

Technology Transfer and IP Driving the Pace of Innovation

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The opinions and views expressed are mine alone and do not necessarily reflect those of Pfizer Inc.

Biopharma R&D – A Challenging Environment

Target Challenges

Changing Standards of Care

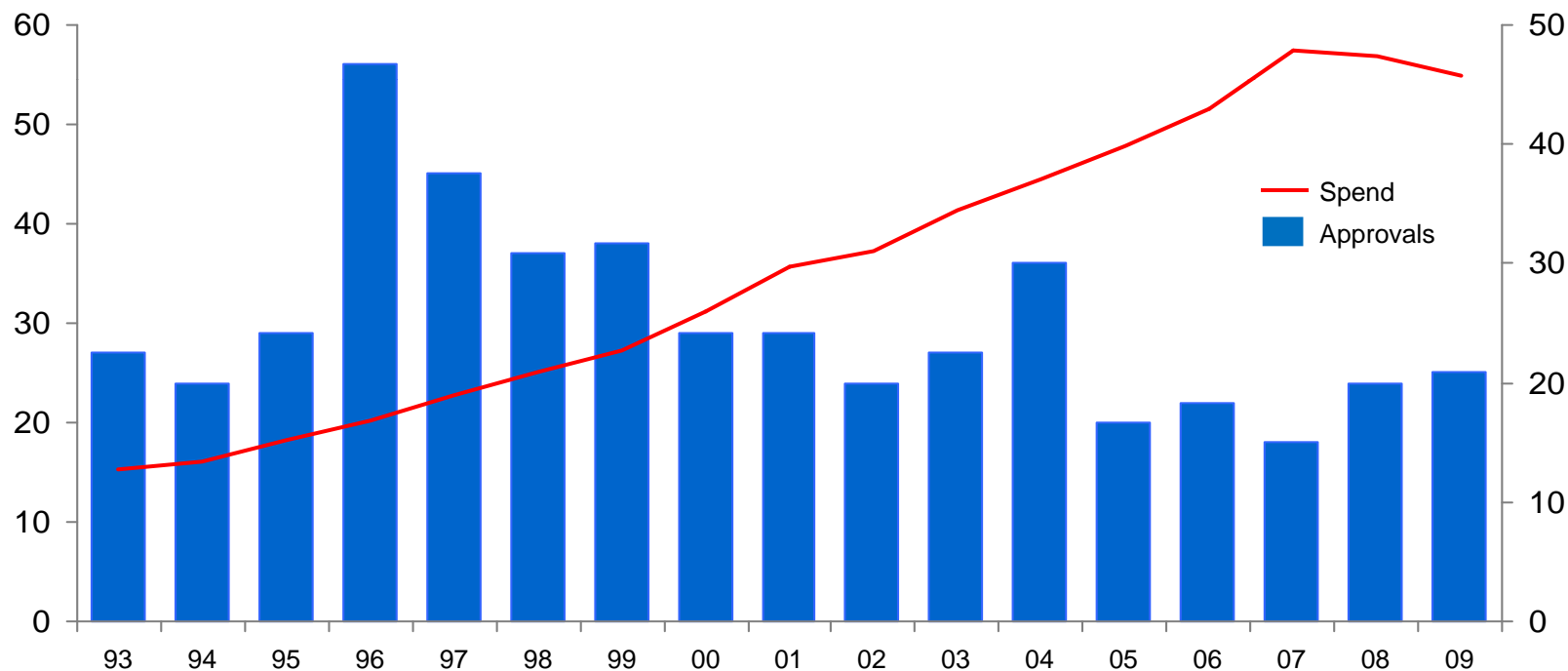
Competitive IP Landscape

Increasing Regulations

Generic Competition

Reimbursement challenges

NME Approvals by FDA



The vertically integrated model has to change to improve the number of products approved

New Approaches to Increasing Research Productivity

Industry is moving to a **mixed model of in-house and external research partnerships**

