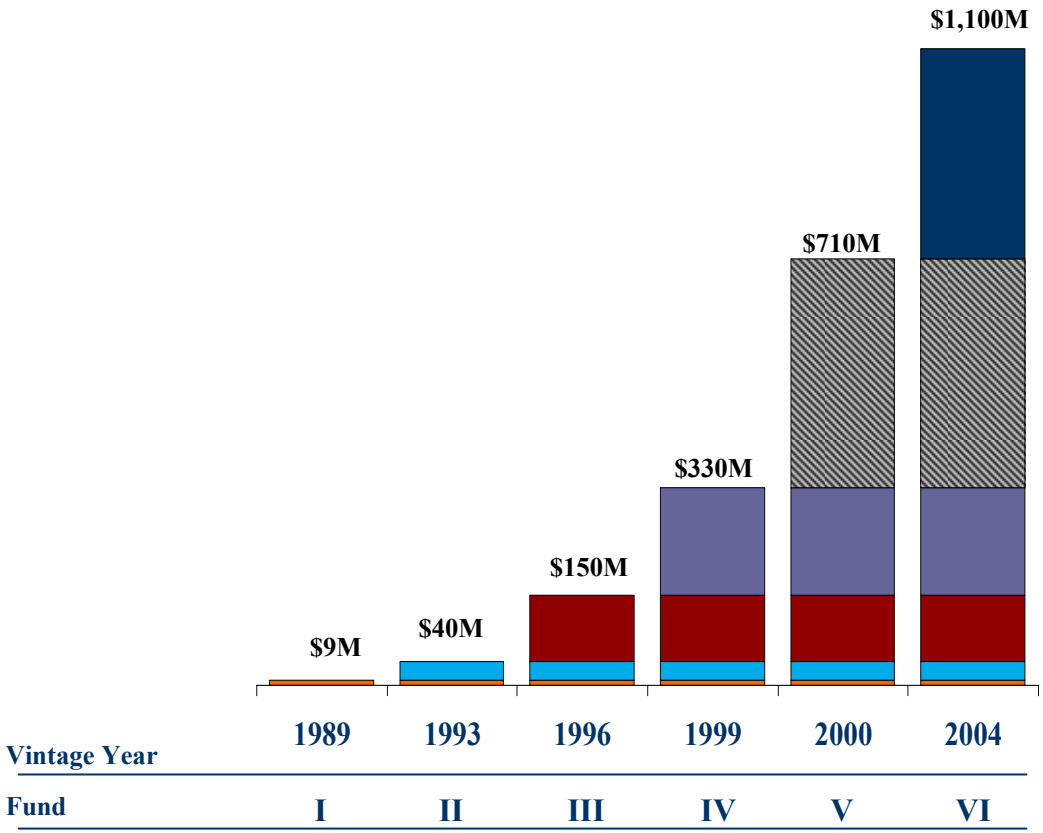
Paul Thurk

ARCH Venture Partners

September 22, 2005

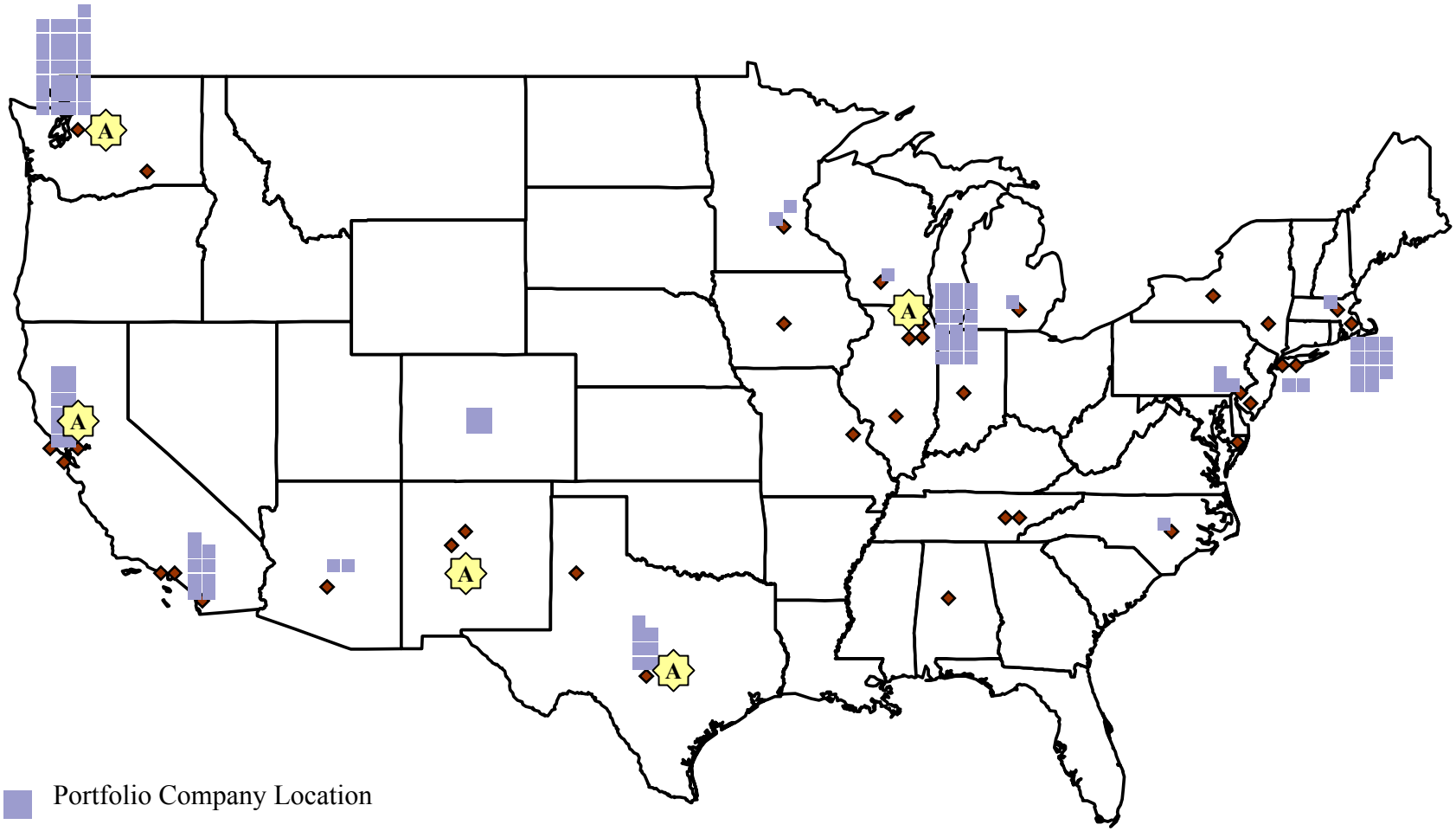
Austin, TX

ARCH Venture Partners



- ARCH Development Corp founded by University of Chicago in 1986
- 17+ years of venture capital investing
- Nationally recognized, nationally focused
- 100+ investments and 49 active portfolio companies
- 40 IPOs and acquisitions
- 24 employees with 17 investment professionals

National Scope



Portfolio Company Location

Technology Source

ARCH Office: Chicago IL, San Francisco, CA, Austin TX, Seattle WA, Albuquerque NM

ARCH Technology Sources

UCSF University of California, San Francisco

CALTECH

UNIVERSITY OF WASHINGTON
BOTHELL SEATTLE TACOMA

THE UNIVERSITY OF CHICAGO

UNIVERSITY OF CALIFORNIA, SANTA BARBARA

UCSD

MIT
massachusetts institute of technology

Harvard University

University of California
Berkeley
Guide for Corporations

STANFORD UNIVERSITY

COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK

UCLA

Los Alamos
NATIONAL LABORATORY

UNIVERSITY OF MICHIGAN

Sandia National Laboratories

NATIONAL CANCER INSTITUTE

UNIVERSITY OF WISCONSIN SYSTEM
UW

OAK RIDGE NATIONAL LABORATORY

Jet Propulsion Laboratory
California Institute of Technology

THE UNIVERSITY OF TEXAS AT AUSTIN

Lawrence Livermore
National Laboratory

NATIONAL INSTITUTES OF HEALTH

USC

Washington University in St.Louis

Pacific Northwest National Laboratory
...delivering breakthrough science and technology

