

# Biological Data Visualisation with R and Bioconductor

Zuguang Gu / 2024-07-18

# R package development

circlize	simplifyEnrichment	BioMartGOGeneSets
ComplexHeatmap	cola	pkgndep
spiralize	rGREAT	bsub
InteractiveComplexHeatmap	simona	GlobalOptions
EnrichedHeatmap	CePa	GetoptLong
HilbertCurve	GeneSummary	epik
gtrellis	UniProtKeywords	More ...

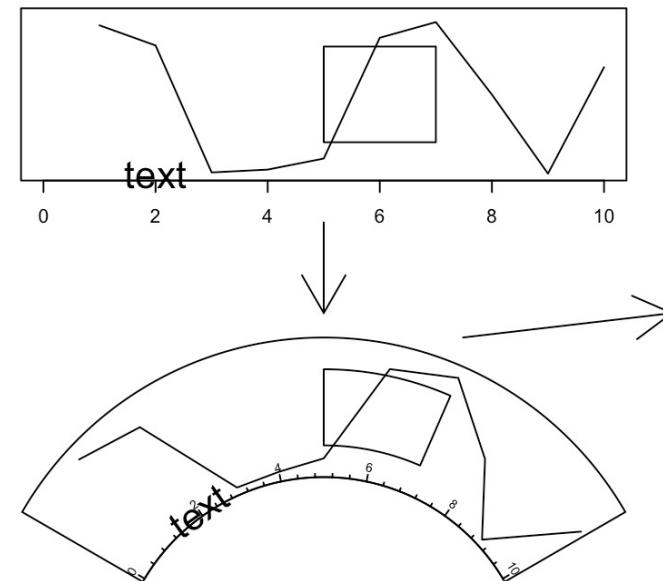
# R package development

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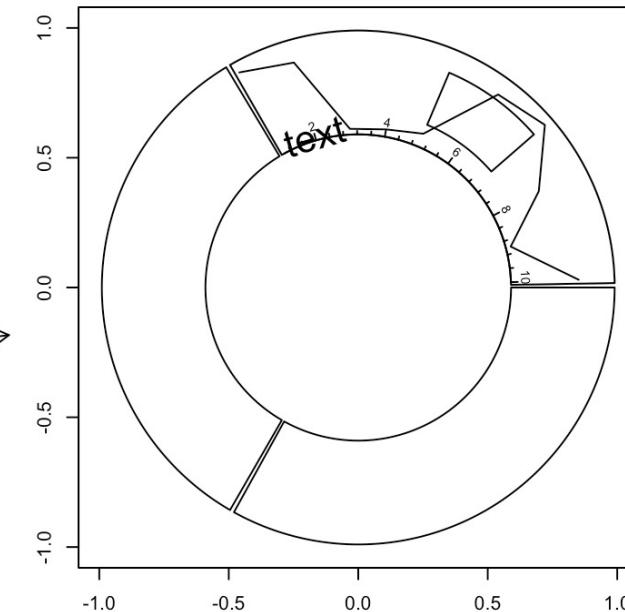
# circlize/spiralize/HilbertCurve

Transformation between several coordinate systems

Users are here



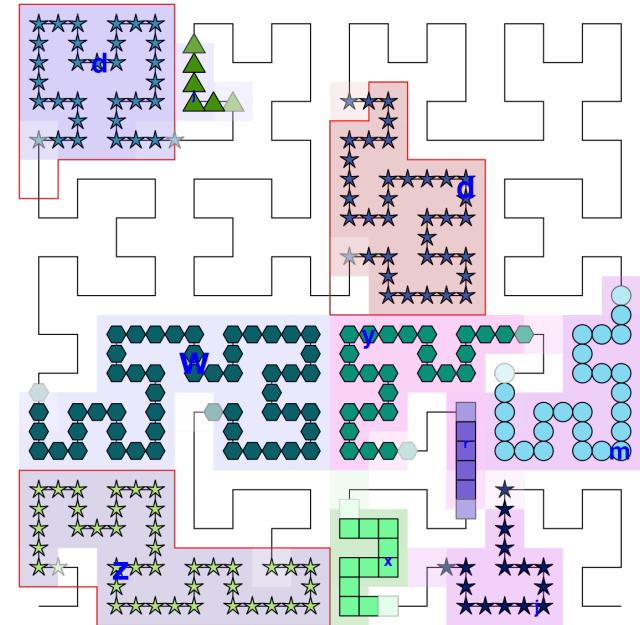
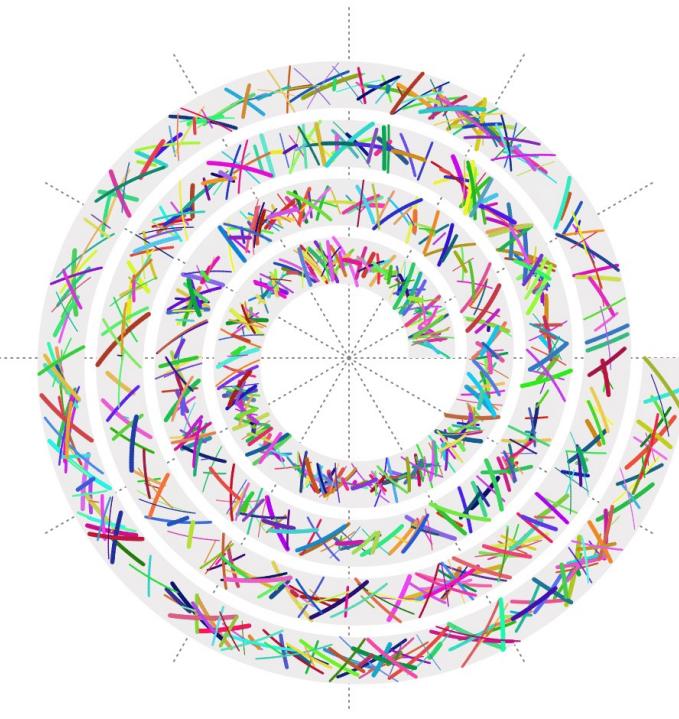
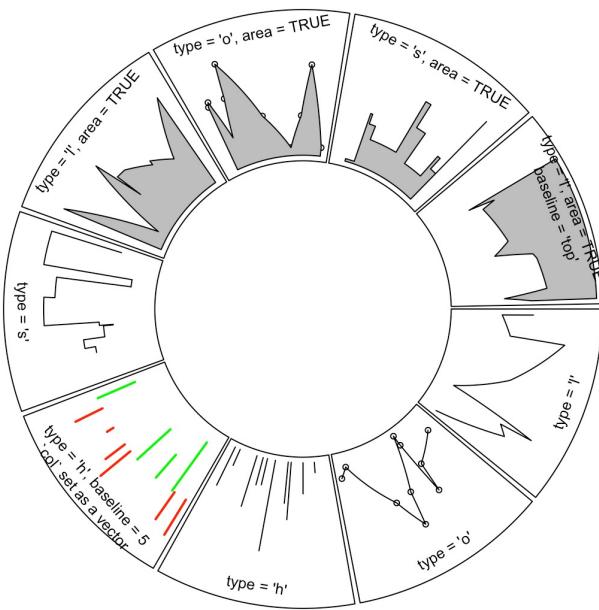
Internally transformed

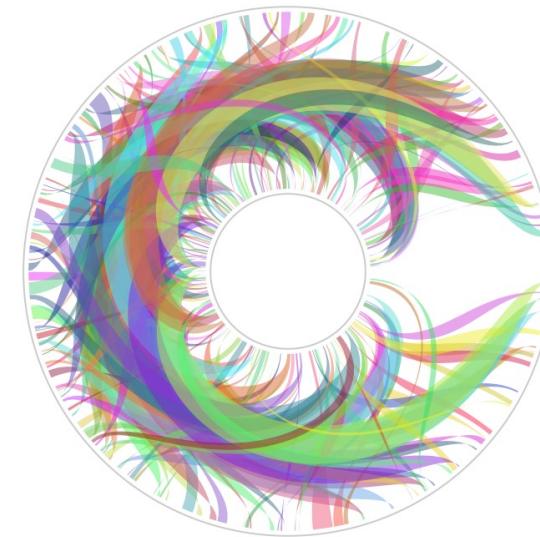
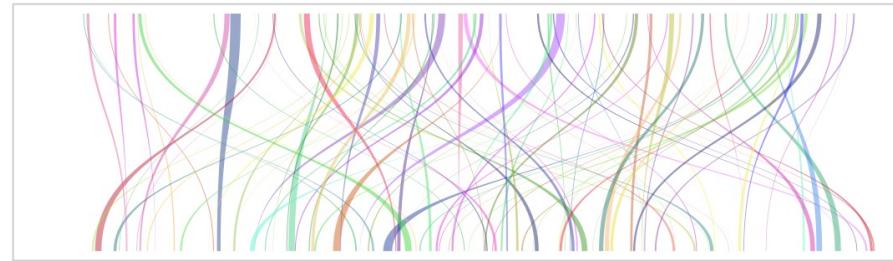
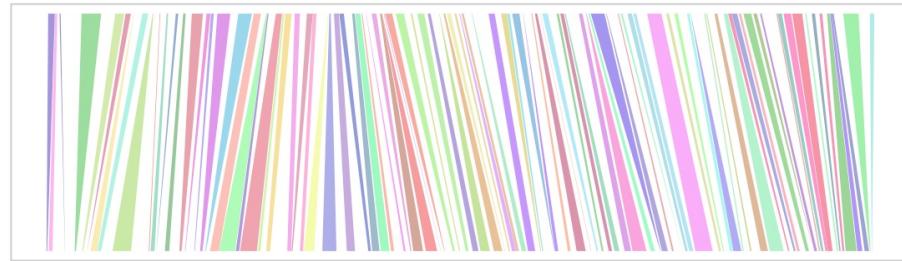


What users see

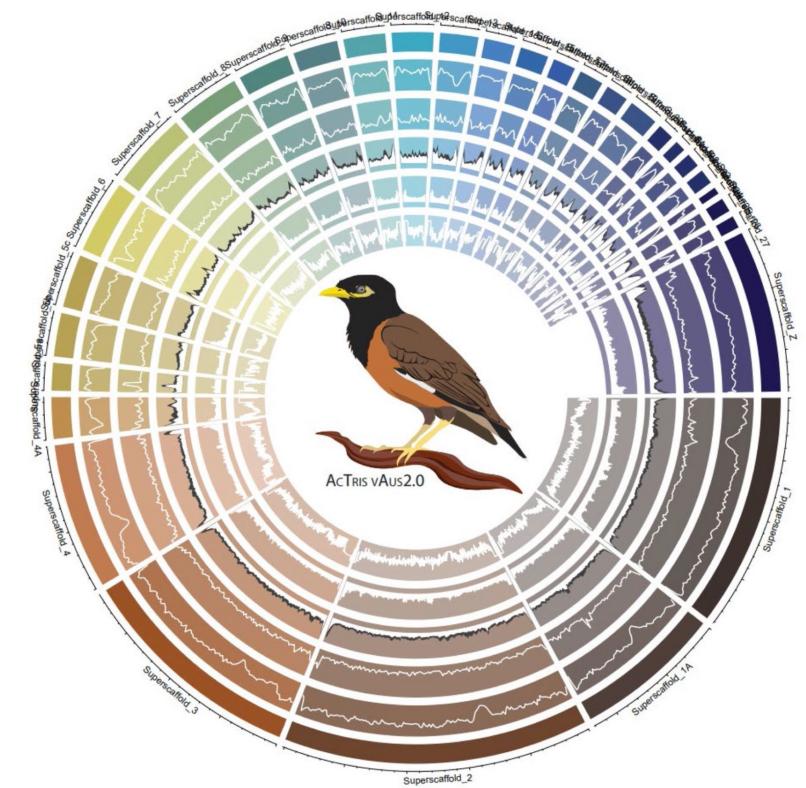
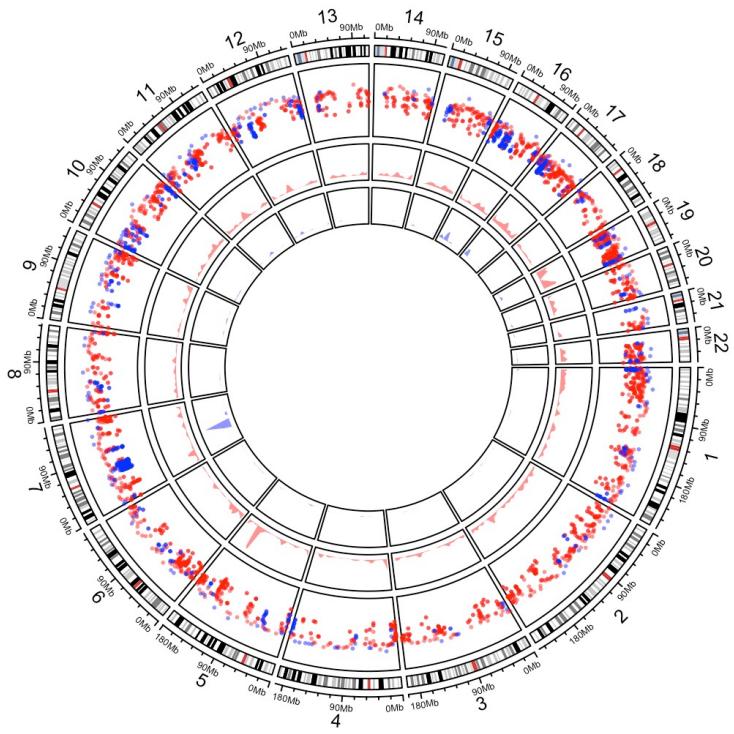
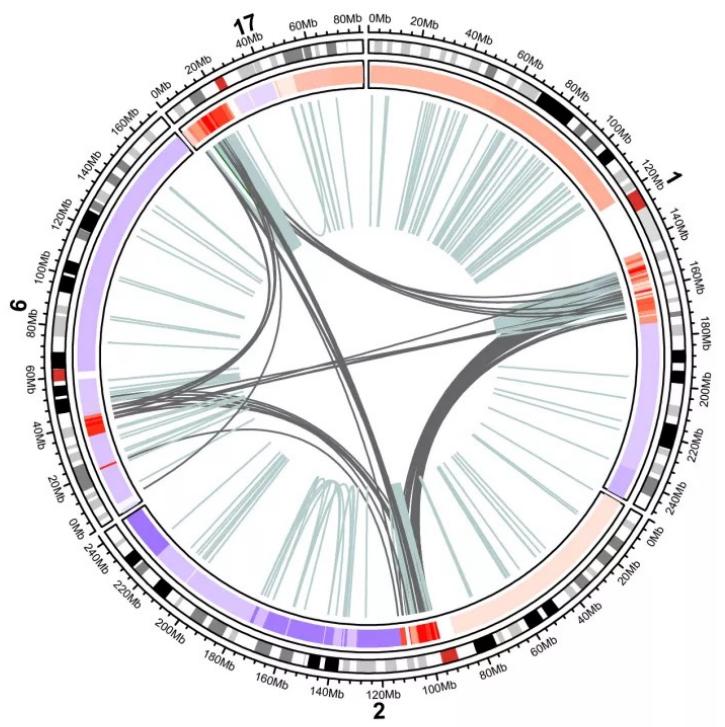
# Low-level graphics

