cBioPortal Tutorial #1: Single Study Exploration

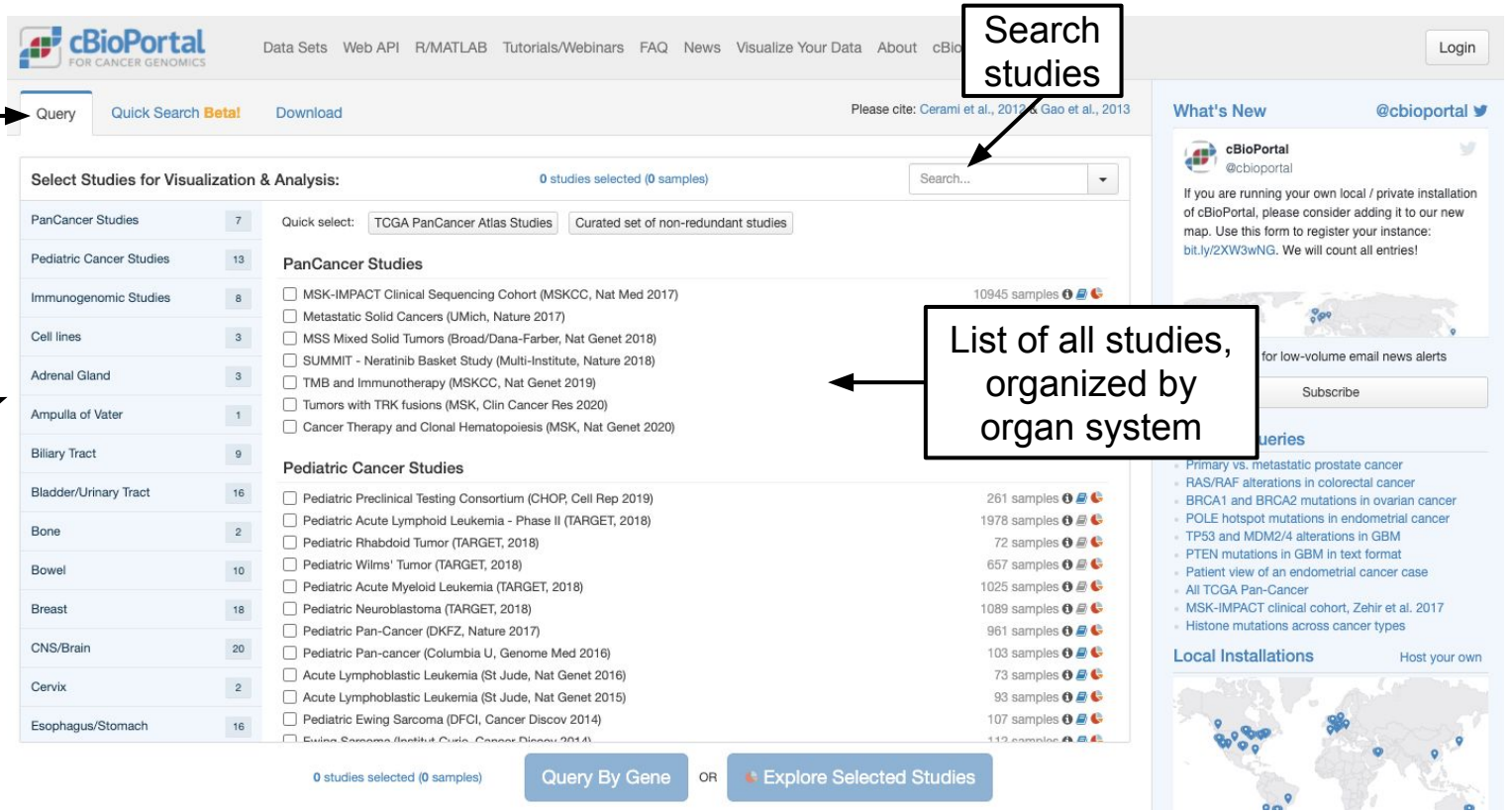
Explore all data in a dataset

Last update: December 30, 2020

Tutorial Objectives

- Introduce cBioPortal main page
- Show two ways to select a study
  - From the Query box on the main page
  - From the Data Sets page
- Walk through the four possible tabs in the study view
  - Study Summary
  - Clinical Data
  - Heatmaps
  - CN Segments
- Show how to run a query from the study view

