OpenSpecimen

A Highly Configurable Biobanking LIMS

OpenSpecimen helps you collect high-quality biospecimen data and track biospecimens from *"collection to utilization"*.

Highly Configurable:

- Define Study Calendar
- Configure Screens and Workflows
- Custom Forms and Fields
- Custom Reports
- Multi-biobank support

Managing Millions of Specimens Across Thousands of Studies in

90+
Customers

20+
Countries

World's Leading Medical Centers Trust OpenSpecimen

University of Southern California
Weill Cornell Medicine
Emory University
Amsterdam UMC
UT Southwestern Medical Center
University of Oxford
Johns Hopkins University
University of Pittsburgh
Columbia University Medical Center
The University of Utah
Singapore General Hospital SingHealth
National Eye Institute National Institutes of Health
Indiana University School of Medicine
The University of Melbourne
The University of Adelaide
UNSW Sydney
The University of British Columbia
University of San Francisco
Georgetown University

Testimonials

Our customers talk highly about us. We will happily provide you with ***references*** to speak directly with them about their experiences with OpenSpecimen.

JOHN MILLER,
OXFORD BIOBANK (U.K.)

OpenSpecimen is a cost-effective solution for us. We were previously locked into proprietary software. With extremely large upgrade costs which we were not able to meet. This is no longer the case with the increasing use of open-source software solutions."

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

We considered OpenSpecimen to be the most complete solution of the six we were offered. It scored consistently highly, particularly because of its flexible configuration, with the ability to collect very varied types of information in a very user-friendly way and configurable access controls to ensure the data is protected. We also noted (although this wasn't one of our evaluation criteria) that there would be no limit on the number of users."

TARA MCSHERRY-HURST,
UNIVERSITY OF PENNSYLVANIA (USA)

The user interface is extremely intuitive and streamlined the data entry flow - so that the real time data entry is possible. We were also impressed by the querying and reporting module. We find the developers to be responsive and helpful with any issues, questions, or requests that arise."

DAVID MULVIHILL,
WASHINGTON UNIVERSITY (USA)

OpenSpecimen's flexible user interface (UI) works very well for the different biorepositories and workflows at our institution. The ability to easily configure the user interface creates streamlined 'screens' so technicians spend less time entering data."

Introduction

About Krishagni

Established in 2009, we are an India- based company exclusively working with academic medical research centers across the globe to manage their biospecimen research data.

We are focused solely on OpenSpecimen, i.e., we have no other products or business priorities. This focus enables us to make rapid progress in improving the product and provide timely support.

Evidence of our recognition as the "Go-to Biobanking LIMS" in the academic world is getting selected via a competitive RFP process in centers like:

- WEILL CORNELL MEDICAL CENTER
- OXFORD UNIVERSITY
- UMC AMSTERDAM
- UNIVERSITY OF BASEL (SWITZERLAND)

Five Reasons to Use OpenSpecimen

High Configurability:
Configure screens, data entry workflows, forms, and fields based on your needs with minimal IT support.

Collect High Quality Data
Collect forms, questionnaires, surveys, consent forms as per study or disease needs.

Reporting and Catalogs
Create custom reports to find "specimens of interest" without any IT/SQL skills.

Community Driven:
The OpenSpecimen Community meets regularly to provide product feedback, pain-points and review roadmap.

Keeping up to date:
New version every 3-4 months, based on community's needs and technology upgrades.

Features

User Management
Control user privileges at a granular level. Integrate with SAML or Active Directory.

Collection Protocols
Design study calendar and track specimen collection and lineage.

Consents
Collect consents (including eConsents) and use for validation during distribution.

Freezer Management
Create containers to track any type of freezers.

Distribution & Invoicing
Track specimen distribution to researchers and track invoicing.

Shipments
Ship and receive specimens between sites.

Custom Forms and Fields
Create custom fields and forms based on the study needs using a UI form builder.

Specimen Carts
Create carts (picklists), share with others, and perform bulk operations.

Printing
Generate unique specimen IDs and print labels. Print collection and distribution PDF manifests.

CSV Import
Import CSVs for every object to add, edit or delete data.

