



MULTIPLEX SUSPENSION ARRAYS

# Bio-Plex Data Pro™ Software

## Getting Started





# **Bio-Plex Data Pro™ Software Getting Started**

Version 1.1

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## Welcome

Thank you for purchasing Bio-Rad Bio-Plex® software.

Bio-Plex Data Pro™ software meets your multiplex data analysis needs. Bio-Plex Data Pro software is a data management and data visualization tool designed to allow you to quickly draw conclusions about your biological study. It allows researchers to get answers to the complex questions that are at the heart of their research. You can easily manage data from many instrument runs, quickly making comparisons between experimental groups and drawing conclusions.

Bio-Plex Data Pro software is used together with Bio-Plex Manager™ software to provide a seamless and integrated solution.

The major functions of Bio-Plex Manager software are:

- Evaluation of raw instrument data
- Optimization of standard curves and usable assay range
- Identification of outliers
- Identification and resolution of problems with instrument runs

## Packaging Checklist

The software product you purchased will be in one of the following two configurations.

### BIO-PLEX DATA PRO (1 CD)

If there is one CD in the folder, then the folder should include the following:

- *Bio-Plex Data Pro Software Getting Started Guide* (this document)
- Bio-Plex Data Pro Software Installation CD. The activation code is located on the folder pocket. You will need this activation code to activate the Bio-Plex Data Pro license.

### BIO-PLEX MANAGER (2 CDs)

If there are two CDs in the folder, then the folder should include the following:

- *Bio-Plex Data Pro Software Getting Started Guide* (this document).
- Bio-Plex Data Pro Software Installation CD. The activation code is located on the folder pocket. You will need this activation code to activate the Bio-Plex Data Pro license.
- Bio-Plex Manager Software Installation CD.
- *Release Notes — Bio-Plex Manager Software, Version 6.1*
- A white envelope containing the Bio-Plex Manager USB Network Security HASP key. This HASP key is used to manage the Bio-Plex Manager user licenses. You will need this HASP key in section 8, Installing the NetHASP Network License Manager, on page 29.

# 1 Installing Bio-Plex Data Pro™ Software

Install Bio-Plex Data Pro software as described in the following sections.

## Bio-Plex Data Pro System Requirements

The following are the minimum and recommended system requirements for Bio-Rad Data Pro.

Component	Minimum	Recommended
Operating system	Windows XP Service Pack 3	Windows 7 (32-bit or 64-bit)
Processor	Core 2, 2.6 GHz or higher	Core 4, 3.1 GHz or higher
Hard disk space	160 GB	500 GB
System memory	2 GB	8 GB
Videographic memory <sup>a</sup>	Not applicable	1 GB
Screen resolution	1280 x 1024	1920 x 1080
Screen colors	24-bit True Color	24-bit True Color
Other software	Internet Explorer 8.0 Microsoft Excel 2007	Internet Explorer 8.0 Microsoft Excel 2007

a. Bio-Rad recommends that you keep your video drivers up to date.

## Installation Instructions

### Installing Bio-Plex Data Pro for the first time

To install the most recent version of Bio-Plex Data Pro, go to [www.bio-rad.com/bio-plexsoftware](http://www.bio-rad.com/bio-plexsoftware) to get to the Bio-Plex Data Pro Resource page. Follow the instructions to download and install the Bio-Plex Data Pro software.

### Upgrading Bio-Plex Data Pro

If you have an existing installation of Bio-Plex Data Pro, upgrade to the latest version by going to [www.bio-rad.com/bio-plexsoftware](http://www.bio-rad.com/bio-plexsoftware) and installing the latest version.

**Note:** You can also get to the Bio-Plex Data Pro Resource page from the software by clicking Help, then clicking Go to Updates and Resources.

## Luminex Output CSV Files

Customers using xPONENT software (all versions) to run their Luminex system must convert their files before these files can be imported into Bio-Plex Data Pro. You must use Bio-Plex Manager 6.1 to convert the Luminex Output CSV files. Conversion of data files of other third-party software is not supported.

## 2 Changing Your Screen Resolution

Your computer screen resolution must be set to the minimum settings to correctly display the Bio-Plex Manager™ and Bio-Plex Data Pro™ interfaces. The status bar and some dialog boxes will not display properly at lower resolutions. If your display is currently set to a lower resolution, then follow the procedure for your operating system.

See Bio-Plex Manager System Requirements on page 27 and Bio-Plex Data Pro System Requirements on page 5 for the screen resolution settings.

### WINDOWS XP

**To change the screen resolution on Windows XP:**

1. Go to the Windows Start menu, select Settings, and select Control Panel.
2. Open the Display control panel.
3. In the Display Properties dialog, select the Settings tab.
4. Drag the Screen Area slider to the right (toward More) until you have selected the desired setting. Click OK to accept the settings.

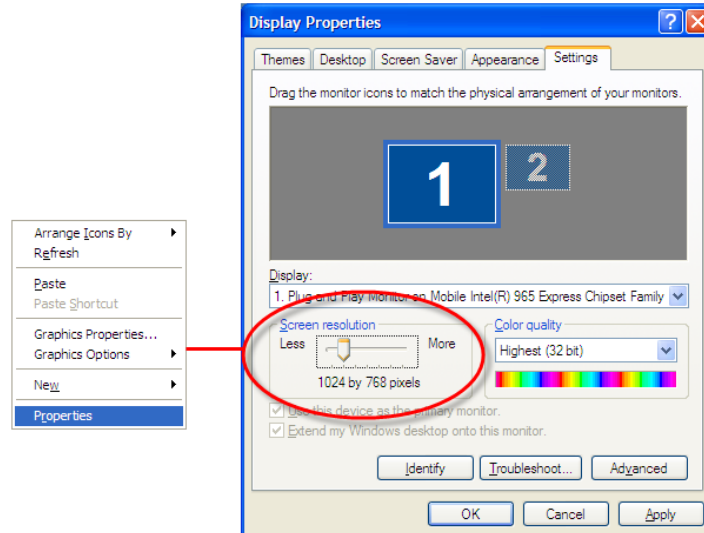


Figure 1. Screen Resolution Dialog Box (Windows XP)

### WINDOWS 7

**To change the screen resolution on Windows 7:**

1. Right-click in your desktop, then click Personalize.
2. Click Display.
3. Click Adjust Resolution.



4. Click the Resolution dropdown list and move the slider until it displays the desired setting.

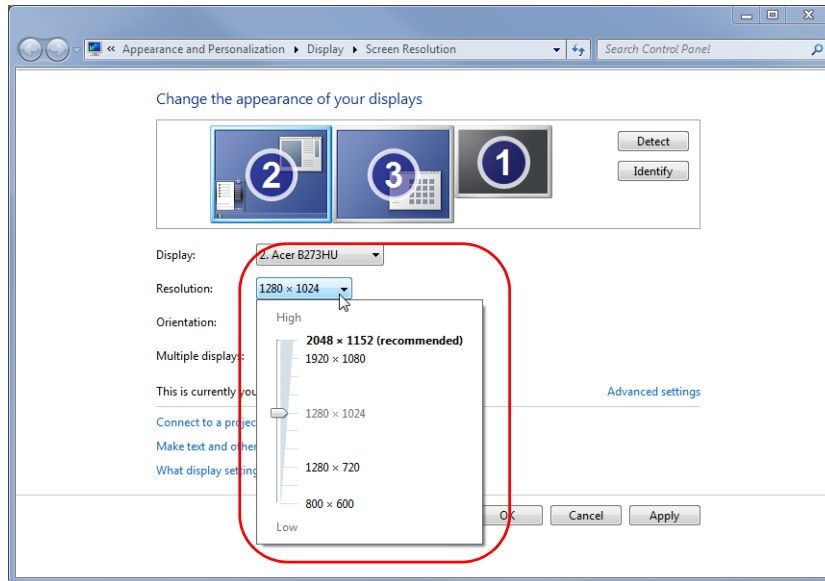


Figure 2. Screen Resolution Dialog Box (Windows 7)

5. Click OK.

### 3 Bio-Plex Data Pro™ Software Licensing

This section describes the terms of the Bio-Plex Data Pro evaluation period, the Bio-Plex Data Pro license, and how to activate your license online or offline.

#### Evaluation Period

There is a 30-day evaluation period with Bio-Plex Data Pro. During the evaluation period, you have full access to all Bio-Plex Data Pro Plus product features. You may continue to use the product once the evaluation period ends on any projects already created. If the evaluation period ends and you have not activated your license, you will not be able to create new projects, import additional data into existing projects, and import or export projects. All other features will continue to be available, and you can continue to use the sample projects.

#### Bio-Plex Data Pro Software License

Each Bio-Plex Data Pro license is a five-user (5) license; you can have up to five computers with active licenses at any time. You can move a license from one computer to another by deactivating it on the first and activating it on the second computer.