- `circlize/spiralize/HilbertCurve` support almost all low-level graphics

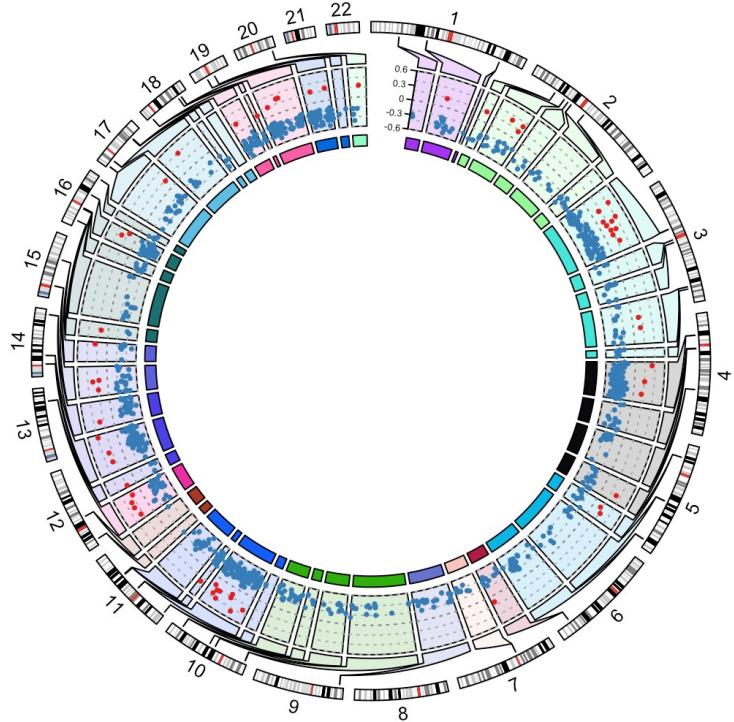
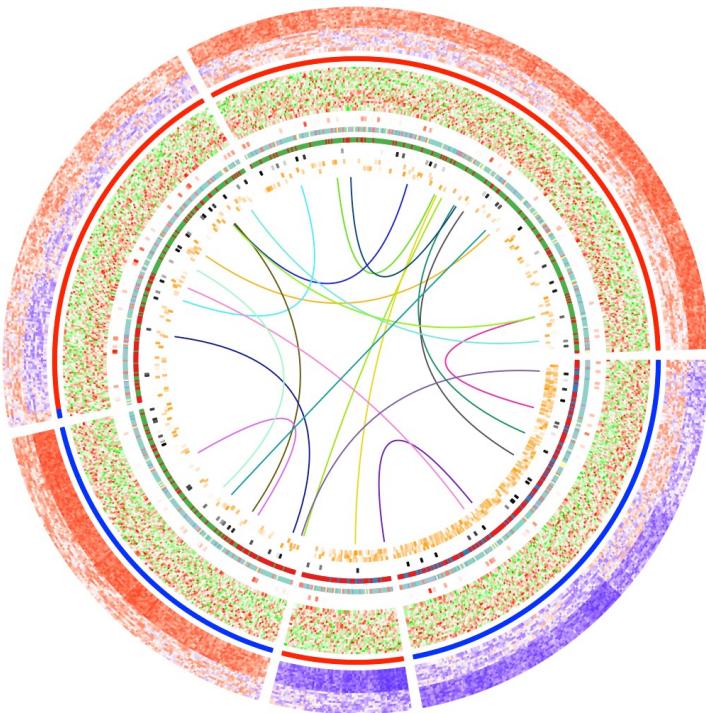
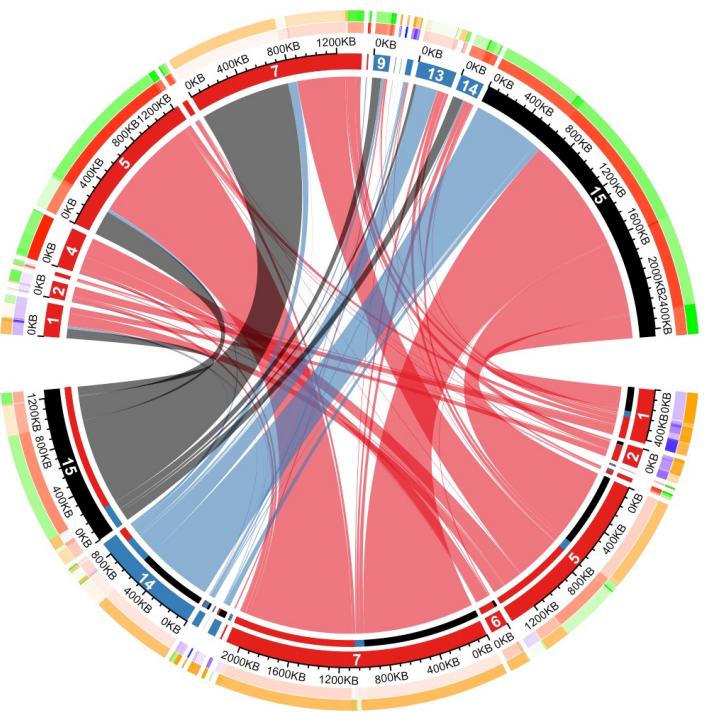




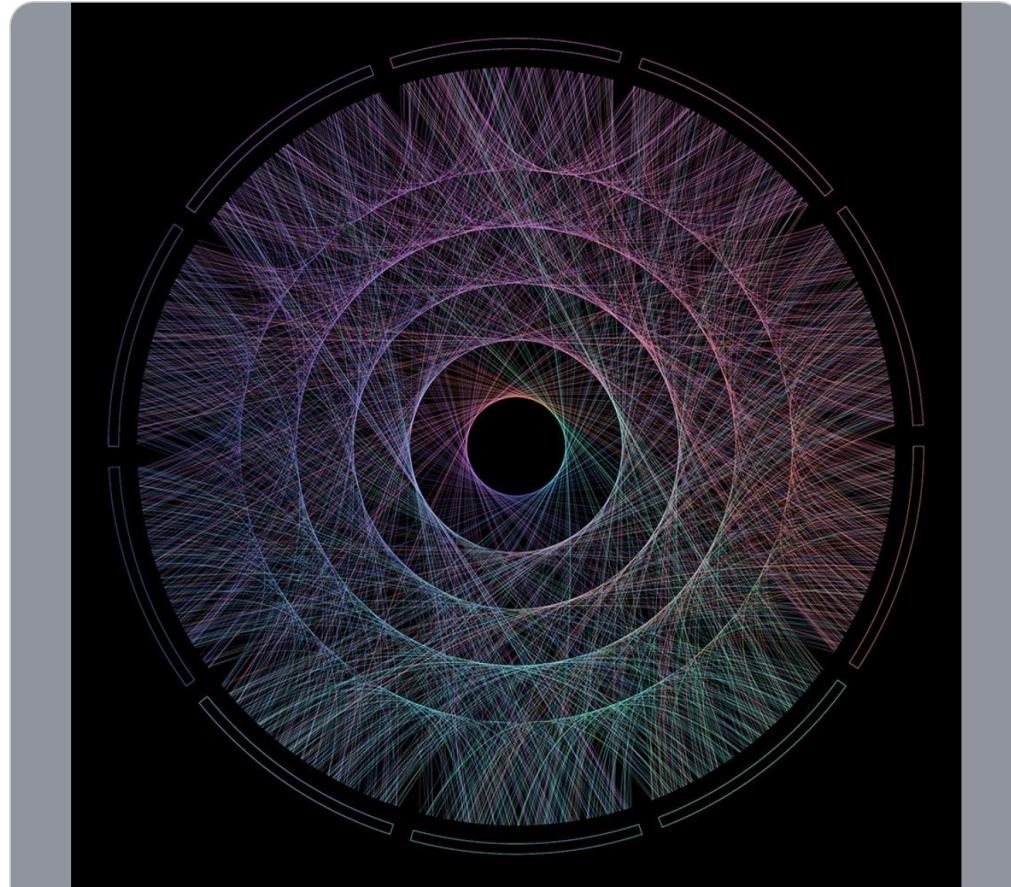
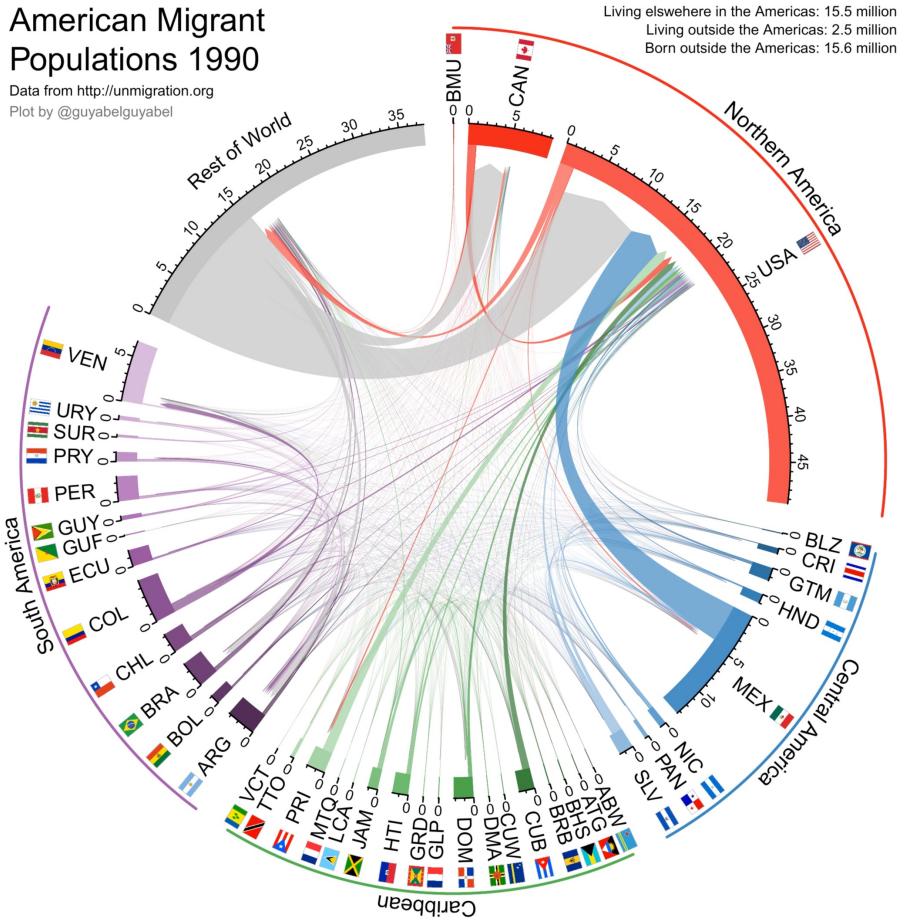
# circlize



# circlize



# circlize



Merkbar

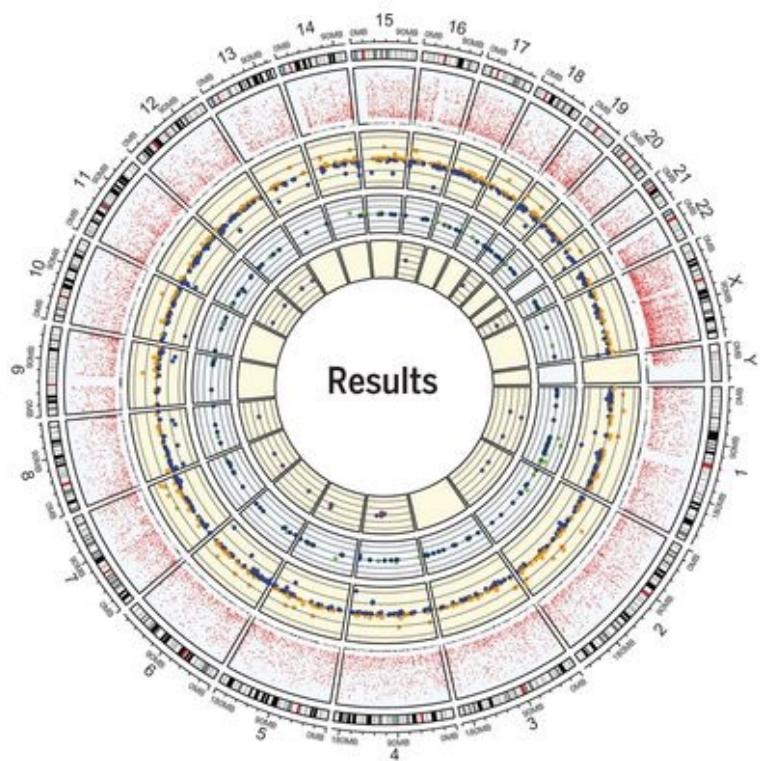
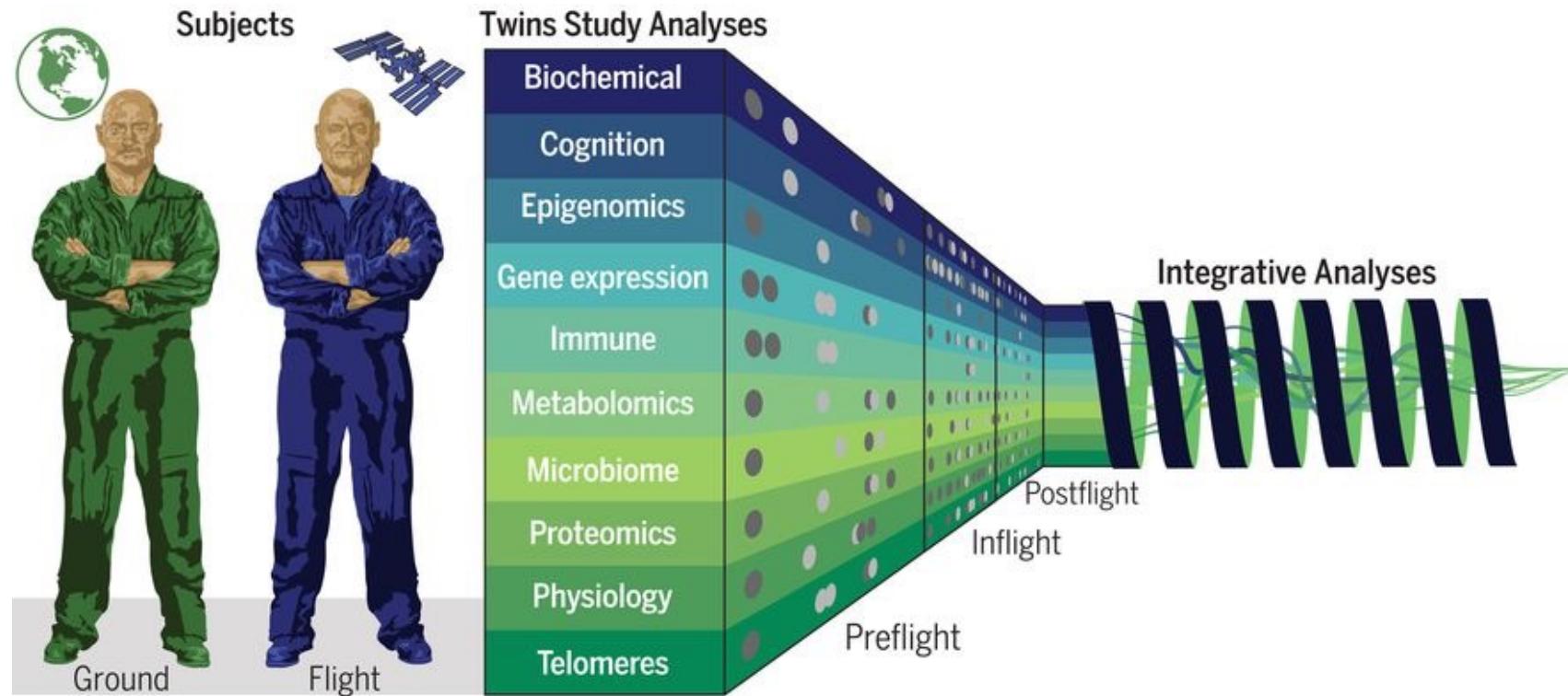
2015年1月31日 · ①

We are extremely proud to present our new EP 'Phi' - now available on Spotify, iTunes, Amazon, Wimp and TDC Play among others.

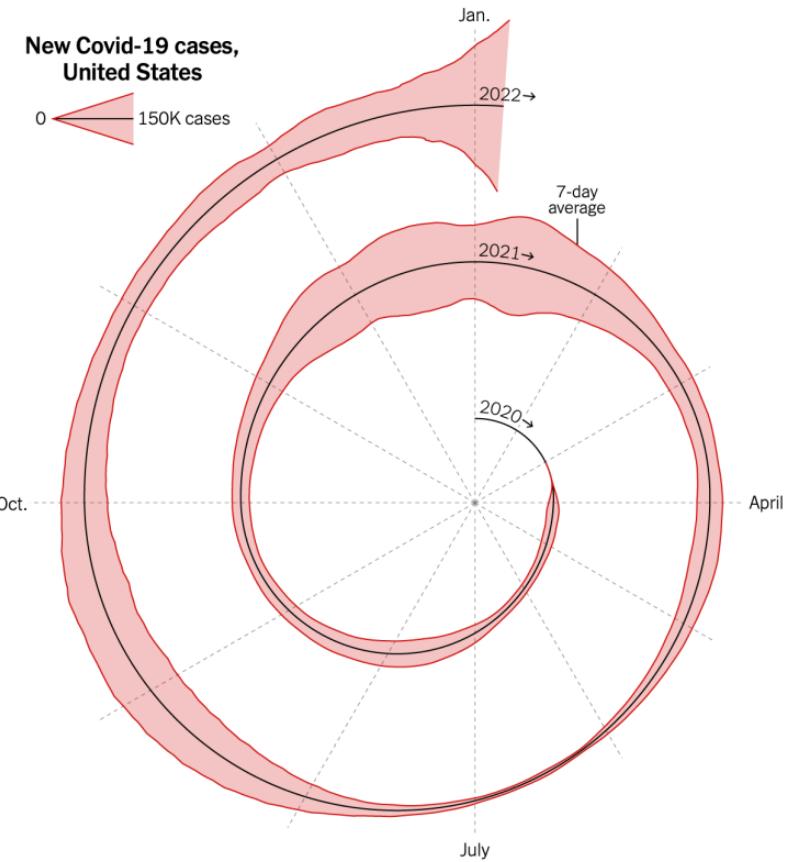
Grab your headphones, close your eyes and let the journey begin 😊

**ENJOY!**

# circlize: NASA twins study



# spiralize



Spiral Graph of COVID-19 Daily Increase

Date type

confirmed

confirmed

deaths

people vaccinated

Order countries by total cases?

State

All

Order states by total cases?

