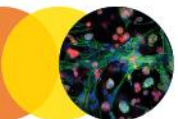


CellReporterXpress® Software Guide for reviewing data with the Data Visualization Tools

Support Resources

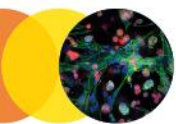
- Help button  within CellReporterXpress[®] Software
- Support and Knowledge Base: <http://mdc.custhelp.com>
- Email Technical Support:
support@moldev.com (US)
techsupport.eu@moldev.com (EU)
- Telephone Technical Support: 800-635-5577 (US) or +44 118 944 8000 (EU), select options for Technical Support → Cellular Imaging Products → ImageXpress Products



Purpose

This document provides a step-by-step review of how to review data with the CellReporterXpress Data Visualization Tools:

- Plate Thumbnail View
- Data View
- Heatmap
- Images
- Scatter Plot
- Stacked Bar
- Data Table
- Cellular Level Data Visualization Tools



Experiment Landing Page

Home > Experiments > 63x 3-color assay > Analyses

Experiment Name *63x 3-color assay* Geometry *384 (24 × 16)* Description *N/A* Barcode *N/A*

Operations: *Stop, Refresh, Redo, Undo, Delete* Annotation *Edit* Groups *3* Compounds *3* Barcode *N/A*

Analyses Acquisitions

phalloidin_2 (highlighted)

matthew.hammer@moldev.com
Sep 20, 2018 14:52
f(x) phalloidin

Launch **Duplicate**

phalloidin

moldev
Mar 16, 2017 09:08
f(x) phalloidin

phalloidin_2 Details:

PLATE TIME VIEW IMAGES PLATE VIEW SUMMARIZE DATA

INPUTS TIME POINTS LIST MEASUREMENTS DESCRIPTION

Nuclei

Target	Nuclei
DAPI	Intensity: 80
	Min Width: 6
	Max Width: 25

Marker

Target	Marker
FITC	Stained Area: Both
	Intensity: 30
	Min Width: 3
	Max Width: 5

If multiple analyses have been run on a plate, select the analysis that you would like to display, and it will be highlighted (outlined in blue). The selected analysis will be displayed on this landing page as well as throughout the data visualization tools that will be shown in this presentation. The most recently run analysis will appear on the top of this list of analyses.

Experiment Landing Page

Experiment Name 63x 3-color assay

Geometry 384 (24 x 16)

Description N/A

Barcode N/A

Barcode N/A

Operations

Annotation

Analyses

Acquisitions

phalloidin

PLATE TIME VIEW IMAGES PLATE VIEW SUMMARIZE DATA

INPUTS TIME POINTS LIST MEASUREMENTS DESCRIPTION

phalloidin_2
matthew.hammer@moldev.com
Sep 20, 2018 14:52
f (x) phalloidin

phalloidin
moldev
Mar 16, 2018 09:08
f (x) phalloidin

Launch Duplicate

Nuclei

Target Nuclei

DAPI Intensity 80

Min Width 6

Max Width 25

Marker

Target Marker

FITC Stained Area Both

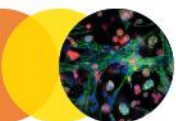
Intensity 100

Min Width 5

Max Width 30

CellReporterXpress has a variety of Data Visualization Tools. They are located in this panel.

The first Data Visualization tool that we will look at is the plate **Thumbnail View**.



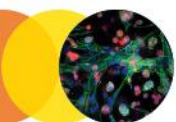
Experiments > 63x 3-color assay > phalloidin

Plate T1

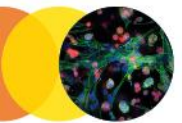
Thumbnail View

C		C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
D		D3	D4	D5	D6	D7	D8	D9	D10	D11	D12
E		E3	E4	E5	E6	E7	E8	E9	E10	E11	E12
F		F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
G		G3	G4	G5	G6	G7	G8	G9	G10	G11	G12
H		H3	H4	H5	H6	H7	H8	H9	H10	H11	H12
I		I3	I4	I5	I6	I7	I8	I9	I10	I11	I12
J		J3	J4	J5	J6	J7	J8	J9	J10	J11	J12
K		K3	K4	K5	K6	K7	K8	K9	K10	K11	K12
L		L3	L4	L5	L6	L7	L8	L9	L10	L11	L12
M		M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
N		N3	N4	N5	N6	N7	N8	N9	N10	N11	N12

Easily view trends across your assay with the plate **Thumbnail View**. You can double-click on a well to open up the image for that well. We will dive deeper into this in slide 12, when we show the **Images Data Visualization Tool**.



Data View displays data analysis measurements along with a heat map on the wells that were analyzed.



Add up to 4 measurements on the Data View display

The screenshot displays the Molecular Devices Data View interface. The main area is a 12x12 grid of cells, each with a numerical intensity value. The grid is labeled with letters E through N on the y-axis and numbers 3 through 12 on the x-axis. The values range from 1 to 86. The cells are color-coded: red for high intensity, green for medium, and dark blue for low. The right-hand side of the interface features a summary panel with a 'Measurements' tab. A dropdown menu is open, showing 'Add measurements' options. An orange arrow points from the top text to this dropdown menu.

		E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	
E		69	34	2	3	4		9	1	1	3	
F		57	68	8	5	12	10	14	23	21	19	
G		66	63	19	13	12	28	19	22	33	27	
H		59	64	29	24	29	23	22	14	28	21	
I		74	70	57	44	58	45	30	23	24	30	
J		64	85	62	44	63	46	60	31	42	25	
K		67	86	54	65	65	51	39	68	75	54	
L		52	73	65	74	66	53	72	71	77	73	
M		50	78	72	55	74	59	53	44	70	89	
N		67	31	60	47	59	59	66	61	58	91	

Measurements Heatmap

Measurement — Add measurements —

- Add measurements —
- Add measurements —

Summary

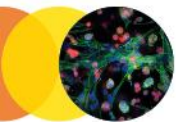
- # Cells
- # Negative Cells
- % Negative Cells
- % Positive Cells
- All Cell Average Intensities
- Positive Cell Average Area
- Positive Cell Average Intensities
- Positive Cell Integrated Intensities
- Positive Cell Total Area
- Positive Cell Total Integrated Intensity
- Positive Cell Total Intensity

