

completeOlink - Manual

Here is an easy, step-wise guide to the use of completeOlink webserver for **OLINK** proteomics data analysis

A. Data upload:

Olink View
Outlier Detection
Filter Data
Statistics
Post-hoc Statistics
Pathway Enrichment
Additional Visualization

Data table: raw
Data table: meta
Data table: complete
Data table: panel metrics
Data table: group-wise panel metrics
About/ Citation

Show 10 entries
Search:

SampleID	Index	OlinkID	UniProt	Assay	MissingFreq	Panel_Version	PlatID	QC
All		A	A		All	All	All	A
1 A1	1	OID01216	O00533	CHL1	0.01875	v.1201	Example_Data_1_CAM.csv	Pas
2 A2	2	OID01216	O00533	CHL1	0.01875	v.1201	Example_Data_1_CAM.csv	Pas
3 A3	3	OID01216	O00533	CHL1	0.01875	v.1201	Example_Data_1_CAM.csv	Pas
4 A4	4	OID01216	O00533	CHL1	0.01875	v.1201	Example_Data_1_CAM.csv	Pas
5 A5	5	OID01216	O00533	CHL1	0.01875	v.1201	Example_Data_1_CAM.csv	Pas
6 A6	6	OID01216	O00533	CHL1	0.01875	v.1201	Example_Data_1_CAM.csv	Pas
7 A7	7	OID01216	O00533	CHL1	0.01875	v.1201	Example_Data_1_CAM.csv	Pas
8 A8	8	OID01216	O00533	CHL1	0.01875	v.1201	Example_Data_1_CAM.csv	Pas

Data Uploading

Use demo data
☐ No
☒ Yes

Process uploaded data

Select panel
all

Select group column
Index

© 2025 Debojyoti Das Bioinformatics Unit, Core Facility & Clinical Genomics Linköping, Linköping University

(a) Demo data upload

Olink View
Outlier Detection
Filter Data
Statistics
Post-hoc Statistics
Pathway Enrichment
Additional Visualization

Data table: raw
Data table: meta
Data table: complete
Data table: panel metrics
Data table: group-wise panel metrics
About/ Citation

Show 10 entries
Search:

SampleID	Index	Sample_Type	OlinkID	UniProt	Assay	MissingFreq	Panel	Panel_Version	PlatID
All		All	A	A		All	All	All	All
1 Sample Control1	4	CONTROL	OID00471	P10145	IL8	0	Inflammation	v.3023	13627181
2 Sample Control1	4	CONTROL	OID00472	P15692	VEGFA	0	Inflammation	v.3023	13627181
3 Sample Control1	4	CONTROL	OID05124	P01732	CD8A	0	Inflammation	v.3023	13627181
4 Sample Control1	4	CONTROL	OID00474	P80098	MCP-3	0.46875	Inflammation	v.3023	13627181
5 Sample Control1	4	CONTROL	OID00475	P39905	GDNF	0	Inflammation	v.3023	13627181
6 Sample Control1	4	CONTROL	OID00476	Q9H5V8	CDCP1	0	Inflammation	v.3023	13627181
7 Sample Control1	4	CONTROL	OID00477	Q9BZW8	CD244	0	Inflammation	v.3023	13627181
8 Sample Control1	4	CONTROL	OID00478	P13232	IL7	0	Inflammation	v.3023	13627181

Data Uploading

Use demo data
☒ No
☐ Yes

Upload data
Browse... user_data.
Upload complete

Upload meta data
Browse... user_data.
Upload complete

Process uploaded data

Select panel
all

Select group column
Index

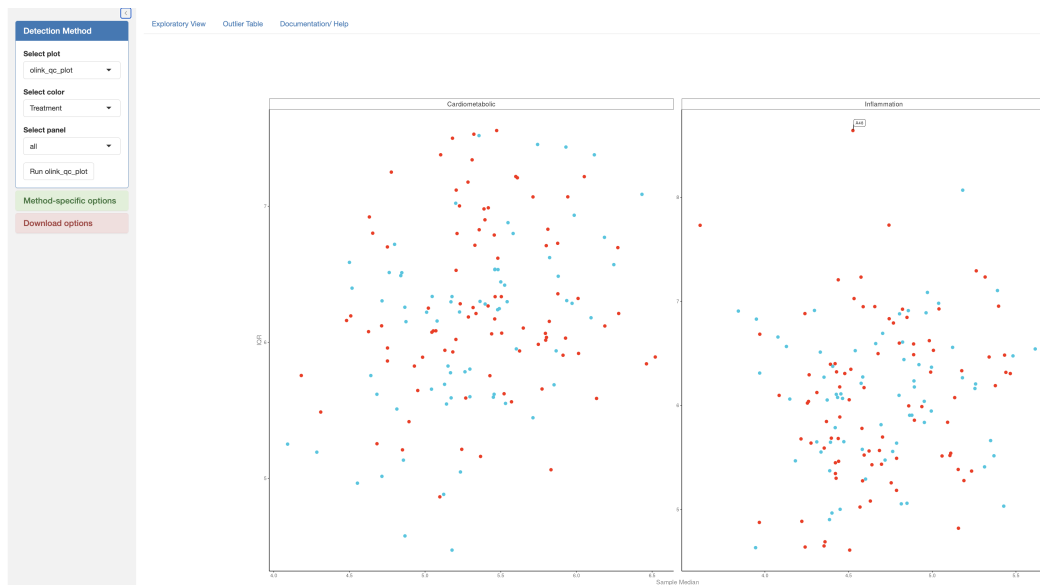
© 2025 Debojyoti Das Bioinformatics Unit, Core Facility & Clinical Genomics Linköping, Linköping University

