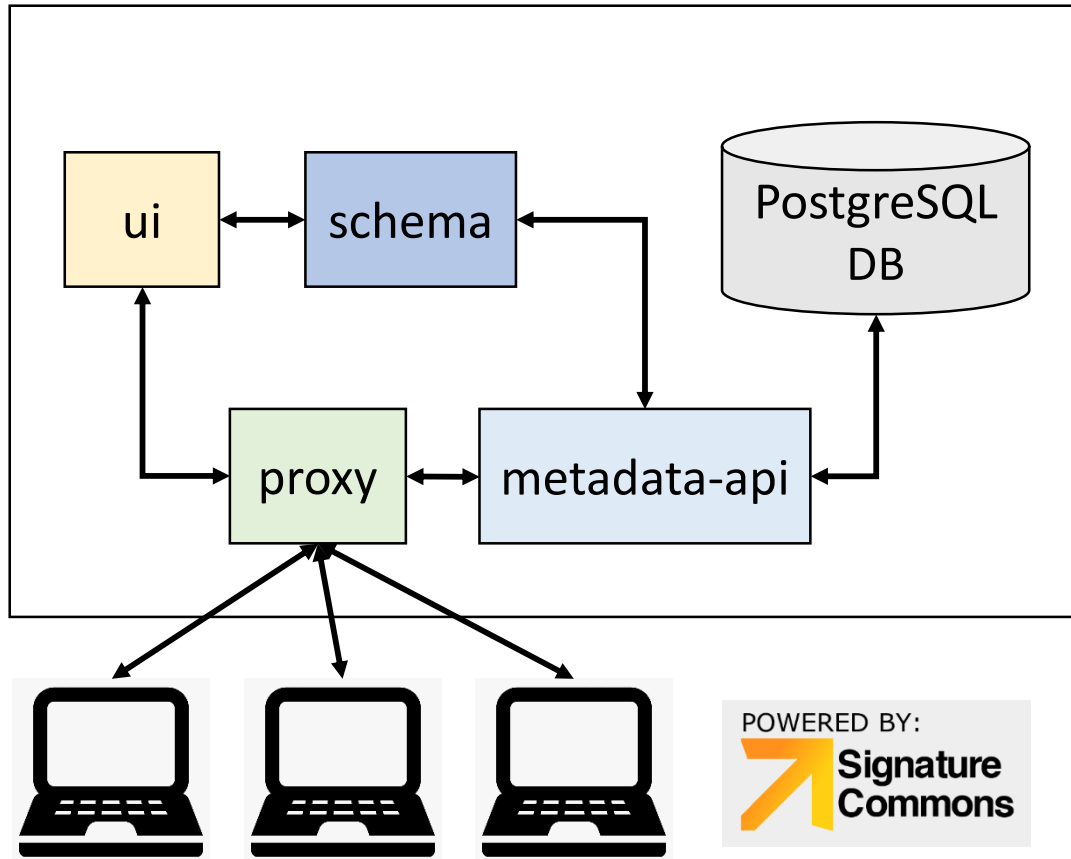# Intelligent Integrative Platform for Sharing Heterogenuous Stem Cell Research Data

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ReMeDy architecture

- ReMeDy is an implementation of Signature Commons, a BD2K-LINCS platform implemented through Docker and designed to store and search diverse metadata in an agile and flexible manner.

- ReMeDy is composed of six packages: proxy, ui, schema, metadata-api, controller, data-api

- The ReMeDy platform uses a relational database for data storage. The leveraged data technology alongside a properly implemented schema for data storage provides strong data conformity to the FAIR guidelines (Findable, Accessible, Interoperable, and Reusable).