Annotation

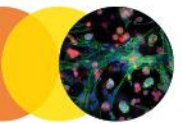
- Compound
- Concentration
- Group

Sensor

- PixelsSaturatedPercent



The Data View also contains a heatmap

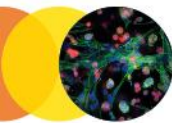
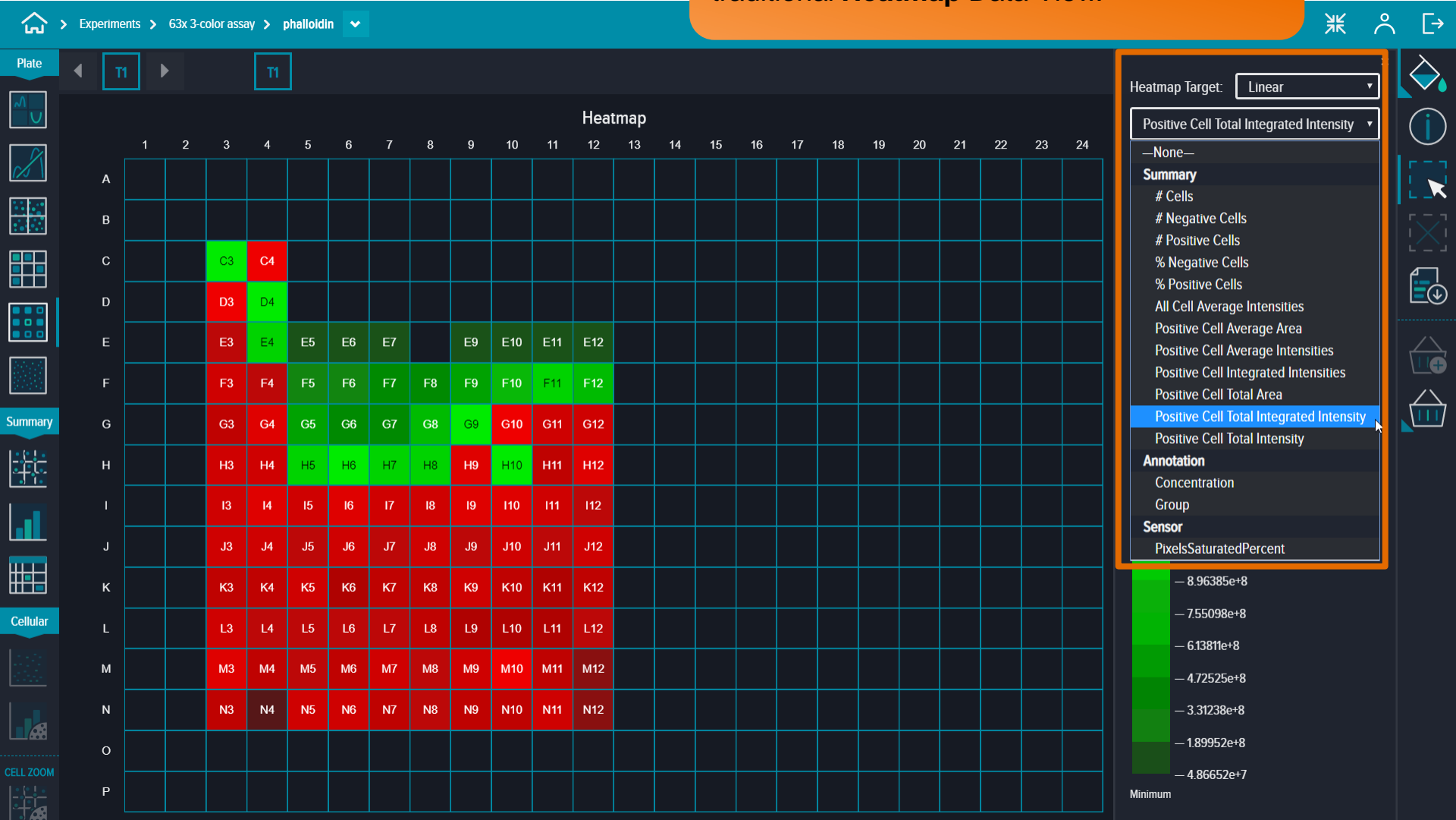


Heatmap any measurement generated from the analysis on the **Data View** display.

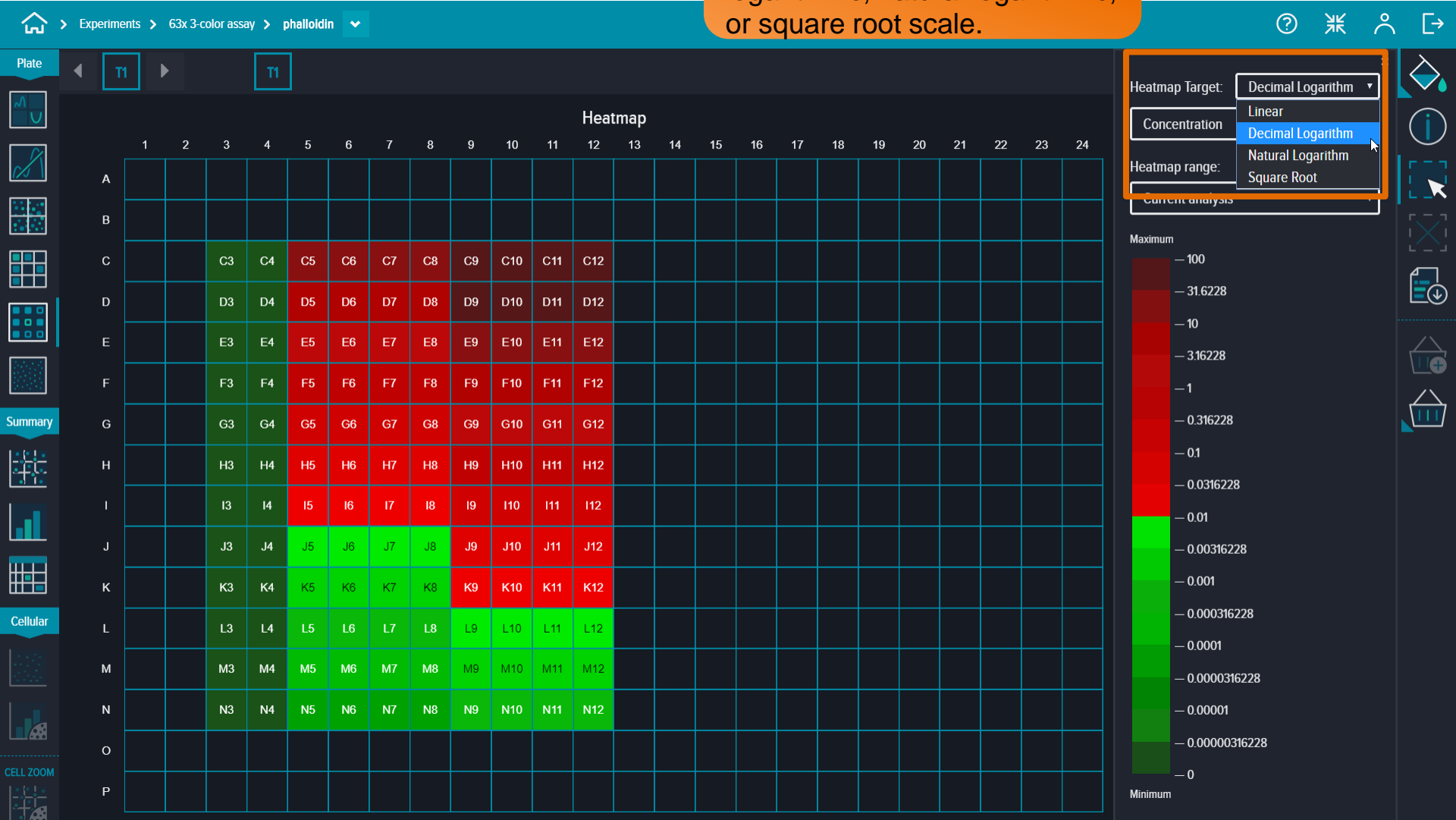
The heatmap target can be represented in a linear, decimal logarithmic, natural logarithmic, or square root scale.



