Enabling 21st Century Cancer Research:
Experience from the Cancer Community

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Duke Comprehensive Cancer Institute

caBIG at Duke

- Developer
  - Cancer Central Participant Registry (C3PR)
  - caTRIP
    - Many elements part of other caBIG applications
  - RProteomics
  - VCDE Mentorship
  - CTMS Knowledge Center

caBIG at Duke

- Adopter
  - Flagship C3D implementation
    - Many trials in production, many more in development
  - C3PR multi-center pilot
  - caAERS (CALGB and Duke) (in progress)
  - caGRID
  - caArray (in progress)

Impact of caBIG at Duke

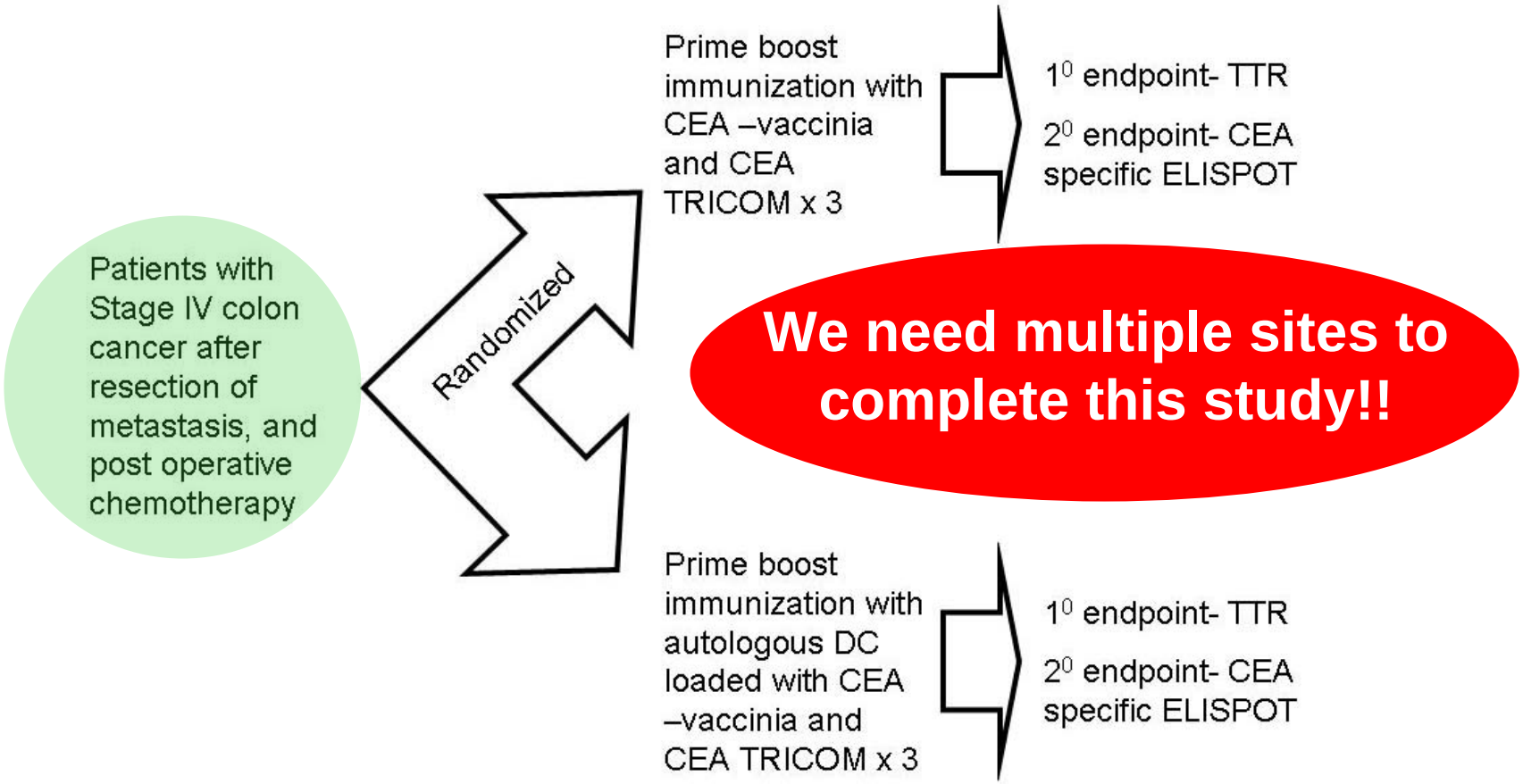
- Investment strategy and long term IT planning aligned with caBIG goals
- Enabling novel clinical trials between cancer centers
- Enabling biomarker intense (real time gene array based) clinical trials
- Improving access and services to underserved populations