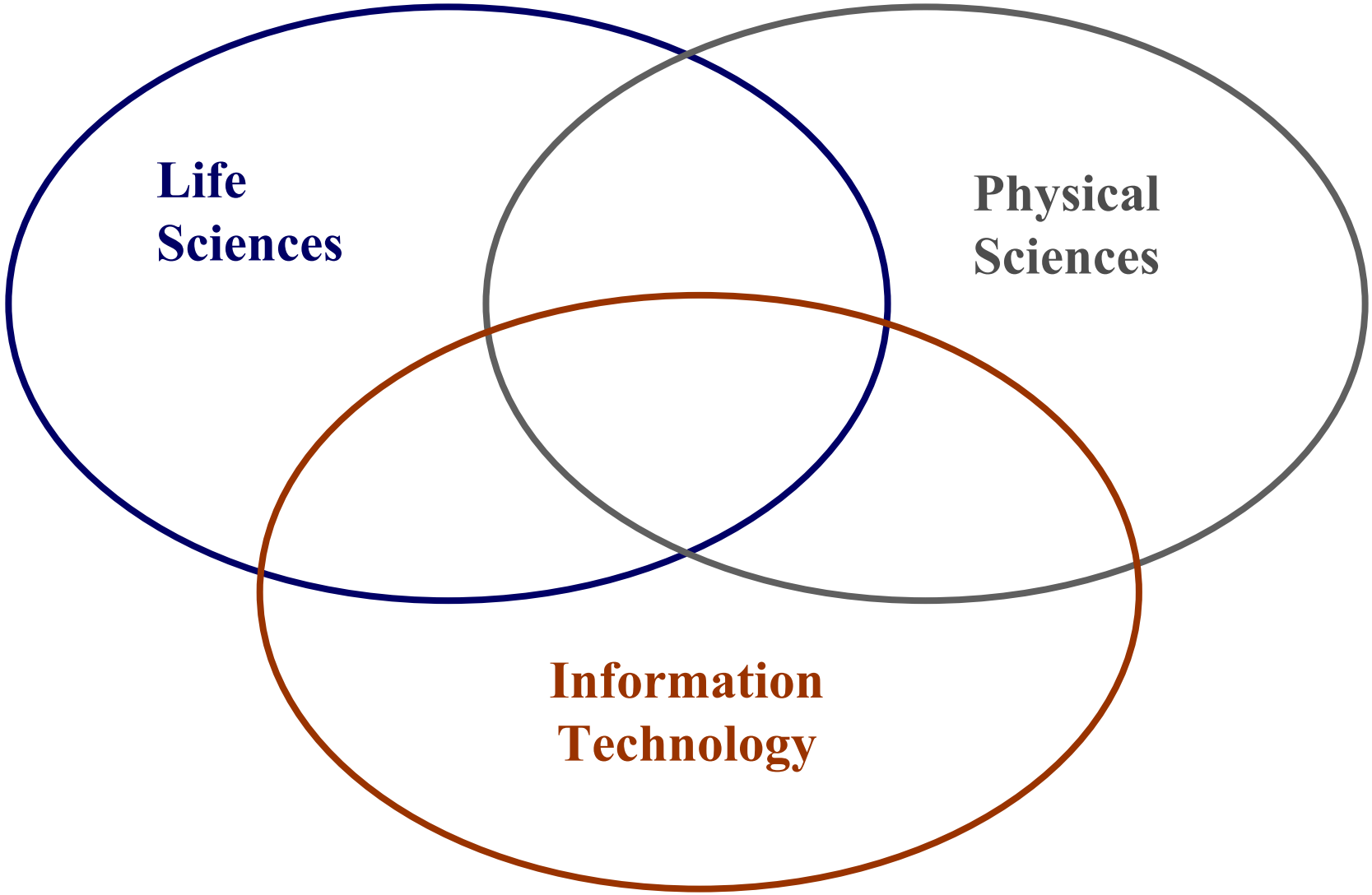
Penn
UNIVERSITY of PENNSYLVANIA

CORNELL

Work with Leading Scientists

- Eugene Fitzgerald, Massachusetts Institute of Technology
- Angela Belcher, MIT / Evelyn Hu, UC Santa Barbara
- Carver Mead, CalTech / Chris Diorio, Univ. of Washington
- Dan Botez, University of Wisconsin, Madison
- Wendye Robbins, University of California, San Francisco
- Charles Leiber, Harvard University / Paul Alivisatos, UC Berkeley
- George Whitesides, Harvard University
- Leonard Guarente, MIT / Cynthia Kenyon, UC San Francisco
- Phil Sharp & Paul Schimmel, Massachusetts Institute of Technology
- David Walt, Tufts University
- Graeme Bell, UC San Francisco (now with University of Chicago)
- Carl June & Craig Thompson, University of Pennsylvania

Convergence



Portfolio Companies

R&D Funding in the US

- 2003 total US R&D expenditure was about $280Billion
  - Industry Funded: $190Billion
  - Public Funded: $90 Billion
    - Universities and Colleges: $40B
    - Industry: $15 B
    - Federal Government R&D (including DOE labs): $23 B
    - Federally Funded R&D Centers: $12 B

New Company Model

Looking For….

- World Class Researchers
- Big Problems; Big Market
  - Platform
- Broad IP Possibilities

Getting Started….

- Organize a Company
- Recruit Management & Team
- Role for Scientists
- Secure License(s) to IP
- Consolidate [other] IP

Licensing

- Field of Use
- Exclusivity
- Economics:
  - Cash
  - Royalty on Sales
  - Equity
  - Maintenance Fees / Minimum Royalties