ReMeDy data organization

Resource:
- Master container for each published stem cell project
- Contains libraries

Library:
- Container for project CDEs, e.g. Project, Manufacturing / Production, Outcomes Modules
- Contains signatures

Signature:
- Represents individual/ grouped Research System data
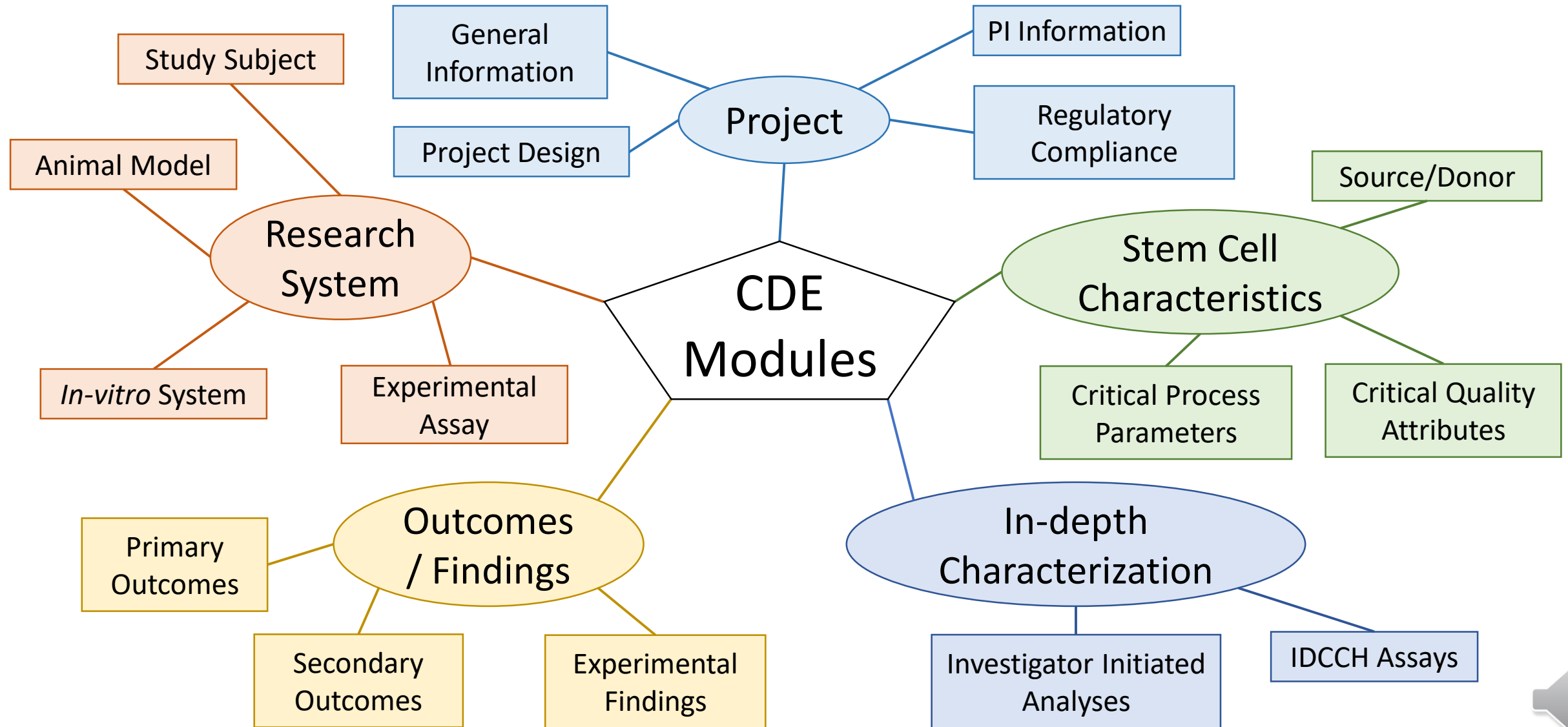- Contains information for patients, animal models, and in-vitro cell lines

Validator:
- Quality control file
- Used to verify formatting and requirements of JSON files, prior to ingestion
- Allows for integration of ontology information
- Applicable to resources, libraries and signatures

Schema:
- Visualization control file
- Defines how the data is presented in the search results
- Applicable to resources, libraries and signatures

Multi-modular CDE Framework

ReMeDy functionality

ReMeDy functionality

The individual project links provide access to all CDE content from each iPSC and CSC project in ReMeDy.

