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#Load libraries and other scripts	
#Defining some variables for the analysis	

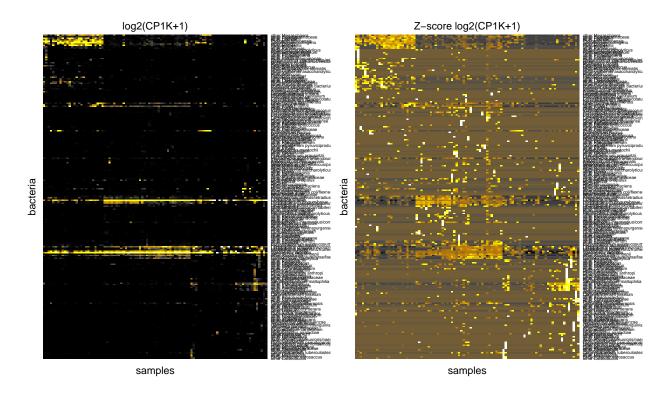
Loading data and metadata

```
## $ASV_tissue_V3_normalized_batch_corrected.csv
## [1] 767 96
##
## $ASV_CVL_V3_normalized_batch_corrected.csv
## [1] 767 111
##
## $ASV_CVL_V2_normalized_batch_corrected.csv
## [1] 767 111
##
## $ASV_CVL_V2_normalized_NOT_batch_corrected.csv
## [1] 767 111
```

