



# Byosphere<sup>®</sup> Deep Query Quick Start Manual

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## Deep Query Quick Start Guide

**Dashboards** are a collection of Visualizations supporting/enabling data interpretation across multiple projects within a specific Data Source. **Data Sources** allow the user to work with different types of data and provide a dynamic view that can be used to monitor processes, assess changes over time, or create descriptive models for business intelligence purposes. A **Visualization** is a chart, table, or other type of visual component that renders data.

### Browse for a Dashboard

Existing Dashboards can be found on the **Browse** page. More information on the **Browse** page can be found in the **Byosphere Web Client Manual**. Dashboards can be saved in any folder and are opened by clicking the **View Dashboard**  icon next to the project of interest. The user must have permission to view and edit the folder and Dashboard of interest.



Byosphere: Search

Search:  Search

1-50 of 273

Actions	Folder	ID	File Alias	File Name	File Size	Created By	Created On	Signature State
	05May25	1477	Intact_001	Intact_001.bdash	31785	Clare	2025-05-05 16:18:59	
	05May25	1519	oligo_001	oligo_001.bdash	31781	Clare	2025-05-06	

Figure 1: Browse Page

### Create a Dashboard

From the **Deep Query Dashboards** page, users can create a Deep Query Dashboard from scratch by clicking **New Dashboard** or from a system template by clicking one of the **System Dashboards**.

#### System Dashboards

##### Peptide

PTM Dashboard Template

PTM Oxidation Dashboard Template

System Suitability Dashboard Template

MAM Dashboard Template

HCP Dashboard Template

Multi-Protein Quant Dashboard Template for HCPs

##### Intact

Intact Protein Dashboard Template

ADC Dashboard Template

Intact Oligo Dashboard Template

##### Chromatogram

Chromatogram Comparison Dashboard Template

Released Glycan Dashboard Template

##### Combined

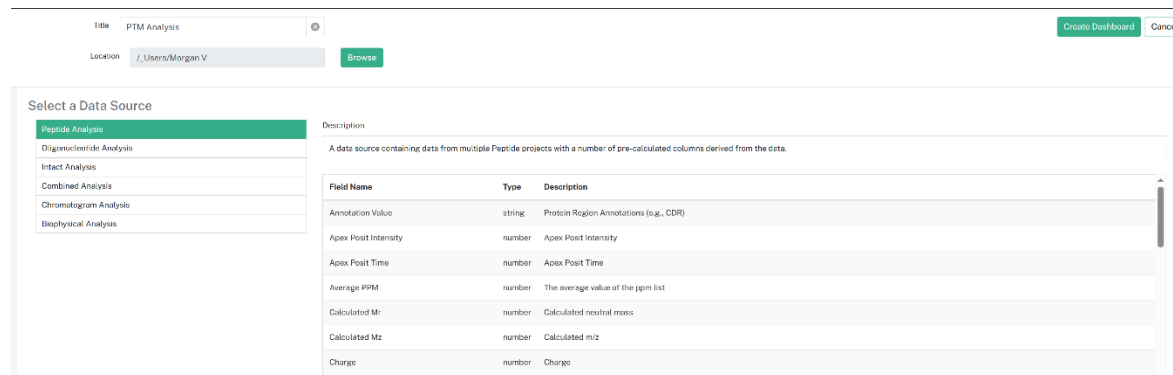
Glycosylation Template

Biophysical data correlation Dashboard Template

Figure 2: Deep Query System Dashboards

Note that this guide uses a blank Dashboard for demonstration purposes, but users are encouraged to utilize **System Dashboards** when applicable. More information about System Dashboards containing preset Visualizations can be found in the **Byosphere Deep Query Manual**.

On the new Dashboard creation screen, the user will be prompted to add a **Title** to the Dashboard and specify a **Location** where the Dashboard will be saved.



Field Name	Type	Description
Annotation Value	string	Protein Region Annotations (e.g., CDR)
Apex Post Intensity	number	Apex Post Intensity
Apex Post Time	number	Apex Post Time
Average PPM	number	The average value of the ppm list
Calculated Mr	number	Calculated neutral mass
Calculated Mz	number	Calculated m/z
Charge	number	Charge

Figure 3: Dashboard creation screen

The user must also select a **Data Source**. A Data Source is the database view that all data for a Dashboard is pulled from. The data pulled from this view will be used for all Visualizations within the Dashboard, although there are options to filter by Global or Include/Exclude filters first.

### Select a Data Source

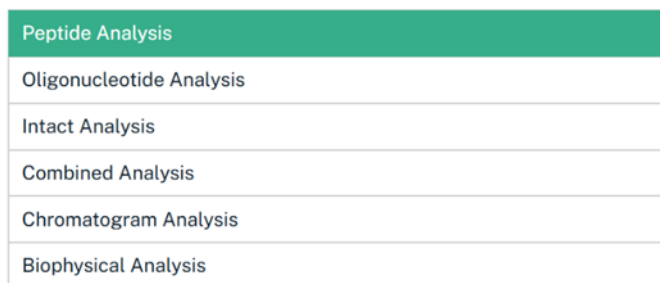



Figure 4: Data Sources in Deep Query

Currently data from the following Project types is supported by Deep Query v5.4: **Peptide Analysis**, **Oligonucleotide Analysis**, **Chromatogram Analysis**, and **Intact Analysis**. The **Combined Analysis** Data Source utilizes both Intact and Peptide data and is designed to facilitate querying Glycan analysis results, paired with the new Glycosylation Dashboard template.

A red exclamation point  symbol specifies that an entry by the user is required to proceed with Dashboard creation.

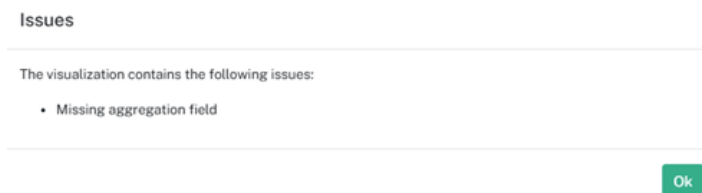


Figure 5: Issues dialog from clicking red exclamation point

To choose a location to save the Dashboard, click **Browse** to launch the **Dashboard Folder Structure** dialog.

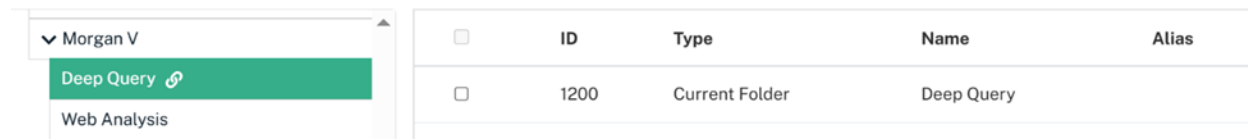


Figure 6: Dashboard Folder Structure

Select a folder using the checkbox and click **Select Folder**. The location will update to the selected folder.

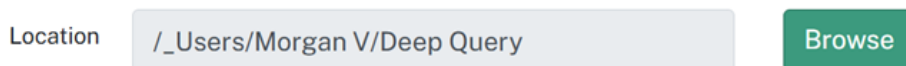



Figure 7: New Dashboard Page

Once a Data Source has been selected, the Dashboard can be created by clicking **Create Dashboard**. The user will be notified that the Dashboard has been saved.

## Applying Global Filters

To filter *all* data from a selected Data Source, click the Filter  icon at the top of the Dashboard page. This allows the user to apply a **Global Filter**, which affects *all* data in a Dashboard, not just a single visualization.

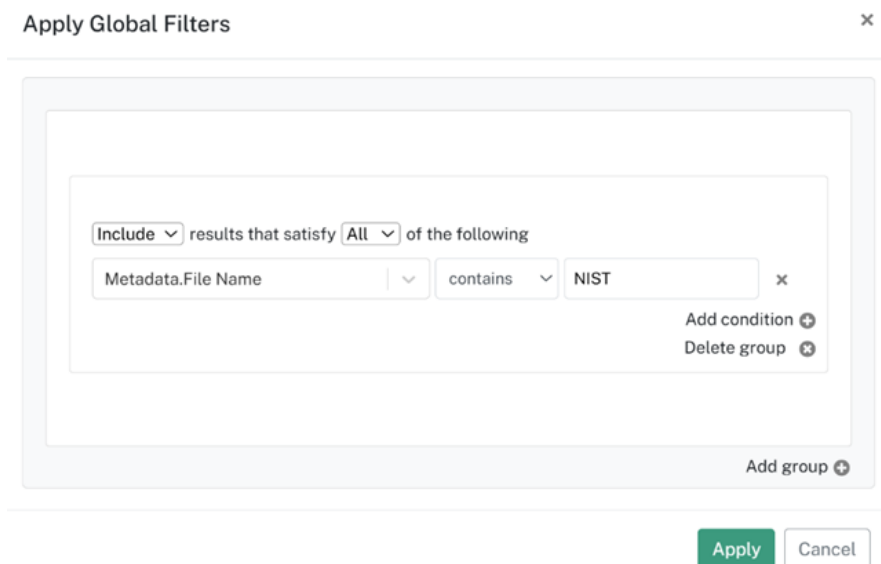


Figure 8: Global Filters dialog

## Add New Visualization

A new Dashboard (not created from a template) will be blank until a Visualization is added. To add a Visualization, click **Add New Visualization**. This will add a generic Visualization pane to the Dashboard.

