Transforming Health through Information Technology: The NIH Roadmap

Elias A. Zerhouni, M.D.

Director, NIH

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Why a Roadmap?

- Accelerate the pace of discoveries in the life sciences.
- Need for more rapid translational processes.
- Urgent need for novel approaches that are orders of magnitude more effective than current approaches.

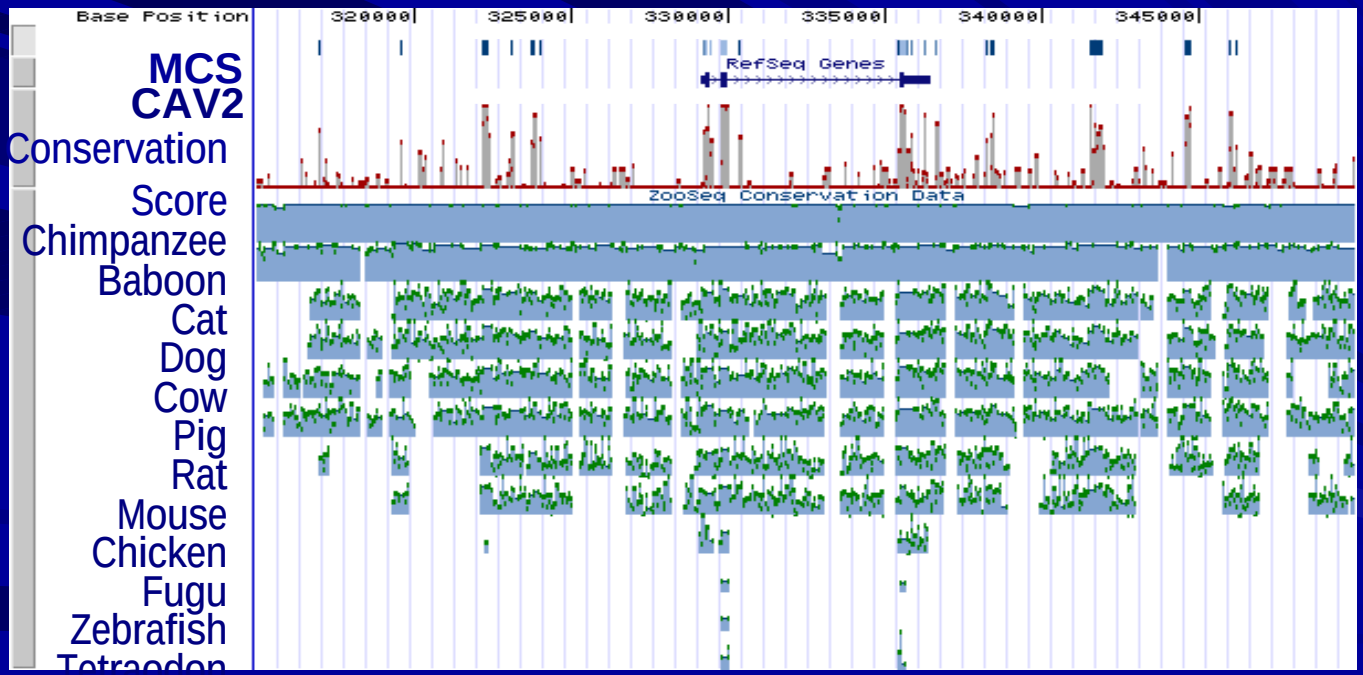
NIH Roadmap
Three CORE Themes

- New Pathways to Discovery
- Research Teams of the Future
- Re-engineering the Clinical Research Enterprise

Computational Biology:

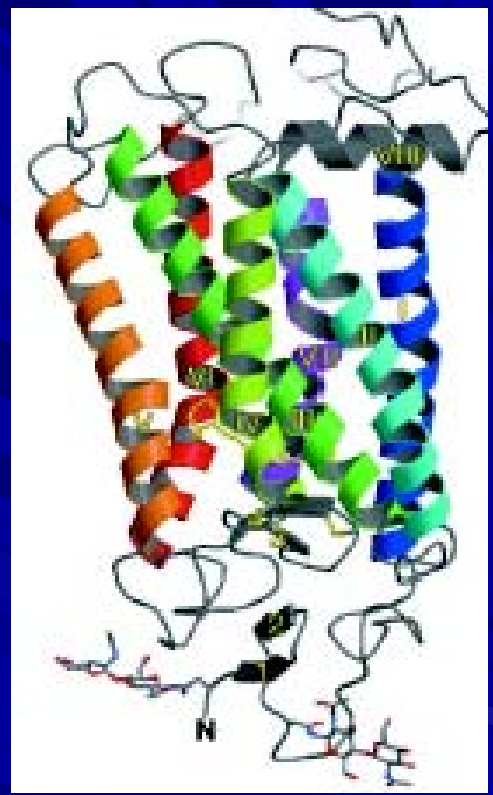
Modeling the Cell's Information Superhighway

National Centers for Biomedical Computing



Structural Biology:
Life in three dimensions

- Proteins that reside in cell membranes – the next frontier
- Long term goal: the ability to predict shape and function of any protein from sequence



Molecular Libraries: Putting Chemistry to Work for Medicine

- Six national screening centers for small molecules
- Public database for “chemical genomics”
- Technology advances in combinatorial chemistry, robotics, virtual screening

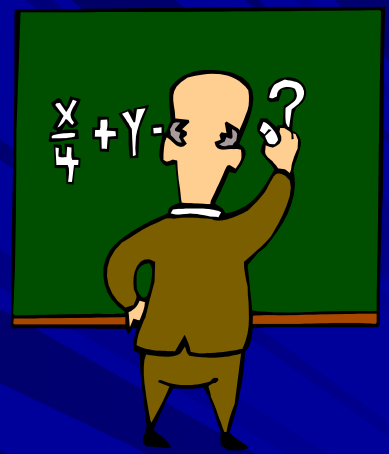
Research Teams of the Future

Scale and complexity of current science require novel team approaches

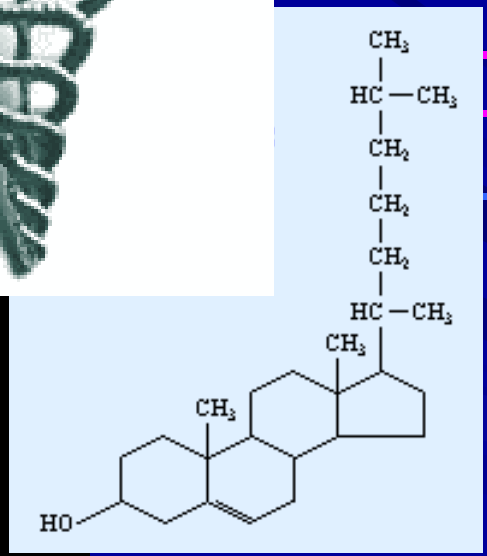
- Director's Innovator Award
- Public-Private Partnerships
- Interdisciplinary Research Teams

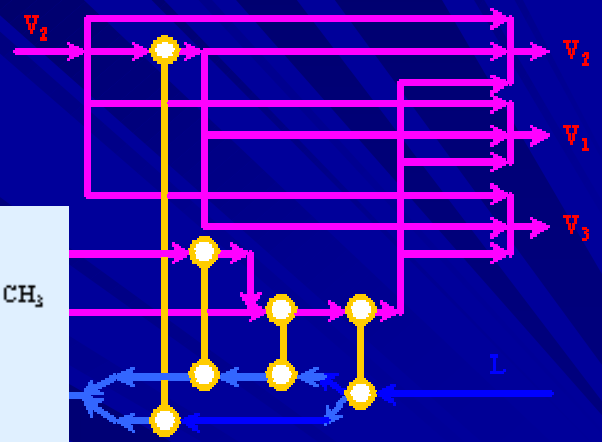
Challenges to Interdisciplinary Research