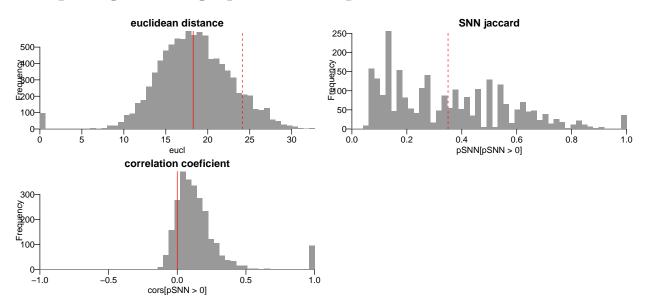
Merging microbiome datasets

Organise the datasets

Organise the datasets



Computing a SNN graph from sample correlations



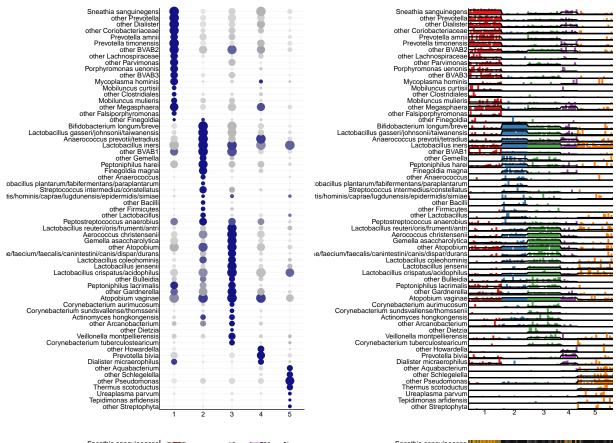
Visualise the data

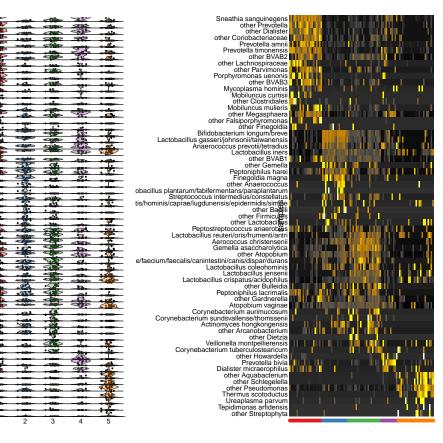


Computing differential expression across clusters

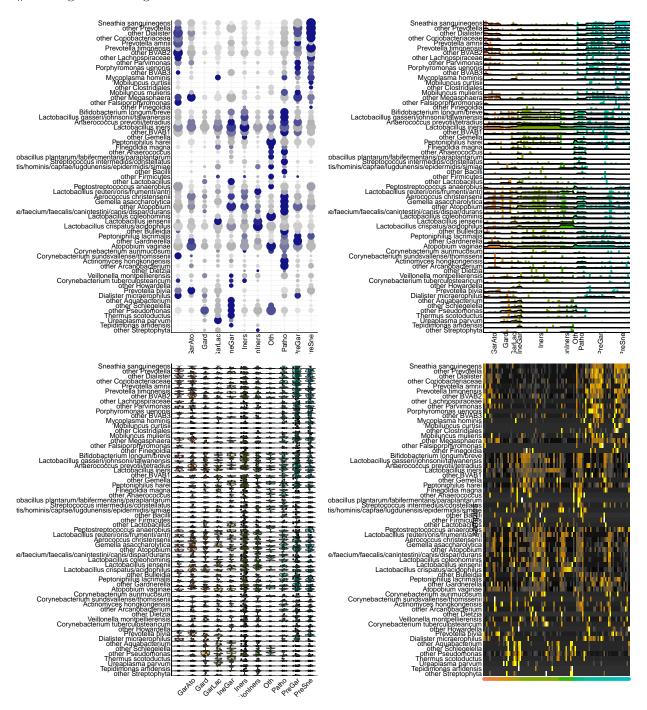
[1] 100 8

 $\# \mbox{Plotting}$ the most significant bacteria across clusters





#Plotting the most significant bacteria across PREVIOUS ANNOTATION



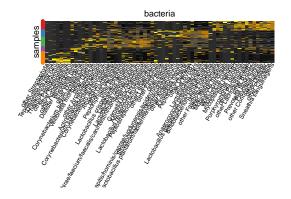
Plotting the most significant bacteria across clusters

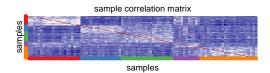
i louding un	.0 111000 0161	illicalit bac		Clastels	
		Sneathia sanguinegens	other Prevotella	other Dialister	other Coriobacteriaceae
<u>@</u>	• 1	cluster=1 (up)	cluster=1 (up)	cluster=1 (up)	cluster=1 (up)
	• 2 • 3	89	89	8	3.
	• 4 • 5	•	•	•	•
	• 5	9		9	
		46	460	46	464
•		-98-	-00-	-00	49
Prevotella timonensis cluster=1 (up)	other Lachnospiraceae cluster=1 (up)	Lactobacillus iners cluster=1 (down)	other Parvimonas cluster=1 (up)	Porphyromonas uenonis cluster=1 (up)	Prevotella bivia cluster=1 (up)
ež.	₩.	₩ .	£.	£.	Ø.*
	•		•	•	
•	0	•	•	0	0
		and the second	and the second		
				**	
		**		46	
Mycoplasma hominis	Mobiluncus curtisii	other Clostridiales	other Megasphaera	other BVAB2	Lactobacillus crispatus/acidophilus
cluster=1 (up)	cluster=1 (up)	cluster=1 (up)	cluster=1 (up)	cluster=1 (up)	cluster=1 (down)
	<i>\$</i> .	\$	8	3.	8
•	•	•	•	•	•
46	45	40	190	46.00	46
	•				
-00-	-40-	-96	-0%	-40	-00-
other Falsiporphyromonas cluster=1 (up)	other Gemella cluster=1 (down)	other BVAB3 cluster=1 (up)	orynebacterium tuberculostearicur cluster=1 (down)	Anaerococcus prevotii/tetradius cluster=1 (down)	cluster=2 (up)
	*		6 .	Ø.*	% *
	9	· ·			•
•	•	•	•	•	•
	and the second	and the second	100	with the state of	100 m
*				40	
***	46	46	46	46	**
obacillus gasseri/johnsonii/taiwane cluster=2 (up)	Anaerococcus prevotii/tetradius cluster=2 (up)	Lactobacillus iners cluster=2 (up)	other Gemella cluster=2 (up)	Peptoniphilus harei cluster=2 (up)	Lactobacillus coleohominis cluster=2 (up)
• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	₩ .	•	82. *	\$. • (ap)
4.	•	**	8.		5
•	•	•	•	•	0
	9.	4 , 3 , 3 ,		40.	
		**			
Finegoldia magna	Dialister micraerophilus		lus plantarum/fabifermentans/para	Sneathia sanguinegens	
cluster=2 (up)	cluster=2 (down)	cluster=2 (up)	cluster=2 (up)	cluster=2 (down)	cluster=2 (up)
8.			\$.		
•	•	•	•	•	•
46.00	46	46	april 1900	46	
			• ,		• •
400	-0.5	•130	•000	-86	900
other Bacilli cluster=2 (up)	other Firmicutes cluster=2 (up)	Ureaplasma parvum cluster=2 (down)	other Lactobacillus cluster=2 (up)	other Atopobium cluster=2 (up)	ctobacillus reuteri/oris/frumenti/an cluster=3 (up)
ė.	ģ.	<u>\$</u>	% .*	%.	•
•	•	•	•		•
•	•	•	•	•	•
				and the same	and the second
		77			
	-96	46	- 46	**	46
Aerococcus christensenii	Gemella asaccharolytica	other Atopobium	1/hirae/faecium/faecalis/canintestir		Lactobacillus jensenii
cluster=3 (up)	cluster=3 (up)	cluster=3 (up)	cluster=3 (up)	cluster=3 (up)	cluster=3 (up)
8	80	30	20	••	X *
	•	•	•		•