Graph type:

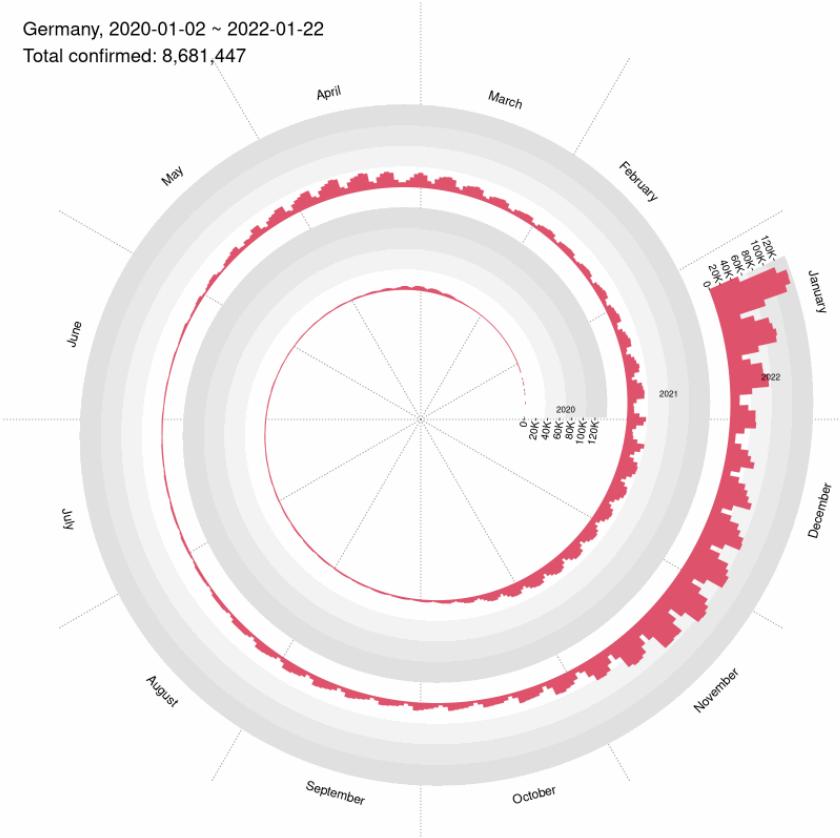
Barplot

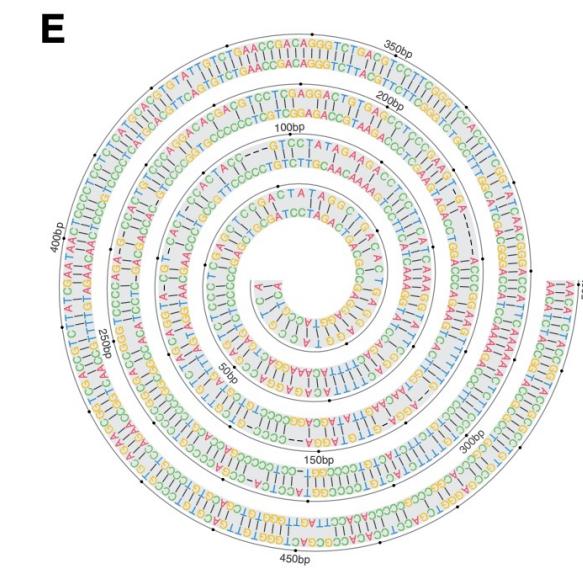
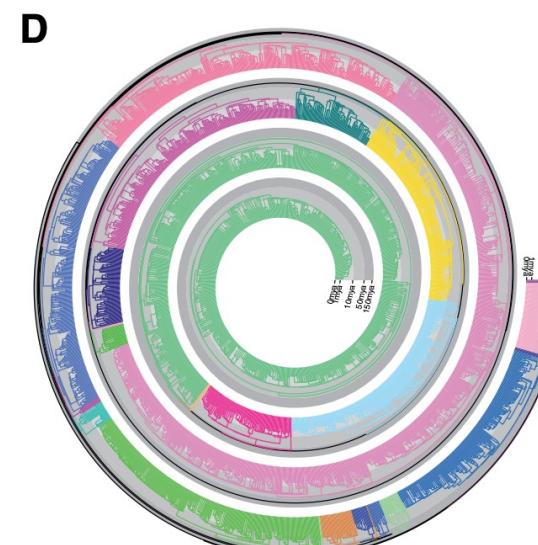
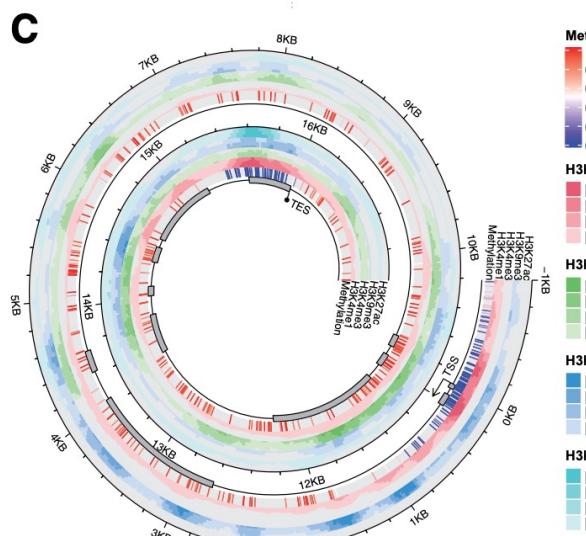
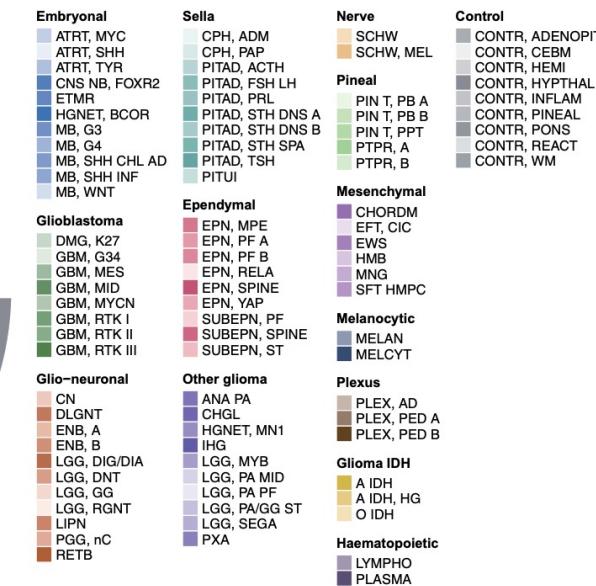
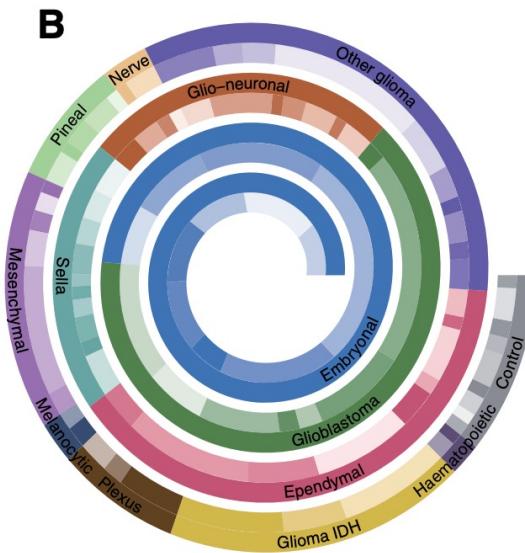
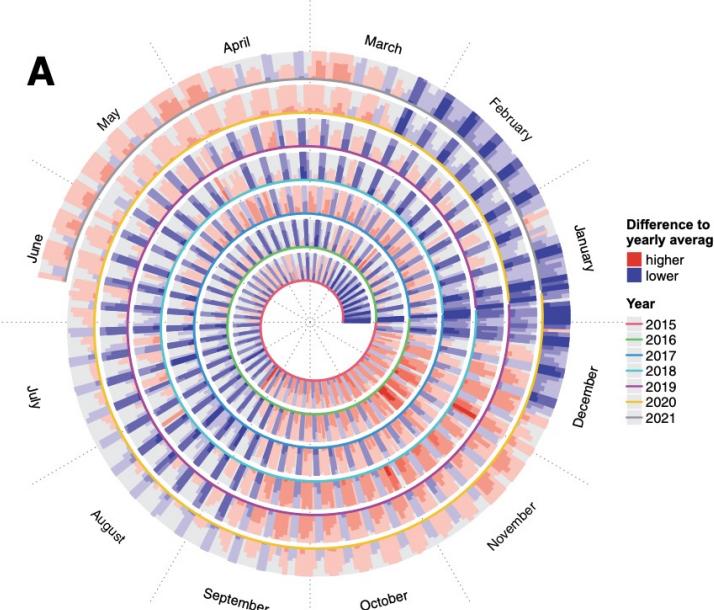
Lollipop chart

Smooth by averaging neighbouring 7 days?

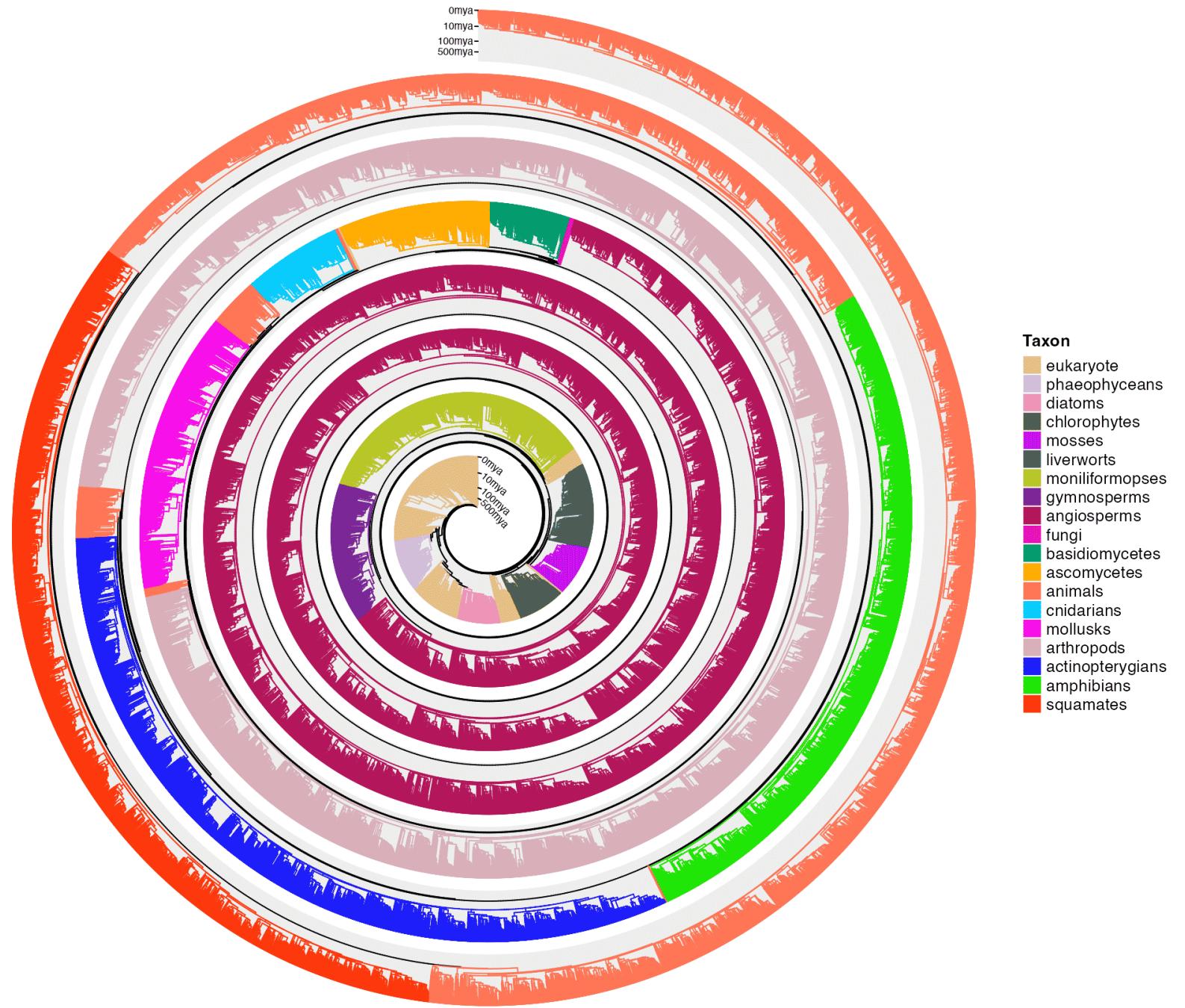
Compare to the average of current year? Values on y-axis are calculated as  $(x - \text{yearly\_mean})/\text{yearly\_mean}$ .

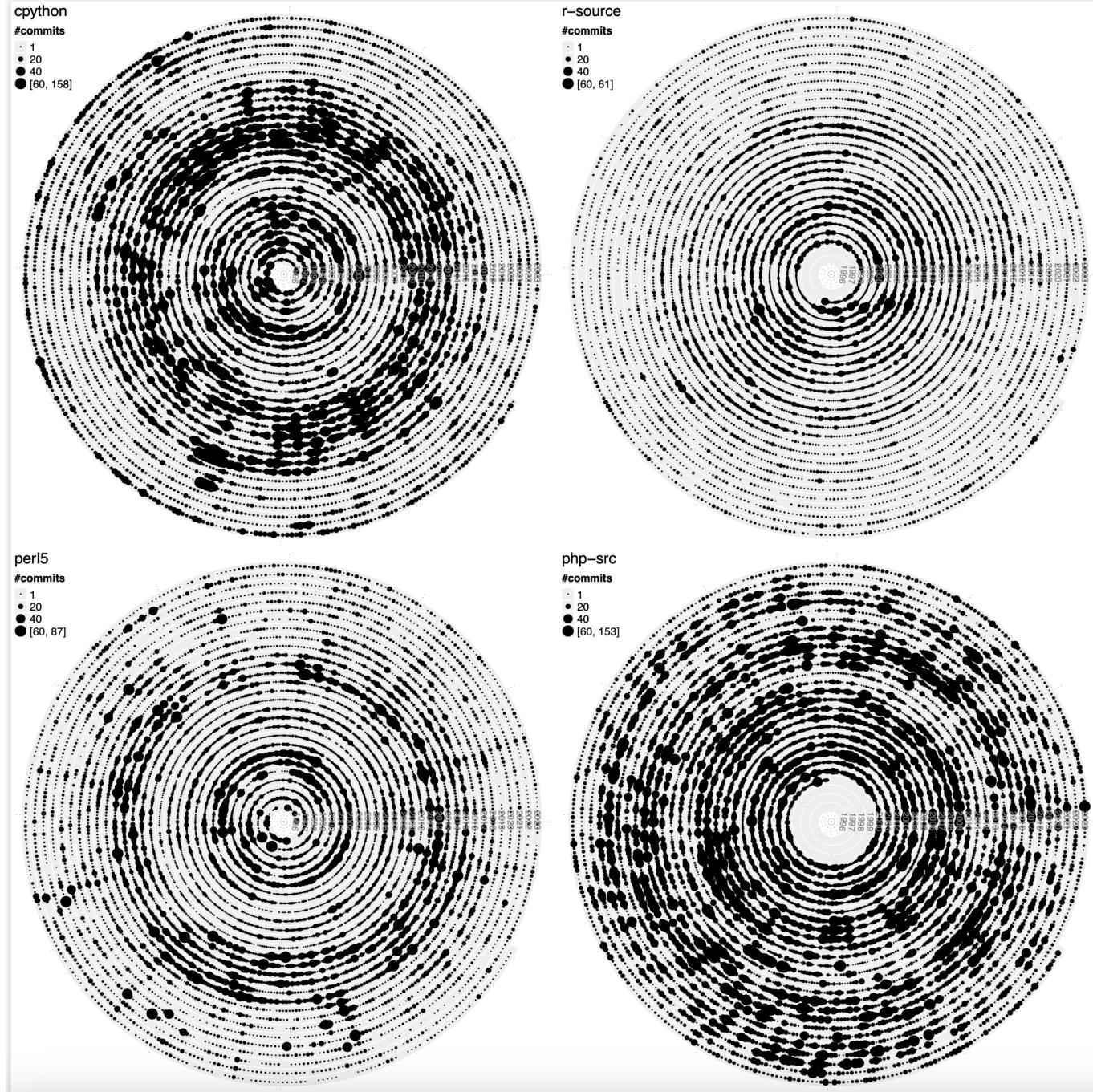
Graph made by [spiralize](#) package. Source code of the app is available at [here](#).



