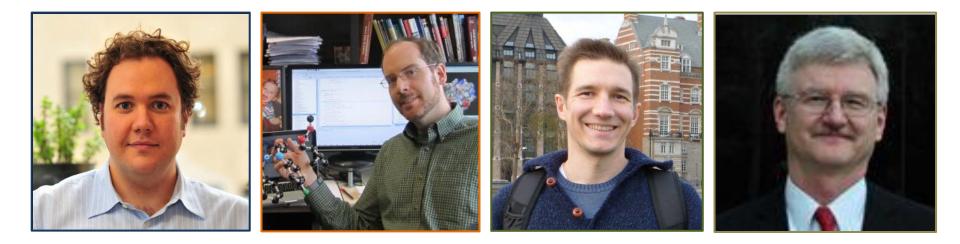
Department of Computational and Systems Biology/ University of Pittsburgh Drug Discovery Institute UPCI Summer Academy



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# <u>**D</u>**rug D<u>i</u>scovery, <u>S</u>ystems and <u>Co</u>mputational <u>Bio</u>logy</u>

**UPCI** Summer Academy





# <u>D</u>rug D<u>i</u>scovery, <u>Systems and Co</u>mputational <u>Bio</u>logy

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## What is it?

Experimental and Computer-based research to...

- Understand fundamentals of cancer biology and related fields
- Design & test new therapeutics for cancer and other diseases

# <u>D</u>rug D<u>i</u>scovery, <u>Systems and Co</u>mputational <u>Bio</u>logy

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### Goals

Help train the next generation of scientists

Immerse scholars in emerging fields of biomedical research

Prepare our scholars for successful careers

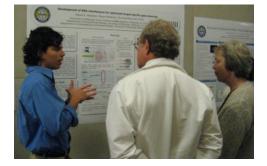
### How do we do it?

#### **Basic Outline/Elements of Our Programs**

- 1. Primary, mentored research experience
- 2. Lectures and labs in core fields
- 3. Professional development
  - a. Research seminars and career panels
  - b. Student presentations

(talks, posters, roundtables)

a. Tours of research facilities (PSC, fish, NMR, DDI, etc.)

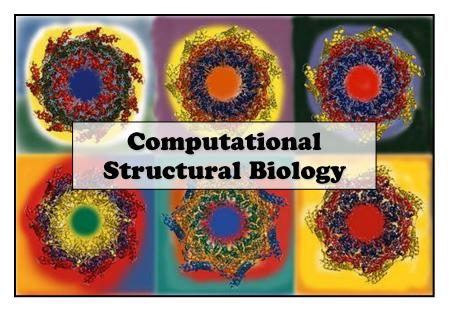


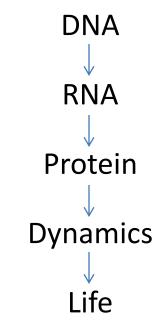


4. Social Activities



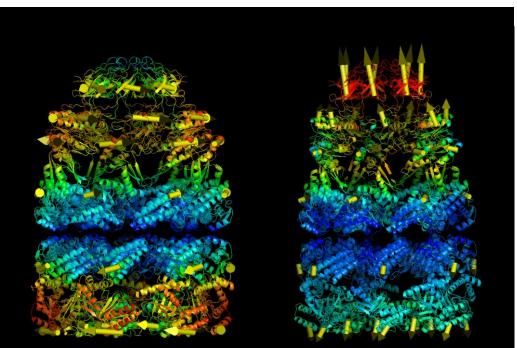






How do Proteins move?

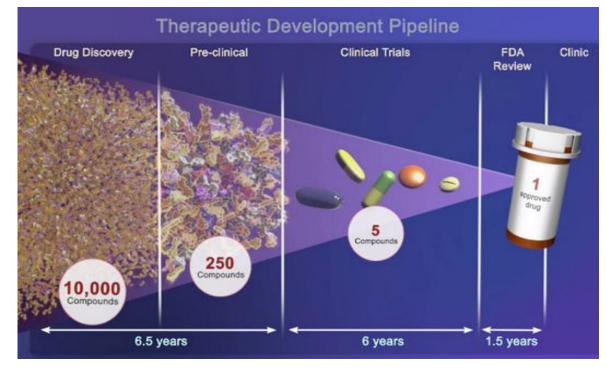
- How do dynamics effect/ determine function?
- Can we predict structures?