cBioPortal Main Page



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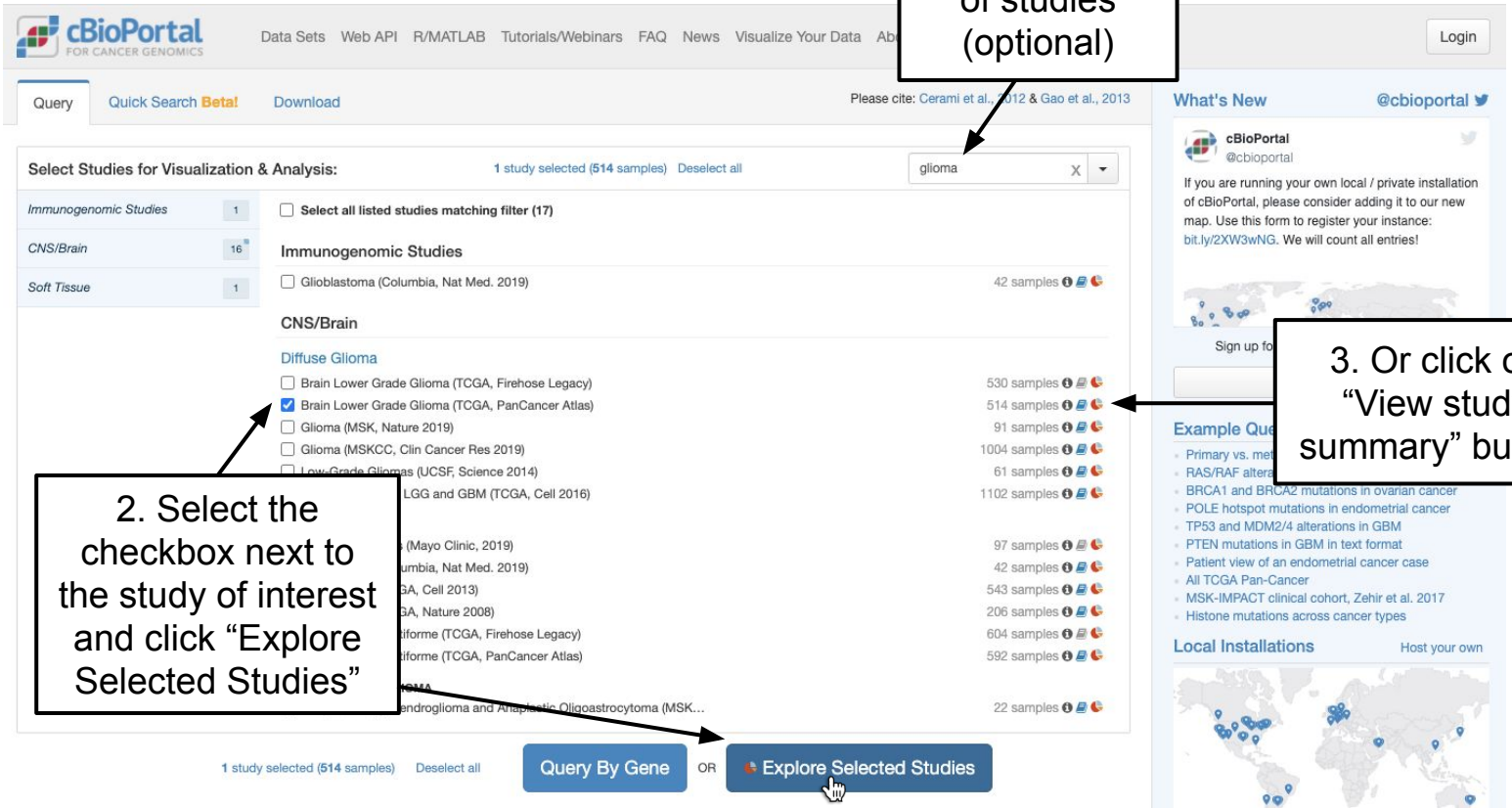
Selecting a study: from Query



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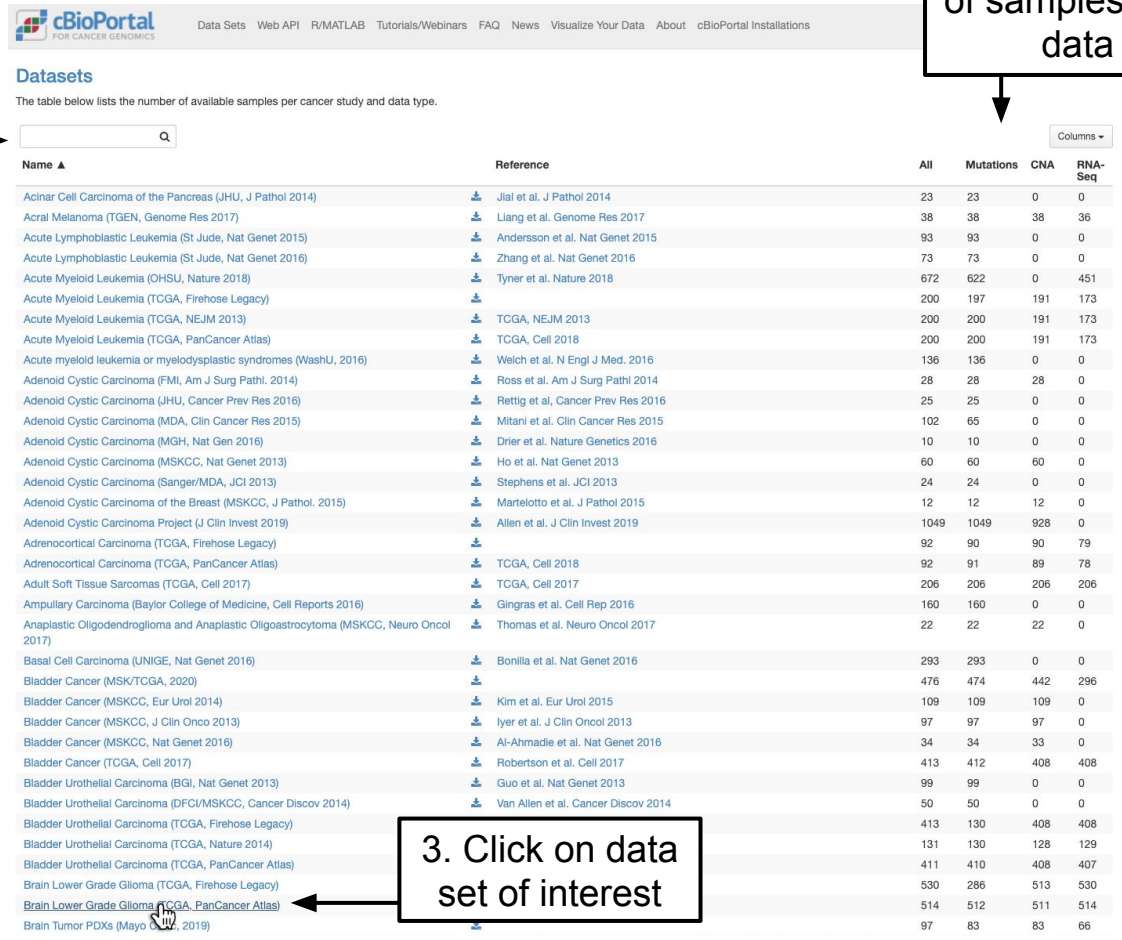
Selecting a study: from Data Sets page

