cBioPortal Tutorial #1: Single Study Exploration

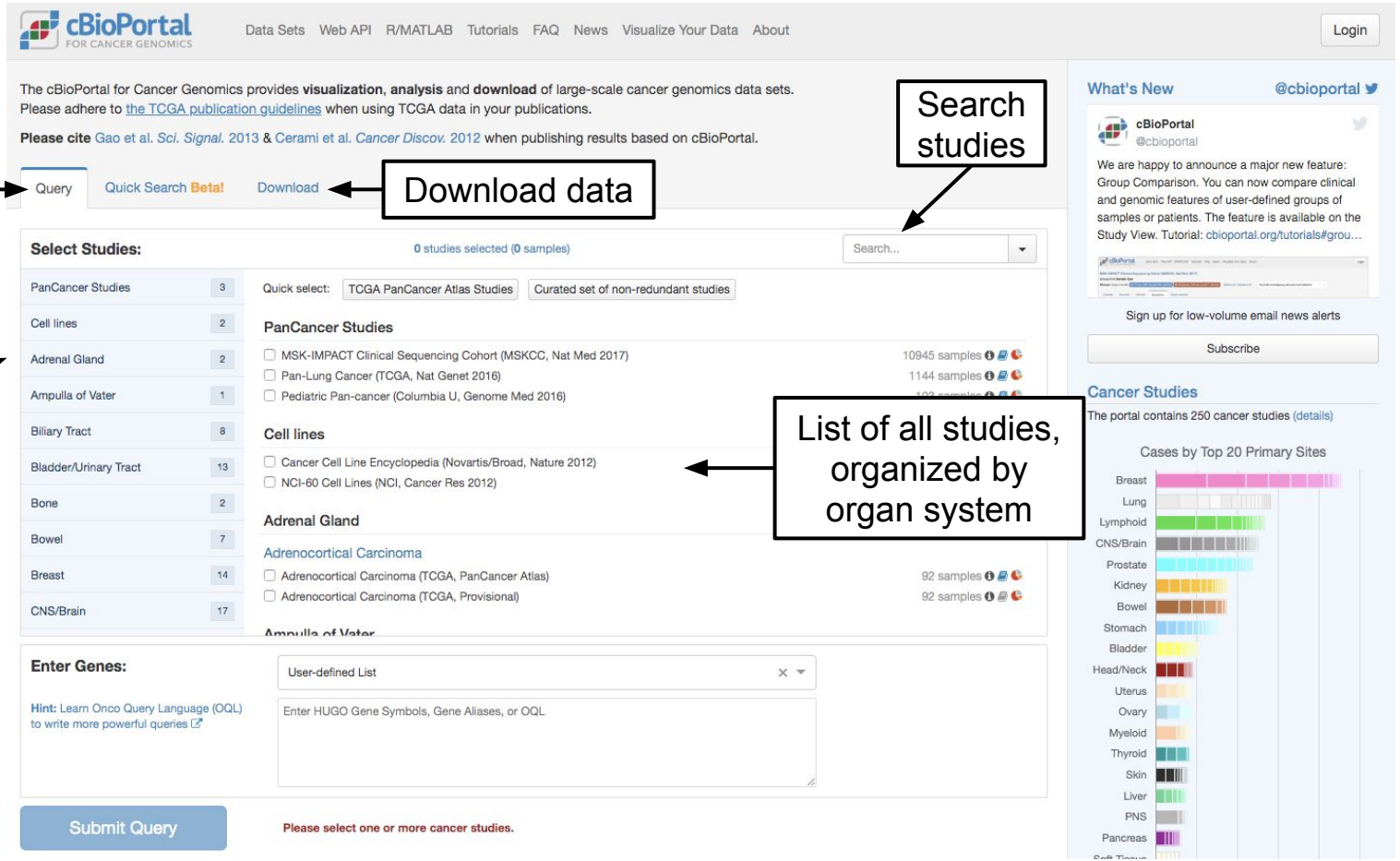
Explore all data in a dataset

Last update: June 7, 2019

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 single study view
  - Study Summary
  - Clinical Data
  - Heatmaps
  - CN Segments
- Show how to run a query from the single study view

