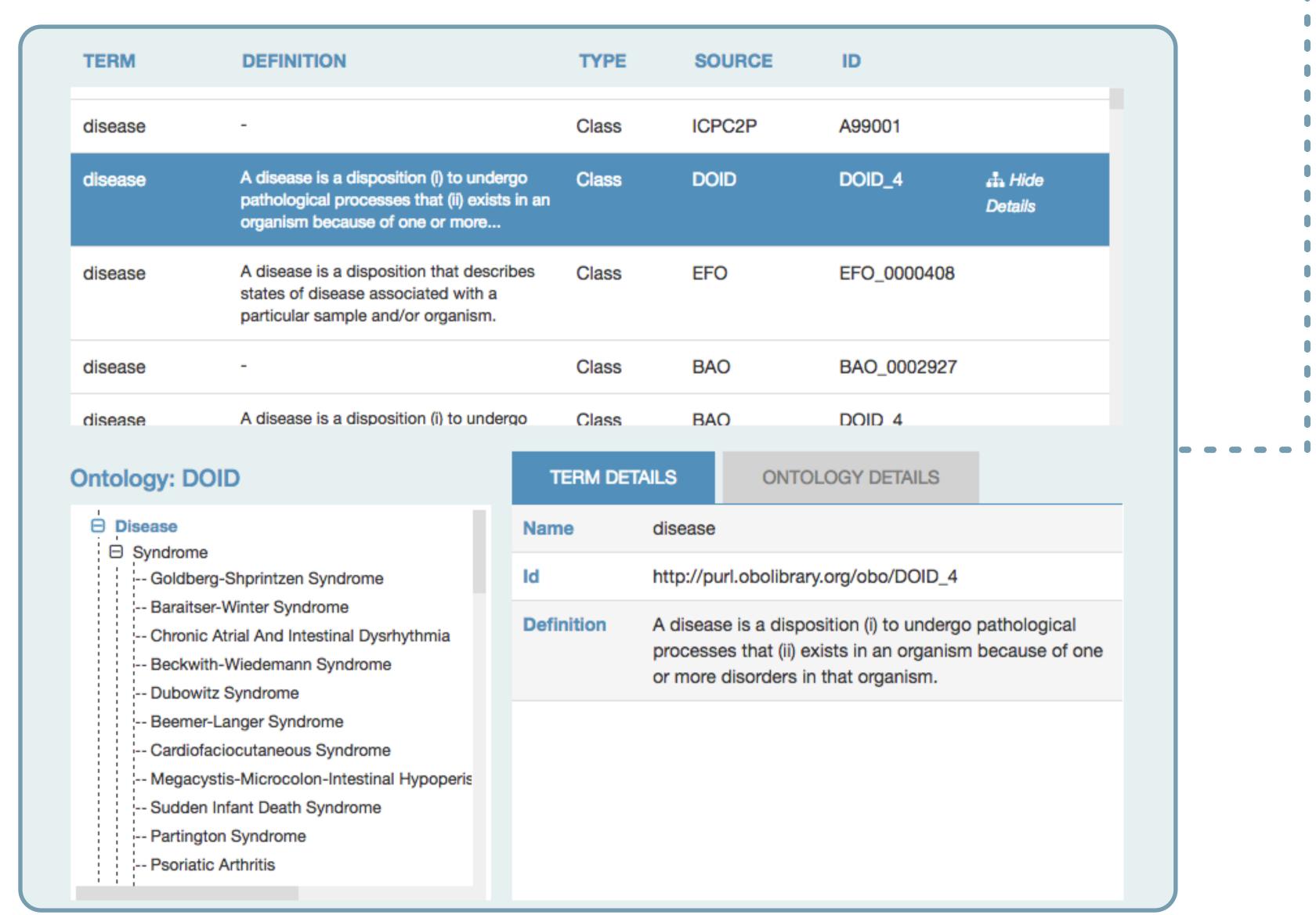# Increasing NCBO BioPortal and CEDAR Synergy for BD2K

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CEDAR CENTER for EXPANDED DATA ANNOTATION AND RETRIEVAL