1. Use search functionality to find datasets of interest

2. Or sort by number of samples with each data type



3. Click on data set of interest

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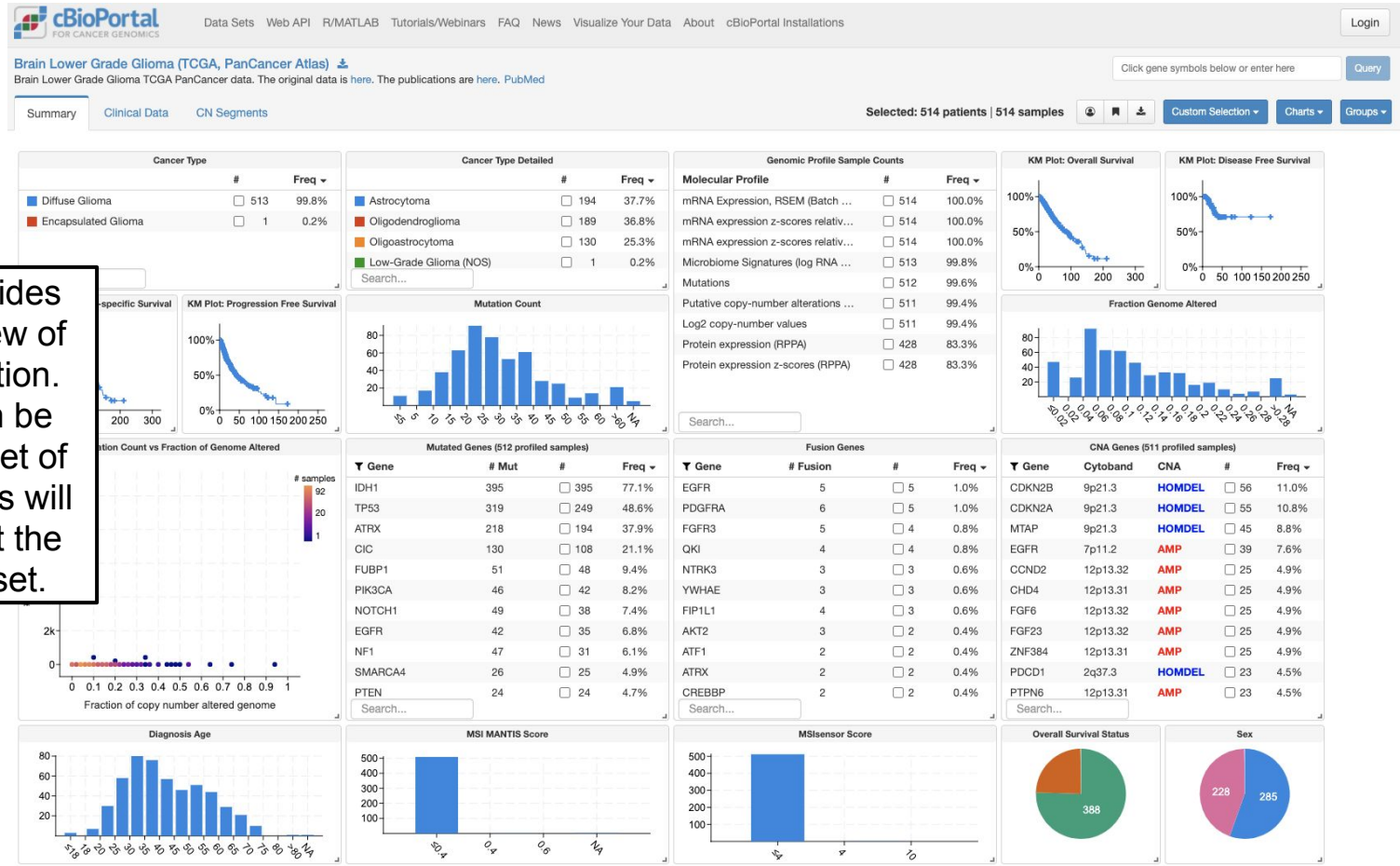
Once you select a study by either method you land on the Study Summary Tab.

Here you can explore features (e.g. mutated genes or gender) of the samples in the study (or of a subset of samples in the study) or initiate a query.

The features available to explore will depend on the data available for the particular study selected.

Study Summary Tab: Overview

Study summary provides an interactive overview of the study for exploration. Individual charts can be used to select a subset of the samples. All charts will then update to reflect the features of that subset.



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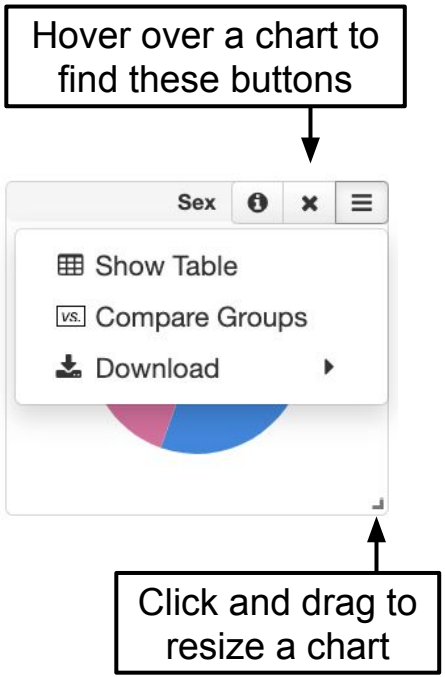
Study Summary Tab: Charts



Hover for a description of the data in this chart.

Click to remove this chart from view.

Hover over this button to bring up a menu with the options below:

- Click to convert the pie chart to a table. Note that hovering over the chart will also bring up a tooltip with tabular data.
- Click to go to a group comparison session with groups based on these values. See the group comparison tutorial for more details.
- Click to download data (text file) or plot (PDF or SVG).

