BIONUMERICS Tutorial:
Dendrogram export options

1 Introduction

In this tutorial, the export options of a dendrogram, displayed in the *Dendrogram* panel of the *Comparison* window is covered. This tutorial is a general tutorial, applicable to any dendrogram created in the *Comparison* window based on any of the available data types in BIONUMERICS. The first section (see 2) deals with the creation of a dendrogram in the *Comparison* window. For more detailed information about the available dendrogram layout options, we refer to the tutorial "Dendrogram layout options" which can be found on our website.

2 Creating a dendrogram in the Comparison window

Before a dendrogram can be created, a selection needs to be made in the *Database entries* panel of the *Main* window.

1. In the *Database entries* panel of the *Main* window make a selection of entries using the **Shift**-key and **Ctrl**-keys. With the **Ctrl+A** keyboard combination all entries are selected at once.

2. Highlight the *Comparisons* panel in the *Main* window and select **Edit** > **Create new object...** (+) to create a new comparison for the selected entries.

3. Make sure the experiment you wish to use for your clustering is selected in the *Experiments* panel. Optionally, click on the ◉ next to the experiment name in the *Experiments* panel to display the data in the *Experiment data* panel.

Cluster analysis is a two-step process. First, all pairwise similarity values are calculated with a **similarity coefficient**. Then, the resulting similarity matrix is converted into a dendrogram with a **clustering algorithm**.

4. Make sure the correct experiment is selected in the *Experiments* panel and select **Clustering** > **Calculate** > **Cluster analysis (similarity matrix)...**.

The first step deals with the similarity coefficient for the calculation of the similarity matrix. Depending on the selected coefficient, the relevant settings are displayed on the right. The list of coefficients depends on the type of experiment that is selected in the *Experiments* panel.

5. Select a coefficient from the list and press <**Next**>.

In step two the options related to the clustering algorithms are grouped. Under **Method**, the clustering algorithm to be applied on the similarity matrix can be selected. A **Dendrogram name** can

be entered in the corresponding text box. By default, the name of the experiment type appended with the aspect will be used.

      6. Select a clustering algorithm from the list and press <***Finish***> to start the cluster analysis.

During the calculations, the program shows the progress in the *Comparison* window's caption (as a percentage), and there is a green progress bar in the bottom of the window. When finished, the dendrogram and the similarity matrix are displayed in their corresponding panels. The cluster analysis is listed in the *Analyses* panel of the *Comparison* window (see Figure 1 for an example).

Numerous dendrogram layout options are available in the *Dendrogram display settings* dialog box (accessible via **Clustering** > **Dendrogram display settings...** (⟨↓↑⟩) and in the toolbar of the *Dendrogram* panel). Some of these layout options are covered in the tutorial "Dendrogram layout options".
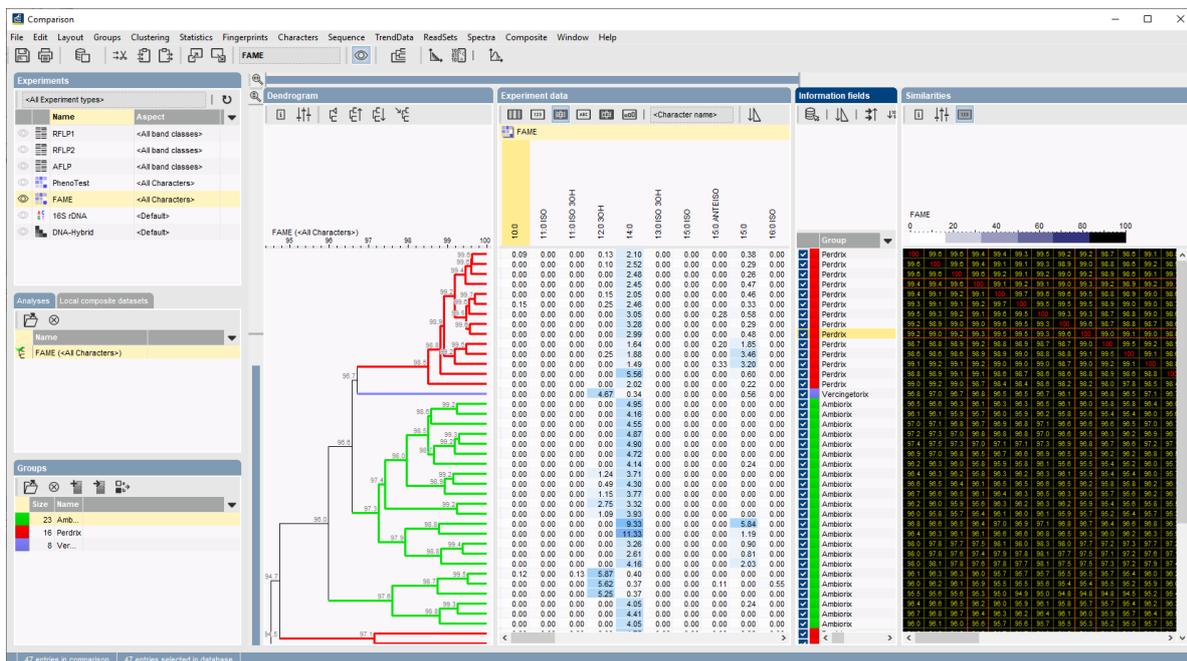
Figure 1: The *Comparison* window.