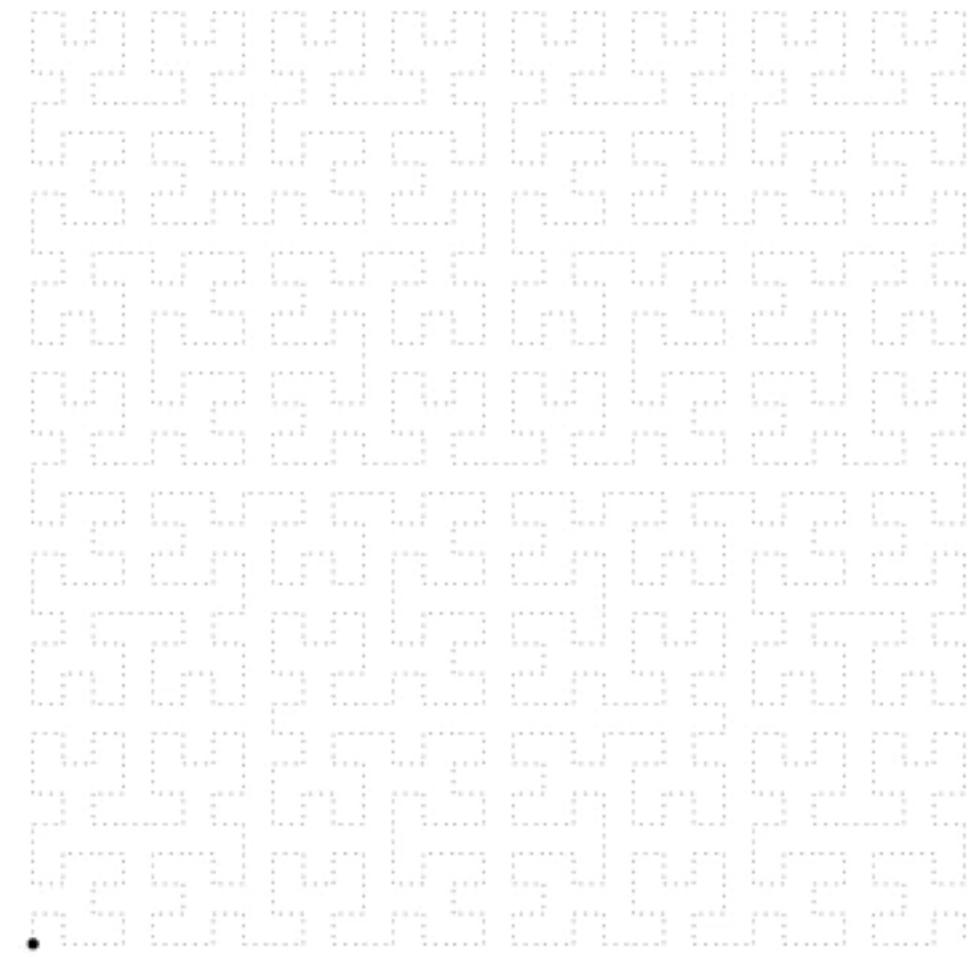
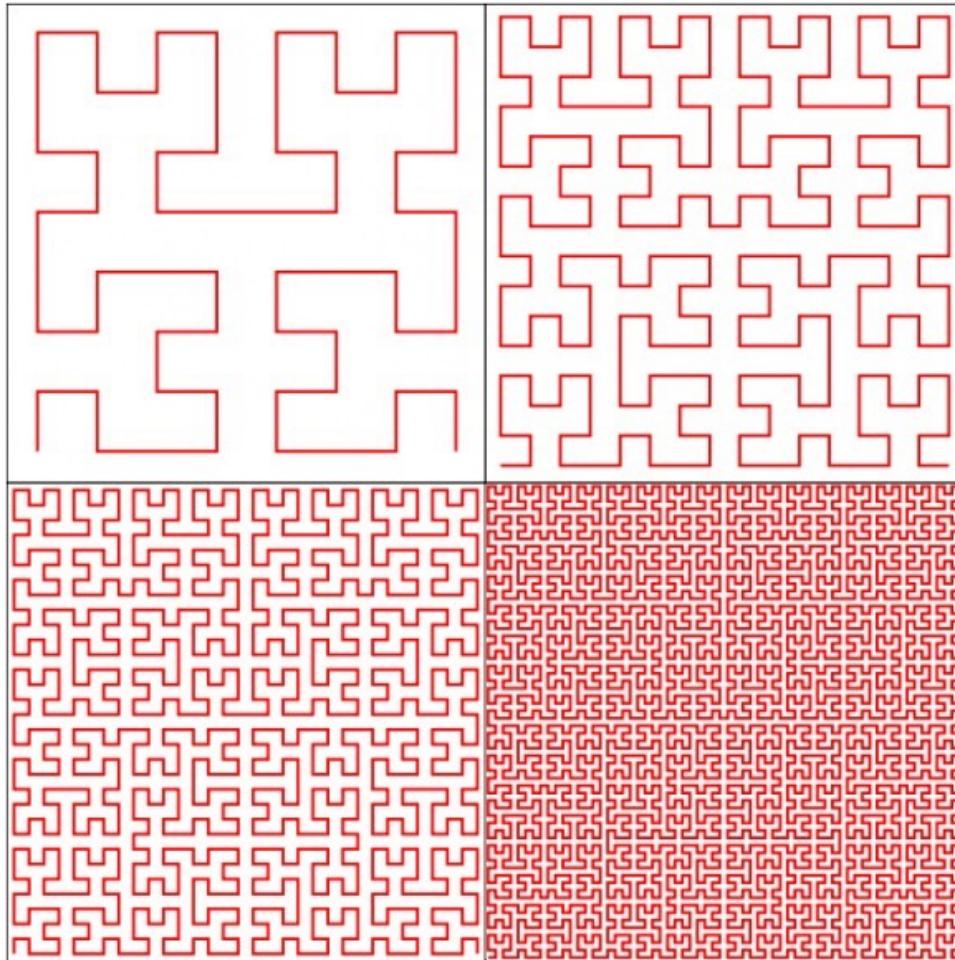


- 50K species

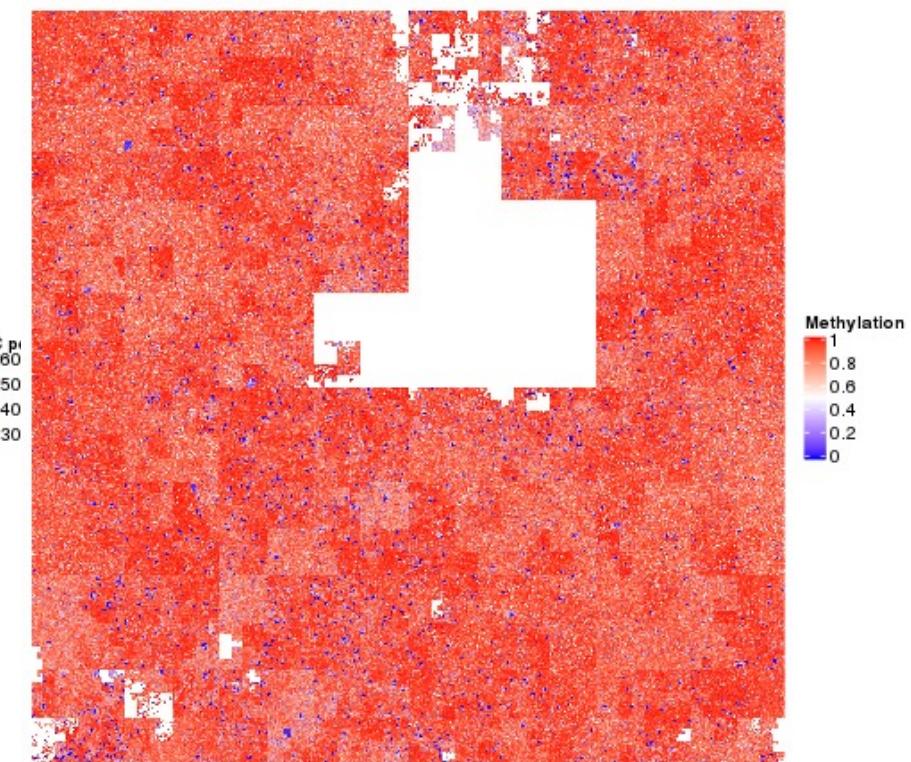
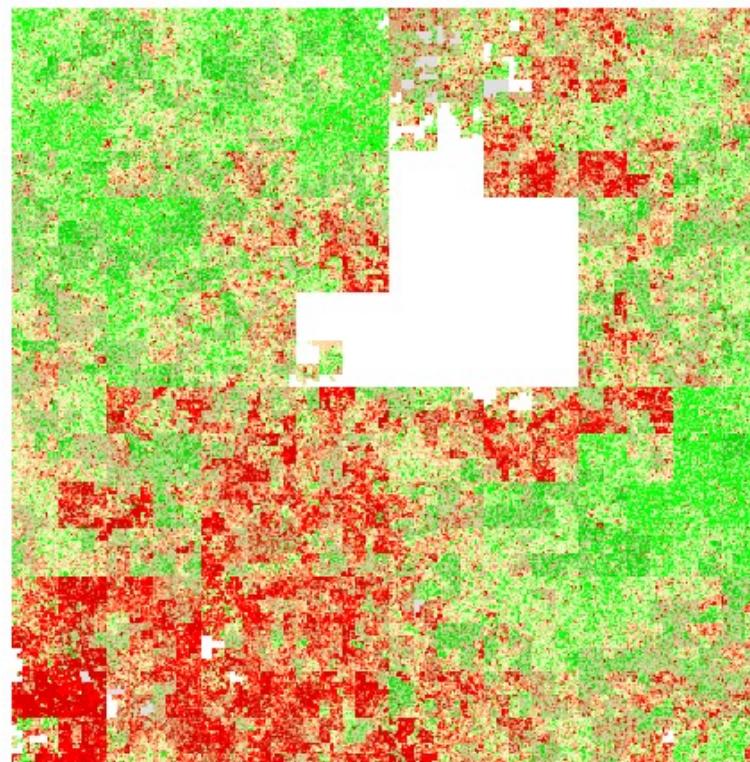
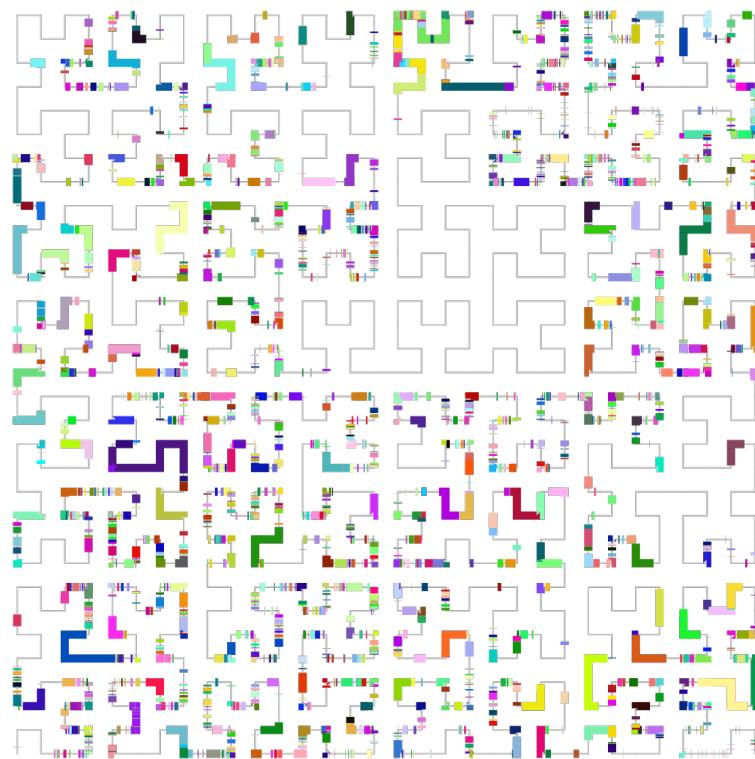