cBioPortal Main Page



Browse available datasets and initiate queries

Download data

Search studies

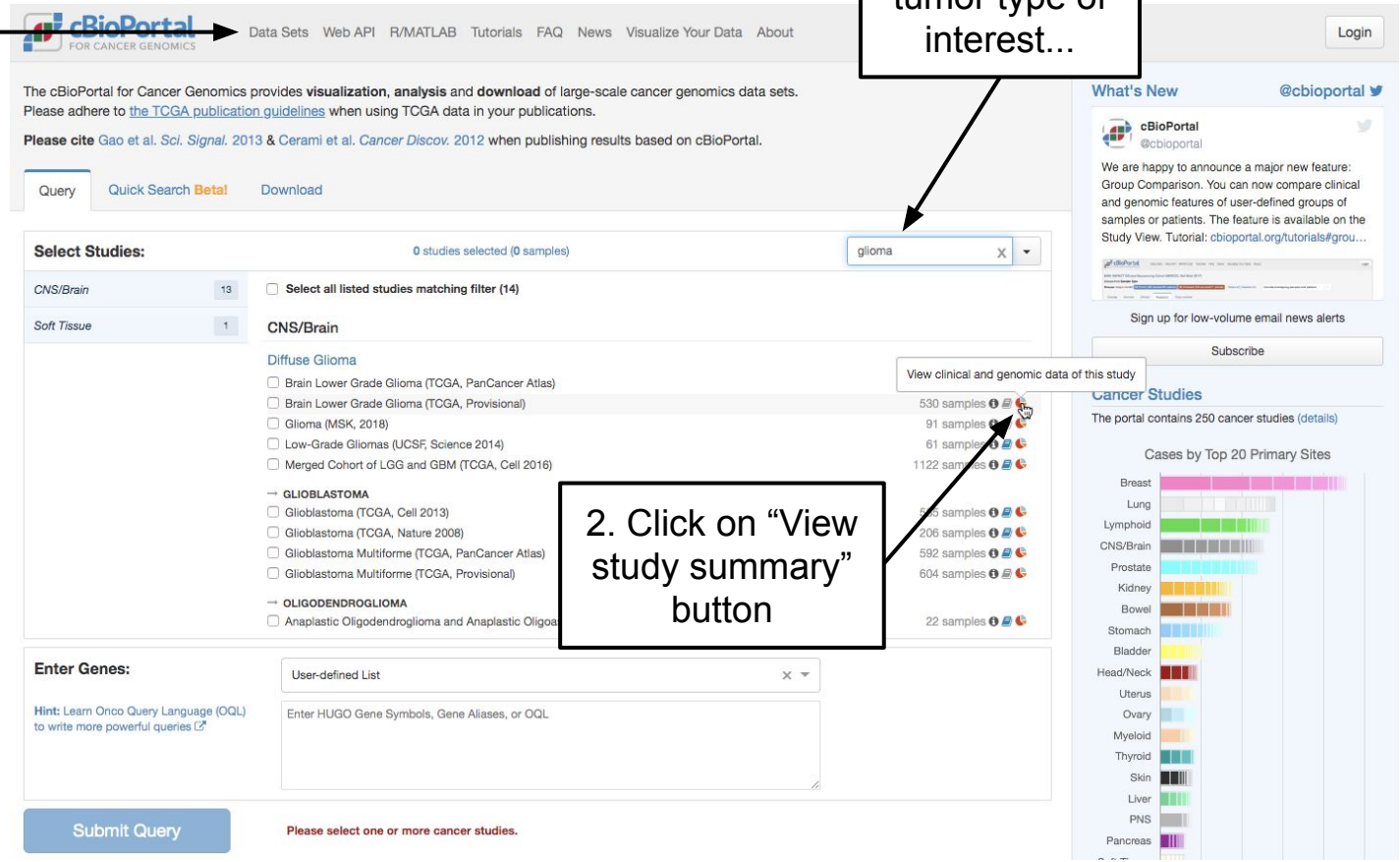
Number of studies for each organ system (click to filter)