(b) User data upload

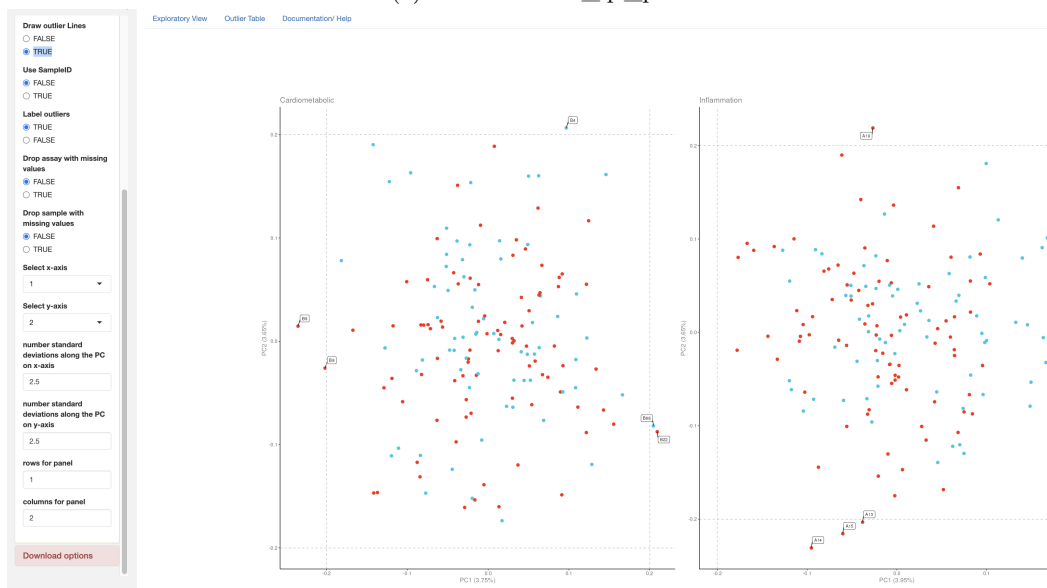
Figure 1: Olink View tab

The **Olink View** tab allows data upload. User can optionally use the demo data by selecting “Yes” for “Use demo data”. Figure 1 depicts both scenarios.

User needs to upload the csv file (the CSV file is characterized by the presence of “;” as a delimiter instead of comma) and a sample manifest file (regular CSV file) where information about each unique “SampleID” in the npx raw data file is available. SampleID (s) are required to be character strings.



