NPX™ Signature

Convert Olink data from long to wide format using R or Excel®

1. Data formats

Long format data refers to a table where each row is a different observation, and each column is a different variable or measurement related to that observation. In the case of Olink data, each row would be related to one OlinkID (assay) in one sample. The columns would contain Ct, NPX and absolute quantification for that observation, as well as QC information, and any other measurements, depending on the platform.

SampleID	OlinkID	NPX
Sample1	OID12345	1.0
Sample1	OID23456	2.0
Sample2	OID12345	3.0
Sample2	OID23456	4.0

Wide format data refers to a table where each row is a sample, and each column is a different assay. While this format can be useful for getting a quick overview of your data, it becomes more complicated, or impossible, to add more than one of the three values (Ct, NPX, absolute quantification) and additional information like QC warnings.

SampleID	OID12345	OID23456
Sample1	1.0	2.0
Sample2	3.0	4.0

For programmatic analysis in R, long format data can provide more opportunities with the use of the tidyverse package and Olink Analyze.

2. How to convert between formats

Option 1: Using R and tidyverse

1. Load the dataset in R using read_NPX from Olink® Analyze (or another reading function).
2. Use select() from dplyr and pivot_wider() from tidyr to generate a dataset where columns are OlinkIDs and rows are SampleIDs.
3. Export the dataset.

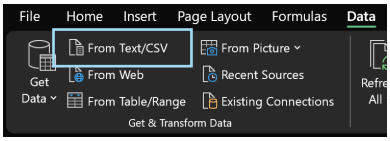
```
library(OlinkAnalyze)
library(tidyverse)
data <- read_NPX("PATH/TO/DATA.csv")
data_wide <- data |>
      select(SampleID, OlinkID, NPX) |>
      pivot_wider(id_cols = SampleID,
            names_from = OlinkID,
            values_from = NPX)
write.csv(data_wide, "wide_data.csv",
      quote = FALSE, row.names = FALSE)
```

NOTE that color coding cannot be applied using R.

Option 2: Using Excel on a PC

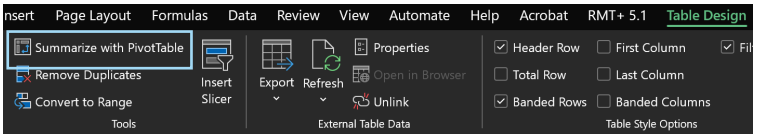
This option is only feasible for smaller studies, as Excel® sheets have a row and column limit.

1. Open a new workbook in Excel.
2. Select **Data > From Text/CSV**.

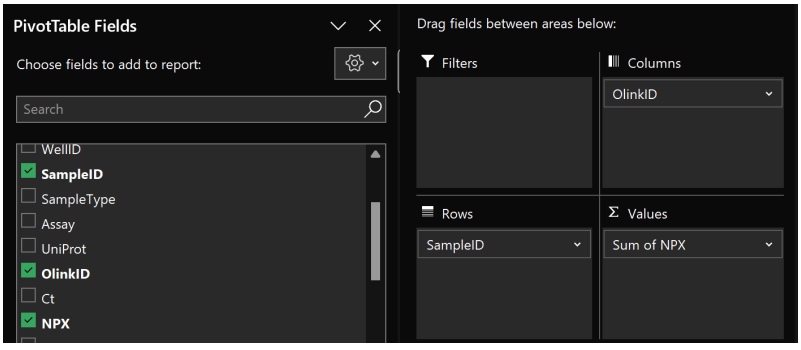


3. Select your datafile.
4. Select **Semicolon** as **Delimiter** and click **Load**.

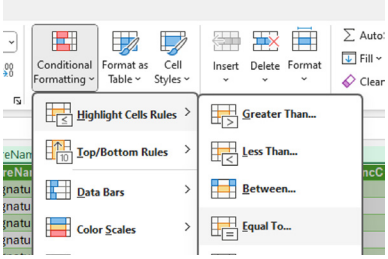
5. *Optional:* Color code the data according to section 3.
6. Select **Summarize with PivotTable**.



7. Select SampleID, OlinkID and NPX as **PivotTable Fields**. Since each SampleID/OlinkID combination only has 1 NPX value, the “average NPX” value will be the same as the NPX value.



8. *Optional:* If you want to color code the data, do the following:
   Select **Conditional Formatting>Highlight Cells Rules>Equal to**.



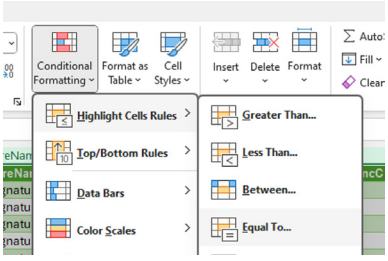
   In the **Equal To** window, color code the data. For example, format cells that are equal to 0 with Grey and then click **OK**.

3. Color code the data

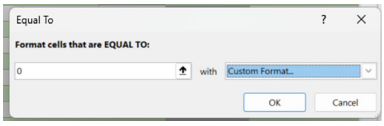
Color code with Highlight Cells Rules

If you want to use color coding, do the following:

1. Click anywhere in the table, and then press CTRL+A to select the table data in the entire table.
2. Select **Conditional Formatting>Highlight Cells Rules>Equal to**.



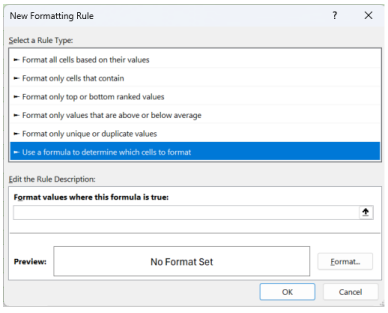
3. In the **Equal To** window, color code the data. For example, format cells that are equal to:
   - 0 with Grey and then click **OK**.
   - TRUE with Light Red Fill with Dark Red Text and then click **OK**.
   - WARN with Red text and then click **OK**.
   - FAIL with Dark red text and then click **OK**.



Color code NPX or absolute quantification values based on another column

If you want to color code NPX or absolute quantification values based on another column, do the following:

1. Click the letter at the top of the column that you want to format, for example the **NPX** or **Quantified Values** column, to select the entire column.
2. Select **Conditional Formatting>New Rule**.
3. In the **New Formatting Rule** window, select **Use a formula to determine which cells to format**



4. In the **Format values where this formula is true** field, color code the data using formulas. For example:
   - If the BelowLOD column is column N, and you want to color code data below LOD, write the formula:

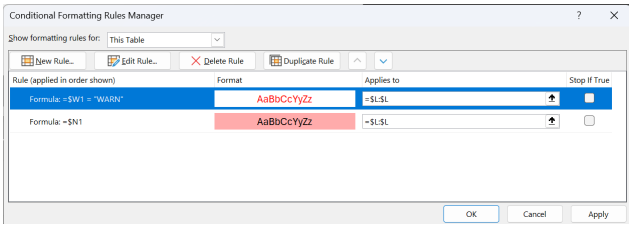
     ```
     = $N1 = True
     ```

   - If the SampleQC column is column W, and you want to color code data with QC warnings, write the formula:

     ```
     = $W1 = "WARN"
     ```

   Click **Format** and select a color. Click **OK**.
5. Click **OK** to color code the data based on the added formula.

All defined rules can be displayed and edited via **Conditional Formatting>Manage Rules**.



Note that Microsoft® 365 Apps for enterprise Excel version 2411 (Build 18227.20222 Click-to-Run) is referenced in this instruction. Other versions of Excel might work differently.

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