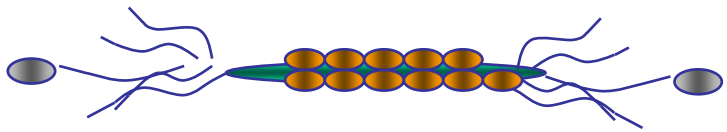
CAMBRIOS

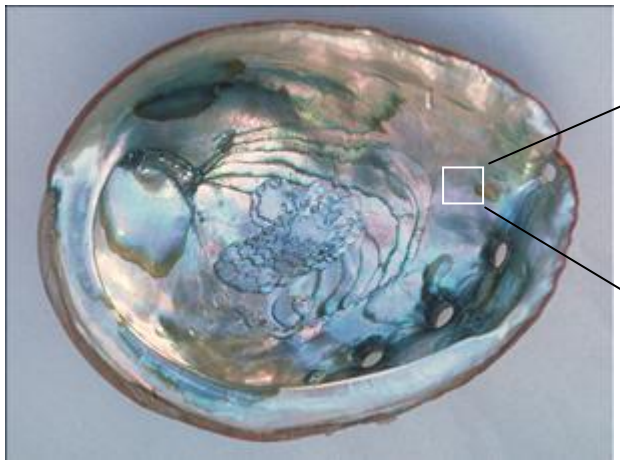
THE UNIVERSITY OF TEXAS AT AUSTIN

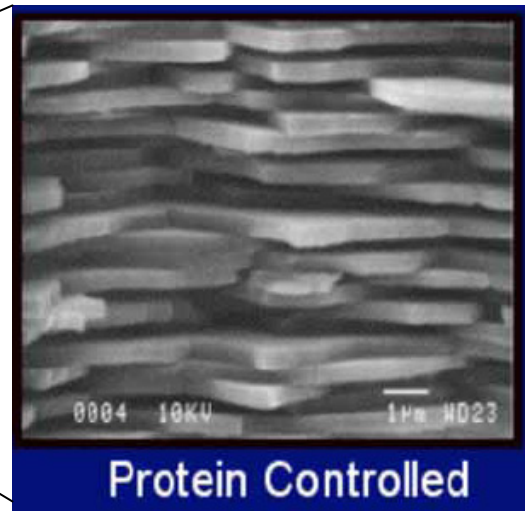
Dyax

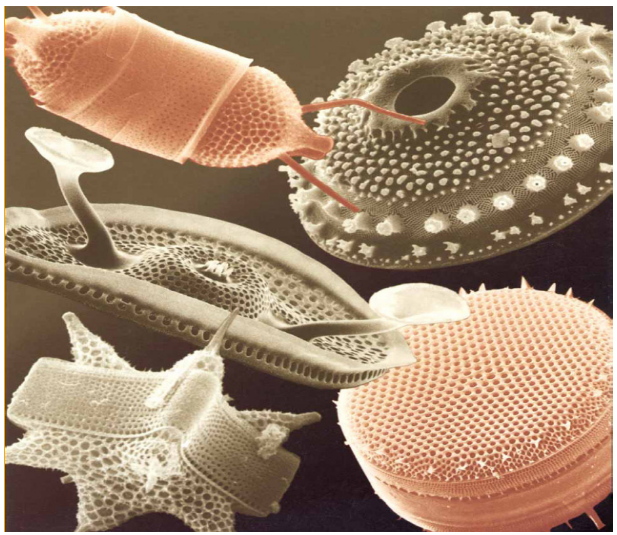
MIT
massachusetts institute of technology

