FNIH
Foundation for the National Institutes of Health

THE biomarkers CONSORTIUM

FDA

NATIONAL INSTITUTES OF HEALTH

PhRMA
Pharmaceutical Research and Manufacturers of America

Bio
BIOTECHNOLOGY INDUSTRY ORGANIZATION

CMS

Facilitating Collaborations to Develop Combination Investigational Cancer Therapies

David Wholley
Director, The Biomarkers Consortium

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Foundation for the National Institutes of Health

Foundation for NIH Overview

- Established by Congress in 1990; incorporated in 1996

- Supports the NIH mission
- Close relationships with NIH

- 501(c)(3) non-profit organization
  - Raised over $560M since 1996
  - 50+ projects

- Non-governmental
  - Directly solicits contributions
  - Flexible donor relationships
  - Creates open, inclusive, objective governance mechanisms
  - Timely, effective grants/contracts/project management

Biomarker qualification: the value of collaboration

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- Biomarkers require extensive testing and qualification for practical use
  - Multiple studies to ensure integrity, reproducibility of results
- Qualification is challenging, expensive, and time-consuming
  - Can require large amounts of data: literature, observational studies, clinical trials
- Qualification is based on *consensus* among the scientific community
  - Deep understanding of and agreement on disease risk, natural history, outcomes
- Qualification is a pre-competitive activity
- Qualification is difficult to accomplish this in a single institutional setting

→ Requires *partnerships* and a *strategic approach*

Goals of The Biomarkers Consortium

- Founded in 2006 to facilitate the development and standardization of biomarkers using new and existing technologies
- Help qualify these biomarkers for specific applications in diagnosing disease, predicting therapeutic response, or improving clinical practice
- Generate information useful to inform regulatory decision-making
- Make consortium project results broadly available to the entire scientific community

Contributing Members (48)

THE biomarkers CONSORTIUM

For-Profit Companies (23)

Abbott Laboratories
Amgen
Amylin Pharmaceuticals
AstraZeneca
Banyan Biomarkers
BG Medicine
Boehringer-Ingelheim
Bristol-Myers Squibb
Celgene Corporation
Daiichi-Sankyo, Inc.
Eisai, Inc.
GlaxoSmithKline
Hoffman-LaRoche/The Roche Group
Johnson & Johnson
Eli Lilly and Company
Merck and Co., Inc.
Orasi Medical, Inc.
Pfizer Inc.
RareCyte, Inc.
Rules-Based Medicine
Sunovion Pharmaceuticals
Takeda Pharmaceuticals
XOMA, Ltd.

Non-Profit Organizations (25)

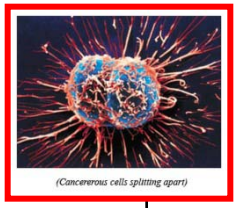
Academy of Molecular Imaging
Advanced Medical Technology Association
Alzheimer's Association
American Association for Cancer Research
American Diabetes Association
American Society of Clinical Oncology
Arthritis Foundation
Association of Clinical Research Organizations
Autism Speaks
Avon Foundation
Battelle Memorial Institute
Biotechnology Industry Organization
CHDI Foundation
Federation of Clinical Immunology Societies
International Society of Biological Therapy of Cancer
Juvenile Diabetes Research Foundation
Kidney Cancer Association
The Leukemia and Lymphoma Society
Michael J. Fox Foundation for Parkinson's Research
Ontario Cancer Biomarker Network
Osteoarthritis Research Society International
Pharmaceutical Research and Manufacturers of America
PROOF Centre of Excellence
Radiological Society of North America
University of Illinois

The Biomarkers Consortium Governance Structure

The Biomarkers Consortium Executive Committee

[NIH / FDA / CMS / industry / general public / Foundation for NIH]