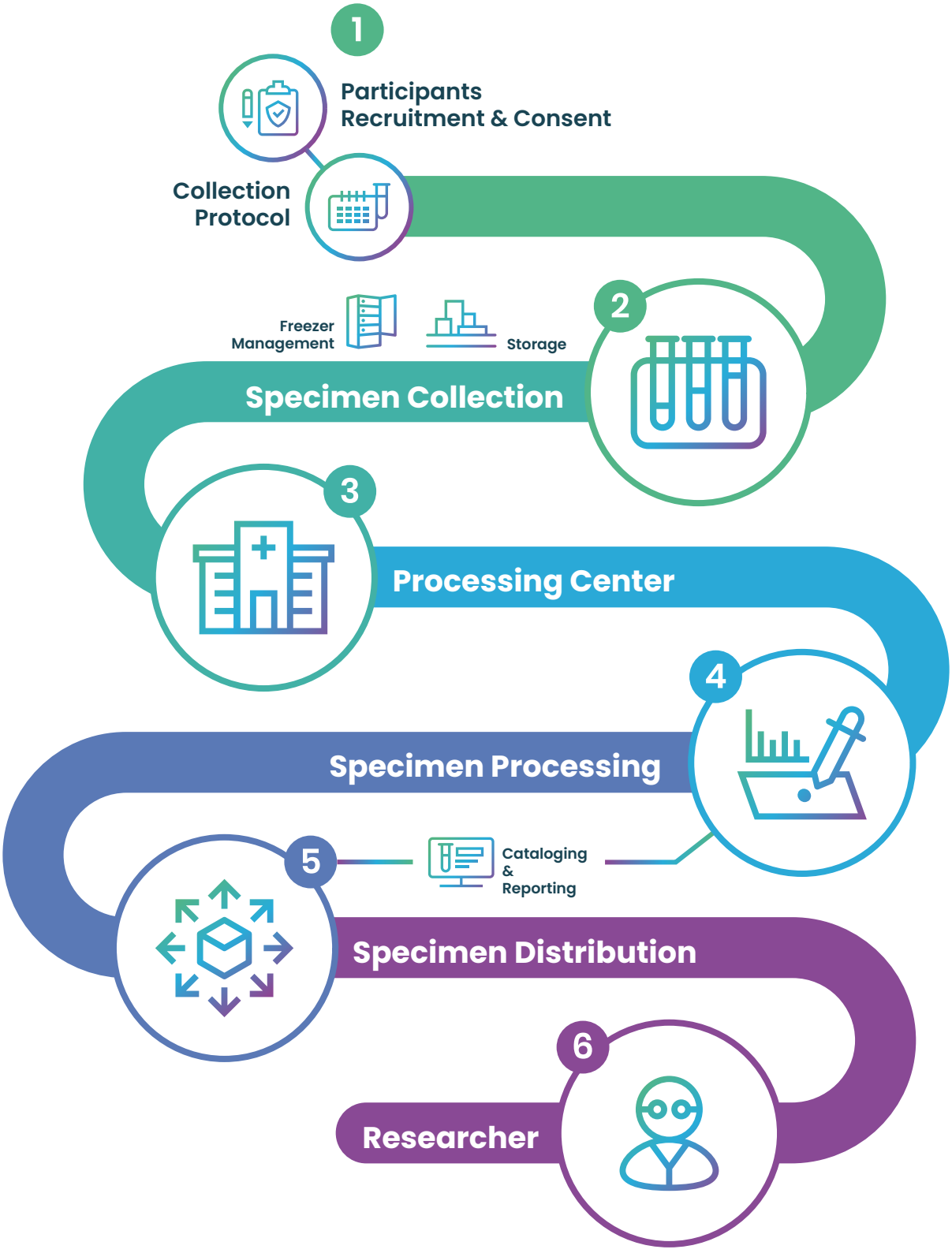
Audit & Security
Every operation is audited for regulatory compliance like CAP or ISO certification.

Catalog & Requests
Easily share biospecimen data with researchers and manage requests.