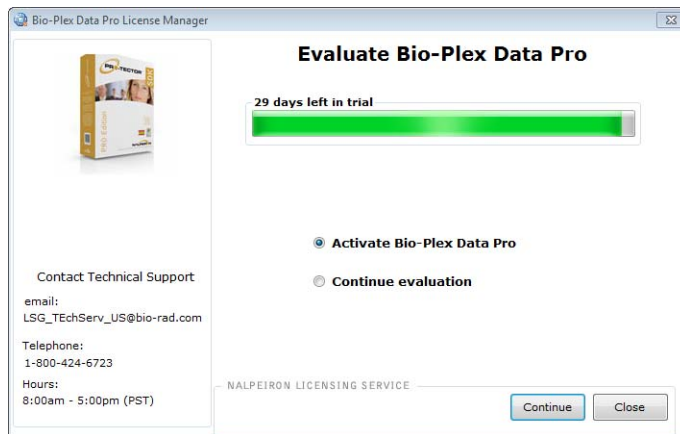
#### Activating Your License Online

You can activate your license at any time during the evaluation period.

**Note:** You must have Internet access in order to activate your license online.

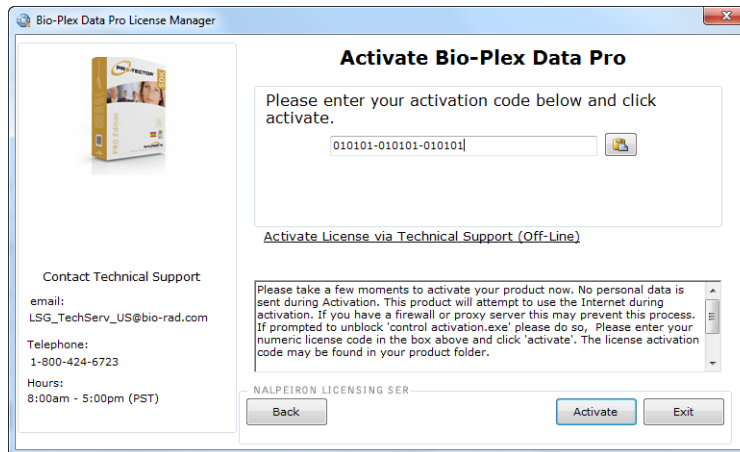
To activate your license online:

1. Start Bio-Plex Data Pro.
2. In the Evaluate Bio-Plex Data Pro window, click Activate Bio-Plex Data Pro, then click Continue.

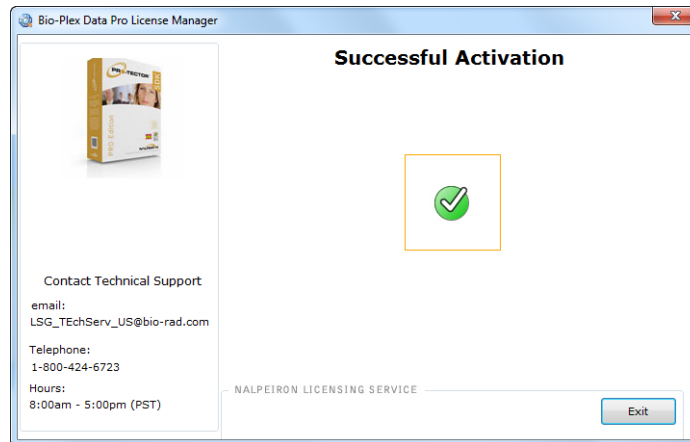


3. In the Activate Bio-Plex Data Pro window, enter the 18-digit activation code and click Activate.

The 18-digit activation code can be found in the Bio-Plex Data Pro software product folder pocket.



Once the license is activated, the following window is displayed.



4. Click Exit.

**Note:** You can activate your license while the application is being run in evaluation mode. Start Bio-Plex Data Pro in evaluation mode. To activate your license, select Manage License from the Help menu and follow the prompts.

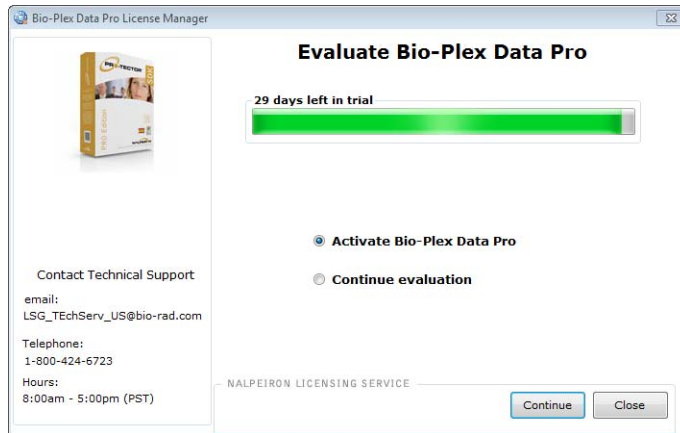
## Activating Your License Offline

If you do not have Internet access or you want to activate your license offline, contact Bio-Rad Support at 1-800-424-6723 or LSG.TechServ.US@Bio-Rad.com (email) to request an activation certificate.

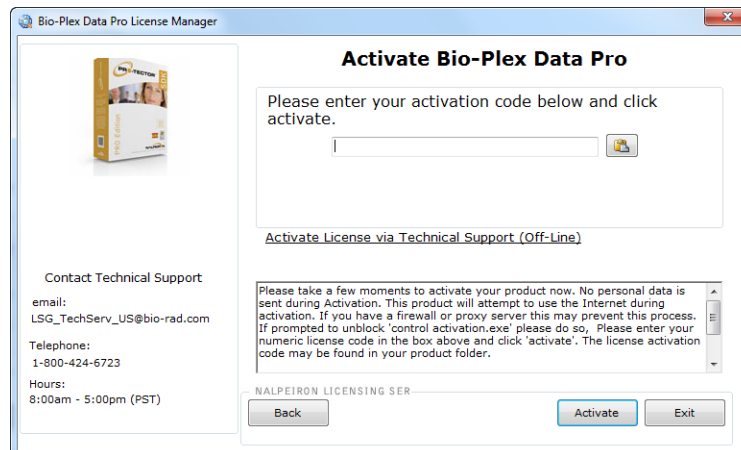
Once you receive the activation certificate, follow the procedure to activate your Bio-Plex Data Pro license.

### To active your license offline:

1. Start Bio-Plex Data Pro.
2. In the Evaluate Bio-Plex Data Pro window, click Activate Bio-Plex Data Pro and click Continue.

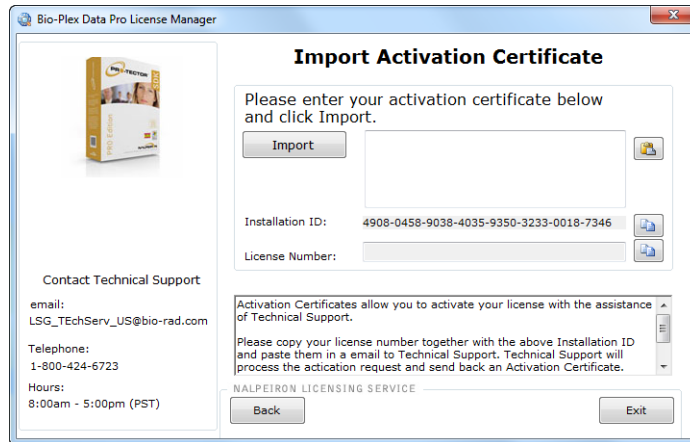


3. In the Activate Bio-Plex Data Pro window, click the Activate License via Technical Support link.

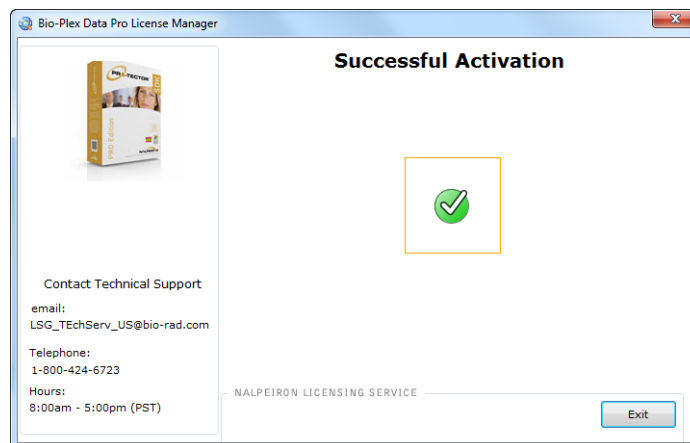


4. Create a text file and copy and paste the Installation ID number from the Import Activation Certificate window into the file. Include the 18-digit activation code, which is found in the Bio-Plex Data Pro software product folder in the text file. Attach the text file in an email to Technical Support with the subject line: Request to Activate Bio-Plex Data Pro License.