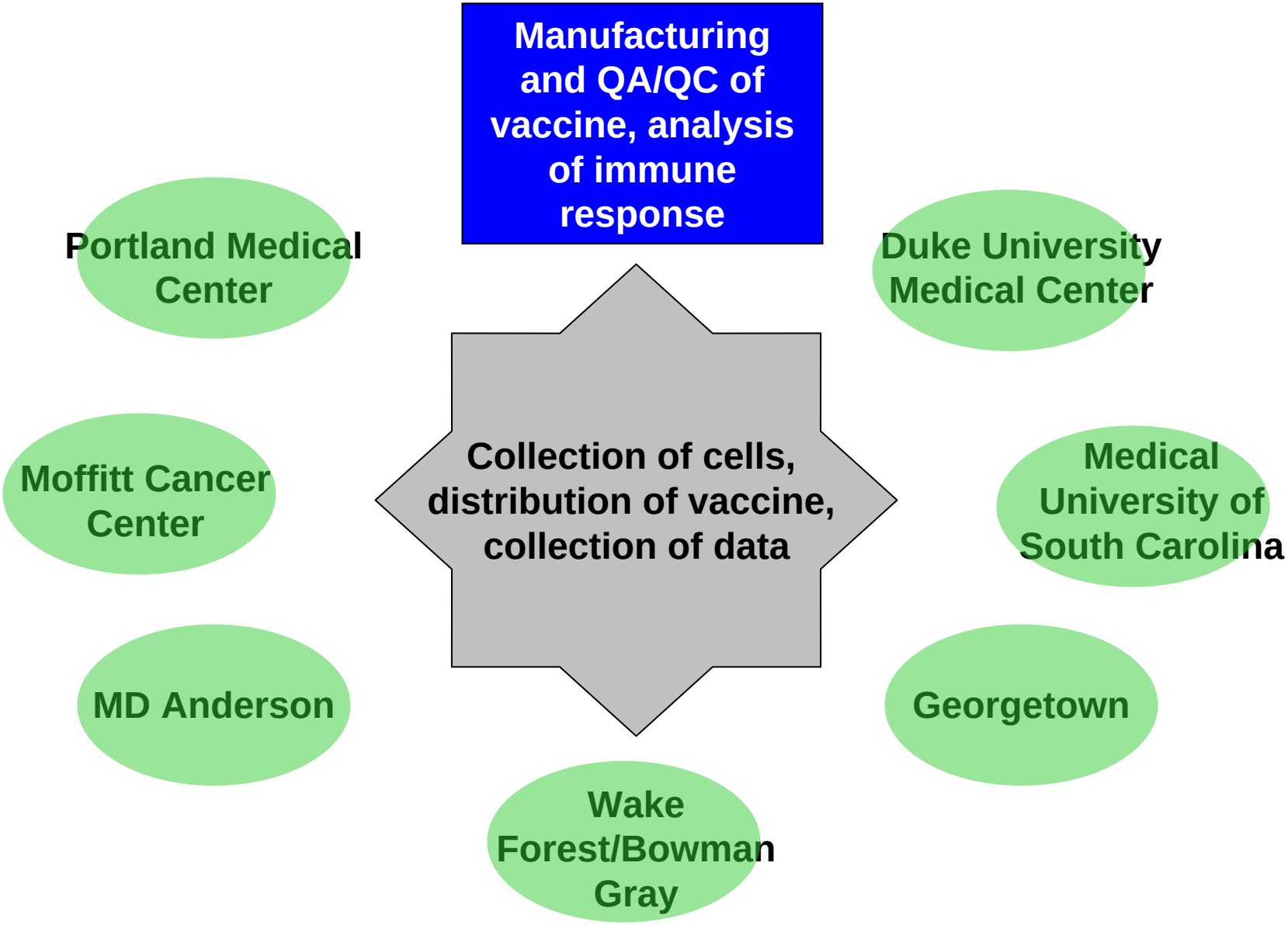
A randomized phase II trial

A) DC infected with rV-CEA(6D)-TRICOM followed by DC infected with rF-CEA(6D)-TRICOM