List of all studies, organized by organ system

Link to this page

Selecting a study: from Query

3. Or click on “Data Sets” to browse Data Sets page



1. Start typing tumor type of interest...

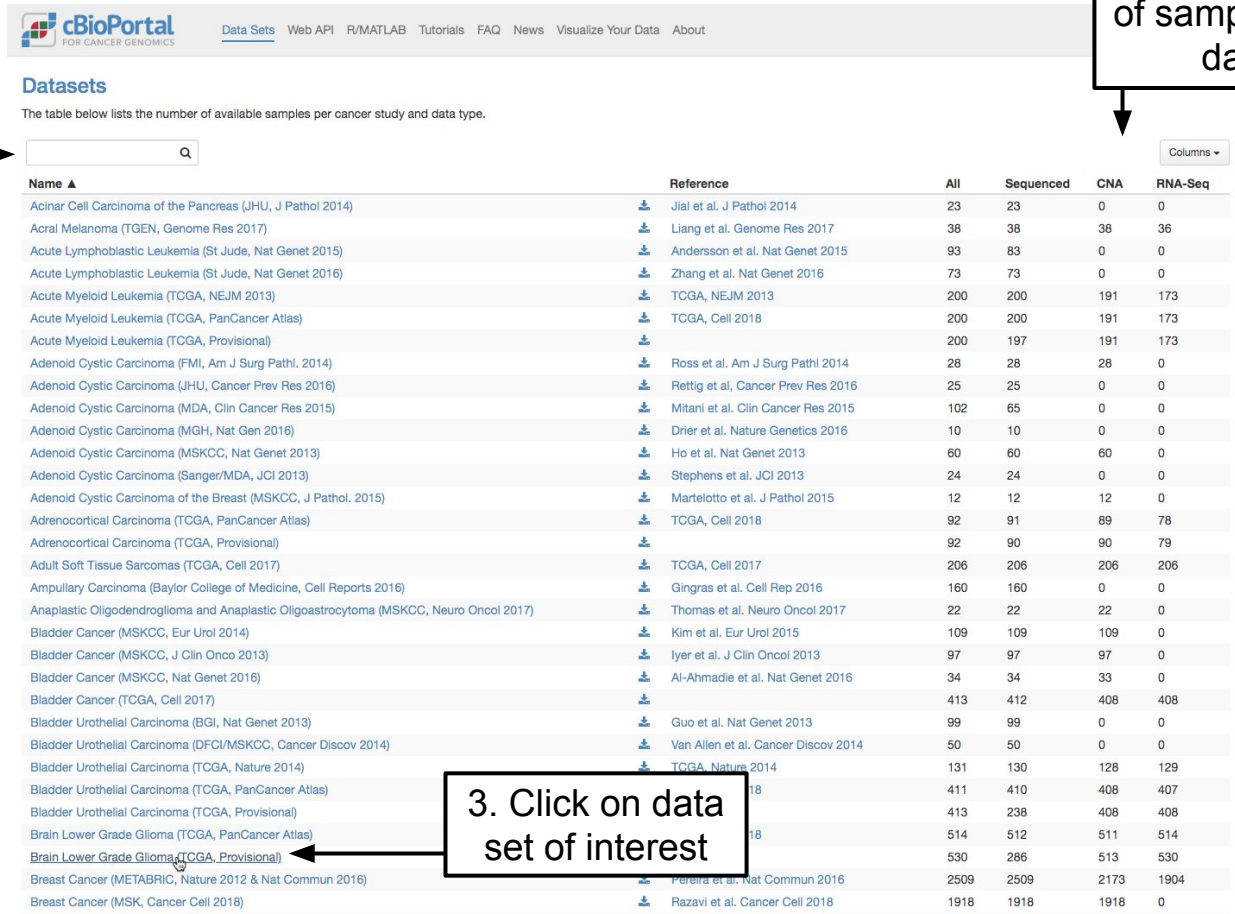
2. Click on “View study summary” button

Link to this page

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 types



Name ▲	Reference	All	Sequenced	CNA	RNA-Seq
Acinar Cell Carcinoma of the Pancreas (JHU, J Pathol 2014)	Jiai et al. J Pathol 2014	23	23	0	0
Acral Melanoma (TGEN, Genome Res 2017)	Liang et al. Genome Res 2017	38	38	38	36
Acute Lymphoblastic Leukemia (St Jude, Nat Genet 2015)	Andersson et al. Nat Genet 2015	93	83	0	0
Acute Lymphoblastic Leukemia (St Jude, Nat Genet 2016)	Zhang et al. Nat Genet 2016	73	73	0	0
Acute Myeloid Leukemia (TCGA, NEJM 2013)	TCGA, NEJM 2013	200	200	191	173
Acute Myeloid Leukemia (TCGA, PanCancer Atlas)	TCGA, Cell 2018	200	200	191	173
Acute Myeloid Leukemia (TCGA, Provisional)		200	197	191	173
Adenoid Cystic Carcinoma (FMI, Am J Surg Pathl. 2014)	Ross et al. Am J Surg Pathl 2014	28	28	28	0
Adenoid Cystic Carcinoma (JHU, Cancer Prev Res 2016)	Rettig et al, Cancer Prev Res 2016	25	25	0	0
Adenoid Cystic Carcinoma (MDA, Clin Cancer Res 2015)	Mitani et al. Clin Cancer Res 2015	102	65	0	0
Adenoid Cystic Carcinoma (MGH, Nat Gen 2016)	Drier et al. Nature Genetics 2016	10	10	0	0
Adenoid Cystic Carcinoma (MSKCC, Nat Genet 2013)	Ho et al. Nat Genet 2013	60	60	60	0
Adenoid Cystic Carcinoma (Sanger/MDA, JCI 2013)	Stephens et al. JCI 2013	24	24	0	0
Adenoid Cystic Carcinoma of the Breast (MSKCC, J Pathol. 2015)	Martelotto et al. J Pathol 2015	12	12	12	0
Adrenocortical Carcinoma (TCGA, PanCancer Atlas)	TCGA, Cell 2018	92	91	89	78
Adrenocortical Carcinoma (TCGA, Provisional)		92	90	90	79
Adult Soft Tissue Sarcomas (TCGA, Cell 2017)	TCGA, Cell 2017	206	206	206	206
Ampullary Carcinoma (Baylor College of Medicine, Cell Reports 2016)	Gingras et al. Cell Rep 2016	160	160	0	0
Anaplastic Oligodendroglioma and Anaplastic Oligoastrocytoma (MSKCC, Neuro Oncol 2017)	Thomas et al. Neuro Oncol 2017	22	22	22	0
Bladder Cancer (MSKCC, Eur Urol 2014)	Kim et al. Eur Urol 2015	109	109	109	0
Bladder Cancer (MSKCC, J Clin Onco 2013)	Iyer et al. J Clin Oncol 2013	97	97	97	0
Bladder Cancer (MSKCC, Nat Genet 2016)	Al-Ahmadie et al. Nat Genet 2016	34	34	33	0
Bladder Cancer (TCGA, Cell 2017)		413	412	408	408
Bladder Urothelial Carcinoma (BGI, Nat Genet 2013)	Guo et al. Nat Genet 2013	99	99	0	0
Bladder Urothelial Carcinoma (DFCI/MSKCC, Cancer Discov 2014)	Van Allen et al. Cancer Discov 2014	50	50	0	0
Bladder Urothelial Carcinoma (TCGA, Nature 2014)	TCGA, Nature 2014	131	130	128	129
Bladder Urothelial Carcinoma (TCGA, PanCancer Atlas)	18	411	410	408	407
Bladder Urothelial Carcinoma (TCGA, Provisional)		413	238	408	408
Brain Lower Grade Glioma (TCGA, PanCancer Atlas)	18	514	512	511	514
Brain Lower Grade Glioma (TCGA, Provisional)		530	286	513	530
Breast Cancer (METABRIC, Nature 2012 & Nat Commun 2016)	Pereira et al. Nat Commun 2016	2509	2509	2173	1904
Breast Cancer (MSK, Cancer Cell 2018)	Razavi et al. Cancer Cell 2018	1918	1918	1918	0