ReMeDy functionality

The customized counting schemas allow users access to quick CDE statistics and easy search refinement.

ReMeDy feasibility testing

- To test the feasibility of the ReMeDy platform to successfully store data from stem cell projects, we abstracted CDEs fro 103 published clinical, pre-clinical, and in vitro induced pluripotent stem cell (iPSC) (51) and cancer stem cell (CSC) (52) studies.

- The studies selection was randomized across PubMed indexed research, with the aim of obtaining a diverse set of research across time, research location, and research type.

- Abstraction was performed by trained personnel with experience in stem cell research.

- A total of 103 iPSC resources were created, along with 170 research subject records.

- On average, 76 CDEs per iPSC study were abstracted out of a total of 841 CDEs in the multi-modular framework.

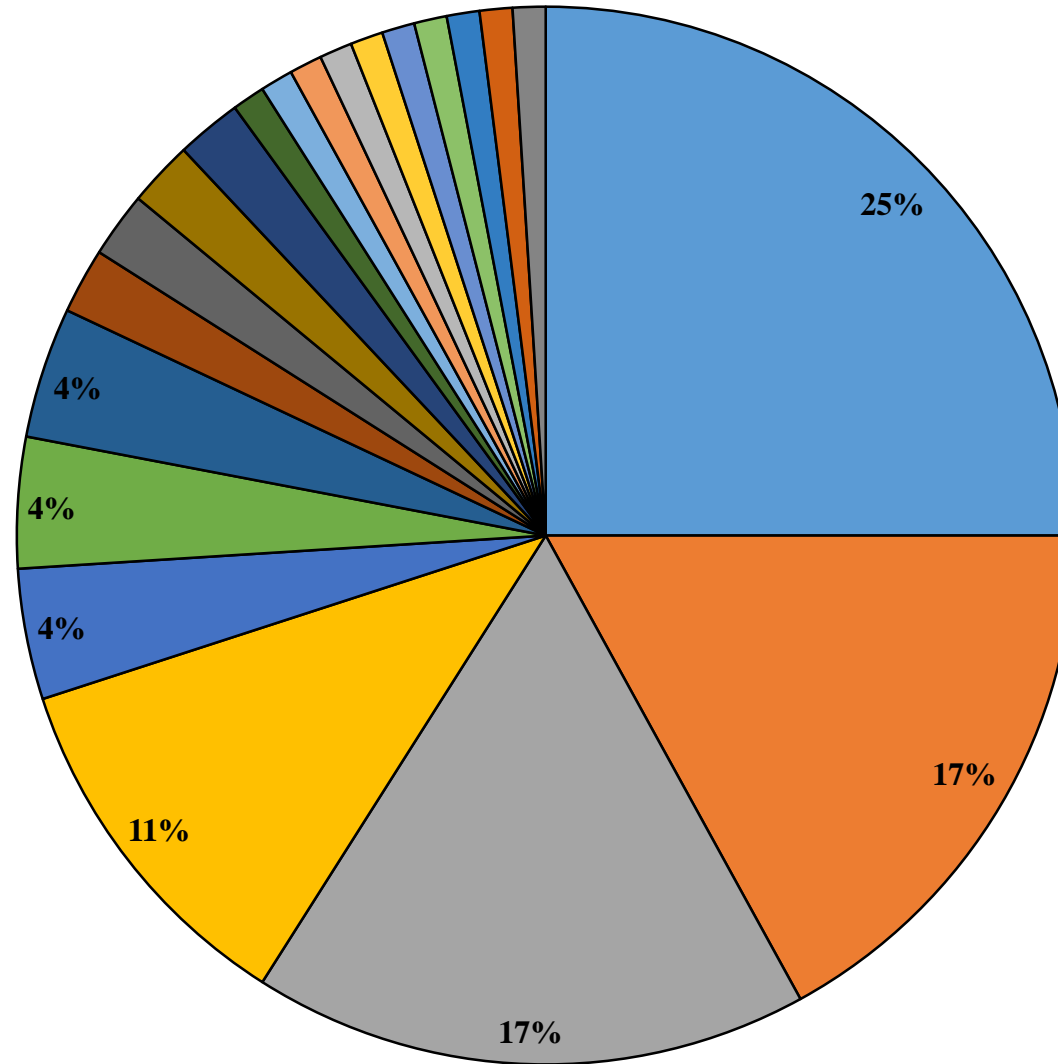Distribution of stem cell projects in ReMeDy by project type