Technical Support will process your email request and reply with a certificate and instructions for completing the activation process.



5. When you receive the certificate, return to the Import Activation Certificate window. Copy and paste the certificate information you receive from Technical Support into the text box.
6. Click Import.  
The following window is displayed.



7. Click Exit.

## 4 An Overview of Bio-Plex Data Pro™ Software

This section introduces you to Bio-Plex Data Pro. It takes you through and gives you an overview of the product.

1. Start Bio-Plex Data Pro.

The Home view appears. In this view, you can create a new project or open an existing project. The navigation bar in the left pane displays the project workflow, starting at the top with Manage Data Sets and ending with Perform Analysis/Create Charts.

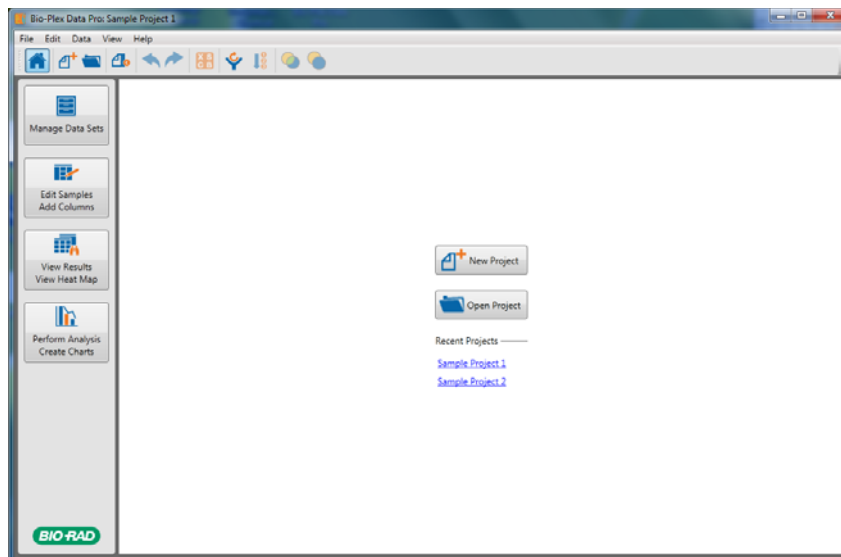


Figure 3. Home View

2. Click Sample Project 1 to open the example project shipped with Bio-Plex Data Pro.

The Manage Data Sets view displays the data sets in your project.

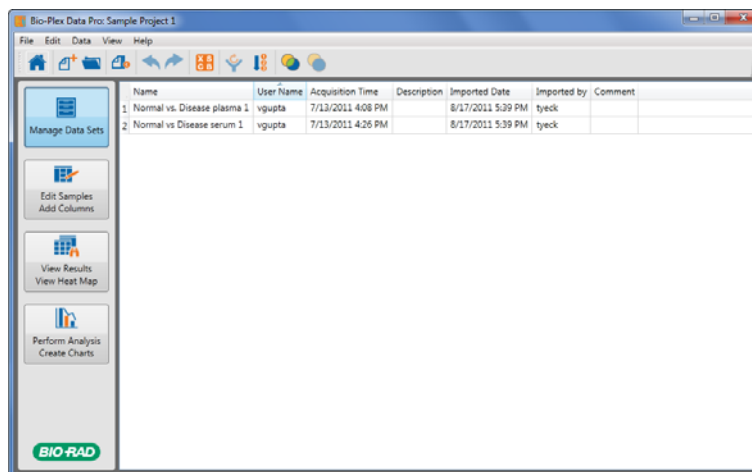


Figure 4. Manage Data Sets View

3. Select one of the data sets and right-click to open the context menu.
  - You can choose Edit Data Set to open the Edit Dataset dialog box, where you can edit the description of your data set.
  - You can choose Delete Data Set to remove a data set from your project.

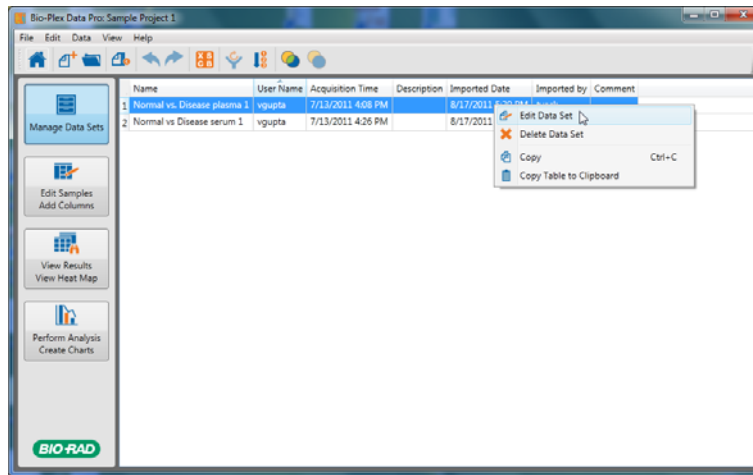
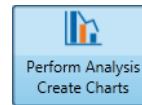


Figure 5. Data Sets Context Menu

4. Click Perform Analysis/Create Charts in the navigation bar.



In this view, you visualize your results and view the results of common calculations.

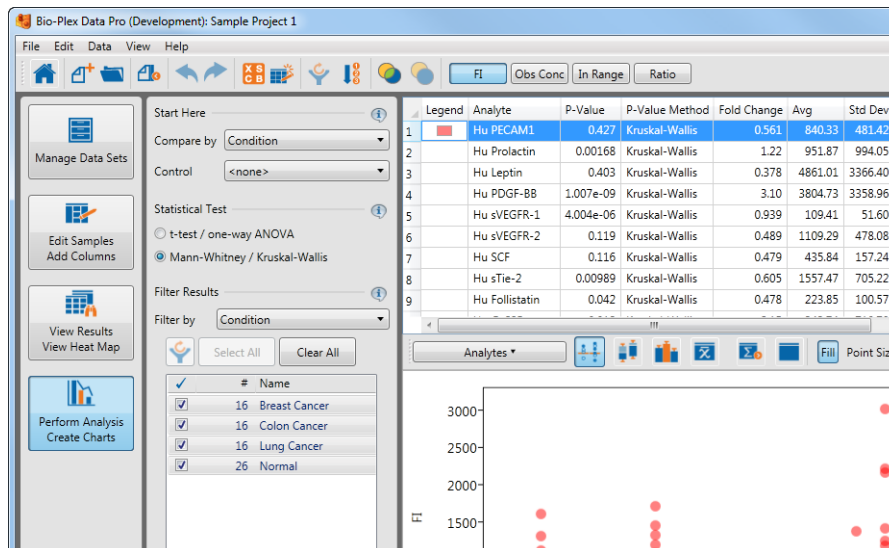


Figure 6. Perform Analysis/Create Charts View

**Note:** In order to view results that are meaningful, you must label your samples with information from your experiment. This is done in the Edit Samples/Add Columns view.

## DATA OUTPUTS

There are six types of data outputs. Click on the buttons in the toolbar to display your data in the desired output.



**Scatter Plot** — shows the results by biological replicates using the parameter you choose to draw your comparisons. The scatter plot allows you to view one or more analytes at a time.

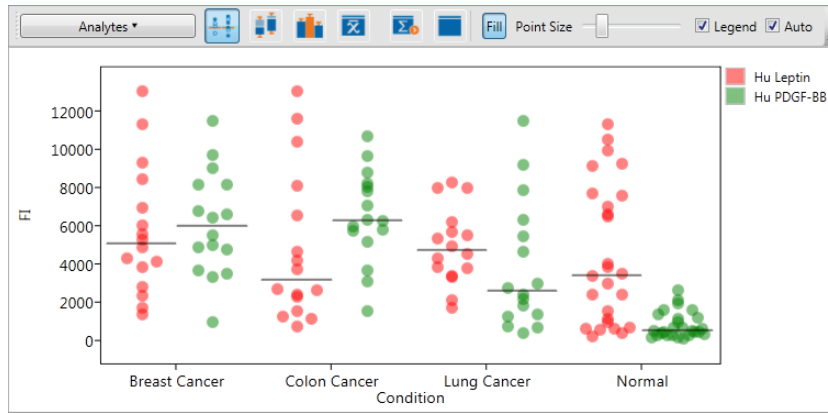


Figure 7. Scatter Plot



**Box and Whisker Plot** — shows the results by biological replicates using the parameter you choose to draw your comparisons. It displays pertinent statistical information for one or more analytes.

