

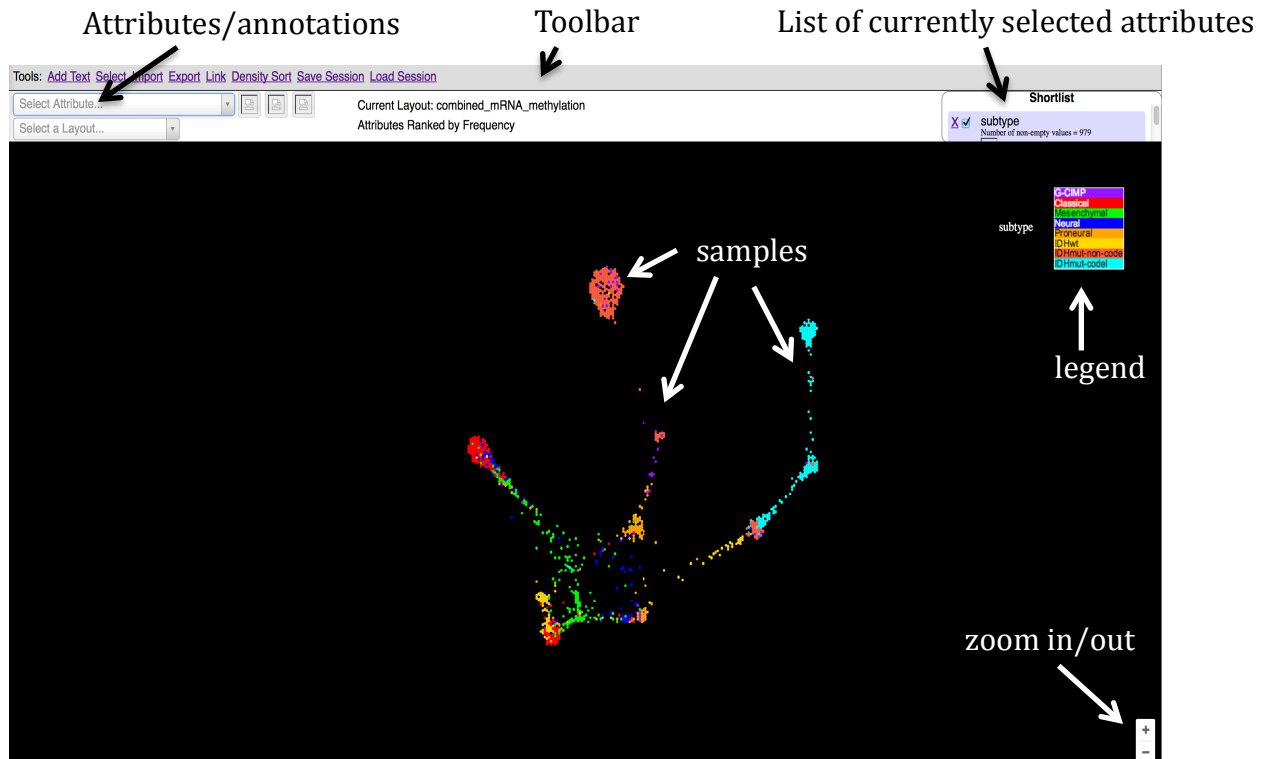
## Tumor Map Summary

Tumor Map is a tool that enables grouping samples based on their omic signatures in a visually accessible way. Similarly to dimensionality reduction methods, Tumor Map method takes a high-dimensional omics space and produces visualization of that space in a 2-D grid. Unlike most dimensionality reduction methods, Tumor Map method is able to combine multiple types of omics data (e.g. mRNA expression and methylation data types in a single map). Furthermore, Tumor Map is an interactive tool that allows navigating through tumor landscape that represents heterogeneous multi-dimensional and multi-platform omic space of oncogenic signatures.

In the Tumor Map, each “dot” is a sample and clusters of samples indicate groups with similar oncogenic signatures and genomic alteration events. The “dots” are actually hexagon shapes, which can be seen at an appropriate level of zoom in. The samples in map can be colored by various molecular, clinical, diagnostic, prognostic, and phenotypic annotations (e.g. tumor type, molecular subtype, etc.)