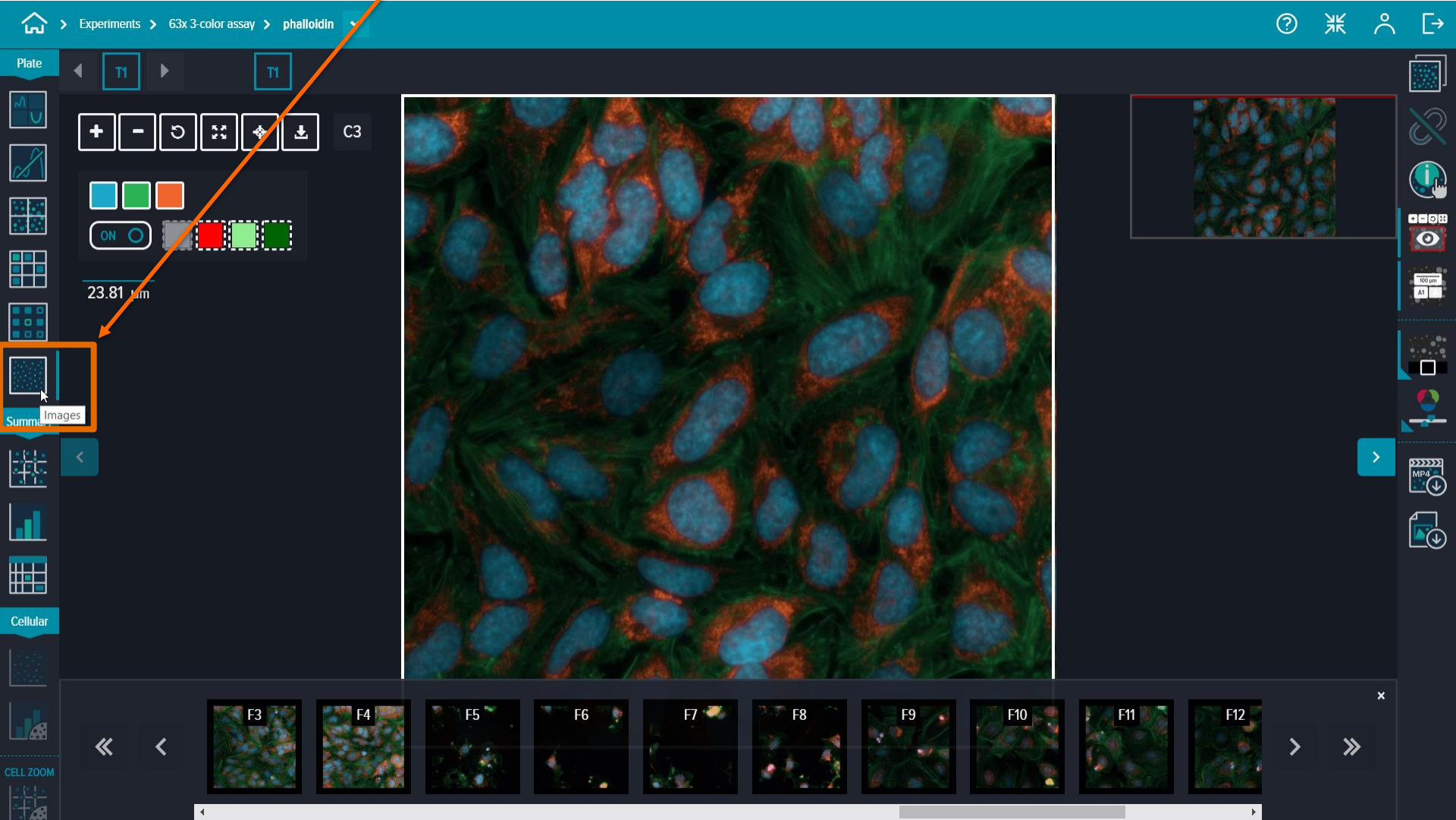
Visualize a heatmap for any measurement produced in the data analysis in the traditional **Heatmap** Data View.



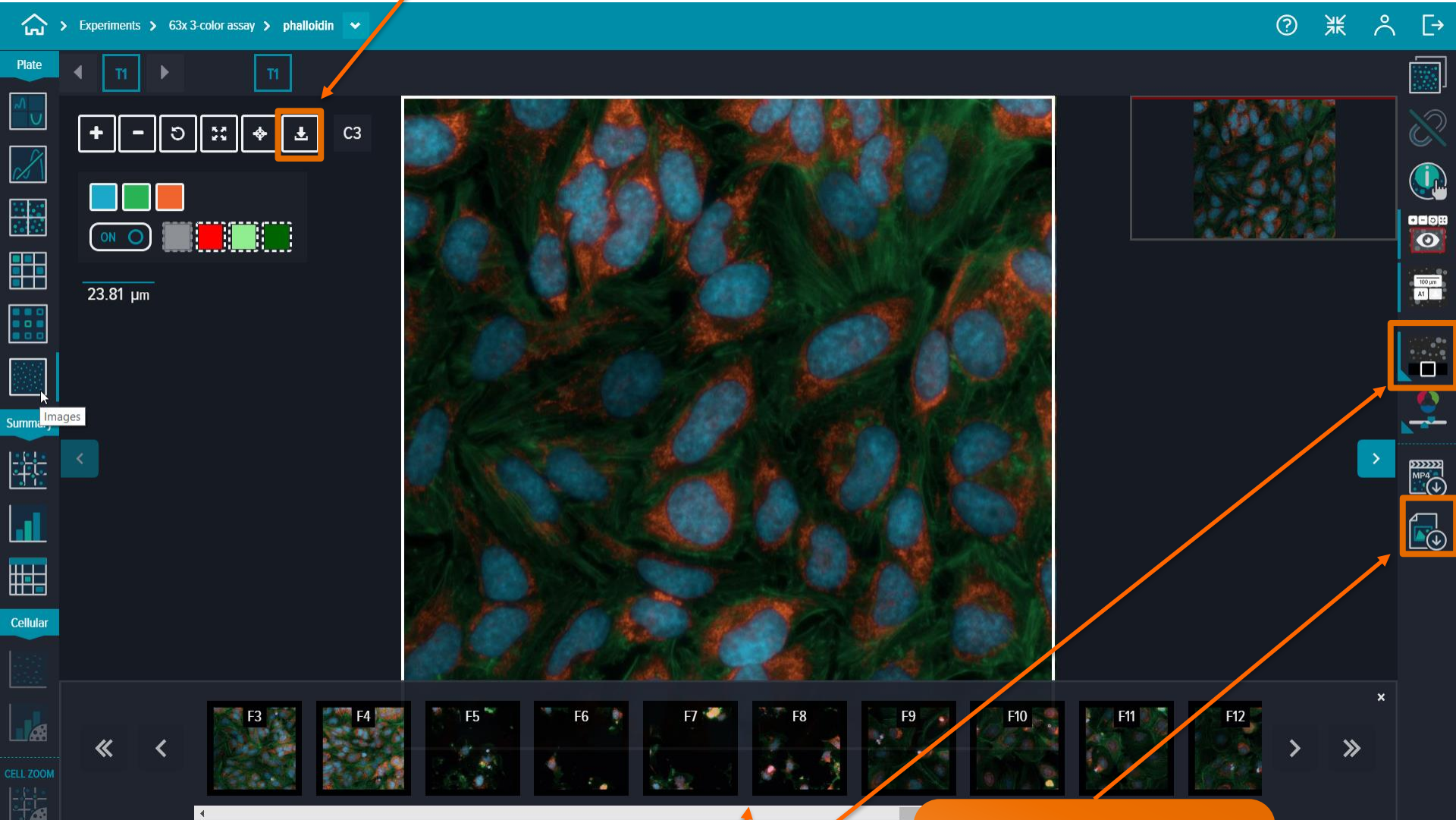
The heatmap target can be represented in a linear, decimal logarithmic, natural logarithmic, or square root scale.



Review the high resolution images from the entire acquisition by clicking on the **Images** Data View.



