Contents

#Load libraries and other scripts

#Defining some variables for the analysis

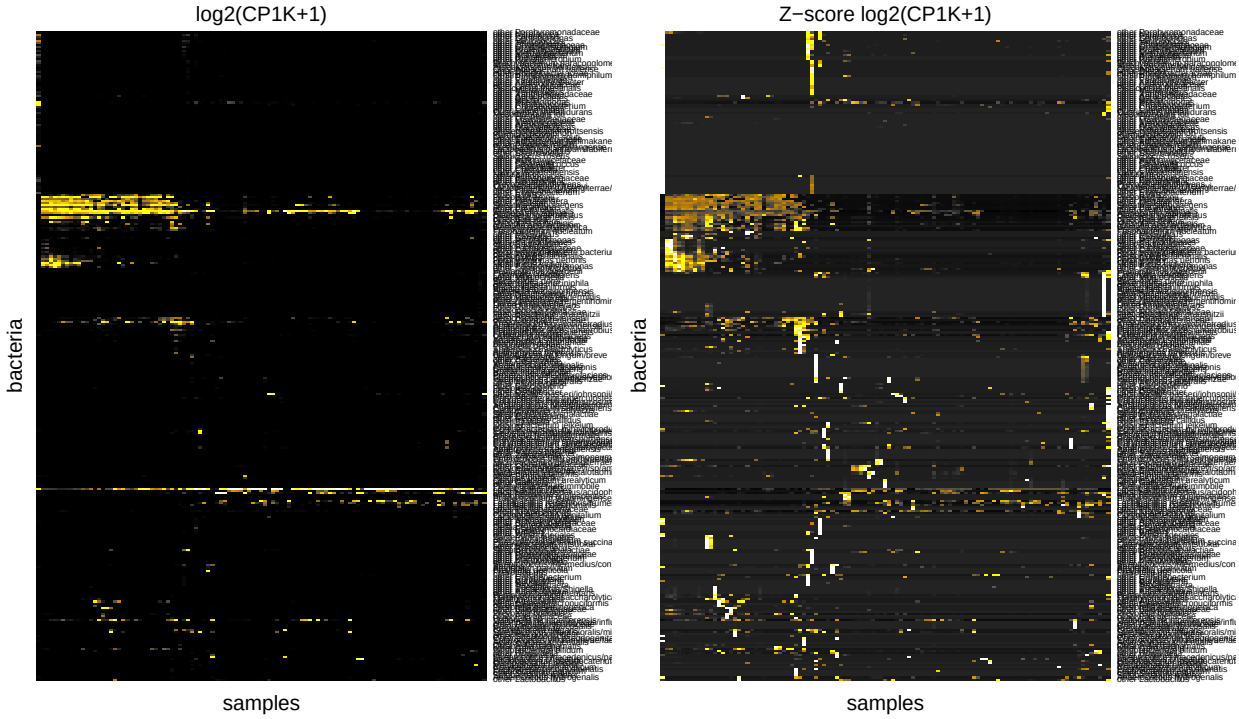
Loading data and metadata

```
## $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
```

