Conditions for Success of Cor Therapeutics, inc

- Good scientists *inside the company*
- University intellectual property and licensing experts
- Business leadership
- Snake Venom

Corporate-Sponsored Research Center at an Academic Institution

¥ $

Daiichi Pharmaceuticals

University of California, San Francisco

-Research Training

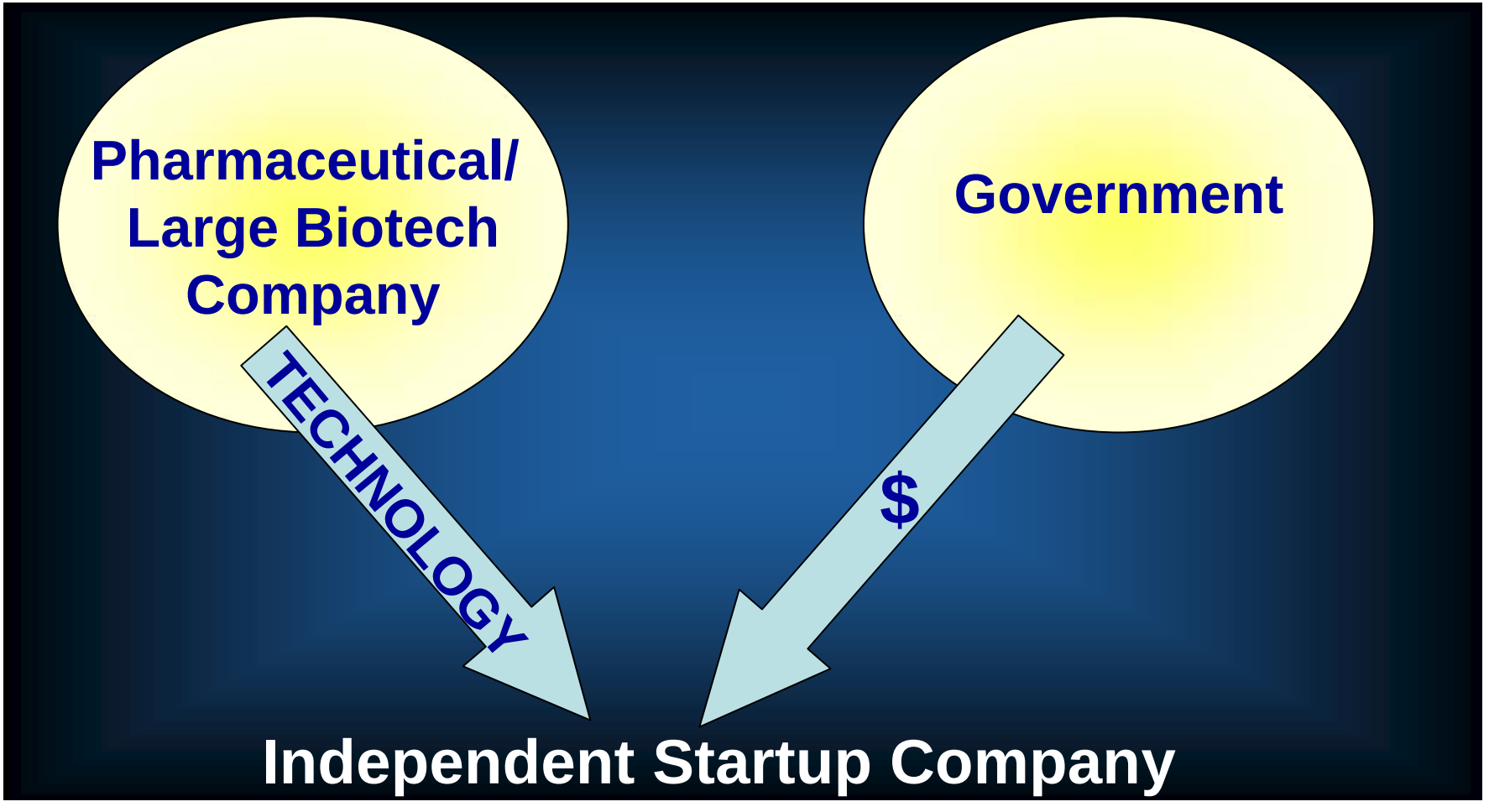
-Intellectual Property

Other Examples: Bristol, Amgen, Sandoz, J & J, Boehringer Ingelheim

Corporate-Sponsored Research Centers at Academic Institutions

- **Positive Outcomes**
  - Funding for science
  - Encouragement of academic scientists to think about drug discovery
  - Intellectual Property
- **Negative Outcomes**
  - Uncertain return on investment (weak commercial link)
  - Culture clash: business and academia
  - Possible constraints on individual academic investigators

S*Bio- A Biotechnology Start-Up Company Founded by Chiron Corporation and the Singapore Government



Another Model for Commercializing Academic Discoveries: University and Single Large Investor

