# MIPortal®

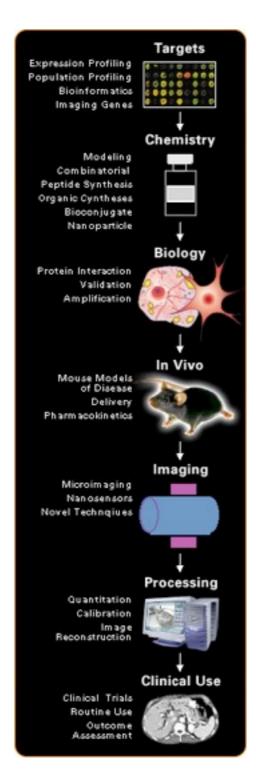
Efficiently archiving and distributing experimental data



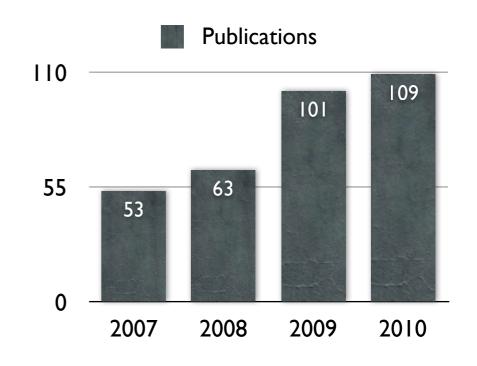
## CSB - Multidisciplinary research center

The mission of the Center is to analyze at a systems level how biological molecules, proteins and cells interact in both healthy and diseased states

- \* 8 Programs
- + Cardiovascular
- Cancer
- Diabetes
- + Clinical
- Nanotechnology
- + Immunology
- + Membrane Biology
- System Pharmacology
- \* 3 Platforms
- + Bioimaging
- Chemical Biology
- + Biocomputing

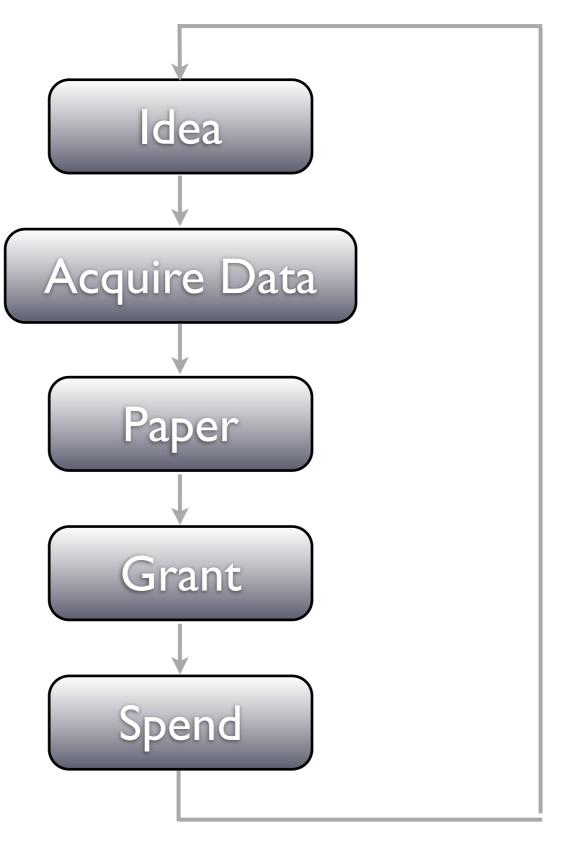


- \* 34 Faculty
- \* 175 employees
- \* 10 Associate Members
- \* 3 Main Facilities





## Research Life Cycle





## **Bioinformatics** Platform

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Thursday, March 31, 2011

### Programs Support

- people
- meetings
- technical protocols
- specialized applications

### Equipment

- repair history
- on-line manuals
- resources calendar

### e-Mice

- animal ordering
- protocols
- charges tracking
- breeding colonies

Lab Inventory

- cell lines and antibodies
- imaging agents
- molecular libraries

### Personnel

- employees, applicants
- attendance
- mailing lists
- lab notebooks tracking



### Finances

- grants and projects
- spending estimates
- expenses and charges

### **Publications**

- automatic feed of abstracts
- talks
- journal covers
- access to pdf

### **Experimental Data**

- Imaging (MIPortal<sup>®</sup>)
- High-throughput screening
- Biodistribution

#### Security

- Partners authentication
- page-level access control
- admin UI

### Content Management

- wiki
- faculty pages
- internal documents

## Data Management Problems

Where is my data?

