



Correlation & regression-based – REBACCA, CCLasso, WGCNA

Graphical model inference – SpiecEasi

Cosine-based network – LSA

Differential network analysis - DiffCoEx

## Network construction

### Correlation & regression-based

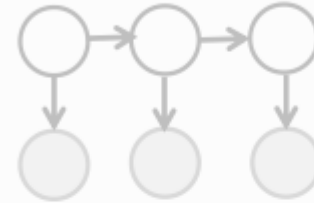


REBACCA

CCLasso

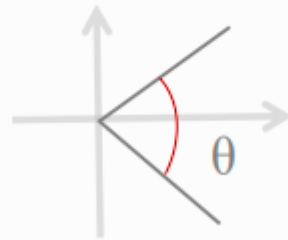
WGCNA

### Graphical model inference



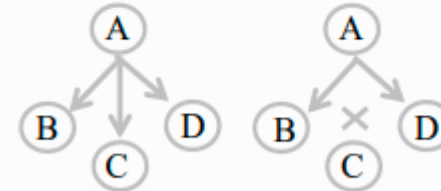
SpiecEasi

### Cosine-based network



LSA

### Differential network analysis



Condition 1

Condition 2

DiffCoEx

# Network construction - Correlation & regression-based



ShinyREBACCA

Status

Starting ShinyApp!!!

Begin

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Finish

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Start App Click to start

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ShinyCClasso

Status

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Step 1: Choose otu abundance matrices

Browse... No file selected

RESET START

Download Table

Developer:  
Small runze (shiny app)

Github:  
<https://github.com/hzaurzli> (Small runze)

OUT matrix

Relationship matrix

Show 10 entries

Search:

	from	to	weight
1	1	1	1
2	1	3	-0.530370446433455
3	1	4	0.5291861370718081
4	2	2	1
5	2	5	0.4537098907678318
6	2	6	0.6267243973737628
7	3	1	-0.5303704464334551
8	3	3	1
9	3	9	0.5486953570067105
10	3	10	-0.4829357354830439

Showing 1 to 10 of 22 entries

Previous 1 2 3 Next

# Network construction - Correlation & regression-based



Step by step ▾

Step1: soft threshold filtering

Step2: One-step network construction

Step3: Modules and traits relationship

Step4: Export modules

Step5: Network heatmap plot (All ASV/OTU)

ShinyMicroWGCNA

Status

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## Soft threshold filtering

First: Choose abundance matrix

BROWSE...

datExpr.csv

Upload complete

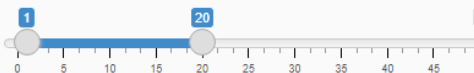
Second: Choose metadata file

BROWSE...

metadata.csv

Upload complete

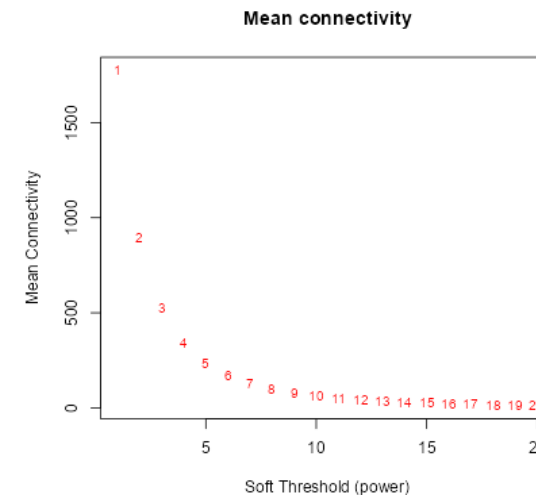
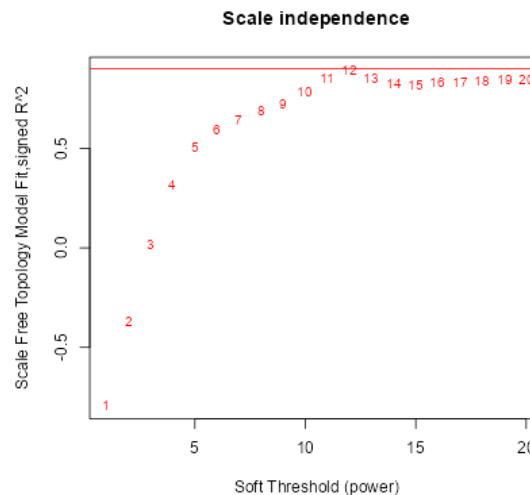
Range:



RESET

START

## Scale independence and Mean connectivity



# Network construction - Correlation & regression-based



Step by step ▾

- Step1: soft threshold filtering
- Step2: One-step network construction**
- Step3: Modules and traits relationship
- Step4: Export modules
- Step5: Network heatmap plot (All ASV/OTU)

