

# PedcBioPortal

## Cancer Visualization & Analytics Application for

Research | Translational Science | Clinical Decisions

Adam Resnick on behalf of PedcBioPortal Team

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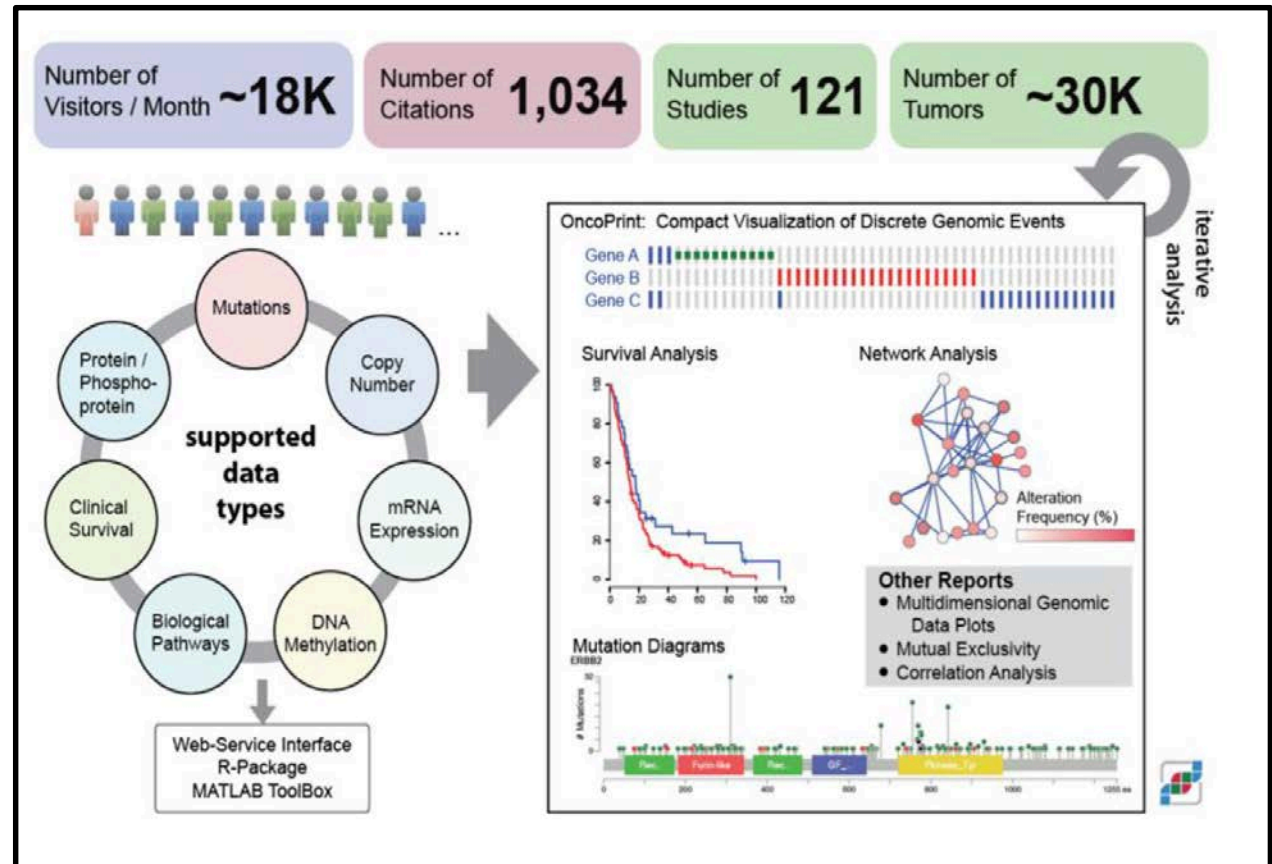


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**D<sup>3</sup>b** Center for Data-Driven  
Discovery in Biomedicine

# History & Overview

- Original cBioPortal developed at MSKCC for **TCGA data** and other large-scale cancer profiling efforts
- Lowers barrier to access and visualize complex genomic data for research
- cBioPortal Development now shared across 5 teams : **DFCI, MSKCC, Princess Margaret, and CHOP, the Hyve**
- **PedcBioPortal** : CHOP Implementation has a focus on Pediatric cancer data sets



PedcBioPortal has a number of visualizations based on one of three entry points

## Study View

Display of frequent / recurrent mutations or lesions within a study

When creating virtual cohorts of molecular subtypes will be able to quickly identify “potential” drivers

## Patient View

Get an overview of all of a patients genetic lesions, connections to Path Reports, clinical trials, drugs, etc..