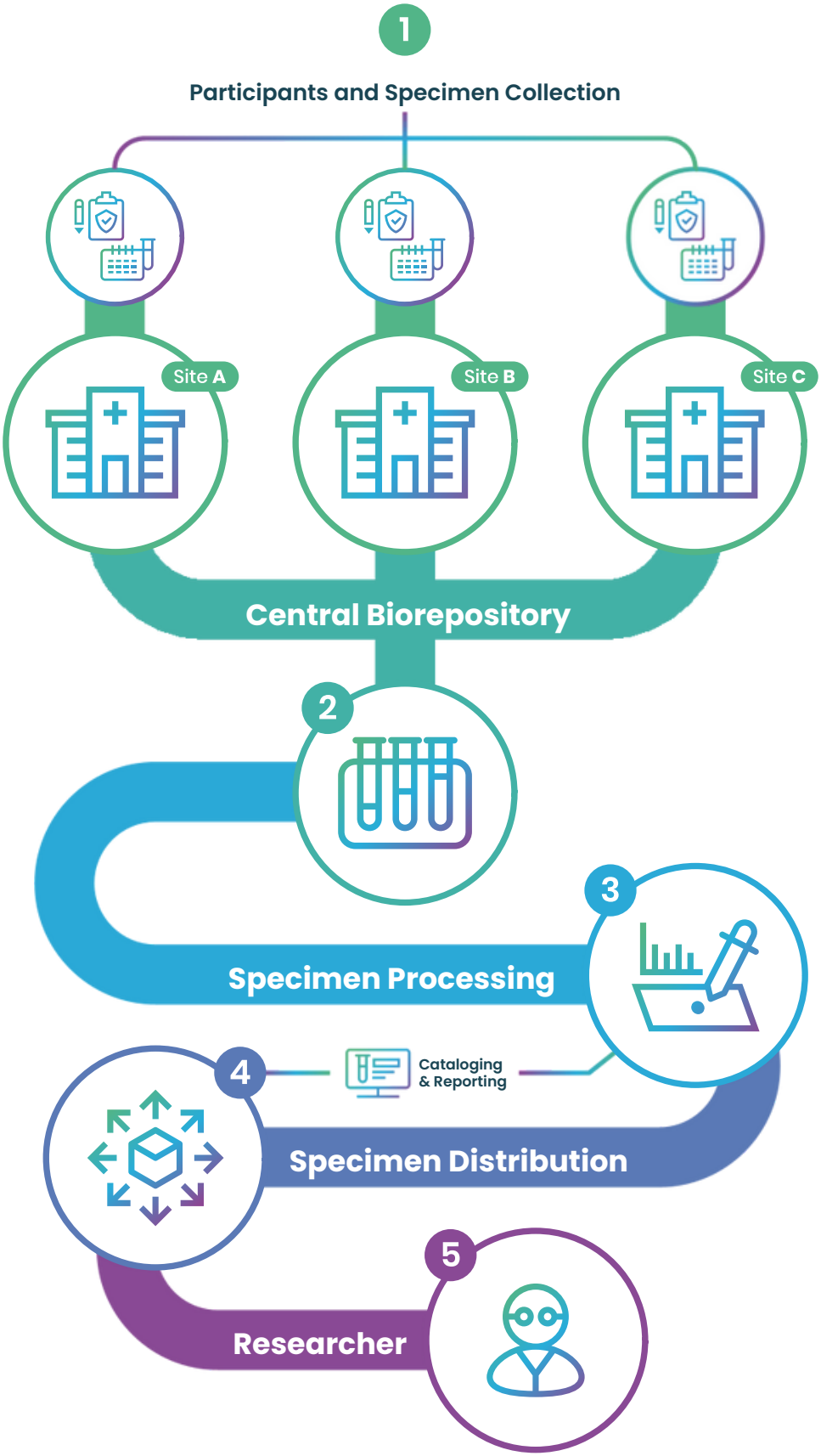
Dashboards
Create visually appealing dashboards per study or biobank.

Integration
Integrate with Epic, REDCap, Cerner, any other database or instrument using REST APIs

Typical Specimen Collection Workflow



Multi-Site Specimen Collection Workflow



Users and Roles

OpenSpecimen allows controlling the user privileges at a granular level - per study or site. For example:

- John is a Biobank Technician for “Breast cancer protocol.”
- Jane is a Clinic Coordinator for “all” protocols in Dr. Jack’s lab.

Administrators can assign multiple “roles” to a user and customize the privileges associated with these roles.

Collection Protocols (CP)

A CP is equivalent to a Study or a Project. Administrators can define the collection events, primary specimens, and processing details. There can be different types of CPs:

Type 1: Longitudinal CP - Multi or Single Sites

A longitudinal CP contains a collection calendar and specimens expected in each time-point and their processing SOP.

- Time points: Screening - Day 0, Surgery - Day 30, Pre-Operative.
- Specimen processing details: Create 10 x 1 ml Plasma or Serum from Whole Blood.

