Network construction

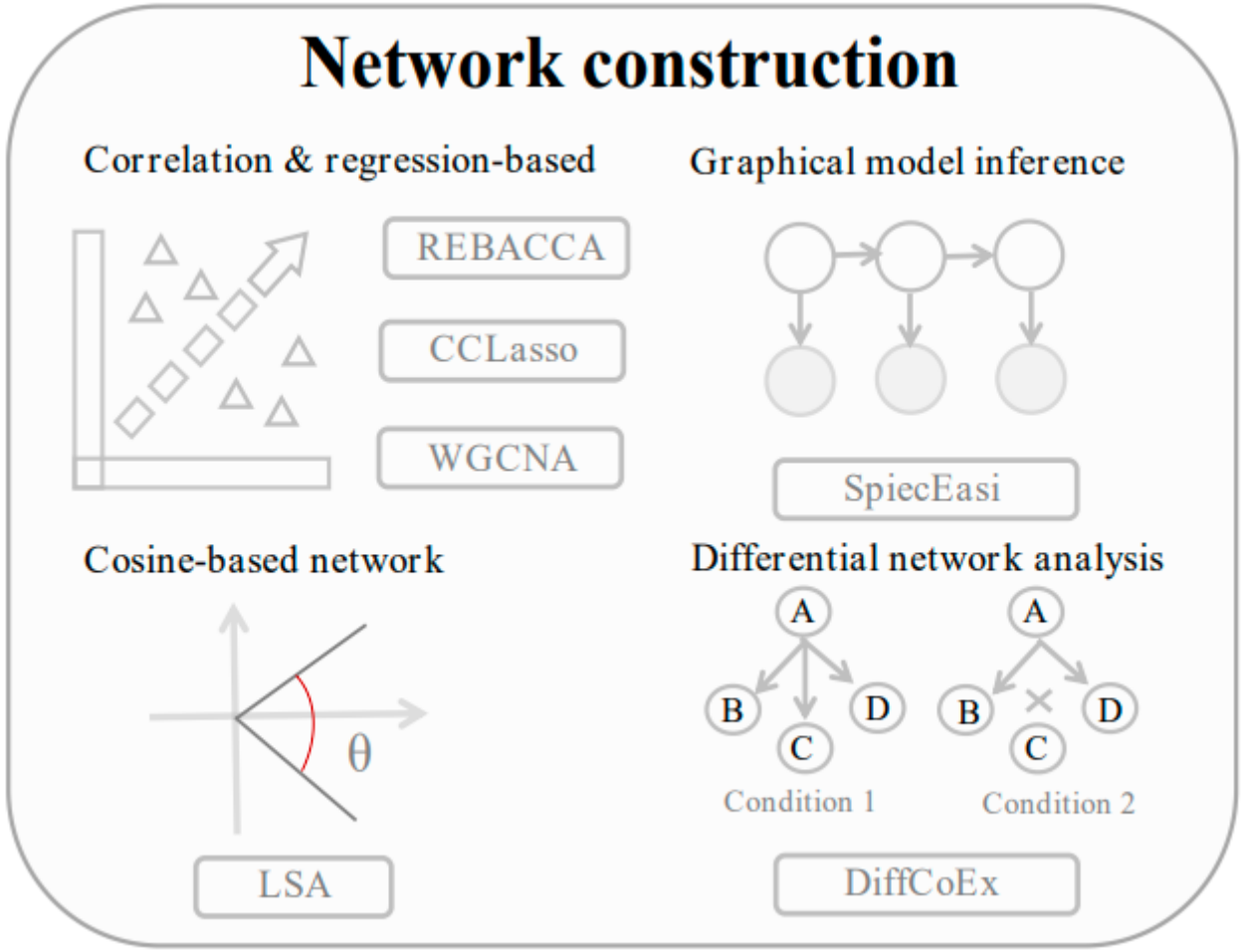
Correlation & regression-based – REBACCA, CCLasso, WGCNA