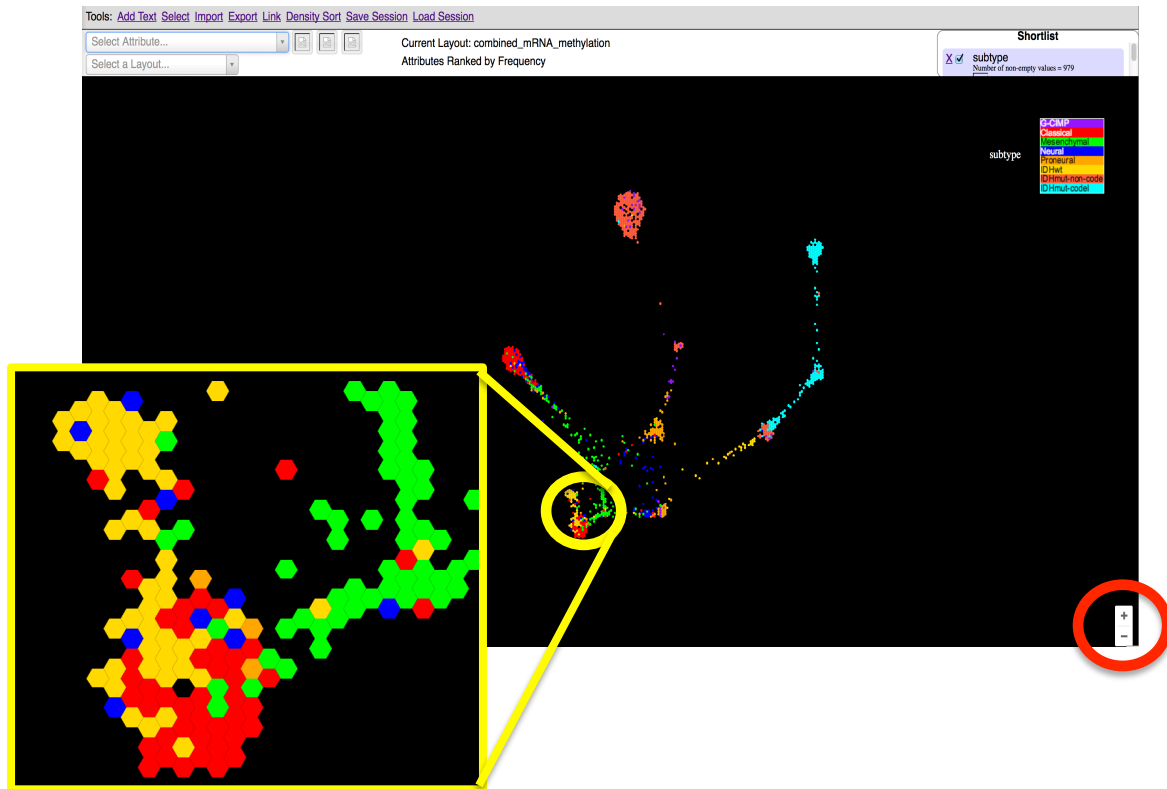
## Tumor Map Controls

Basic Tumor Map controls include ability to zoom in/out, move the map around by dragging the map space, and coloring samples by various molecular, clinical, diagnostic, prognostic, and phenotypic attributes and annotations. Some of the Tumor Map functionality will seem familiar to a general computer user because it utilizes Google API functionality and, therefore, has a similar feel to terrestrial maps.