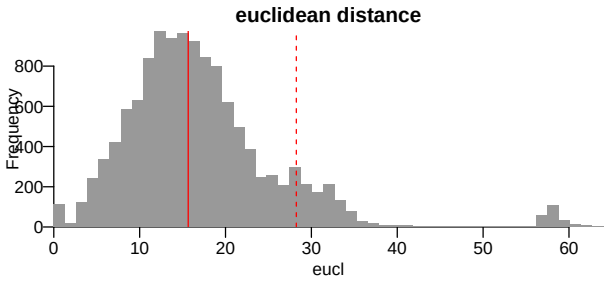
Merging microbiome datasets

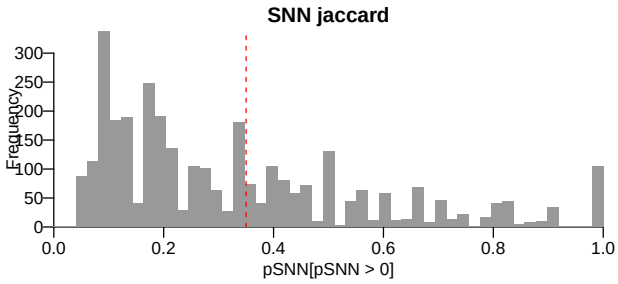
Organise the datasets

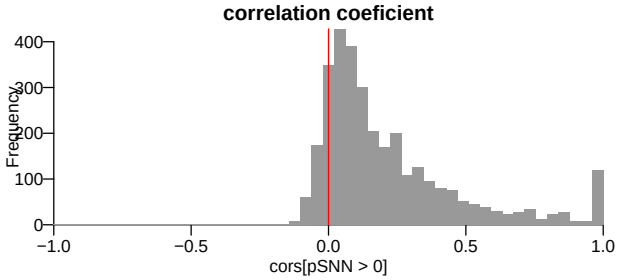
Organise the datasets



Computing a SNN graph from sample correlations





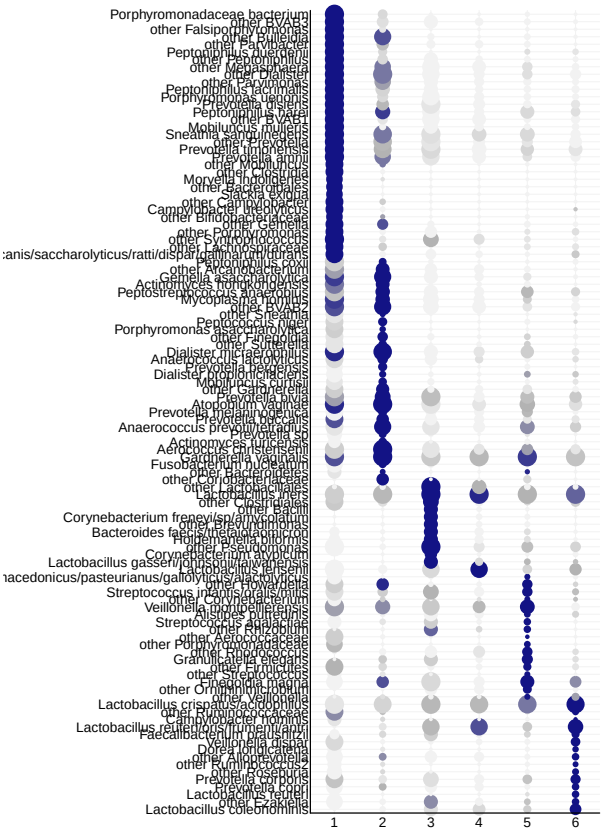


Visualise the data

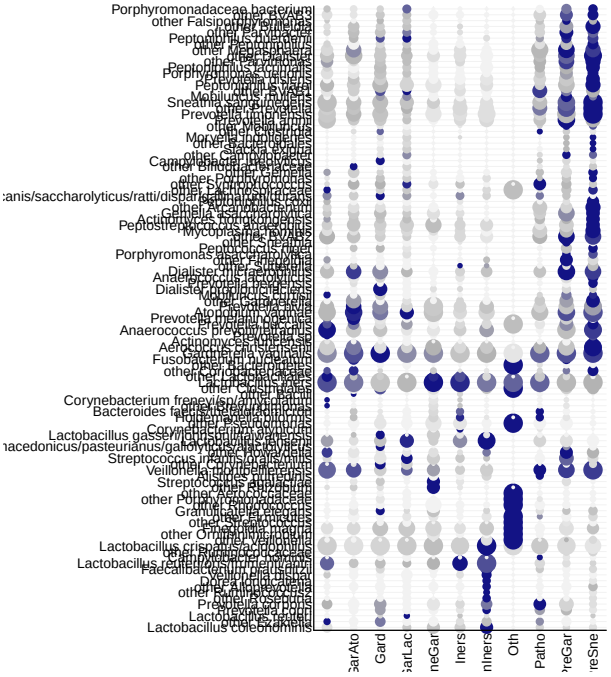
Computing differential expression across clusters