Graphical model inference – SpiecEasi

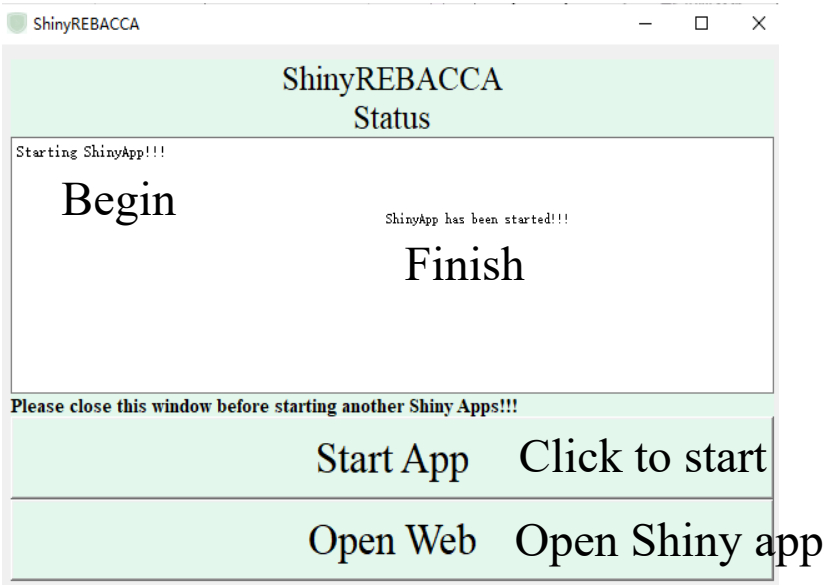
Cosine-based network – LSA

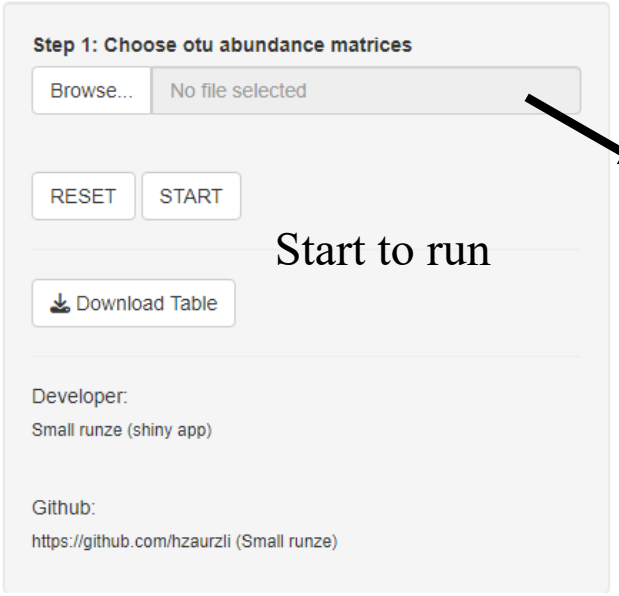
Differential network analysis - DiffCoEx