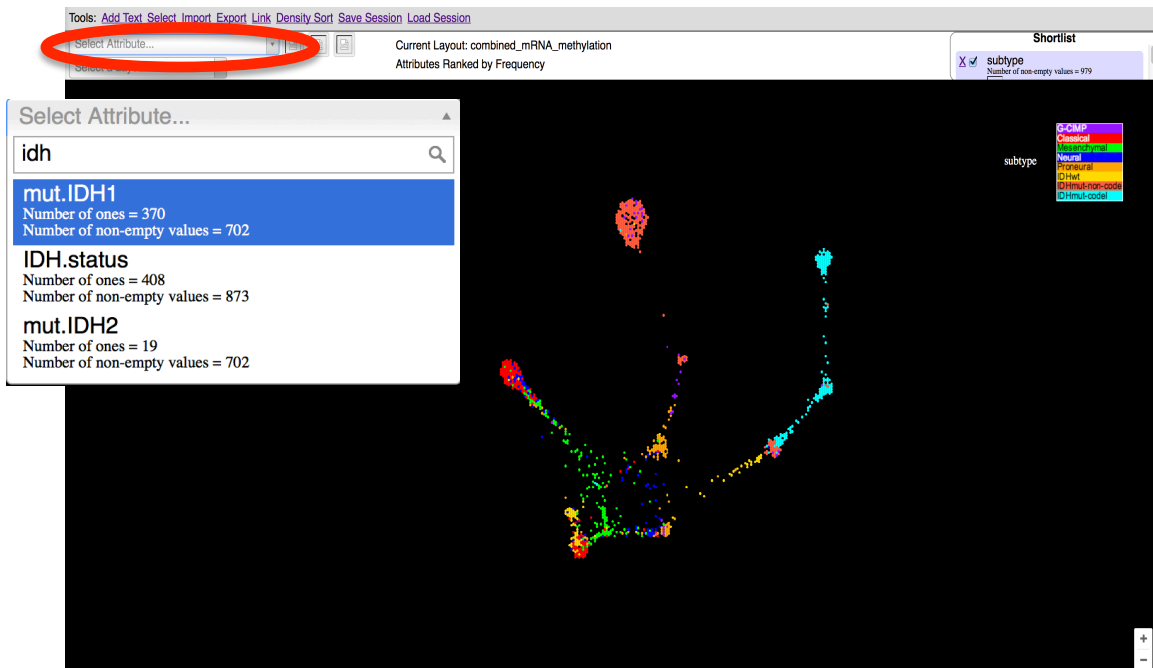
## Zooming In/Out

When the map first appears the zoom level may not be appropriate to view enough details. To zoom in and out inside the map use the +/- controls.

