
ADEM ALBAYRAK & MIKE TUNG

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Required Skills:

Understanding of cancer, genomics, databases, and APIs.

Preferred Team Communications:

Anticipate two hours per week by online audio/video conference, but flexible.

Data Sources:

DFCI will provide source data schema. Students may utilize TCGA or DFCI can provide test data.

Other Items:

Project has timezone flexibility. Mentors and students will determine a good time for virtual meeting

CANCER GENOMICS DATA AND VISUALIZATION ON FHIR

Cancer genomics data is complex and has relationships that differ significantly from traditional, germline data. This is due to several factors, including the fact that a patient can have multiple tumors, each with their own genomic profile; a tumor can evolve over time, leading to the need to maintain the concept of multiple tests for a given tumor; a tumor can have sub-clonal, heterogeneous populations of cells in which the genotype of some portion of a patient's cells could differ from another portion at the same locus; knowledge about mutations (phenotypes) are often within the context of a disease type; etc. With the desire to build interoperable applications that fit both clinical and research needs, it's critical that we utilize APIs and data standards that enable efficiency in informatics.

PROJECT OBJECTIVES

Map cancer genomic data to FHIR, and build a visualization dashboard that sits on top of the data.

SUCCESSFUL PROJECT

Build a tool that will map data from DFCI's cancer genomics schema to the FHIR schema. Students will need to be able to represent the concept of a patient, a biopsy, a genomic test, genomic results, and annotations of genomic results. A dashboard to visualize the data will serve as a proof of concept that the database has been accurately populated with sample patient data.