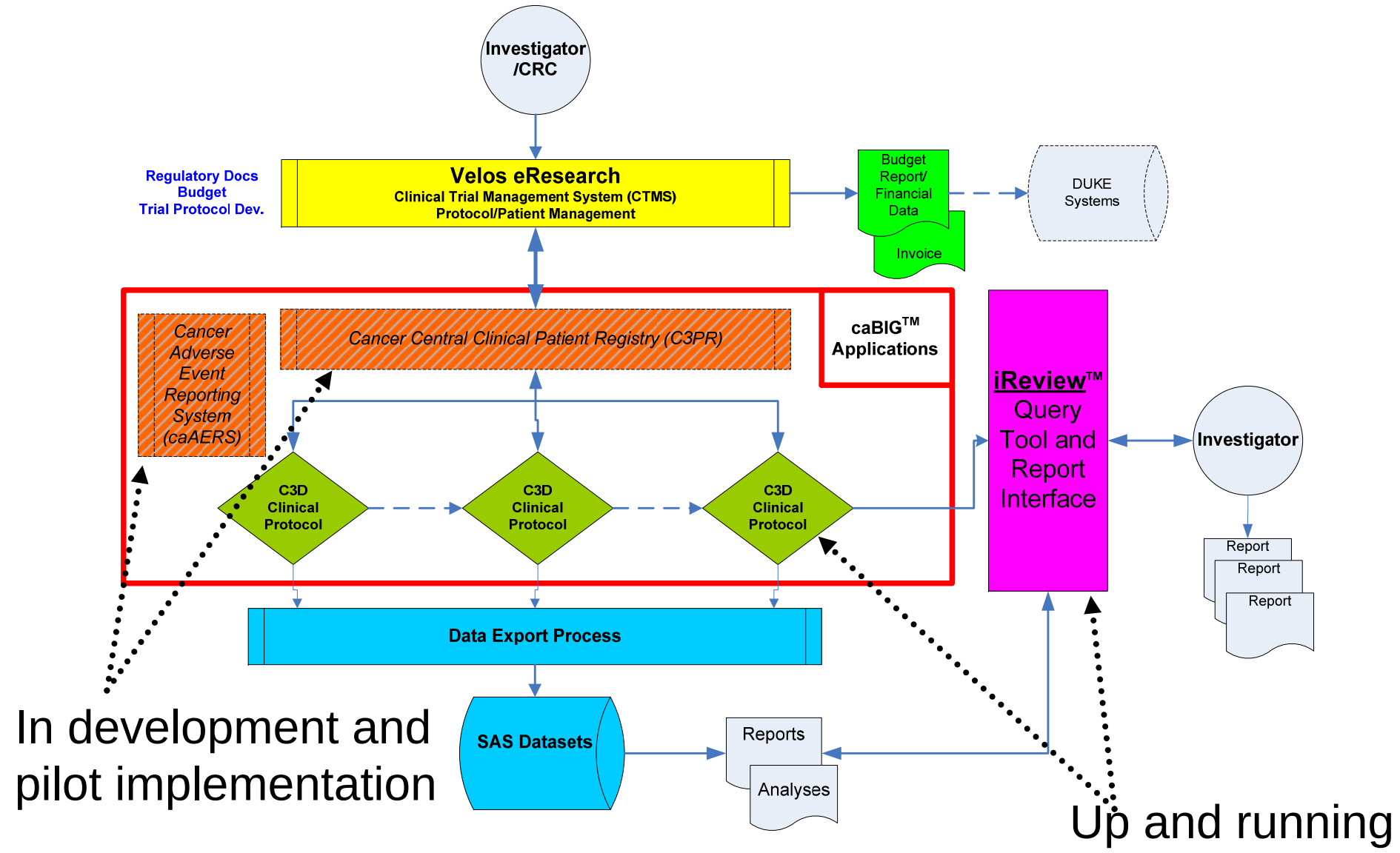
versus

B) rV-CEA(6D)-TRICOM followed by rF-CEA(6D)-TRICOM along with in situ GM-CSF following hepatic metastasis resection and adjuvant chemotherapy.