1

Creating greater research focus to **strengthen** the **scientific core**

2

Driving competitive advantage through **strategic externalization**

3

Positioning pharma for **differentiated innovation**

Improving output and reducing costs to **drive productivity**

Probability of Success

Quality of Output

Speed

Cost per Product

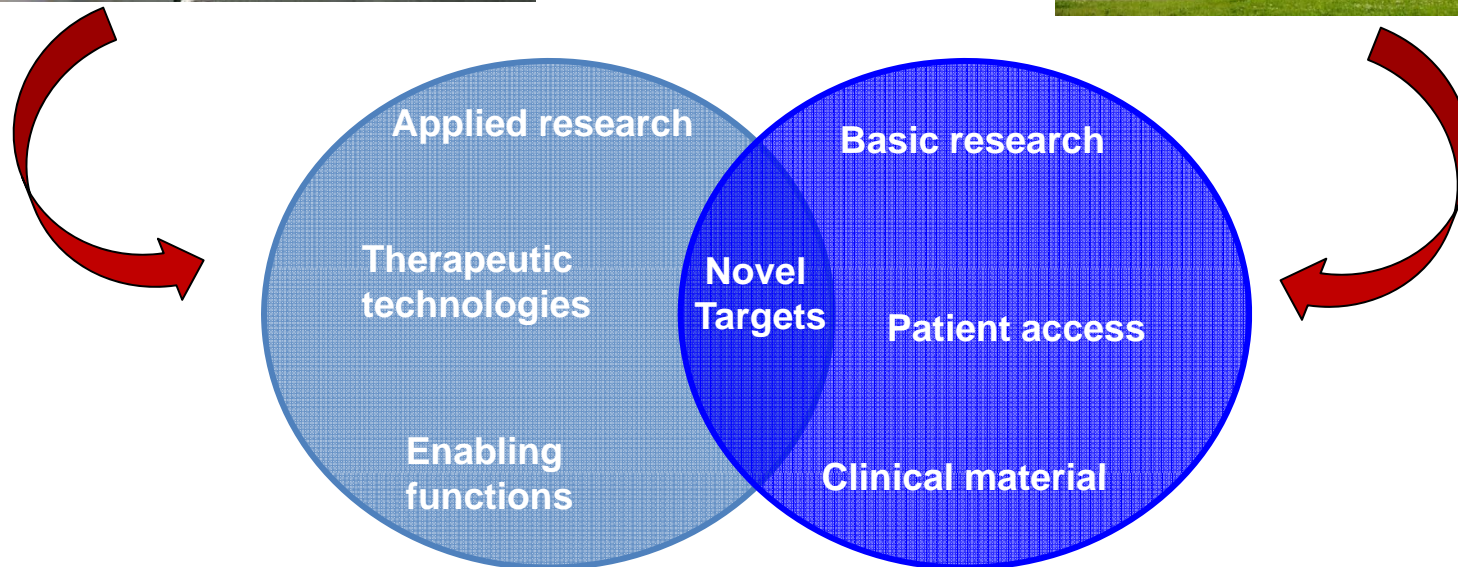
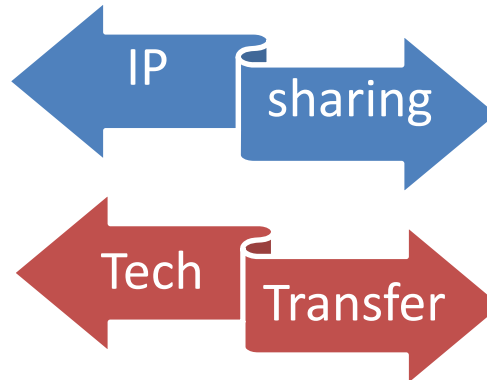
Creating an Engine for Sustainable Innovation

Transforming the Model for Biopharma Research

Big Pharma

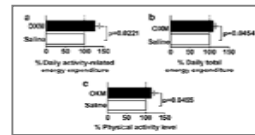
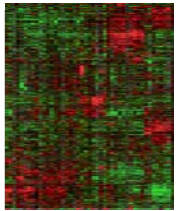


Academic Centers



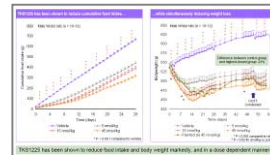
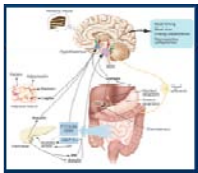
Increasing Biopharma R&D Success: Precision Medicine