3   Exporting a dendrogram from the Comparison window

BIONUMERICS can export the cluster analysis as it appears in the *Comparison* window.

      1. Select ***File*** > ***Print preview...*** (🖶 , **Ctrl+P**).

The *Comparison print preview* window appears displaying the active dendrogram (if calculated), the data displayed in the *Experiment data* panel (if any), and the fields that are displayed in the *Information fields* panel. If a similarity matrix is available, it can be included with **Layout** > **Show similarity matrix** (🖳). The *Overview* panel shows an overview of the pages that will be printed, with the actual page in yellow.

      2. To scan through the pages, use ***Edit*** > ***Previous page*** (◀ , **Page Up**) and ***Edit*** > ***Next page*** (▶ , **Page Down**).

      3. To zoom in or out, use ***Edit*** > ***Zoom in*** (🗗 , **Ctrl+Page Up**) and ***Edit*** > ***Zoom out*** (🖵 , **Ctrl+Page Down**) or use the zoom slider.

4. To enlarge or reduce the whole image, use **Layout** > **Enlarge image size** (ᴀA) or **Layout** > **Reduce image size** (Aᴀ).

The small yellow slide bars on top of the pages can be used to resize the width of the displayed information. Information can be hidden from the print preview by moving the yellow slide bar to the right.

Default the experimental data (if shown) is displayed in black and white and the group symbols (if groups are defined) are used instead of the group colors.

5. To show the print preview in full color select **Layout** > **Use colors** (🎨).

6. The group information present in the *Groups* panel (if present) can be shown to the left with the option **Layout** > **Show group legend** (🔳) (see Figure 2).
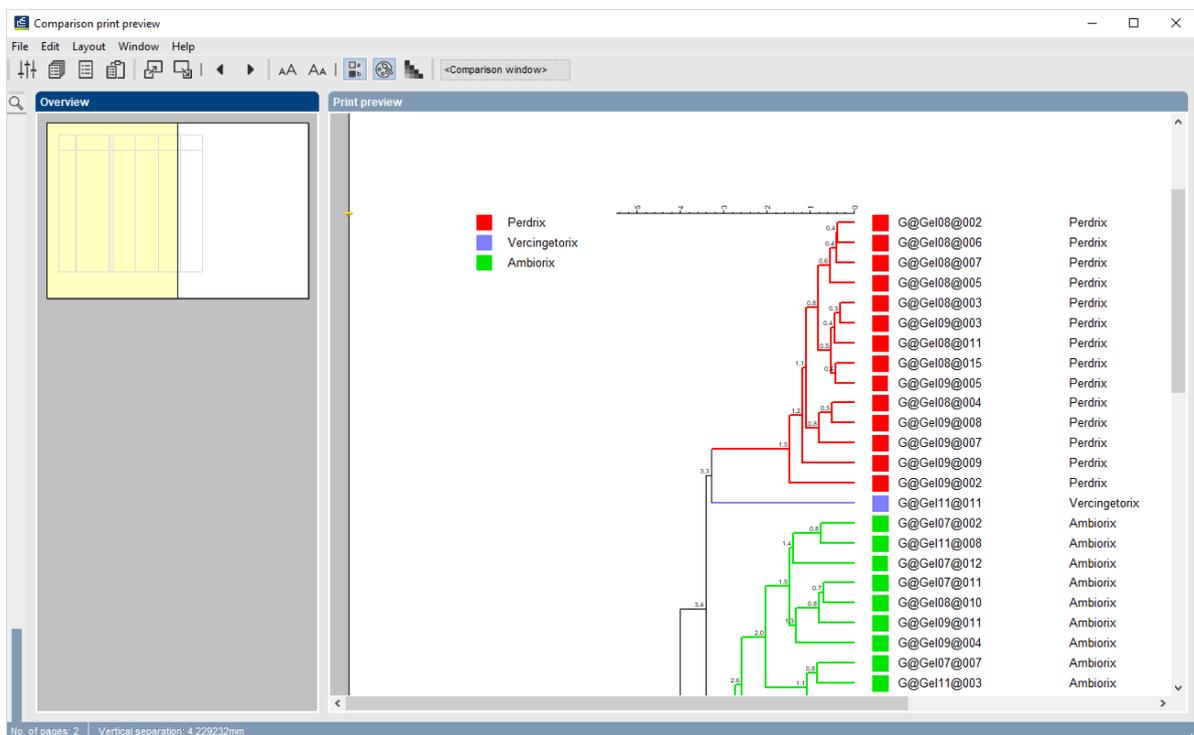
Figure 2: Group legend displayed next to the dendrogram.