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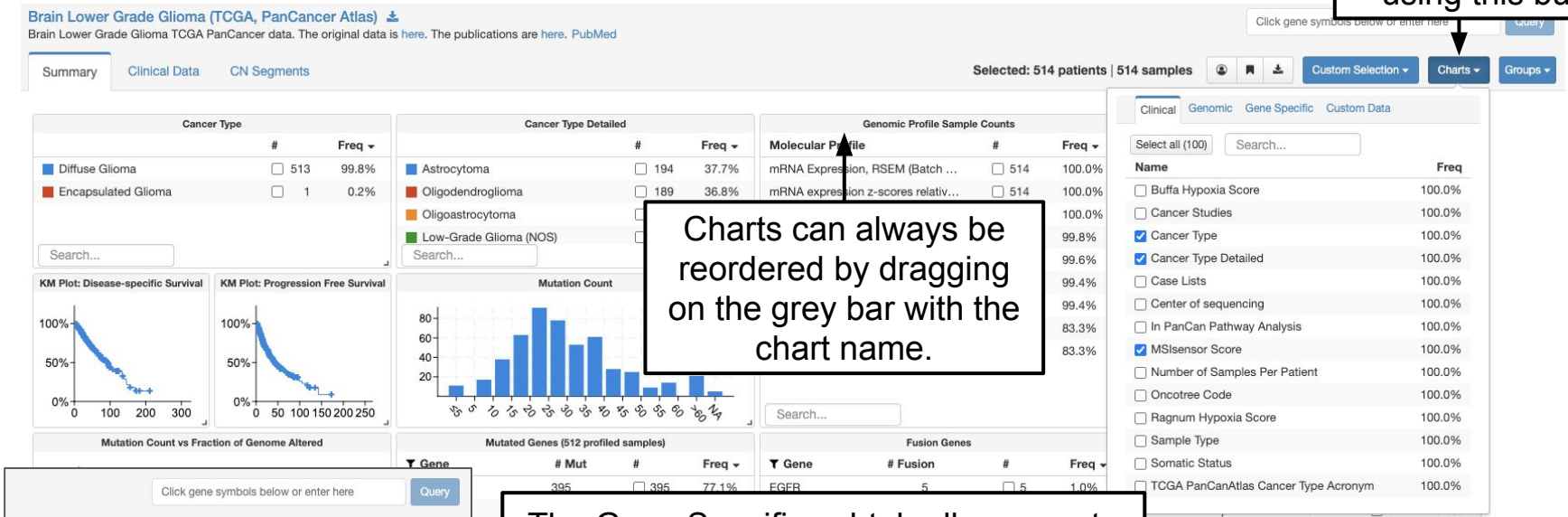
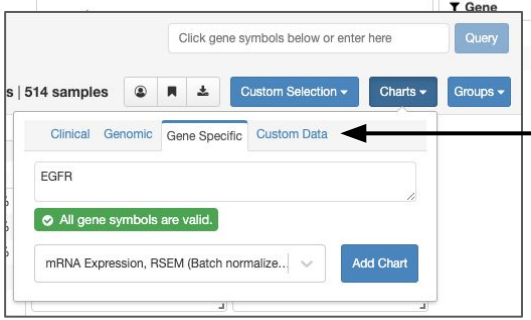
Study Summary Tab: Charts

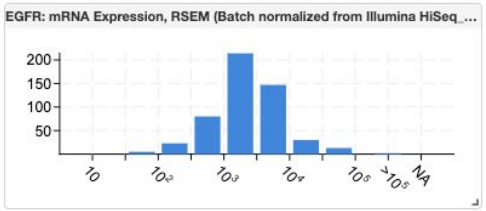
Many studies have additional charts that that can be added using this button.



Charts can always be reordered by dragging on the grey bar with the chart name.



The Gene Specific subtab allows you to add charts for individual genes from any molecular profile with continuous data, e.g. mRNA expression. The data will be displayed as a histogram, which can be used like any other chart to filter or define groups for comparison.



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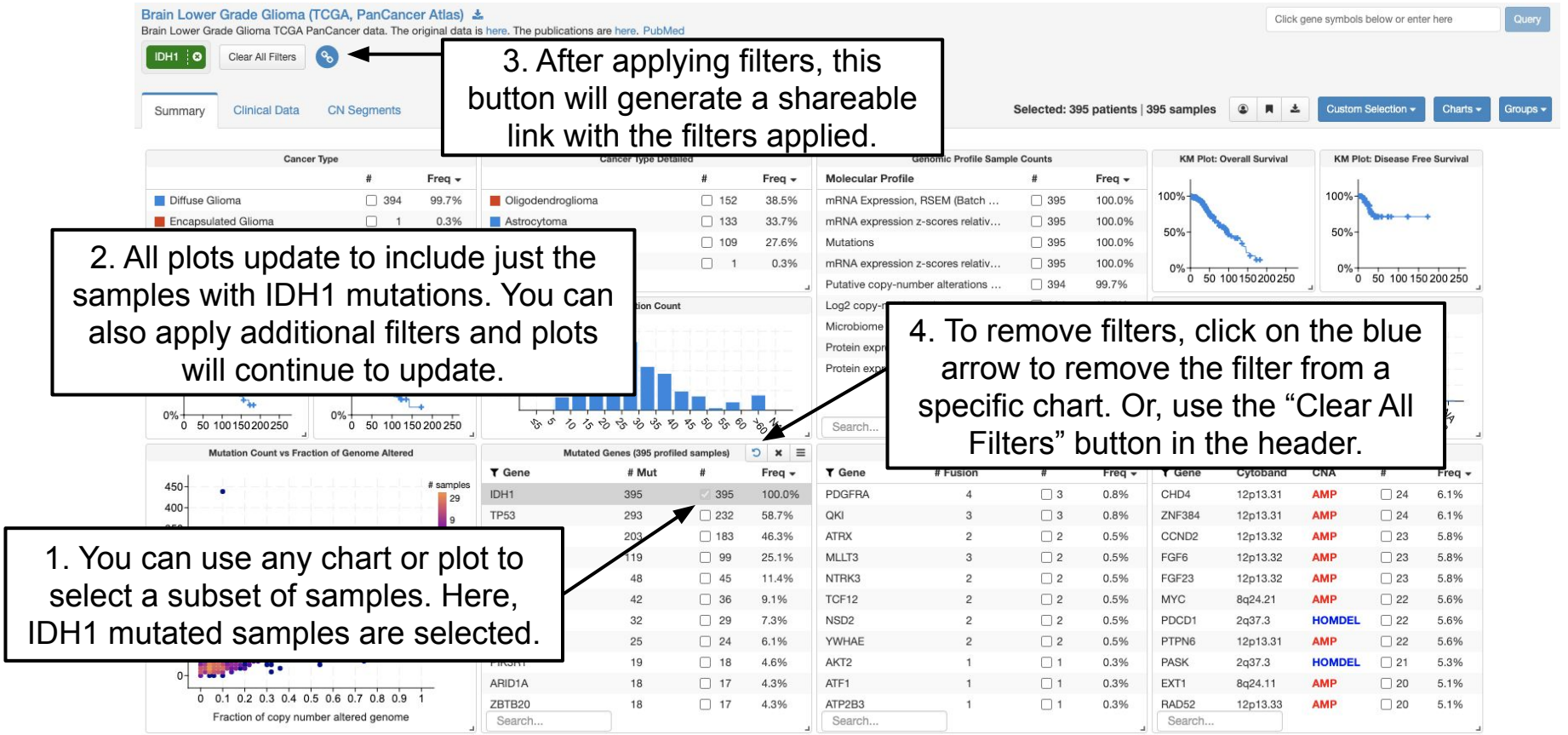
Study Summary Tab: Selecting subsets of data