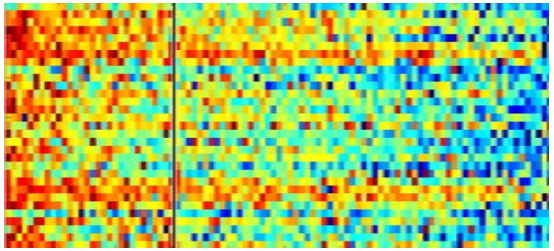

Manufacturing and QA/QC of vaccine, analysis of immune response
Portland Medical Center
Duke University Medical Center
Collection of cells, distribution of vaccine, collection of data
Moffitt Cancer Center
Medical University of South Carolina
MD Anderson
Georgetown
Wake Forest/Bowman Gray

Clinical Trial Software Elements



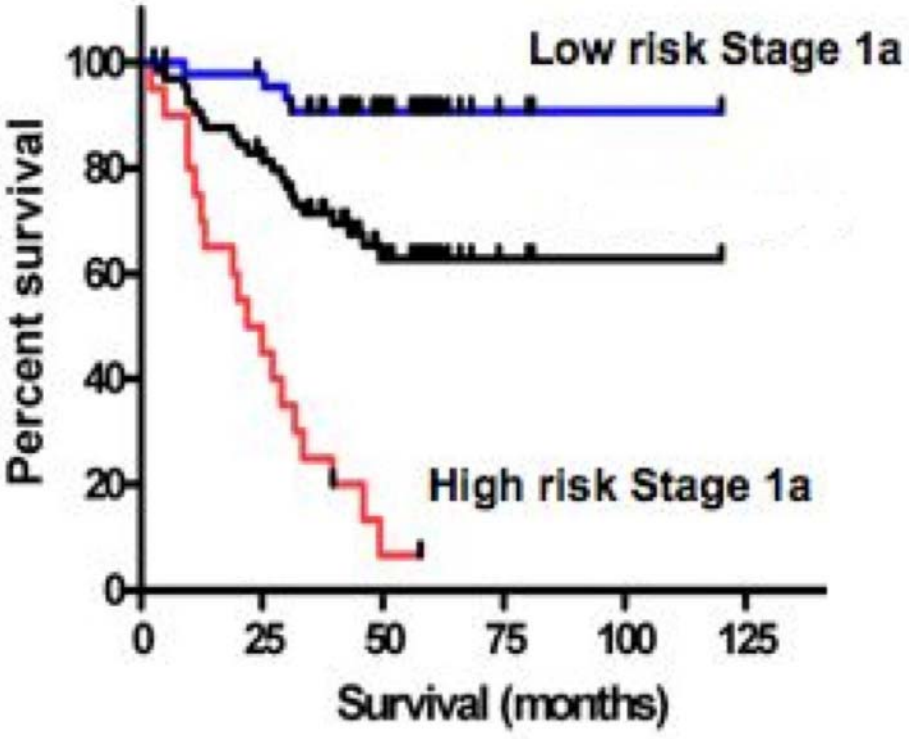
Lung Cancer Prognostic Markers

The NEW ENGLAND JOURNAL of MEDICINE



A Genomic Strategy to Refine Prognosis in Early-Stage Non–Small-Cell Lung Cancer

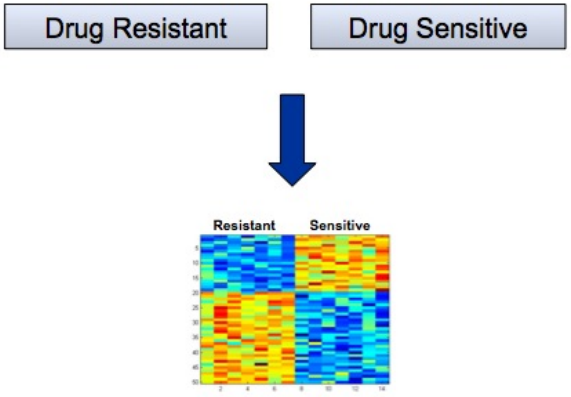