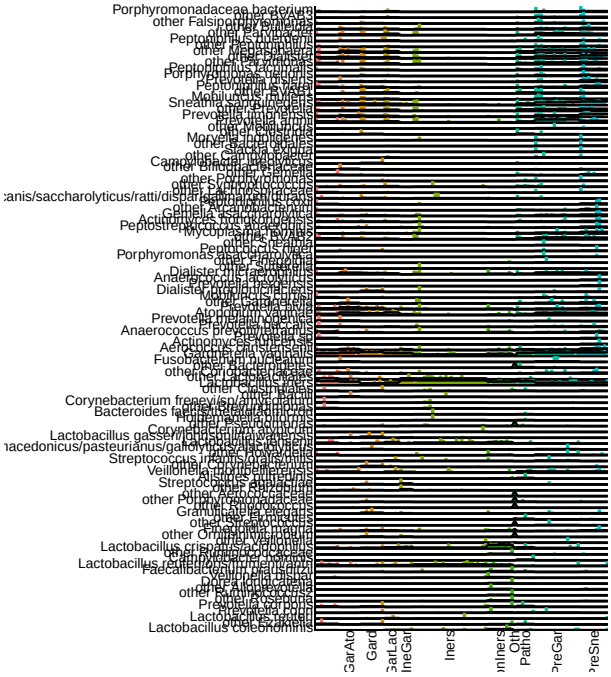
```
## [1] 162   8
```

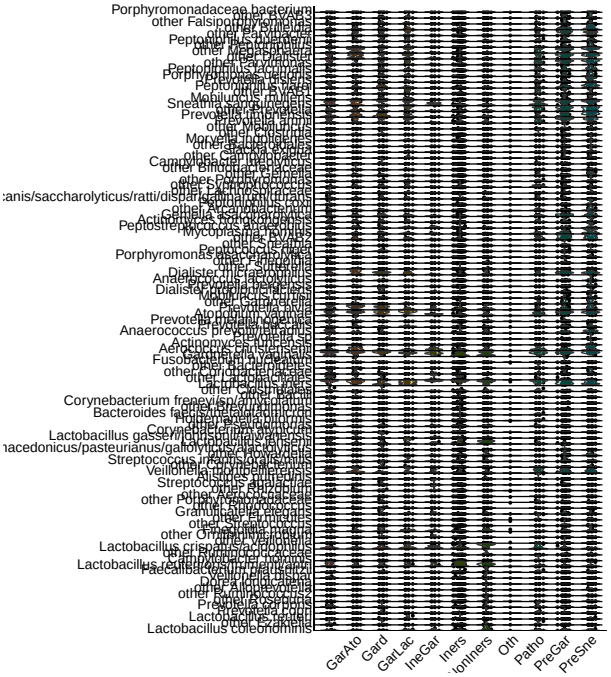
#Plotting the most significant bacteria across clusters

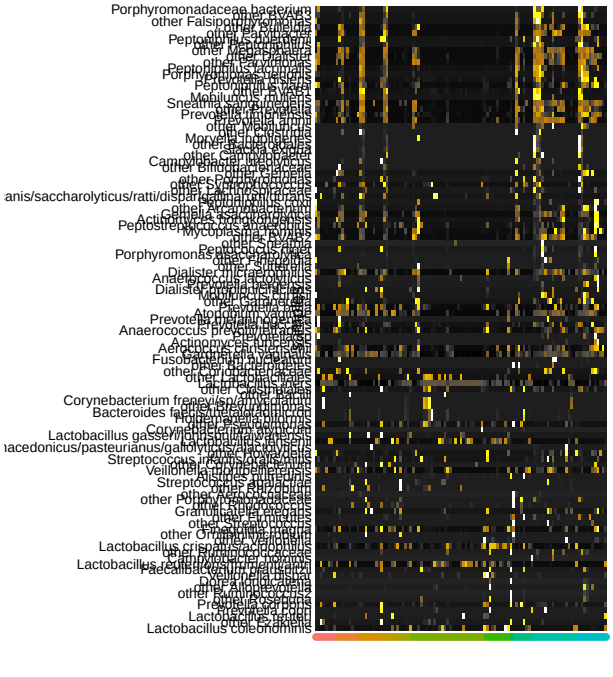

Porphyromonadaceae bacterium
other BVAB1
other Falsiporphyromonas
other Bulleidia
other Parvimonas
Peptoniphilus duerdenii
other Peptoniphilus
other Megasphaera
other Dialister
other Parvimonas
Peptoniphilus lacrimalis
Porphyromonas uenonis
Prevotella disiens
Peptoniphilus harei
other BVAB1
Mobiluncus mulieris
Sneathia sanguinegens
other Prevotella
Prevotella timonensis
Prevotella amnii
other Mobiluncus
other Clostridiales
Morvella thoadenes
other Bacteroidales
Stackia exigua
other Campylobacter
Campylobacter ureolyticus
other Bifidobacteriaceae
other Gemella
other Porphyromonas
other Synergistaceae
other Lachnospiraceae
anis/saccharolyticus/ratti/dispar/gallinarum/hominis
Peptoniphilus coxii
other Arcanobacterium
Gemella asaccharolytica
Actinomyces hongkongensis
Peptostreptococcus anaerobius
Mycoplasma hominis
other BVAB2
other Sneathia
Peptococcus niger
Porphyromonas asaccharolytica
other Finegoldia
other Sutterella
Dialister micraerophilus
Anaerococcus lactolyticus
Prevotella bergensis
Dialister propionicifaciens
Mobiluncus curtisii
other Gardnerella
Prevotella bivia
Atopobium vaginae
Prevotella melaninogenica
Prevotella buccalis
Anaerococcus prevotii/vaginalis
Prevotella sp
Actinomyces turicensis
Aerococcus christensenii
Gardnerella vaginalis
Fusobacterium nucleatum
other Bacteroidetes
other Coriobacteriaceae
other Lactobacillales
Lactobacillus iners
other Clostridiales
other Bacilli
Corynebacterium freneyi/jeikeium/urealyticum
other BVAB3
Bacteroides fragilis/thetaiotaomicron
Hoylesella oralis
other Pseudomonas
Corynebacterium accolens
Lactobacillus gasseri/johnsonii/taiwanensis
Lactobacillus fermentum
acedonicus/pasteurianus/gallolyticus/alactolyticus
other Howardella
Streptococcus infantis/oralis/mitis
other Corynebacterium
Veillonella montpellierensis
Aerococcus urinaehominis
Streptococcus agalactiae
other Rhizobium
other Aerococcaceae
other Porphyromonadaceae
other Enterococcus
Granulicatella elegans
other Finegoldia
other Streptococcus
Finegoldia magna
other Ornithinimicrobium
other Veillonella
Lactobacillus crispatus/acidophilus
other Ruminococcaceae
Lactobacillus reuteri/oris/rumenis/ruminis
Faecalibacterium prausnitzii
Veillonella dispar
Dolosigranulum pigrum
other Alloprevotella
other Ruminococcus
other Roseburia
Prevotella corporis
Prevotella pallens
Lactobacillus ferreri
other Ezakiella
Lactobacillus colehominis
1
2
3
4
5
6