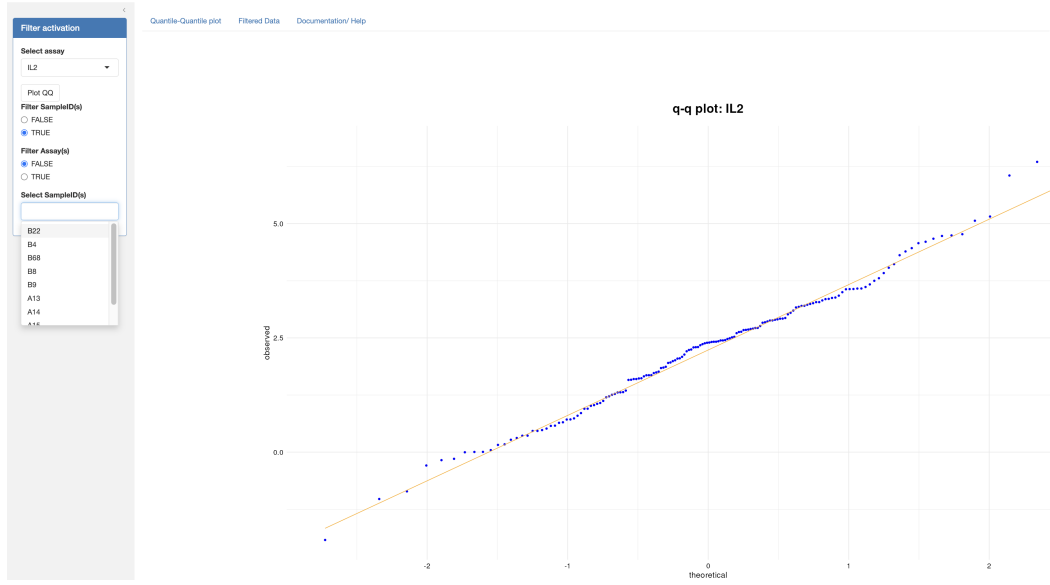
(a) method: olink_qc_plot



(b) method: olink_pca_plot

Figure 2: Outlier Detection tab (demo data; color: Treatment)

B. Outlier detection: Three outlier detection methods are available with control over parameters (optional) for accurate detection. The user can choose any of the three methods to find outliers or this step can be entirely skipped. See Figure 2. Note: If this step is used the outliers that are found in the most recent run/execution, are propagated to the next analysis step. Although, the user can choose to use the original data instead of the filtered data at every subsequent step. Results of **olink_umap_plot** can change in each run because of the inherent stochasticity of UMAP method.



(a) assay qq plot

Filter activation														
<div> <div>Filter data</div> <div>Select assay</div> <div>CHL1</div> <div>Plot QQ</div> <div> <input type="radio"/> FALSE <input checked="" type="radio"/> TRUE </div> <div>Filter Assay(s)</div> <div> <input checked="" type="radio"/> FALSE <input type="radio"/> TRUE </div> <div>Select SampleID(s)</div> <div>B22 B4 B68 B8 B9</div> </div>														
<div> <div>Quantile-Quantile plot</div> <div>Filtered Data</div> <div>Documentation / Help</div> </div>														
<div> <div>Copy</div> <div>CSV</div> <div>Excel</div> <div>Show All</div> <div>Show 10 entries</div> <div>Search:</div> </div>														
<div> <div>clear data</div> <div> <div>SampleID</div> <div>Index</div> <div>OutlierID</div> <div>UnitProt</div> <div>Assay</div> <div>MissingFreq</div> <div>Panel_Version</div> <div>PlateID</div> <div>QC_Warning</div> <div>LOD</div> <div>NPX</div> <div>Panel</div> <div>Subject</div> <div>Treatment</div> <div>Site</div> <div>Time</div> </div> </div>														
<div> <div>All</div> <div>1</div> <div>A1</div> <div>1</div> <div>OID01216</div> <div>000533</div> <div>CHL1</div> <div>0.01875</div> <div>v1201</div> <div>Example_Data_1_CAM.csv</div> <div>Pass</div> <div>2.36846658156787</div> <div>12.9561425886421</div> <div>Olink</div> <div>Cardiomatabolic</div> <div>ID1</div> <div>Untreated</div> <div>Site_D</div> <div>Basal</div> </div>														
<div> <div>2</div> <div>A2</div> <div>2</div> <div>OID01216</div> <div>000533</div> <div>CHL1</div> <div>0.01875</div> <div>v1201</div> <div>Example_Data_1_CAM.csv</div> <div>Pass</div> <div>2.36846658156787</div> <div>11.269476531342</div> <div>Olink</div> <div>Cardiomatabolic</div> <div>ID1</div> <div>Untreated</div> <div>Site_D</div> <div>Week</div> </div>														
<div> <div>3</div> <div>A3</div> <div>3</div> <div>OID01216</div> <div>000533</div> <div>CHL1</div> <div>0.01875</div> <div>v1201</div> <div>Example_Data_1_CAM.csv</div> <div>Pass</div> <div>2.36846658156787</div> <div>25.4510701414362</div> <div>Olink</div> <div>Cardiomatabolic</div> <div>ID1</div> <div>Untreated</div> <div>Site_D</div> <div>Week</div> </div>														