Network construction



Network construction - Correlation & regression-based





OUT matrix

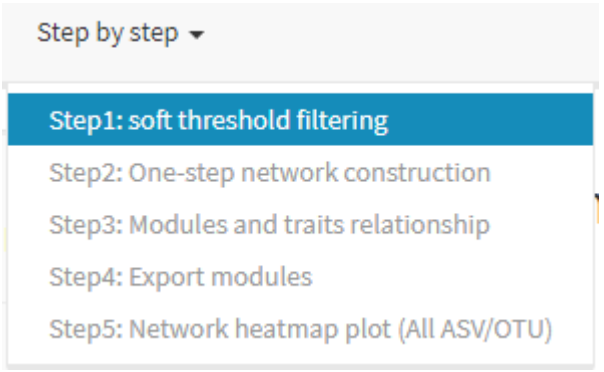
Relationship matrix

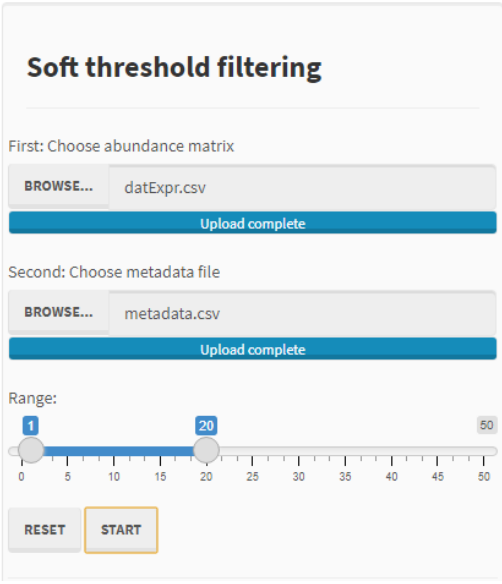
Show 10 entries Search:

	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

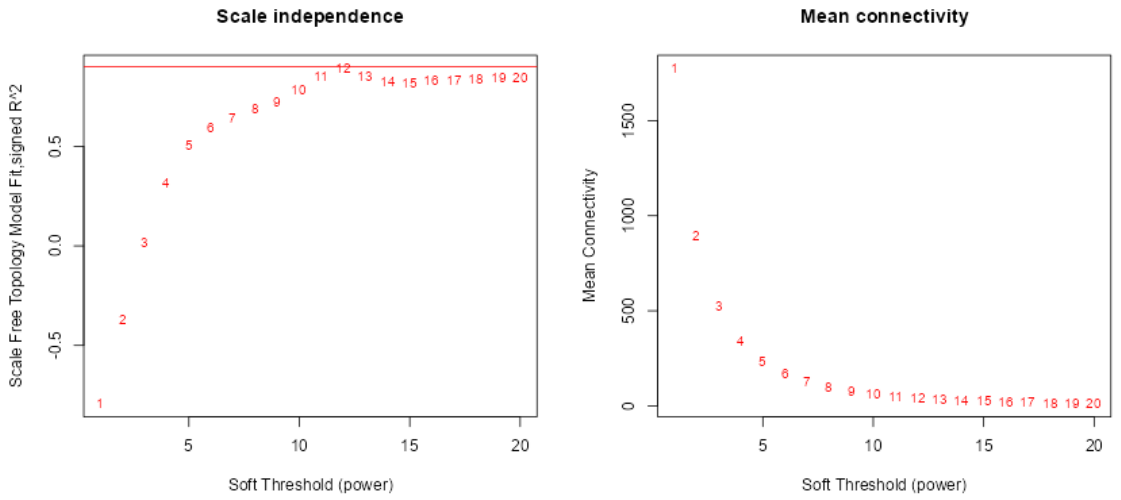
Showing 1 to 10 of 22 entries Previous 1 2 3 Next

Network construction - Correlation & regression-based





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

First: Choose abundance matrix

BROWSE... datExpr.csv

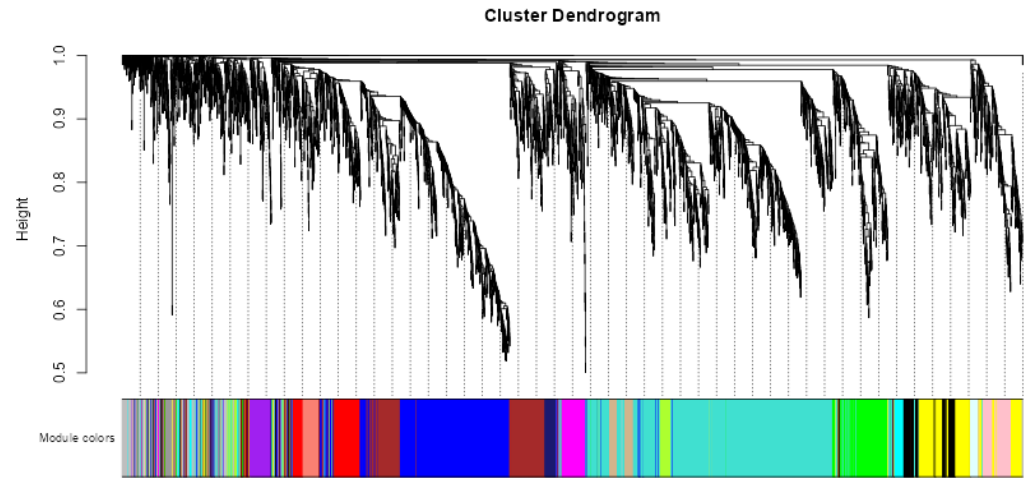
Upload complete

Second: Choose metadata file

BROWSE... metadata.csv

Upload complete

One-step network construction



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	MaxBlockSize	Reassign Threshold
pearson	12	6000	0

