Labels with Embedded Barcodes

Using labels with embedded barcodes is very common practice. Barcodes are typically used to print out mailing and shipping labels, and can be used to identify and track almost anything. When creating any type of label, you can specify your own dimensions or use standard Avery label sheets. The size of the labels component is based on the values in the Label Attribute section of the Configure Labels tab. When you update any of the Label Attributes (i.e., Rows, Columns, Width, Height, and Spacing), the labels automatically resize based on the values that were specified.

The best way to explain how to setup labels with embedded barcodes is to use an example. Let's create a set of custom labels for the University Research Lab to better track the DNA Primers used in experiments. We want the labels to contain information about each Primer and where it belongs. In addition, we want the barcode to contain the Primer name, number of the lab, and the location within the lab that the samples belong to. We also want the labels to include a sequence number to identify the process order for each step in the experiment. A barcode will be embedded into the template label to create QR Codes, and a QR Code Scanner will be used to track the Primers.

Setting Up Data Sources

Before setting up any labels, you first need to specify a Data Source in the Data panel.

1. Click the plus icon to add a Static CSV Data Source. This example will use the static data listed below, but could easily substitute real data from a database by using a SQL Data Source editor instead.

2. With the Static CSV Data Source editor open, copy and paste the CSV data below into your Data Source editor, and give your data a meaningful name (i.e., PrimerData) in the Data Key field.

<table>
<thead>
<tr>
<th>PrimerName, Sequence, LabNumber, Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>16F, CGG TTA CCT TGT GAC T Y, 2, Cooler 2</td>
</tr>
<tr>
<td>3AOX, GCA AAT GGC ATT CTG ACA TCC, 3, Freezer</td>
</tr>
<tr>
<td>EGFPC1R, CAT TTT ATG TTT CAG GGT CAG GG, 2, Cooler 2</td>
</tr>
<tr>
<td>pGlIrev, CTT TAT GTT TTT GCC GTC TTC, 1, Cooler 1</td>
</tr>
<tr>
<td>pGLfor, GTA TCT TAT GGT ACT GTA ACT G, 3, Walk-in Shelf A</td>
</tr>
<tr>
<td>EF-1xForward, TCA AGC CTC AGA CAG TGG TTC, 1, Cooler 1</td>
</tr>
</tbody>
</table>

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3. Next, go to the Design panel, and expand the Datasources folder in the Key Browser. You'll see that each column of data in the Static CSV datasource is represented by its own Data Key.

![Key Browser panel]

### Configuring the Label and Embedded Barcode

Now that you know what information you want on your labels, you have to decide what you want your labels to look like.

1. In the Design panel, drag a Labels component from the Report Component Palette to your workspace. By default, 15 labels will display in your workspace.

2. Specify the Data Key that maps to the Data Source that you want to drive the label. Drag your Datasource (i.e., PrimerData) to the Dataset Key in the Configure Labels tab of the Property Inspector.
3. While the Label component is selected, edit the number and size of the labels in the Configure Labels tab. The size of the label is based on the values for the Label Attributes: Rows, Columns, Label Width, Label Height, Spacing Width, and Spacing Height. When any of the Label Attributes are changed, the labels on the page are automatically resized based on these values.  
   **Note:** To commit values to any of the Label Attributes, enter a value and hit Enter.

![Configure Labels](image)

4. Next, drag a Barcode component and place it in the upper left corner of the template label.

5. Now you're ready to drag your data keys (i.e., PrimerName, LabNumber, and Location) from the Key Browser to the label template.  
   **Note:** Once you drag the first data key to your label template, the Edit Text tab will open. You can drag the other data keys directly into the Edit Text tab so they make one shape. This makes editing a little easier.  
   Next, drag the Sequence data key into the lower left corner of the label.

![Label Formatting](image)

6. Go to the Preview panel to verify if all your data populated all the labels, and check how all the data fits on the label because you may need to resize the barcode or text components.

7. Go back to the Design panel, click on the barcode component, and specify the data key you want to map to the Data Source to drive the barcode. In this example, we want the barcode to encode the PrimerName to the Data Key field of the barcode.  
   Next, choose a Barcode Format from the dropdown list based on your label requirements (i.e., product type, number of characters required, label spacing, etc.). For this example, select the QR_CODE barcode format. **Note:** If you want to push multiple fields into
the barcode text, you can concatenate them together in the Data section of the report.

8. Add a Title for your label by dragging a **Text Shape** component to the top of the label. Enter a title inside the text box (i.e., Primer Identification Label).
   In addition, in the Edit Text tab, you can mix plain text and data keys, change the font, size, and style, and even bold text that you want to stand out.

   ![Design panel screenshot]

9. Go to the **Preview Panel**, to view the finished design layout and the HTML code. It's not uncommon to go back to the Design panel to resize components and shapes on the label several times so they fit correctly and the data is readable. This may take several iterations.

   ![Preview panel screenshot]

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**Printing Labels**

You can print your labels by creating a **Print Action** on the Schedule tab, and run it by clicking the "Run Immediately" button. If you receive new shipments of Primers on a set schedule, you can setup the labels to print automatically. For this example, we want to simply print our labels on demand.