Investment Group

$

University

TECHNOLOGY

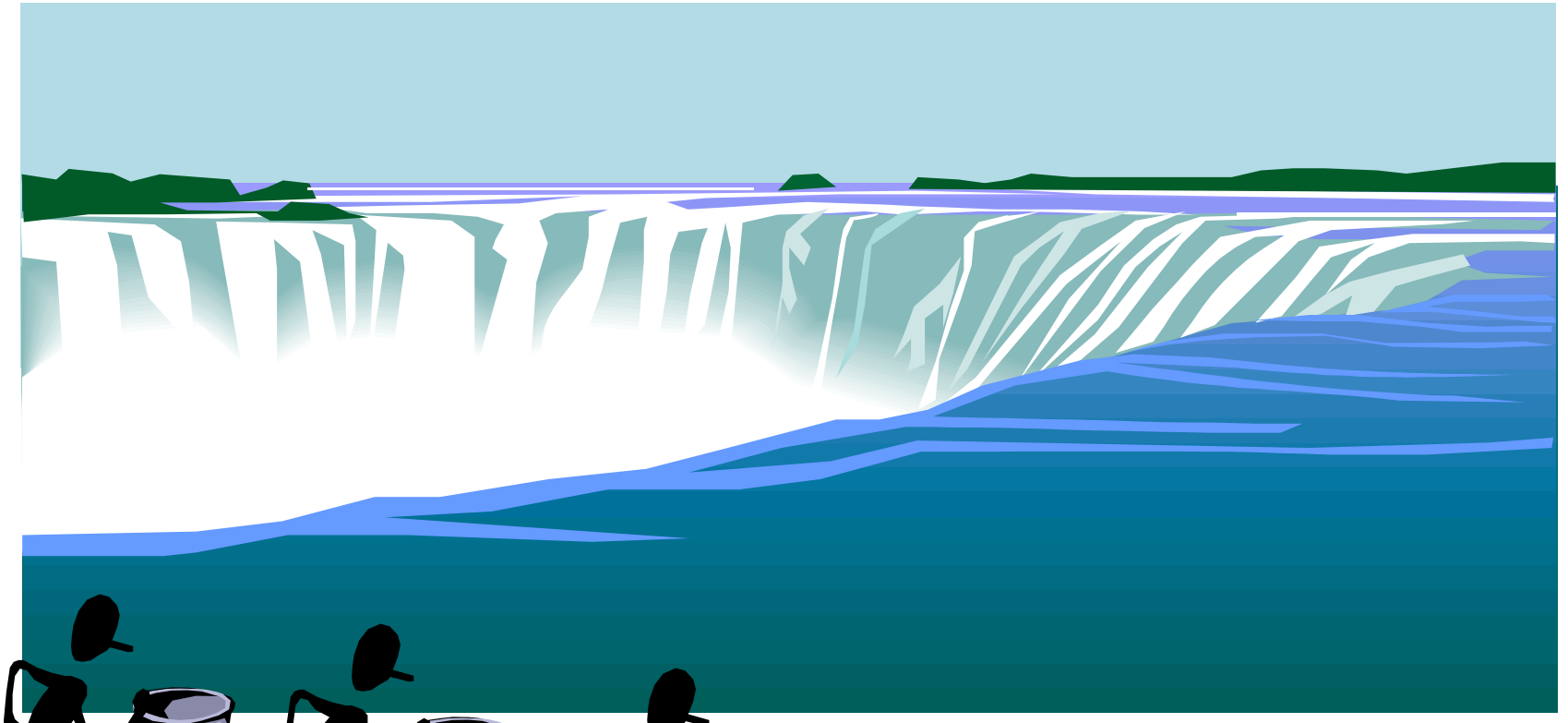
COMPANY

Access to University Inventions

Specialized Clinical Development Capabilities: Discoveries → Products

Equity: University/Investors/Employees (? University scientists)