What project/study/session/paper does this file belong to?

How can I open this image?

PostDoc left 2 month ago, how can I find his files?

The hard drive on a Microscopy computer is full - we need to delete some files.

How can I email data if one study is 256MB?

I got all data on a CD/DVD, but I can't read it...

I submitted a paper with post-processed images and now I need original files for additional analysis...

I searched for file "Mouse I.tiff" and got 357 hits.

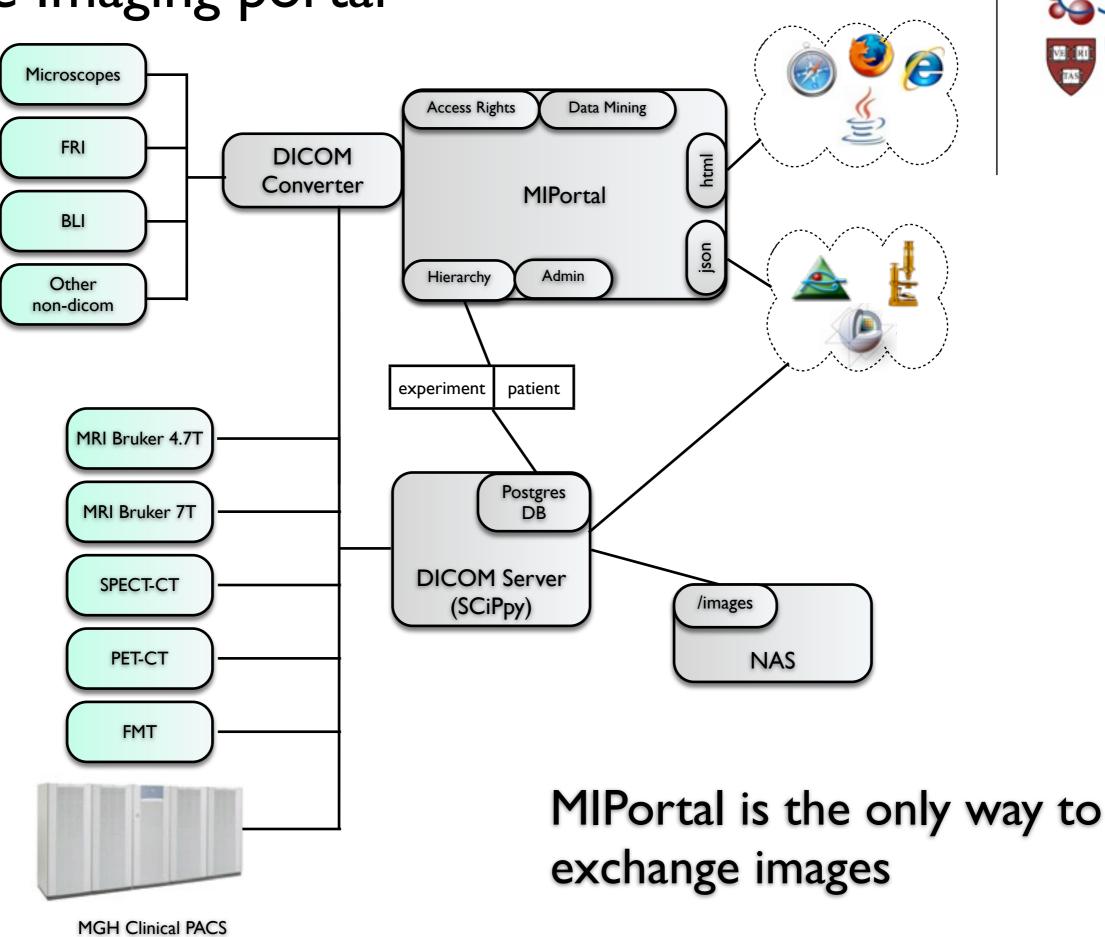


### Estimated Data Volumes

Imaging Source	MB/ study	studies/ day	MB/ day
Optical	20	30	600
MRI	50	30	I,500
SPECT	10	5	50
PET	10	5	50
СТ	256	10	2,560
Histology	50	20	I,000
BLI	10	30	300
Other	20	20	400
Clinical MRI	50	5	250