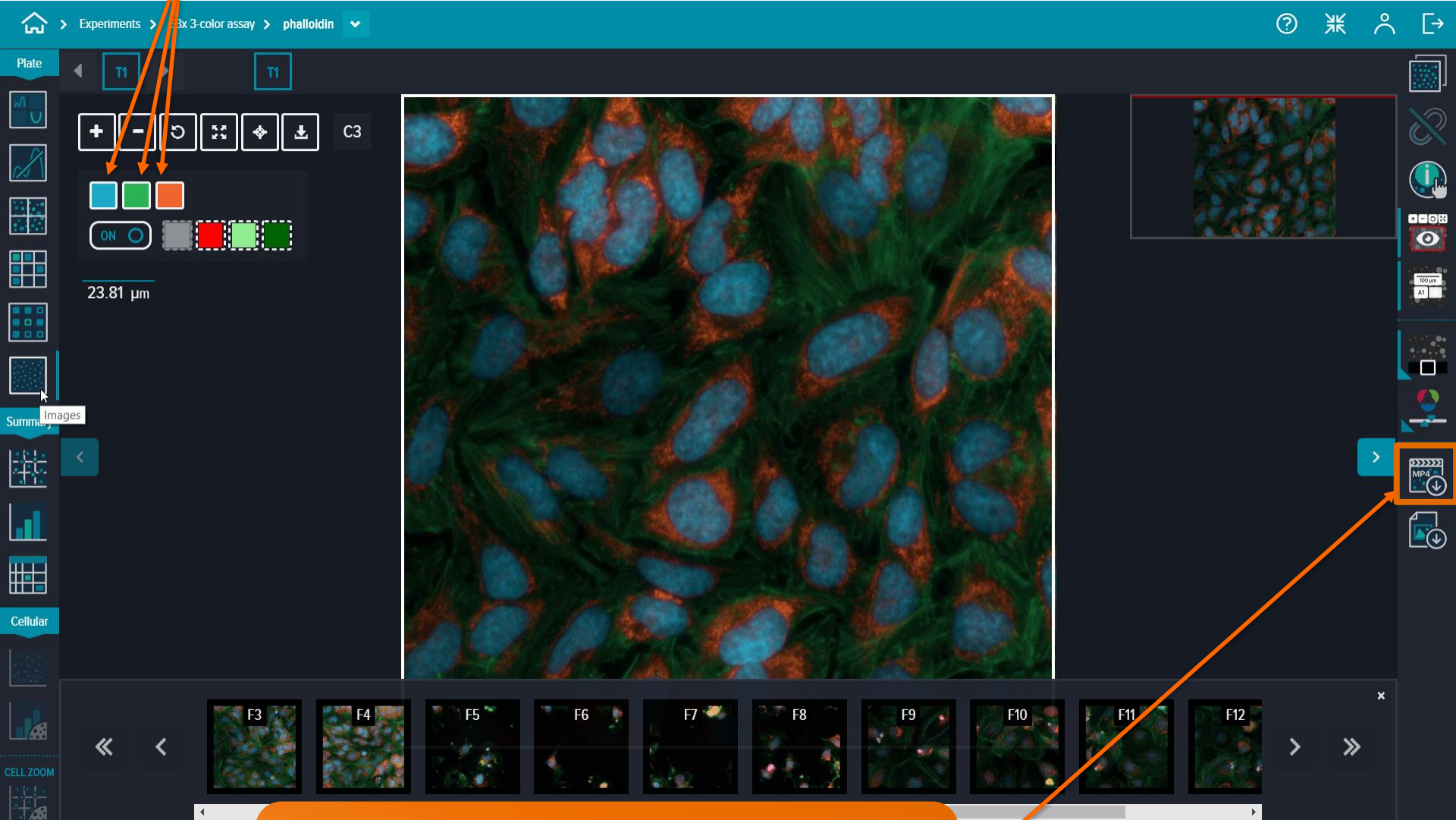
Export the image currently in view as a raw TIF image by clicking on the **Export Raw Images**



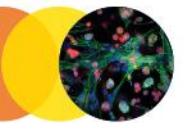
Select images to view from the **Image Gallery**

Export the image currently in view as a raw TIF image by clicking on the **Export Raw Images**

Toggle on and off channels by clicking on these icons

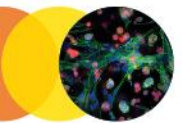


If you acquired a Time Series then you can export MP4 videos for the selected well that is open in this window by clicking on the **Download MP4 Movie** icon.



Toggle on and off analysis segmentation masks by clicking on these buttons. To visualize the segmentation masks, zoom in on the image until the masks appear.

The red box in the **Navigation Map** indicates where you are looking in the image.



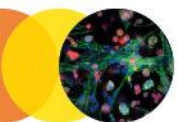
Compare images from two different wells with the **Comparison Mode** feature.

Link the two images that are being compared so that the zoom and viewing position remains equal between both wells.

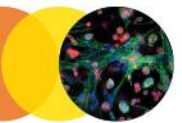
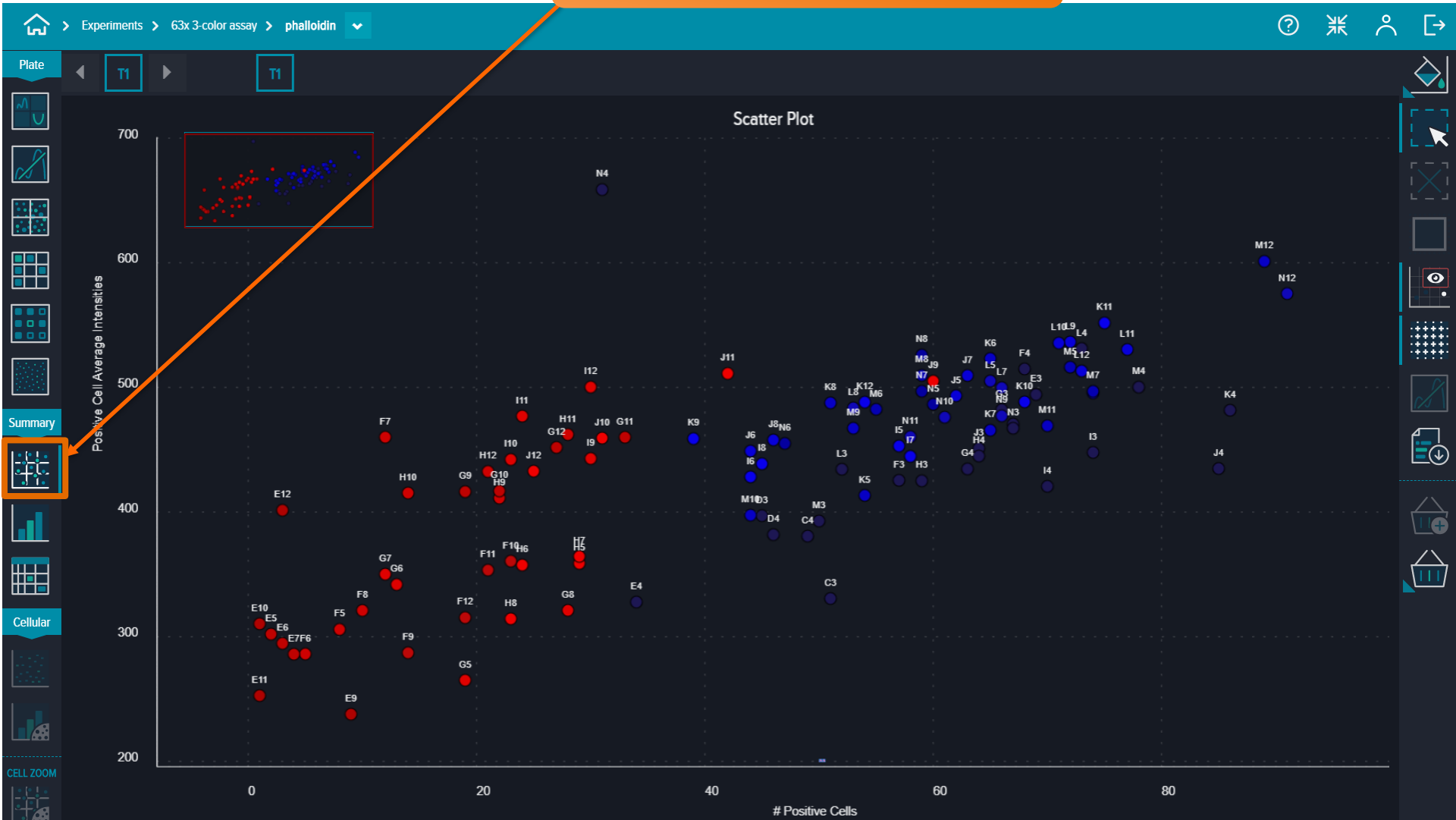
The screenshot displays a microscopy software interface in Comparison Mode. The main view shows two side-by-side images of cells, labeled C3 and H8. Both images have a 14.95 μm scale bar. The interface includes a top navigation bar, a left sidebar with 'Plate', 'Summary', and 'Cellular' sections, and a bottom 'CELL ZOOM' section with a row of thumbnails from G12 to H11. A right sidebar contains various tool icons. Two orange callout boxes point to the 'Comparison Mode' icon and the linking icon in the right sidebar.