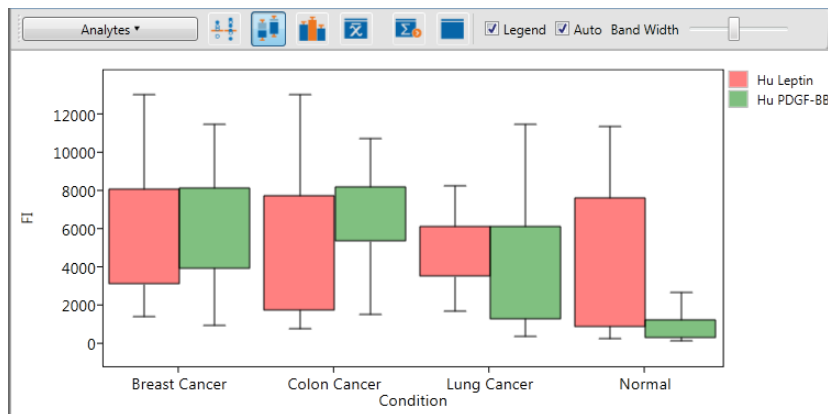



Figure 8. Box and Whisker Plot



**Bar Graph**  — shows the results by biological replicates using the parameter you choose to draw your comparisons. You can select as many analytes as you like from the Analyte Table for comparison.

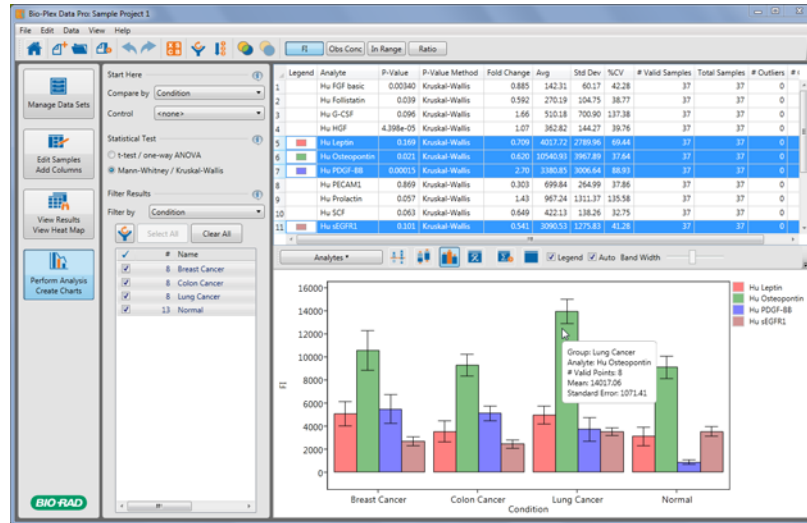




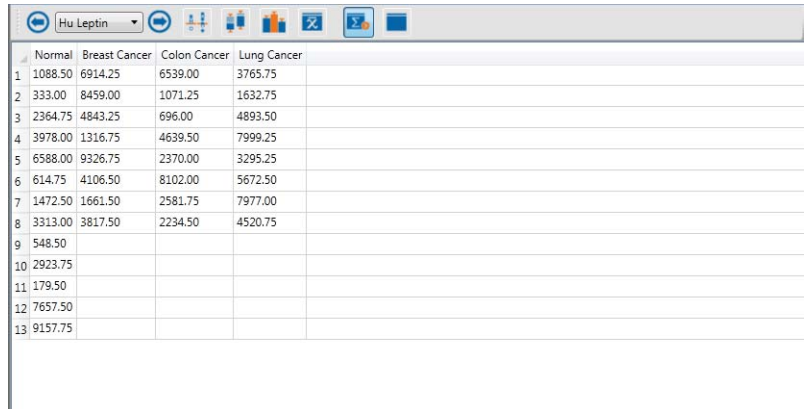
Figure 9. Bar Graph

**Summary Table**  — displays common calculations for your biological replicates.

Legend	Analyte	Condition	# Samples	# Valid Samples	P-Value	P-Value Method	Fold Change	Mean
1	Hu Leptin	Breast Cancer	16	16	<choose control>	<choose control>	<choose control>	5686.89
2	Hu Leptin	Colon Cancer	16	16	<choose control>	<choose control>	<choose control>	4776.58
3	Hu Leptin	Lung Cancer	16	16	<choose control>	<choose control>	<choose control>	4906.20
4	Hu Leptin	Normal	26	26	<choose control>	<choose control>	<choose control>	4376.92
5	Hu PDGF-BB	Breast Cancer	16	16	<choose control>	<choose control>	<choose control>	6095.02
6	Hu PDGF-BB	Colon Cancer	16	16	<choose control>	<choose control>	<choose control>	6470.78
7	Hu PDGF-BB	Lung Cancer	16	16	<choose control>	<choose control>	<choose control>	3805.84
8	Hu PDGF-BB	Normal	26	26	<choose control>	<choose control>	<choose control>	753.98


Figure 10. Summary Table

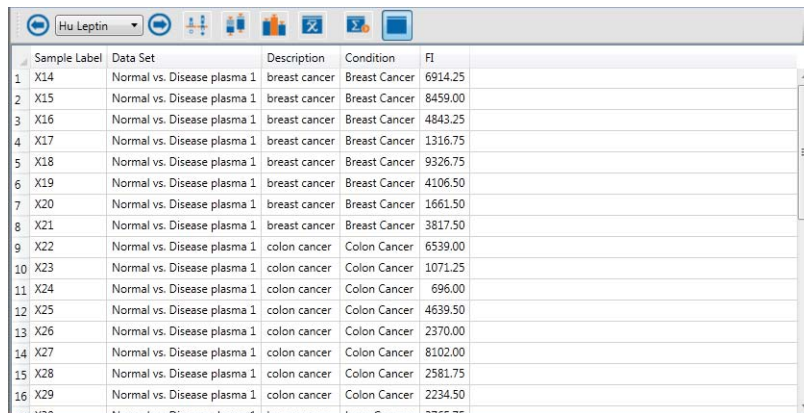
 **Export to Statistics Software** — displays the sample information used to generate the other outputs in a format that is convenient for import into statistical software packages.



	Normal	Breast Cancer	Colon Cancer	Lung Cancer
1	1088.50	6914.25	6539.00	3765.75
2	333.00	8459.00	1071.25	1632.75
3	2364.75	4843.25	696.00	4893.50
4	3978.00	1316.75	4639.50	7999.25
5	6588.00	9326.75	2370.00	3295.25
6	614.75	4106.50	8102.00	5672.50
7	1472.50	1661.50	2581.75	7977.00
8	3313.00	3817.50	2234.50	4520.75
9	548.50			
10	2923.75			
11	179.50			
12	7657.50			
13	9157.75			

Figure 11. Export to Statistics Software

 **Sample List** — represents the data in the Results Table section. This can be used to reproduce the scatter plots in Microsoft Excel.



	Sample Label	Data Set	Description	Condition	FI
1	X14	Normal vs. Disease plasma 1	breast cancer	Breast Cancer	6914.25
2	X15	Normal vs. Disease plasma 1	breast cancer	Breast Cancer	8459.00
3	X16	Normal vs. Disease plasma 1	breast cancer	Breast Cancer	4843.25
4	X17	Normal vs. Disease plasma 1	breast cancer	Breast Cancer	1316.75
5	X18	Normal vs. Disease plasma 1	breast cancer	Breast Cancer	9326.75
6	X19	Normal vs. Disease plasma 1	breast cancer	Breast Cancer	4106.50
7	X20	Normal vs. Disease plasma 1	breast cancer	Breast Cancer	1661.50
8	X21	Normal vs. Disease plasma 1	breast cancer	Breast Cancer	3817.50
9	X22	Normal vs. Disease plasma 1	colon cancer	Colon Cancer	6539.00
10	X23	Normal vs. Disease plasma 1	colon cancer	Colon Cancer	1071.25
11	X24	Normal vs. Disease plasma 1	colon cancer	Colon Cancer	696.00
12	X25	Normal vs. Disease plasma 1	colon cancer	Colon Cancer	4639.50
13	X26	Normal vs. Disease plasma 1	colon cancer	Colon Cancer	2370.00
14	X27	Normal vs. Disease plasma 1	colon cancer	Colon Cancer	8102.00
15	X28	Normal vs. Disease plasma 1	colon cancer	Colon Cancer	2581.75
16	X29	Normal vs. Disease plasma 1	colon cancer	Colon Cancer	2234.50
17	X30	Normal vs. Disease plasma 1	lung cancer	Lung Cancer	3765.75

Figure 12. Sample List

- Notice the “Compare by” and Control dropdown lists.

**Compare by** — changes how samples are grouped on the x-axis of the graphs and grouped for analysis in the summary table.

**Control** — chooses the biological replicate group for your experiment. This group is plotted on the left side of the graphs and results in the P-value for the pair-wise statistical tests being presented in the relevant views.