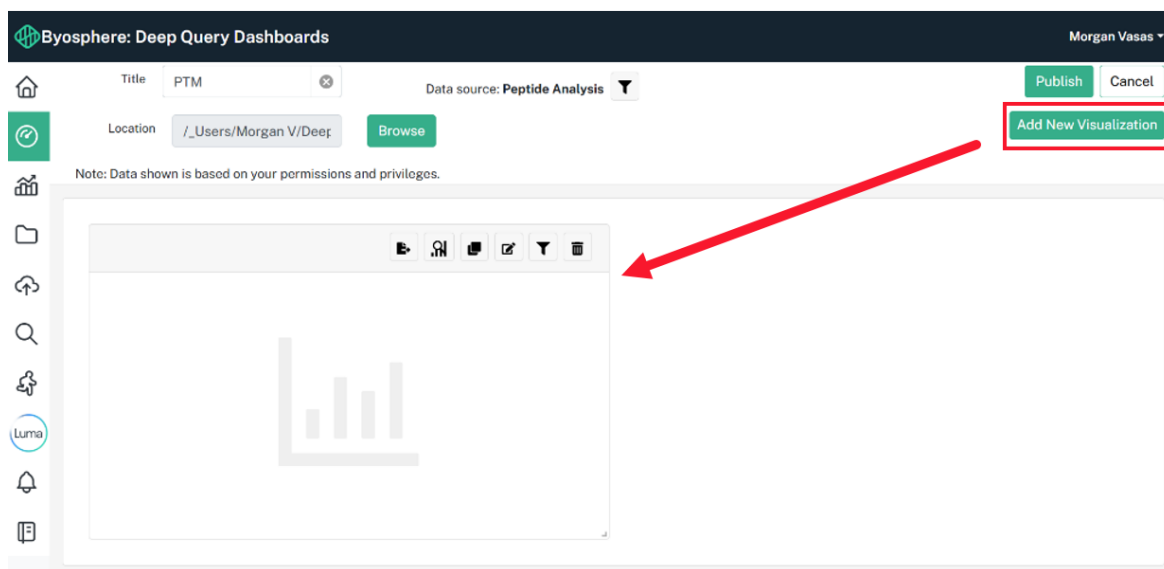



Figure 9: Adding a Visualization

Users are reminded that the data included in a Dashboard is based upon their permissions. Users will only see data from Projects that are in folders they have privileges to view.

To **Duplicate** a Visualization, click  while the Dashboard is in Edit mode. The duplicated Visualization will contain the same content as the original Visualization, including all filter settings, derived fields, and chart/pivot table settings. Note: Background Alerts will be excluded. When the user makes changes to this copy, the original remains unchanged. The duplicate Visualization will only be saved to the Dashboard if the user publishes the Dashboard.

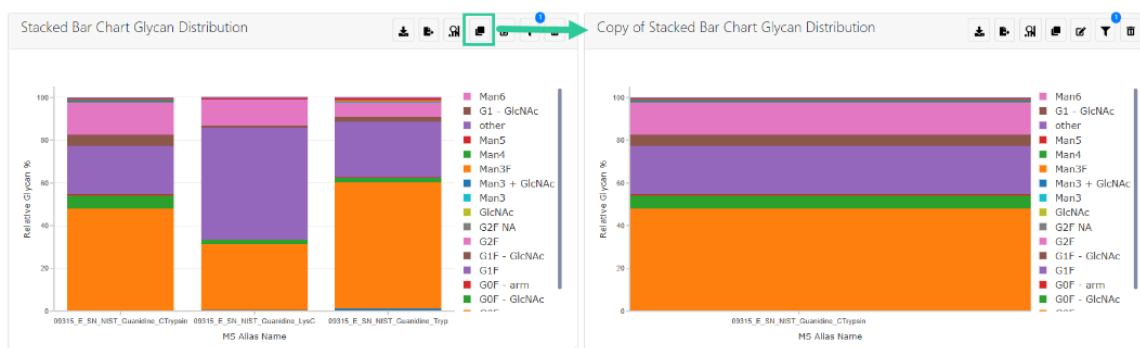



Figure 10: Duplicating a Visualization

To **Edit Visualization**, click the Edit  icon. There are four main panes within a Visualization: the **sidebar**, which contains settings based upon user selection, the **Visualization Builder**, the **Visualization** itself, and **Data Preview**.

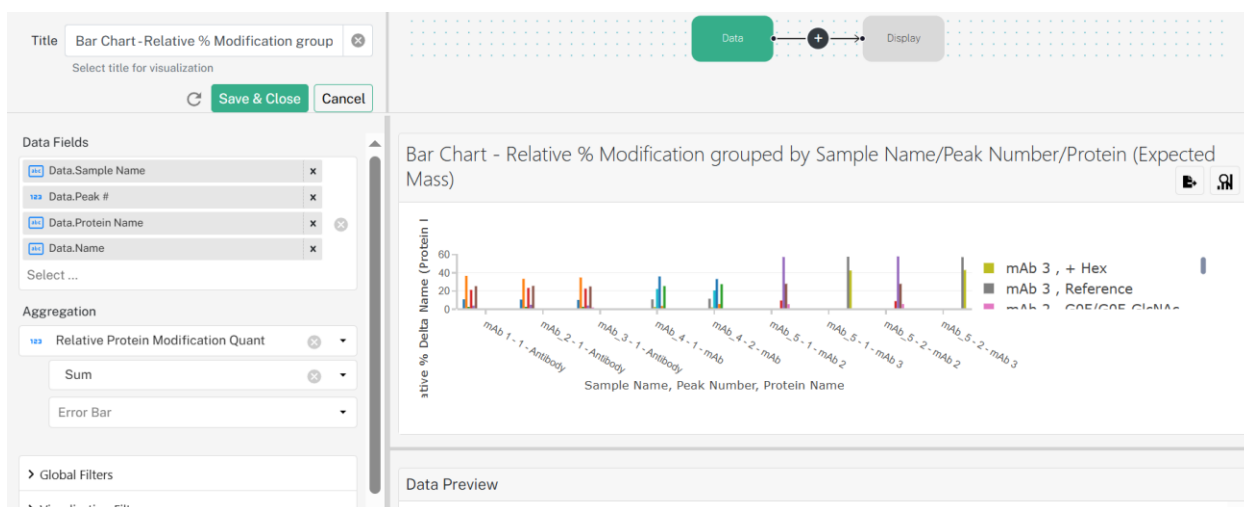


Figure 11: Visualization Editor

Users can drag the separation between the each of these panes to resize each section.

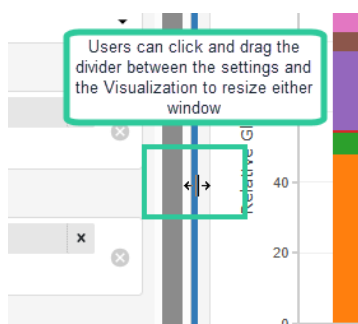


Figure 12: Adjust the size of the Visualization window

The sidebar contains settings that the user can modify and Apply to update the Visualization and Data Preview windows. The settings available in the sidebar for each Visualization type are detailed below. The options available in the sidebar are controlled by the **Visualization Builder** present at the top of the Visualization Editor page. This flowchart contains two blocks by default representing the fundamental settings available in the Visualization: **Data** and **Display** settings. These blocks cannot be removed from the flowchart.



Figure 13: Visualization Builder

Clicking on a block will highlight it in the flowchart and populate the sidebar with relevant controls. Shown below is the Data block highlighted with data settings present in the left sidebar:

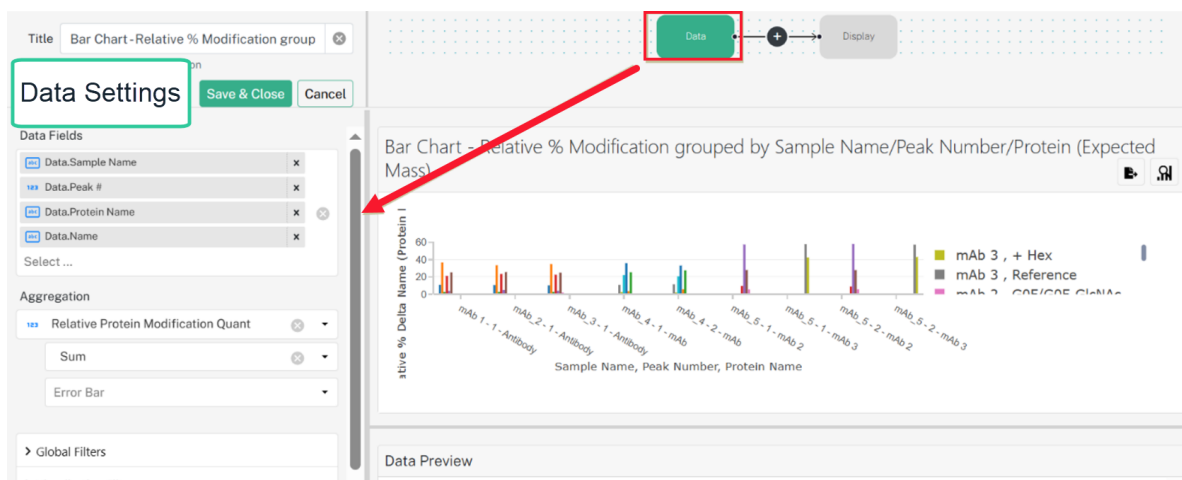


Figure 14: Data settings selected from Visualization Builder

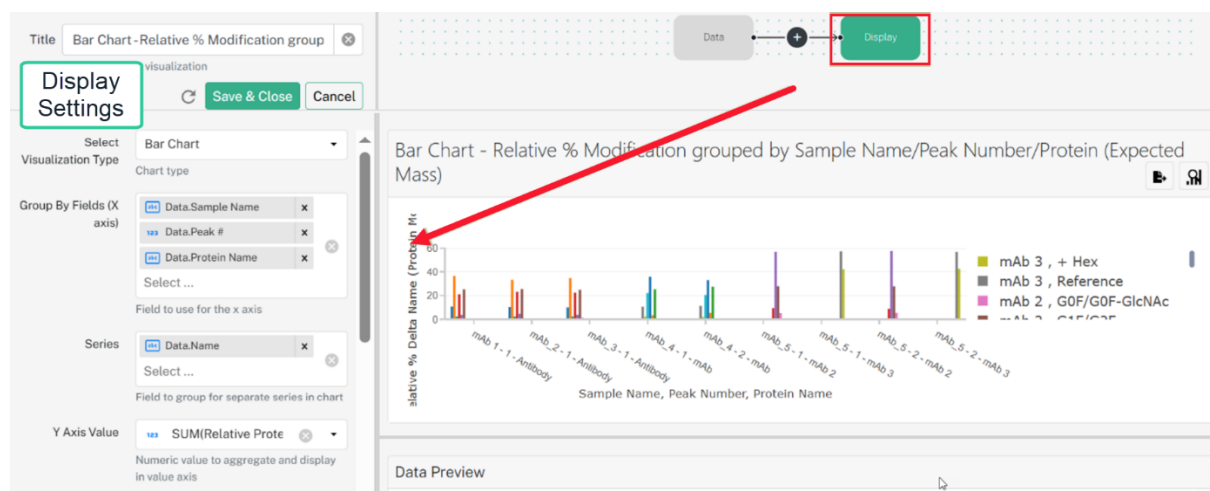



Figure 15: Display settings selected from Visualization Builder

The **Data Preview** pane provides the user with a data grid containing the underlying data being used to generate the Visualization. Updates to the Data Preview occur in sync with any updates made to the Visualization itself, excluding any numerical display changes applied to the Visualization (since these only affect the Visualization of the data rather than the underlying values themselves).