Users can also configure label formats, printing, consents, monthly reports, catalog, custom forms/fields, and questionnaires.

Article: ***Managing Longitudinal Collections In OpenSpecimen***

Type 2: Prospective Biobanking

Users can define CPs to collect data for prospective collections. For example, breast cancer biorepository or HIV biorepository. These can be participant-centric or specimen-centric collections.

Consent Management

Configure consent questions within a CP and collect responses for each participant. The consent responses can be used for reporting and validating during specimen distribution.

Article: ***Consent management for Biobanks***

Freezer Inventory Management

OpenSpecimen supports all types and sizes of freezers. Administrators can configure any type of freezers, LN2s, or other storage compartments.

Highlights:

- Predefine “container types” to create a complete hierarchy in a single click.
- Restrict containers by specimen type or study.
- Create containers in bulk.
- Transfer boxes or racks from one freezer to another.
- “Dimensionless” containers, i.e., with no predefined dimensions.
- Auto-allocate boxes to specimens during collection.

Distributing Specimens to Researchers

Track the distribution of specimens to researchers and generate invoices. Upon distribution, the location of the specimen is vacated and specimens are marked as closed.

Shipping Specimens between Sites

In the case of multi-site collections, specimens are collected in one site and shipped to another place for processing and storage. These specimens are then shipped back and forth from the storage locations to the biobanks. The Shipments module supports tracking specimens from one place to another - sending, receiving, and storage.

Custom Forms and Fields

Based on research interests, Biobanks need to collect additional clinical and pathological data like smoking history, family history, pathology annotations, test results, or other information. OpenSpecimen supports custom Forms or Questionnaires with various field types, and link them with one or more CPs.

Specimen Carts

A “specimen cart” allows users to shortlist specimens of interest for further use. A user can:

- Create multiple carts and save them.
- Share them with other users.
- Perform bulk operations like shipping, distribute, add annotations, delete, transfer, and more.

Label Generation and Printing

Users can auto-generate specimen labels and print them from OpenSpecimen. The label can contain various details like study code, visit code, sample type, collection year, etc. You can define the formats at the CP level.

NOTE: OpenSpecimen is compatible with printing software like Bartender, NiceLabel, and others.

CSV Import

OpenSpecimen supports importing CSV files for (almost) all objects, including the custom fields and forms. This feature is useful for legacy data migration, integration with instruments, and high throughput workflows.

Audit & Security

OpenSpecimen audits every action of a user from login to logout. The audit information includes the date-time, user id, IP address, old value, and the new value. You can generate audit reports from the user interface per study or user.

Security:

Following security measures are available in OpenSpecimen:

1. HTTPS for SSL-based encryption for data to and from the server.
2. Integrate with the institute's LDAP/SAML.
3. Password complexity, expiry, and other password-related security measures.
4. Inactivity for a certain number of days or incorrect password locks the user account.
5. 2-Factor-Authentication (2FA)

Article: ***Is OpenSpecimen CFR Part-11 Compliant?***

LDAP/SAML Integration

You can integrate with your institution's identity providers (e.g., Active Directory) for better security. It enables users to use their existing login credentials to log in to OpenSpecimen as well. Thus, it eliminates the hassle for the users to remember two different sets of usernames and passwords.

Specimen Catalog & Requests

Specimen Catalog is an online display of your specimens that improves the utilization of the specimens in your biobank. Create configurable displays and request forms for researchers to filter and request specimens of interest.

Article: ***OpenSpecimen's SpecimenCatalog Helps Researchers Find Biospecimens of Interest***

Specimen Requests

Researchers can search for specimens of interest and submit a request using the SpecimenCatalog. A researcher can shortlist the specimens using the easy-to-use catalog user interface and add these specimens to a cart. Once ready, the researcher can fill in a request form customized per catalog.

The Request Admins can review and approve the request.

Reporting & Dashboards

Reporting is one of the most powerful features of OpenSpecimen. With an easy-to-use interface, the reporting module allows users to query any data with any IT or SQL knowledge.

Example queries:

- Show all participants who have consents.
- Show pairs of primary & relapse tumors collected at various time points.
- Aliquots that are processed within 30 minutes of collection.
- List of visits scheduled for the next month.
- Count-based report on the number of specimens collected by type and site.
- Inventory reports: based on freezer or boxes.
- Distribution reports: based on specimens distributed, reserved, or invoiced.