- Clinical Trial
- Preclinaical Trials
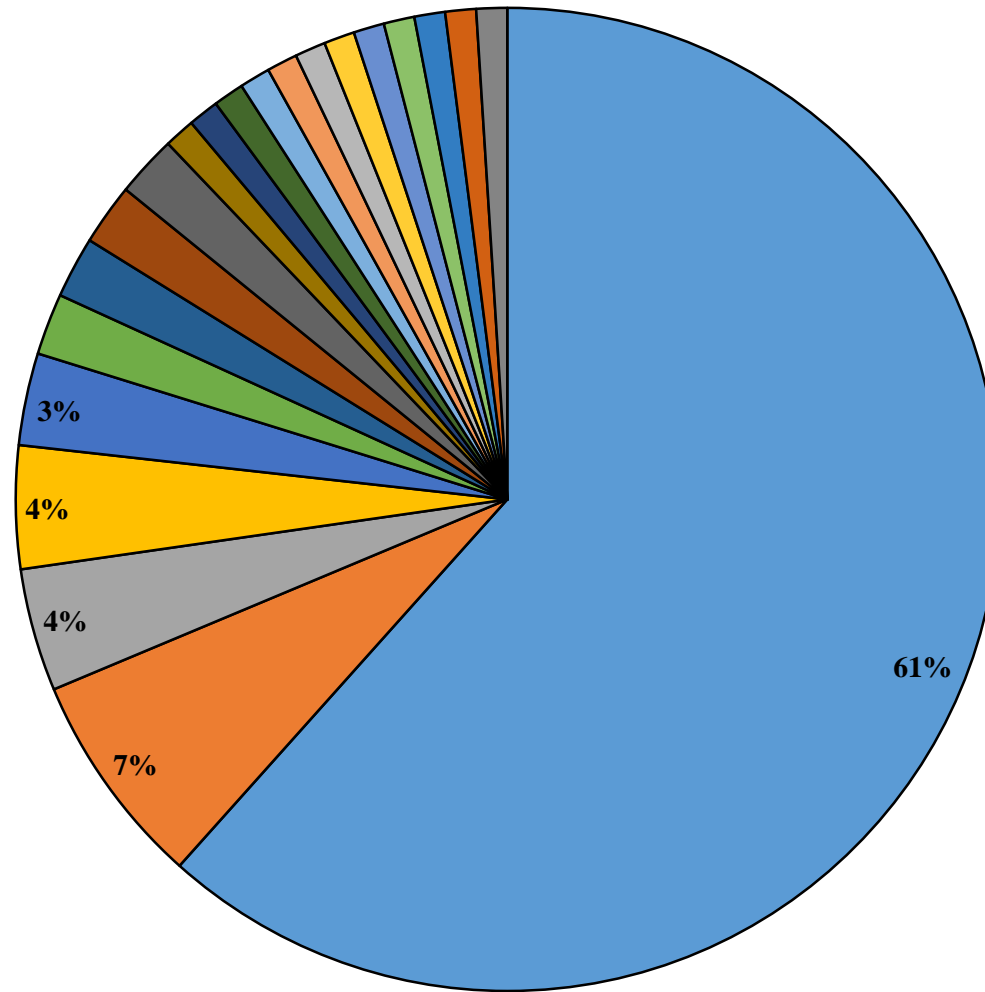- In Vitro