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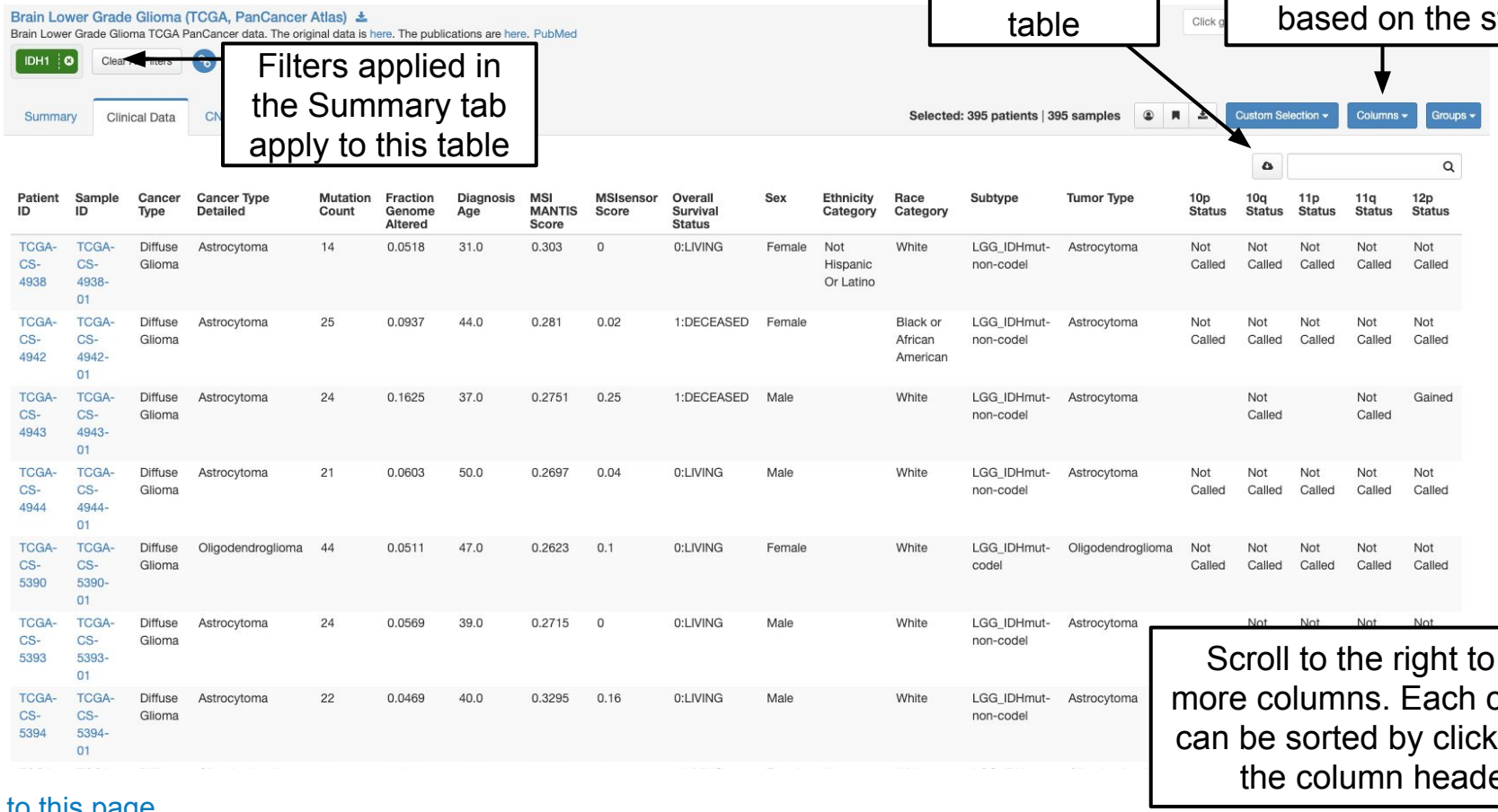
Clinical Data Tab