#Plotting the most significant bacteria across PREVIOUS ANNOTATION

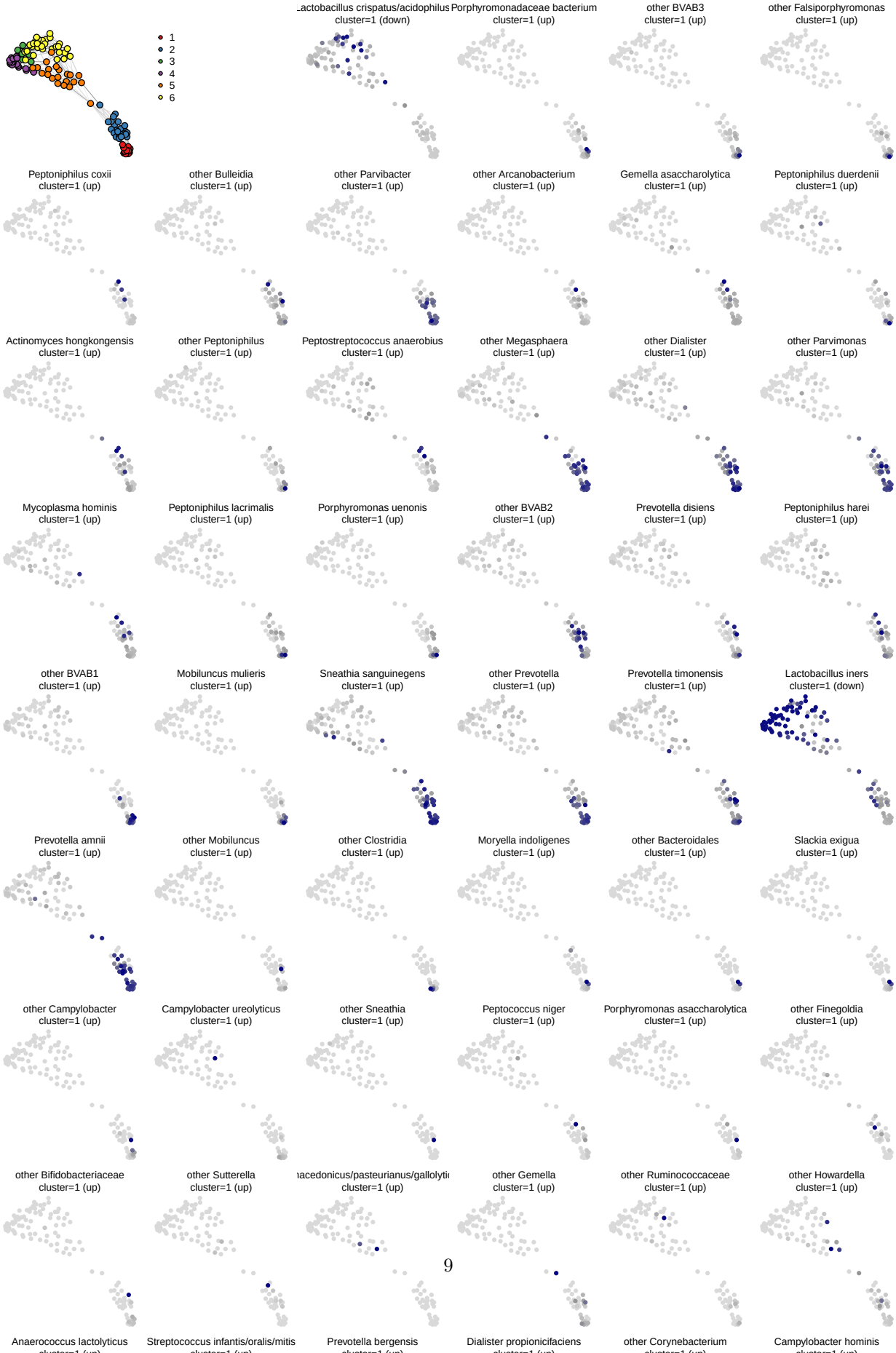


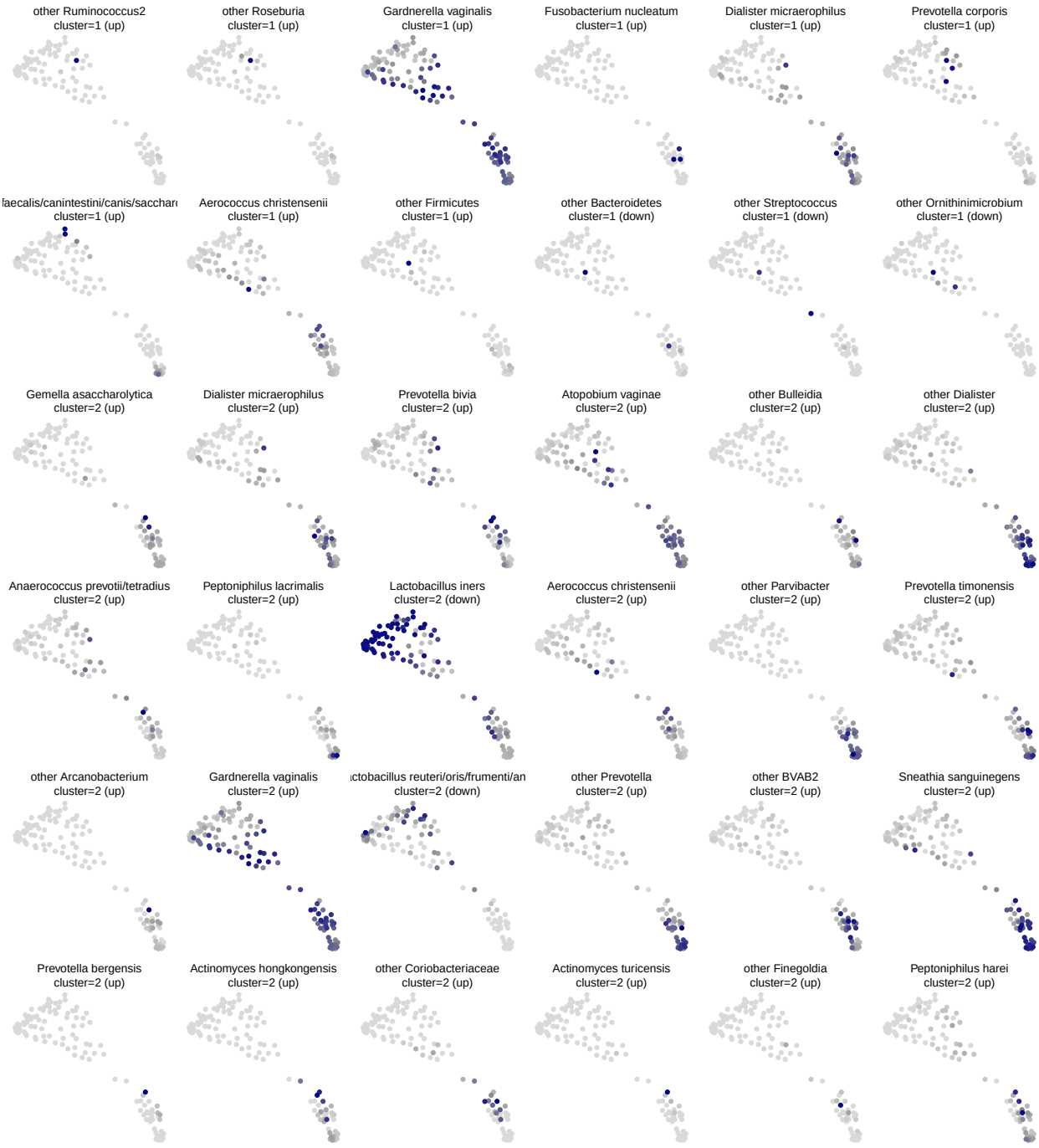


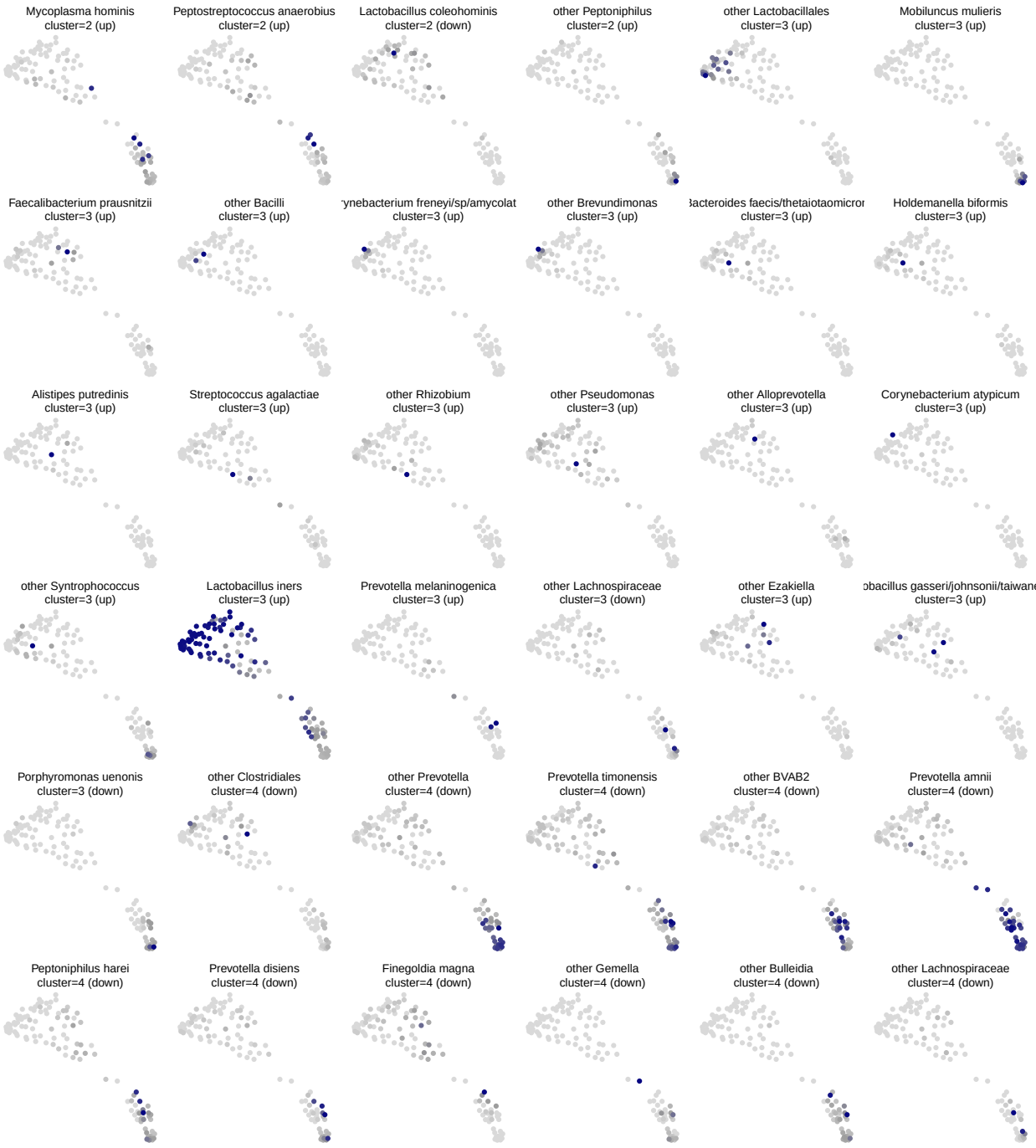


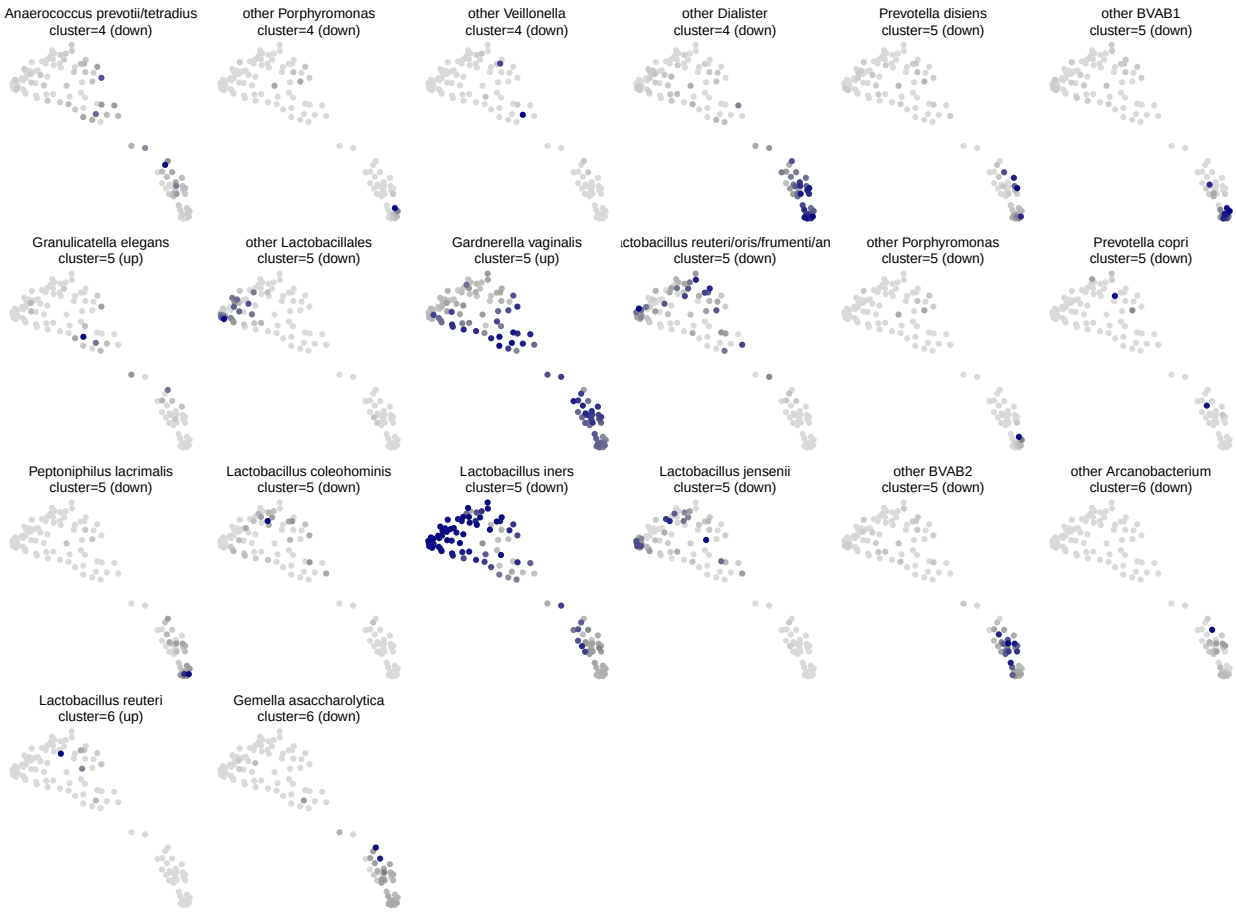


Plotting the most significant bacteria across clusters

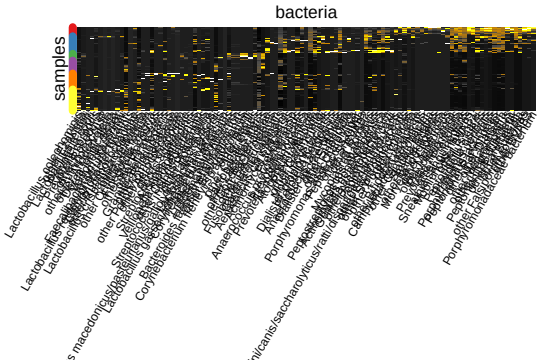


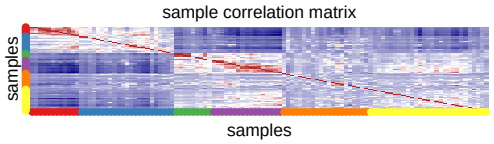

other Ruminococcus2
cluster=1 (up)
other Roseburia
cluster=1 (up)
Gardnerella vaginalis
cluster=1 (up)
Fusobacterium nucleatum
cluster=1 (up)
Dialister micraerophilus
cluster=1 (up)
Prevotella corporis
cluster=1 (up)
faecalis/canintestini/canis/sacchar
cluster=1 (up)
Aerococcus christensenii
cluster=1 (up)
other Firmicutes
cluster=1 (up)
other Bacteroidetes
cluster=1 (down)