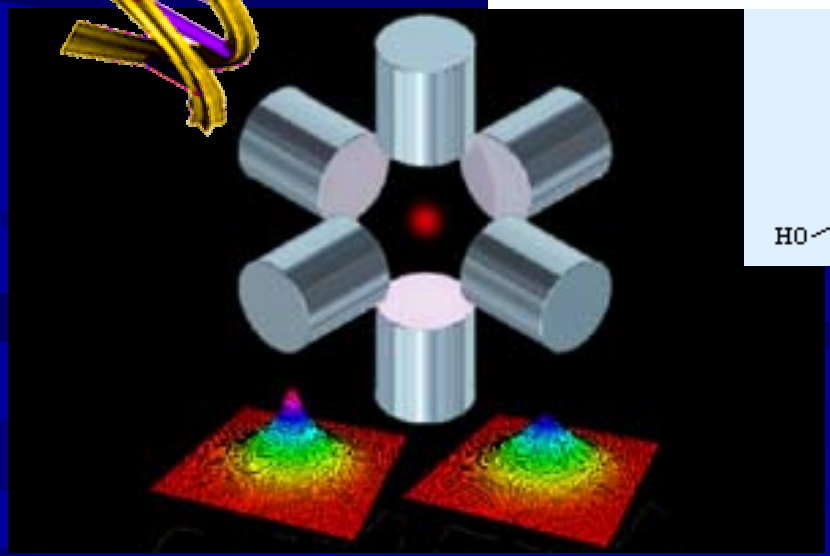
- The current system of academic advancement in science favors the independent investigator.
- Most research institutions house scientists in discrete departments.
- Interdisciplinary research teams take time to assemble and require unique resources to be maintained.



Interdisciplinary Research Centers







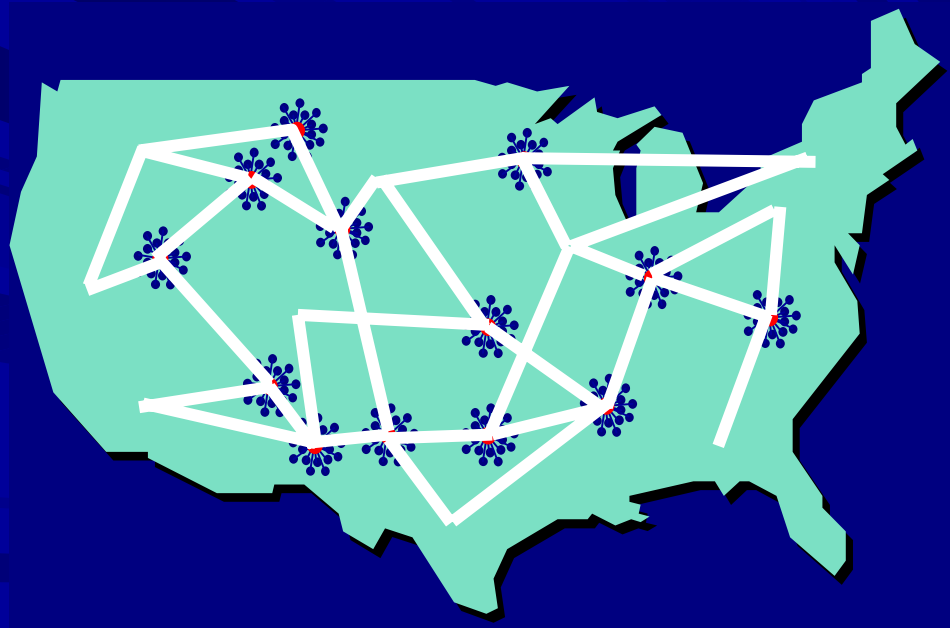
Lowers several traditional barriers that have slowed interdisciplinary studies

Allows the interdisciplinary team to evolve

Re-engineering of the Clinical Research Enterprise

Integration of Clinical Research Networks

- Establish interoperable networks where clinical studies and trials can be effectively conducted
- Ensure that patients, physicians and scientists form true “Communities of Research”