<div> <div>4</div> <div>A4</div> <div>4</div> <div>OID01216</div> <div>000533</div> <div>CHL1</div> <div>0.01875</div> <div>v1201</div> <div>Example_Data_1_CAM.csv</div> <div>Pass</div> <div>2.36846658156787</div> <div>14.4530382024394</div> <div>Olink</div> <div>Cardiomatabolic</div> <div>ID2</div> <div>Untreated</div> <div>Site_C</div> <div>Basal</div> </div>														
<div> <div>5</div> <div>A5</div> <div>5</div> <div>OID01216</div> <div>000533</div> <div>CHL1</div> <div>0.01875</div> <div>v1201</div> <div>Example_Data_1_CAM.csv</div> <div>Pass</div> <div>2.36846658156787</div> <div>7.6287118351486</div> <div>Olink</div> <div>Cardiomatabolic</div> <div>ID2</div> <div>Untreated</div> <div>Site_C</div> <div>Week</div> </div>														
<div> <div>6</div> <div>A6</div> <div>6</div> <div>OID01216</div> <div>000533</div> <div>CHL1</div> <div>0.01875</div> <div>v1201</div> <div>Example_Data_1_CAM.csv</div> <div>Pass</div> <div>2.36846658156787</div> <div>6.31658627701563</div> <div>Olink</div> <div>Cardiomatabolic</div> <div>ID2</div> <div>Untreated</div> <div>Site_C</div> <div>Week</div> </div>														
<div> <div>7</div> <div>A7</div> <div>7</div> <div>OID01216</div> <div>000533</div> <div>CHL1</div> <div>0.01875</div> <div>v1201</div> <div>Example_Data_1_CAM.csv</div> <div>Pass</div> <div>2.36846658156787</div> <div>12.7306115666331</div> <div>Olink</div> <div>Cardiomatabolic</div> <div>ID3</div> <div>Untreated</div> <div>Site_D</div> <div>Basal</div> </div>														
<div> <div>8</div> <div>A8</div> <div>8</div> <div>OID01216</div> <div>000533</div> <div>CHL1</div> <div>0.01875</div> <div>v1201</div> <div>Example_Data_1_CAM.csv</div> <div>Pass</div> <div>2.36846658156787</div> <div>13.6663354482353</div> <div>Olink</div> <div>Cardiomatabolic</div> <div>ID3</div> <div>Untreated</div> <div>Site_D</div> <div>Week</div> </div>														
<div> <div>9</div> <div>CONTROL_SAMPLE_AS 1</div> <div>9</div> <div>OID01216</div> <div>000533</div> <div>CHL1</div> <div>0.01875</div> <div>v1201</div> <div>Example_Data_1_CAM.csv</div> <div>Pass</div> <div>2.36846658156787</div> <div>16.196823765218</div> <div>Olink</div> <div>Cardiomatabolic</div> <div></div> <div></div> <div></div> <div></div> </div>														
<div> <div>10</div> <div>A9</div> <div>10</div> <div>OID01216</div> <div>000533</div> <div>CHL1</div> <div>0.01875</div> <div>v1201</div> <div>Example_Data_1_CAM.csv</div> <div>Pass</div> <div>2.36846658156787</div> <div>6.10659226461137</div> <div>Olink</div> <div>Cardiomatabolic</div> <div>ID3</div> <div>Untreated</div> <div>Site_D</div> <div>Week</div> </div>														
<div> <div>Showing 1 to 10 of 28,520 entries</div> <div>Previous</div> <div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div> <div>...</div> <div>2,852</div> <div>Next</div> </div>														

