plots (e.g., color by selected point).

Fun loading spinner.

Current S4 class hierarchy



Flexible extensibility

- Inherit from existing concrete class and specialize specific methods (if desired).
- Inherit from virtual class and write methods from scratch.
- Add/overwrite UI elements, observers for native integration into shiny.

1.7.2

