

Drug Development: Translational Research and Academic-Industry Collaboration

Seth R Stevens, MD

Director, Medical Affairs

Amgen Inc

Important Note

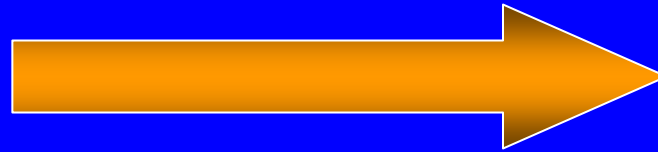
This presentation includes a brief backgrounder for Amgen Medical Affairs personnel to use when introducing Amgen's Policy on Interactions with Healthcare Professionals to current and potential research partners.

This presentation is not intended to provide legal advice.

Persons and entities engaging in transactions with Amgen should consult their counsel to ensure the proposed arrangement meets their own standards and understanding of the law.

Simple Model of Drug Development

Bench

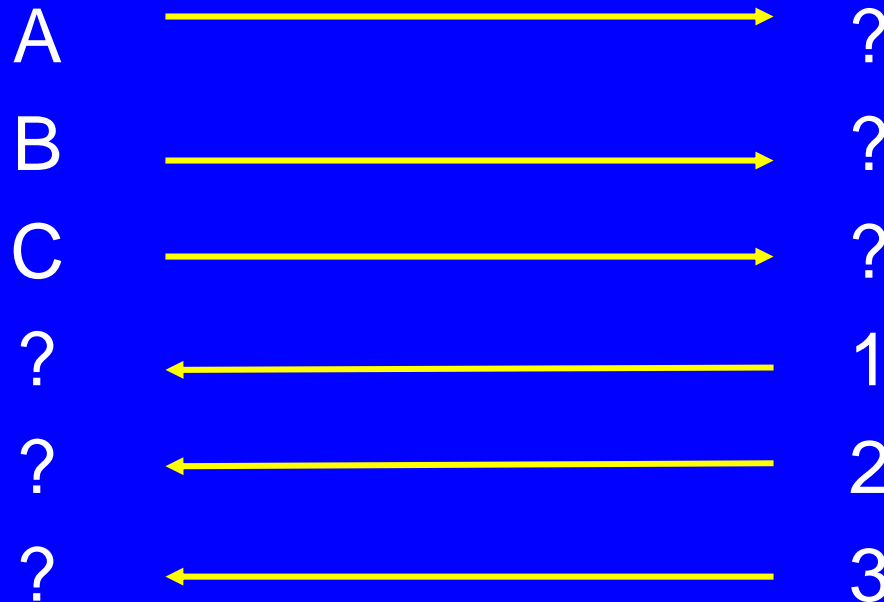


Bedside

Comparison of Model and Disease

Model

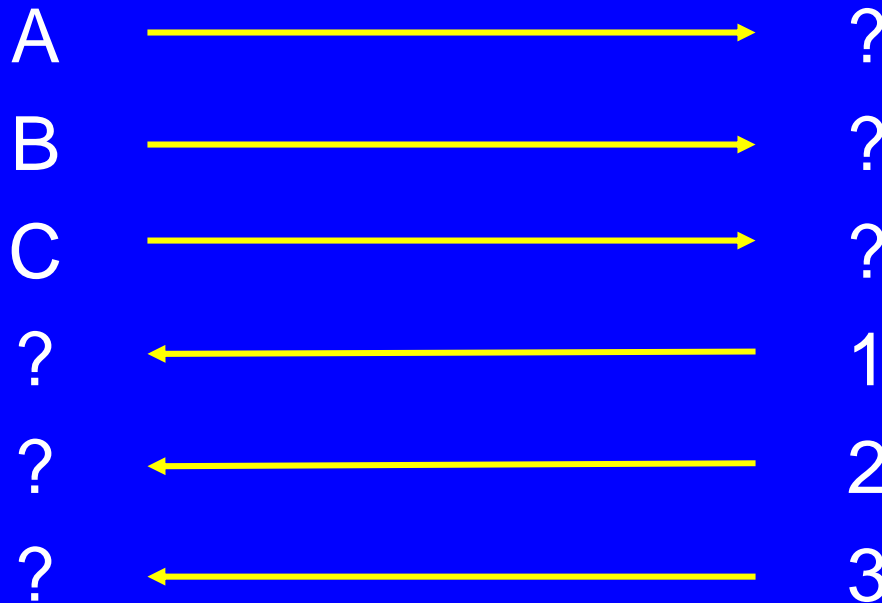
Disease



Translational Research

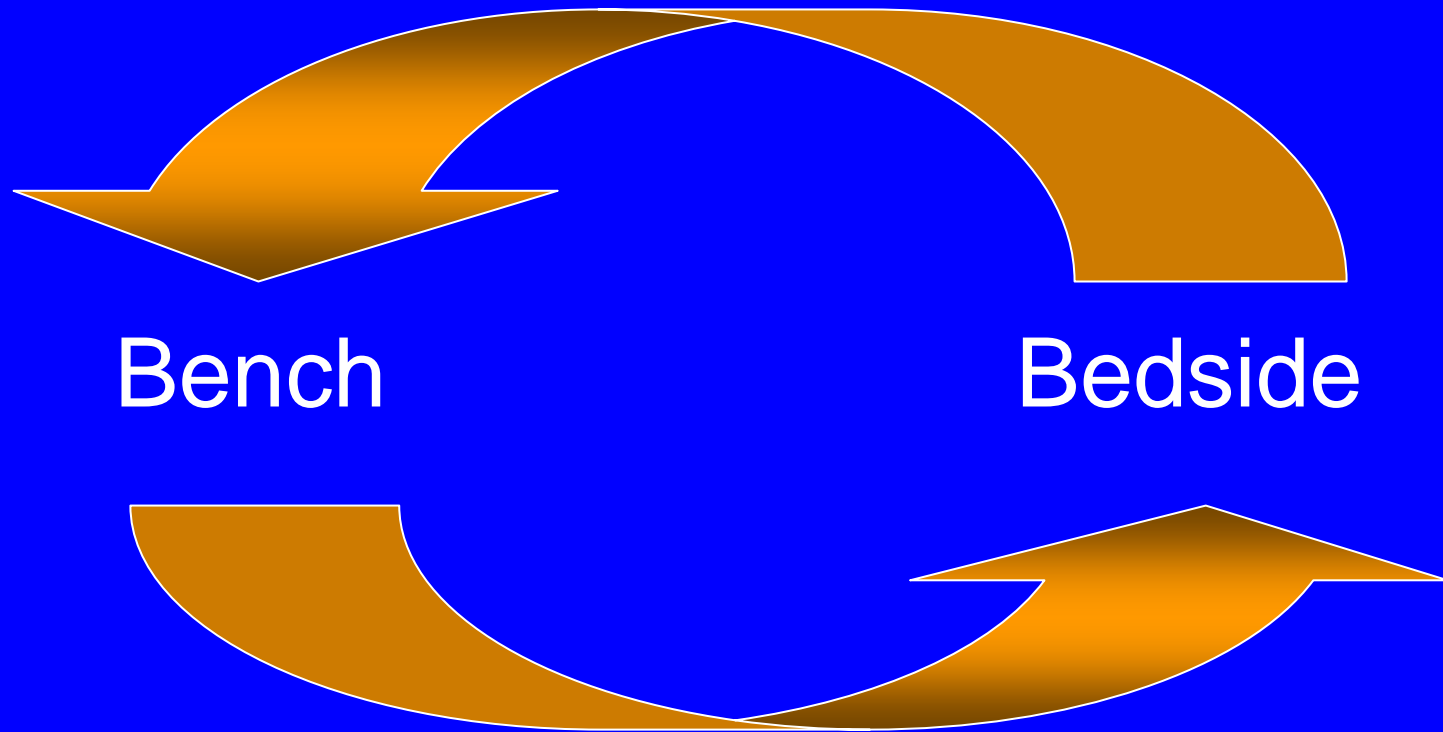
Model

Disease



Translational Research

Intervention



Bench

Bedside

Translational Research

What do therapeutics need to do to work?

1. Achieve effective plasma level
2. Effective concentration for effective duration at target site
3. Drug-target interaction take place
4. Desired biologic effect

Translational Research

Successful Clinical Trial

- Predict responses
- Isolate other targets in pathway
- Clarify MOA/Pathophysiology