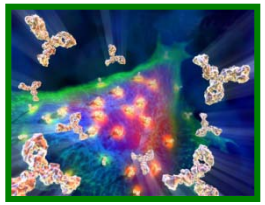
Cancer SC



Metabolic Disorders SC

Neuroscience SC

Inflammation & Immunity SC



Project Team 1

Project Team 2

Project Team 3

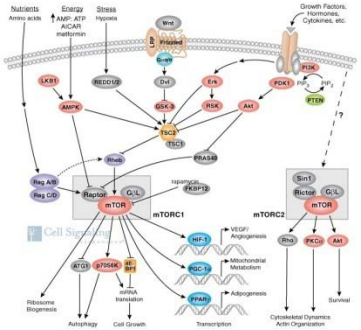
Project Team 4

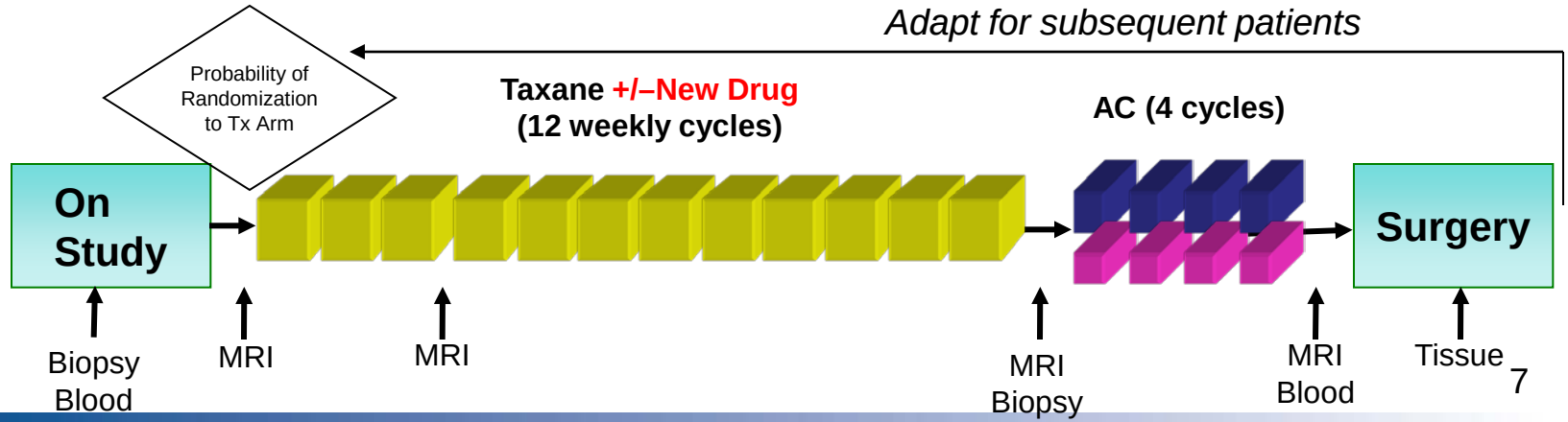
Project Team 5

Project Team 6

I-SPY 2 is Designed to Accelerate the Clinical Trial Process

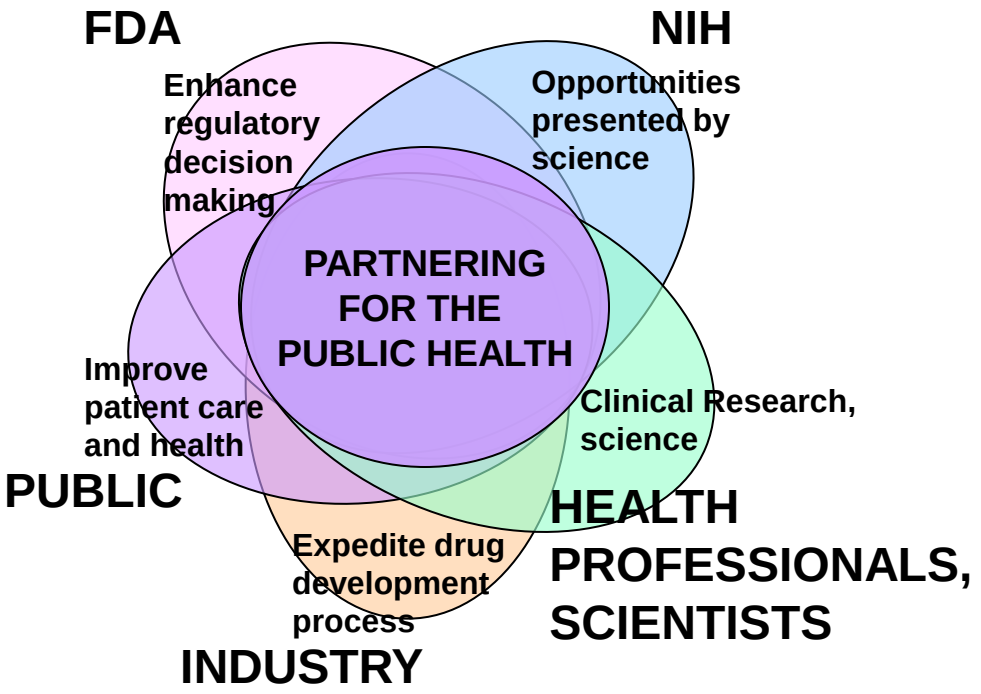
- **Neoadjuvant Setting**
  - Chemotherapy before surgery in a population with locally advanced breast cancer (LABC)
  - Accelerates knowledge turns from 5+ years to 1 year
- **Adaptive Trial Design**
  - Learn rapidly which drugs work for which patients, and apply that knowledge to subsequent patients within the trial
- **Molecular and Imaging Biomarker Guidance**
- **Multiple Drugs Tested Simultaneously, representing different signaling pathwa**
- **Organizational Efficiencies**