# HilbertCurve

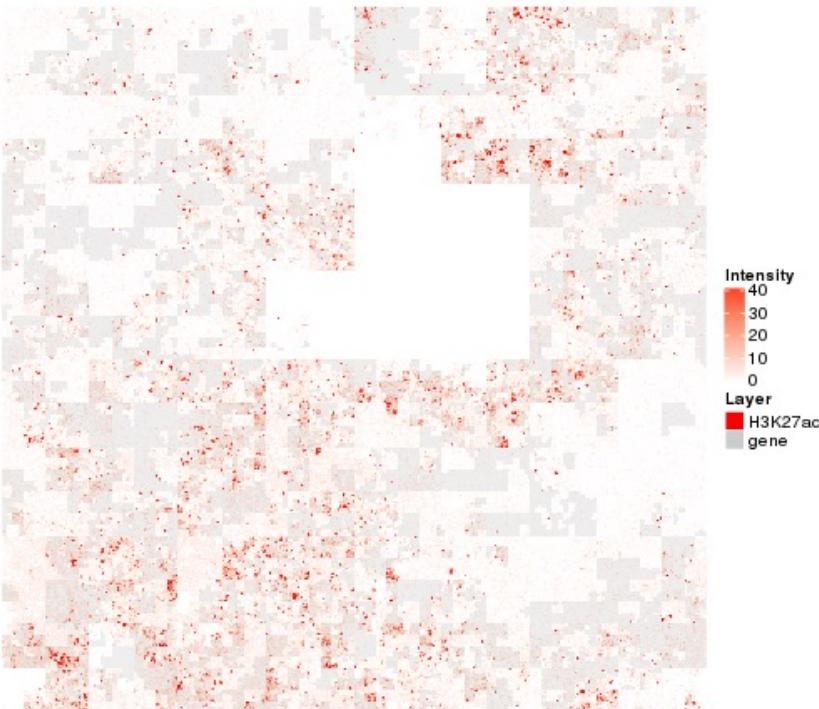


# HilbertCurve

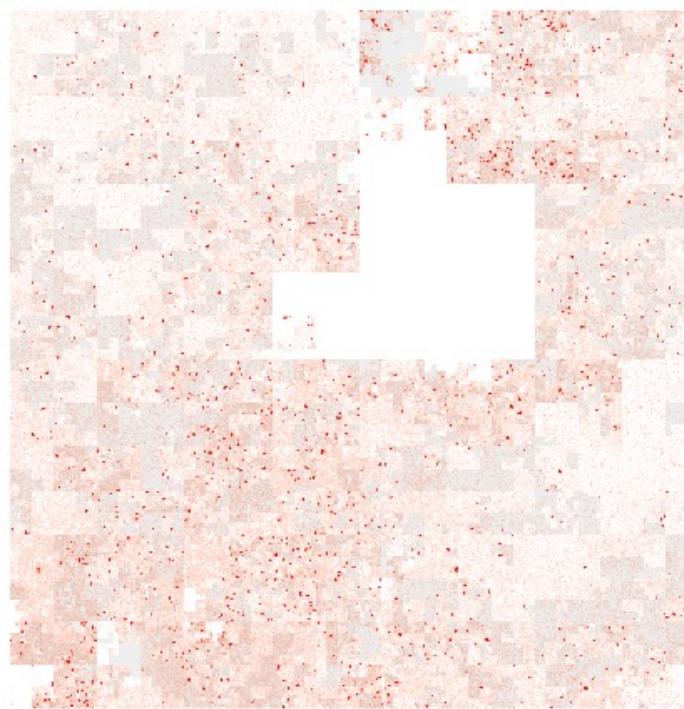


# HilbertCurve

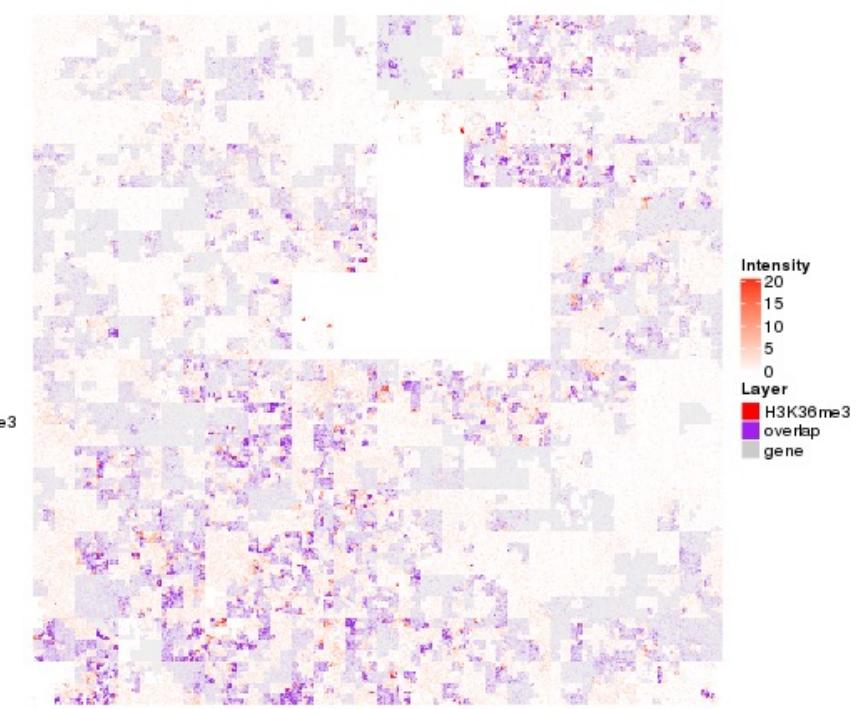
Intensity of H3K27ac mark on chr1



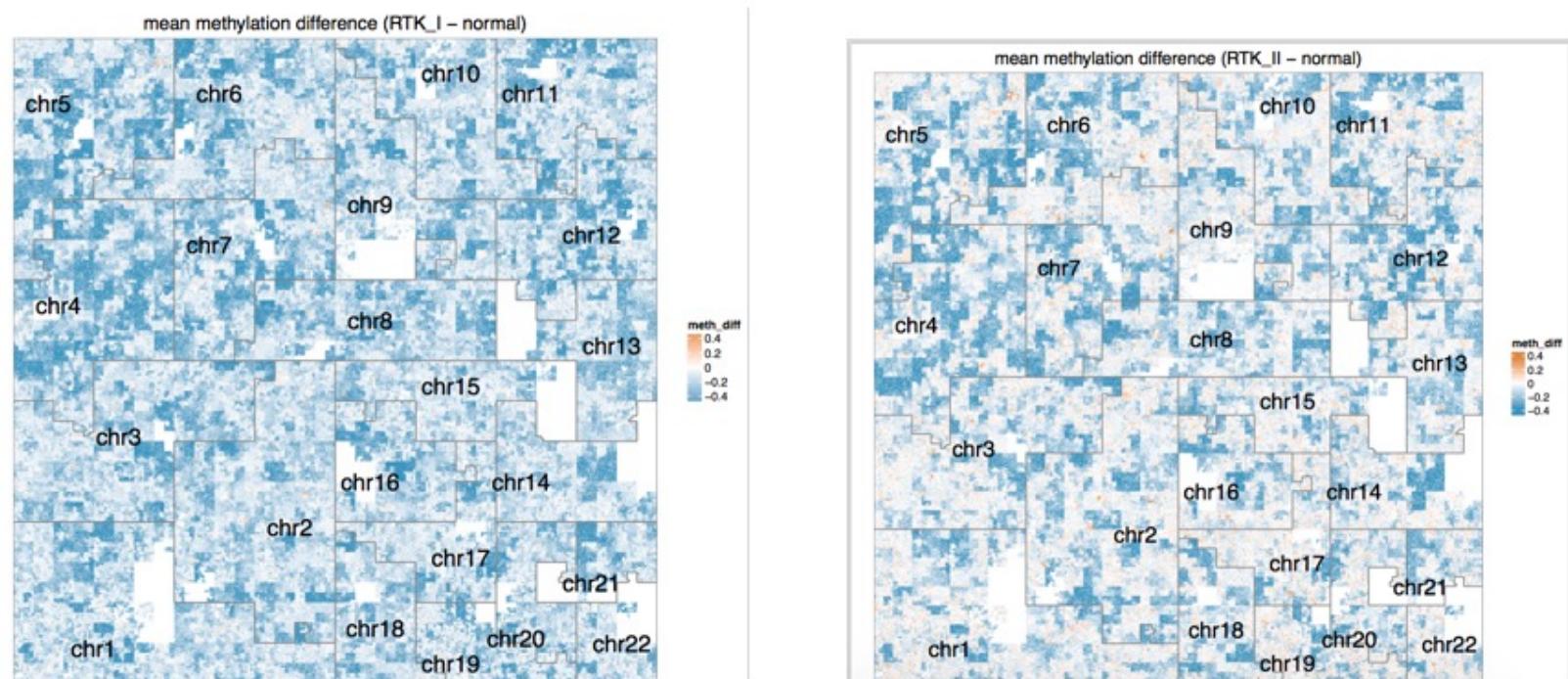
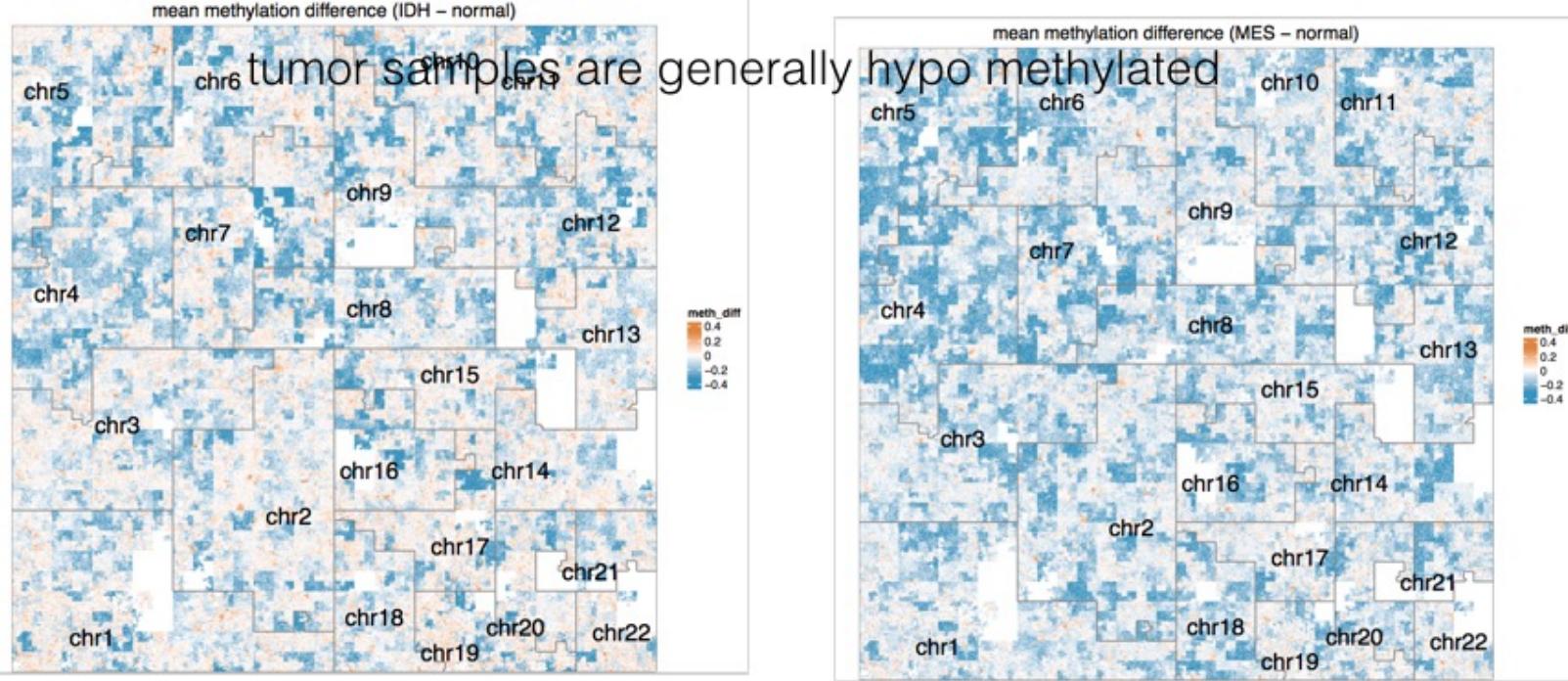
Intensity of H3K4me3 mark on chr1