3. Click on data set of interest

Link to this page

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

Number of samples/patients

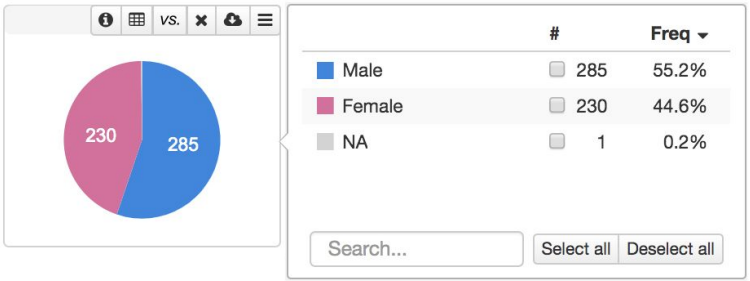
Interactive charts: these can be used to select a subset of the samples. All charts will then update to reflect the features of that subset.

Ⓜ and Ⓖ indicate that a gene is significantly frequently altered according to MutSig and GISTIC respectively.

Link to this page

Study Summary Tab: Charts

Hover over a chart to find these buttons



Hover for a description of the data in this chart.

Click to convert the pie chart to a table. Hovering over the chart will also bring up a tooltip with tabular data.

vs. Click to go to a group comparison session with groups based on these values. See the group comparison tutorial for more details.

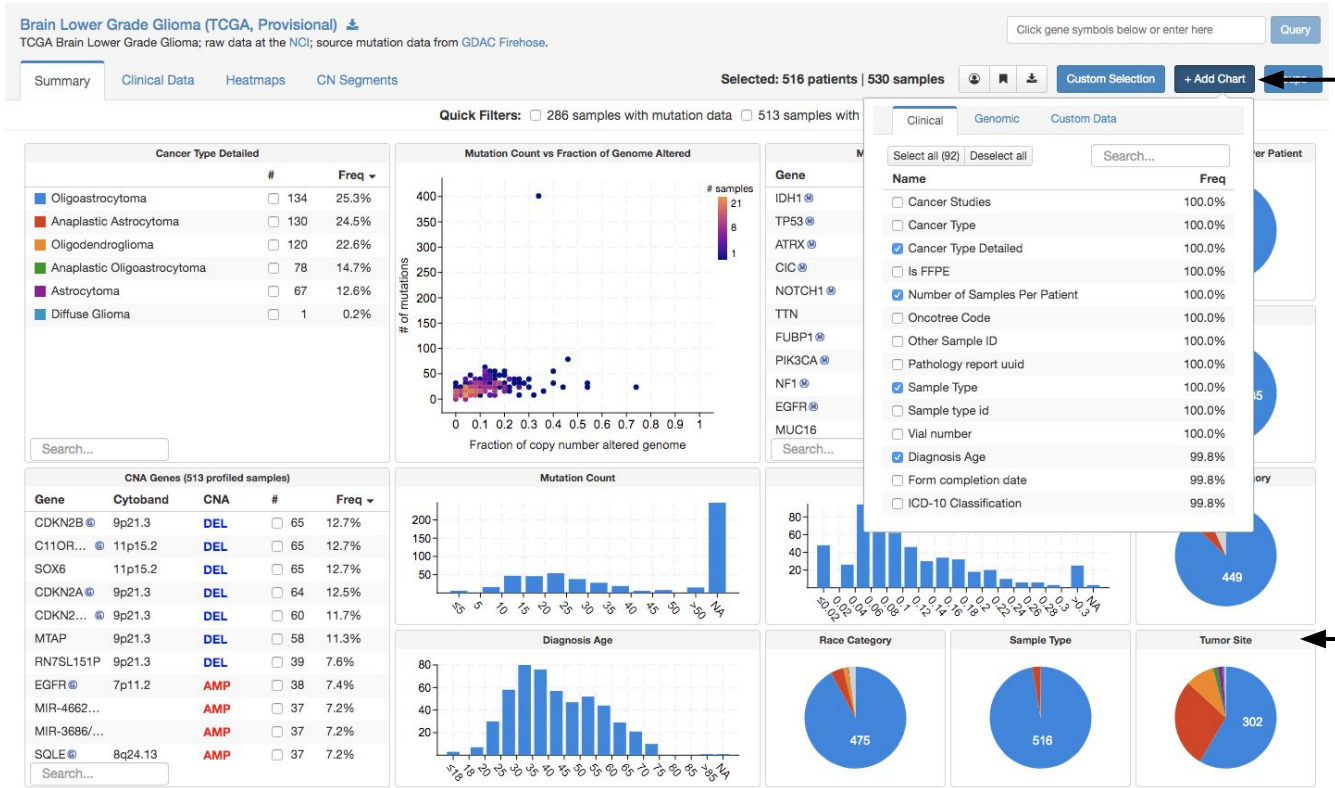
Click to remove this chart from view.