Data Preview			
Data.MS Alias Name	Glycan Short Name	SUM(Relative Glycan Quant)	
09315_E_SN_NIST_Guanidine_CTrypsin	G2F NA	0.507553603609197	
09315_E_SN_NIST_Guanidine_CTrypsin	GlcNAc	0.09663941557671231	
09315_E_SN_NIST_Guanidine_CTrypsin	Man3	0.12819015909568296	
09315_E_SN_NIST_Guanidine_CTrypsin	Man3 + GlcNAc	0.17689039263642065	
09315_E_SN_NIST_Guanidine_CTrypsin	Man3F	0.40373345402184335	
09315_E_SN_NIST_Guanidine_CTrypsin	Man4	0.038639133949044516	
09315_E_SN_NIST_Guanidine_CTrypsin	Man5	0.3014283145592117	
09315_E_SN_NIST_Guanidine_CTrypsin	other	0.6898753533623342	
09315_E_SN_NIST_Guanidine_LysC	AGly	0.508788440069641	
09315_E_SN_NIST_Guanidine_LysC	G0F	31.044163819321696	
09315_E_SN_NIST_Guanidine_LysC	G0F - GlcNAc	1.7223853112500473	
09315_E_SN_NIST_Guanidine_LysC	G1 - GlcNAc	0.011072569350648919	
09315_E_SN_NIST_Guanidine_LysC	G1F	52.70200958451611	

Figure 16: Data Preview

A red exclamation point present within the Visualization settings indicate fields that are required to be defined for or removed from the Visualization. To view all issues with the Visualization at once, the user can click the red exclamation point icon  in the corner, which will launch the **Issues** dialog.

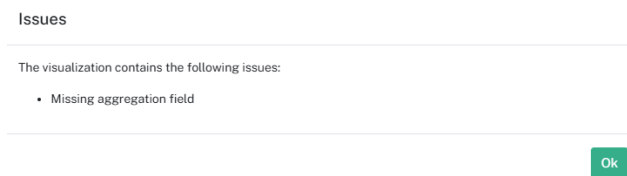


Figure 17: Issues dialog

Potential issues that could arise in the Visualization include not adding a title, forgetting an essential field or aggregation, or the presence of an unsupported field in a project uploaded from a Visualization created in a previous release version.

The user must provide a unique title for the Visualization. If the user tries to provide a title that is already in use, they will be notified that the title is already in use and will be unable to save the Visualization until a unique title is provided.

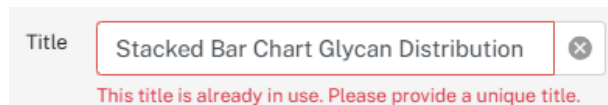
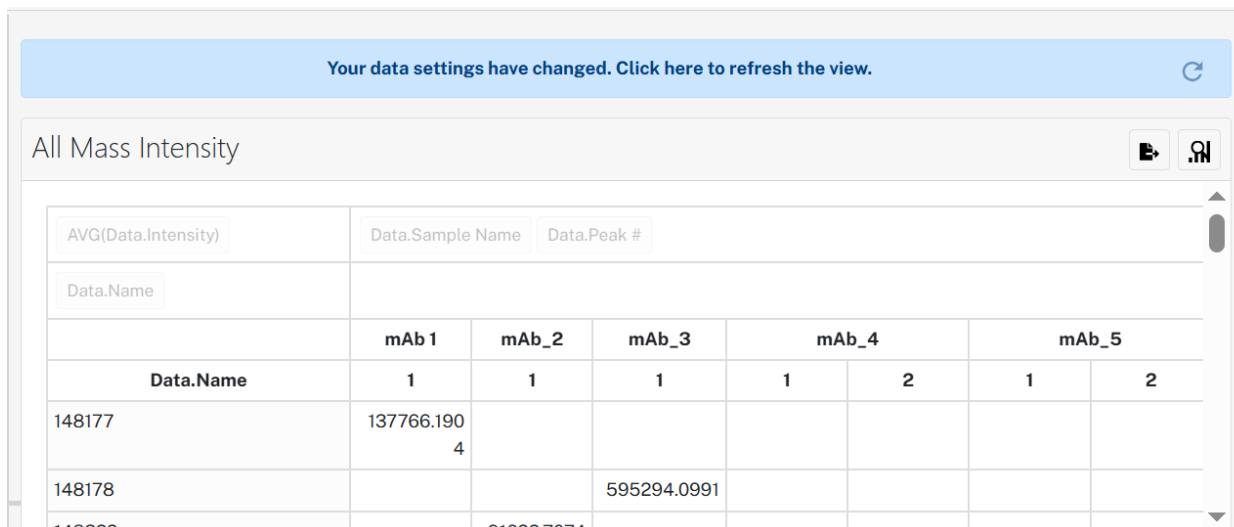




Figure 18: Please provide a unique title

Once any changes have been made to the settings, the user will be prompted with a dialog in the Visualization pane which, if clicked, will update the Visualization/Data Preview with any changes made.



The **refresh** button  can also be clicked to push a refresh to the Visualization/Data Preview at any time. Clicking **Save and Close** will refresh the Visualization/Data Preview one final time and save all changes before going back to the Dashboard. Clicking **Cancel** when in Edit mode will take the user back to the Dashboard, canceling any changes that were made/applied.

## Apply Visualization Filters

The user can apply *local* filters to specific Visualizations on the dashboard by clicking the **Filter**  button. This will open the **Visualization Filters** dialog, which has two options: **Include/Exclude Filters** provides filtering of the data that is to be *included* or *excluded* in the calculations involved in the Visualization; **Show/Hide Filters** provides filtering of the data that is to be *shown* in the Visualization. If data is hidden based upon defined conditions in the **Show/Hide Filters** option, it will still be used to make calculations, but it will not be visualized.

For more information on adding Visualization filters to a single Visualization, see [Filter & Sort](#).

## Modifying the Visualization

This manual outlines the Basic and General Data and Display Settings for **Line Chart and Scatter Plot Visualizations**. Additional details as well as outlines of all other Visualization types can be found in the **Byosphere Deep Query Dashboards Manual**.

## Apply Visualization Settings – Display options

### Basic Data Settings



**Data Fields**

abc Data.Sample Name x

abc Data.Name x

Select ...

**Aggregation**

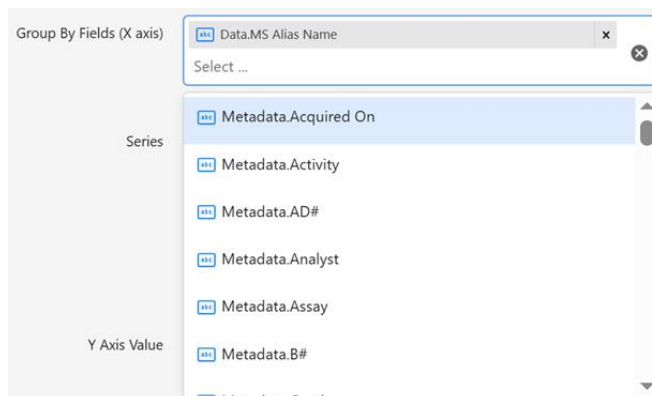
123 Data.Mass Err PPM x

Average x

Error Bar

Figure 20: Example of Basic Settings for Line Chart Visualizations

- Group By Fields (X axis):** Field(s) to be represented on the X-axis. The user has the option to select multiple fields. Fields can be selected directly from the dropdown, or the user can type within the box to filter through the available fields to find a specific field. Users can select both Data Source Fields and Metadata fields. In this case, the field **Data.MS Alias Name** has been selected, and the user has the option to search for and add additional fields.



Group By Fields (X axis)

abc Data.MS Alias Name x

Select ...

Series

Y Axis Value

Metadata.Acquired On

Metadata.Activity

Metadata.AD#

Metadata.Analyst

Metadata.Assay

Metadata.B#

Figure 21: Group by Fields (X axis)

- Series:** Field to group for separate series in a chart. In the example below, multiple fields have been added to be included in the series grouping.

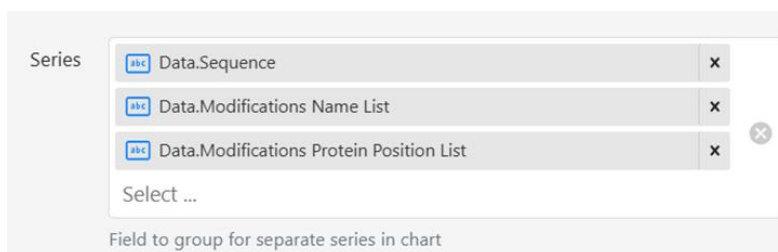


Figure 22: Series field

If multiple fields have been added, they are clustered within the Visualization to represent groups combining values from each field as shown below:

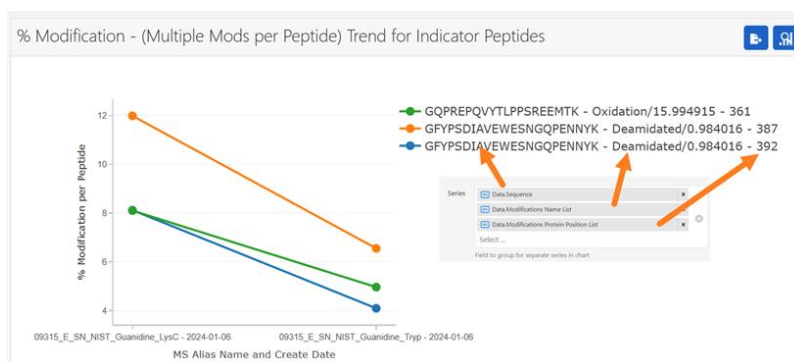


Figure 23: Multiple fields grouped into separate series

## Basic Display Settings

Select Visualization Type: Line Chart

Chart type

Group By Fields (X axis): Data.Sample Name

Select ...