Patient ID	Sample ID	Cancer Type	Cancer Type Detailed	Mutation Count	Fraction Genome Altered	Diagnosis Age	MSI MANTIS Score	MSIsensor Score	Overall Survival Status	Sex	Ethnicity Category	Race Category	Subtype	Tumor Type	10p Status	10q Status	11p Status	11q Status	12p Status
TCGA-CS-4938	TCGA-CS-4938-01	Diffuse Glioma	Astrocytoma	14	0.0518	31.0	0.303	0	0:LIVING	Female	Not Hispanic Or Latino	White	LGG_IDHmut-non-codel	Astrocytoma	Not Called	Not Called	Not Called	Not Called	Not Called
TCGA-CS-4942	TCGA-CS-4942-01	Diffuse Glioma	Astrocytoma	25	0.0937	44.0	0.281	0.02	1:DECEASED	Female		Black or African American	LGG_IDHmut-non-codel	Astrocytoma	Not Called	Not Called	Not Called	Not Called	Not Called
TCGA-CS-4943	TCGA-CS-4943-01	Diffuse Glioma	Astrocytoma	24	0.1625	37.0	0.2751	0.25	1:DECEASED	Male		White	LGG_IDHmut-non-codel	Astrocytoma		Not Called		Not Called	Gained
TCGA-CS-4944	TCGA-CS-4944-01	Diffuse Glioma	Astrocytoma	21	0.0603	50.0	0.2697	0.04	0:LIVING	Male		White	LGG_IDHmut-non-codel	Astrocytoma	Not Called	Not Called	Not Called	Not Called	Not Called
TCGA-CS-5390	TCGA-CS-5390-01	Diffuse Glioma	Oligodendroglioma	44	0.0511	47.0	0.2623	0.1	0:LIVING	Female		White	LGG_IDHmut-codel	Oligodendroglioma	Not Called	Not Called	Not Called	Not Called	Not Called
TCGA-CS-5393	TCGA-CS-5393-01	Diffuse Glioma	Astrocytoma	24	0.0569	39.0	0.2715	0	0:LIVING	Male		White	LGG_IDHmut-non-codel	Astrocytoma		Not	Not	Not	Not
TCGA-CS-5394	TCGA-CS-5394-01	Diffuse Glioma	Astrocytoma	22	0.0469	40.0	0.3295	0.16	0:LIVING	Male		White	LGG_IDHmut-non-codel	Astrocytoma					

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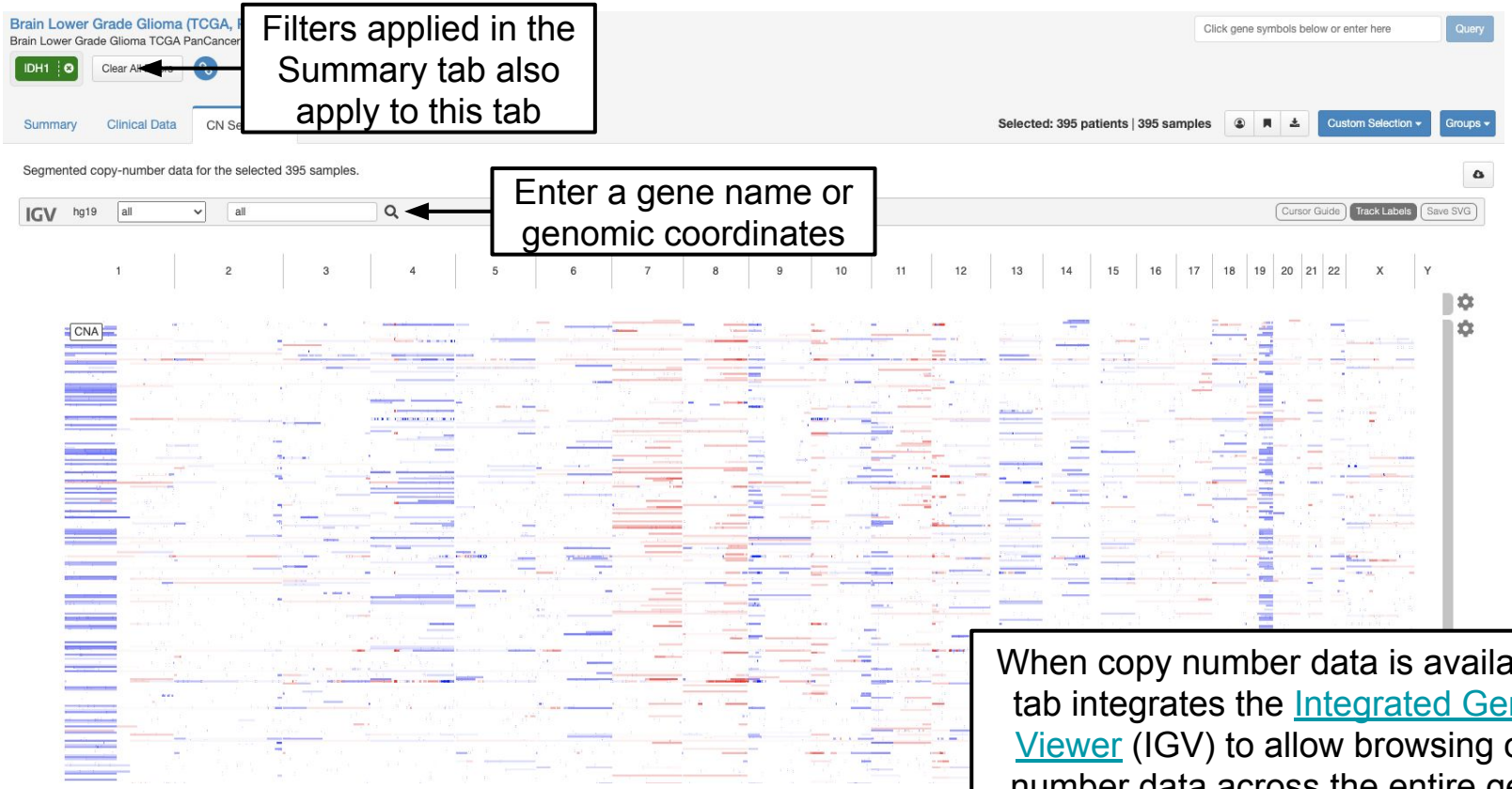
CN Segments Tab



When copy number data is available, this tab integrates the Integrated Genomics Viewer (IGV) to allow browsing of copy number data across the entire genome. Each row is a single sample.