Click to download data (text file) or plot (PDF or SVG).

Hover to bring up a menu with the same options.

Link to this page

Study Summary Tab: Charts

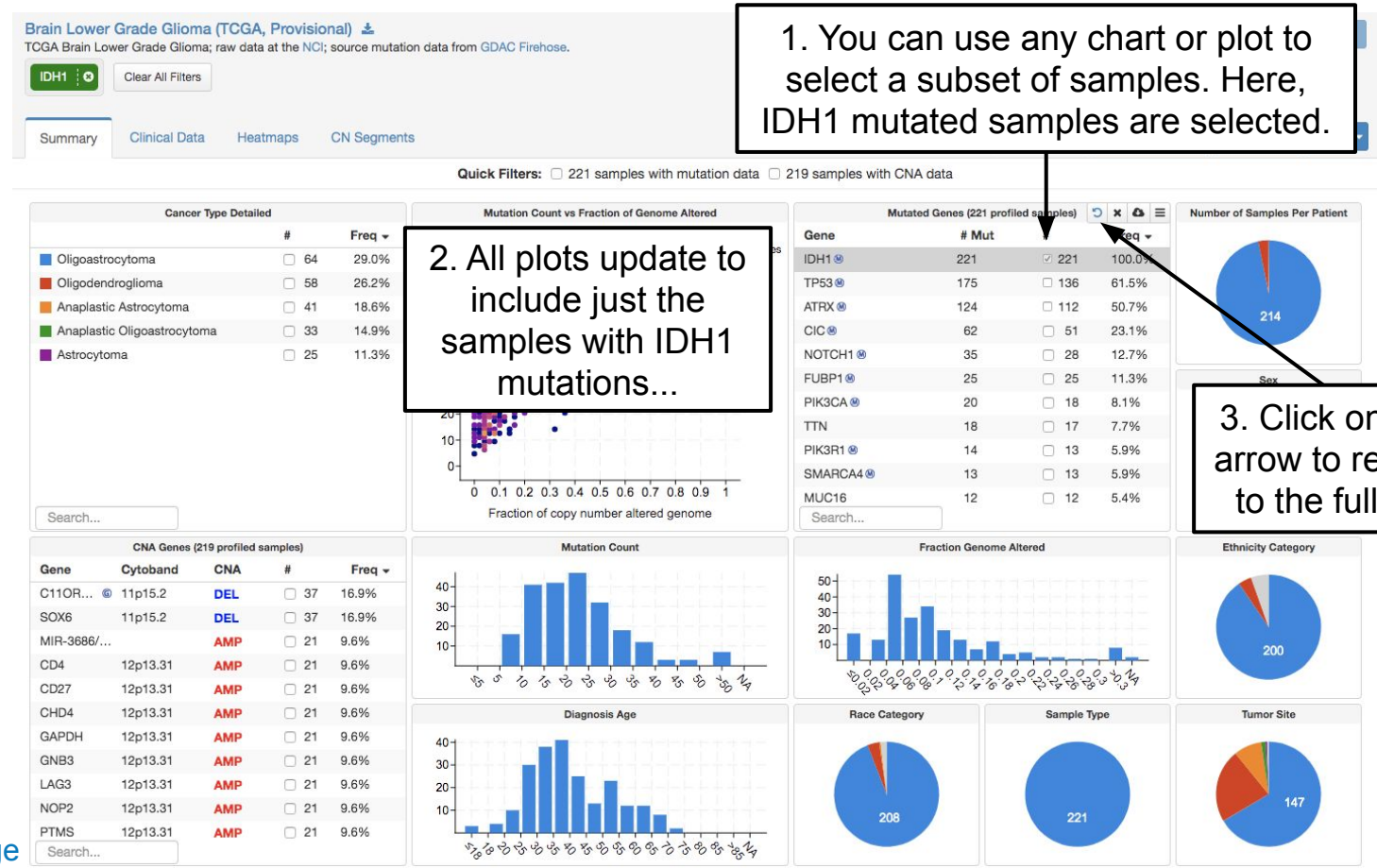


Many studies have additional charts that that can be added using this button.