Anil Potti, M.D., Sayan Mukherjee, Ph.D., Rebecca Petersen, M.D., Holly K. Dressman, Ph.D., Andrea Bild, Ph.D., Jason Koontz, M.D., Robert Kratzke, M.D., Mark A. Watson, M.D., Ph.D., Michael Kelley, M.D., Geoffrey S. Ginsburg, M.D., Ph.D., Mike West, Ph.D., David H. Harpole, Jr., M.D., and Joseph R. Nevins, Ph.D.

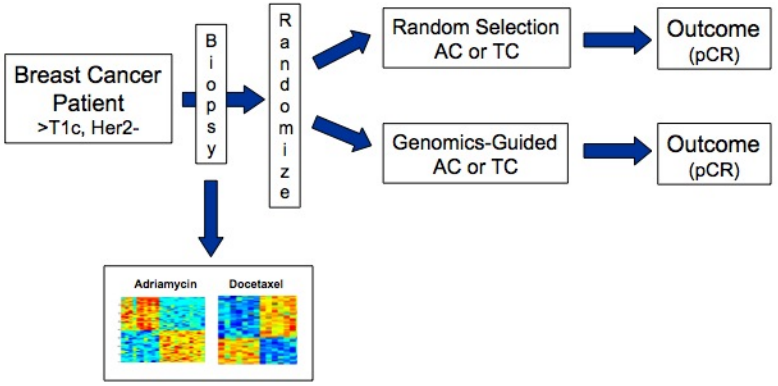


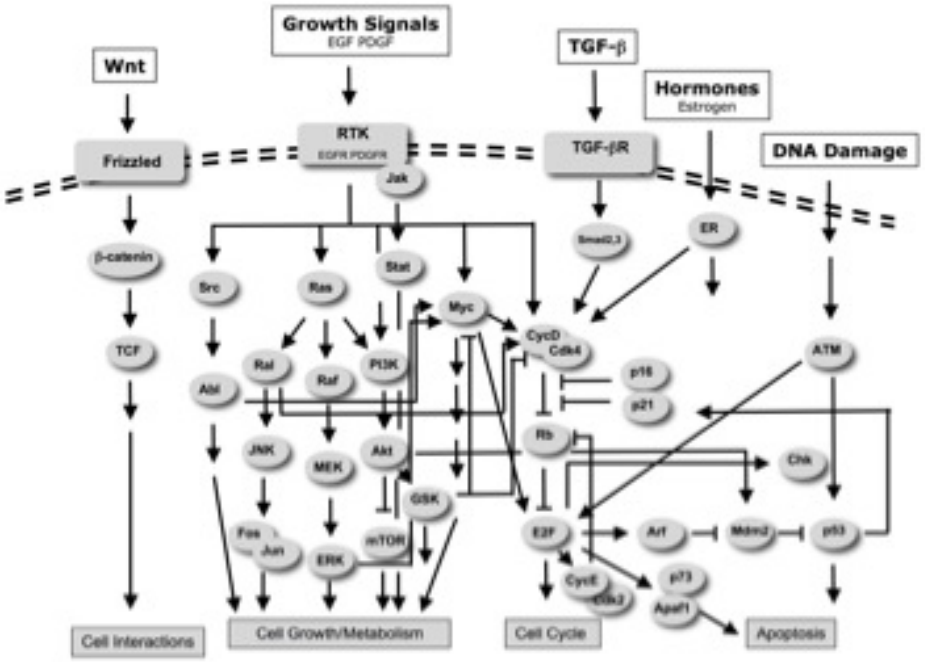
Predictive Markers-Chemotherapy

Potti, A., Dressman, H. K., Bild, A., Riedel, R. F., Chan, G., Sayer, R., Cragun, J., Cottrill, H., Gray, J., Marks, J., Kelley, M., Berchuck, A., Petersen, R., Harpole, D., Ginsburg, G. S., Febbo, P., Lancaster, J. M., and Nevins, J. R. (2006). A genomic strategy to guide the use of chemotherapeutic drugs in solid tumors. Nat. Med. 12, 1294-1300.