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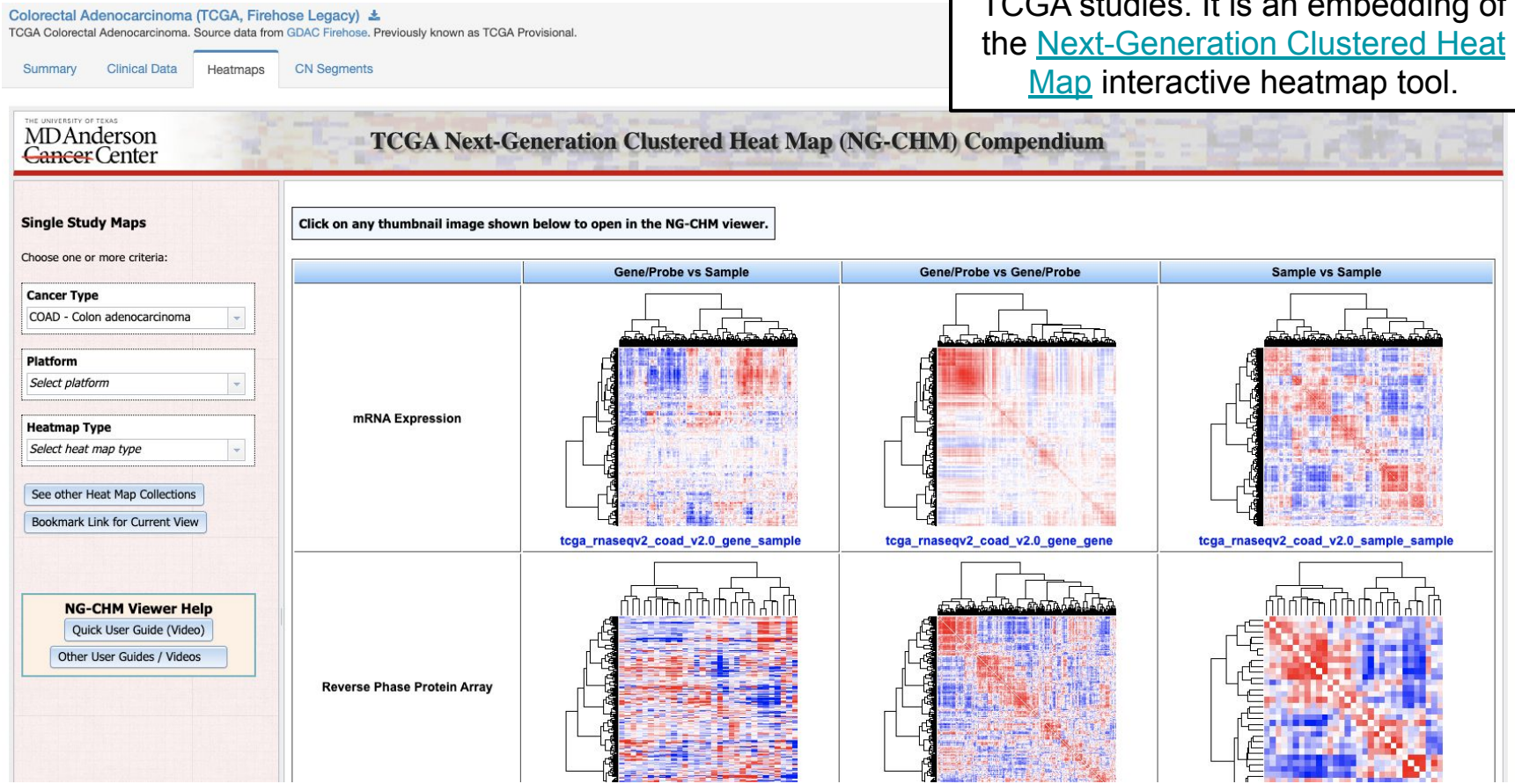
Additional Tabs: Heatmaps

This tab will only appear for some TCGA studies. It is an embedding of the Next-Generation Clustered Heat Map interactive heatmap tool.