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

Link to this page

Study Summary Tab: Selecting subsets of data



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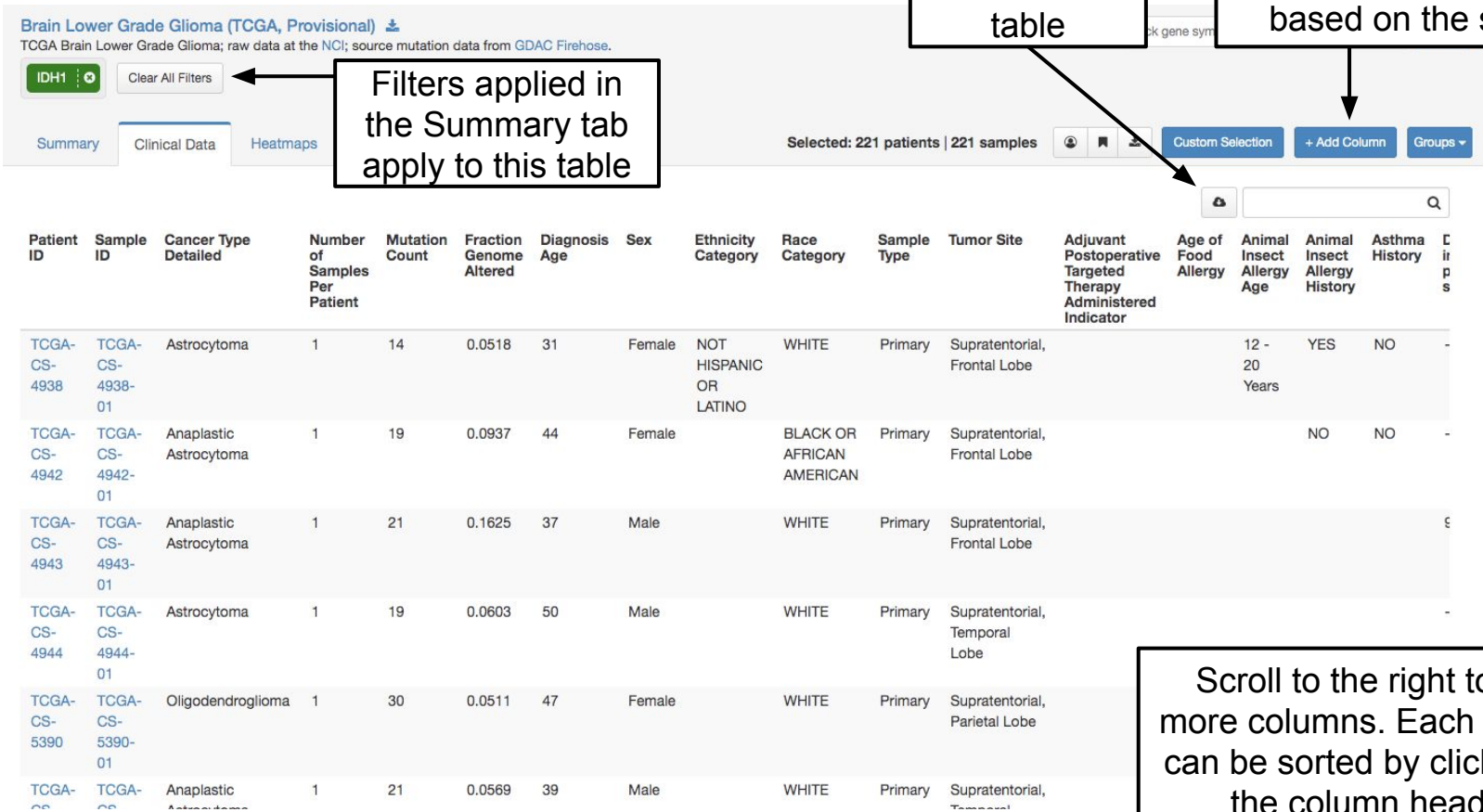
Clinical Data Tab



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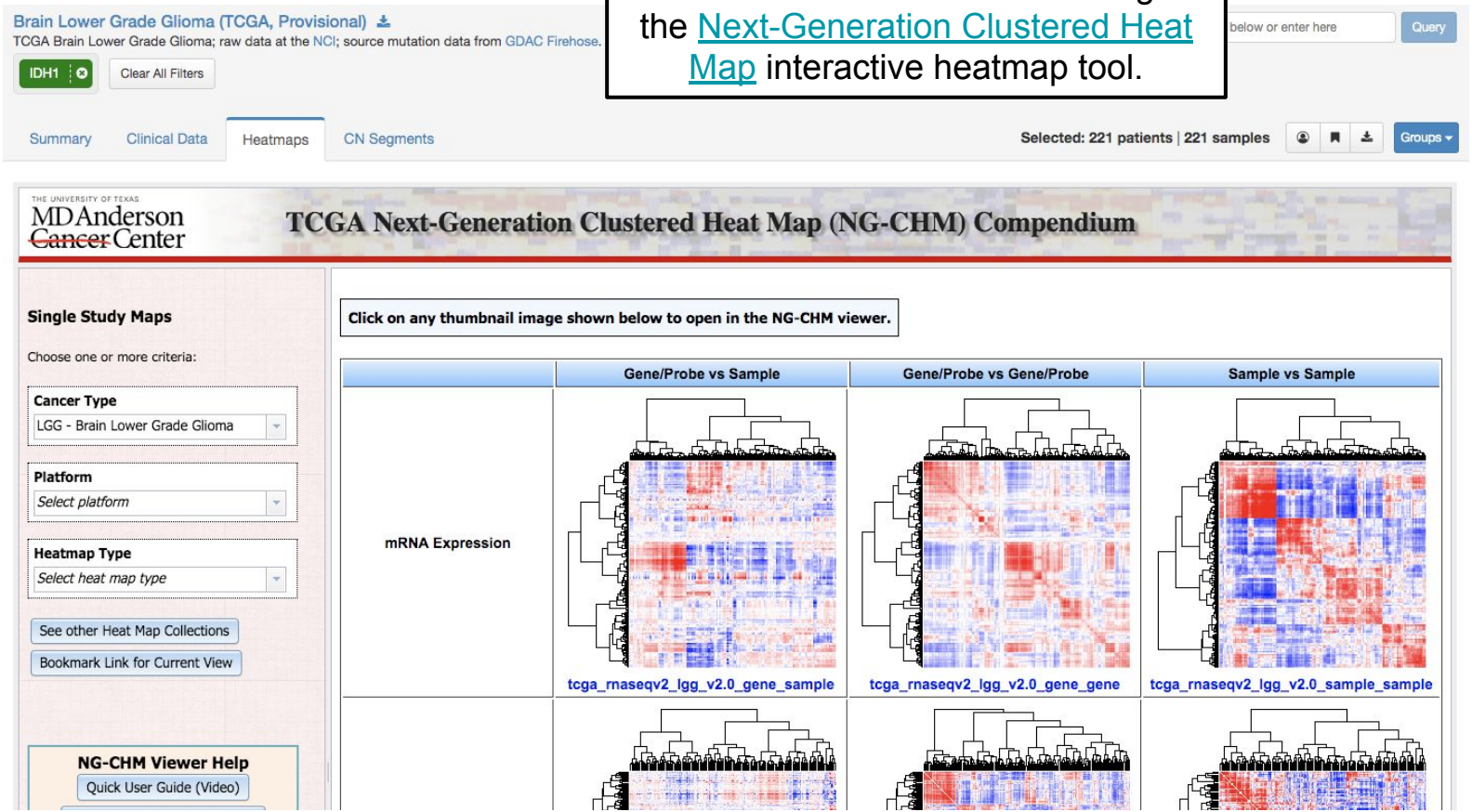
Heatmaps Tab