Has COSMIC data as well as internal statistics to aid in determining if a mutation is likely causal

## Gene View

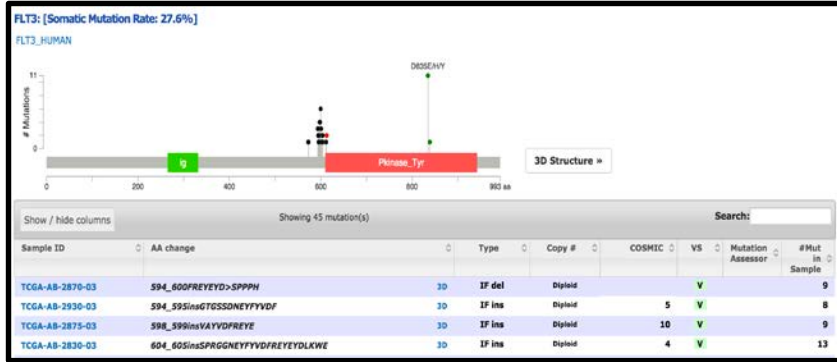
Look at gene data (mutation / expression etc..) across or within study

Correlate genes to other genes within a study or compare to normal tissue expression

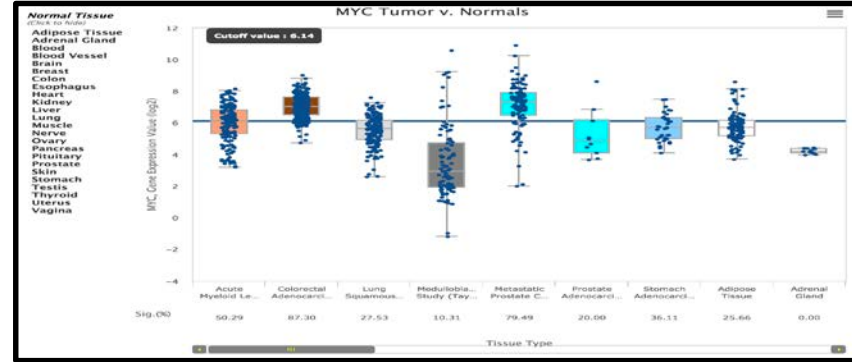
Can be used to identify targets for immunotherapy

# Visualizations & Analytics

Lollipop View



Tumor vs Normal



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CLINICAL HISTORY
year old woman with right temporal ring enhancing lesion.

OPERATIVE FINDINGS
and Gross
Operation/Specimen: A: Brain, biopsy right temporal
B: Brain, resection

PATHOLOGICAL DIAGNOSIS
Brain, right temporal, coronal biopsy: "Medulloblastoma," WHO grade 4.
Dissection index: 14.
See comment.

COMMENT
This A is a portion of brain containing a malignant neoplastic proliferation
of neurocytic cells with moderate anaplasia, hyperchromatic nuclei, proliferation
and moderate areas of necrosis, 10 x 4 x 2 cm. This B is normal
brain containing a DM which is usually in the white matter, and has unusual
nuclei and focal cortical calcification.

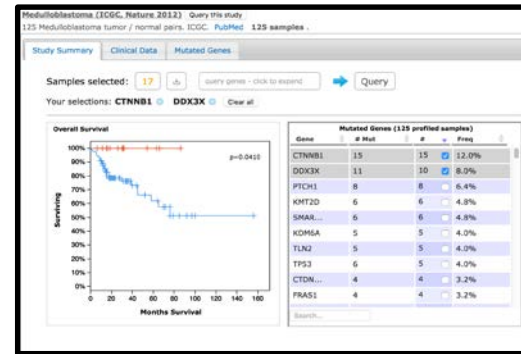
***Electronically signed out***

DIAGNOSTIC CONSIDERATION
Brain, biopsy right temporal: High grade glioma

GROSS DESCRIPTION
A: Received fresh, several fragments, 1.2 cm. In aggregate, soft,
tan-brown. In total, A1 and A2.