Compare analysis masks between different wells in your assay.

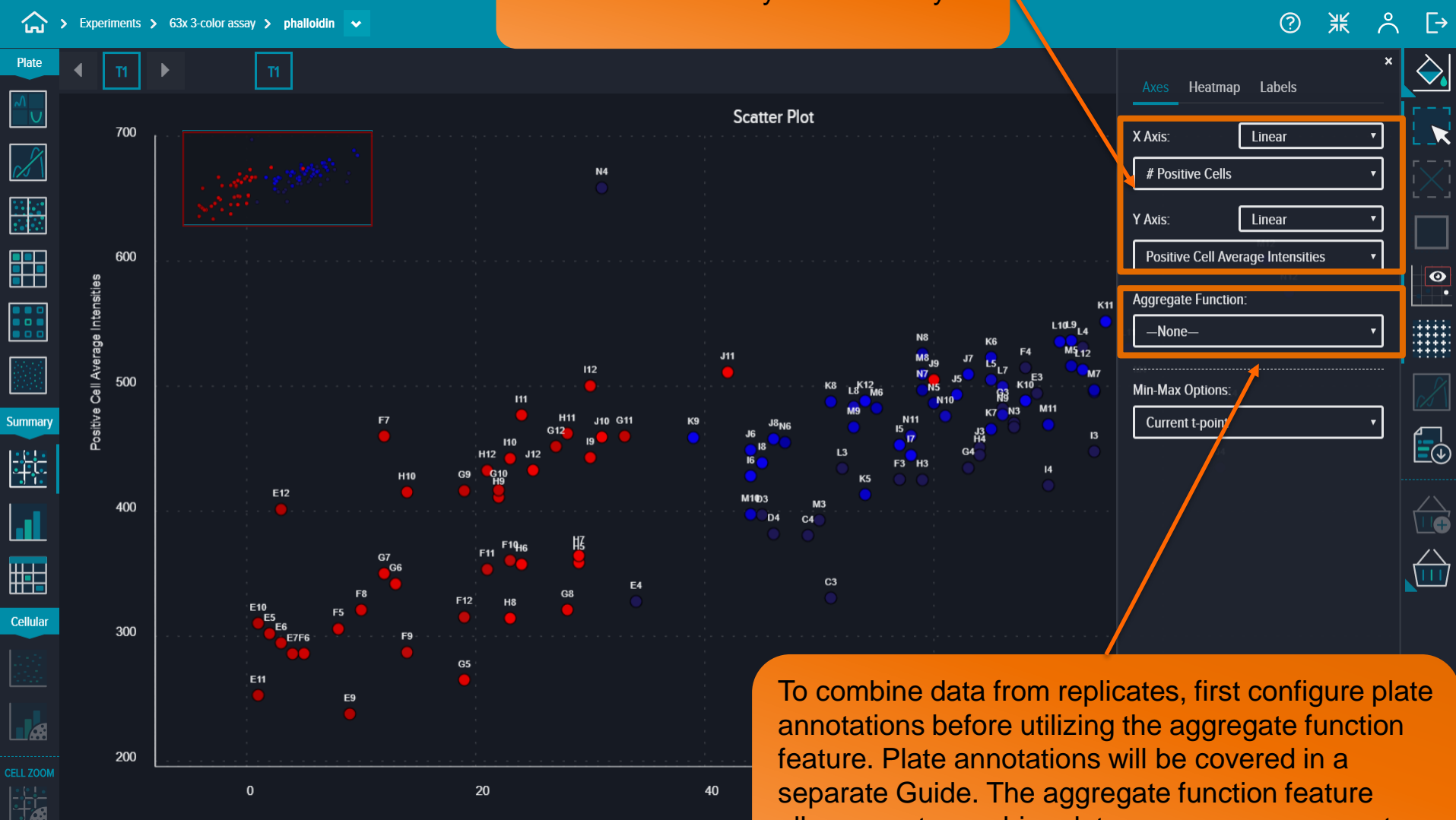
The screenshot displays a microscopy software interface for comparing analysis masks across different wells. The main view shows two side-by-side images of cells, labeled 'C3' (left) and 'H8' (right). Both images include a 14.95 µm scale bar and a set of analysis masks (green, red, and blue) overlaid on the cell structures. The interface features a top navigation bar with the path 'Experiments > 63x 3-color assay > phalloidin'. A left sidebar contains sections for 'Plate', 'Summary', and 'Cellular'. At the bottom, a row of well thumbnails is shown, with 'H8' selected. The right side of the interface has a vertical toolbar with various icons for navigation and analysis.