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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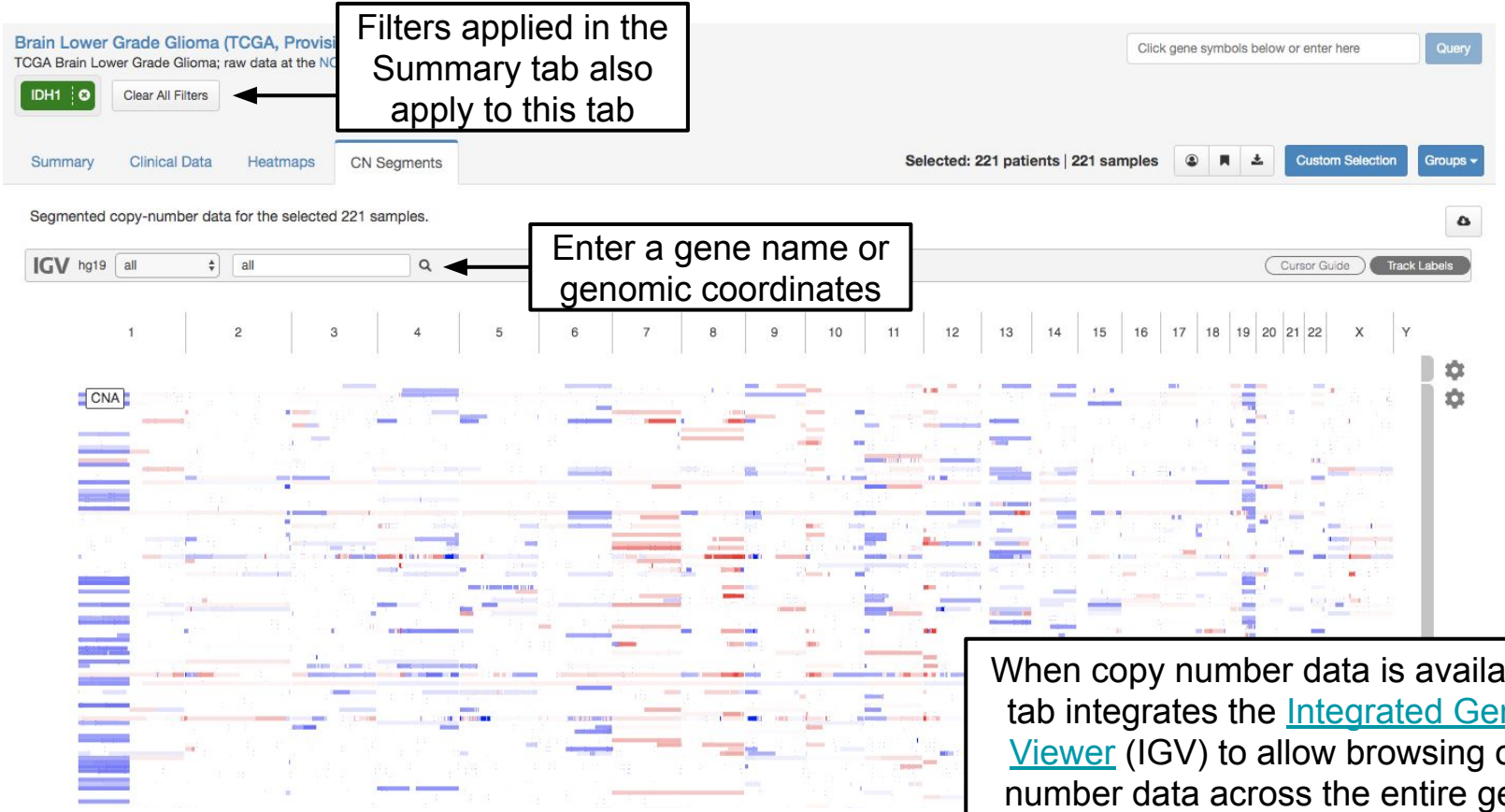
CN Segments Tab