Genomics and Drug Discovery

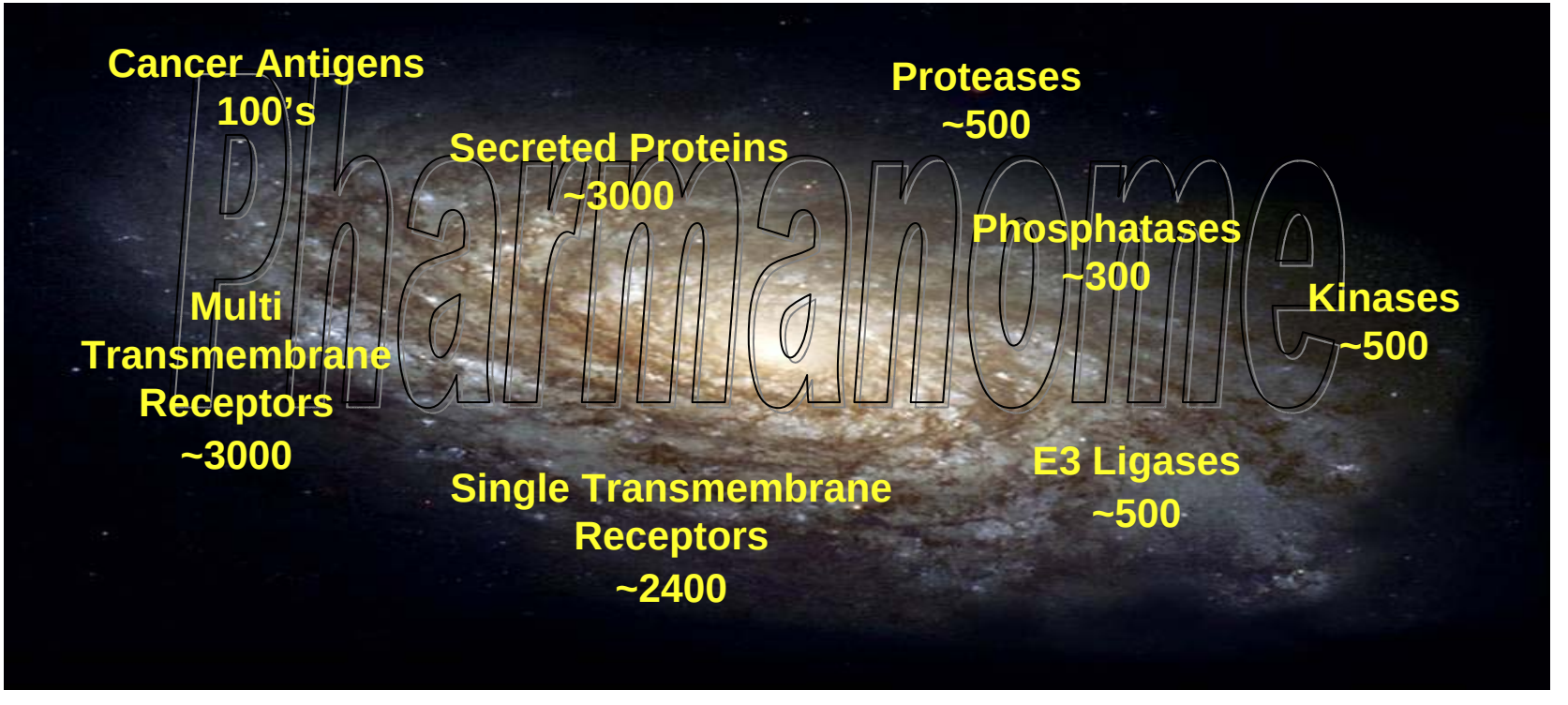


Inadequate paradigm for capitalizing on breadth of the genome!

New Era of Biotech Innovation

- New paradigms that capitalize on the breadth of the genome
  - The use of **whole sets** of protein families for target selection and screening
  - Emphasis on Protein Function to help prioritize targets