UNIVERSITY OF CALIFORNIA, SANTA BARBARA







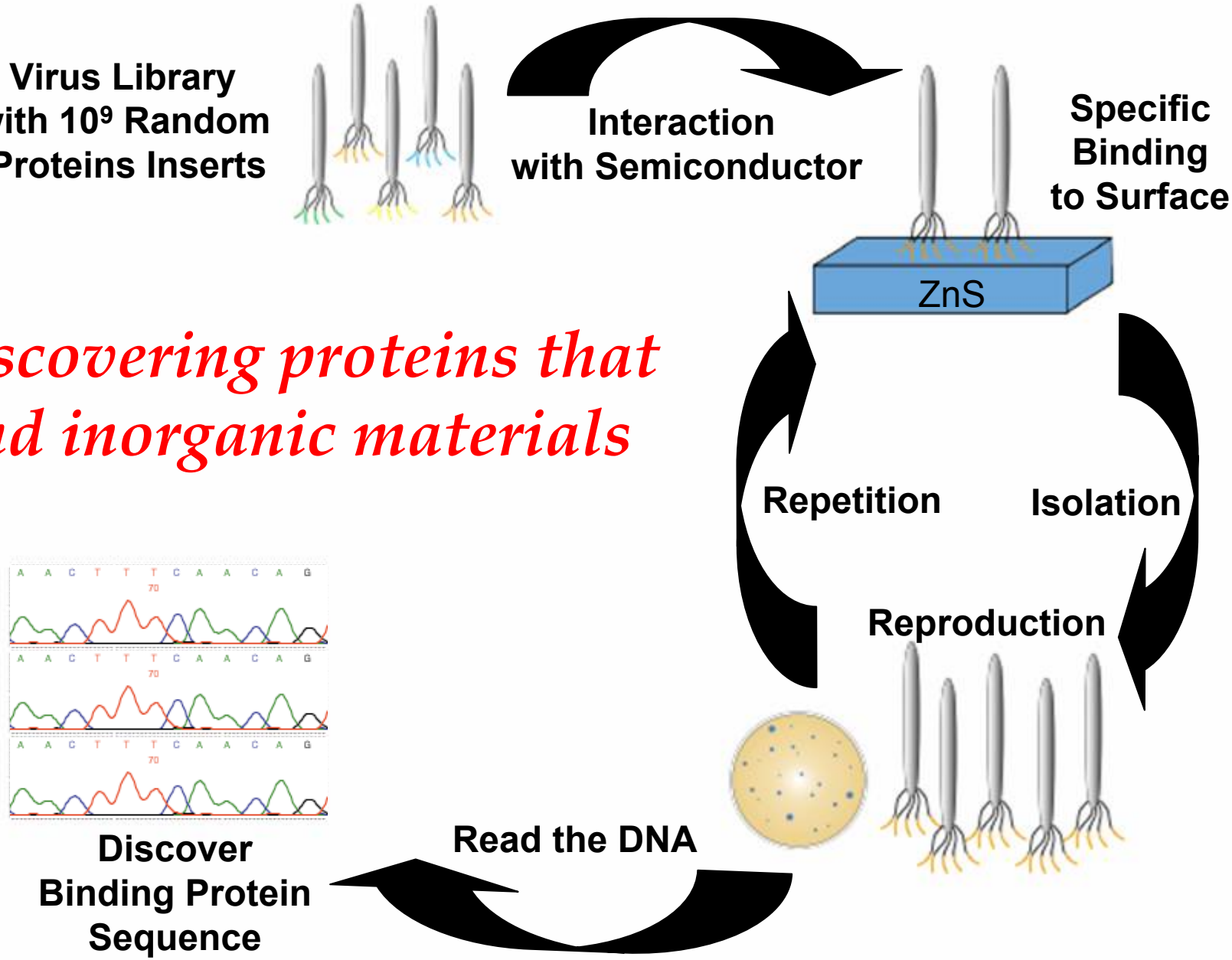


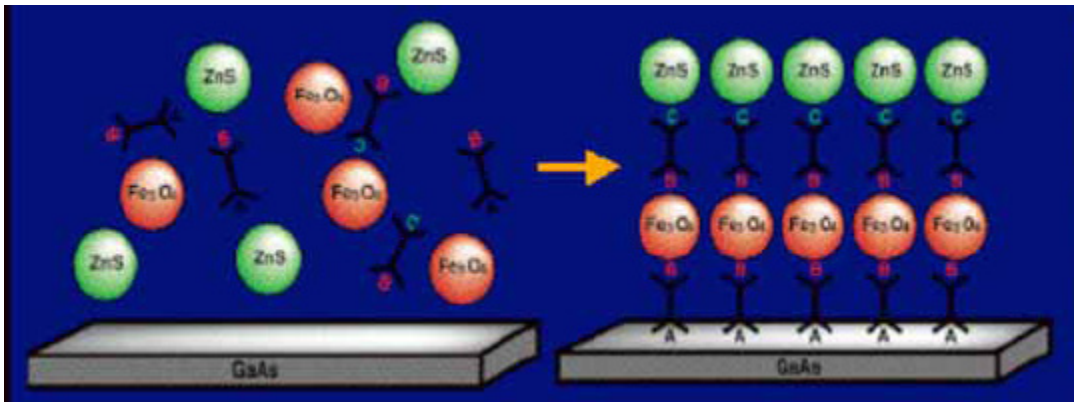
Nature manifests tremendous variety, even within the same environment.

Evolution has used genetic modifications to produce this variety.

Even so, evolution has exploited a small portion of the periodic table.

Discovering proteins that bind inorganic materials





- Genetic control of broad set of building blocks
- Massive parallelism
- Nanoscale control of positions, assembly, material composition

nanosys

- Fundamental Building Blocks
- Compositions of Matter
- Manufacturing Strategies
- End Applications *(Sensing, Optoelectronics, Nanoelectronics)*
- Device Configuration
- Rapid Prototyping and Characterization Tools