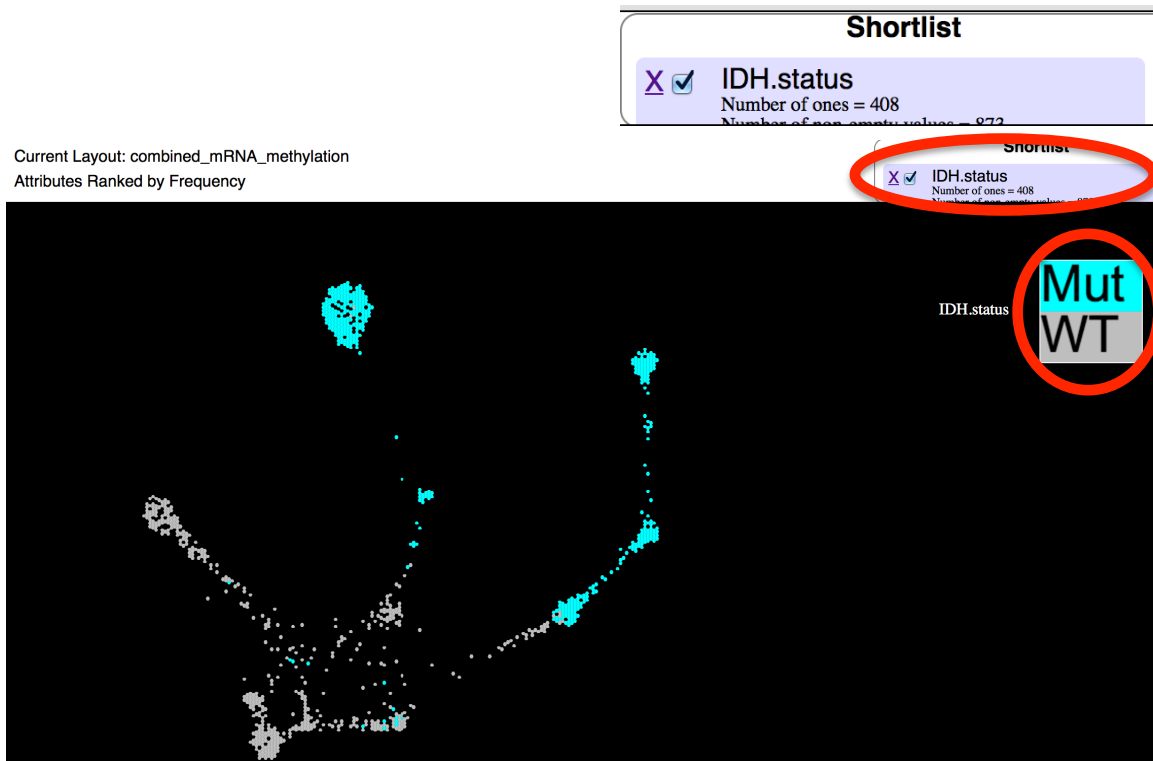


## Selecting Sample Attributes/Annotations

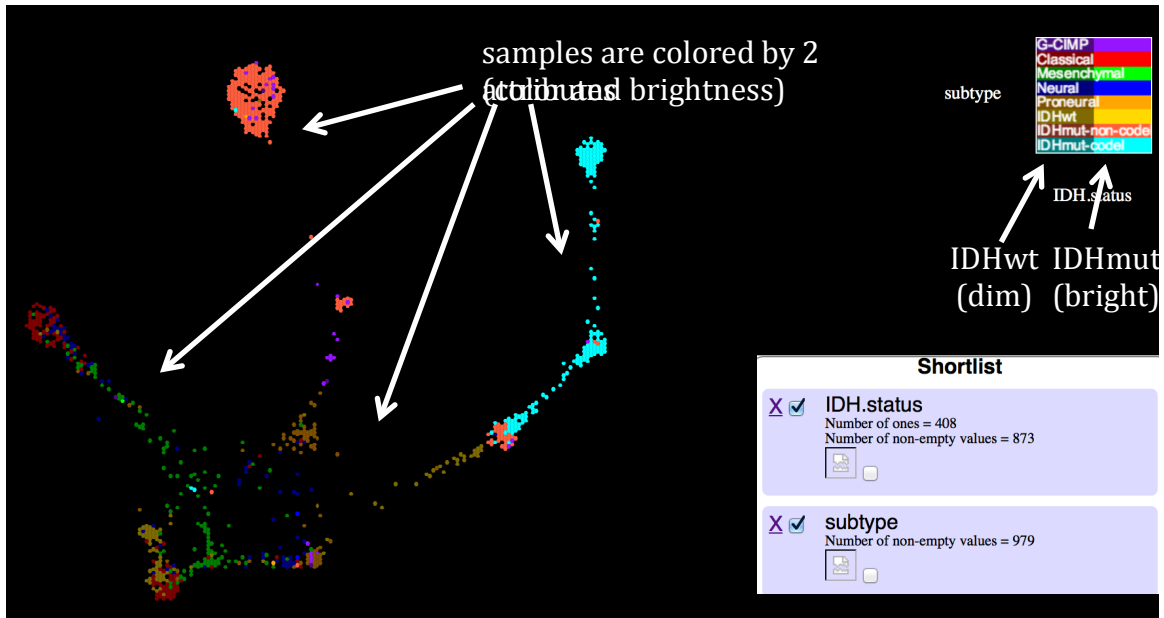
Samples in the map can be colored by annotations. This allows to visually explore what annotations and genomic events are recapitulated by the groupings of samples. To select an attribute, click on *Select Attribute* drop down list and type in just a few letters that the annotation name will contain anywhere in it. The drop down list will automatically filter to display only those annotations that have the specified string in the name. This search is not case sensitive. For example, to select "IDH.status" annotation one can type in "idh" in the *Select Attribute* drop down. Once the annotation is selected, it will appear in the *Shortlist* on the upper right of the map. While the *Select Attribute* drop down contains all the attributes and annotations available for the map, the *Shortlist* contains only those attributes and annotations that have already been selected. To remove the attribute from the *Shortlist* one simply needs to click on the X next to the attribute.



Once the attribute of interest is selected, the samples in the map color by that annotation.



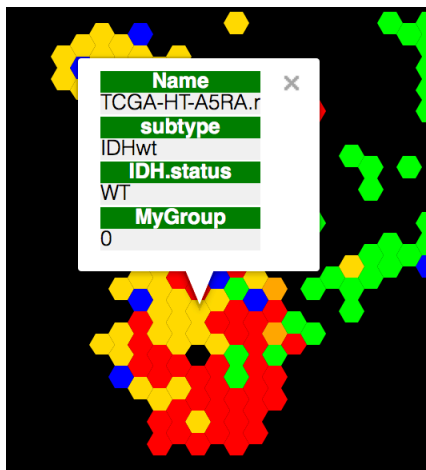
It is also possible to color samples by two annotations at the same time. In such a case, the first annotation provides the colors for the samples and the second annotation provides the brightness contrasts.



No more than two attribute can be selected to annotate the samples at a time. First, uncheck the attribute you no longer wish to view in the *Shortlist* and then select the new attribute of interest.