Intensity of H3K36me3 mark on chr1

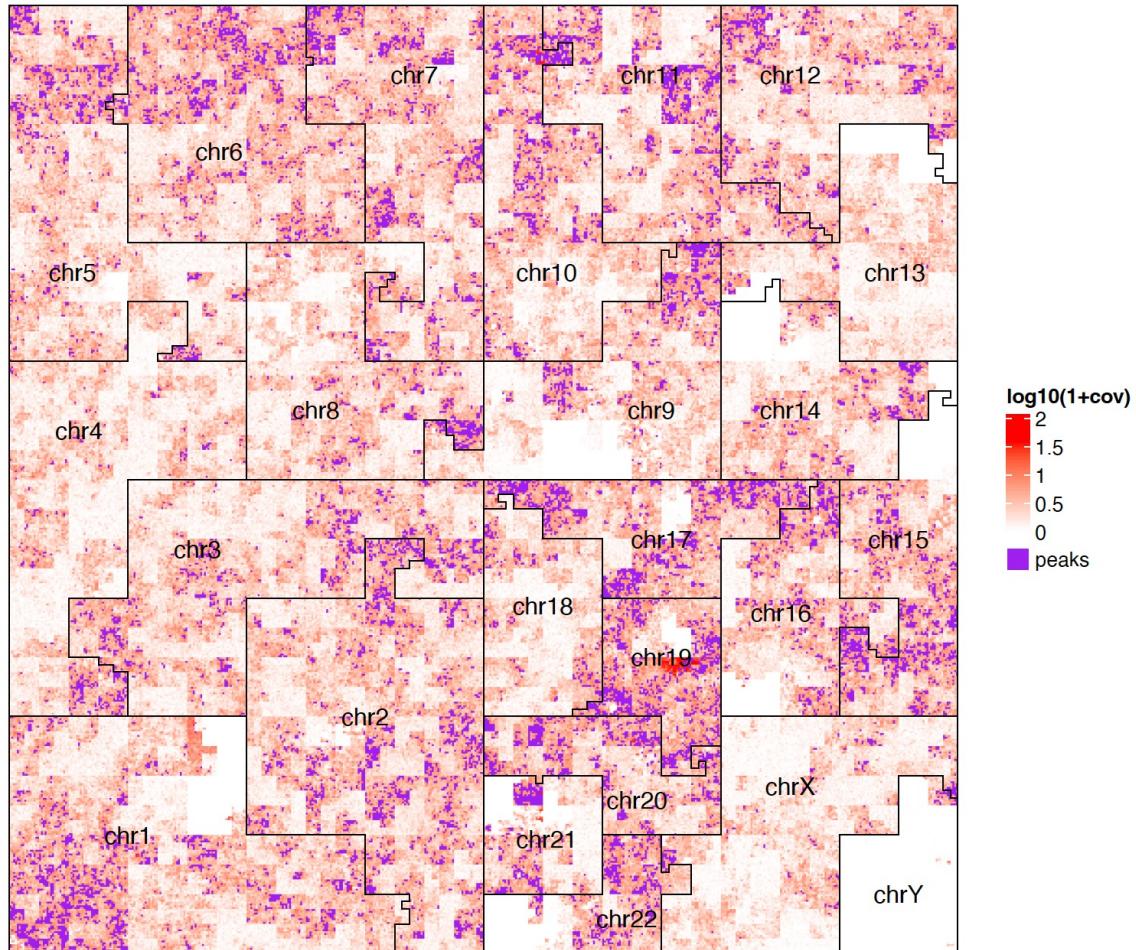


## Methylation difference

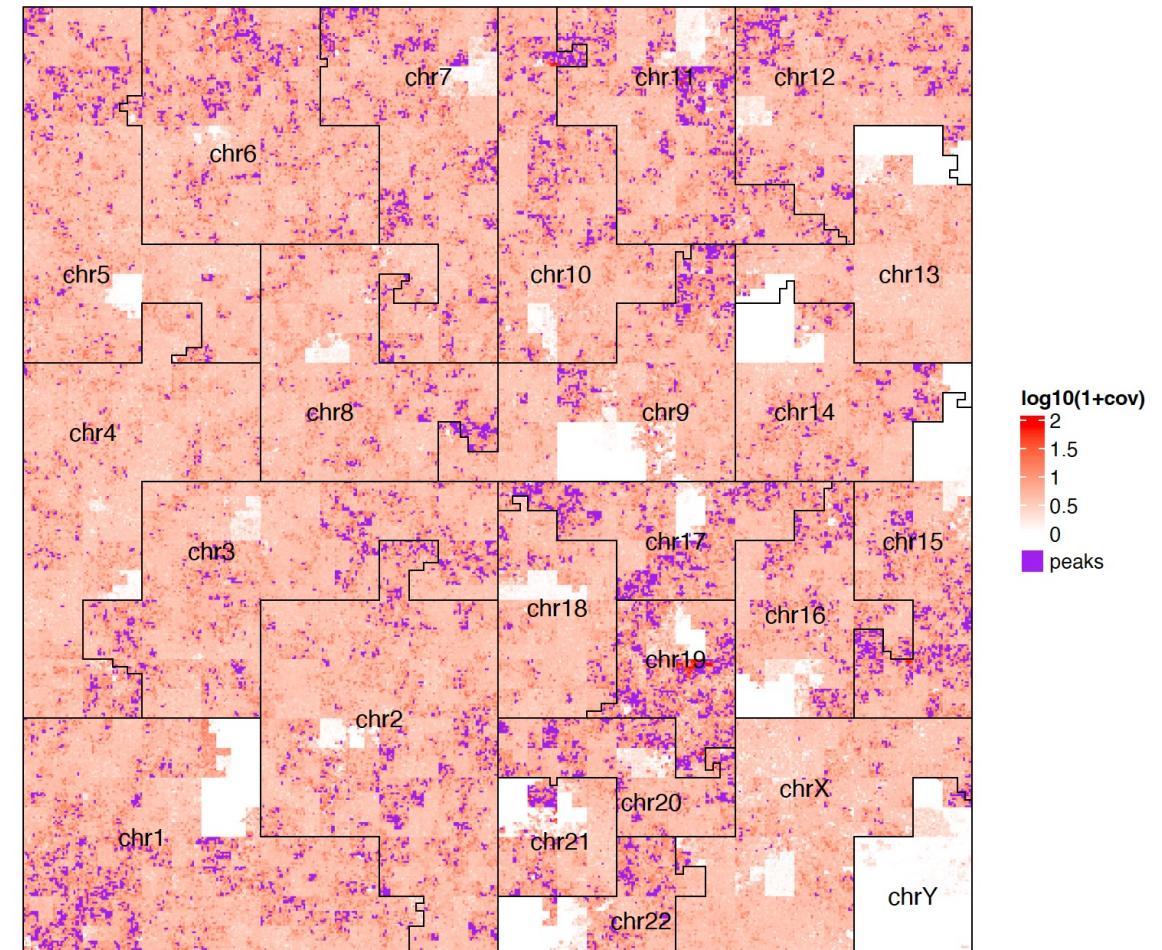


# HilbertCurve

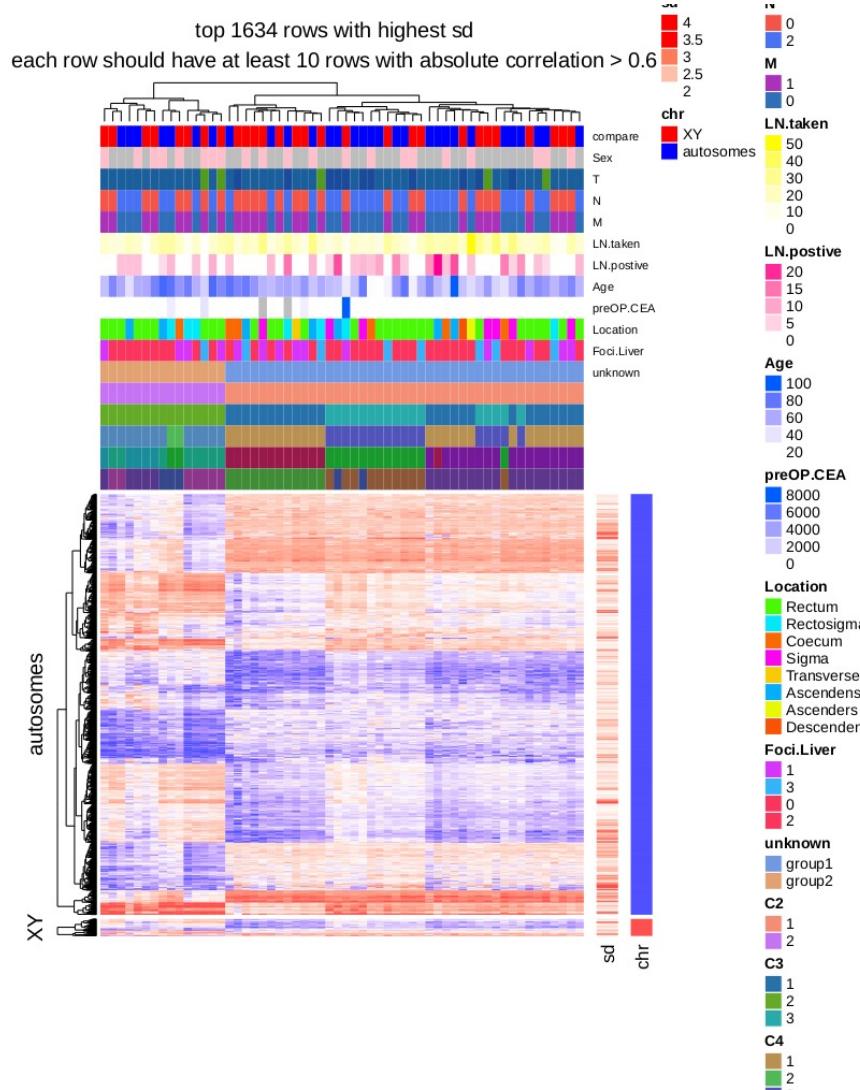
PANC-1\_A3OE\_H3K4me1\_1

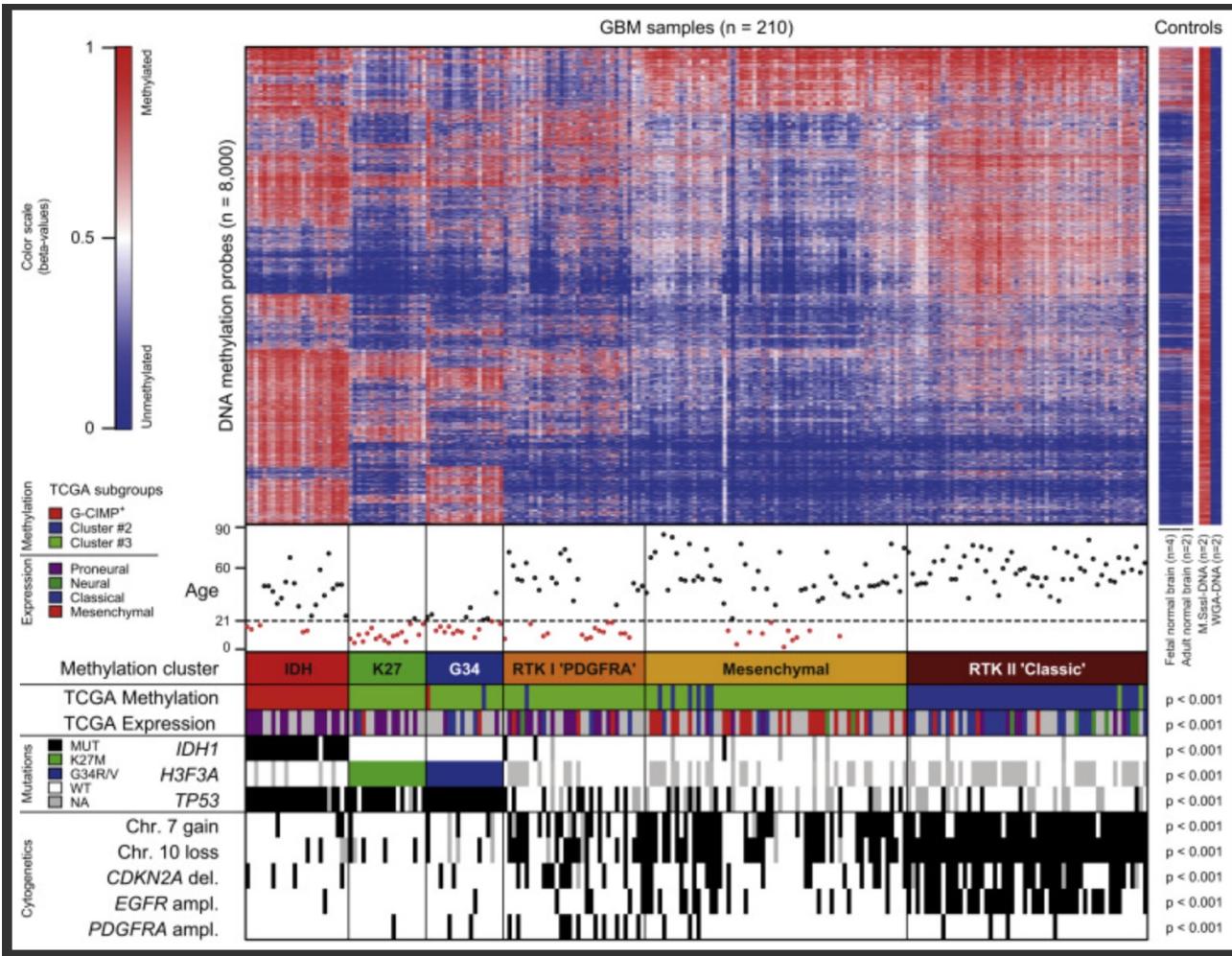
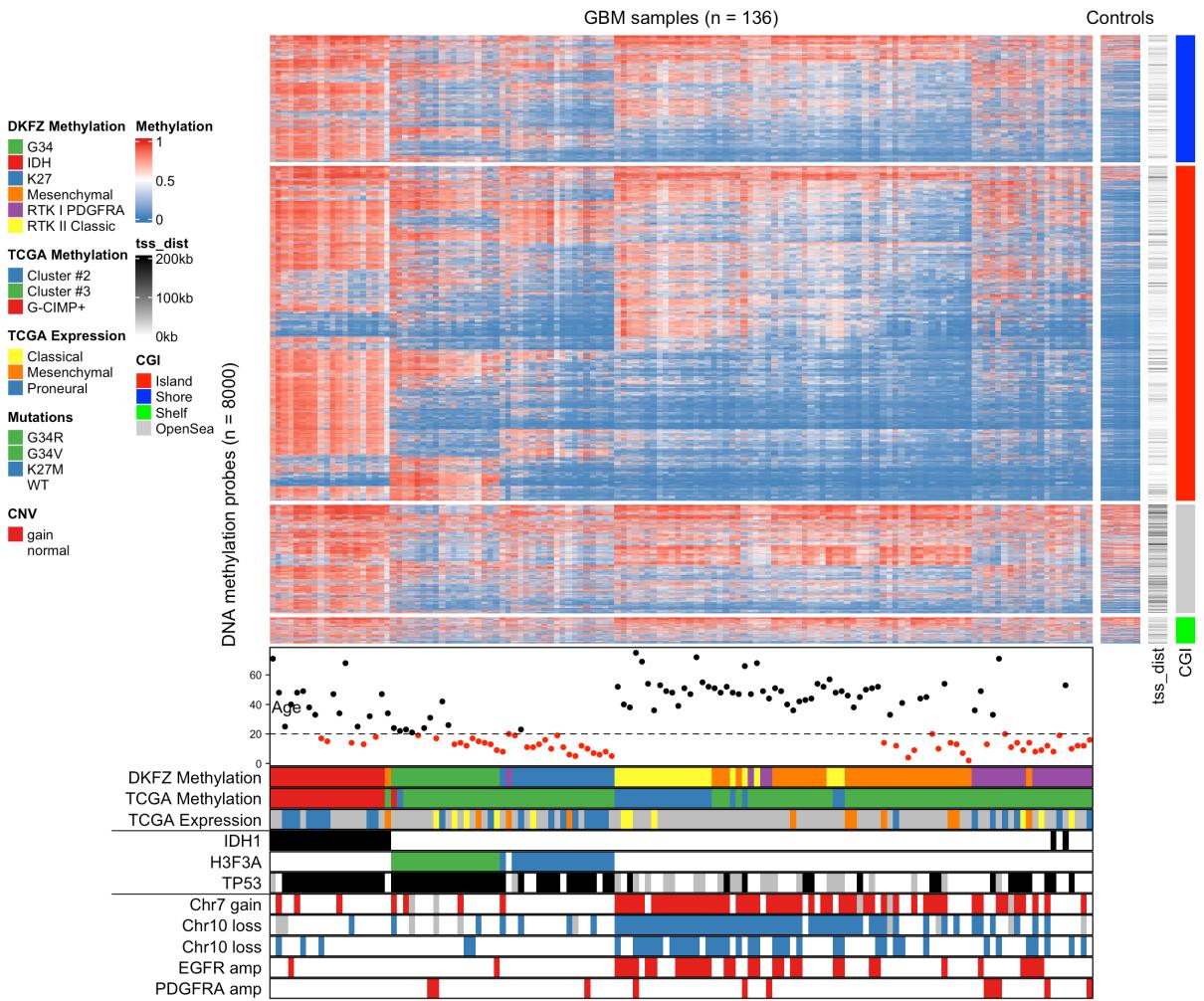


PANC-1\_A3OE\_H3K4me1\_2

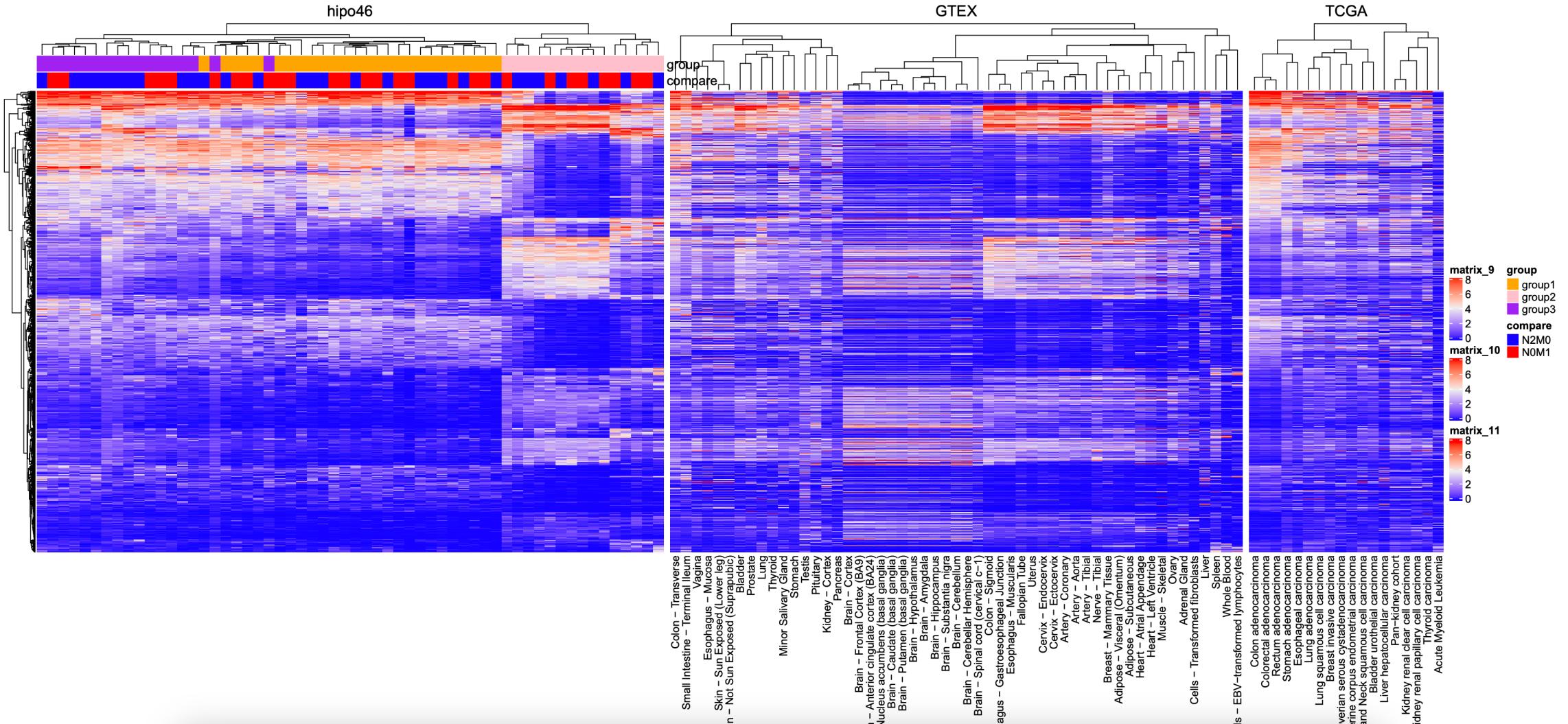


# ComplexHeatmap

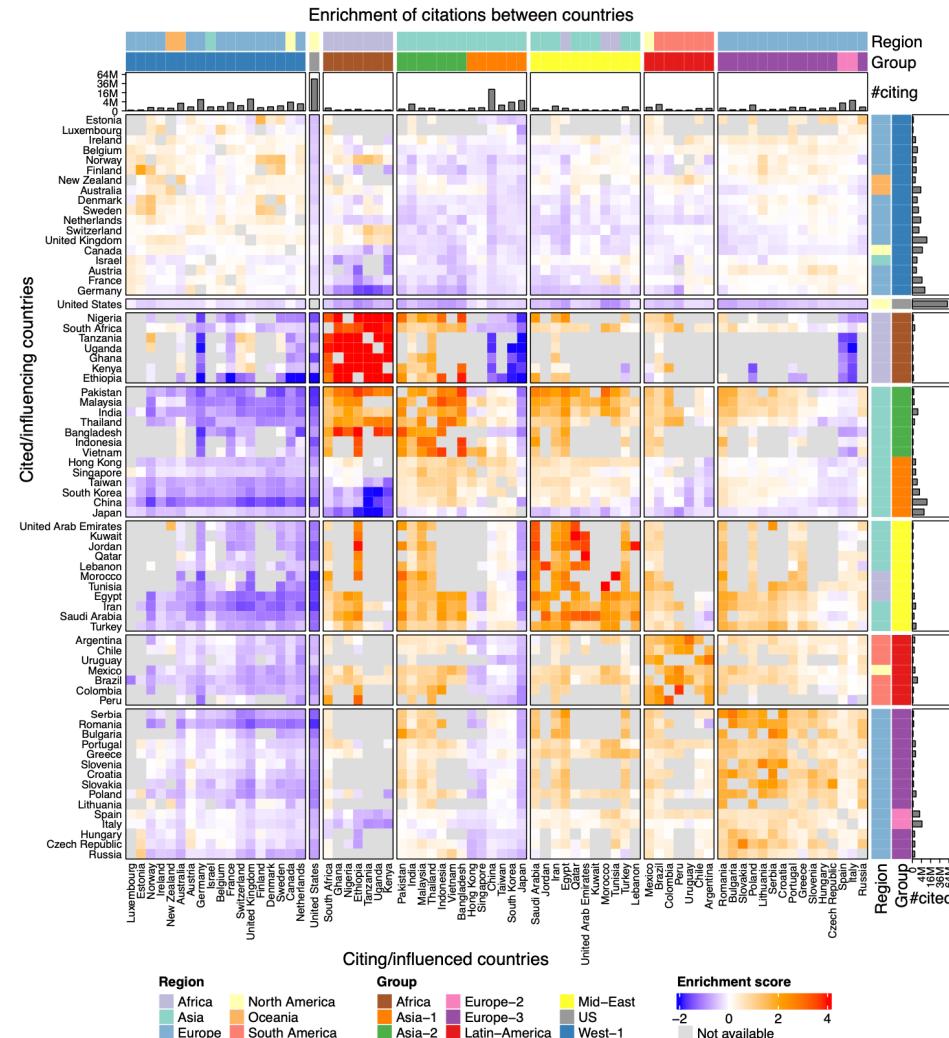
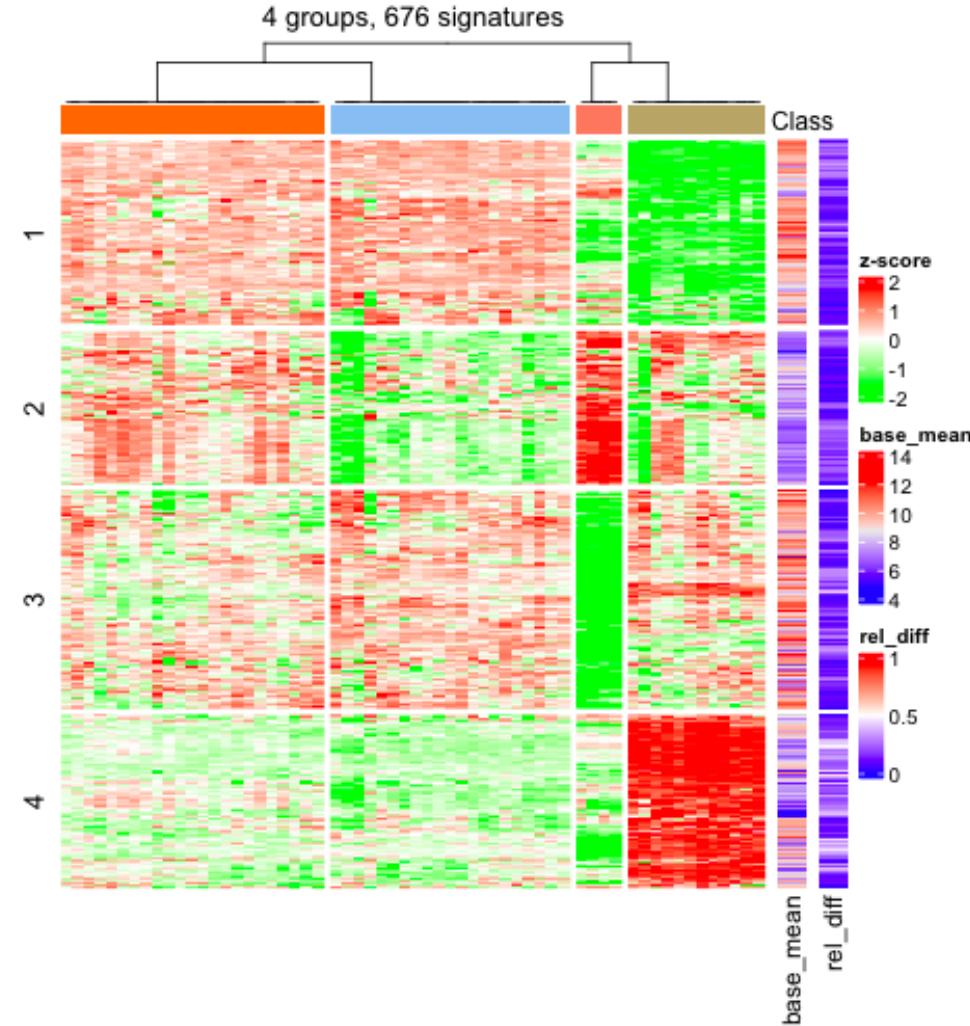