25%

42%

33%
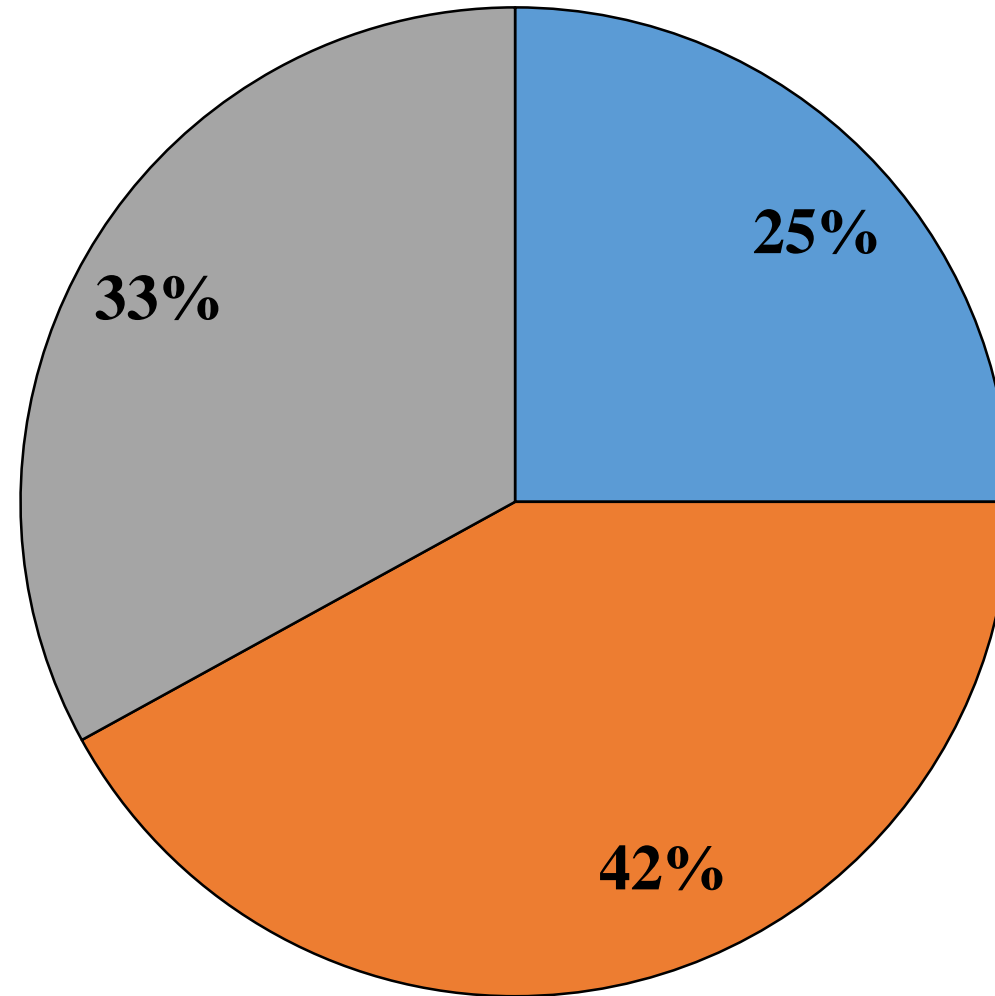
Geographical distribution of stem cell projects in ReMeDy

- USA
- China
- Japan
- Italy
- UK
- Germany
- South Korea
- France
- Spain
- Switzeland

Distribution of stem cell projects in ReMeDy by primary disease

Legend:
- Cancer
- Myocardial Infarction
- Sclerosis
- Spinal Cord Injury
- Macular Degeneration
- Graft-vs-Host Disease
- Anemia
- Stroke
- Lung Disease

Thank you for
your attention

https://remedy.mssm.edu/