View your summary (well-by-well) data in a **Scatter Plot**

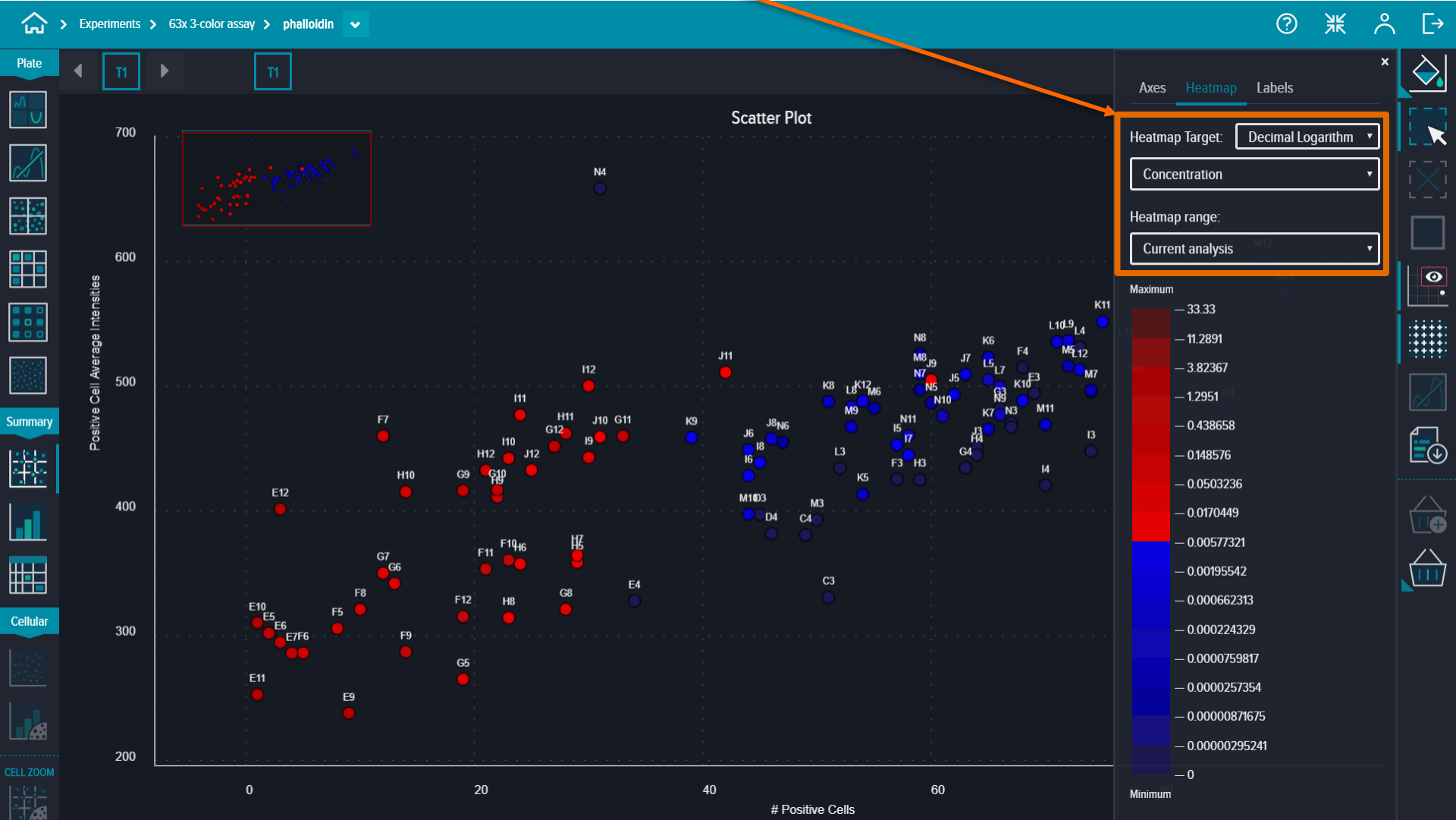


Configure the X and Y axes with any measurement from you data analysis.

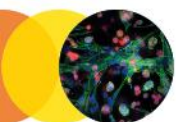


To combine data from replicates, first configure plate annotations before utilizing the aggregate function feature. Plate annotations will be covered in a separate Guide. The aggregate function feature allows you to combine data as an average, count, maximum, minimum, standard deviation, or sum.

Heatmap a third measurement or an annotation on your **Scatter Plot**. The Heatmap target can be represented in a linear, decimal logarithmic, natural logarithmic, or square root scale.



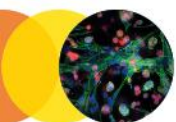
View your summary (well-by-well) data in a **Stacked Bar**, which can be used to gate populations of cells based on well-by-well data



Map up to two measurements on the X axis of the **Stacked Bar** graph



Heatmap a measurement on the **Stacked Bar** graph



View all of your measurements along with a

Export this table into an Excel (.CSV) file by clicking on this **Export** button

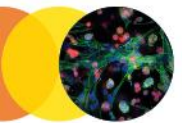
Experiments > 63x 3-color assay > phalloidin

Plate T1

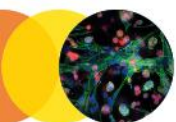
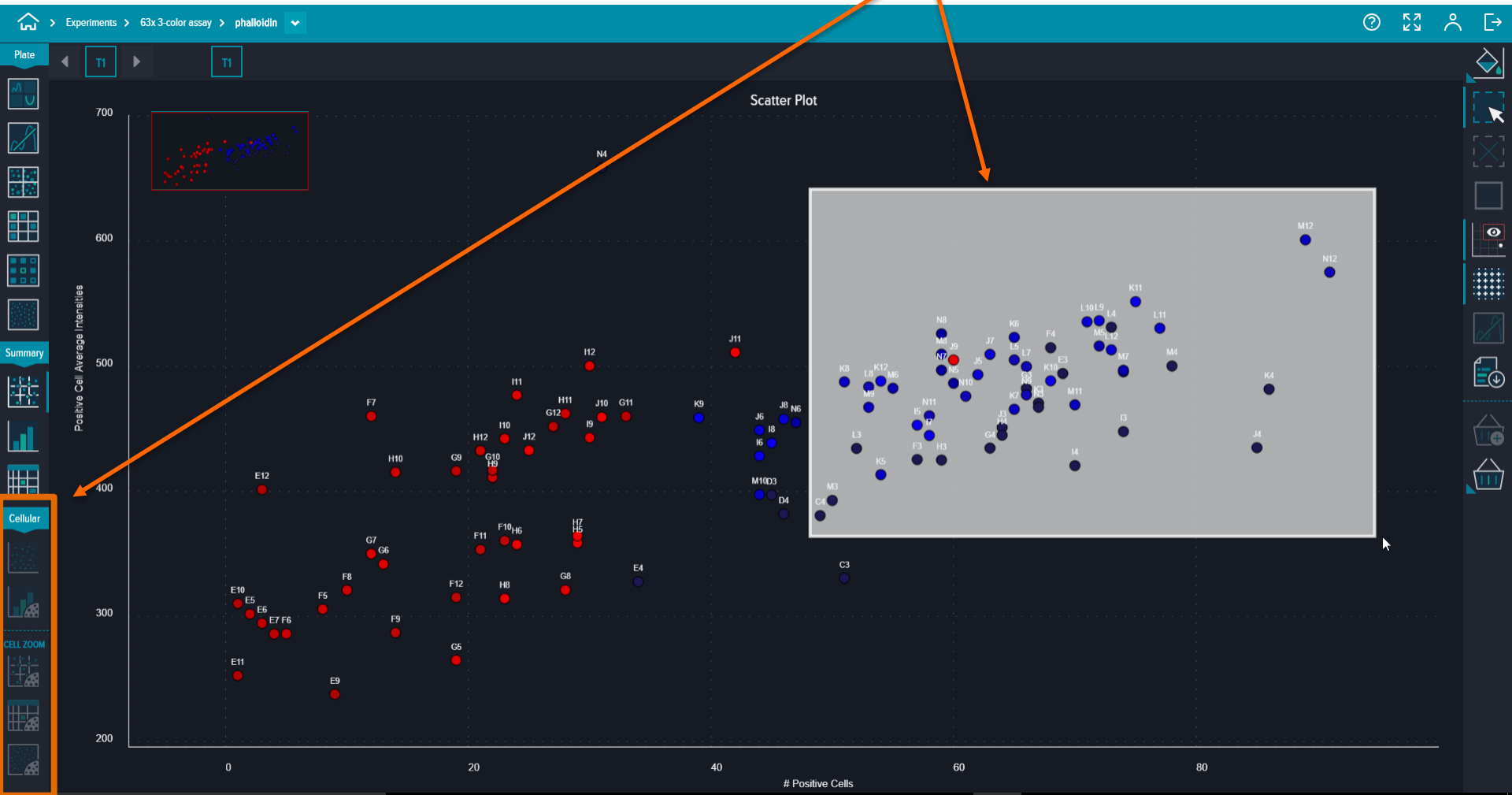
Well Name	# Cells	# Negative Cells	# Positive Cells	% Negative Cells	% Positive Cells	All Cell Average Intensities	Compound	Concentration	Group
N12	91	0	91	0	100	575.266	Mitomycin C	0.000564503	
M12	89	0	89	0	100	601.116	Mitomycin C	0.00169351	
K4	86	0	86	0	100	481.7	Control	0	
J4	85	0	85	0	100	434.931	Control	0	
M4	78	0	78	0	100	500.232	Control	0	
L11	77	0	77	0	100	530.449	Mitomycin C	0.00508053	
K11	75	0	75	0	100	551.715	Mitomycin C	0.0152416	
I3	74	0	74	0	100	447.849	Control	0	
L6	74	0	74	0	100	495.572	Staurosporine	0.000508053	
M7	74	0	74	0	100	496.848	Staurosporine	0.000169351	
L4	73	0	73	0	100	531.234	Control	0	
L12	73	0	73	0	100	513.161	Mitomycin C	0.00508053	
M5	72	0	72	0	100	516.254	Staurosporine	0.000169351	
L9	72	0	72	0	100	536.465	Mitomycin C	0.00508053	
L10	71	0	71	0	100	535.575	Mitomycin C	0.00508053	
I4	70	0	70	0	100	420.615	Control	0	
M11	70	0	70	0	100	469.217	Mitomycin C	0.00169351	
E3	69	0	69	0	100	494.264	Control	0	