Field to use for the x axis

Series: Data.Name

Select ...

Field to group for separate series in chart

Y Axis Value: AVG(Data.Mass Err PPM)

Numeric value to aggregate and display in value axis

Low Error Bar: Select values

Lower bound for the error bar

High Error Bar: Select values

Higher bound for the error bar

Figure 24: Basic Display Settings for Line and Bar Chart Visualizations

As of release v5.10, users are directed to **Select Visualization Type** within the basic Display settings. In addition, the fields used to build the Visualization itself, including Group By Fields, Series, and Y Axis value, are all specified within the Display settings. Available fields are based upon the fields selected within the Data Settings.

Users can also error bars within the Display settings for Line Charts.

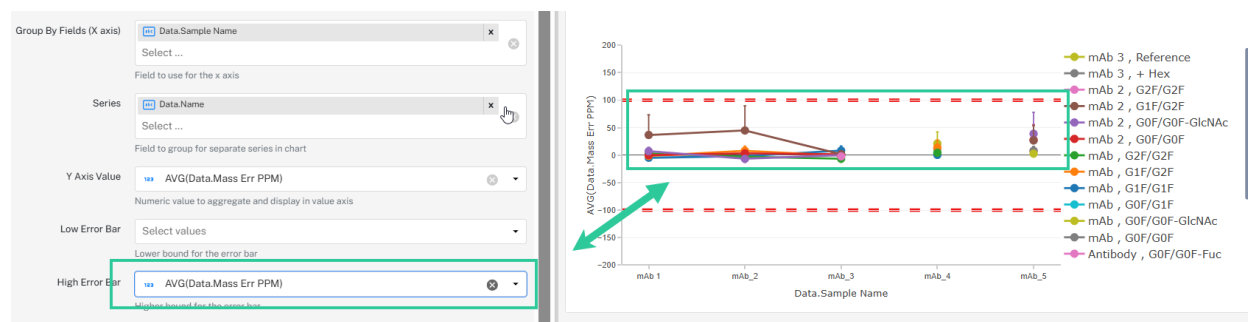
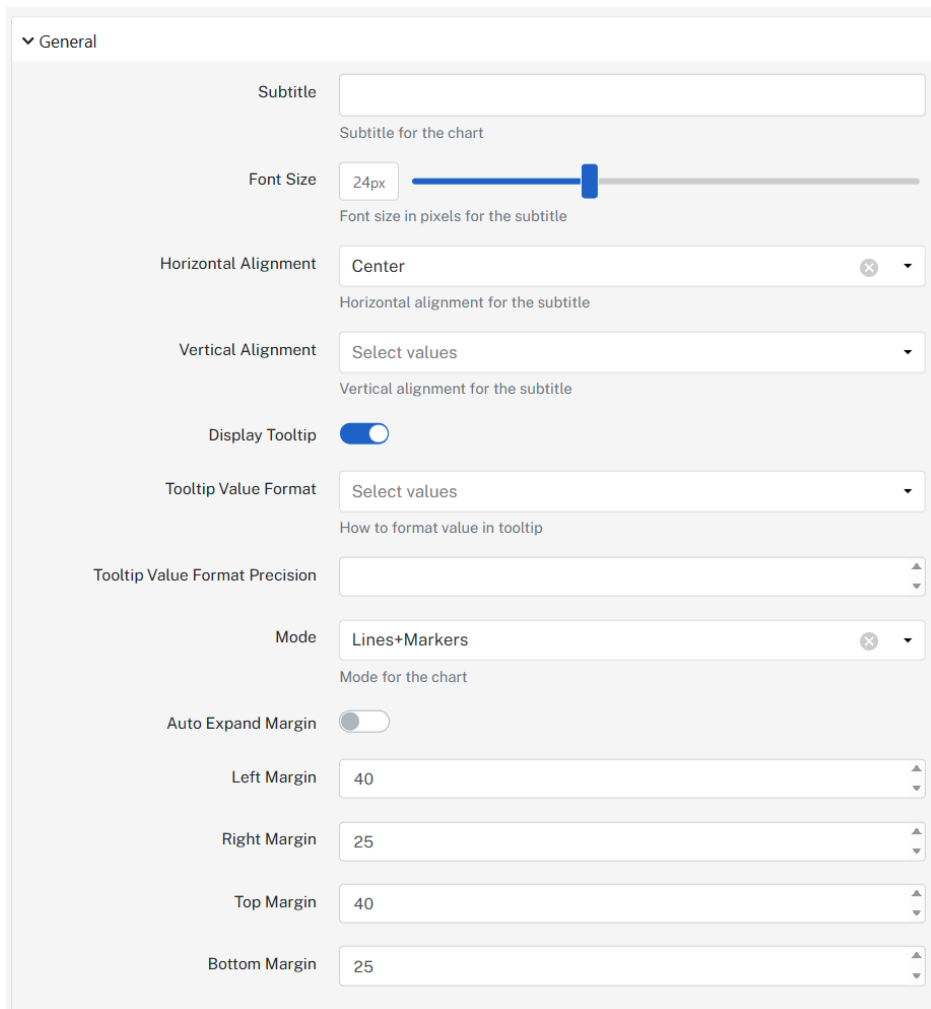


Figure 25: Error bars

## Additional Display Settings

### General



▼ General

Subtitle

Subtitle for the chart

Font Size

Font size in pixels for the subtitle

Horizontal Alignment   ▼

Horizontal alignment for the subtitle

Vertical Alignment  ▼

Vertical alignment for the subtitle

Display Tooltip ☒

Tooltip Value Format  ▼

How to format value in tooltip

Tooltip Value Format Precision

Mode   ▼

Mode for the chart

Auto Expand Margin ☐

Left Margin  ▲ ▼

Right Margin  ▲ ▼

Top Margin  ▲ ▼

Bottom Margin  ▲ ▼

Figure 26: General tab

The **General** tab under the **Display Settings** enables the user to make modifications to the chart. The user can add a subtitle to any kind of chart and adjust its size/alignment accordingly. If **Display Tooltip** is enabled, hovering over a data point will show a popup of its value with the format and precision determined by the user (e.g., hundredths place, thousandths place, percentage).

### Margin Settings

All non-table Visualizations have options under the **General** tab to adjust the margins of the Visualization.



Auto Expand Margin ☐

Left Margin

Right Margin

Top Margin

Bottom Margin


Figure 27: Margin settings

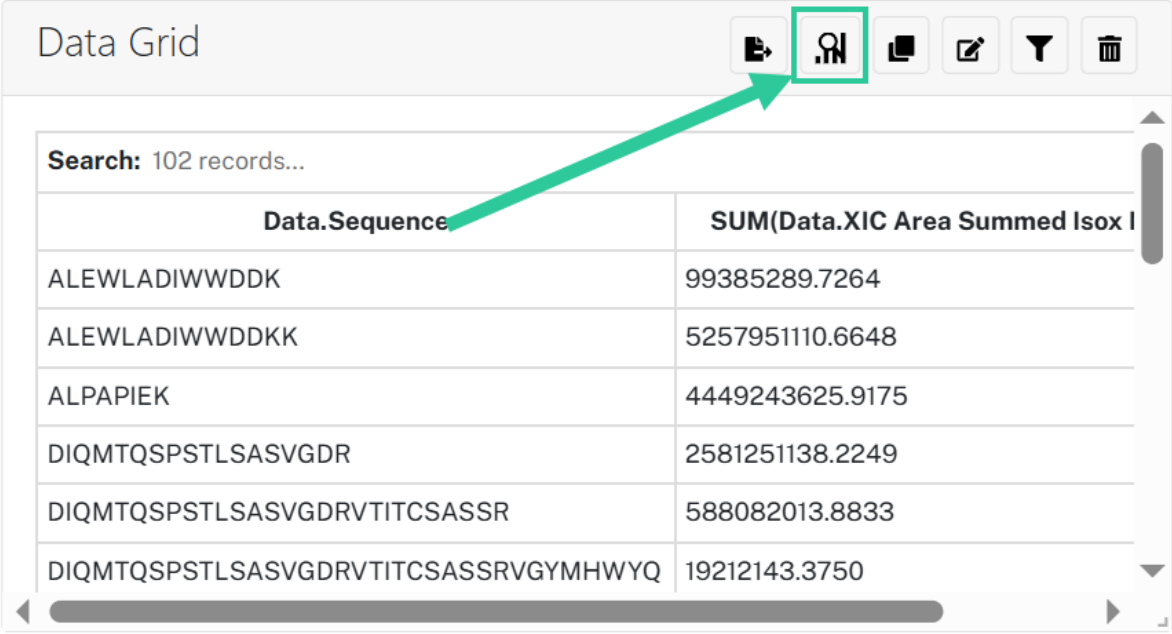
Increasing the value of the margin for each direction will increase the space on that side (e.g., increasing the **Left Margin** will create more space between the edge of the Visualization itself (for instance, the tick marks) and the Visualization settings panel).

If **Auto Expand Margin** is toggled **on**, the dimensions of the Visualization will automatically adjust so that any tick labels are not cut off.

More advanced settings configuration can be found in the **Byosphere Deep Query Manual**.

## Visualization Inspection

Users can view the files present within their Dashboard by clicking the **Visualization Inspection**  icon:



**Data Grid**

Search: 102 records...

Data.Sequence	SUM(Data.XIC Area Summed Isox I
ALEWLADIWWDDK	99385289.7264
ALEWLADIWWDDKK	5257951110.6648
ALPAPIEK	4449243625.9175
DIQMTQSPSTLSASVGDR	2581251138.2249
DIQMTQSPSTLSASVGDRVITICSASSR	588082013.8833
DIQMTQSPSTLSASVGDRVITICSASSRVGYMHWYQ	19212143.3750

Figure 28: Visualization Inspection icon

This toggle shows an inspection table where users can view the Folder, Project File, and the Sample file name.









Search: 3 records...		
Folder	File Name	MS Alias Name
Dashboard Template Projects 	001_001.blgc 	09315_E_SN_NIST_Guanidine_Tryp
Dashboard Template Projects 	002_001.blgc 	09315_E_SN_NIST_Guanidine_LysC
Dashboard Template Projects 	003_001.blgc 	09315_E_SN_NIST_Guanidine_CTrypsin


Figure 29: Visualization Inspection table

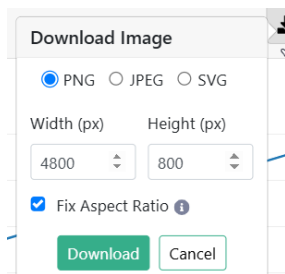
The **Folder**  icon will take the user to the folder browser view, opening a new tab.