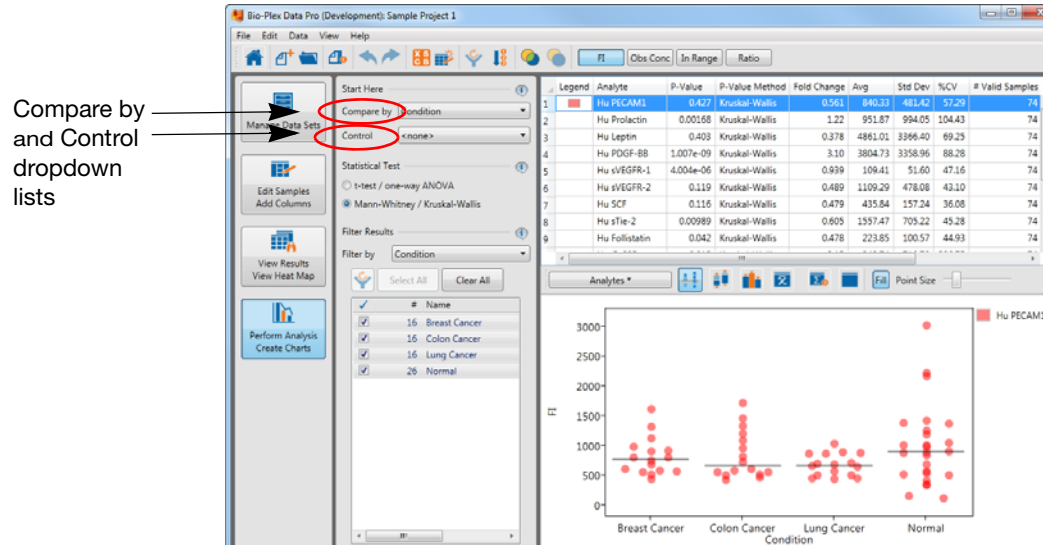
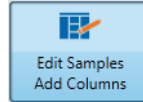


Figure 13. Compare by and Control dropdown lists



- Click Edit Samples/Add Columns in the navigation bar.

In this view, you see a list of every sample in your project. Each sample is created from samples identified in Bio-Plex Manager™ software. In this view, you add specific information from your experiment.

	Condition	Matrix	Gender	Data Set	Sample Type	Description	Sample Label
1	Normal	Plasma	Male	Normal vs. Disease plasma 1	Unknown	Normal	X1
2	Normal	Plasma	Male	Normal vs. Disease plasma 1	Unknown	Normal	X2
3	Normal	Plasma	Male	Normal vs. Disease plasma 1	Unknown	Normal	X3
4	Normal	Plasma	Male	Normal vs. Disease plasma 1	Unknown	Normal	X4
5	Normal	Plasma	Male	Normal vs. Disease plasma 1	Unknown	Normal	X5
6	Normal	Plasma	Male	Normal vs. Disease plasma 1	Unknown	Normal	X6
7	Normal	Plasma	Female	Normal vs. Disease plasma 1	Unknown	Normal	X7
8	Normal	Plasma	Female	Normal vs. Disease plasma 1	Unknown	Normal	X8
9	Normal	Plasma	Female	Normal vs. Disease plasma 1	Unknown	Normal	X9
10	Normal	Plasma	Female	Normal vs. Disease plasma 1	Unknown	Normal	X10
11	Normal	Plasma	Female	Normal vs. Disease plasma 1	Unknown	Normal	X11
12	Normal	Plasma	Female	Normal vs. Disease plasma 1	Unknown	Normal	X12
13	Normal	Plasma	Female	Normal vs. Disease plasma 1	Unknown	Normal	X13
14	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X14
15	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X15
16	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X16
17	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X17
18	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X18
19	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X19
20	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X20
21	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X21
22	Colon Cancer	Plasma	Male	Normal vs. Disease plasma 1	Unknown	colon cancer	X22
23	Colon Cancer	Plasma	Male	Normal vs. Disease plasma 1	Unknown	colon cancer	X23
24	Colon Cancer	Plasma	Male	Normal vs. Disease plasma 1	Unknown	colon cancer	X24
25	Colon Cancer	Plasma	Male	Normal vs. Disease plasma 1	Unknown	colon cancer	X25
26	Colon Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	colon cancer	X26

Figure 14. Edit Samples/Add Columns View



7. Click View Results/View Heat Map in the navigation bar.

In this view, you can do the following and view your results:

- Filter your results by removing samples that meet specific criteria.
- Sort your data and export tables.
- Create heat maps of your results or custom tables.

	Condition	Matrix	Gender	Data Set	Sample Type	Description	Sample Label	FI	FI %CV	FI Std Dev
1	Normal	Plasma	Male	Normal vs. Disease plasma 1	Unknown	Normal	X1	79.50	0.889	
2	Normal	Plasma	Male	Normal vs. Disease plasma 1	Unknown	Normal	X2	64.75	3.82	
3	Normal	Plasma	Male	Normal vs. Disease plasma 1	Unknown	Normal	X3	69.50	9.16	
4	Normal	Plasma	Male	Normal vs. Disease plasma 1	Unknown	Normal	X4	80.00	5.30	
5	Normal	Plasma	Male	Normal vs. Disease plasma 1	Unknown	Normal	X5	77.25	3.20	
6	Normal	Plasma	Male	Normal vs. Disease plasma 1	Unknown	Normal	X6	69.00	6.15	
7	Normal	Plasma	Female	Normal vs. Disease plasma 1	Unknown	Normal	X7	126.50	1.68	
8	Normal	Plasma	Female	Normal vs. Disease plasma 1	Unknown	Normal	X8	179.50	5.12	
9	Normal	Plasma	Female	Normal vs. Disease plasma 1	Unknown	Normal	X9	115.75	2.75	
10	Normal	Plasma	Female	Normal vs. Disease plasma 1	Unknown	Normal	X10	87.25	1.22	
11	Normal	Plasma	Female	Normal vs. Disease plasma 1	Unknown	Normal	X11	87.50	5.66	
12	Normal	Plasma	Female	Normal vs. Disease plasma 1	Unknown	Normal	X12	159.75	8.19	
13	Normal	Plasma	Female	Normal vs. Disease plasma 1	Unknown	Normal	X13	169.50	6.26	
14	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X14	86.25	1.23	
15	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X15	125.25	2.54	
16	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X16	212.50	4.33	
17	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X17	256.50	1.38	
18	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X18	164.25	9.69	
19	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X19	191.25	2.77	
20	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X20	188.50	4.13	
21	Breast Cancer	Plasma	Female	Normal vs. Disease plasma 1	Unknown	breast cancer	X21	152.75	2.08	
22	Colon Cancer	Plasma	Male	Normal vs. Disease plasma 1	Unknown	colon cancer	X22	140.50	1.51	
23	Colon Cancer	Plasma	Male	Normal vs. Disease plasma 1	Unknown	colon cancer	X23	202.75	8.89	
24	Colon Cancer	Plasma	Male	Normal vs. Disease plasma 1	Unknown	colon cancer	X24	290.50	0.487	
25	Colon Cancer	Plasma	Male	Normal vs. Disease plasma 1	Unknown	colon cancer	X25	263.75	3.89	

Figure 15. View Results/View Heat Map View

## Sample Projects

Bio-Plex Data Pro comes with two sample projects. Use these sample projects to familiarize yourself with Bio-Plex Data Pro. The following is a description of these sample projects.

### SAMPLE PROJECT 1

The samples in Sample Project 1 are of individuals who have been diagnosed with various cancers and whose blood was processed as serum and plasma. The gender of the individuals is known. This project includes several custom columns:

- **Condition** — the values are Normal or one of several cancers.
- **Matrix** — the values are Serum or Plasma.
- **Gender** — the values are Male or Female.

In the Perform Analysis/Create Charts view, “Compare by” is set to Condition. The Plasma samples are excluded from analysis by default. You can click “Filter by” and select Matrix to see the list of samples.

The Sample Info section of Bio-Plex Manager is used to track all of the information that is pertinent to your experiment (in this example, Condition, Matrix, and Gender). When you begin working with your own projects, you will need to add the data you want to use to perform your analysis.

## **SAMPLE PROJECT 2**

The samples in Sample Project 2 were labeled as Normal, Breast Cancer, Lung Cancer, Colon Cancer, Ovarian Cancer, and Prostate Cancer. In the Perform Analysis/Create Charts view, “Compare by” is set to Description. Labeling samples with informative descriptions in Bio-Plex Manager can eliminate the need to label samples in Bio-Plex Data Pro if the experiment is relatively simple. In this example, we were interested only in whether the samples came from patients diagnosed with a specific type of cancer or were free of any cancer.

## 5 Analyzing Your Data

This section describes how to take data from Bio-Plex Manager™ and analyze it using Bio-Plex Data Pro™.

### Analyze Your Data in Bio-Plex Manager Software

Before you use Bio-Plex Data Pro, first analyze the results of your run in Bio-Plex Manager. Bio-Rad recommends you do the following:

1. Run the Curve Fit Optimizer for all curves.  
This algorithm optimizes most curves to create as broad a dynamic range as possible.
2. Review the messages in your optimization report.
3. Visually inspect your curves and ensure that your data is acceptable for your purposes.