other Streptococcus
cluster=1 (down)
other Ornithinimicrobium
cluster=1 (down)
Gemella asaccharolytica
cluster=2 (up)
Dialister micraerophilus
cluster=2 (up)
Prevotella bivia
cluster=2 (up)
Atopobium vaginae
cluster=2 (up)
other Bulleidia
cluster=2 (up)
other Dialister
cluster=2 (up)
Anaerococcus prevotii/tetradius
cluster=2 (up)
Peptoniphilus lacrimalis
cluster=2 (up)
Lactobacillus iners
cluster=2 (down)
Aerococcus christensenii
cluster=2 (up)
other Parvibacter
cluster=2 (up)
Prevotella timonensis
cluster=2 (up)
other Arcanobacterium
cluster=2 (up)
Gardnerella vaginalis
cluster=2 (up)
ıctobacillus reuteri/oris/frumenti/an
cluster=2 (down)
other Prevotella
cluster=2 (up)
other BVAB2
cluster=2 (up)
Sneathia sanguinegens
cluster=2 (up)
Prevotella bergensis
cluster=2 (up)
Actinomyces hongkongensis
cluster=2 (up)
other Coriobacteriaceae
cluster=2 (up)
Actinomyces turicensis
cluster=2 (up)
other Finegoldia
cluster=2 (up)
Peptoniphilus harei
cluster=2 (up)


Mycoplasma hominis
cluster=2 (up)
Peptostreptococcus anaerobius
cluster=2 (up)
Lactobacillus coleohominis
cluster=2 (down)
other Peptoniphilus
cluster=2 (up)
other Lactobacillales
cluster=3 (up)
Mobiluncus mulieris
cluster=3 (up)
Faecalibacterium prausnitzii
cluster=3 (up)
other Bacilli
cluster=3 (up)
ynebacterium freneyi/sp/amycolat
cluster=3 (up)
other Brevundimonas
cluster=3 (up)
acteroides faecis/thetaiotaomicron
cluster=3 (up)
Holdemanella biformis
cluster=3 (up)
Alistipes putredinis
cluster=3 (up)
Streptococcus agalactiae
cluster=3 (up)
other Rhizobium
cluster=3 (up)
other Pseudomonas
cluster=3 (up)
other Alloprevotella
cluster=3 (up)
Corynebacterium atypicum
cluster=3 (up)
other Syntrophococcus
cluster=3 (up)
Lactobacillus iners
cluster=3 (up)
Prevotella melaninogenica
cluster=3 (up)
other Lachnospiraceae
cluster=3 (down)
other Ezakiella
cluster=3 (up)
obacillus gasseri/johnsonii/taiwane
cluster=3 (up)
Porphyromonas uenonis
cluster=3 (down)
other Clostridiales
cluster=4 (down)
other Prevotella
cluster=4 (down)
Prevotella timonensis
cluster=4 (down)
other BVAB2
cluster=4 (down)
Prevotella amnii
cluster=4 (down)
Peptoniphilus harei
cluster=4 (down)
Prevotella disiens
cluster=4 (down)
Finegoldia magna
cluster=4 (down)
other Gemella
cluster=4 (down)
other Bulleidia
cluster=4 (down)
other Lachnospiraceae
cluster=4 (down)