The **File Search**  icon will take the user to the file search view, opening a new tab (if the user has Virtual Client enabled, they can open and review the results in the Project from within Byosphere).

Visualization Inspection views are accessible from Edit mode and the main Dashboard page and are available for *all* data sources.

## Image Export

Users can click the **Image Export**  icon in View or Edit mode to export images of their graphical Visualization (excluding Pivot Table and Data Grid). Images can be exported as PNG, JPEG, or SVG.



The dialog box titled "Download Image" contains the following elements:

- Format selection: ☒ PNG, ☐ JPEG, ☐ SVG
- Width (px): 4800
- Height (px): 800
- Checkmark for "Fix Aspect Ratio" with an information icon.
- Buttons: "Download" (green) and "Cancel" (white).

Figure 30: Download image

## Export CSV

Users can export a CSV of the data present in all Visualizations. Exports of non-tabular Visualizations will consist of the underlying data which composes the Visualization.



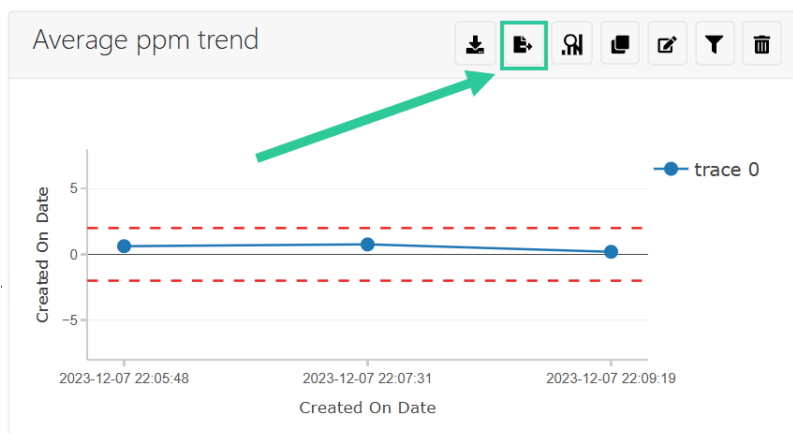


Figure 31: Export CSV

## Transformations

If a user has selected either a Data Grid or Pivot Table Visualization, a plus sign icon will appear within the Visualization builder. Clicking on this shows a list of **Transformations** which the user can apply to their data. Users can choose from **Normalization**, **Ranking**, **Filter**, **Aggregate and Reduce**, and **Grouped Aggregate** options. Each option has its own information that the user must populate.

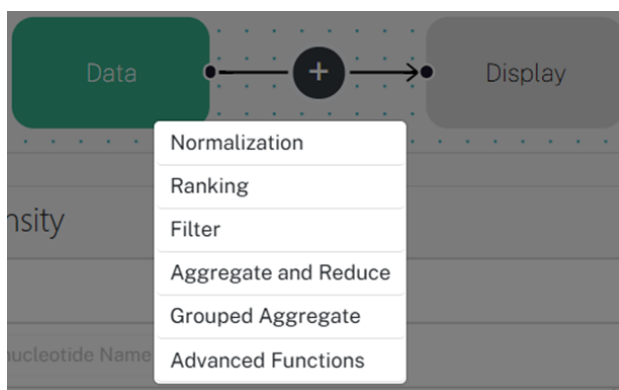


Figure 32: Add Transformation from Visualization Builder

Once a Transformation has been added, it will be visible within the flowchart.

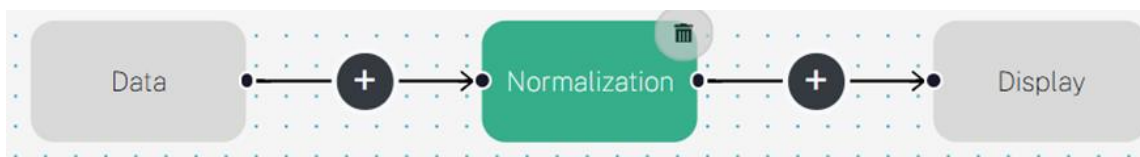


Figure 33: Visualization Builder including a Transformation

Users can choose from **Normalization**, **Ranking**, **Filter**, **Aggregate and Reduce**, and **Grouped Aggregate** options. Each option has its own information that the user must populate. To perform a transformation on data, that data field must be included in the Visualization. Numeric derived fields will also be available. The way in which a grouping occurs for a transformation may be controlled by the user by utilizing the partitioning function, in much the same way as can be performed for the function "Normalization within Calculation Presets" under the Data Settings tab. The types of Transformation possible are outlined in the **Byosphere Deep Query Manual**.

Note: Unlike Visualization filters, Transformation filters will apply in the sequence that they appear in the Transformations as represented in the Visualization Builder. They will act as a filter to anything that happens after it (will filter before) and won't impact anything before that step. Since transformations happen after the data step, the transformations filters apply after global, include/exclude, show-hide filters and any previous transformations have been applied.

## Advanced Functions

If a user has selected either a Line Chart or Scatter Plot Visualization, a plus sign icon will appear within the Visualization builder. Clicking on this allows the user to add an **Advanced Function** which the user can apply to their data.

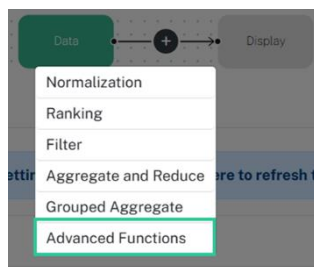


Figure 34: Add Advanced Function

Currently, the only Advanced Function available is **Linear Regression**. Upon adding the Linear Regression Advanced Function, the user must add the Independent and Dependent Variables from the fields provided in the dropdown.

Figure 35: Linear Regression Advanced Function

Adding Linear Regression will calculate the equation for the line of best fit, the Pearson Correlation, and the R2 value. Display of these values within the Visualization can be enabled from **General > Display** settings.

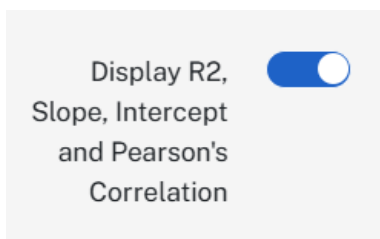


Figure 36: Toggle for Linear Regression display

## Data Settings

### Global Filters

**Global Filters** are data filter settings that are applied across *all* Visualizations. Data from the selected Data Source will be filtered by these global settings before being passed to the Visualizations. Users can only *view* any **Global Filters** that have been applied, as the option to edit has been grayed out.

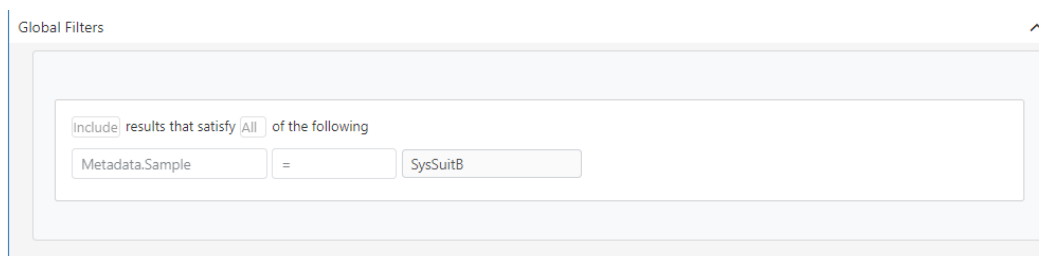


Figure 37: Global Filters tab, with options grayed out

### Visualization Filters

Users can add or edit filters within a single Visualization by clicking the **Visualization filters tab**, which has two options: **Include/Exclude Filters** provides filtering of the data that is to be *included* or *excluded* in the calculations involved in the analysis; **Show/Hide Filters** provides filtering of the data that is to be *shown* in the analysis. If data is hidden based upon defined conditions in the **Show/Hide Filters** option, it will still be used to make calculations, but it will not be visualized.

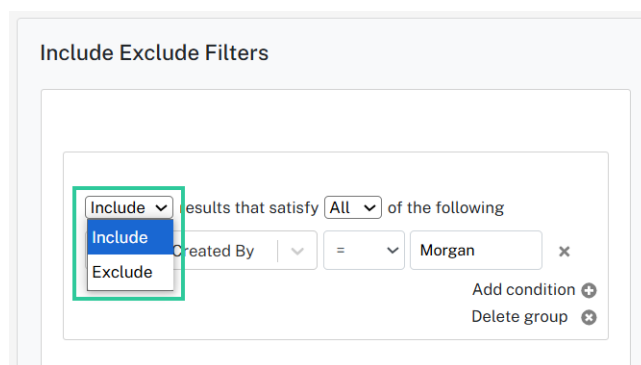


Figure 38: Include/Exclude Filters

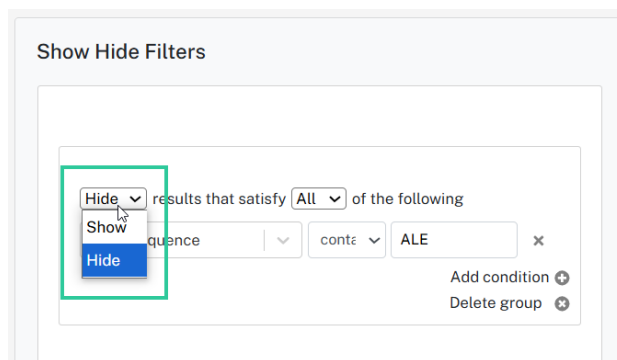



Figure 39: Show/Hide Filters

The user can also apply filters to specific Visualizations from the Dashboard by clicking the Filter  button in the header of a Visualization. This will open the same Visualization Filters page as seen in the Filter&Sort tab when editing a Visualization.