(b) sample filtered data

Figure 3: Filter Data tab (demo data)

C. Filter Data:

While the filtering step is optional, the user has the choice of removing samples (outliers from outlier detection step B) as well as assays (having non-parametric or non-standard distribution) before further analysis. See Figure 3. Qualitative feature of each assay is captured using quantile-quantile plot, a standard way to detect if there are departures from normal distribution (non-parametric distribution).

Method

Use filtered data

- FALSE
- TRUE

Select panel

all

Select variable

Treatment

Select test

olink_test

Parameters

P-value cutoff

0.05

P-value column to use

Adjusted_pval

Pair-id

- TRUE
- FALSE

Run olink test

Plot

Heatmap

Download Options

Statistical test resultStatistical test plotStatistical test logDocumentation/HelpHeatmapCompiledHeatmap Documentation/HelpInner visualization

CopyCSVExcelShow All

10 entries

Search:

olink test

Assay	OlinkID	UniProt	Panel	estimate	Untreated	Treated	statistic	p.value	parameter	conf.low	conf.high	method	alternative	Adjusted_pval	Threshold	
A	P	A	All	All	All	A	A	All	All	All	All	A	All	All	All	
1	TRAIL	OID00488	P00591	Olink Inflammation	2.639	10.04	7.4	4.97	0.00001851103913620632	145.745	1.59	3.689	Weibach Two Sample t-test	two.sided	0.0001710813215703923	Up
2	SERPINA7	OID01232	P05543	Olink Cardiomatabolic	3.201	12.26	9.059	4.979	0.00001859679562296872	139.422	1.93	4.472	Weibach Two Sample t-test	two.sided	0.0001710813215703923	Up
3	CXCL11	OID00488	O14625	Olink Inflammation	-1.719	3.897	5.616	-4.31	0.0002957411100113864	148.867	-2.507	-0.931	Weibach Two Sample t-test	two.sided	0.00181387880609837	Down
4	MMP-10	OID00527	P06238	Olink Inflammation	2.15	11.348	9.198	4.055	0.00008492225456731057	133.107	1.101	3.199	Weibach Two Sample t-test	two.sided	0.003903180191504221	Up
5	CD6	OID00499	Q8WWJ7	Olink Inflammation	-0.89	1.844	2.734	-3.989	0.0001960646791169625	141.105	-1.331	-0.449	Weibach Two Sample t-test	two.sided	0.003903180191504221	Down
6	FKBL	OID00533	P49771	Olink Inflammation	-1.96	4.171	6.131	-3.879	0.0001569219151478983	148.828	-2.959	-0.962	Weibach Two Sample t-test	two.sided	0.004812272054535549	Down
7	DPP4	OID01296	P27487	Olink Cardiomatabolic	1.987	6.221	4.235	3.766	0.0002367703108137154	151.567	0.944	3.029	Weibach Two Sample t-test	two.sided	0.006223676741389091	Up
8	TWEAK	OID00555	O43508	Olink Inflammation	1.924	10.056	8.132	3.595	0.0004357291155828183	153.654	0.667	2.981	Weibach Two Sample t-test	two.sided	0.01002176965840482	Up
9	EFEMP1	OID01281	Q12805	Olink Cardiomatabolic	0.686	2.775	2.09	3.201	0.001664181916611961	153.746	0.203	1.109	Weibach Two Sample t-test	two.sided	0.03290616774754727	Up
10	REG3A	OID01280	Q06141	Olink Cardiomatabolic	2.259	9.486	7.227	3.149	0.00199978883208386	142.217	0.841	3.678	Weibach Two Sample t-test	two.sided	0.03290615774754727	Up

Showing 1 to 10 of 184 entries

Previous

1

2

3

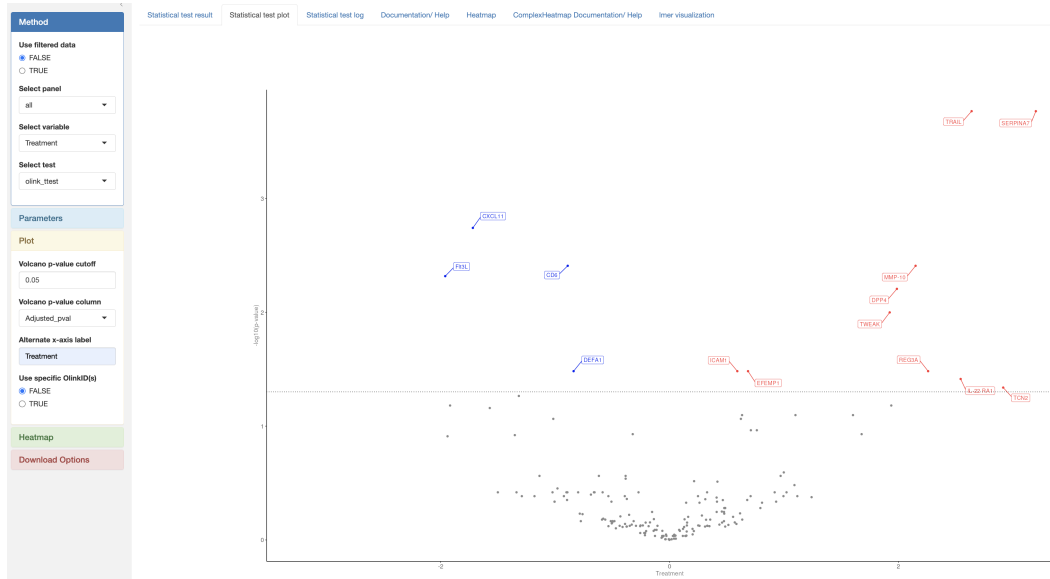
4

5

...

19

(a) t-test result



(b) t-test plot

Figure 4: Statistics tab (two-level variable)

D. Statistics:

Statistical analysis methods offered in the application can be broadly grouped as “parametric” and “non-parametric” statistics. Parametric statistical tests can be further grouped as tests where “Outcome factor with exactly two levels” and “Outcome factor with greater than two levels”. The former comprises of t-test (olink_ttest) [See Figure 4.] whereas the latter includes analysis of variance (anova; olink_anova)[See Figure 5.] and linear mixed effects model (lmer; olink_lmer).