Reporting features:

- Count-based reports (e.g., count of samples per anatomic site subdivided by specimen type)
- Save queries for future use, organize in folders, and share with other users.
- Export and import query definition.
- Export data into CSV files.
- Add specimens to a picklist to distribute, ship, or perform any other bulk operation.
- Create live Dashoards
- Create Specimen Catalogs

Dashboards

Dashboards are a graphical representation of the current status of the CP. Each CP can have its dashboard, which the administrator can configure (without any programming changes). You can also embed the graphs in a website to display live data, e.g., on the website for biobank or study.

Tissue Microarray (TMA) & Gels

This plugin allows the creation of specimen arrays with existing specimens to be tracked, processed, and created into slides. Additional annotations can be captured by creating custom forms and fields.

Gels

Track DNA gel loading with the image and its associated specimens.

Optional Plugins

Project Tracker

The Project Tracker module helps biobanks track projects, specimen requests, services, timelines, and their statuses. It also supports email notifications and messaging to ensure that information is not lost in emails. It reduces the communication gap between biobanks and researchers and eliminates the need for using Excel sheets outside OpenSpecimen. Finally, the reporting module enables biobanks to query for projects related data and download reports.

Article: ***Track Biobank Projects Using "Project Tracker" Module***

Supply Management

The Supply module allows tracking the inventory of supply items (like tubes, vials, kits, gloves, labels, and reagents) across multiple studies and sites. Supply items get deducted as specimens are collected or processed. It also sends notifications for low quantity and expiry dates.

Article: ***Manage supply items inventory***

eConsents & Surveys

The eConsent module allows biobanks to collect consents and survey questionnaires directly from patients via email or tablets. The consent forms can be designed in multiple languages, and support form versioning. Patients can fill the consent form from home or in the clinic.

Currently used in:

- Columbia University Medical Center
- University of Kansas
- University of Miami

Integrations

OpenSpecimen is 100% REST API-enabled software. Thus, it is easy to integrate OpenSpecimen with other databases and instruments. Following are the integration plugins supported in OpenSpecimen

REDCap (RC) and OpenClinica (OC)

OpenSpecimen can be integrated with EDC systems like REDCap or OpenClinica to enable users to query data across the two systems. For instance, biospecimen data is in OpenSpecimen, and clinical data is in REDCap.

This plugin pulls the complete dataset of the study, including Case Report Form (CRF) data from into OpenSpecimen. Thus, it enables users to highly powerful queries to search for specimens of interest across both datasets.

Article: ***OpenSpecimen-OpenClinica Integration***

Epic (or any EMR)

The goal of integration with Epic is to eliminate duplicate data entry and human errors. Epic sends HL7 messages to OpenSpecimen with patient demographic details. OpenSpecimen stores this information in a staging area and displays matching participants based on MRN.

Article: ***OpenSpecimen EPIC integration***

Pathology Reports from Cerner/CoPath

Pathology reports can be loaded in OpenSpecimen manually or via an HL7 message from Cerner, CoPath, and other databases. These reports can also be de-identified either manually or using de-identification algorithms.

Hamilton BiOS Automated Freezers

OpenSpecimen can be integrated with automated freezers from Hamilton, Brooks, etc. The integration will provide an “one-click” option to store or retrieve specimens from the freezer.

Azenta/FluidX Box Scanners

OpenSpecimen can be integrated with box scanners to read barcodes. This enables high-throughput labs to process specimens in bulk based on barcodes.

Case Studies

Visit https://www.openspecimen.org/case-studies/

- The University of California Davis Adopts OpenSpecimen to Manage Large Biospecimen Projects
- Johns Hopkins OpenSpecimen Adoption Over the Years
- OpenSpecimen Helps Streamlining Biobanking at Washington University
- How Tumor Bank at the University of Pennsylvania benefited from adopting OpenSpecimen?
- OpenSpecimen adoption at University of Leicester
- How does the Oxford Biobank manage 400,000+ specimens using OpenSpecimen?
- Victorian Cancer Biobank goes live with OpenSpecimen
- OpenSpecimen Helps SAHMRI (Adelaide) Manage Large Sample Inventory
- OpenSpecimen-OpenClinica Integration Poster by FIND Diagnostics
- Adopting an Organized and Queryable Biospecimen Database

To Schedule a Demo:

Email us at:
contact@openspecimen.org