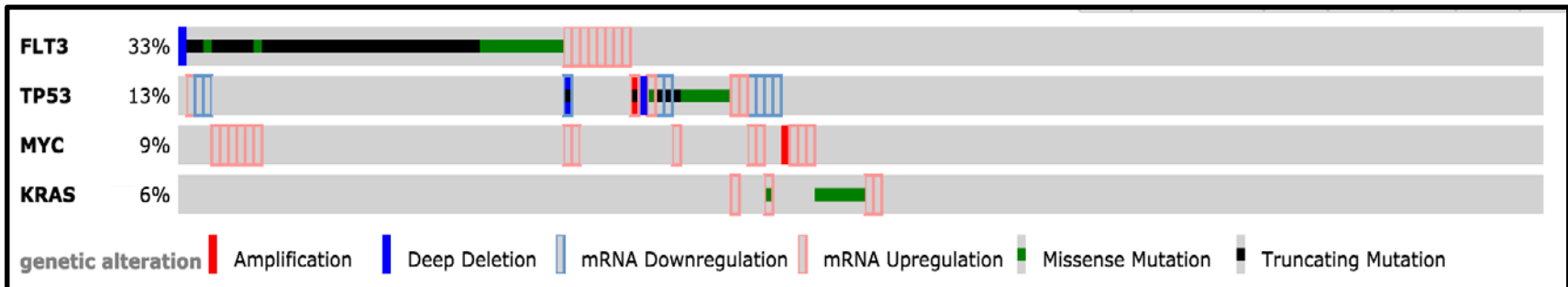
DISCUSSION
Right temporal paramedian.
FINDINGS: Pilocytic.
COMMENT: A segment of both paramedian 1 x 3 x 1.8 cm. (See other right surface
    