6.7 GB per day40 GB per week2 TB per year.

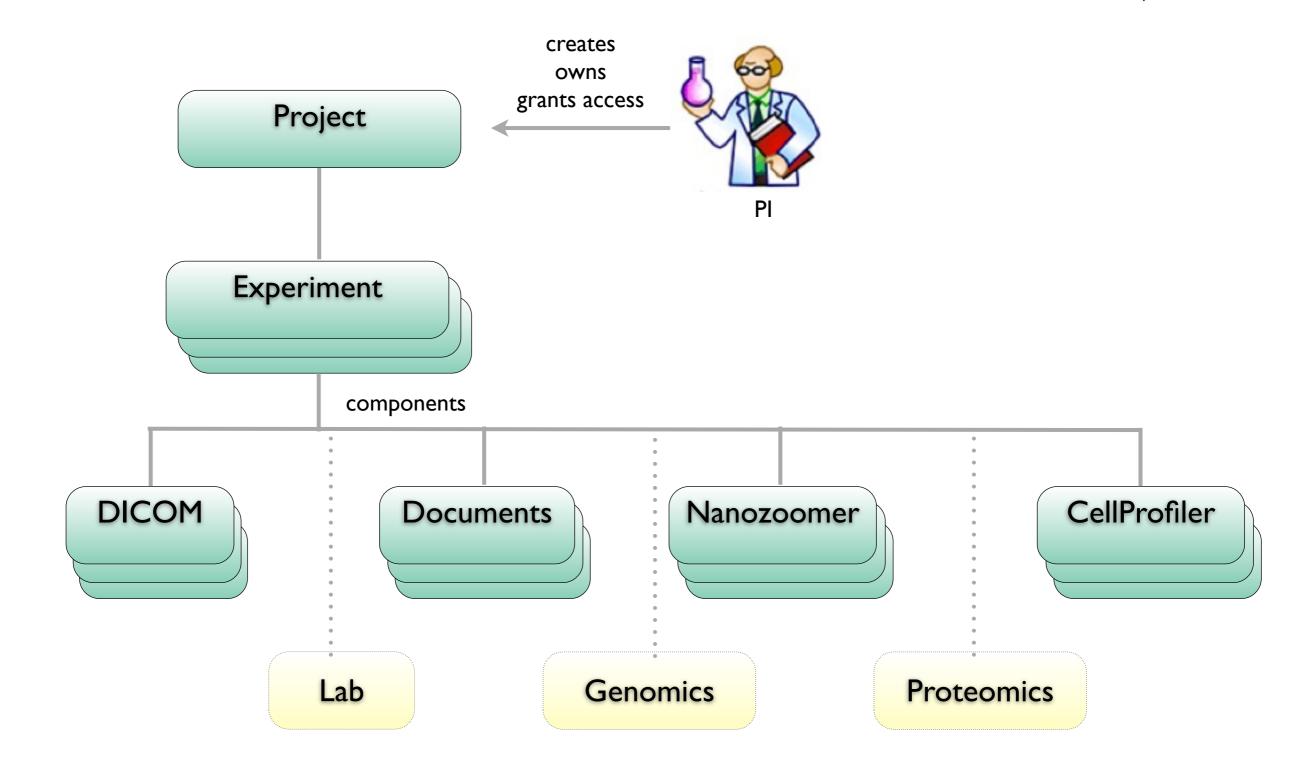
## Mouse Imaging portal



MGI

## **MIP** Hierarchy





## DICOM backend

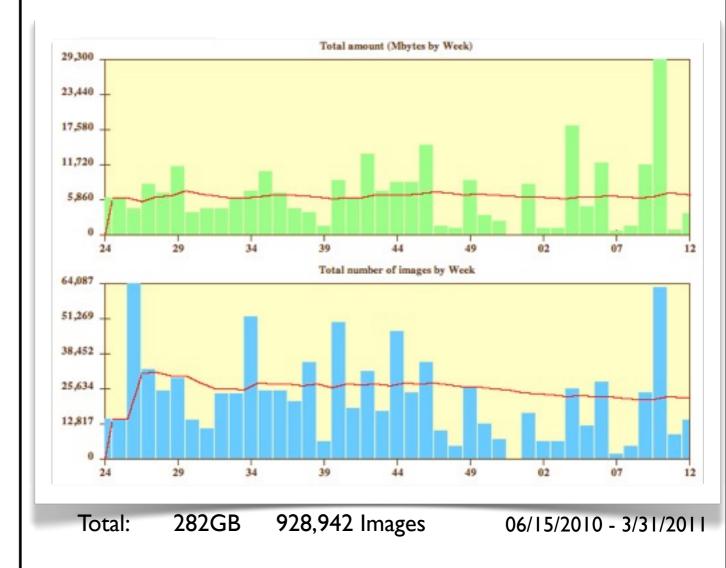
- SCiPpy full-featured DICOM server
- DICOM Converter
- Flexible, Configurable, Customizable, and Reliable
- Based on Open-Source Linux, Postgres, dicomlib, ImageMagick, Boost, LibTIFF, etc.
- Full DICOM support (sync and async communications)
- Anonymization
- Autoforward to another DICOM node
- Autoforward to FILE node for backup
- Web-based control
- Dynamic settings change
- Detailed logging, audit trail and statistics
- Advanced searching
- Automatic creation of thumbnails
- Used as a back-end server for all image storage and retrieval
- Custom rules for "not-so-standard" DICOM nodes
- Plugin architecture for converter