### View Individual Sample Details

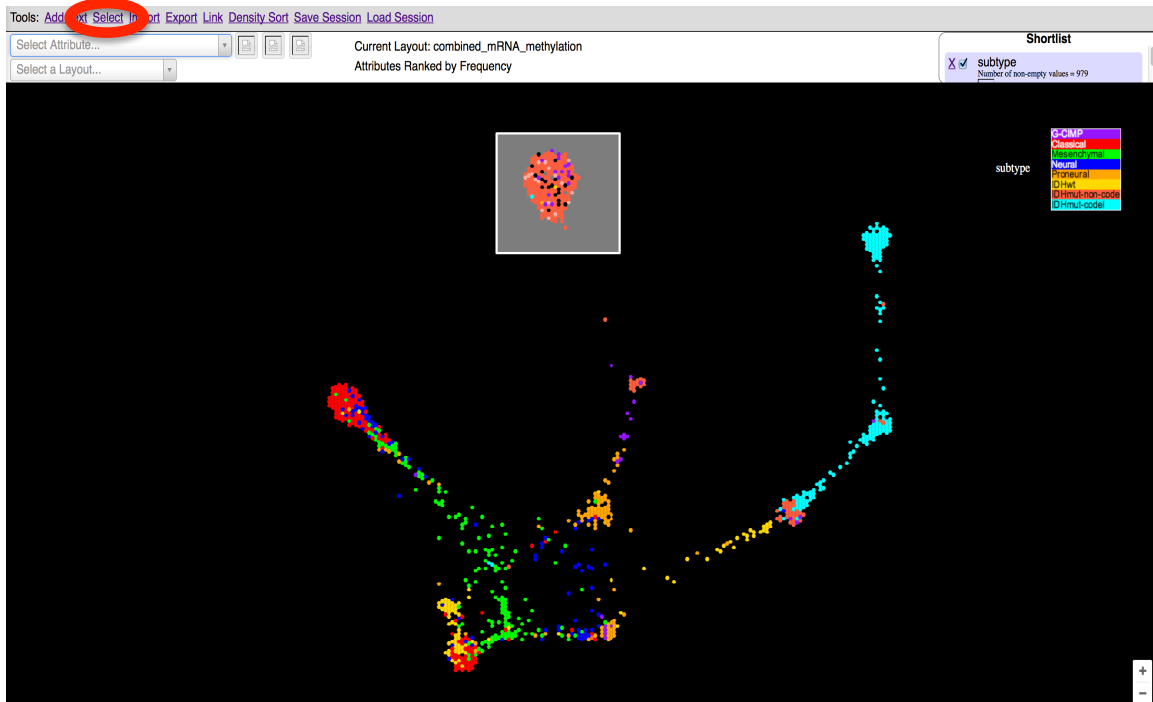
In order to view information about the specific samples in the map, just click on the sample. It may be required to zoom in for the samples to be big enough to click on the sample of interest.



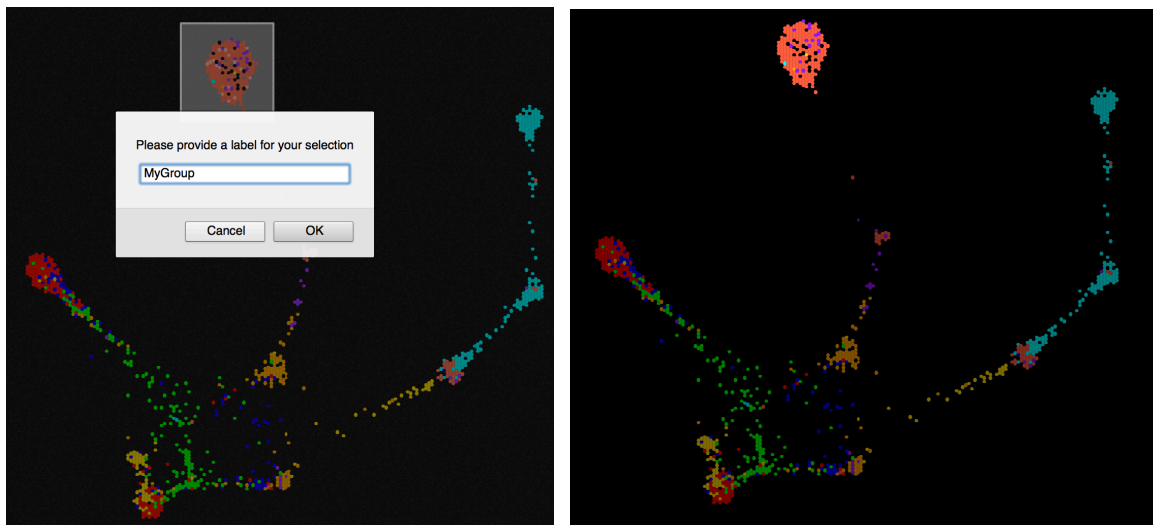
### Select Sample Subsets

Sometimes it may be necessary to extract sample IDs for a group of samples in the map in order to do additional analysis outside of the map or to record group memberships. To select a group of samples of interest, click on *Select* in the toolbar,

click in the upper left corner of the region of interest and let go of the mouse, then move the mouse over to the lower right corner of the region of interest and click. The selection region is a rectangle with a diagonal going from the first mouse click to the second mouse click.



A popup box will appear. Specify the name of your group for the map to use. The newly created group will appear with the specified name in the *Shortlist*.



## Download Sample IDs

In order to download sample IDs for a custom subgroup, click on Export in the toolbar. A popup screen will appear. Select the group of interest in the *Select a selection to export* drop down.