### Importing Your Data into Bio-Plex Data Pro Software

There are two methods for transferring your data into Bio-Plex Data Pro:

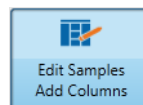
- If you are viewing your results in Bio-Plex Manager 6.1, you can use the Export Results to Bio-Plex Data Pro function. The data are seamlessly exported from Bio-Plex Manager and imported to Bio-Plex Data Pro. You can create a new project and import the data into it, or you can import the data into an existing project.
- Create a new project and import data files in Bio-Plex Data Pro.

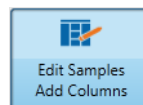
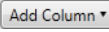
### Selecting Your Samples

The results files that are imported into Bio-Plex Data Pro contain different sample types. Typically, Standard and Blank samples are unnecessary and, sometimes, confusing. By default, these sample types are automatically excluded. Click Select Sample Type for Analysis to see how these sample types are filtered out. You can always include them by selecting them for inclusion.

### Labelling Your Samples

Before you can analyze your data, you must first label your samples with data from your experiments that are pertinent to your analysis. Sometimes the information entered in the description is sufficient to carry out the desired analysis, but usually you need to annotate your data.



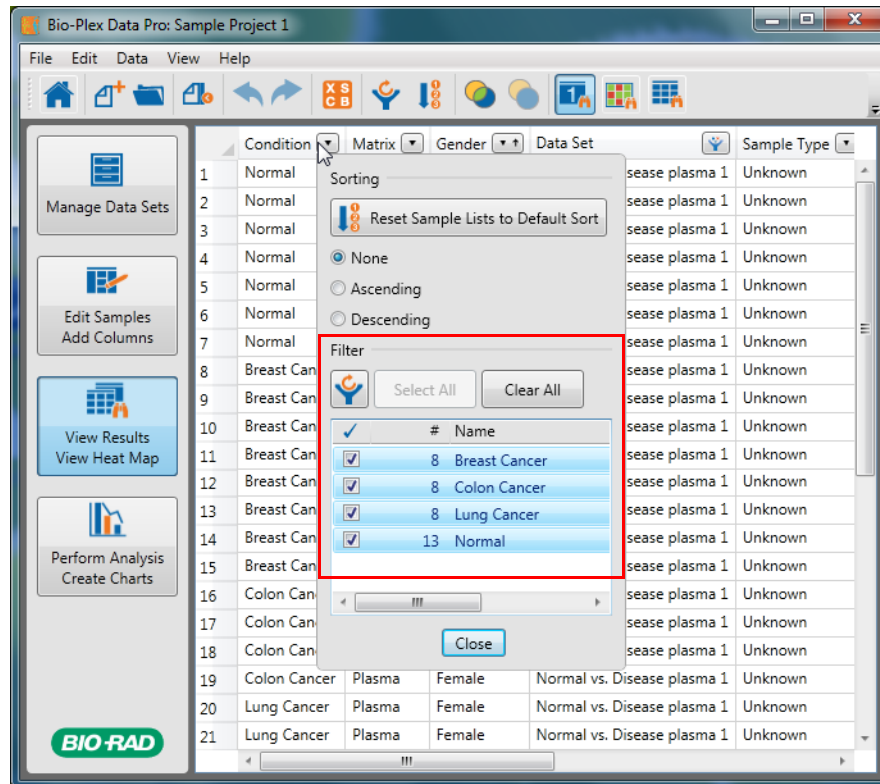
1. Open your project, then click Edit Samples/Add Columns  in the navigation pane.
2. Click Add Column  in the toolbar to add a column to the table for each of the parameters you want to track for analysis.  
These parameters can be experimental group (for example, Dosage, Concentration, or Time Point) or demographic (for example, Gender, Species, Strain) information.
3. Add sample data to the column by copying and pasting from a Microsoft Excel spreadsheet.

You can arrange the order of the columns by clicking the header and dragging the column to a new location in the table.

## Viewing Your Data in the Results Table



1. Navigate to the View Results/View Heat Map view.
2. In the Results table, click the triangle in the column header to open the dropdown list. The dropdown list displays a list of the different sample types for that column.



3. Select and clear the check boxes to include or exclude the desired samples.

**Note:** When a filter is applied, the filtering is carried throughout the entire project.

**Note:** Filters can be cleared at any time by clicking the Clear All Analysis Filters button.



You can also view your data as a heat map, a graphical representation of data that enables you to quickly identify the intensity readings and to find patterns in the data. For more information on heat maps, see the *Bio-Plex Data Pro User Guide*.



## The Perform Analysis/Create Charts View

When you select a parameter in the “Compare by” dropdown list, a list of sample types is displayed. You can include or exclude the sample types from the Filter list.

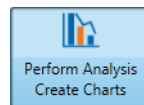
Select a column in the “Compare by” dropdown list

Then select and clear check boxes to include and exclude samples.

Legend	Analyte	P-Value	P-Value Method	Fold Change	Avg
1	Hu PECAM1	0.427	Kruskal-Wallis	0.561	846
2	Hu Prolactin	0.00168	Kruskal-Wallis	1.22	951
3	Hu Leptin	0.403	Kruskal-Wallis	0.378	4861
4	Hu PDGF-B8	1.007e-09	Kruskal-Wallis	3.10	3804
5	Hu sVEGFR-1	4.004e-06	Kruskal-Wallis	0.939	105
6	Hu sVEGFR-2	0.119	Kruskal-Wallis	0.489	1109
7	Hu SCF	0.116	Kruskal-Wallis	0.479	431
8	Hu sTie-2	0.00989	Kruskal-Wallis	0.605	1557
9	Hu Follistatin	0.042	Kruskal-Wallis	0.478	221

Figure 16. Filtering Samples in the Perform Analysis/Create Charts View

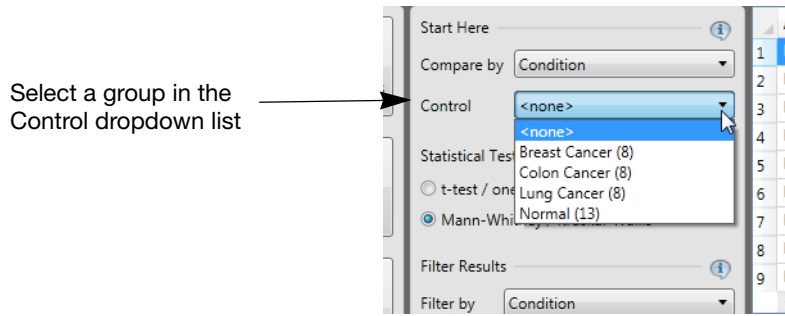
## Analyzing Your Data in Bio-Plex Data Pro Software



1. Click Perform Analysis/Create Charts.
2. From the “Compare by” dropdown list, choose the parameter you want to see on the x-axis on the charts in the Analyte Charts and Tables pane.

Select a column in the “Compare by” dropdown list

3. If you have a control in your experiment, select this group from the Control dropdown list.



4. Review the results using the different display options.  
**TIP:** When you use the bar graph, you may select as many analytes for comparison as you like.

## Analyzing Your Data Using Other Tools

There will be instances when you want to perform an analysis that is not supported by Bio-Plex Data Pro, or when you want to verify the results using other software tools. There are two primary ways to do this:

- **Statistical software packages** — the Export to Statistics Package table is automatically generated in the Perform Analysis/Create Charts view. You can copy your table, plot, or graph to the clipboard and paste the data into the statistical software application. The Export to Statistics Package table is updated when you change the “Compare by” and Control choices.
- **Microsoft Excel** — you can perform additional calculations by copying the Group Statistics table in the Perform Analysis/Create Charts view to Excel. You can also produce custom tables in the Results table (View Results/View Heat Map view) by using the filter and sort functions in the column headers.

## For More Information about Bio-Plex Data Pro

You can get more information about Bio-Plex Data Pro from the following sources:

- *Bio-Plex Data Pro User Guide* which is available on your Bio-Plex Data Pro Software Installation CD as a PDF file. This guide is also available from the Help menu in the application. Click Help, then click View Online Help.
- Bio-Plex Data Pro updates, training resources, tutorials are available on the Bio-Rad Laboratories web site. From any view in the application, click Help, then click Go To Resources and Updates to download available resources.

## 6 Deactivating Bio-Plex Data Pro™ Software Licenses

Once the license is deactivated, you may continue to use Bio-Plex Data Pro on any existing projects. However, you will not be able to create new projects or import additional data into existing projects.