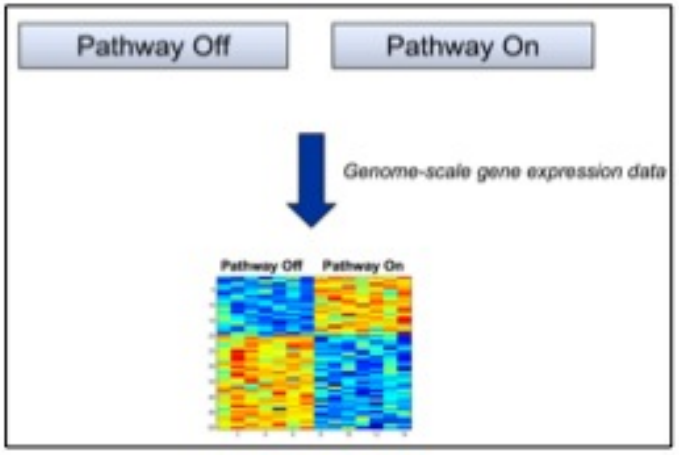
BOP0701 – A Randomized Phase II Study to Evaluate the Capacity of Expression Signatures to Guide Neoadjuvant Breast Cancer Chemotherapy (DOD Breast Program)



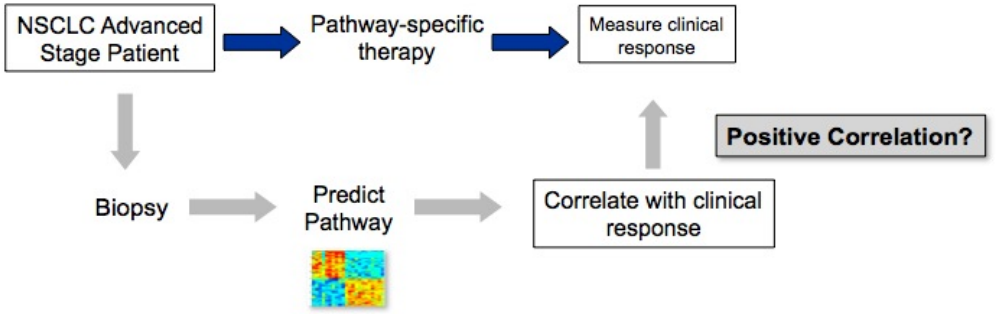




Can gene expression profiling demonstrate an activated pathway, suggesting that inhibition would predict response to a therapy?

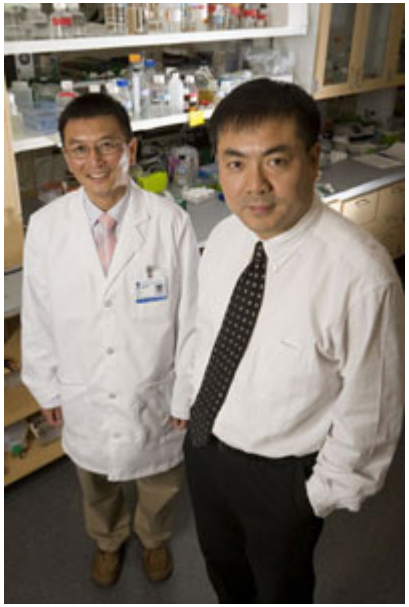


Phase II Studies to Evaluate a Src Pathway Signature as a Predictor of Dasatinib Response



Nature 439, 353-357.