- The use of more Integrated Biology to give better and earlier predictions of the success of drug candidates

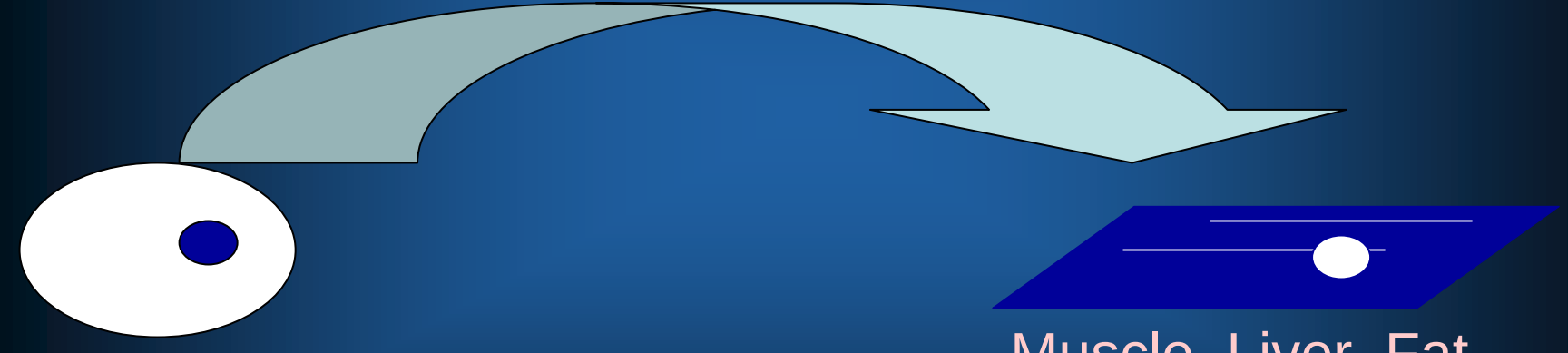
In the universe of proteins, certain “’Whole Sets” can be used to change the paradigm of drug discovery



Secreted Proteins….

… an example of taking a “Whole Set” approach to find new *therapeutic* proteins: Start with Whole Set of Secreted Proteins and find those with desired function