Parameters for one-step network

CorType	Power
pearson ▾	12
TOMType	NetworkType
unsigned ▾	unsigned ▾

MaxBlockSize	Reassign Threshold
6000	0
MinModuleSize	Merge cut height
30	0.25

## One-step network construction

**One-step network construction**

First: Choose abundance matrix

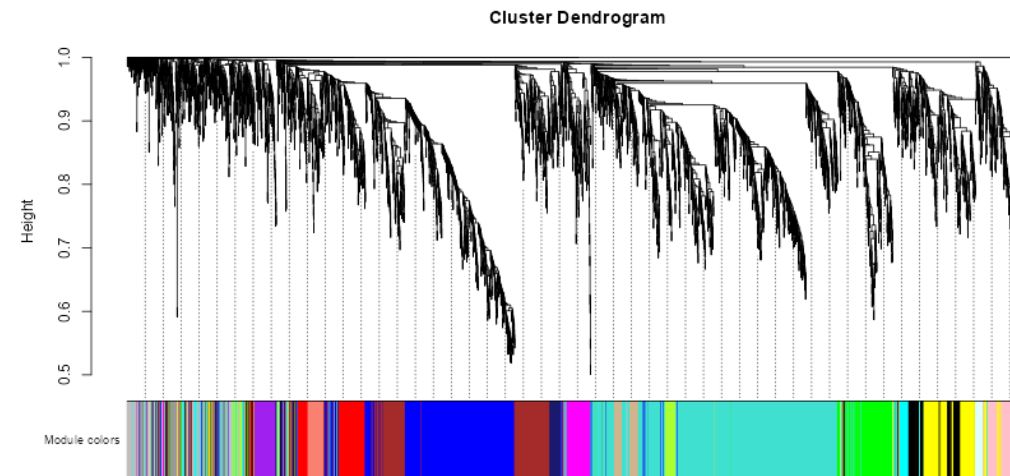
BROWSE... datExpr.csv

Upload complete

Second: Choose metadata file

BROWSE... metadata.csv

Upload complete



# Network construction - Correlation & regression-based



Step by step ▾

- Step1: soft threshold filtering
- Step2: One-step network construction
- Step3: Modules and traits relationship**
- Step4: Export modules
- Step5: Network heatmap plot (All ASV/OTU)

Parameters for one-step network

CorType:

Power:

TOMType:

NetworkType:

MaxBlockSize:

Reassign Threshold:

MinModuleSize:

Merge cut height:

## Modules and traits relationship matrix and graph

Show  entries

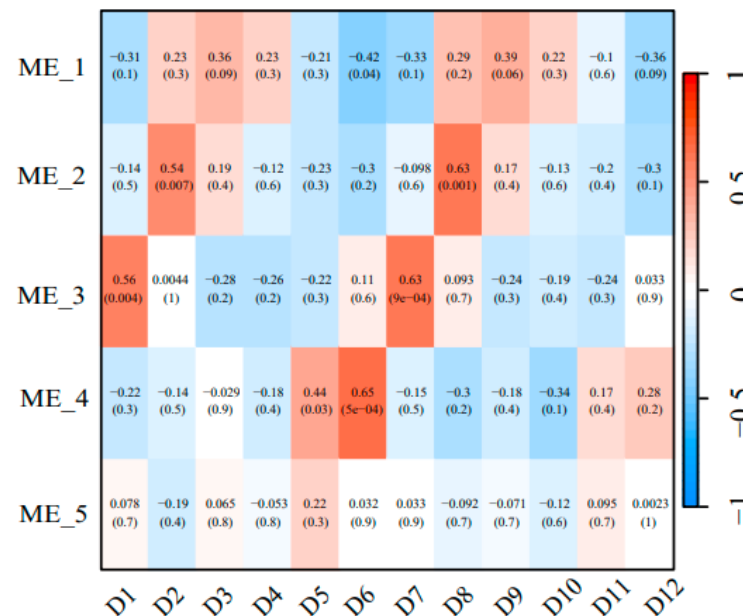
Search:

	Cor	P_val	Group	Module
1	-0.1854835706855175	0.3855383482877763	D1	ME_1
2	-0.1484085123562221	0.4888837608409156	D1	ME_2
3	-0.3312691657680626	0.1138161991096475	D1	ME_3
4	-0.1179681229195639	0.5830090209729648	D1	ME_4
5	-0.2605371723233824	0.2188463541969577	D1	ME_5
6	-0.2995390689107063	0.1550281713239249	D1	ME_6
7	0.3852789965143196	0.0629944323321912	D1	ME_7
8	0.4797044642424764	0.01768633885266085	D1	ME_8
9	-0.1556895948758352	0.4675621693072267	D1	ME_9
10	-0.06710999082119329	0.7553666701726757	D1	ME_10

Showing 1 to 10 of 216 entries

Previous  2 3 4 5 ... 22 Next

## Module-trait relationships



# Network construction - Graphical model inference



ShinySpiecEasi

Status

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Open Shiny app

Step 1: Choose otu abundance matrices

Browse...