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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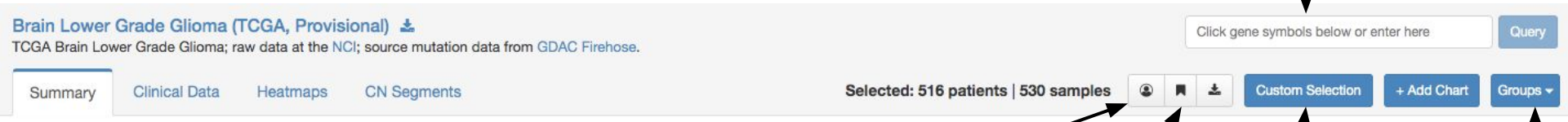
Study Summary Tab: Additional Features



Use this box to run a query (see next slide).

Click here to see all selected samples/patients in Patient View. See tutorial.

Click here to create a virtual study of the selected samples/patients. See tutorial.

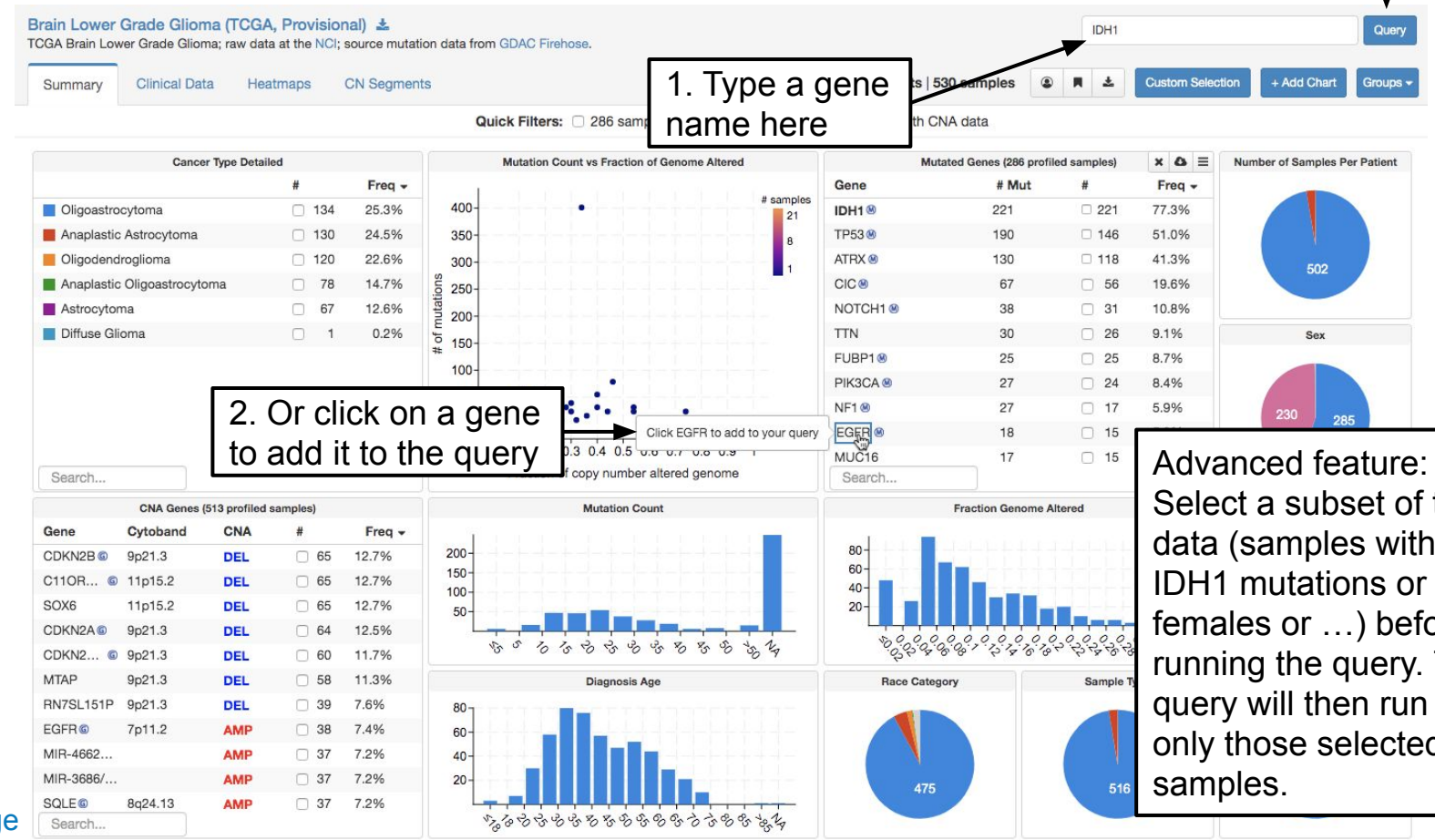
Click here to enter a list of sample or patient IDs for a custom filter.

Click here for group comparison. See tutorial.

Link to this page

Study Summary Tab: Run a query

3. Then click here to run the query



Advanced feature: Select a subset of the data (samples with IDH1 mutations or females or …) before running the query. The query will then run in only those selected samples.

Link to this page

See Tutorial #2: Single Study Query

Questions?
Check out our other tutorials
or email us at:
cbioportal@googlegroups.com