# ComplexHeatmap

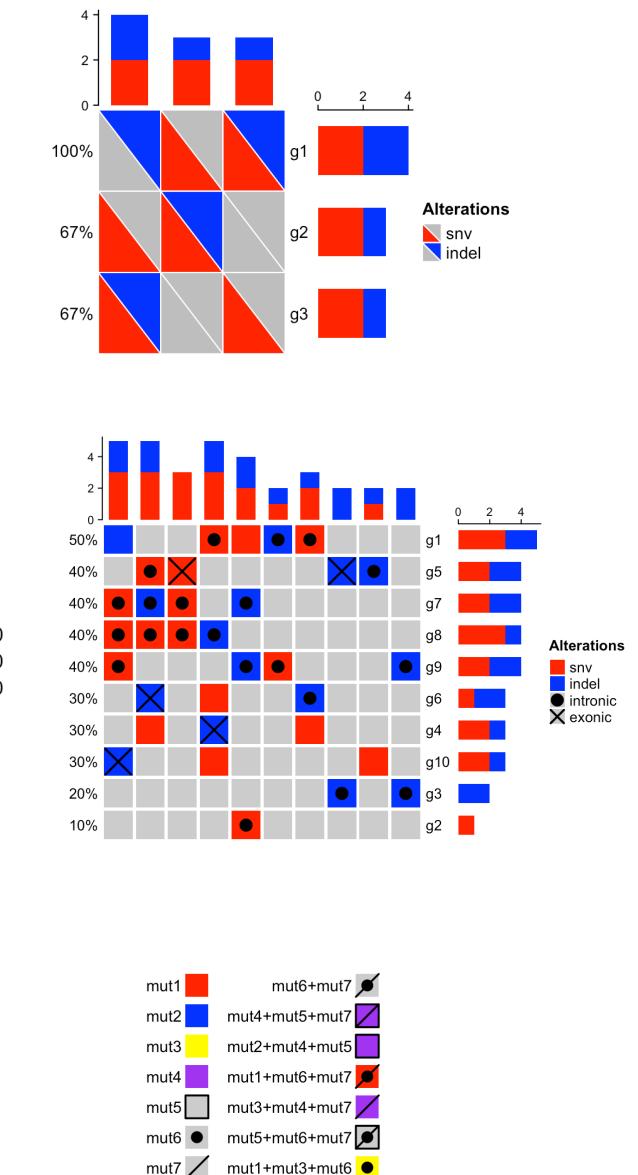
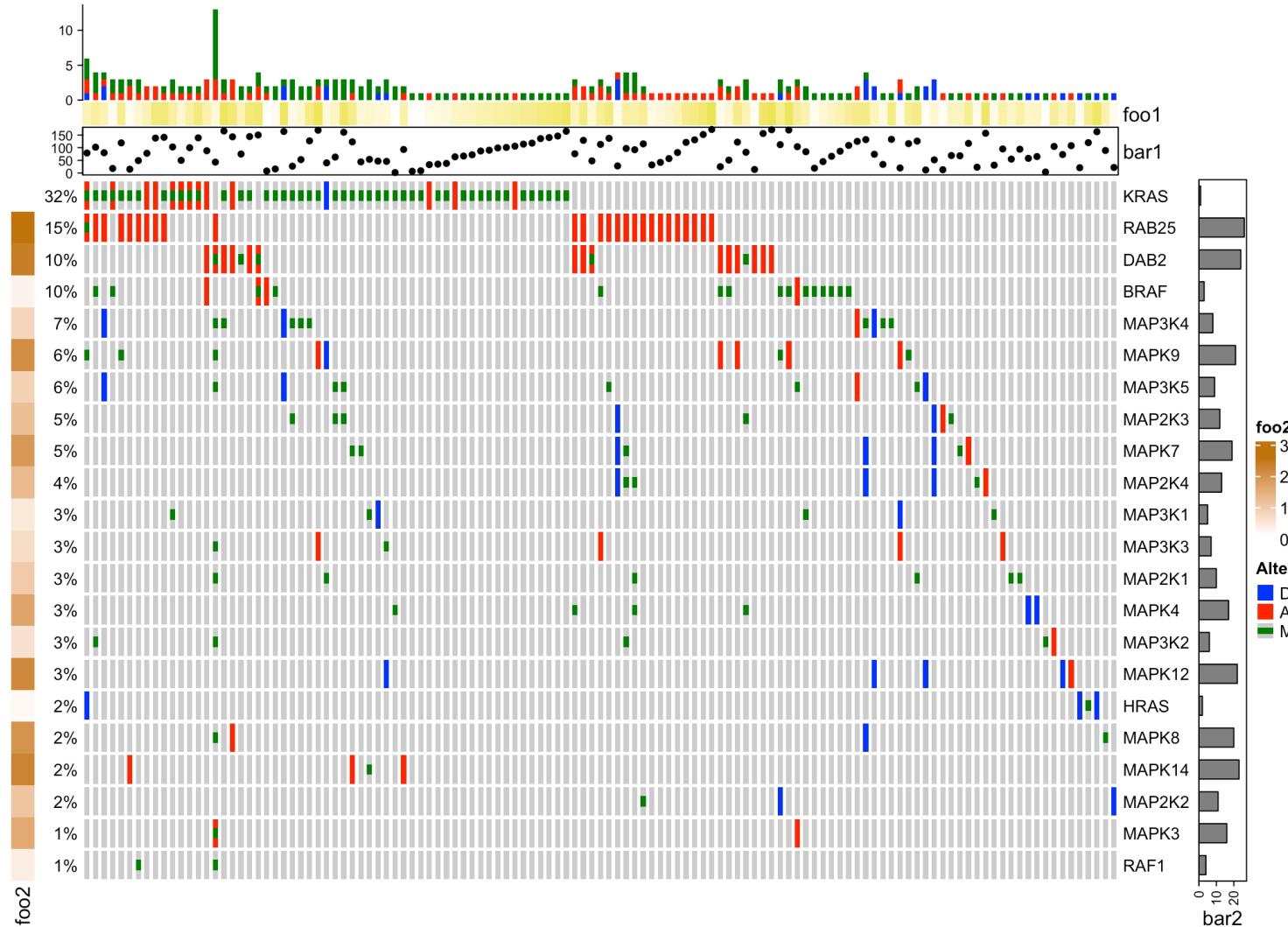


# ComplexHeatmap

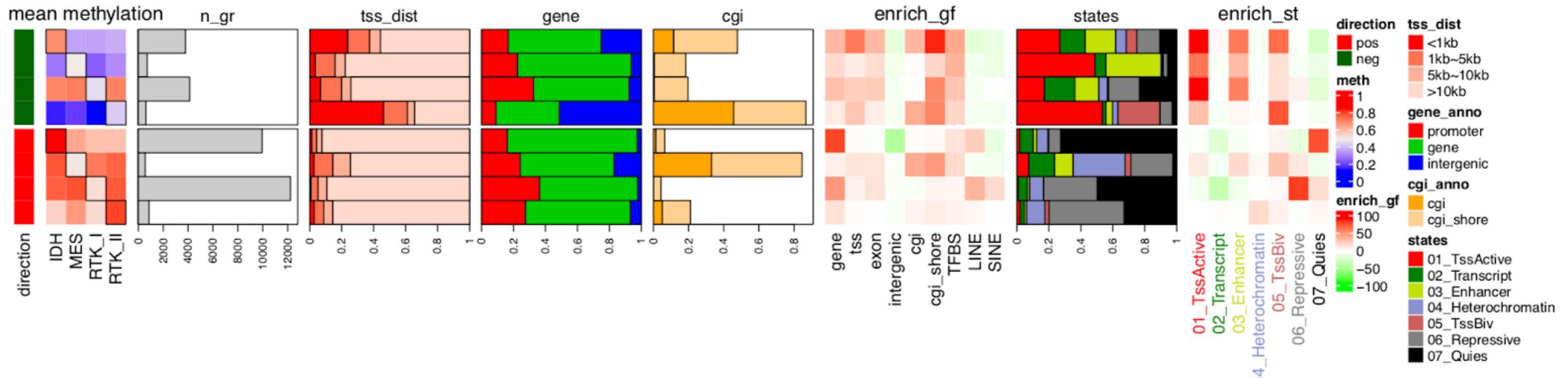


# ComplexHeatmap

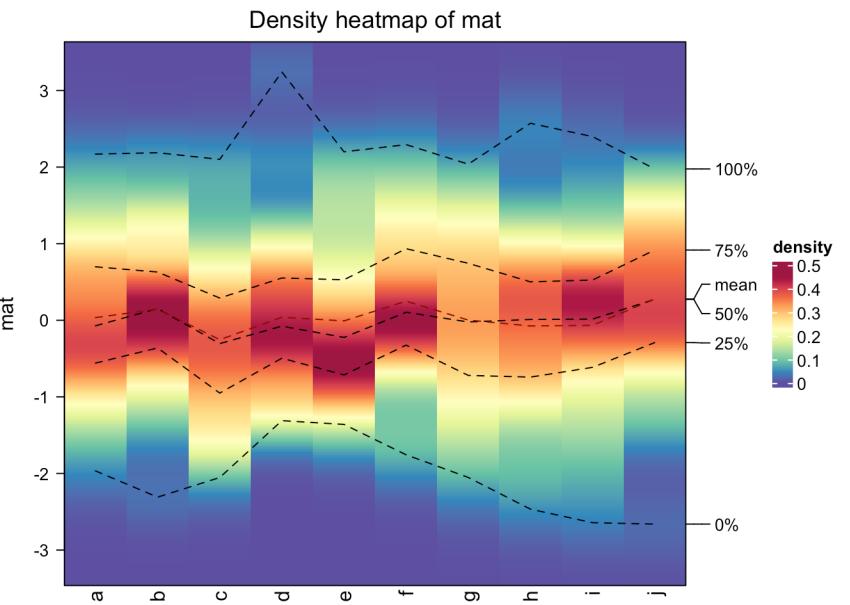
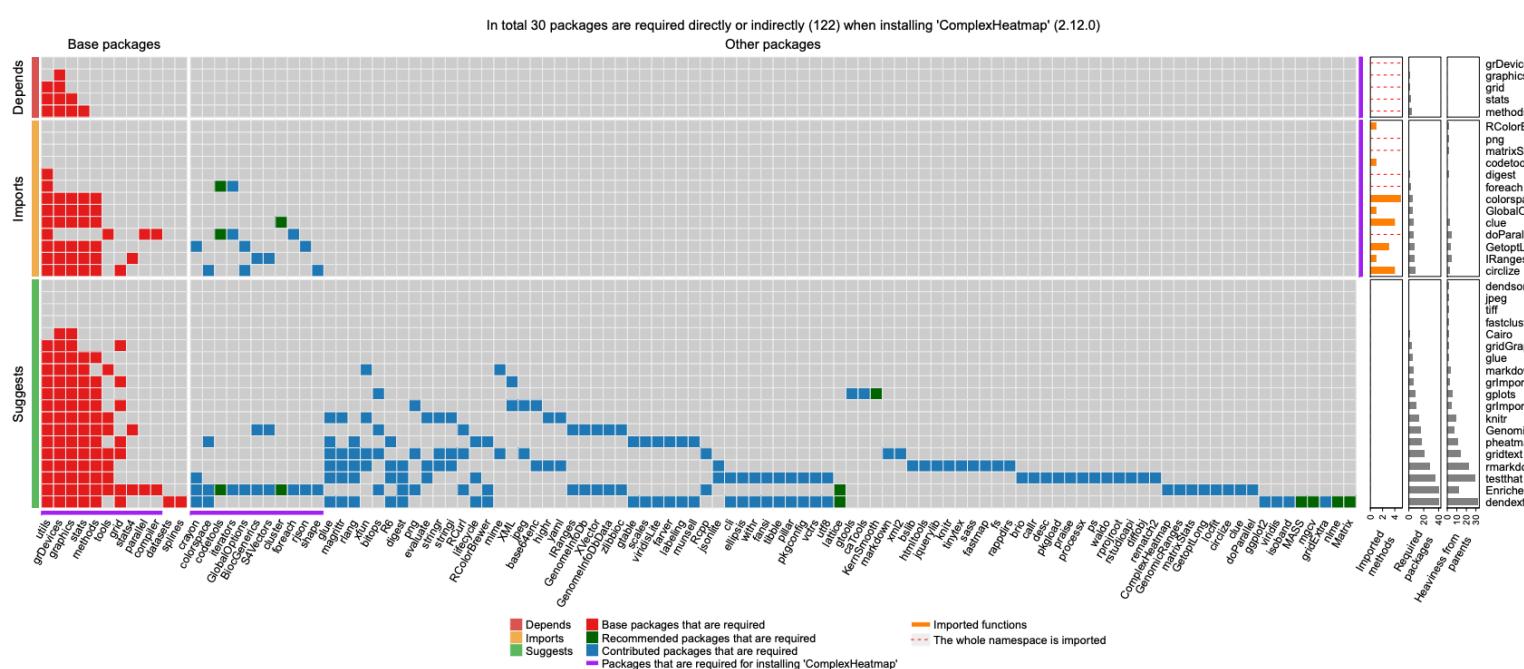
OncoPrint for TCGA Lung Adenocarcinoma, genes in Ras Raf MEK JNK signalling



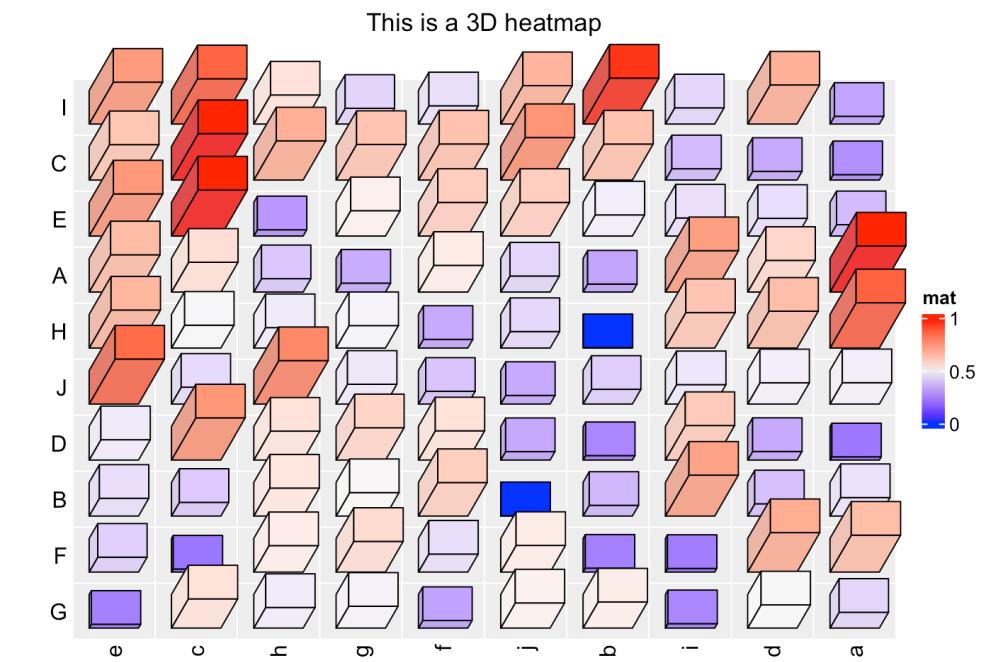
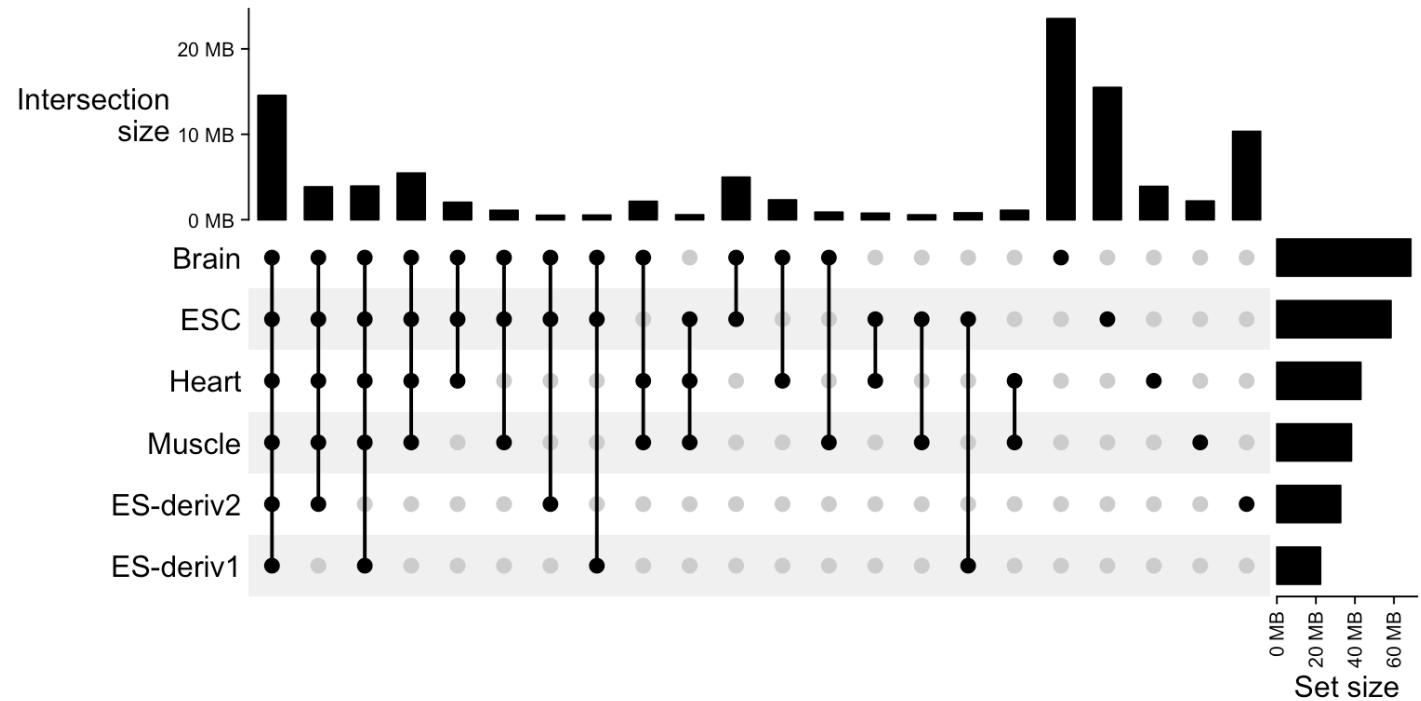
# ComplexHeatmap