Cellular Table

CELL ZOOM

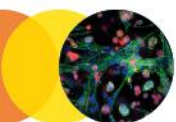
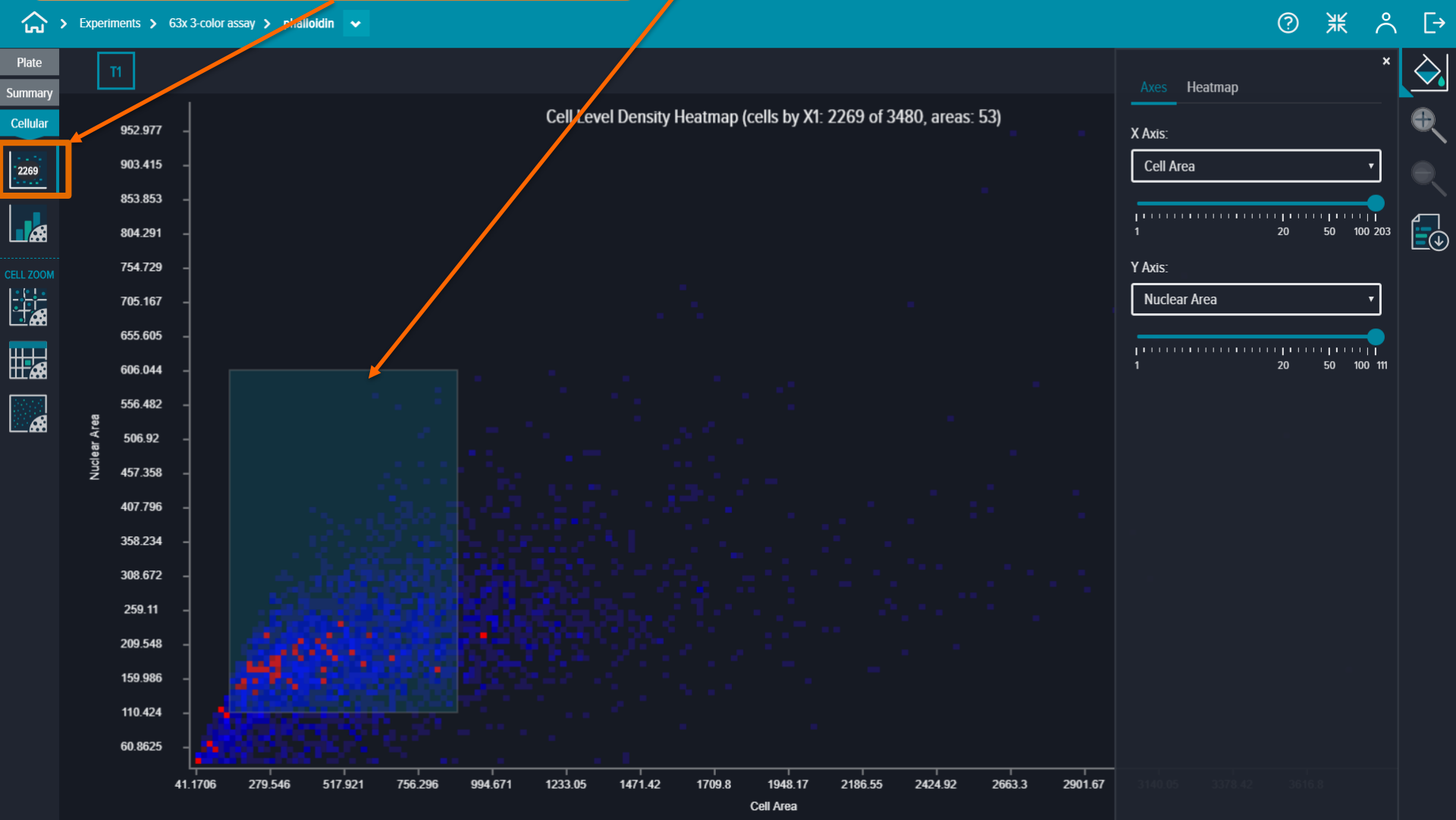


Highlight data points (wells) to gate populations of cells based on well-by-well data. This will open up access to the Cellular Data Visualization Tools.