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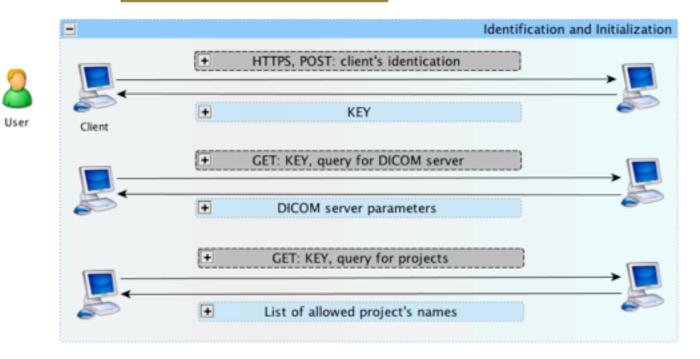
## **CSB MIPortal Stats**

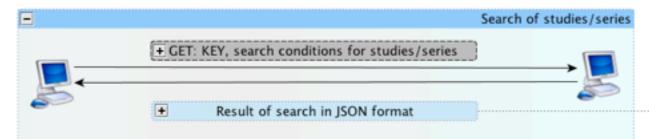
- ► Over 200 active users across Harvard
- Lab Experiments and Clinical Trials
- 70 active projects, 407 completed projects
- over 3,000 experiments
- Over 35,400 DICOM studies
- Over 6,300,000 DICOM images
- Over 3,750 NanoZoomer data sets
- Over 3 TB
- Modalities:
- \* MRI: Bruker 4.7T, 7T, 9.4T
- \* PET-CT: GammaMedica, Inveon
- \* SPECT-CT: GammaMedica
- \* Optical: BonSAI, FMT, Kodak, BLI
- \* Confocal (Olympus IV100, OV100, FV1000)
- \* Cell microscopy (DeltaVision)
- \* Histology (Nanozoomer)
- \* MGH DICOM Network (MRs, CTs, PET)
- DICOM Converter
- \* Over 2,500,000 images processed to date

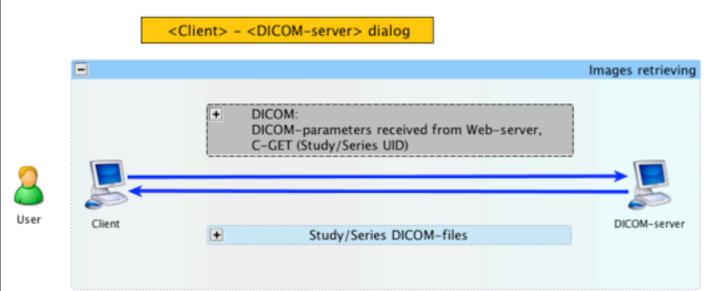


## Client - Server Interface

<Client> - <Web-server> dialog









#### + {"projects":

## Let's Take a Look