Example of a Secreted Protein: Insulin



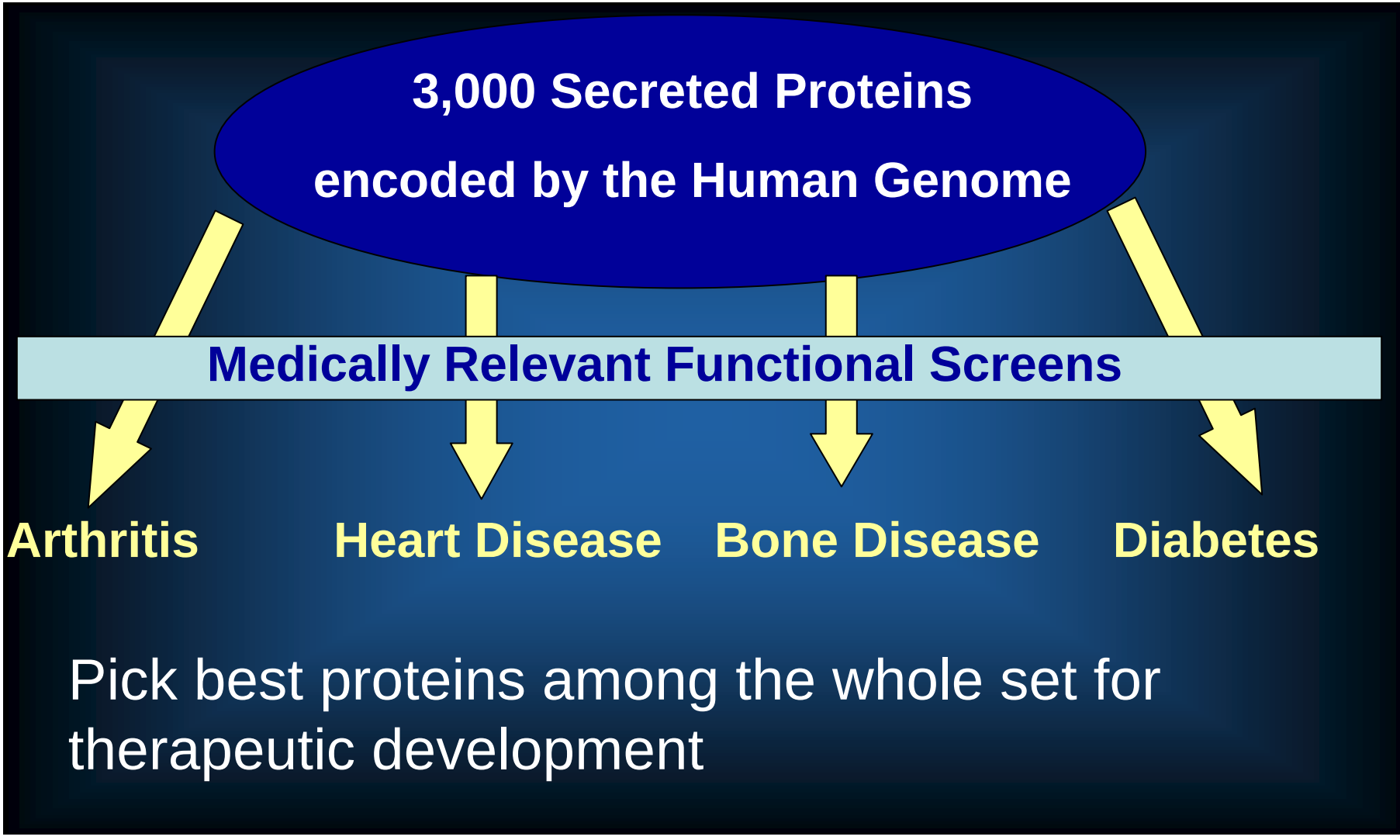
Insulin is one of the 3,000 secreted proteins in the body. In diabetes, Insulin is given to patients as a Therapeutic Protein Drug.

New Therapeutic Protein Products (like Insulin) Will Come From the Set of Secreted Proteins

- Total Number of Proteins: ~100,000
- Current Number of Therapeutic Protein Products: 20
- Number of Secreted Proteins in the Human Genome 3,000