Data Grid

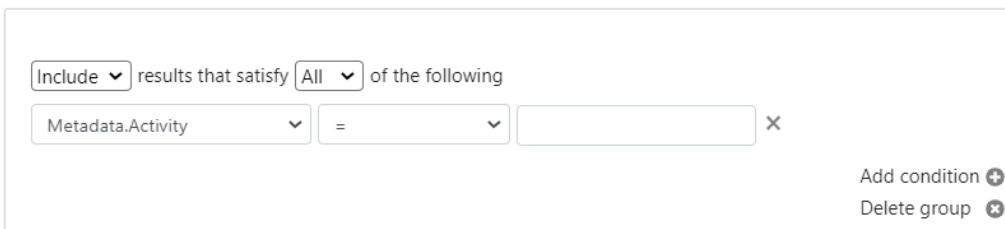
Search: 102 records...

Data.Sequence	SUM(Data.XIC Area Summed Isox Normaliz
ALEWLADIWWDDK	99385289.7264
ALEWLADIWWDDK	5257951110.6648
ALPAPIEK	4449243625.9175
DIQMTQSPSTLSASVGDR	2581251138.2249
DIQMTQSPSTLSASVGDRVTITCSASSR	588082013.8833
DIQMTQSPSTLSASVGDRVTITCSASSRVGYMHWYQQKPGK	19212143.3750
DMIFNFYFDVWGQTTTVTVSSASTK	436278363.6217
DMIFNFYFDVWGQTTTVTVSSASTKGPSVFPLAPSSK	11917543.6547
DRLTISK	221205894.9932
DRLTISKDTSK	866828.9655
DSTYLSSTLTLSK	2791133973.5964
DSTYLSSTLTLSKADVEK	4688701.5165

Figure 40: Manage Visualization Filters from the Dashboard

To define a new filtering condition using either filter option, click **Add Condition**. This will generate a row wherein you can determine which field should be filtered (from within a dropdown), the condition it must satisfy, and a user-entered value. The user is given the option to **Include** or **Exclude** results that satisfy either **All** or **Any** specified conditions (provided more than one filter has been applied).

The same tools are used for the **Show/Hide Filters** option.



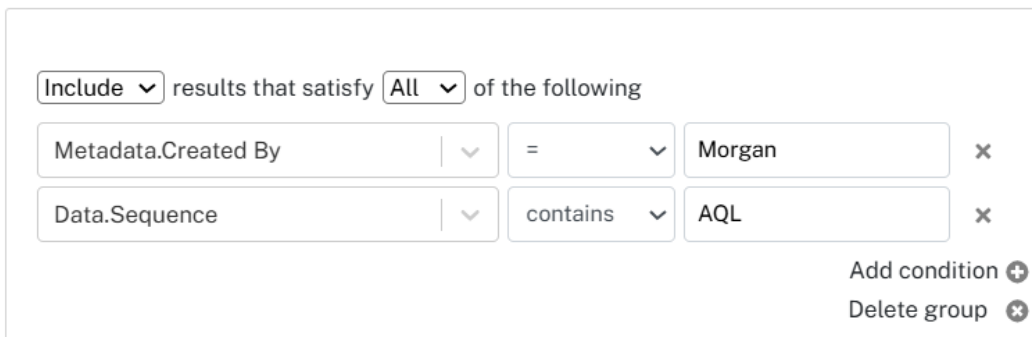
Include ▾ results that satisfy All ▾ of the following

Metadata.Activity ▾	= ▾		×
---------------------	-----	--	---

Add condition +  
Delete group ×

Figure 41: One Condition added

The user also has the option to create multiple conditions within a **Group**.



Include ▾ results that satisfy All ▾ of the following

Metadata.Created By ▾	= ▾	Morgan	×
Data.Sequence ▾	contains ▾	AQL	×

Add condition +  
Delete group ×

Figure 42: Multiple Conditions added to a group

The user must ensure that a filter is defined with a value if it is added and that it is not left blank. If the filter is no longer needed, the user can remove the filter by clicking the x next to the row of interest.

In the above example, the group must “**Include** results that satisfy **All** of the following [conditions]”. In this case, if three different conditions are defined, they must *all* be met by a data point for it to be included in the Visualization.

To delete a group of condition(s), click **Delete group**.

The Filters icon on a Visualization will show the number of conditions applied. The Visualization below currently has **two** filters applied.



Figure 43: Visualization with two filters applied

After performing a Deep Query search and generating a specific plot, the user can apply filters to an attribute of the data *from* the Visualization and use these filters to do the following:

1. Include/Exclude specific attributes (If **Excluded**, data is neither considered in calculations nor included in the Visualization).

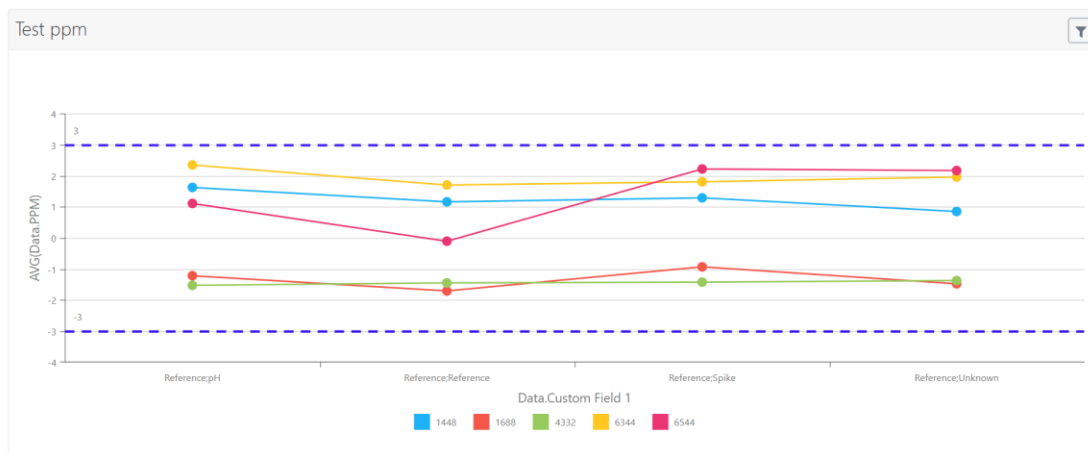


Figure 44: No filter applied

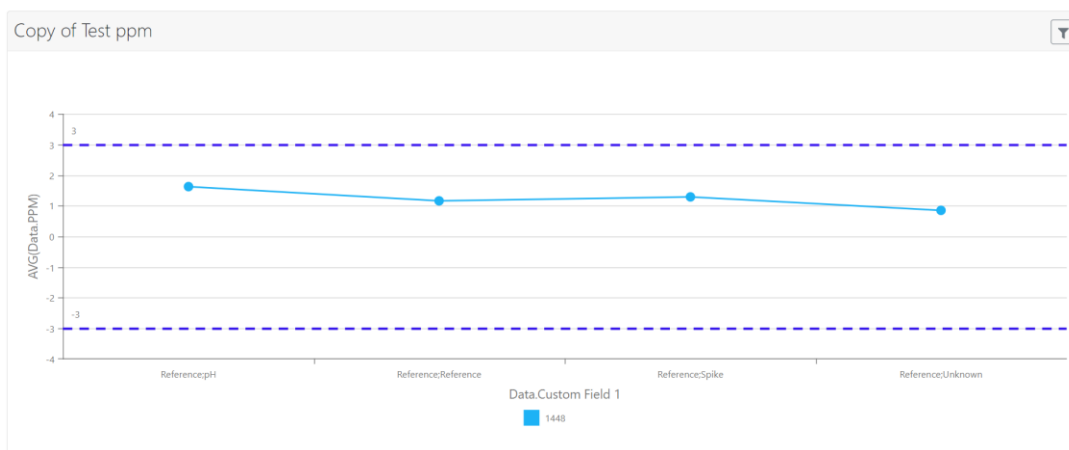


Figure 45: Exclusion filter applied

2. Show/Hide specific attributes: In this case, query results are filtered out from the Visualization, but this data is still used to perform the visualized calculations.

Additionally, the user can perform a combination of Include/Exclude and Show/Hide filters.

It is possible for too many filters to be applied or the conditions for the filters to be too narrow, which can result in the warning shown below. In this case, the user will need to try removing filters or adjust conditions (such as Any/All) to ensure that data has not been completely filtered out.

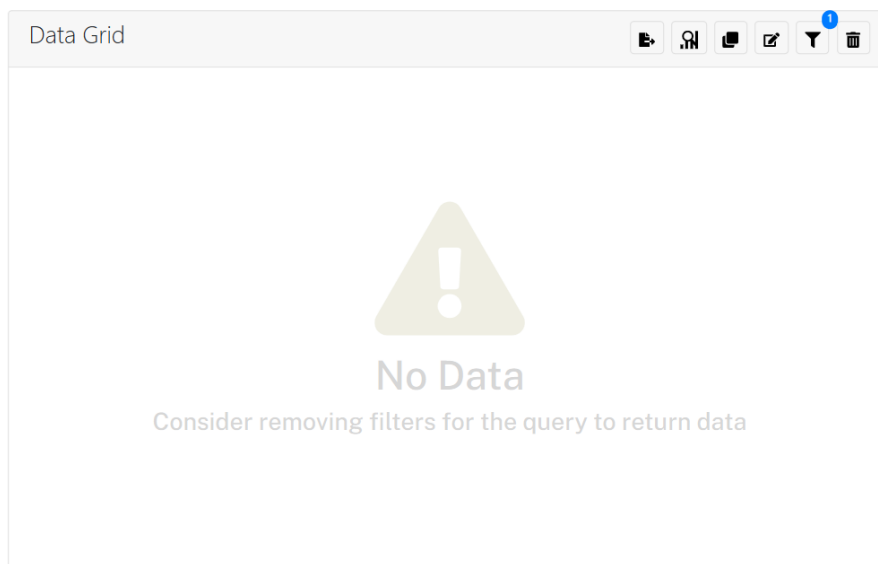


Figure 46: No Data warning

## Sort

**Sort** orders data according to sort rules determined by the user.

Users can also order filtered data within a Visualization using the **Sort** function.