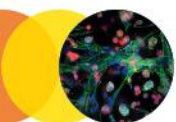
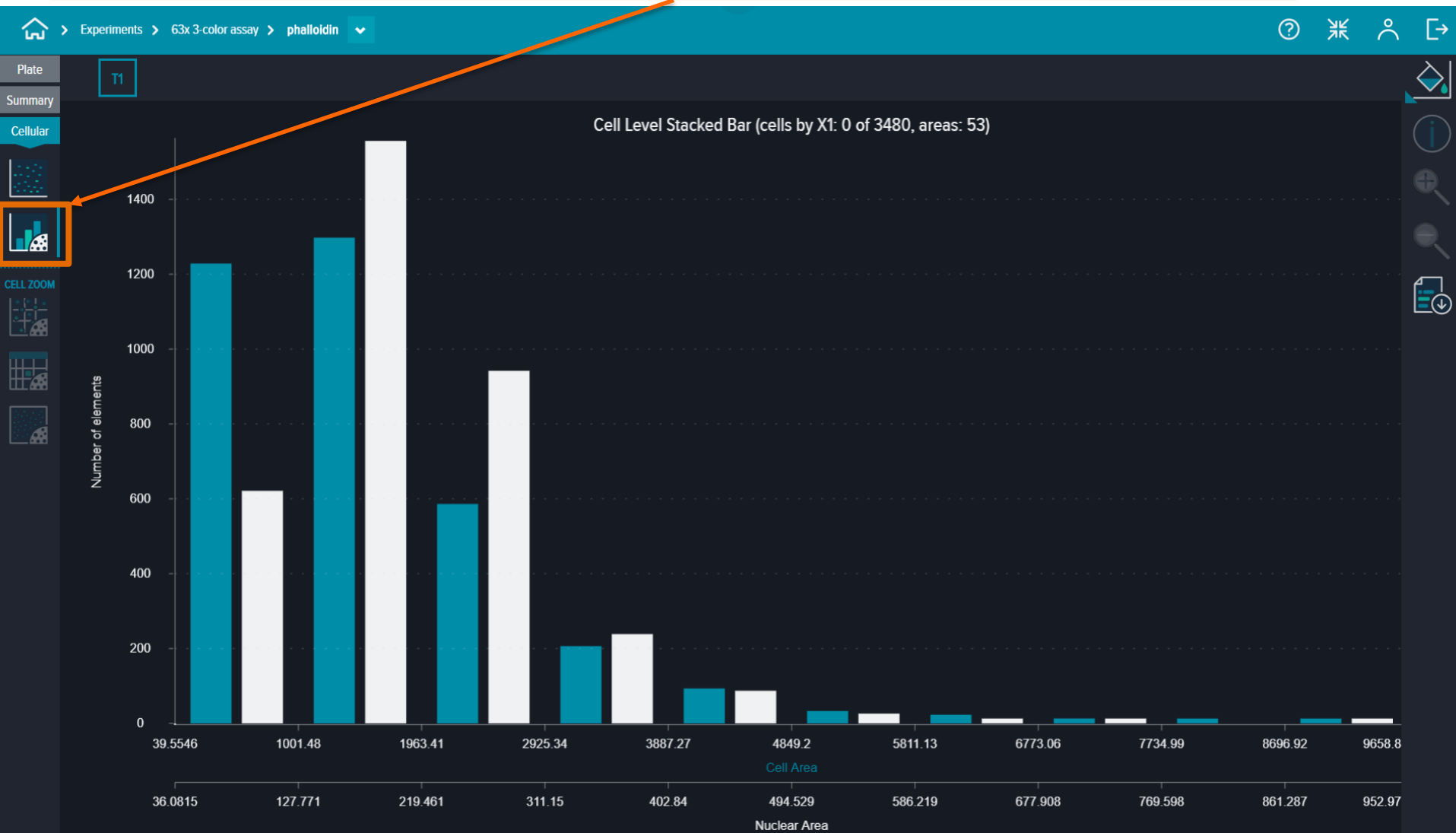


Open up the **Cell Level Density Heatmap** to visualize a Scatter Plot of cell-by-cell data. Each data point is an individual cell.

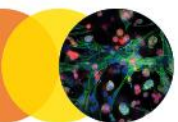
Gate further by highlighting a group of cells.



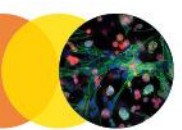
You can also gate cells in the **Cell Level Stacked Bar**. Similar to the summary data (well-by-well) **Stacked Bar**, you can map two measurements as well as heatmap a measurement on the graph.



Gate cells further with the **Cell Level Scatter Plot**.



Heatmap a third measurement on the **Cell Level Scatter Plot**. Gate cells by drawing a box around a group of cells.



Once you've gated your cells of interest in the previously mentioned Cellular Data Visualization Tools, open up the high-resolution images of these cells with the **Cell Level Images** icon. Individual cells will be highlighted with a green box.

Look at the data analysis measurements for each highlighted cell by selecting the **Cell Info Mode** icon and clicking on the highlighted cell outlined in green.

The screenshot displays the software interface. On the left, a sidebar contains icons for 'Fate', 'Summary', 'Cellular', and 'CELL ZOOM'. The main area shows a fluorescence microscopy image of cells with a green box highlighting a specific cell. A scale bar indicates 8.57 μm. On the right, a 'Cell Info Mode' panel is open, displaying a table of measurements for the selected cell (I3 361). At the bottom, an 'Image Gallery' shows a row of white segmentation masks for various cells, with the mask for cell I3 361 highlighted.

Cell	
Cell Area	1032.63
Nuclear Area	288.073
Positive	1
Positive Cells Area	1032.63
Positive Cells Average Intensity	330.183
Positive Cells Integrated Intensity	2.82732e+07
Wavelength 1 Average Nuclear Inte...	631.06
Wavelength 1 Integrated Nuclear In...	1.50748e+07
Wavelength 2 Average Cell Intensity	330.183
Wavelength 2 Average Nuclear Inte...	364.357
Wavelength 2 Integrated Cell Inten...	2.82732e+07
Wavelength 2 Integrated Nuclear In...	8.70376e+06
Summary	
Well Name	I3
# Cells	74
# Negative Cells	0
# Positive Cells	74
% Negative Cells	0
% Positive Cells	100
All Cell Average Intensities	447.849
Positive Cell Average Area	569.519
Positive Cell Average Intensities	447.849
Positive Cell Integrated Intensities	2.13008e+07
Positive Cell Total Area	42144.4
Positive Cell Total Integrated Intens...	1.57626e+09
Positive Cell Total Intensity	33140.8

Toggle through the images of all the gated cells with the **Image Gallery**. The white images are the image analysis segmentation masks of the cells. Each cell has a unique identifier (well name_number).

View cell-by-cell data in the **Cell Level Table**. Each row in this table is an individual cell. This table is also interactive, where you can heatmap measurements and rank your table based on measurements.

Export this table into an Excel (.CSV) file by clicking on this **Export** button

Plate: T1

Summary

Cellular

2012

CELL ZOOM

1024

Well Name	Cell Area	Nuclear Area	Positive	Positive Cells Area	Positive Cells Average Intens...	Positive Cells Integrated Inte...	Wavelength 1 Average Nucle...	Wavelength 1 Integrated Nuc...
M3	519.962	246.975	1	519.962	246.865	1.06441e+07	800.284	1.63898e+07
I5	519.709	255.079	1	519.709	342.651	1.47669e+07	612.158	1.29484e+07
I3	519.311	163.621	1	519.311	516.838	2.22566e+07	1162.68	1.57753e+07
M11	518.781	285.691	1	518.781	554.308	2.38458e+07	1257.33	2.77016e+07
M11	518.503	218.805	1	518.503	483.96	2.08083e+07	934.402	1.69538e+07
I3	518.045	158.076	1	518.045	462.434	1.98652e+07	1028.28	1.34746e+07
H4	517.9	351.168	1	517.9	430.059	1.84693e+07	950.128	2.76677e+07
N3	517.888	143.14	1	517.888	429.269	1.8435e+07	1067.07	1.27366e+07
K7	517.768	165.743	1	517.768	433.686	1.86203e+07	961.838	1.32195e+07
N12	517.683	238.1	1	517.683	683.887	2.93579e+07	1341.53	2.64872e+07
N5	517.43	212.63	1	517.43	471.49	2.02302e+07	818.046	1.44238e+07
L11	517.225	221.508	1	517.225	531.648	2.28024e+07	866.481	1.59155e+07
K5	516.803	241.38	1	516.803	266.512	1.14214e+07	706.733	1.4146e+07
K11	516.803	145.596	1	516.803	647.157	2.77339e+07	812.868	9.83895e+06
N3	516.646	216.296	1	516.646	370.112	1.58563e+07	718.471	1.28865e+07
J4	516.369	144.355	1	516.369	355.149	1.52071e+07	1093.89	1.31442e+07
N10	516.055	253.921	1	516.055	473.68	2.02702e+07	722.19	1.52064e+07
H3	515.295	215.777	1	515.295	401.544	1.7158e+07	747.411	1.33697e+07
F4	515.03	255.044	1	515.03	543.67	2.32191e+07	1061.44	2.25366e+07