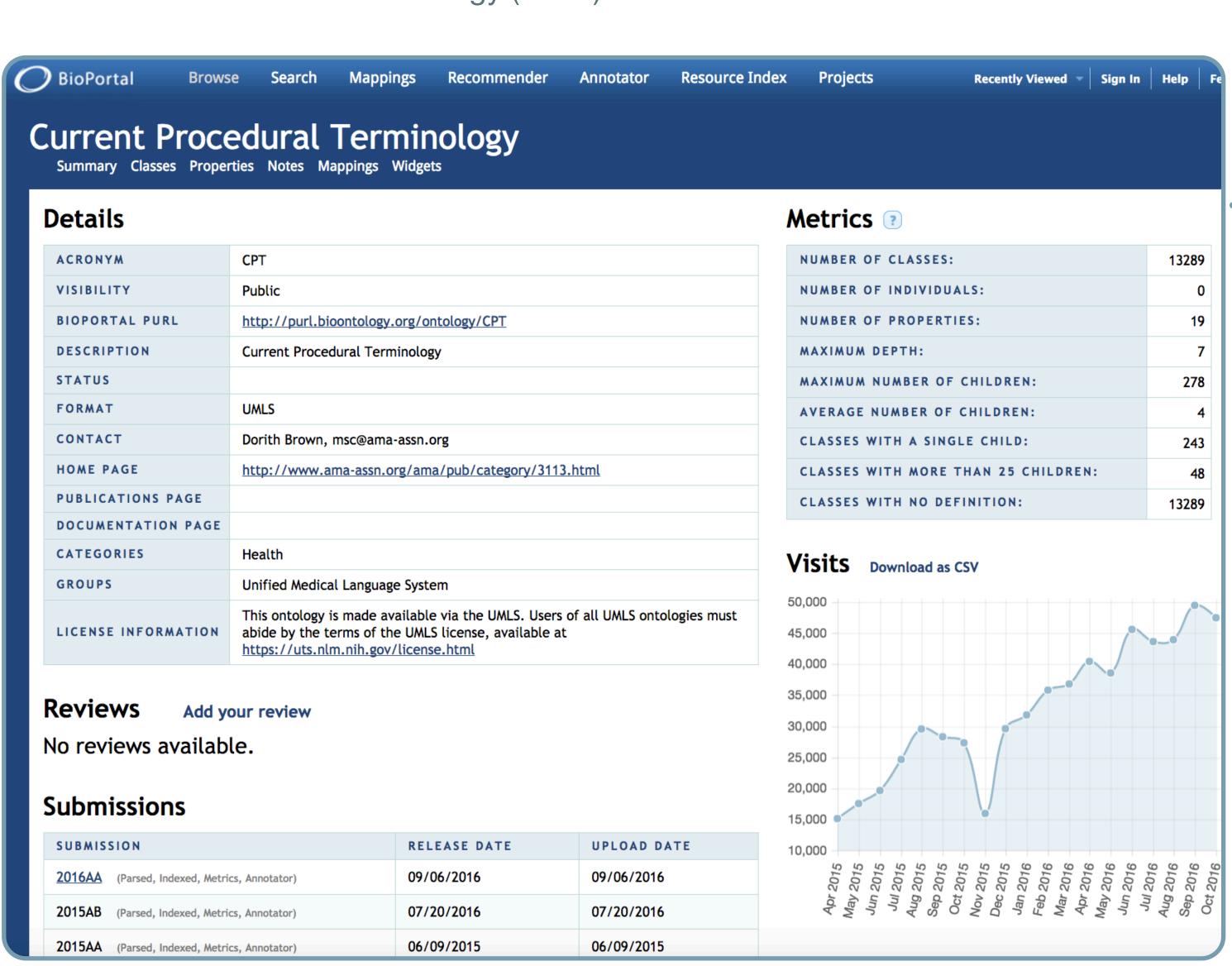NIH Big Data to Knowledge(BD2K)

We are developing enhancements to maximize BioPortal's value to CEDAR, and advance BioPortal's integration with other BD2K programs and services