The corresponding “non-parametric” test for “Outcome factor with exactly two levels” is the Mann-Whitney U test (olink_wilcox), while for “Outcome factor with greater than two levels” the tests are Kruskal-Wallis test/ Friedman test (olink_one_non_parametric) and two-way ordinal analysis of variance (olink_ordinalRegression). Both olink_ttest and olink_wilcox results can be used to generate volcano plots corresponding to the test outcome. In addition to statistical tests, this section allows user to generate heatmaps for a choice of grouping variable. Clustering can be invoked both on rows and/or columns, and

Method

Use filtered data

☐ FALSE

☐ TRUE

Select panel

all

Select variable

TreatmentTime

Select test

olink_anova

Parameters

P-value cutoff

0.05

P-value column to use

Adjusted_pval

Provide model formula

Return covariates

☒ FALSE

☐ TRUE

Select covariate column

Site

Run olink anova

Plot

Heatmap

Download Options

Statistical test result

Statistical test plot

Statistical test log

Documentation/ Help

Heatmap

ComplexHeatmap Documentation/ Help

Inner visualization

Copy

CSV

Excel

Show All

Show 25 entries

Search:

olink anova

Assay	OlinkID	UniProt	Panel	term	df	sumsq	meansq	statistic	p.value	Adjusted_pval	Threshold	
All	All	All	All	All	All	All	All	All	All	All	All	
1	TRAIL	O1D0488	P50591	Olink Inflammation	Treatment	1	246.553	246.553	28.201	3.994221509184481e-7	0.0002204810273069633	Significant
2	SERPINA7	O1D01232	P50543	Olink Cardiometabolic	Treatment	1	334.071	334.071	22.468	0.00005052529051121295	0.001396977432109477	Significant
3	MMP-10	O1D00527	P09238	Olink Inflammation	Treatment	1	209.571	209.571	21.473	0.00000788343221843342	0.001450551528191749	Significant
4	CD6	O1D00499	Q6WWJ7	Olink Inflammation	Treatment	1	33.659	33.659	19.013	0.00002437828598631435	0.00336420346611381	Significant
5	CXCL11	O1D00486	O14625	Olink Inflammation	Treatment	1	112.527	112.527	17.653	0.00004595835901001439	0.005073802834705589	Significant
6	EFEMP1	O1D01281	Q12805	Olink Cardiometabolic	Treatment	1	27.021	27.021	15.59	0.0001218416881933909	0.01121883531379197	Significant
7	CD59	O1D01248	P13987	Olink Cardiometabolic	Time	2	44.386	22.193	9	0.0002060960119263373	0.01489544805144775	Significant
8	ILTR	O1D01253	P16871	Olink Cardiometabolic	Treatment	1	42.825	42.825	14.401	0.0002156760567166341	0.01489544805144775	Significant
9	TWEAK	O1D00555	O43508	Olink Inflammation	Treatment	1	144.761	144.761	12.308	0.000599724473999425	0.03678310107196474	Significant
10	RI3L	O1D00533	P49771	Olink Inflammation	Treatment	1	118.616	118.616	12.055	0.0006797119782441076	0.03752010119907474	Significant
11	CD59	O1D01248	P13987	Olink Cardiometabolic	Treatment:Time	2	35.907	17.954	7.281	0.0009677763023400308	0.04856477444469568	Significant
12	REG3A	O1D01280	Q06141	Olink Cardiometabolic	Treatment	1	200.63	200.63	11.043	0.001125412261855826	0.05176896404536799	Non-significant
13	DPH4	O1D01266	P27487	Olink Cardiometabolic	Treatment	1	117.972	117.972	10.841	0.001240214059814251	0.05287370469365128	Non-significant
14	IL-22 RA1	O1D00516	Q8N6P7	Olink Inflammation	Treatment	1	283.918	283.918	10.161	0.001755149429312008	0.06791960420726395	Non-significant
15	TNFSF14	O1D00506	O43557	Olink Inflammation	Treatment	1	130.038	130.038	10.062	0.001845641418675651	0.06791960420726395	Non-significant
16	TNC	O1D01265	P24821	Olink Cardiometabolic	Time	2	21.974	10.987	6.405	0.002155564348252676	0.0743697001471733	Non-significant
17	CCL18	O1D01276	P55774	Olink Cardiometabolic	Time	2	214.238	107.119	6.237	0.0025165969845903	0.07717564085984921	Non-significant
18	DEFA1	O1D01277	P59665	Olink Cardiometabolic	Treatment	1	26.539	26.539	9.495	0.002463056067384039	0.07717564085984921	Non-significant