example.csv

Upload complete

Select Method:

MB

MB

Glasso

Normal

Download all results:

Download Table

Plot output format

☒ PNG

☐ PDF

☐ JPEG

Relationship matrix and network graph

Search:

	from	to
1	otu_1	otu_58
2	otu_2	otu_15
3	otu_2	otu_68
4	otu_2	otu_105
5	otu_4	otu_14
6	otu_4	otu_22
7	otu_4	otu_39
8	otu_4	otu_44
9	otu_4	otu_56
10	otu_4	otu_93

Showing 1 to 10 of 144 entries

Previous

1

2

3

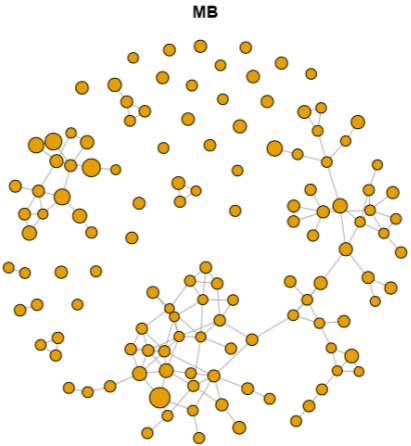
4

5

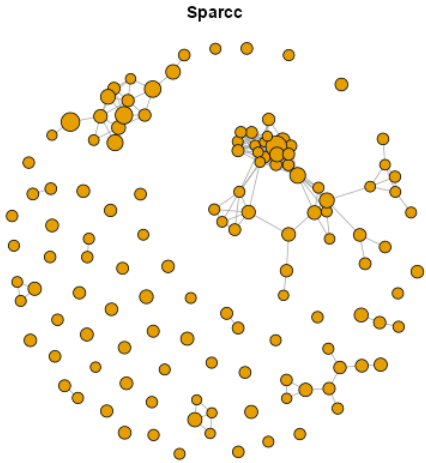
...

15

Next



MB



Sparcc

# Network construction - Cosine-based network



ShinyCosine

Status

Starting ShinyApp!!!

Begin

ShinyApp has been started!!!

Finish

Please close this window before starting another Shiny Apps!!!

Start App Click to start

Open Web Open Shiny app

Step 1: Choose otu abundance matrices

Browse...

example.csv

Upload complete

RESET

START

Download Table

Developer:

Small runze (shiny app)

Github:

<https://github.com/hzaurzli> (Small runze)

Relationship matrix

Show 10 entries

Search:

	from	to	weight
1	otu_1	otu_1	1
2	otu_1	otu_2	0.5822740536768669
3	otu_1	otu_3	0.3810506495397799
4	otu_1	otu_4	0.6787597480723121
5	otu_1	otu_5	0.439113053712139
6	otu_1	otu_6	0.4623154170265368
7	otu_1	otu_7	0.5090927911893118
8	otu_1	otu_8	0.4994547522395268
9	otu_1	otu_9	0.5501973238586478
10	otu_1	otu_10	0.5545631017481684

Showing 1 to 10 of 100 entries

Previous

1

2

3

4

5

...

10

Next



# Network construction - Differential network



ShinyDiffCoEx

Status

Starting ShinyApp!!!  

Begin

ShinyApp has been started!!!  
Finish

Please close this window before starting another Shiny Apps!!!

Start App Click to start

Open Web Open Shiny app

Step 1: Choose otu abundance matrices (Treatment 1)

Browse...

datC1.csv

Upload complete

Step 2: Choose otu abundance matrices (Treatment 2)

Browse...

datC2.csv

Upload complete

Step 3: User defined parameter for soft thresholding

6

RESET

START

Dissimilarity coefficient T values and ASV/OTU dendrogram and module

Show 10 entries

Search:

	from	to	T value
1	otu_1	otu_2	0.9996925245006302
2	otu_1	otu_3	0.9996768046198222
3	otu_1	otu_4	0.9995780680803314
4	otu_1	otu_5	0.9996526098272054
5	otu_1	otu_6	0.9997661885718989
6	otu_1	otu_7	0.9994539576176121
7	otu_1	otu_8	0.9998193171131736
8	otu_1	otu_9	0.9977469913787405
9	otu_1	otu_10	0.9998176359594321
10	otu_1	otu_11	0.9976019954367364

Showing 1 to 10 of 999,000 entries

Previous

1

2

3

4

5

...

99,900

Next

Larger T values represent that the weights (regulatory relationships) of ASV/OTU pairs are less different between the two treatments!!!

Show 10 entries

Search:

	ann
otu_1	M1
otu_5	M1
otu_9	M1
otu_18	M1
otu_30	M1
otu_41	M1
otu_45	M1
otu_60	M1
otu_65	M1
otu_80	M1

Showing 1 to 10 of 1,000 entries

Previous

1

2

3

4

5

...

100

Next

Difference networks analysis

