The Role of Biobanks should be viewed in the context of the Healthcare and Life Sciences Ecosystem with the Patient/Consumer in the Center

- **Patients/Consumers**
- **Research Institutions**
  - Large University/Medical Schools
  - Specialized Research Centers
  - Other Academic Medical Research Centers (AMRC’s) and **Biobanks**
- **Clinical Trial Support**
  - CROs (e.g. Quintiles, Parexel, Covance, Imaging Core Labs)
- **Drug Developers**
  - Large Pharma
  - Other Pharma
  - Integrated Biotech
  - Research Biotech
- **Healthcare Providers**
  - Integrated Delivery Networks
  - Specialized Hospitals
  - Independent Community Hospitals
  - Physician Private Practices
- **Government Research**
  - Research Funding Agencies
    - (NIH etc, EU FP, AP Gov’ts)
- **Government Agencies**
  - Regulatory Agencies
    - (FDA, EMEA, MHLW, WHO, DHHS, CDC)
- **Solution Providers**
  - Equipment & Device Companies
  - Applications Providers
  - IT Infrastructure and Service Providers
  - Diagnostics Manufacturers
- **Advocacy Groups**
  - Patient (Genetic Alliance etc)
  - Industry and Academic (e.g., Personalized Medicine Coalition, EPPOSI)
- **Payers**
  - Government (CMS, EU, AP)
  - Private (US HMO’s: CIGNA, AETNA, Oxford Health, WellPoint, Kaiser Permanente, ...)
  - Employers (Corporations)
Clinical Patient Data must be integrated with Imaging, Genotypic, and Environmental Data to discover Biomarkers and to enable Biomarker based Pharma R&D and “Personalized Clinical Care”
Medical/Biological Research (Biobank) Projects are aimed at the Discovery of new Biomarkers

The Mayo Clinic: Transform the effectiveness and economics of health care, by focusing on new techniques to harness patient data to improve diagnoses; deep computing power to model diseases to find cures; and new devices to access information to transform how patients and physicians interact, leading to more personalized care. Latest Step: MCLSS

Karolinska Institutet: The KI Biobank is an asset for biomedical research within fields such as genetics, functional genomics, as well as genetic and molecular epidemiology. KI Biobank benefit combines significant tissue collections and large national databases with epidemiological information. The robust and scalable Biobank Information Management System (BIMS) can readily accommodate a growing number of new projects and diverse data sources.

iCAPTURE/University of British Columbia: Determine the relationships between genomic, phenotypic, and environmental data in relation to heart, lung, and blood vessel disease. Focus on Imaging and Biomarker Discovery, including Tissue Rejection Biomarkers

In addition: AMC (Amsterdam), Danubian Biobank (Regensburg), St. Justine (Montreal), NIH Lupus Project, Taiwan Biobank ...
In the Medical Research Space, IBM has been partnering with leading institutions since 2002

MAYO Clinic High Level Architecture

Query/Visualization/Analysis

Data Discovery and Query Builder

WebSphere

WS Information Integrator

Medical Information Repository

ETL

CDA/XML

Replication

MAGE-ML
In Partnership with IBM, KI Biobank developed the BIMS Architecture.....
... recently enhanced to include Image Data Management (to address Stockholm Brain Institute IT requirements)
IBM Healthcare and Life Sciences Biobank Summits

- Nice, France: March 2004
  - 40 attendees
  - 30+ institutions

- Tarrytown, NY: November 2004
  - 100+ attendees
  - 90+ institutions
2005 WW Biobank Summits III and IV: Strategies to Address Next Generation Challenges for Biobanking

24-26 May 2005
The Nobel Forum
Karolinska Institutet
Stockholm, Sweden

8-9 November 2005
“Quest for a Cure”
Cooperation with NCI
Washington, DC

By bringing together the various Stakeholders, IBM is hoping that the Imaging Biomarker Summits will accelerate the Transformation of Healthcare and Life Sciences

• The Imaging Biomarker Summits provide a Forum for the exchange of ideas and best practices related to Biomarker enabled Pharma R&D, with special emphasis on the impact of Imaging technologies. They are attended by representatives from Pharma, Biotech, Government & Academic Medical Research Centers, FDA, Medical Device Manufacturers and other IBM Partners.

• The Imaging Biomarker Summit feature presentations, facilitated Workshops, and Panel Discussions led by established academic and industry leaders

• Presentations at IBS I were given by
  - Peter Corr, Pfizer R&D
  - Carol Kovac, IBM HC & LS
  - Gerd Schmitz, Danubian Biobank
  - George Mills, FDA
  - Larry Schwartz, MSK Cancer Center

• Presentations at IBS II were be given by
  - Andrew von Eschenbach, FDA
  - Pfizer, Genentech, Merck & FNIH
  - NCI, UCLA, JHU, Wash U, U MD
  - GE HC, Siemens, Philips
  - IBM, VirtualScopics, Kitware

• Discussions of Imaging Biomarkers in Oncology, Neurosciences, and Cardiovascular disease

• Workshops, Panel Discussions
  - Imaging Biomarker Research / Discovery
  - Imaging Biomarkers in Pharma R&D
  - IT Standards and Architectures

• IBS Events 2007: IBS III (Nice) Jan 24-26, IBS IV (Japan) July 14-16