(a) ANOVA result

Olink View Outlier Detection Filter Data Statistics Post-hoc Statistics Pathway Enrichment Additional Visualization

Method

Use filtered data

Select panel

Select variable

Select test

Parameters

P-value cutoff

P-value column to use

Provide model formula

Return covariates

Select covariate column

Run olink anova

Plot

Heatmap

Download Options

Statistical test result

Statistical test plot

Statistical test log

Documentation/ Help

Heatmap

Complex-Heatmap Documentation/ Help

Inner visualization

Try olink_anova_posthoc analysis

(b) ANOVA plot

Figure 5: Statistics tab (>two-level variable)

the user can choose to use only significant assays obtained in the most recently run/executed statistical test.

F. Pathway Enrichment: Following t-test or Mann-Whitney U test or the appropriate post-hoc analysis, the user has the option of performing pathway enrichment using over-representation analysis (ORA) or gene set enrichment analysis (GSEA)[See Figure 8].

enrichment options

Run Pathway Enrichment
Select Method
GSEA

Select Ontology
GO

Select Organism
human

visualization options

Download options

Pathway Enrichment Result Pathway Enrichment Log Documentation / Help Pathway Enrichment Plot Plot Documentation / Help

Copy CSV Excel Show All **Show 10** entries Search:

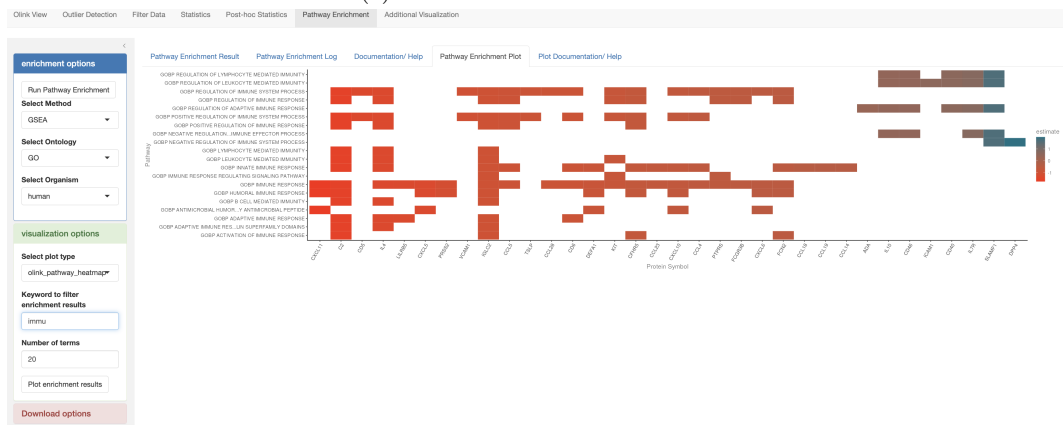
pathway enrichment on clink_test results

ID	Description
All	All
GOBP_RESPONSE_TO_LIPID	GOBP_RESPONSE_TO_LIPID
GOBP_RESPONSE_TO_MOLECULE_OF_BACTERIAL_ORIGIN	GOBP_RESPONSE_TO_MOLECULE_OF_BACTERIAL_ORIGIN
GOBF_CHEMOKINE_ACTIVITY	GOBF_CHEMOKINE_ACTIVITY
GOBF_CHEMOKINE_RECEPTOR_BINDING	GOBF_CHEMOKINE_RECEPTOR_BINDING
GOBP_NEGATIVE_REGULATION_OF_NUCLEOBASE_CONTAINING_COMPOUND_METABOLIC_PROCESS	GOBP_NEGATIVE_REGULATION_OF_NUCLEOBASE_CONTAINING_COMPOUND_METABOLIC_PROCESS
GOBF_G_PROTEIN_COUPLED_RECEPTOR_BINDING	GOBF_G_PROTEIN_COUPLED_RECEPTOR_BINDING
GOBP_CELLULAR_RESPONSE_TO_ENDOGENOUS_STIMULUS	GOBP_CELLULAR_RESPONSE_TO_ENDOGENOUS_STIMULUS
GOBP_CELLULAR_RESPONSE_TO_LIPID	GOBP_CELLULAR_RESPONSE_TO_LIPID
GOBP_RESPONSE_TO_BACTERIUM	GOBP_RESPONSE_TO_BACTERIUM
GOBP_CELL_CELL_SIGNALING	GOBP_CELL_CELL_SIGNALING