/ticus/capitis/hominis/caprae/lugdu cluster=4 (down)	Veillonella montpellierensis cluster=4 (down)	Aerococcus christensenii cluster=5 (down)	other BVAB1 cluster=5 (down)	Bifidobacterium longum/breve cluster=5 (down)	other Atopobium cluster=5 (down)
			***		**
other Bulleidia cluster=5 (down)	other BVAB2 cluster=5 (down)	other Dialister cluster=5 (down)	Atopobium vaginae cluster=5 (down)	Prevotella amnii cluster=5 (down)	\hirae/faecium/faecalis/canintestir cluster=5 (down)
	***		****	4	*
other Aquabacterium cluster=5 (up)	other Schlegelella cluster=5 (up)	other Pseudomonas cluster=5 (up)	Peptoniphilus lacrimalis cluster=5 (down)	other Gardnerella cluster=5 (down)	other Parvimonas cluster=5 (down)

Mobiluncus mulieris cluster=5 (down)	Actinomyces hongkongensis cluster=5 (down)	other Arcanobacterium cluster=5 (down)	Thermus scotoductus cluster=5 (up)	Peptoniphilus harei cluster=5 (down)	other Prevotella cluster=5 (down)
					**
other BVAB3 cluster=5 (down)	other Finegoldia cluster=5 (down)	Mycoplasma hominis cluster=5 (down)	Tepidimonas arfidensis cluster=5 (up)	other Streptophyta cluster=5 (up)	Peptostreptococcus anaerobius cluster=5 (down)

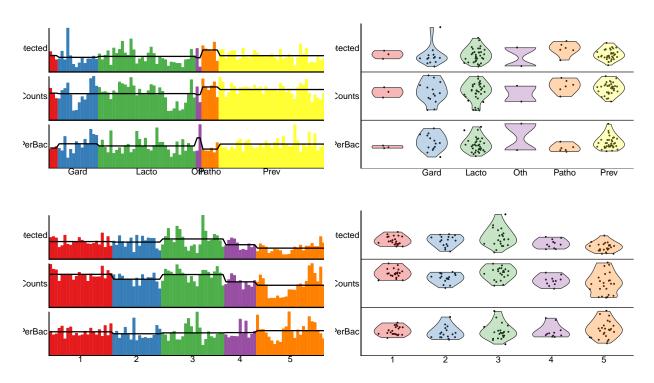
#Plotting bacteria across clusters





[1] -0.01536842

#Plotting bacteria across clusters



##		2					
##	. 1		${\tt Gard}$	Lacto	0 th	${\tt Patho}$	Prev
##	1	1	0	0	0	1	20
##	2	0	2	9	1	3	2
##	3	1	2	12	0	1	6
##	4	1	1	0	0	0	9
##	5	0	9	13	1	1	0

Saving clusters and differentially expressed bacteria