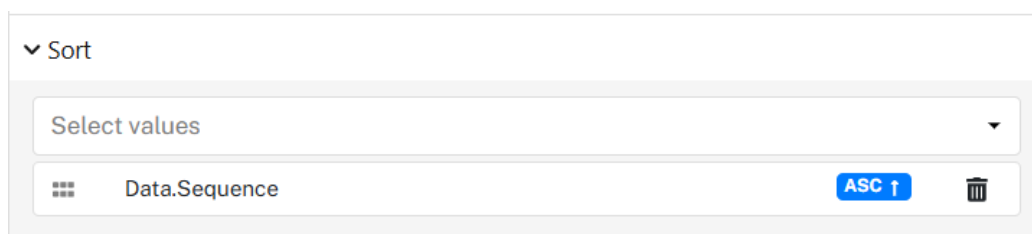



Figure 47: Sort Tab

A new sort rule can be added to the Visualization by clicking **Add sort rule** . Multiple sort rules can be added at a time. Data fields can be sorted by ascending or descending order.

## Calculation Presets

The **Calculation Presets** tab provides the user with the ability to build calculated fields based upon Calculation Type.

When a user creates and opens a new Visualization, they will have the option to add a new Calculation Preset.

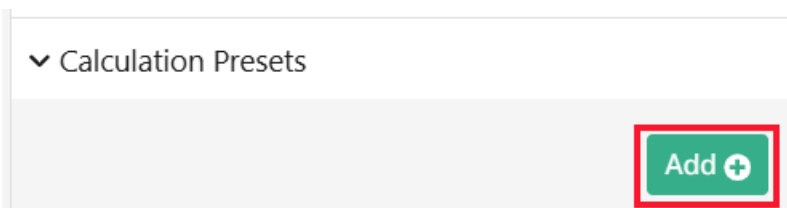


Figure 48: Add Calculation Preset

The user will be prompted to provide a preset option from the Calculation Type dropdown list. Currently, users can use this tool to build a custom normalized field.

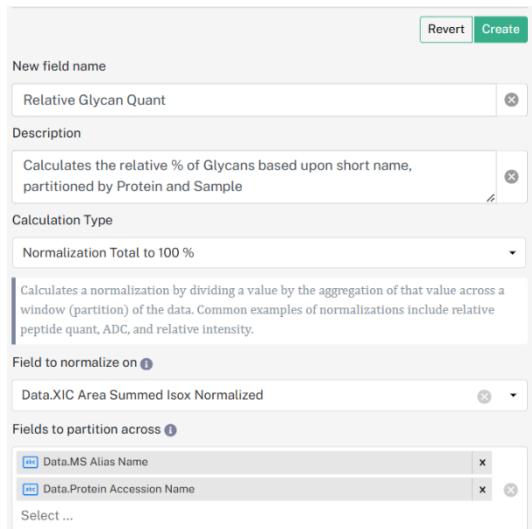
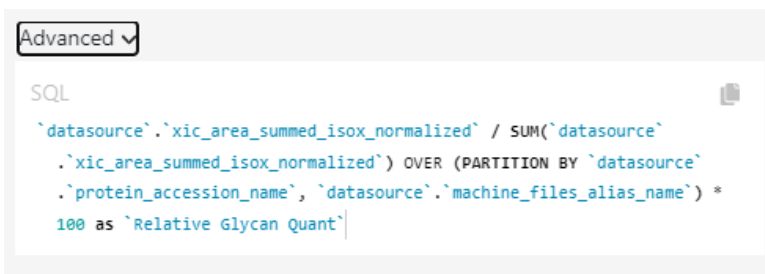


Figure 49: Normalization Calculation Preset options

The inputs available are dependent upon the Calculation Type selected. The user will be required to enter values for each field. Users can consult the tooltips for more information on how to populate each field.

Advanced SQL code used to build the preset is updated in real time and can be viewed by the user underneath the Advanced option. Users can click the copy button in the corner to copy the SQL code to the clipboard.



```

SQL
`datasource`.`xic_area_summed_isox_normalized` / SUM(`datasource`
.`xic_area_summed_isox_normalized`) OVER (PARTITION BY `datasource`
.`protein_accession_name`, `datasource`.`machine_files_alias_name`) *
100 as `Relative Glycan Quant`

```

Figure 50: Advanced options can be used to preview SQL code

## Derived Fields

**Derived Fields** are variables that are created from one or more existing data fields that exist in a single data source or across data sources. User-created Derived Fields can be used in local Filters, as x or y-axis Values within Visualizations, or within Background Alerts.



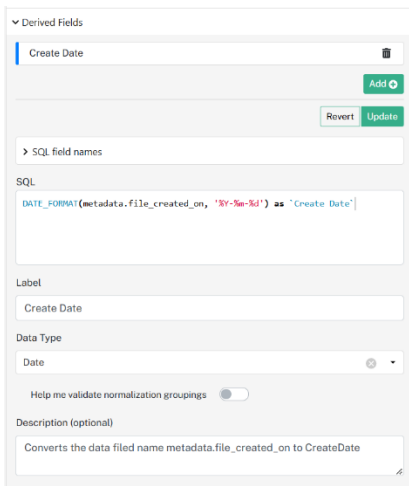
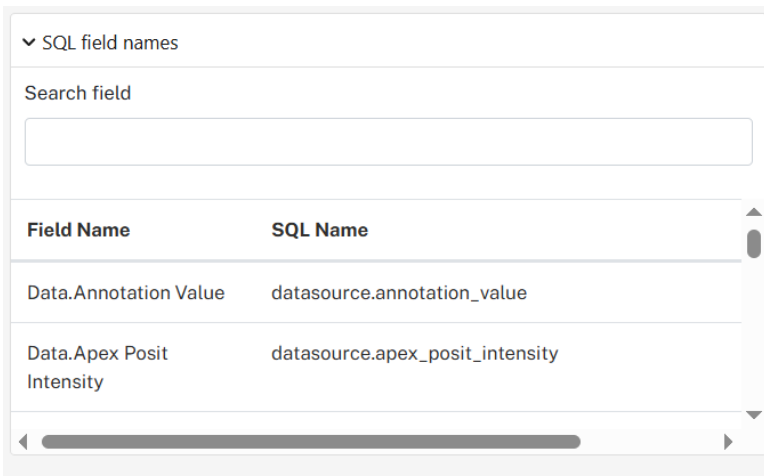


Figure 51: Derived Fields Tab

The **SQL field names** dropdown contains a searchable list of fields and their associated SQL name. Double-clicking the field of interest will populate the **SQL** text box.



Field Name	SQL Name
Data.Annotation Value	datasource.annotation_value
Data.Apex Posit Intensity	datasource.apex_posit_intensity

Figure 52: Searching SQL fields

Alternatively, the user can manually enter a SQL field into the text box themselves if an applicable field is known.

There are only certain functions available to users. If a user types in a function that does not exist, they are met with a warning:

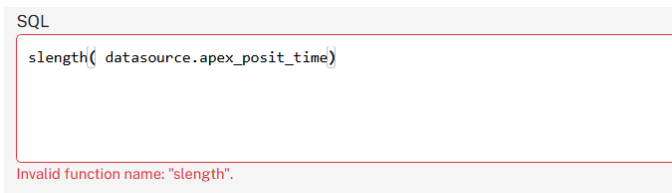


Figure 53: Invalid SQL function entry

Additionally, if a user specifies a number outside of the allowed number of arguments they are warned :

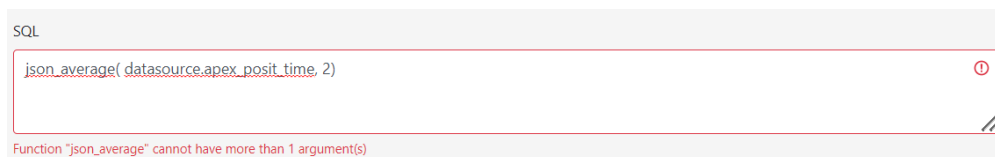


Figure 54: Invalid SQL function (too many arguments)

**Label** denotes the name of the generated derived field. The user can change the Label for any derived field. The user can also provide an optional **Description**.

The **Data Type** dropdown enables the user to specify the expected data type they wish to generate using SQL commands, with the options of **Date**, **Numeric**, and **Text** (which includes alphanumeric values). The default data type is numeric.

Once all required fields are filled in, clicking **Create** will add the user-created derived field to the Visualization (as an option under the X and Y-field dropdowns)

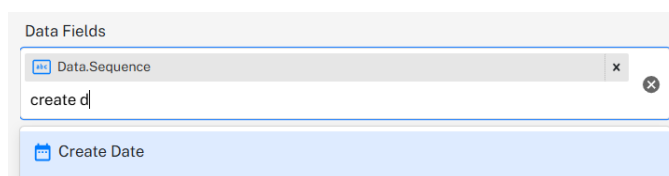


Figure 55: Created Derived Field

Once the derived field is created, it can be found within the Visualization settings dropdowns for Group By Fields (X Axis) and Y Axis Value.

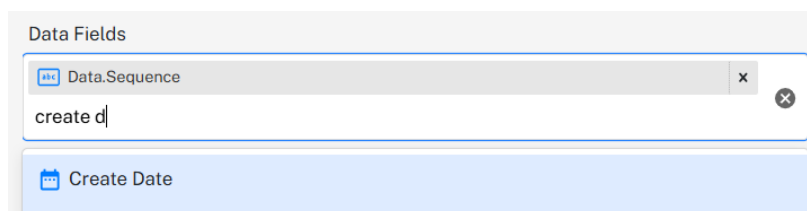


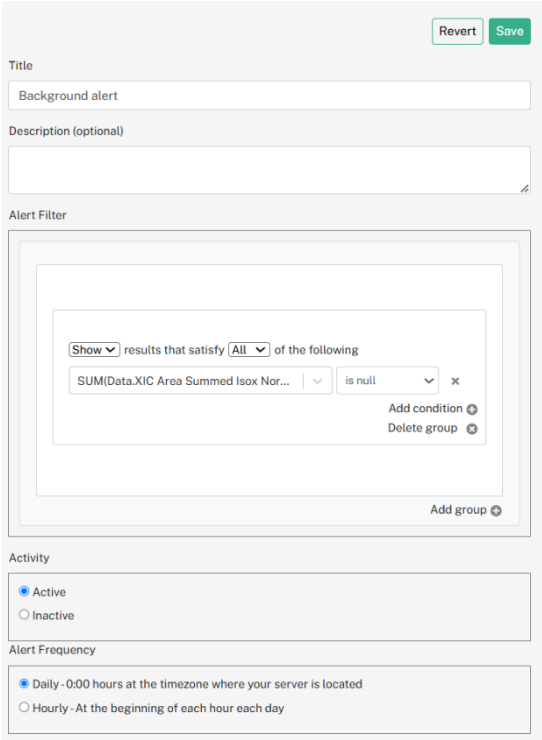
Figure 56: User-Created Derived Field available in Visualization Settings

If the user wishes to make changes to a Derived Field they created, they can click the Derived Field of interest and either **Update** to make changes or **Revert**, which will undo the last change that was made after clicking Update.