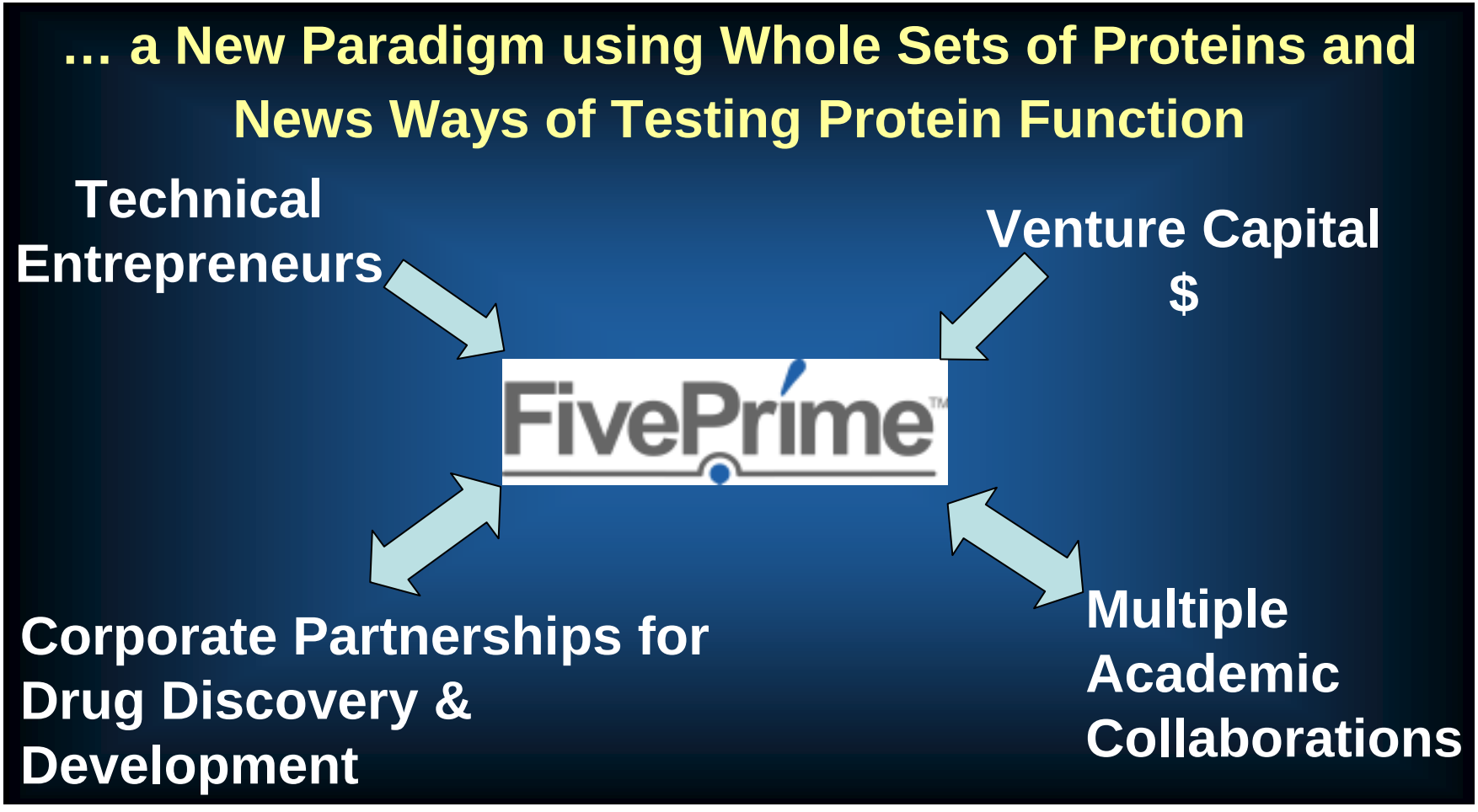
Many New Protein Products Will Come From This Group

Therapeutic Protein Products: Using the Whole Set Approach



Pick best proteins among the whole set for therapeutic development

Five Prime Therapeutics…



Graduate Education: Enhancing Future Drug Discovery

- **Cross-Discipline Training**

Genomics
Chemistry
Computer Science
Math
Engineering
Cellular and Molecular Biology

Medicine !

Integrated Biology (Physiology)
Pharmacology

- **Pharmaceutical science should be a vibrant field of study**
- **One priority for academia: Doing something "practical"**

Summary

- New era of biotechnology: academia and business can capitalize on recent science
- Need **new experimetal paradigms** to study **protein function** in order to take advantage of the breadth of the genome
- Need great science **inside** companies as well as in universities
- Biotechnology companies need **medical focus** and good business models
- New **educational paradigms** – new approach focusing on integration of functional information