Anaerococcus prevotii/tetradius
cluster=4 (down)
other Porphyromonas
cluster=4 (down)
other Veillonella
cluster=4 (down)
other Dialister
cluster=4 (down)
Prevotella disiens
cluster=5 (down)
other BVAB1
cluster=5 (down)
Granulicatella elegans
cluster=5 (up)
other Lactobacillales
cluster=5 (down)
Gardnerella vaginalis
cluster=5 (up)
ıctobacillus reuteri/oris/frumenti/an
cluster=5 (down)
other Porphyromonas
cluster=5 (down)
Prevotella copri
cluster=5 (down)
Peptoniphilus lacrimalis
cluster=5 (down)
Lactobacillus coleohominis
cluster=5 (down)
Lactobacillus iners
cluster=5 (down)
Lactobacillus jensenii
cluster=5 (down)
other BVAB2
cluster=5 (down)
other Arcanobacterium
cluster=6 (down)
Lactobacillus reuteri
cluster=6 (up)
Gemella asaccharolytica
cluster=6 (down)

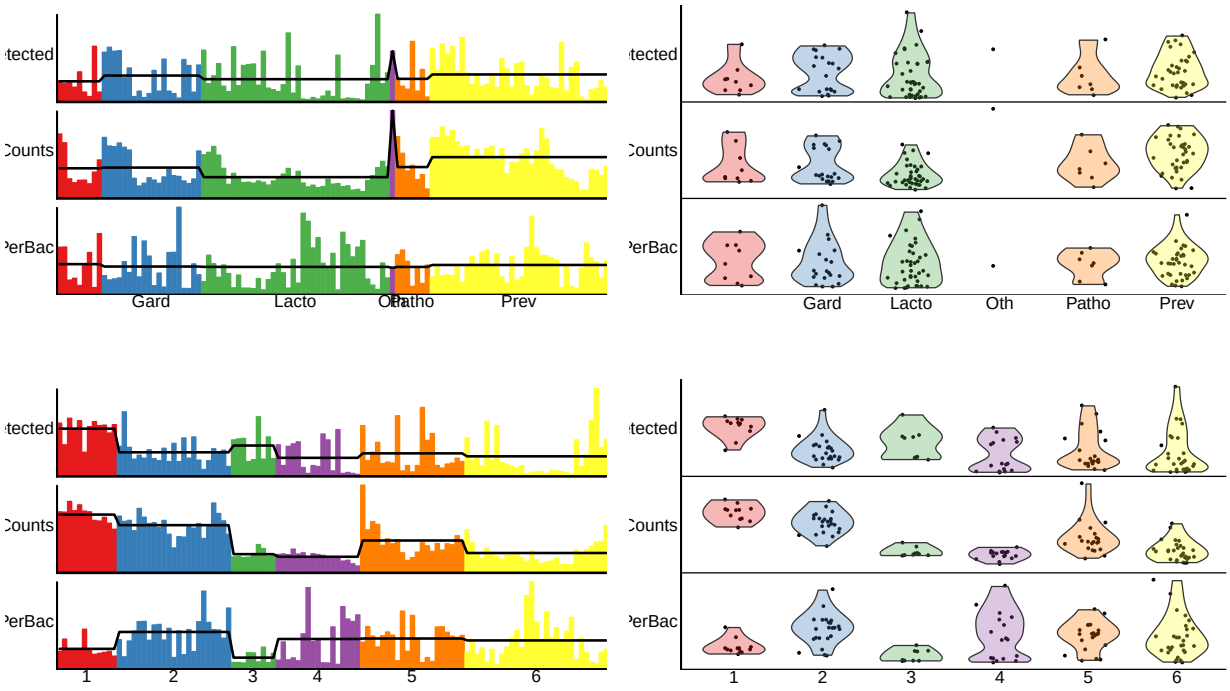
#Plotting bacteria across clusters






```
## [1] -0.01463636
```

#Plotting bacteria across clusters




```
##    .2
## .1     Gard Lacto Oth Patho Prev
##   1  0    4     1   0     1    6
##   2  3    0     2   0     1   17
##   3  1    0     6   0     0    2
##   4  3    3     8   0     2    1
##   5  0    8     3   1     2    7
##   6  2    5    18   0     1    3
```

Saving clusters and differentially expressed bacteria