To create another Derived Field, click **Add new Derived Field**. Users can create multiple Derived Fields.

## Background Alerts

**Backgrounds alerts** can be set up in Deep Query that will notify the user if a value has fulfilled a condition (e.g., Obs > 5) previously assigned. To **add** a background alert, click [Add background alert](#). Background alert filters operate on top of the Global, Include/Exclude, and Show/Hide filters associated with the Visualization.

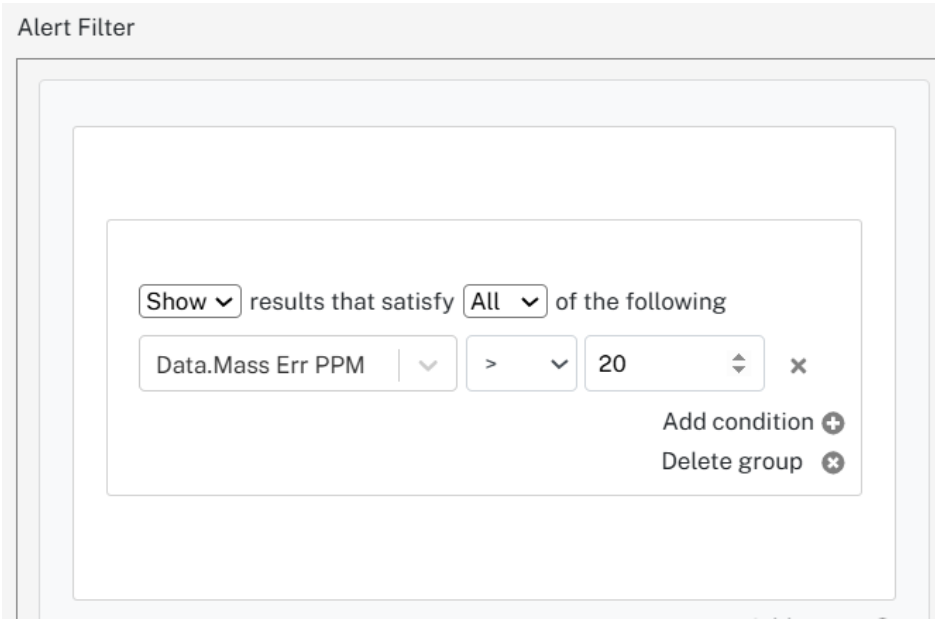


The form is titled "Background Alert" and includes a "Revert" button and a "Save" button. It contains the following sections:

- Title:** A text input field with the value "Background alert".
- Description (optional):** A text area for an optional description.
- Alert Filter:** A container for filter rules. It shows a rule: "Show results that satisfy All of the following" with a condition "SUM(Data.XIC Area Summed Isox Nor...) is null". Buttons for "Add condition", "Delete group", and "Add group" are present.
- Activity:** Radio buttons for "Active" (selected) and "Inactive".
- Alert Frequency:** Radio buttons for "Daily - 0:00 hours at the timezone where your server is located" (selected) and "Hourly - At the beginning of each hour each day".

Figure 57: Background Alert

The user must provide a name to the alert and has the option to add a description. To assign a condition that must be fulfilled to trigger the background alert, click **Add Condition**.



The "Alert Filter" section shows a rule: "Show results that satisfy All of the following". The condition is "Data.Mass Err PPM" with a greater-than operator and a value of 20. Buttons for "Add condition", "Delete group", and "Add group" are visible.

Figure 58: Example alert condition

In this example, an alert will be triggered for data that satisfies the following condition: For the field "Data.PPM", the value must exceed the value of 3. Users can use both Data Source fields and Derived Fields when building conditions for Background Alerts.

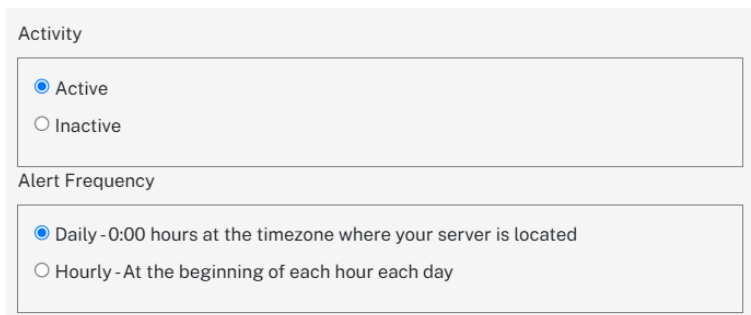


Figure 59: Activity and Alert Frequency

Alerts will not incorporate documents that the user does not have access to, and users lacking the correct roles (**Contributor** or **Advanced Viewer**) do not have permission to create a background alert.

A Background Alert can be set to **Active** or **Inactive**, as shown in the above figure. If an alert is set to **Inactive**, the alert will not be run at all.

The user can also define how frequently an alert is sent out if conditions are met for a Background Alert. If **Daily**, the user will receive an alert at 0:00 in their own time zone if the alert conditions have been met within a 24 hour period. If **Hourly**, the user will receive an alert every hour if the alert conditions have been met. Alerts will only notify a user if new data has been added since the alert was last run. For example, a daily alert run yesterday will only trigger for data that has been added since the previous alert that also meets the specified alert criteria.

The user can create multiple **Groups** of conditions for an alert filter. This enables the user to set up alerts that are triggered by results that satisfy *any* of the conditions listed in the group, rather than just one criterion. Multiple conditions can be created per group and multiple groups per designated alert.

**Note:** Alerts will **not** be fully saved unless changes are published to the Dashboard.

A message will be sent to the user's email if the alert is triggered. The user will also receive a notification within the web client.

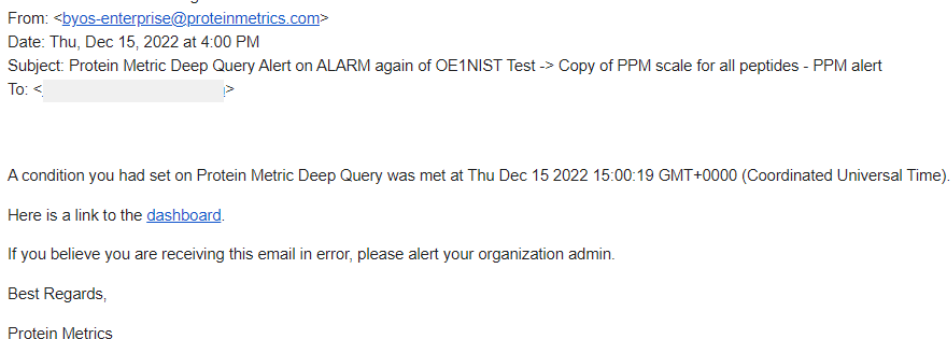


Figure 60: Background alert notification email

To **delete** an alert, the user can click the red x icon on the Alert title.

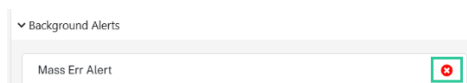


Figure 61: Deleting an Alert

If the user has not saved the alert yet, they will be prompted with a warning dialog. A similar dialog will present if the alert has been saved and the user wishes to delete it.

## Confirm deletion

You are about to delete an unsaved alert.

Cancel

Confirm

Figure 62: Unsaved alert deletion dialog



If an alert in a project created in v5.0 contains an unsupported field or has any other issues, the user will receive an email with a link to the affected Dashboard and the background alert will be disabled.

Currently, there can only be one alert per Visualization at a time.

If the user is not the owner of a background alert, they are only capable of deleting it if they delete the Dashboard or Visualization it is tied to. All alerts tied to a Visualization/Dashboard are deleted when the Visualization/Dashboard is deleted. These alerts cannot be recovered even if the Visualization/Dashboard is restored. Any alert without a valid Visualization or Dashboard will be deleted automatically if it is run.

## Publishing a Dashboard

Clicking **Save and Close** after changing Visualization settings, adding Filters/Sort, Derived Fields, or Background Alerts will update the Dashboard in real-time for the user. However, this will **not** save the contents of the Dashboard and any changes will be lost if the page is closed and reopened.

To ensure any changes made to the Dashboard have been saved, the user must **Publish** the Dashboard by clicking the  icon on the right-hand side of the Dashboard. Note that this button only becomes available once the user has clicked  when initially entering the Dashboard.

Publish

Cancel

Add New Visualization

Figure 63: Publishing a Dashboard

Note that the Publish button will be disabled if the user tries to change the name of the Dashboard to a preexisting name that is already saved within the same Folder.

If publishing a Dashboard fails for some reason (such as having an invalid or blank Title or Location), the Dashboard will remain in Edit mode so the user can try again. If the Publish is successful, the Dashboard Editor will close, and the Dashboard will display in Viewer mode.

If the user clicks Cancel prior to Publishing a Dashboard that has changes, a dialog will ask if the user would like to proceed and discard any unsaved changes.

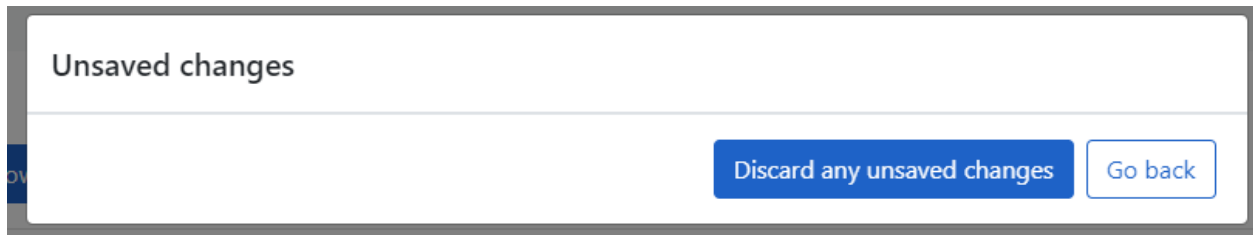


Figure 64: Discard any unsaved changes dialog