Precision Medicine: **Right Target, Right Drug(s), Right Patient**

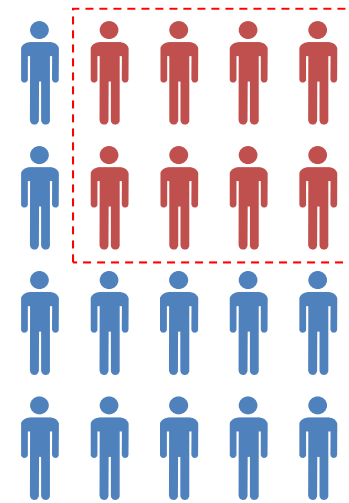


Building disease understanding to identify the right pathways and targets

Linking genetic disease understanding and clinical outcomes



Medicines targeting patient segments that will have an optimal response to therapy



Target & Diagnostic Technology (IP & Tech Transfer)

Smaller Faster Clinical Trials & Earlier Regulatory Filings

Segmenting Patients
(5-20%+ patient subgroups, not individuals)

Classic Development Plan for a New Cancer Drug

Clinical Trial Objectives

- Identify the dose for the drug, scheduling, safety, etc.
- Antitumor activity

Cancers Studied

- Advanced cancers
- Cancers not responding to treatment

Patient Criteria to Enter Trial

- Basic selection criteria, e.g., failed previous drug therapy, etc.
- No genetic testing of driver of the cancer to segment patients

New Drug Discovery and Early Drug Development



2002

Drug Screening
Program

2004

Drug Discovered

2006

Drug Starts
Clinical Testing

A New Cancer Gene Discovery in 2007

New Cancer Gene Driver

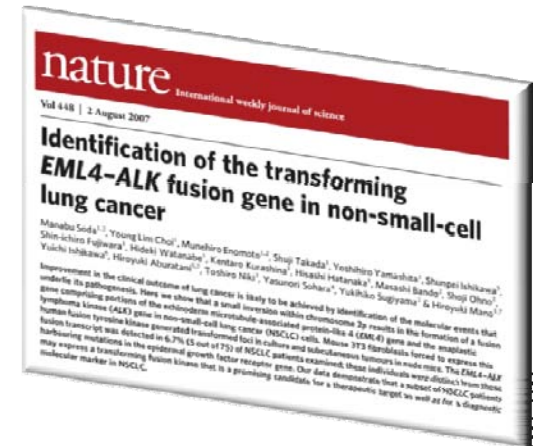
- A new cancer gene discovered in lung cancer patients in **August 2007**
- Test drug shrinks tumors in mice with the gene

Identify Patients in the Clinic

- Diagnostic test to identify patients with the new cancer gene in lung cancer in **December 2007**

New IP for Gene Driver

- Two companies independently discovered the cancer gene and both filed for patents