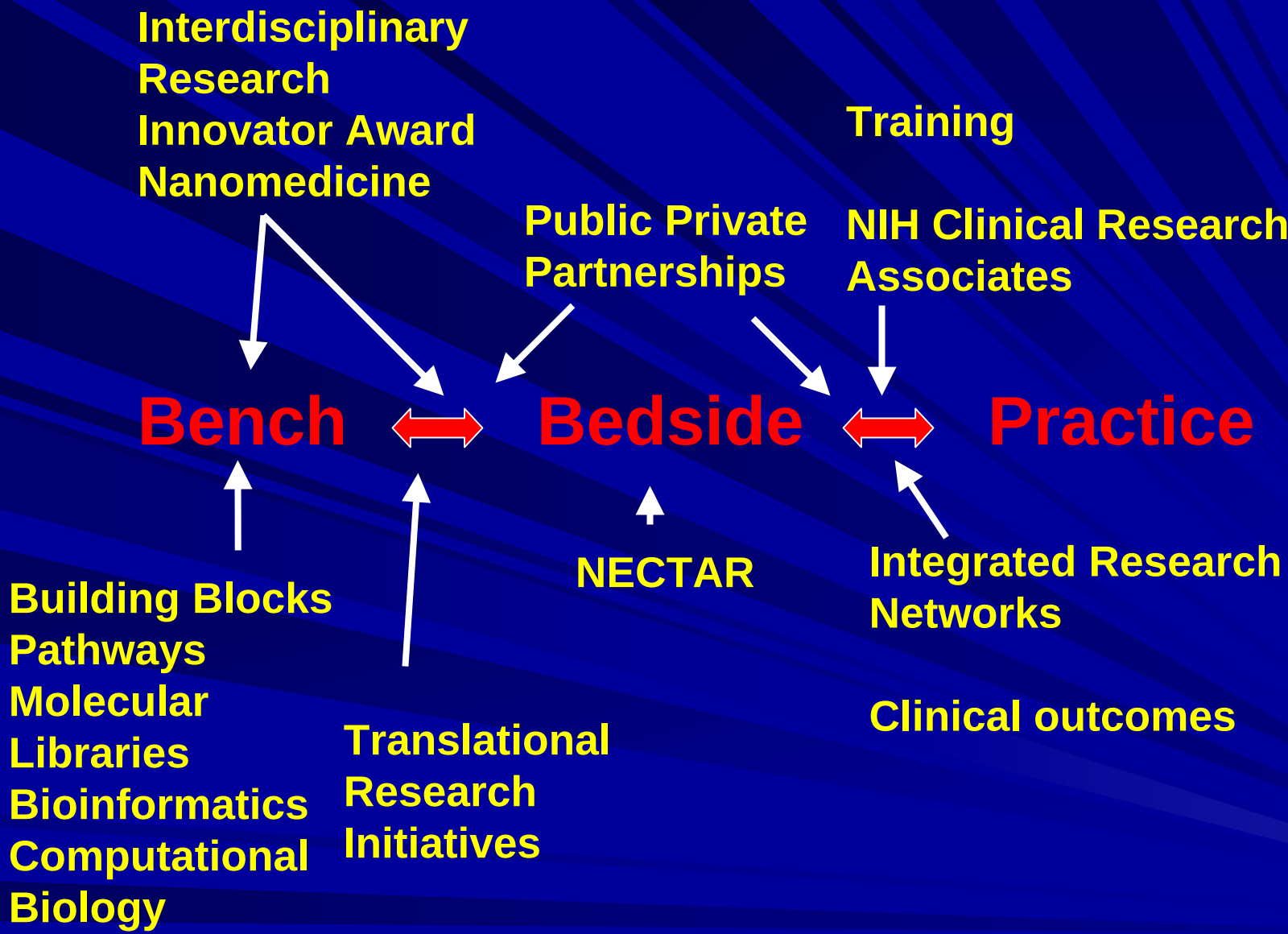
National Electronic Clinical Trials and Research (NECTAR) Network

- Data standards - Common data exchange and vocabularies (HL-7, SNOMED, LOINC)
- Tools - Software applications for clinical research tasks (protocol prep, IRB mgmt, AE reports, data collection, analysis, reporting)
- Network infrastructure - Platforms, architectures, integrating elements

NECTAR Network

Transforming the clinical research paradigm:

- **More efficient and effective "business" practices and processes**
- **Enhanced data sharing and analysis, research collaboration**
- **Streamlined oversight and improved patient safety**
- **Rapid translation of research into clinical findings and products**


Interdisciplinary Research Innovator Award Nanomedicine
Training
Public Private Partnerships
NIH Clinical Research Associates
Bench
Bedside
Practice
NECTAR
Integrated Research Networks
Building Blocks Pathways Molecular Libraries Bioinformatics Computational Biology
Translational Research Initiatives
Clinical outcomes

NIH

Ideas
People
Resources