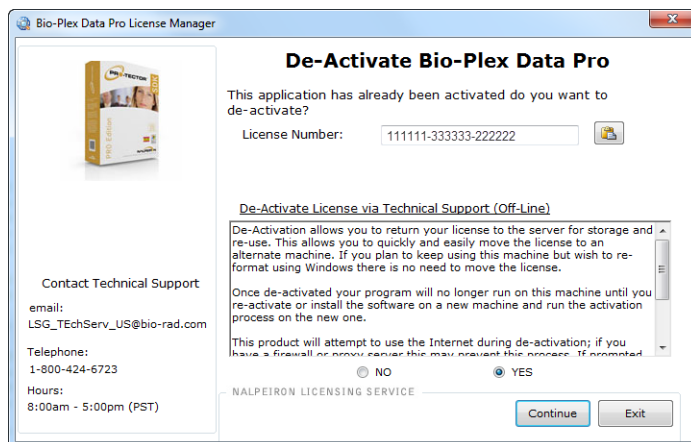
You can deactivate your license online or offline.

### To deactivate Bio-Plex Data Pro licenses online:

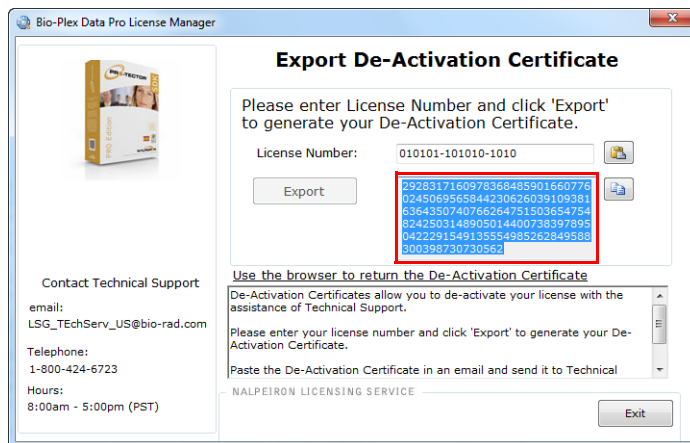
1. From the Help menu, click Manage License.
2. Click Yes and click Continue.  
A message confirms that the license has been successfully removed.
3. Click OK.

### To deactivate Bio-Plex Data Pro licenses offline:

1. From the Help menu, click Manage License.
2. In the De-Activate Bio-Plex Data Pro window, click the De-Activate License via Technical Support link.



3. In the Export De-Activation Certificate window, click Export.  
The text box is populated with a long string of numbers. This is your de-activation certificate.



4. Copy the contents of the text box into a text file. Attach the file to an email to Technical Support with the subject line: Request to Deactivate Bio-Plex Data Pro License.

**Note:** The number of available licenses will not be updated until Technical Support processes the deactivation request. Technical Support will send a confirmation once the license is deactivated.

## 7 Installing Bio-Plex Manager™ 6.1 Software

If you purchased Bio-Plex Manager 6.1, follow the instructions in this section for installing the software.

Install, or reinstall, Bio-Plex Manager 6.1 software as described in the following sections. If you need to upgrade your software from a previous version, see the *Bio-Plex Manager 6.1 Software Upgrade and Configuration Guide* to determine the part number of your upgrade kit.

### Bio-Plex Manager System Requirements

Following are the minimum and recommended system requirements for Bio-Plex Manager 6.1.

Component	Minimum	Recommended
Operating system	Windows XP (XP Professional required for running Security Edition) or Windows 7 (32-bit)	Windows XP Professional
Processor	Pentium 4 or equivalent, 2.8 GHz	Core 2, 2.6 GHz or higher
Hard disk space	80 GB	160 GB
System memory	1 GB	2 GB
Screen resolution	1024 × 768 (Windows XP) 1280 × 1024 (Windows 7)	1280 × 1024
Screen colors	256 colors	24-bit True Color
Ports for connecting instrument (required for Instrument Control license only)	1 RS232 serial port and 1 USB port	1 RS232 serial port and 1 USB 2.0 port
Port for connecting the HASP key	1 USB port	1 USB 2.0 port
Other software	Internet Explorer 6.0 or later Microsoft Excel 2003 or later	Internet Explorer 8.0 Microsoft Excel 2007

**NOTE:** For Windows 7, the workstation version of Bio-Plex Manager 6.1 can be run only on Windows 7 (32-bit); it is not compatible with Windows 7 (64-bit).

### Installing Bio-Plex Manager Software

To install the software, insert the Bio-Plex Manager Software CD into the CD-ROM drive on your computer.

#### NOTES

- Before installing Bio-Plex Manager 6.1, we recommend that you first uninstall any existing version of Bio-Plex Manager on your computer.
- We recommend that you turn off any antivirus protection software before installation. Such software, if active, can greatly slow the progress of the installation. If you are unable to turn off your antivirus protection software, allow 15 minutes for complete installation. Do not cancel the installation during this period.

The Bio-Plex Manager Installation Program opens, displaying a navigation screen for performing the installation.

Before you can use Bio-Plex Manager, your system administrator must install the Bio-Plex Manager License Manager software. For more information, see *Installing the NetHASP Network License Manager* on page 29.

#### MICROSOFT.NET

Microsoft.NET is automatically installed on your computer when you install Bio-Plex Manager. It is required to support the logistic curve-fitting features of Bio-Plex Manager.

### **BIOPLEXDATA.MDB FILE**

During installation, you will be prompted to save the application database file (*bioplexdata.mdb*) to a location on your hard drive or a file server. This database file contains logs of calibration, validation, and instrument operations activity for your instrument.

You can save the *bioplexdata.mdb* file to any folder on your computer. The default location is the Bio-Plex Manager application folder. If your computer is connected to multiple instruments, each instrument must have a separate *bioplexdata.mdb* file saved in a different folder.

For more information about the calibration, validation, and instrument operations logs in Bio-Plex Manager 6.1 Security Edition, see the Controlling the System chapter in the *Bio-Plex Manager Software 6.1 User Guide*.

**NOTE:** The *bioplexdata.mdb* file is not compatible with versions of Bio-Plex Manager earlier than 4.0. If you have an earlier version of the software, installing version 4.0 or later will copy the data from your existing database file (*bioplex.mdb*) into the new database. A copy of your old database will remain in the application folder.

### **LUMINEX LXR DIRECTORY AND FILES**

A directory called Luminex is automatically created in the Program Files folder on your computer during installation. Inside this folder is a folder called LXR that contains various applications for monitoring and communicating with the array reader and platform. A Windows service called LXService is also installed and started. This service enables automatic communication with the instrument when you open Bio-Plex Manager.

### **HARDWARE PROTECTION KEY (HASP KEY)**

A hardware protection key, also known as a HASP key, is required to run Bio-Plex Manager. The HASP key determines the license (Instrument Control, Desktop, or Network) and the edition (Standard or Security) of your Bio-Plex Manager. A complete list of HASP key part numbers and the software versions they enable is in the *Bio-Plex Manager 6.1 Software Upgrade and Configuration Guide*.

Instrument Control or Desktop HASP keys must be attached to a USB port on the computer running the software. Network HASP keys must be attached to a USB port on the network file server computer.

The HASP key has a driver that is automatically installed when you install Bio-Plex Manager.

### **Upgrading Bio-Plex Manager**

You can upgrade from versions 4.0, 5.0, and 6.0 of Bio-Plex Manager to Bio-Plex Manager 6.1. Before you install Bio-Plex Manager 6.1, you must first uninstall your existing version of Bio-Plex Manager. See Uninstalling Bio-Rad Products on page 33 for more information on uninstalling your software.

## 8 Installing the NetHASP Network License Manager

If you ordered Bio-Plex Manager™ 6.1, the product folder will include the Bio-Plex Manager Software CD and an envelope containing the hardware protection key, also known as a HASP key.

You may install Bio-Plex Manager on as many computers as you like. The HASP key supports five (5) users at any one time.

Work with your information technology group or the person who manages your network to install the HASP key and related software. Refer to the following sections for detailed instructions.

### OVERVIEW OF THE NETHASP NETWORK LICENSE MANAGER INSTALLATION

The basic steps to install the HASP key are:

1. Update the HASP drivers on the network license server that will be managing your Bio-Plex Manager software licenses.
2. Install the NetHASP License Manager software on the network license server.
3. If necessary, update the HASP configuration file on each of your client machines.

**Note:** For more information, see the *Bio-Plex Manager 6.1 Upgrade and Configuration Guide*. This guide can be found on the Bio-Plex Manager software CD or on the Bio-Rad website.

### Installing the NetHASP License Manager on the Network License Server

Install the network HASP key and License Manager software on a server that is *always on* and to which all PCs running Bio-Plex Manager have access.

**Note:** You must have Administrator privileges to install the HASP drivers and the NetHASP Network License Manager software on the network license server.

### INSTALL YOUR HASP DRIVERS

Follow the procedure to install the HASP drivers on your network license server.