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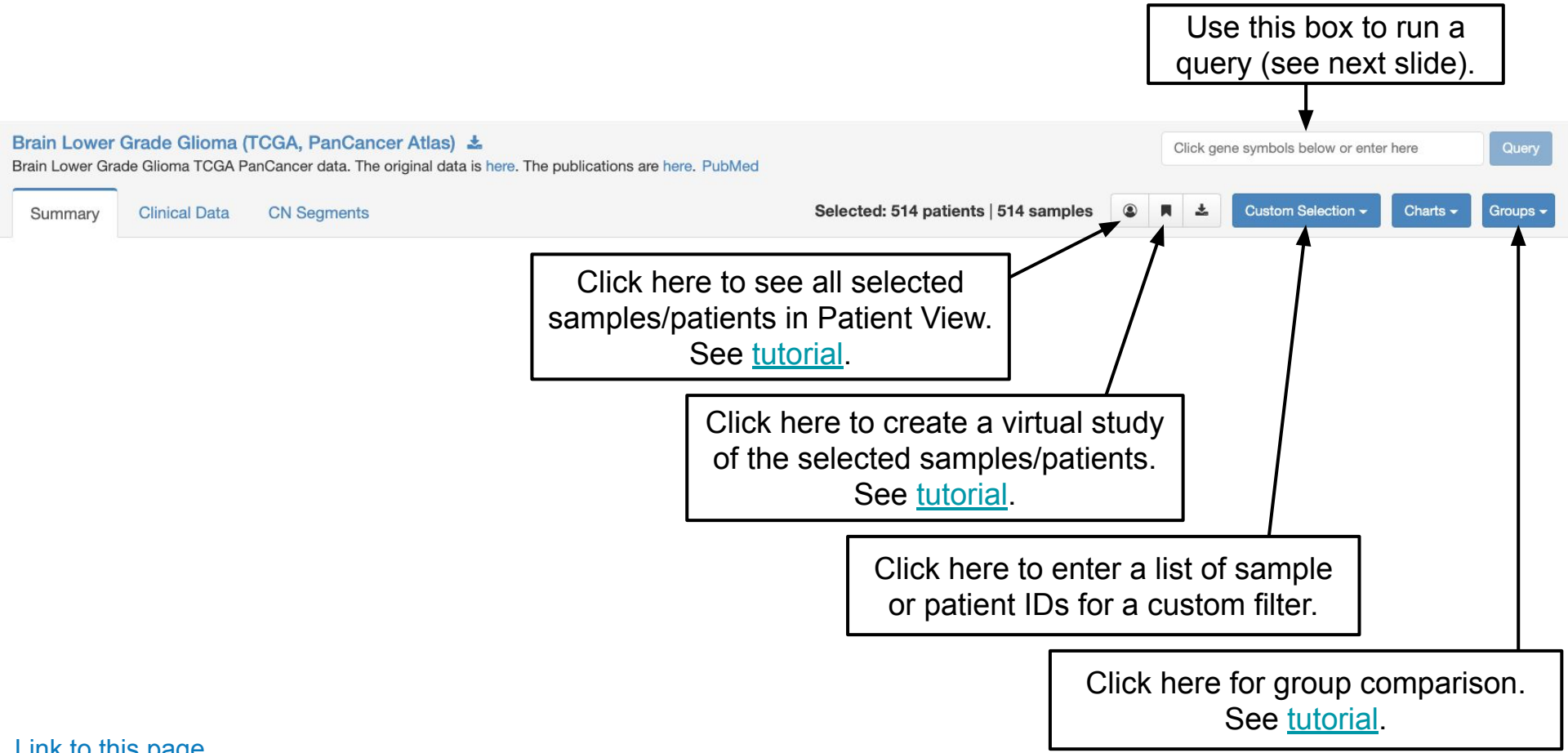
Study View: Additional Features



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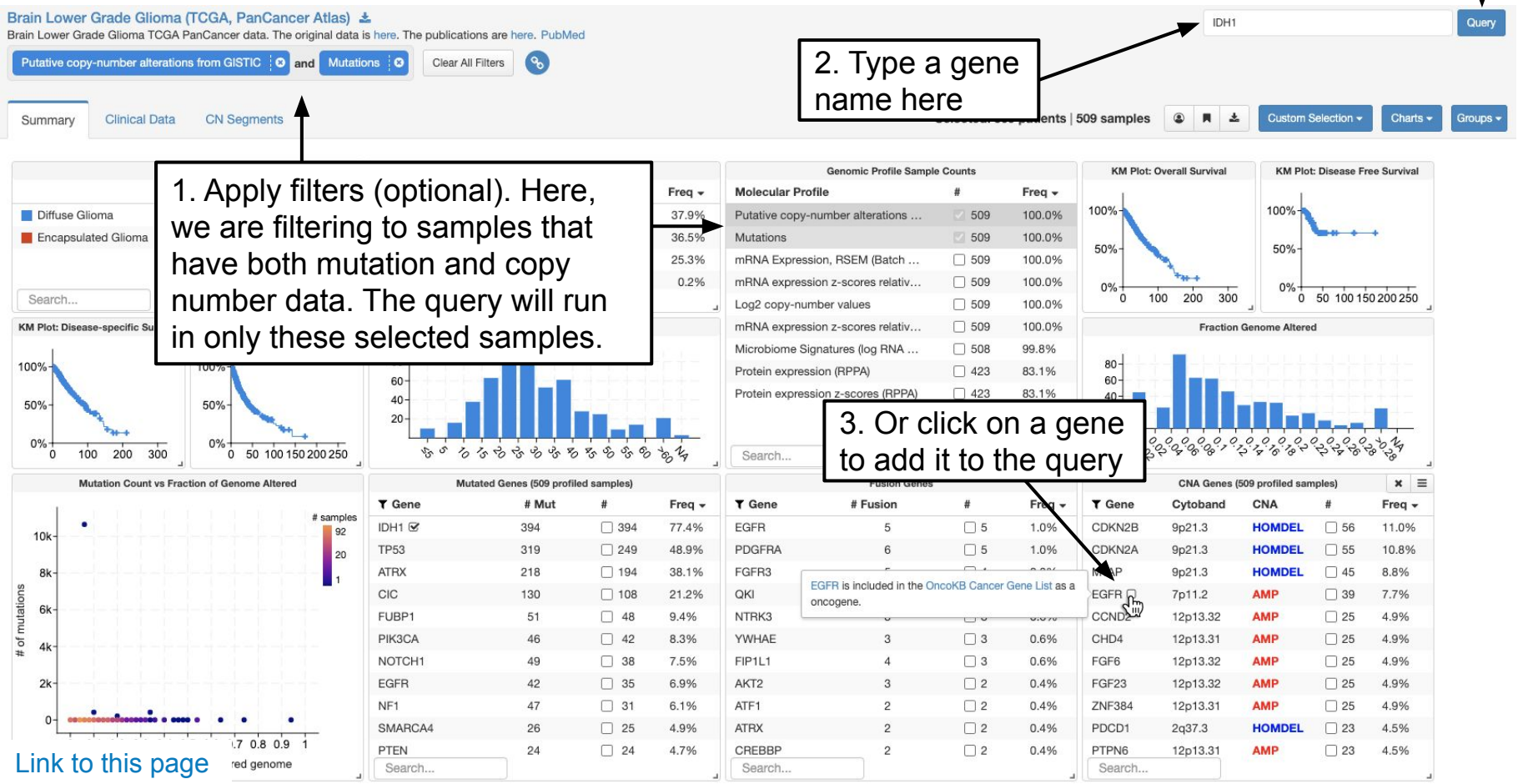
Study Summary Tab: Run a query



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See Tutorial #2: Single Study Query

Questions?
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or email us at:
cbioportal@googlegroups.com