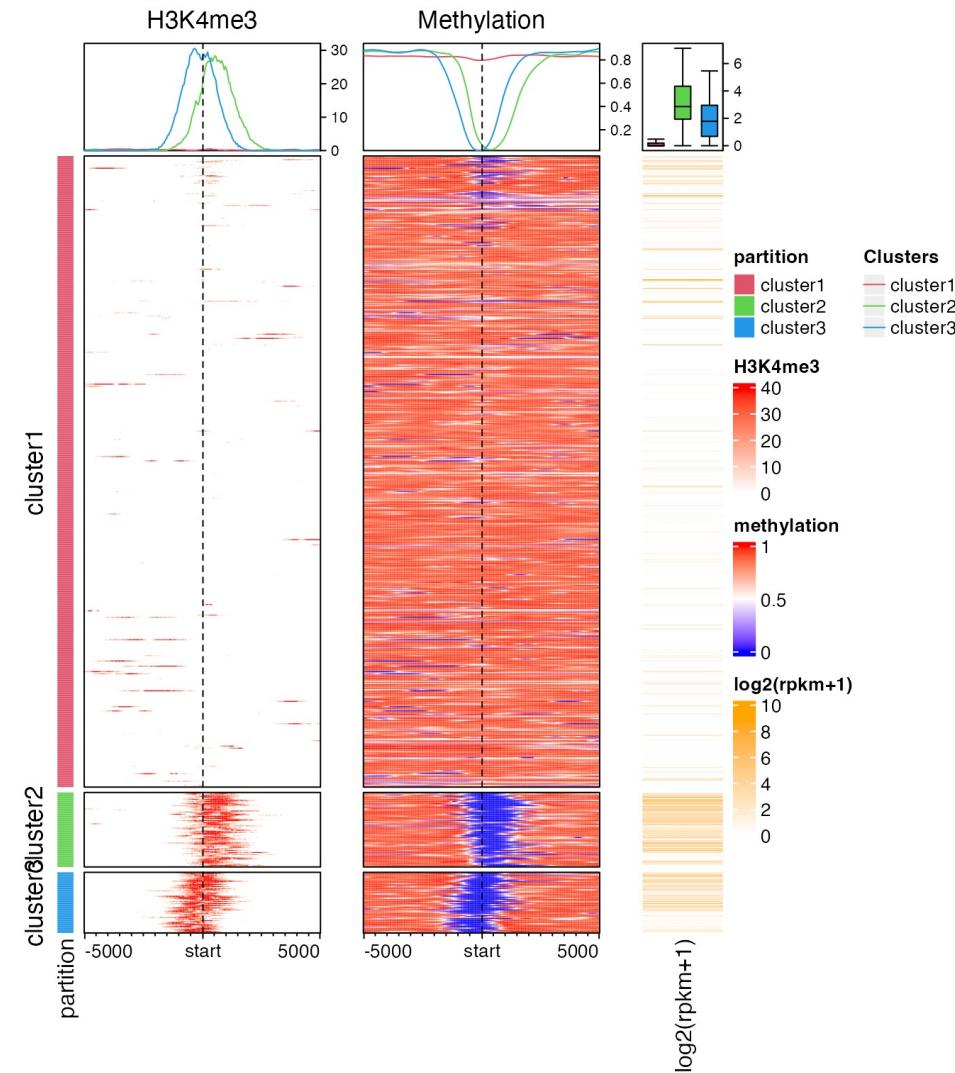
# ComplexHeatmap



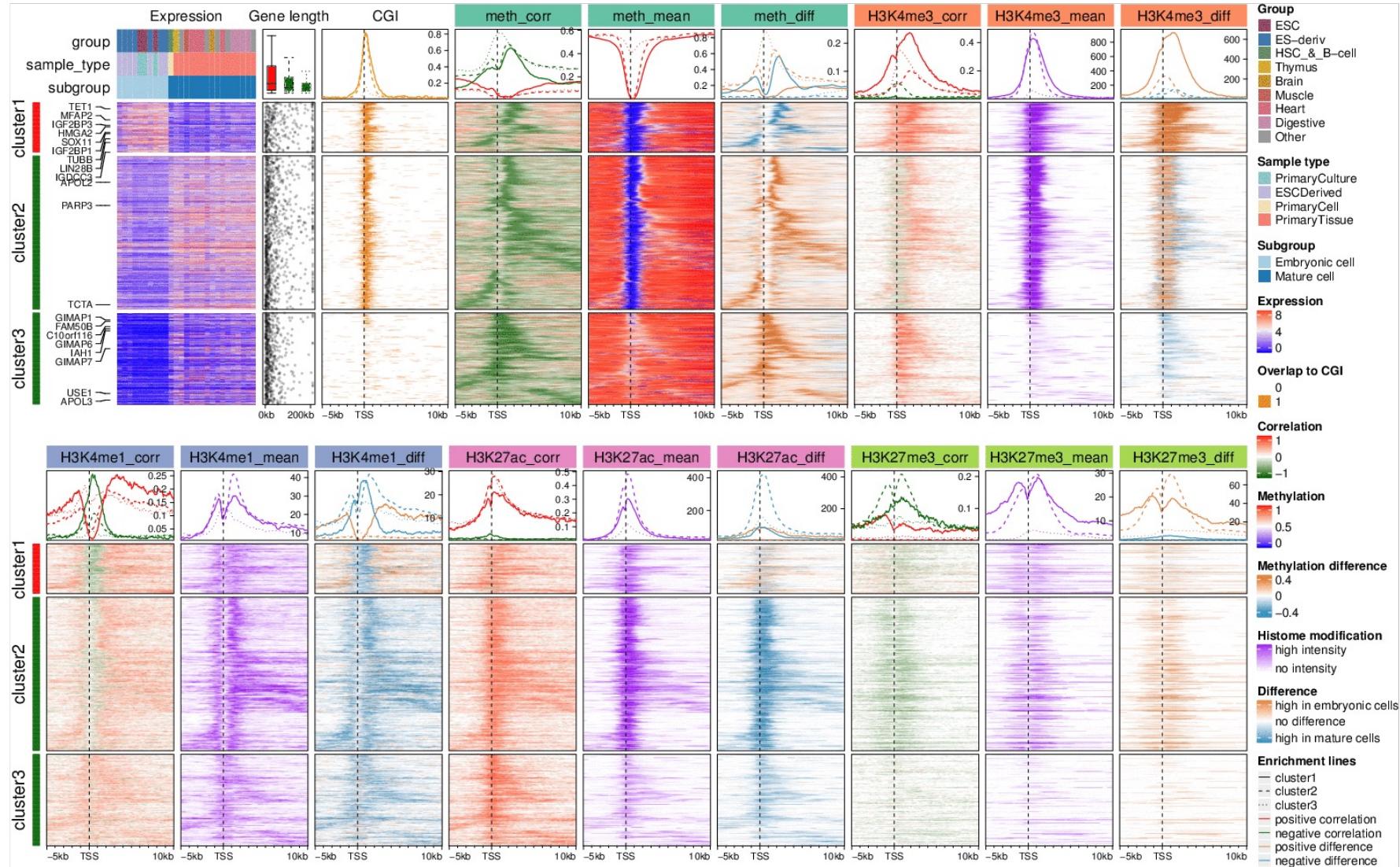
# ComplexHeatmap



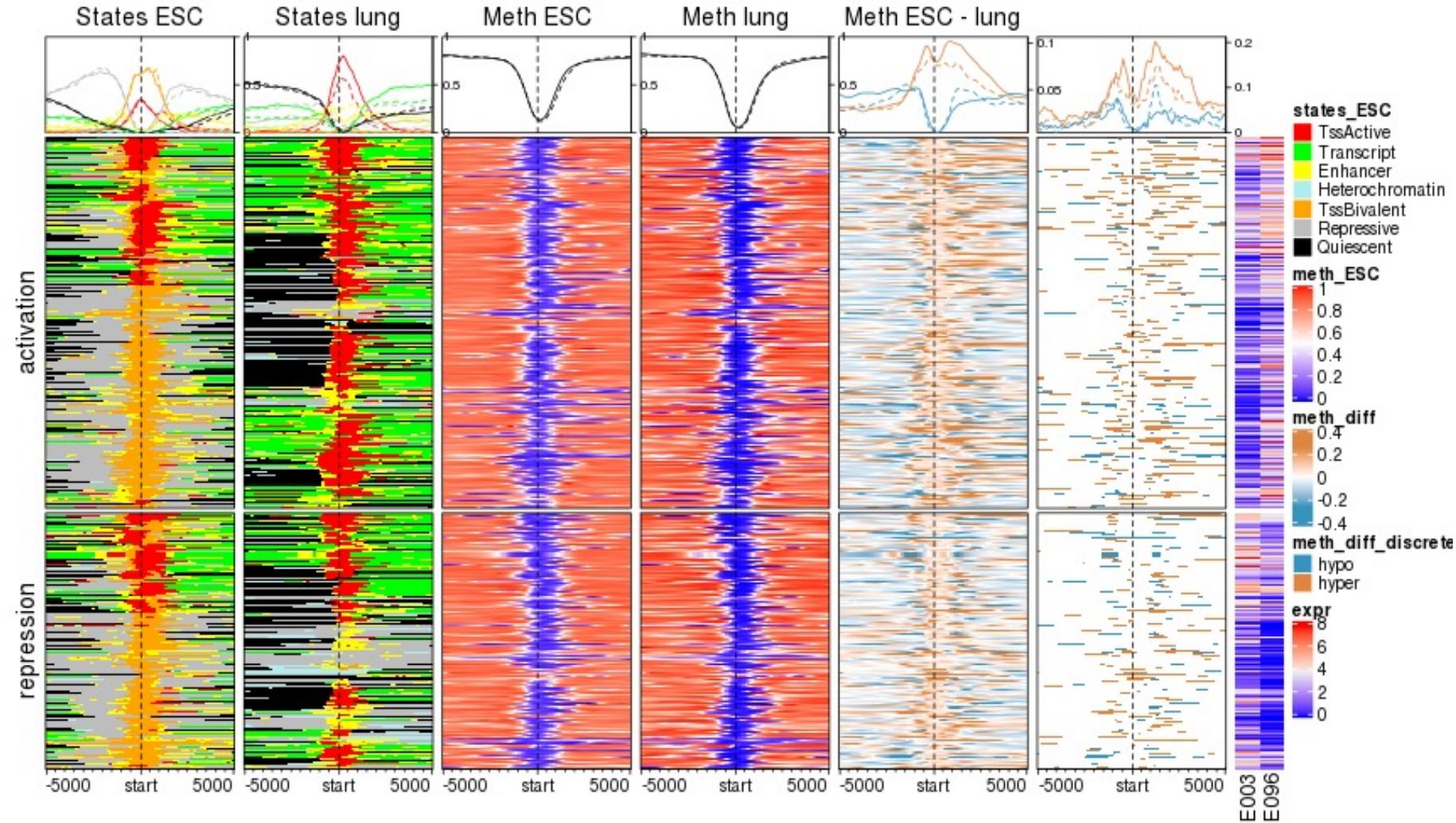
# EnrichedHeatmap



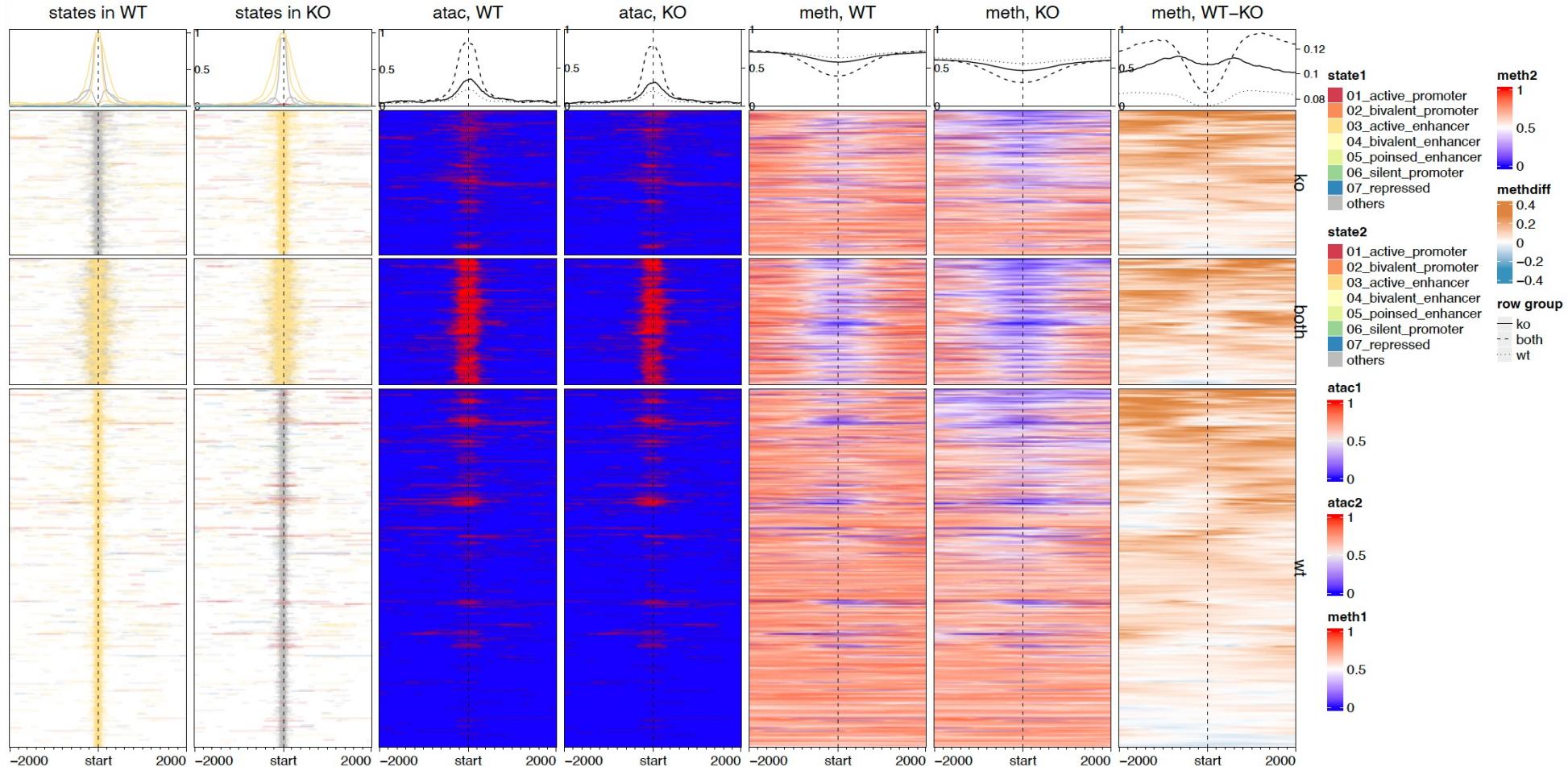
# EnrichedHeatmap



# EnrichedHeatmap



# EnrichedHeatmap



Thank you!

