**CCDI Federation open API v1.0.0 Query Functionality**

**Subjects**

* Retrieve All Subjects:
  + Easily access a comprehensive list of subjects within the CCDI federated ecosystem.
  + **Filtering**: Refine your search by sex, race, ethnicity, identifiers, vital status, age at vital status, and unharmonized metadata fields.
* Retrieve Specific Subject by ID:
  + Quickly fetch detailed information about a specific subject using its unique ID (organization, namespace, and name).
* Group Subjects and Get Counts:
  + Organize subjects by any metadata field and receive aggregated counts for better insights.
  + Example Fields: Sex, race, ethnicity, identifiers, vital status, age at vital status
* Summary Information for Subjects:
  + Obtain summary statistics and high-level information for all subjects in the system.

**Samples**

* Retrieve All Samples:
  + Access an extensive list of samples within the CCDI federated ecosystem.
  + **Filtering**: Narrow down results by disease phase, library strategy, preservation method, tissue type, tumor classification, age at diagnosis, age at collection, tumor tissue morphology, depositions, and unharmonized metadata fields.
* Retrieve Specific Sample by Name:
  + Fetch detailed information about a specific sample using its unique name (organization, namespace, and name).
* Group Samples and Get Counts:
  + Organize samples by any metadata field and receive aggregated counts for better insights.
  + **Example Fields**: Disease phase, library strategy, preservation method, tissue type, tumor classification, age at diagnosis, age at collection, tumor tissue morphology, depositions
* Summary Information for Samples:
  + Get summary statistics and high-level information for all samples in the system.

**Files**

* Retrieve All Files:
  + Access a comprehensive list of files within the CCDI federated ecosystem.
  + Refine your search by file type, size, checksums, description, depositions, and unharmonized metadata fields.
  + Manage large datasets with pagination options.
* Retrieve Specific File by Name:
  + Quickly fetch detailed information about a specific file using its unique name (organization, namespace, and name).
* Group Files and Get Counts:
  + Organize files by any metadata field and receive aggregated counts for better insights.
  + Example Fields: Type, size, checksums, description, depositions.
* Summary Information for Files:
  + Obtain summary statistics and high-level information for all files in the system.
* Retrieve Metadata Fields for Subjects:
  + Access detailed metadata fields supported for subjects.
  + Fields Include: Name, race, sex, vital status, age at vital status, identifiers, ethnicity
* Retrieve Metadata Fields for Samples:
  + Access detailed metadata fields supported for samples.
  + Fields Include: Disease phase, library strategy, tumor classification, tumor tissue morphology, preservation method, tissue type, age at collection, age at diagnosis, depositions.
* Retrieve Metadata Fields for Files:
  + Access detailed metadata fields supported for files.
  + Fields Include: Description, name, size, type, MD5 checksum, depositions.
* Retrieve All Namespaces:
  + View all namespaces within the server for better data organization.
* Retrieve Specific Namespace by Name:
  + Fetch detailed information about a specific namespace using its unique name (organization and namespace).
* Retrieve All Organizations:
  + Access a complete list of organizations within the server for comprehensive data management.
* Retrieve Specific Organization by Name:
  + Quickly fetch detailed information about a specific organization using its unique name.
* API Implementation Information:
  + Get detailed information about the API implementation for better integration and usage.

Limitations

Read-only Operations: The API supports read-only operations, meaning users can only perform GET requests. Resource creation, updates, or deletions are not supported.

Handling Incomplete Data: The API requires careful handling and interpretation of incomplete data and null values. Null values indicate a lack of assertion, and should not be confused with explicit values like "Unknown" or "Not Reported."

Filtering Logic: While filtering capabilities are extensive, logical OR operations across multiple fields are not supported directly. Users need to perform multiple queries and combine the results externally.

Security Requirements: All interactions with the API must be over HTTPS, using certificates from recognized authorities. Self-signed certificates are not permitted.

Access Control: The API utilizes different access levels (open, registered, controlled, closed) requiring appropriate authentication and authorization mechanisms, which can add complexity for accessing restricted data.