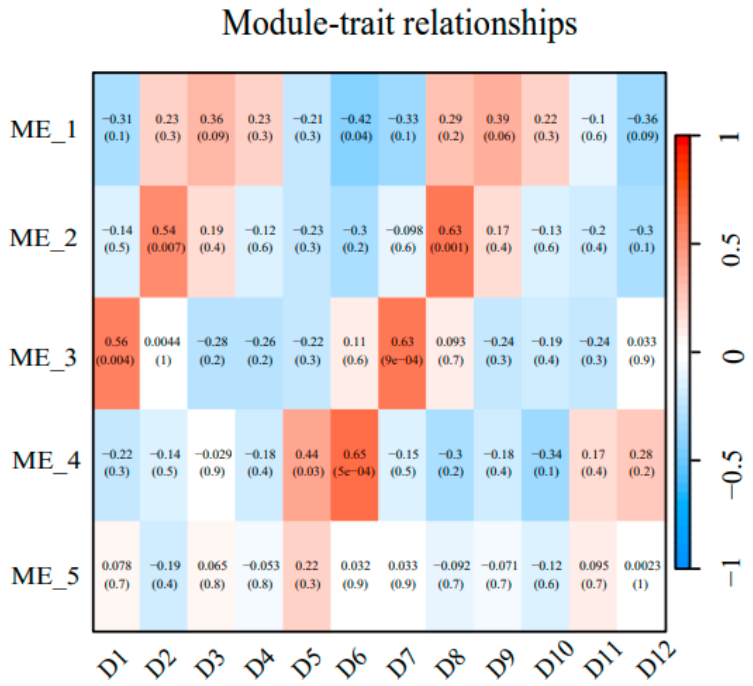
TOMType	NetworkType	MinModuleSize	Merge cut height
unsigned	unsigned	30	0.25

Modules and traits relationship matirx and graph

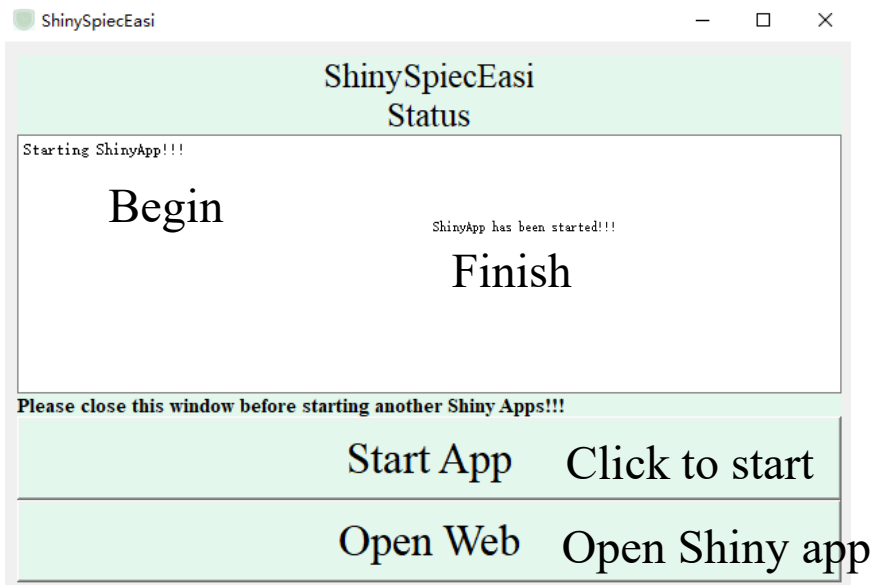
Show 10 entries Search:

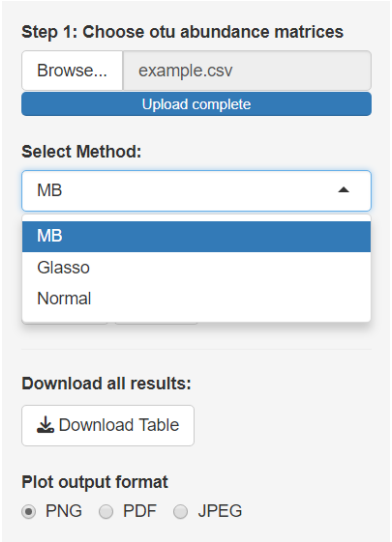
	Cor	P_val	Group	Module
1	-0.1854835706855175	0.3855383482877763	D1	ME_1
2	-0.1484085123562221	0.4888837608409156	D1	ME_2
3	-0.3312691657680626	0.1138161991096475	D1	ME_3
4	-0.1179681229195639	0.5830090209729648	D1	ME_4
5	-0.2605371723233824	0.2188463541969577	D1	ME_5
6	-0.2995390689107063	0.1550281713239249	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 1 2 3 4 5 … 22 Next



Network construction - Graphical model inference



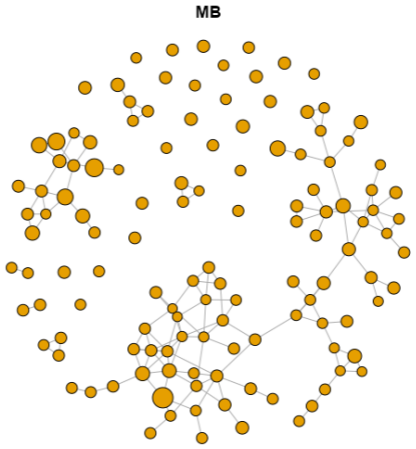


Relationship matrix and network graph

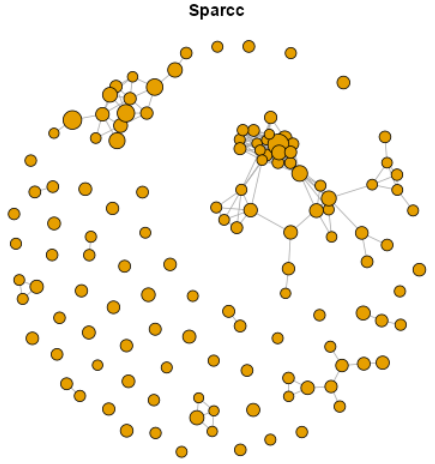
Show 10 entries Search:

	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

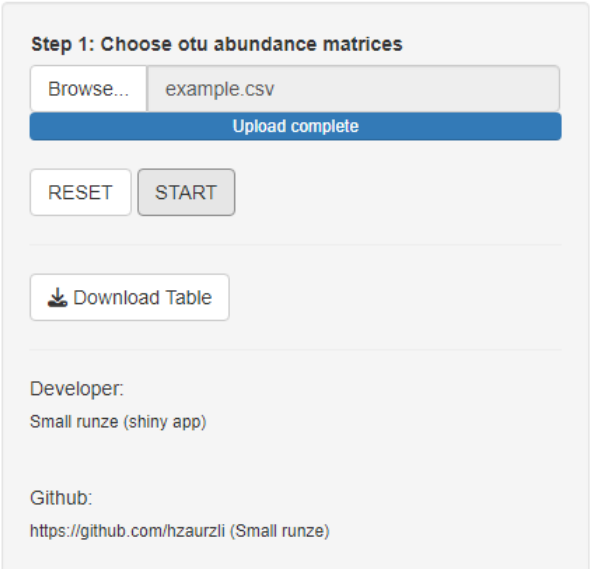


MB



Sparcc

Network construction - Cosine-based network



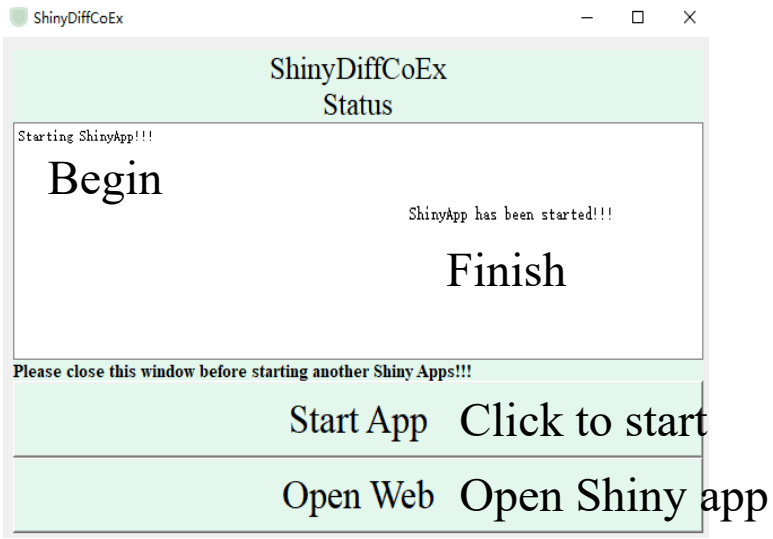
Relationship matrix

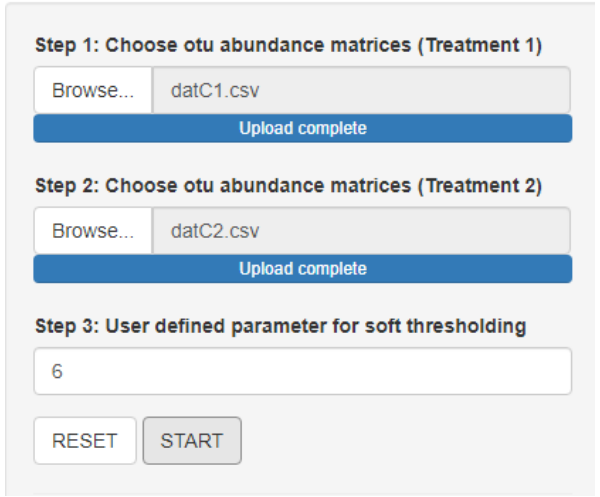
Show 10 entries Search:

	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





Dissimilarity coefficient T values and ASV/OTU dendrogram and module

Show 10 entries Search:

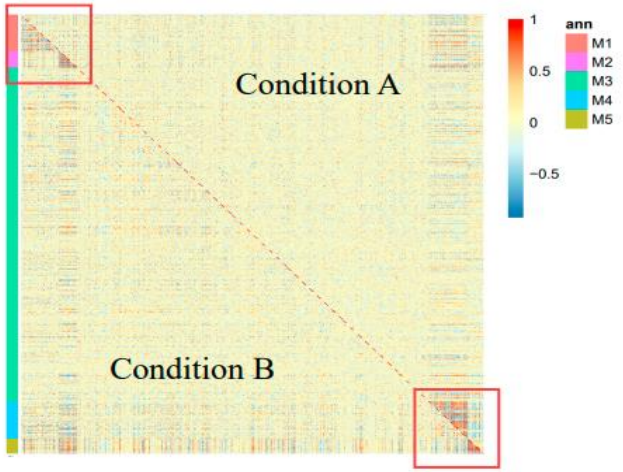
	from	to	T value
1	otu_1	otu_2	0.9996925245006302
2	otu_1	otu_3	0.9996768046198222
3	otu_1	otu_4	0.9995780680803314
4	otu_1	otu_5	0.9996526098272054
5	otu_1	otu_6	0.9997661885718989
6	otu_1	otu_7	0.9994539576176121
7	otu_1	otu_8	0.9998193171131736
8	otu_1	otu_9	0.9977469913787405
9	otu_1	otu_10	0.9998176359594321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