Harvard University

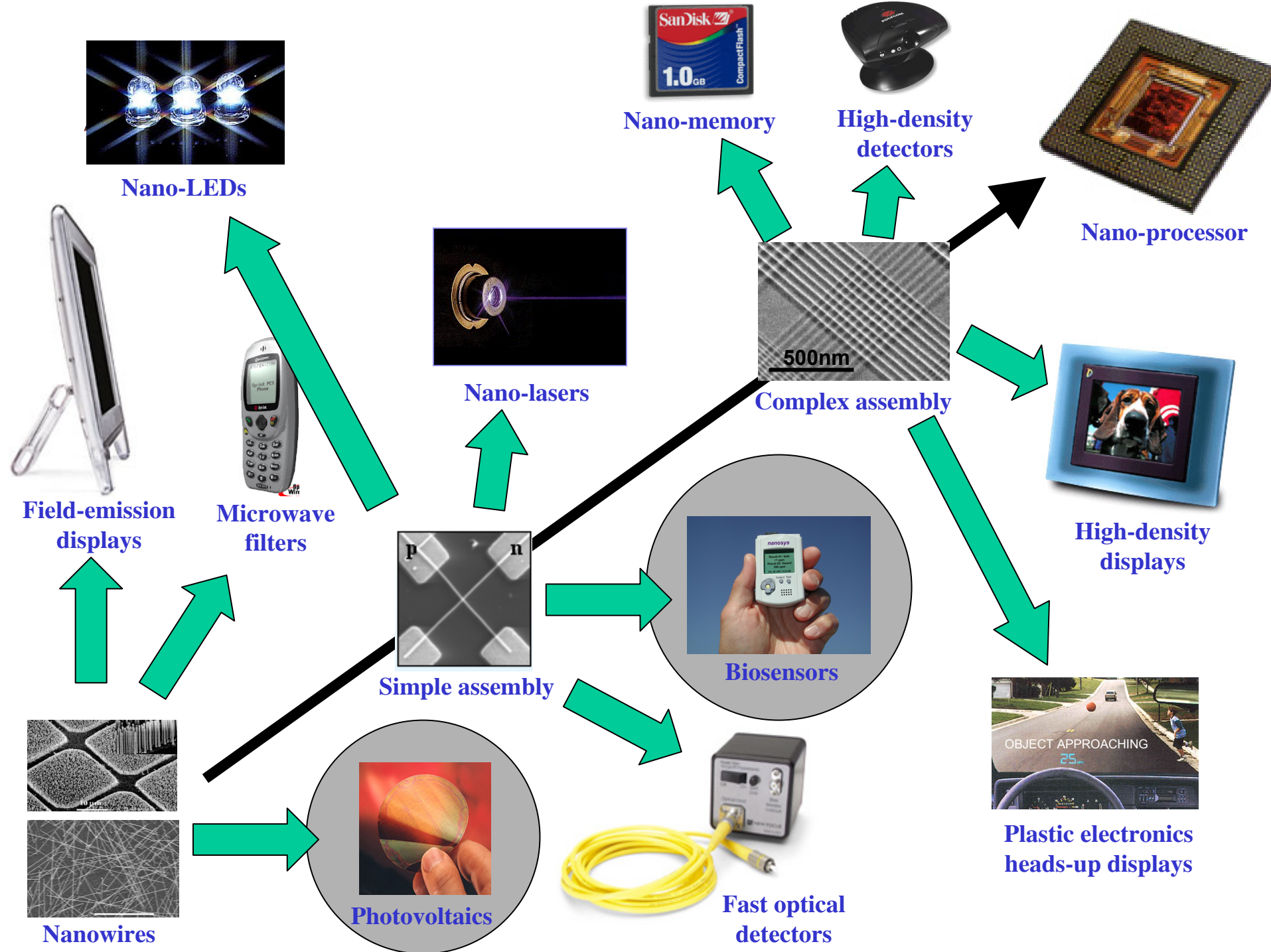
University of California Berkeley Guide for Corporations

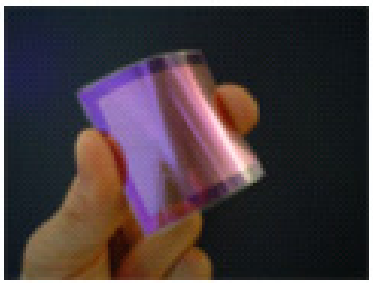
MIT massachusetts institute of technology

COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK

UCLA

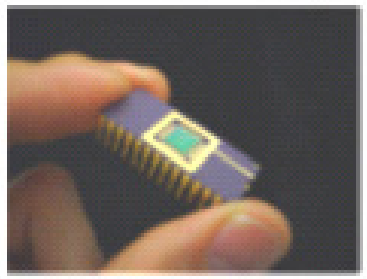
BERKELEY LAB


Nano-LEDs
Nano-memory
High-density detectors
Nano-processor
Nano-lasers
500nm
Complex assembly
Field-emission displays
Microwave filters
High-density displays
p
n
Simple assembly
Biosensors
OBJECT APPROACHING
Plastic electronics heads-up displays
Nanowires
Photovoltaics
Fast optical detectors

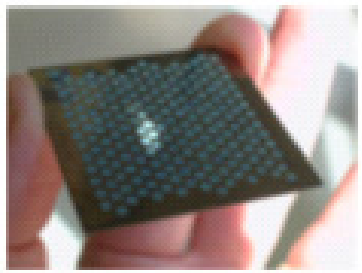


Conformal Solar Cells

Flexible Electronics



Memory

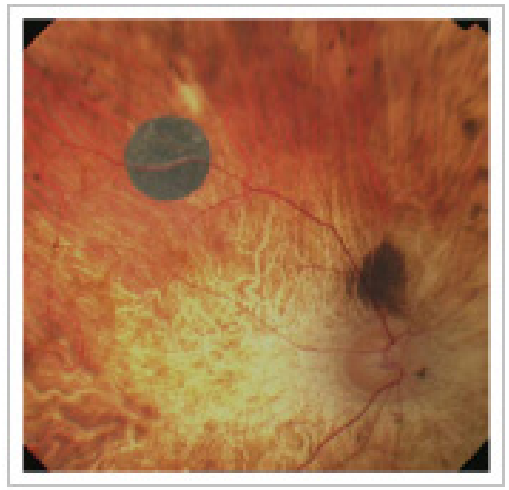


Drug Discovery Substrates

OPTOBIONICS™
Technology for Vision™

2mm ASR® device lying on a penny

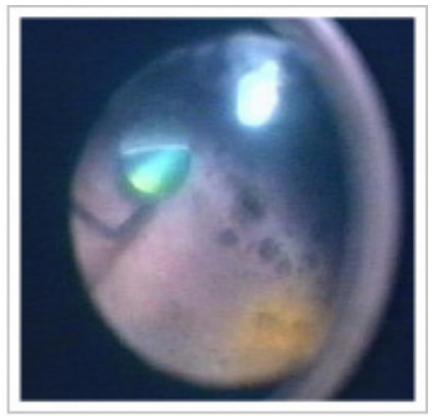
Artificial Silicon Retina



ASR® device implanted in the human eye

RETINITIS PIGMENTOSA

AGE-RELATED MACULAR DEGENERATION



ASR® device (blue green, left center above tool) being implanted in the subretinal space

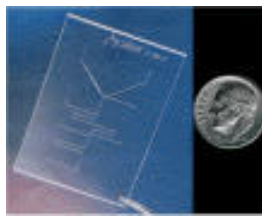
OAK RIDGE NATIONAL LABORATORY

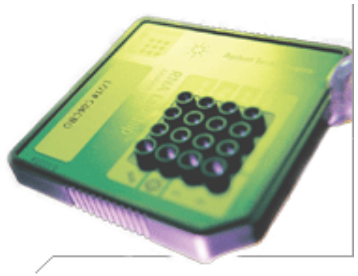
caliper

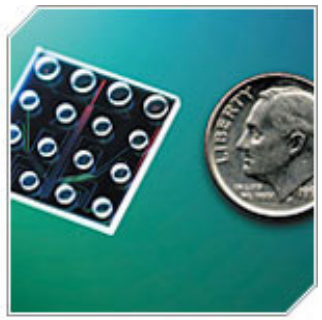
Princeton University

STANFORD UNIVERSITY

Penn
UNIVERSITY of PENNSYLVANIA







LabChip 3000
Drug Discovery System