The NCBO BioPortal provides Web services for **over 500 biomedical ontologies**, serving as the definitive international repository of biomedical ontologies and terminologies to investigators whose work depends on reusable, computer-based representations of biomedical knowledge
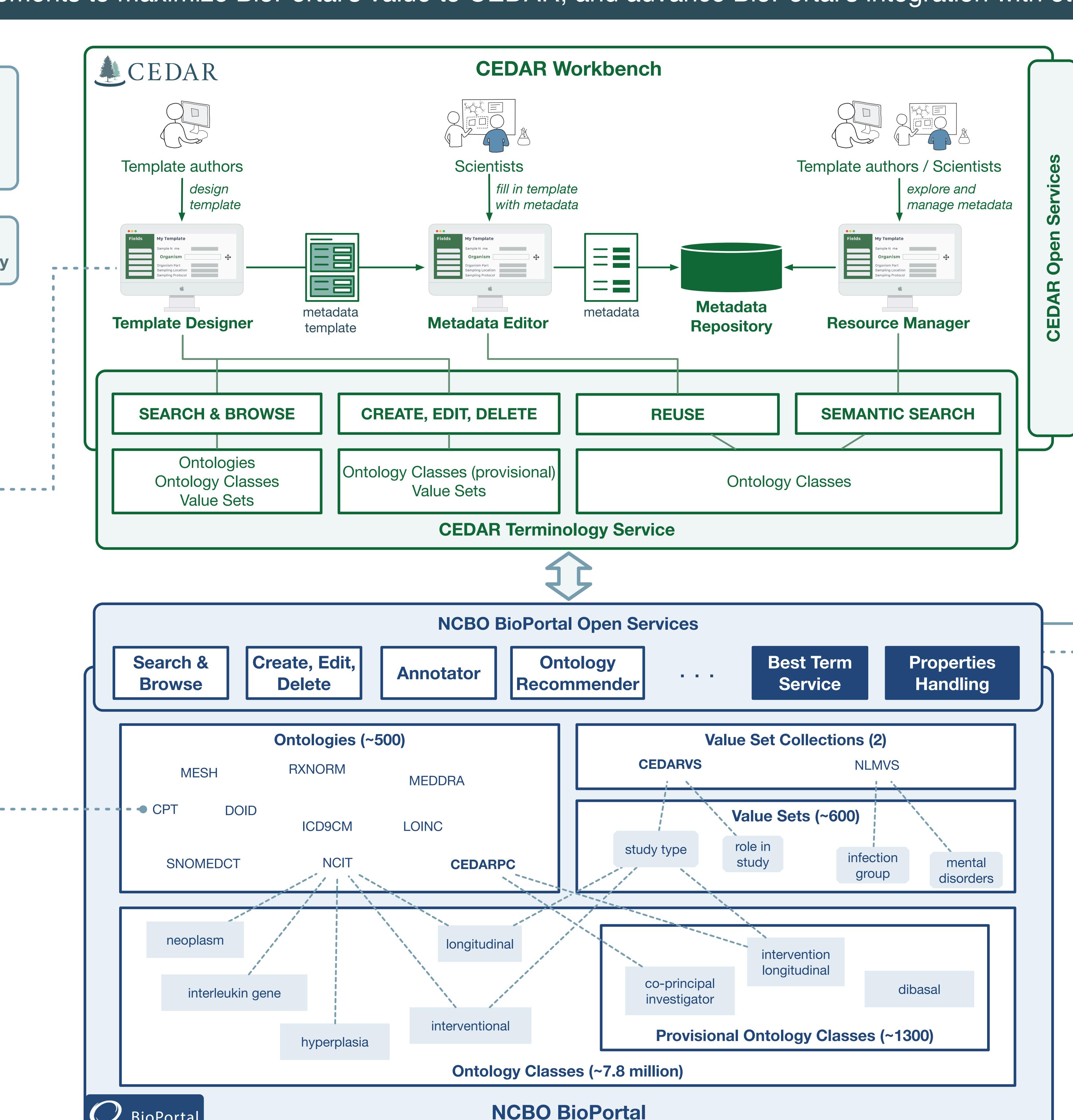
BioPortal provides **core services for many CEDAR metadata activities**, and also **heavily serves the wider BD2K community**

CEDAR's Template Designer allows users to search for BioPortal terms to annotate their experimental metadata. This screenshot shows details of the term 'disease', from the Human Disease Ontology (DOID)

BioPortal page for the Current Procedural Terminology (CPT)

CEDAR Workbench

Template authors — *design template* — **Template Designer** — metadata template — Scientists — *fill in template with metadata* — **Metadata Editor** — metadata — **Metadata Repository** — Template authors / Scientists — *explore and manage metadata* — **Resource Manager**

CEDAR Open Services

SEARCH & BROWSE	CREATE, EDIT, DELETE	REUSE	SEMANTIC SEARCH
Ontologies Ontology Classes Value Sets	Ontology Classes (provisional) Value Sets	Ontology Classes	

CEDAR Terminology Service

NCBO BioPortal Open Services

| Search & Browse | Create, Edit, Delete | Annotator | Ontology Recommender | . . . | Best Term Service | Properties Handling |

Ontologies (~500)
MESH, RXNORM, MEDDRA, CPT, DOID, ICD9CM, LOINC, SNOMEDCT, NCIT, CEDARPC

Value Set Collections (2)
CEDARVS, NLMVS

Value Sets (~600)
study type, role in study, infection group, mental disorders

Provisional Ontology Classes (~1300)
neoplasm, interleukin gene, hyperplasia, longitudinal, interventional, co-principal investigator, intervention longitudinal, dibasal

Ontology Classes (~7.8 million)

NCBO BioPortal

The BD2K CEDAR-BioPortal supplement will allow us to initialize the last two of the NCBO BioPortal Open Services (i.e., Best Term Service and Properties Handling Service). We hope to obtain additional funding to enhance both of these services

BD2K Community

The enhancements that we have planned will be of great benefit to the entire BD2K community, which includes many centers, grantees, and trainees who routinely rely on BioPortal services in their work

Best-term service. It will suggest the best terms to match a user's need. Our approach will take into account contextual factors that make terms most appropriate

Advanced handling of ontology properties. Formal representation of CEDAR metadata templates and their components demands a service able to manage not only ontology terms (for example, Person), but also their corresponding properties (for example, hasName). However, current BioPortal support for ontology properties is limited. We are extending the BioPortal API to support improved handling and retrieval of ontology properties

NCBO API Usage

NCBO Website Traffic