Published August 2007

Pooling of IP for the New Cancer Gene

Cancer Gene IP Estate #1



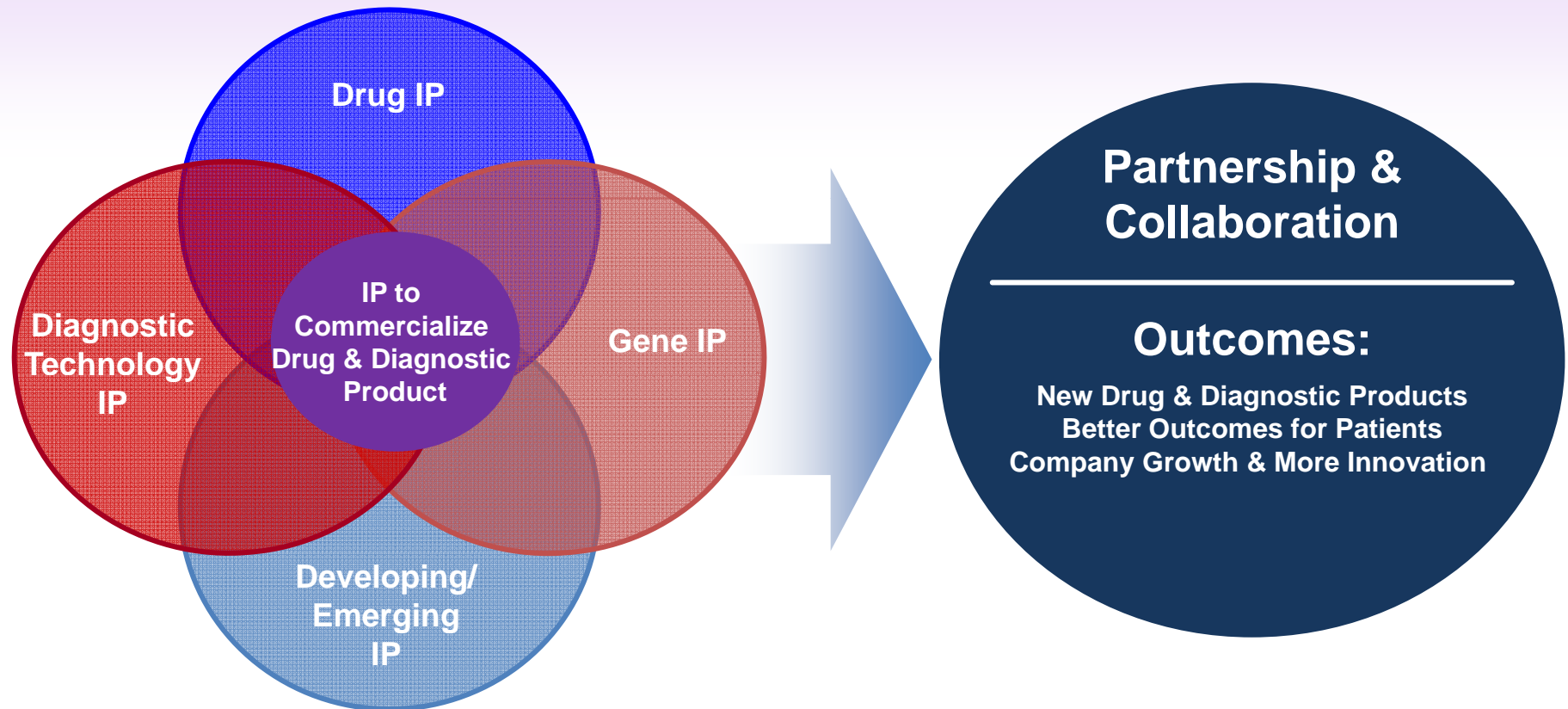
Cancer Gene IP Estate #2



Pooled Cancer Gene IP Estates

The New Frontier for Innovation in Pharma

IP & Tech Transfer from Multiple Parties May Be Required to Commercialize a Product



How will access to IP & tech transfer impact the pace of Innovation?

Development of New Drug – a Precision Medicine

Testing Patients for
New Cancer Gene



Drug & Diagnostic
Test Approved

2007

1H2011

2H2011



New Drug and
Diagnostic
Applications Filed



Translational Research Quickly Becoming Medical Practice

Questions on Challenges in IP Access & Tech Transfer

Developing Models

- What types of models support the transfer and access to key patent portfolios for companies working in the same space?

Comparing Models

- Are models to support access to competitive patent portfolios similar across different technology areas, e.g., mobile phones (wars) vs. pharma?

Value of Pooling IP

- Are patent pooling agreements between parties the answer? Do they drive transaction efficiencies or do they slow innovation?

Risks of Pooling

- What competitive risks are presented by typical pooling arrangements? In what way can patent pools be made pro-competitive?

Culture & Competitive Questions for Consideration

Culture Drivers

- What are the critical drivers necessary to create a culture of collaboration between academic, small entities and big Pharma to support the development of new products? What about other industries?

Speaking the Same Language

- How do we become *multilingual* when companies from different technology areas have to partner together to make a new product a success?

Proximity of Partners

- How important is proximity of research organizations to effectively transfer technology, develop and manage patent portfolios?

Working in Pre-Competitive Space

- How do we draw the lines between the non-competitive space from the competitive space and share access to information? How does it impact future patent portfolio development and the pace of innovation?