7. To display a header line with the database field names select **Layout** > **Show field names**.

8. With **Layout** > **Show comparison information**, the name of the comparison (if already saved) and the number of entries are indicated on top of the first page.

9. Export the image to the clipboard using **File** > **Copy page to clipboard** (📋). Choose a bitmap format or choose **Enhanced Metafile** (see Figure 3).

The Enhanced metafile image can be pasted in another Microsoft application such as PowerPoint and can be edited further here.

More export formats are available in the *Comparison print preview* window:

10. Select **File** > **Export...**.

11. In the *Export image* dialog box that appears (see Figure 4), choose the desired export format, file name and dimensions (where applicable) and press <**OK**>.
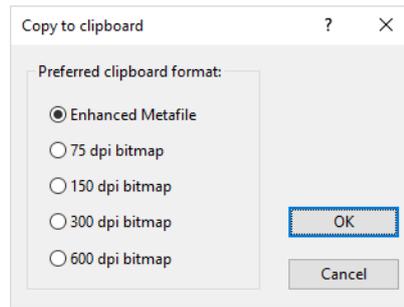
Figure 3: Copy to clipboard.
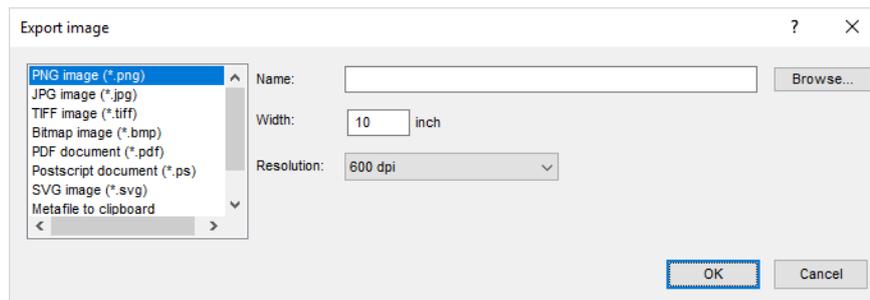
Figure 4: Export options.

The exported file will be opened automatically in the default editor for this file type.

12. Select *File* > *Exit* to close the *Comparison print preview* window.

A confirmation message appears, asking to save the current layout settings to a new print template (see Figure 5).
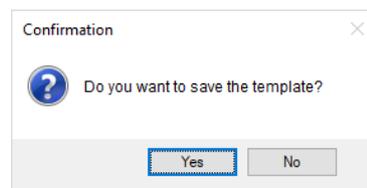
Figure 5: Confirmation message.

When you wish to save the layout settings to a print template in the database, confirm the action and specify a template name. The template will now become available in the Template drop-down list in the toolbar of the *Comparison print preview* window (see Figure 6). An existing print template can be loaded by selecting the template name from the list.
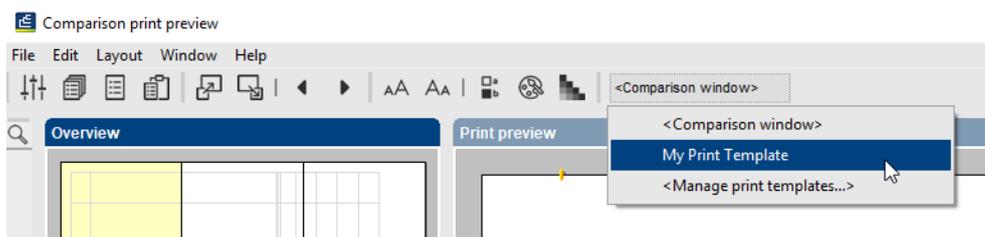
Figure 6: Template drop-down list.