Peking University/Beijing Cancer Hospital



Gene expression analysis and generation of gene signature

Collection of tumors, collection of data

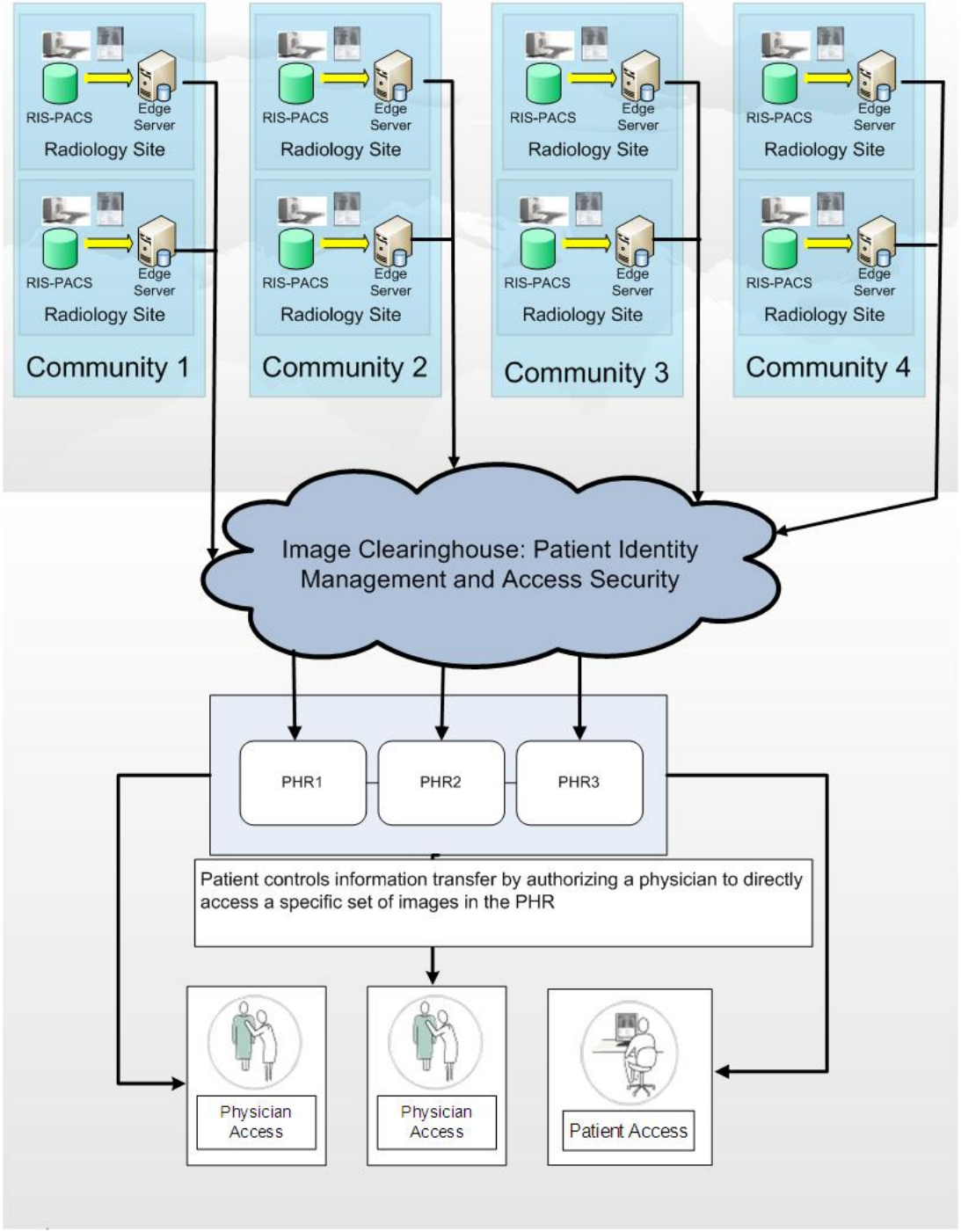
Duke University Medical Center

Duke Health Raleigh

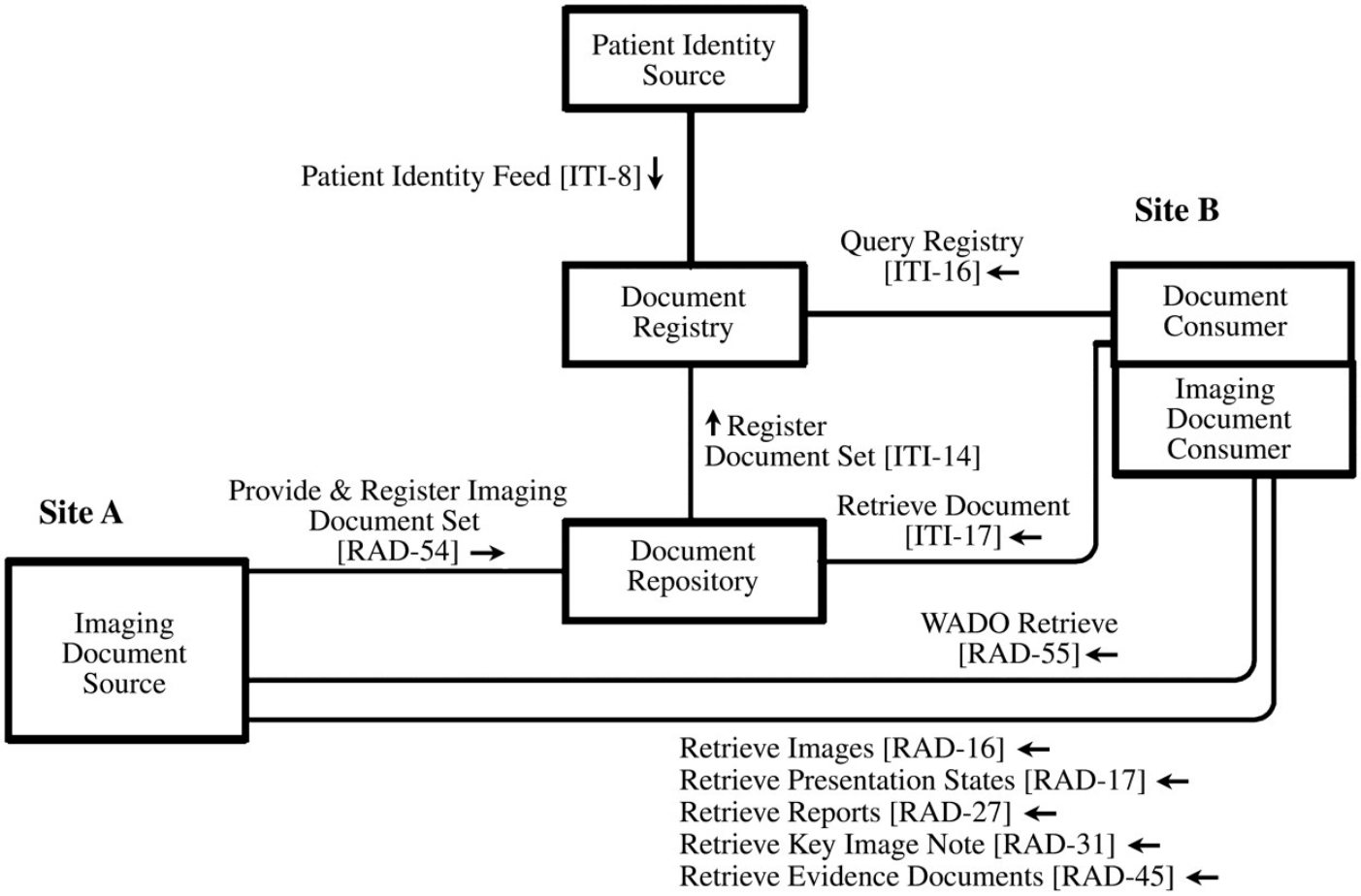
Non-Duke Clinics

Patient-controlled Exchange of Breast Imaging Studies to Healthcare Providers

- **web-based system**
- **allows patients to access, download and transfer the DICOM files of all their imaging studies.**
- **makes them usable by medical care providers or researchers at any other medical center.**
- **improve health care**
- **reduce radiation dose from unnecessary duplicate imaging studies**
- **facilitate a wide array of research that requires data from images**


RIS-PACS
Edge Server
Radiology Site
Community 1
Community 2
Community 3
Community 4
Image Clearinghouse: Patient Identity Management and Access Security
PHR1
PHR2
PHR3
Patient controls information transfer by authorizing a physician to directly access a specific set of images in the PHR
Physician Access
Physician Access
Patient Access

Technical Architecture for Image Transfer



Potential caBIG solutions

- Technical challenges can be addressed
- Standards for community providers from NCI
- Can address other issues that may have limited implementation of previous strategies:
  - HIPAA (HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT OF 1996)
  - Reporting concordant/non-concordant results (quality)
  - Billing
  - Liability