I-SPY 2 is being conducted as a large-scale public-private partnership with many stakeholders

- NCI
- FDA
- Lead academic institutions (UCSF, MD Anderson)
- **Up to 18 additional academic sites**
- **Multiple pharmaceutical companies**
  - **Contributing agents**
  - **Funding**
- **Platform companies**
- **Laboratories**
- Non-profit organizations
- Advocates
- FNIH



Biomarkers in I-SPY 2

Stratifying Biomarkers

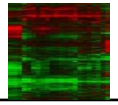
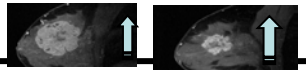
- HER2
- HR
  - –ER
  - –PR
- Mammaprint™
  - –MP1
  - –MP2 ≥ median score of patients in I-SPY 1
  - –Low, excluded from trial unless ER+ HER2+

•Response Biomarkers

- MRI
- pCR

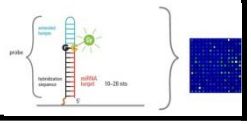
Qualifying Biomarkers

These are validated assays, hypothesis-driven. Additional assays will be added per Biomarker Committee decision.

Panomics mRNA expression arrays (UCSF)		GWAS, SNPs, genomics, pharmacogenomics (UCSF)
RPMA (reverse phase protein microarrays, at GMU)		MRI Imaging, MR Volume 