```

Pathology Report



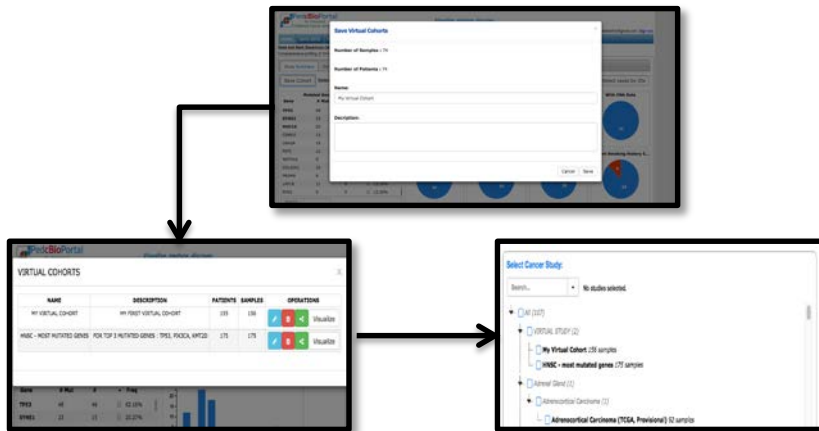
Survival Analysis

Oncoprints



# Current Developments & Connectivity

## Virtual Cohort Creation



**Synthetic or virtual cohorts can serve to bridge together data from different studies to focus on subsets of patients or samples. Examples include**

- Patients with rare cancers & diseases
- Patients belonging to specific population or demographic
- Cases originating from a particular locale

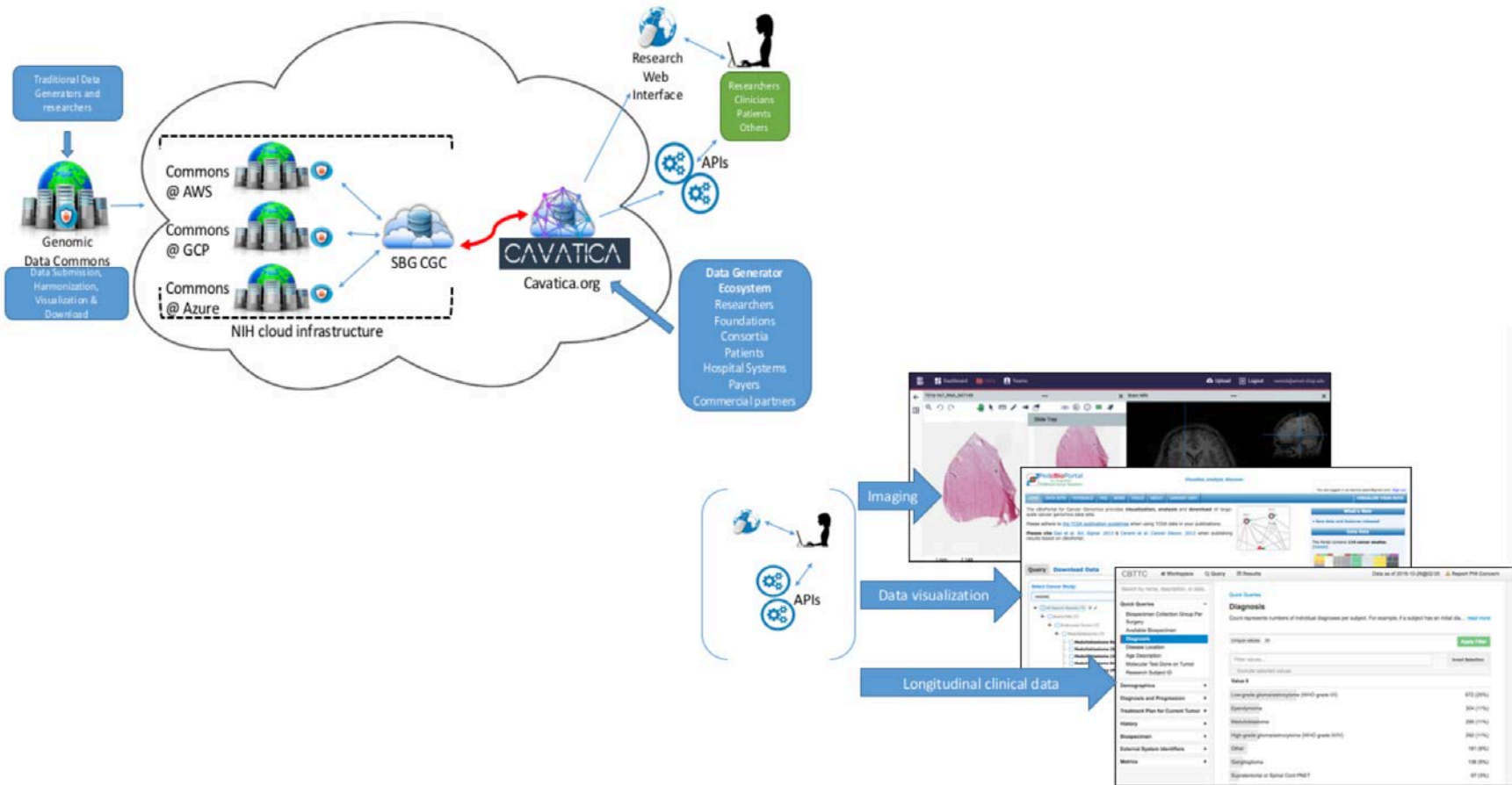
## Biorepository Integration



**Users can move seamlessly between visualization on the portal and samples in the biorepository applications**

**Connecting to other applications on the cloud currently**

# The larger data ecosystem



# Acknowledgements

## cBioPortal Consortium

- MSKCC
- DFCI
- Princess Margeret
- The Hyve

## CHOP PedcBioPortal+ Team

- Karthik Kalletla
- Anna Lu
- Kaitlyn Money
- Anthony Cros

## D3B Collaborators

- Adam Resnick
- Alex Felmeister
- Tyler Rivera
- Jena Lilly
- Angela Waanders

## CHOP/DBHi Collaborators

- Deanne Taylor
- Asif Chinwalla
- Will Struebing
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