Showing 1 to 10 of 384 entries

Previous 1 2 3 4 5 ... 39 Next

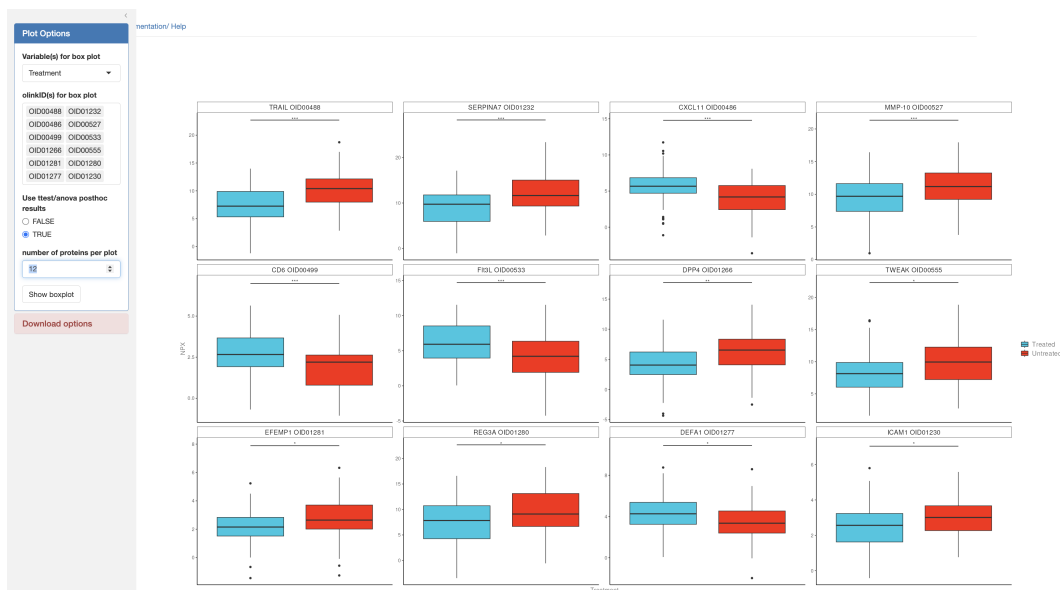
(a) Gene Set Enrichment Results



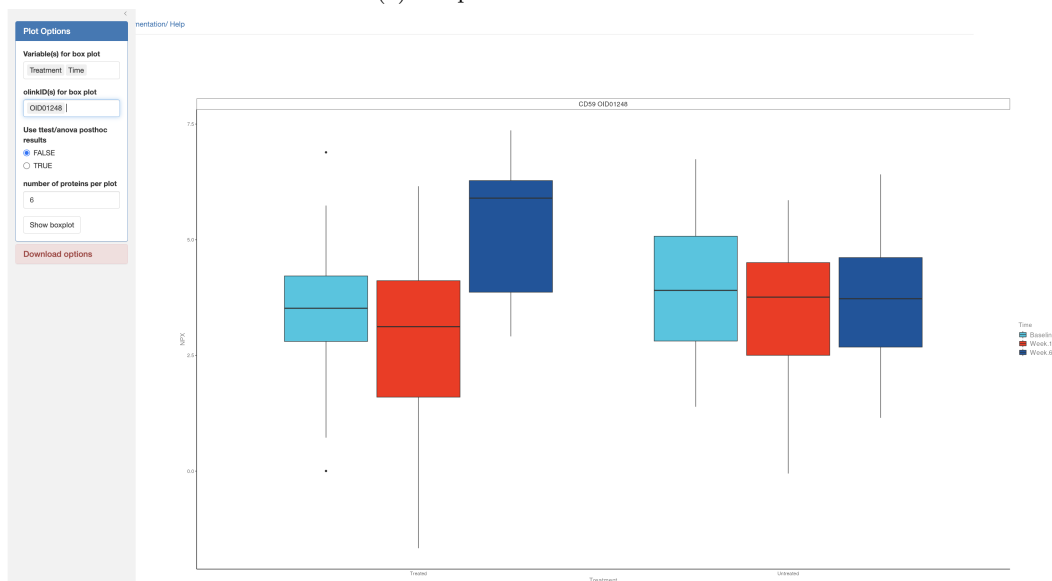
(b) Gene Set Enrichment Heatmap

Figure 7: Pathway Enrichment tab (demo data t-test results)

G. Additional Visualization: Lastly, significant assays can be visualized using boxplots and the p-value significance added to the plot in case t-test were previously performed. Download handlers have been implemented for easy download of all result tables. Figures generated during analysis can be customized for size and downloaded in three file formats.



(a) Boxplot with t-test results



(b) Boxplot with ANOVA results

Figure 8: Additional Visualization tab (demo data)