Exploratory Biomarkers

Additional, new assays per Biomarker Committee decision

e.g. CTCs 	e.g. miRNAs 

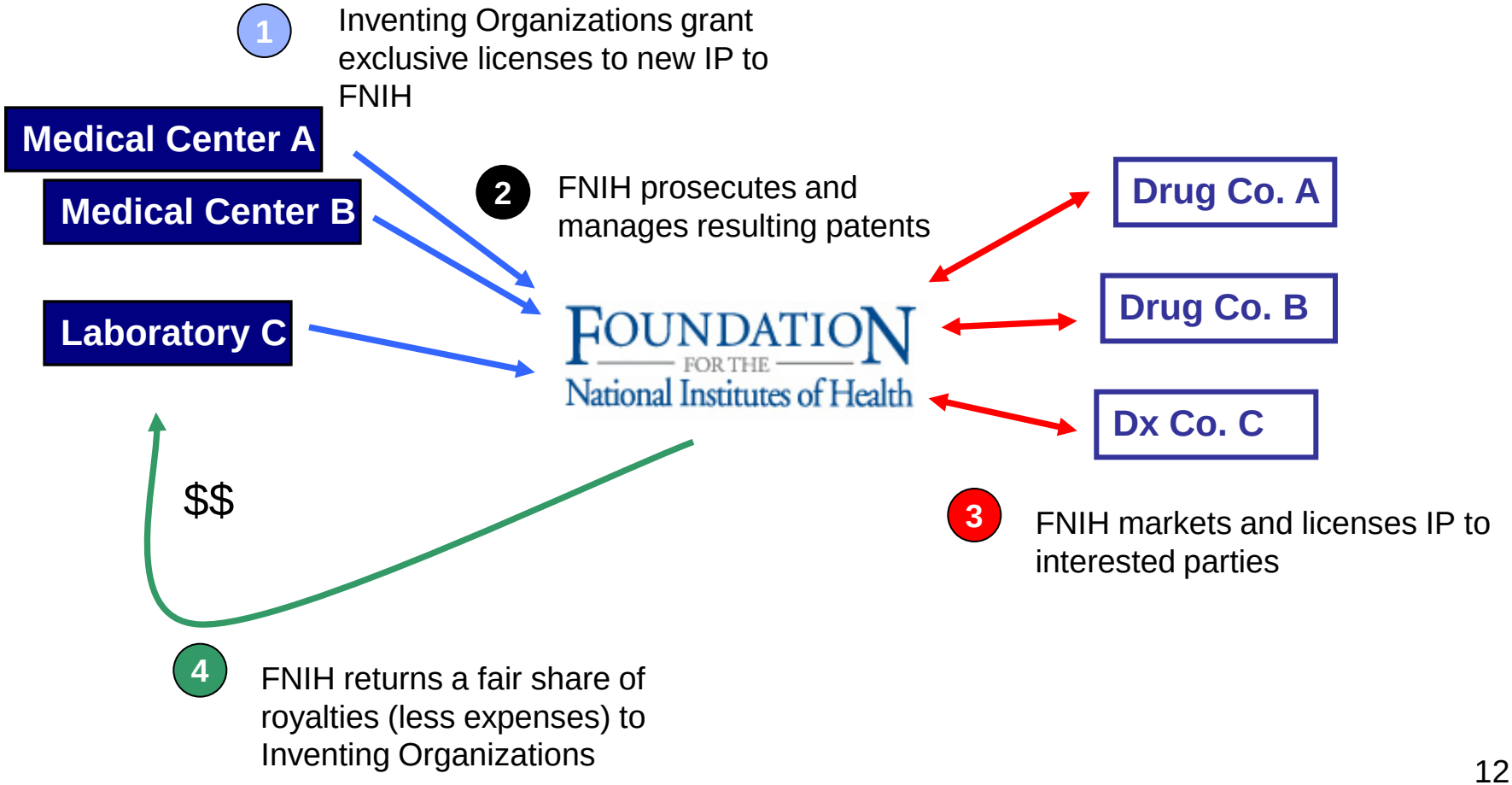
The FNIH plays multiple roles in management of I-SPY 2

- Holds the master IND with the FDA
- Negotiates and holds the contracts with sites, pharma companies, biomarker companies, and other entities
- Serves as a trusted 3rd party to manage data and intellectual property (IP) coming out of the trial, to maximize the public health benefit
- Co-manages the project (with Quantum Leap Healthcare Collaborative)
- Raises some of trial funding

Intellectual property is treated as precompetitive, to drive public health benefit

- No single company stands to be the sole beneficiary of the I-SPY 2 project
- Agents in trial are selected through an independent, objective process and are not tied to financial support of the trial
- Pre-existing IP related to agents contributed by companies remains with the company owning that IP
- Pre-existing IP related to biomarkers and platforms remains with those companies, and is licensed for use in the Project. In some cases the tests have been published and are available commercially
- Data and results are made broadly available

FNIH acts as a trusted third party to ensure fair and appropriate licensing of new inventions arising from I–SPY 2



I-SPY terms for creation of new IP

- New IP is be managed by the FNIH, acting as a trusted third party to hold and license the new inventions
- FNIH gets exclusive license with right to sublicense to all inventions
- Contributor pharmacos get non-exclusive royalty-free license to agent-related IP (e.g., new indications) in connection with their agent only (not across class) [This will be rare]
- Contributor pharmacos get right to negotiate an exclusive or non-exclusive royalty-bearing license for biomarker IP around their drug only (not across class)
- FNIH otherwise offers non-exclusive, royalty-bearing license for biomarker IP to all comers
- FNIH returns proceeds (less costs) to the inventors

Contact Information

David Wholley
Director, The Biomarkers Consortium
301.594.6343
dwholley@fnih.org

Sonia Pearson-White, Ph.D.
Scientific Program Manager, The Biomarkers Consortium
301.435.4103
spearson-white@fnih.org

www.biomarkersconsortium.org
www.fnih.org