Failed Clinical Trial

- Alternative pathways
- Alternative metabolism

Overcoming Barriers

Interdisciplinary Teams

Laboratory-based investigators

Preclinical validation

In situ biomarker assessment

Surrogate endpoint measurement

Clinical Investigators

Plan and execute clinical trial

Imaging/interventional radiology

Pathology

Molecular pathology

Statisticians

Research Nurses

Data Managers

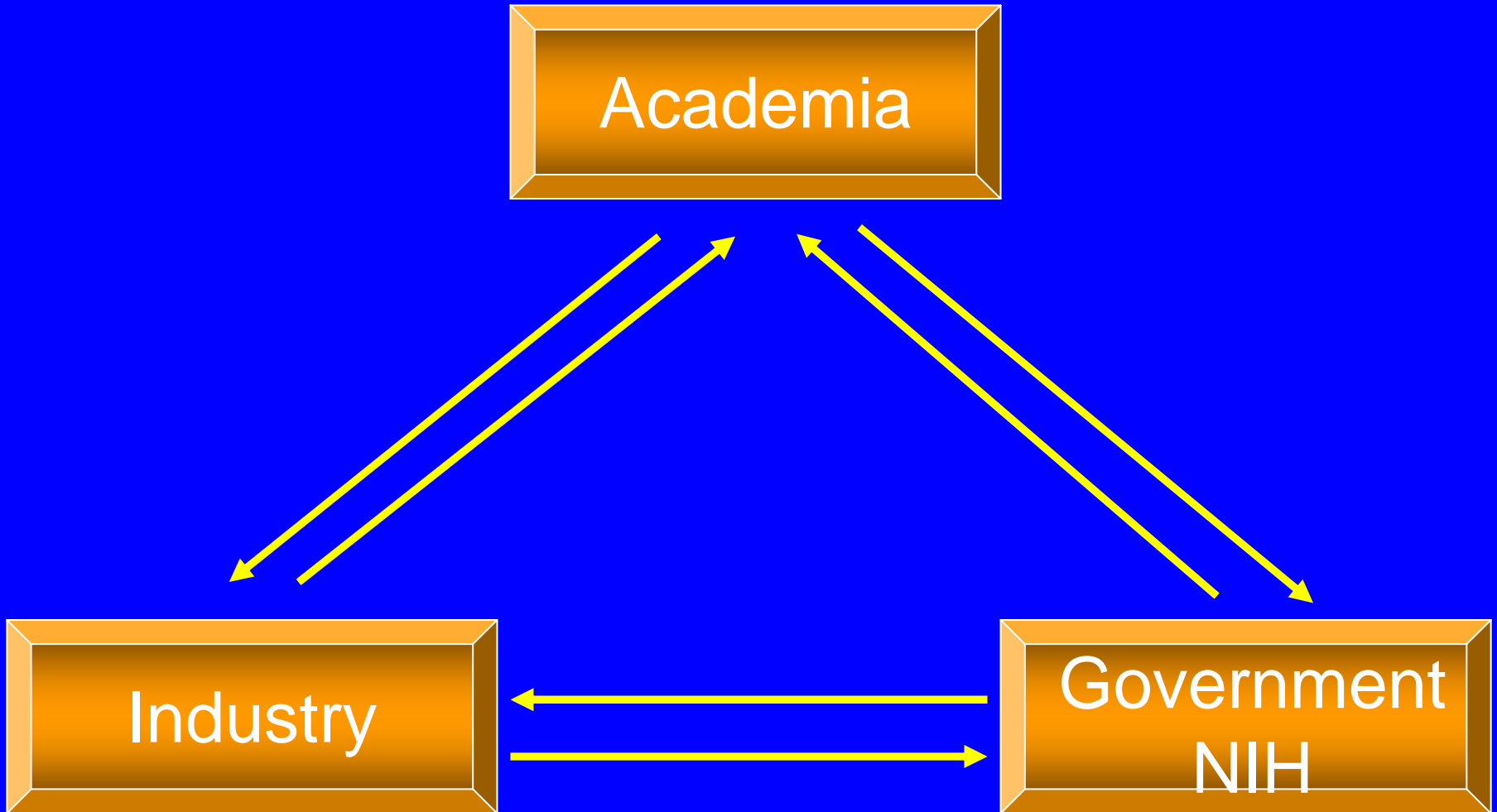
Project Managers

Others

Physicists

Bioinformatics

Collaboration



Understanding Industry

- Legal and Regulatory Environment
 - Anti-Kickback Laws
 - Off-label Promotion Laws

Anti-Kickback Law

- The Anti-Kickback Law prohibits payment of any remuneration, direct or indirect, in cash or in kind, in order to induce any person to use or recommend the use or purchase of Amgen products that may be paid for by Medicare, Medicaid or other federal health care programs.
- Almost any payment or benefit given to a Customer or potential Customer could be viewed as payment for business if it is substantial enough to affect the recipient's judgment.
- Penalties under this law are severe, and can include the following:
 - Prison
 - Civil and criminal fines
 - Exclusion from the Medicare Program and other Federal health care programs

Off-Label Promotion

- **Misbranding**
- **Introduction of an unapproved drug into commerce**
- **False Claims**

Some requirements

Best evidence

- Study design
 - Rigor (if not RDBPCT, why not?)
 - Size
- Likely to produce useful new information

Appropriate interactions

- Of interest to the company
- Fair market value
- Written agreement

Summary

Translational research is complex

Effective collaborations between academics, industry and government will bring necessary components together

Different cultures and demands must be understood and respected to maximize benefits from these collaborations