#### To install your HASP drivers:

1. Insert the Bio-Plex Manager Software CD in the CD-ROM drive of your network license server.
2. Double-click Hasp Utilities\HASPDRIVERS\HASPUserSetup.
3. In the Welcome window, click Next.
4. Accept the license agreement and click Next.
5. Click Next to begin the installation.
6. When the drivers have been successfully installed, click Finish.

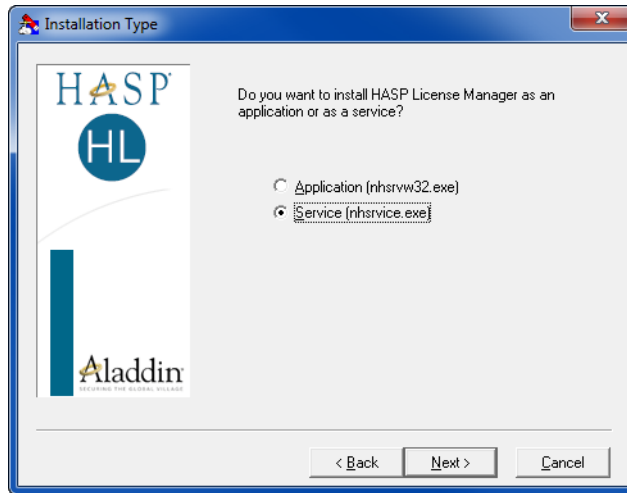
### INSTALL THE NETHASP LICENSE MANAGER ON THE NETWORK LICENSE SERVER

Locate the HASP key in the envelope included in your Bio-Plex Data Pro product folder. You will be instructed to insert the HASP key during this procedure.

#### To install the NetHASP License Manager:

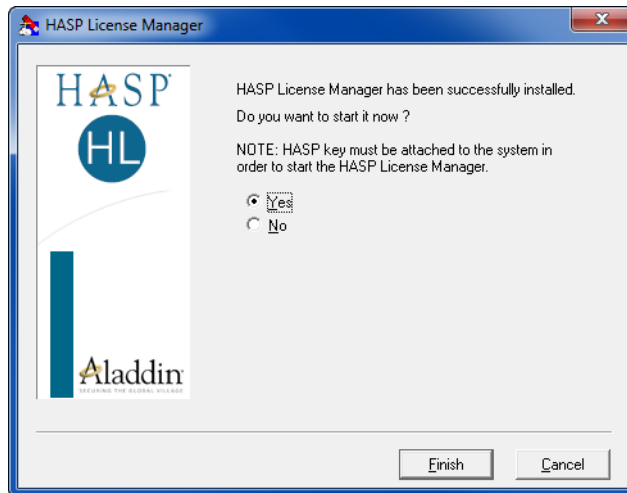
1. Insert the Bio-Plex Manager Software CD in your CD-ROM drive if you haven't already done so.
2. Double-click Hasp Utilities\HASPSEVERERS folder\lmsetup.

3. In the Welcome window, click Next.
4. Accept the license agreement and click Install.
5. In the Installation Type window, Service is selected. Accept this default and click Next.



6. In Choose Destination Location, accept the default location, or click Browse and choose a different location where the HASP License Manager will be installed. Click Next.
7. In Select Program Manager Group, accept the default or choose another program group. Click Next.
8. Click OK to start the installation.

When the HASP License Manager is installed, the following dialog box is displayed.



9. While the dialog box remains on your screen, insert the HASP key in the USB port. When the light on the HASP key goes on, the installation is completed and the HASP key has been recognized.
10. Return to the dialog box on your screen. In response to the question “Do you want to start it now?” click Yes.
11. Click Finish.



## Configuring Clients to run Bio-Plex Manager Software

**Note:** System administrators may want to edit the NETHASP.ini file once and have their end users copy the file to the correct location on their client machines.

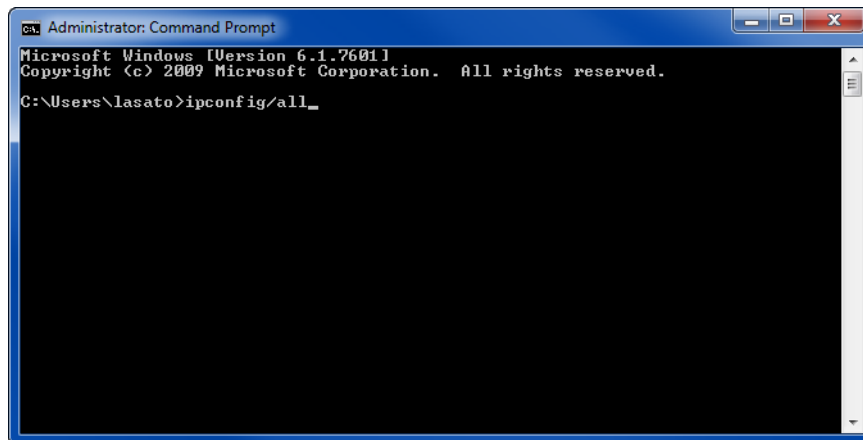
Start Bio-Plex Manager using the desktop shortcut. Often no additional configuration is required and you will be able to start the application successfully. If you get a message saying that the HASP cannot be found, then follow the procedure to configure the client.

### GET THE NETWORK LICENSE SERVER ADDRESS

You will need the address of the network license server in order to configure the clients that are running Bio-Plex Manager.

#### To get the network license server address:

1. On the server where the Net HASP License Manager is installed, click the Start menu, then click All Programs > Accessories > Command Prompt.
2. In the Command Prompt window, type ipconfig/all.



```
Administrator: Command Prompt
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.
C:\Users\lasato>ipconfig/all_
```

3. Scroll down the window to locate the IP address, and make a note of the address. You will need this address to configure the clients.

### CONFIGURE THE CLIENT

If you are able to successfully start Bio-Plex Manager, no additional configuration is required. If you get a message saying that the HASP driver is missing, perform the procedure below.

You will need the address of the network license server.

#### To configure the client:

1. Open the NETHASP.ini file in the C:\Program Files\Bio-Rad\Bio-Plex Manager 6.1 directory in WordPad or NotePad.
2. Find the text NH\_USE\_BROADCAST = ENABLED in the file.
3. Change ENABLED to DISABLED.  
NH\_USE\_BROADCAST = DISABLED
4. Enter the IP address of the network license server where the NetHASP License Manager is installed. You may use a numeric address, a DNS alias, or a network station ID. For example:

NH\_SERVER\_ADDR = DD-dell551.genes.bio-rad.com

**Note:** The default port setting for the License Manager is 475. If the server on which the License Manager is installed is firewall enabled, then port 475 must be reserved for the License Manager. Contact Bio-Rad Technical Support if this conflicts with your existing network configuration.

## 9 Uninstalling Bio-Rad Products

Follow the procedure for your operating system to uninstall Bio-Plex Manager™ or Bio-Plex Data Pro™ from your computer.

**WARNING!** Uninstalling does not remove an active license from the active license count. Therefore, if you have an active Bio-Plex Data Pro license on a computer and you want to uninstall Bio-Plex Data Pro, first deactivate the license. Once the software is uninstalled, you will not be able to access the license. If you need to use a license that was not deactivated, contact Bio-Rad Technical Support for assistance.

### To uninstall Bio-Rad products on Windows XP:

1. Click the Start menu, then click Add or Remove Programs from the list.
2. Click the name of the software program you want to uninstall.
3. Click Remove.

### To uninstall Bio-Rad products on Windows 7:

1. Click the Start menu, then click Control Panel.
2. In the Programs section, click “Uninstall a program.”
3. In the “Uninstall or change a program” window, find the name of the Bio-Rad software application you want to uninstall.
4. Select the application, then click Uninstall.



**Bio-Rad  
Laboratories, Inc.**

Life Science  
Group

**Web site** [www.bio-rad.com](http://www.bio-rad.com) **USA** 800 424 6723 **Australia** 61 2 9914 2800 **Austria** 01 877 89 01 **Belgium** 09 385 55 11 **Brazil** 55 11 5044 5699  
**Canada** 905 364 3435 **China** 86 21 6169 8500 **Czech Republic** 420 241 430 532 **Denmark** 44 52 10 00 **Finland** 09 804 22 00  
**France** 01 47 95 69 65 **Germany** 089 31 884 0 **Greece** 30 210 9532 220 **Hong Kong** 852 2789 3300 **Hungary** 36 1 459 6100 **India** 91 124 4029300  
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**New Zealand** 64 9 415 2280 **Norway** 23 38 41 30 **Poland** 48 22 331 99 99 **Portugal** 351 21 472 7700 **Russia** 7 495 721 14 04  
**Singapore** 65 6415 3188 **South Africa** 27 861 246 723 **Spain** 34 91 590 5200 **Sweden** 08 555 12700 **Switzerland** 061 717 95 55  
**Taiwan** 886 2 2578 7189 **Thailand** 800 88 22 88 **United Kingdom** 020 8328 2000