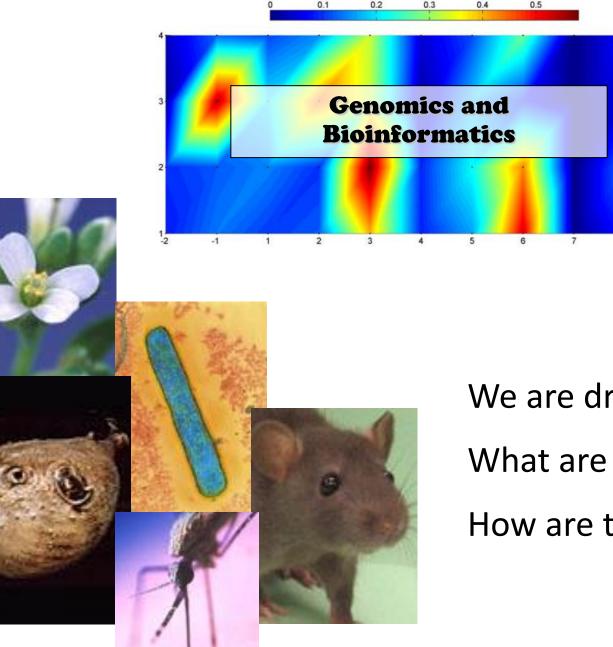


### Lots of \$\$ and time High attrition rate Not tailored

How can we improve? -better screening -computations -systems



#### http://www.ncats.nih.gov/research/reengineering/process.html

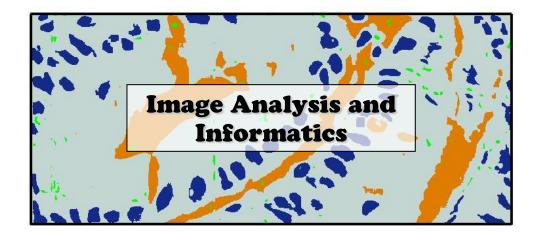


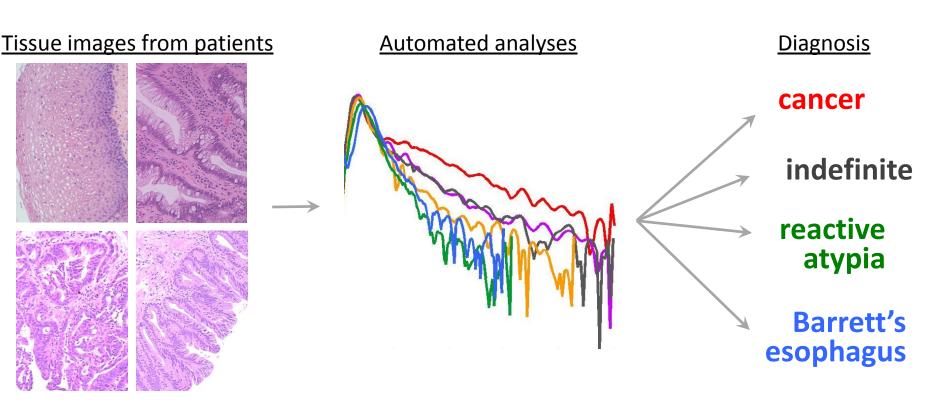
We are drowning in data! What are we missing? How are things alike/ different?

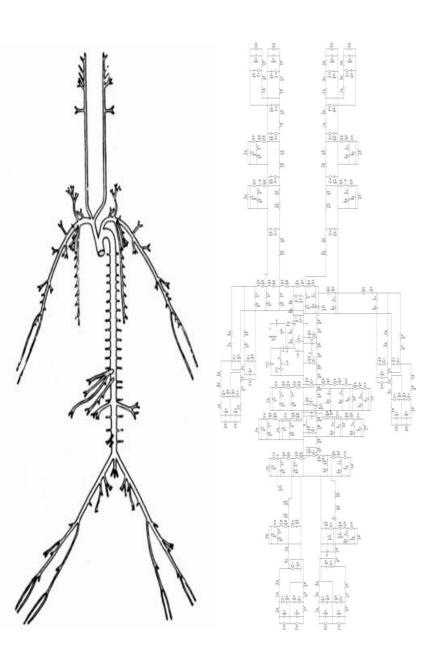
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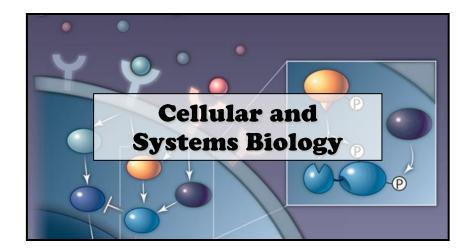
Images: www.genomenewsnetwork.org/

How can we make computers "See" for us?



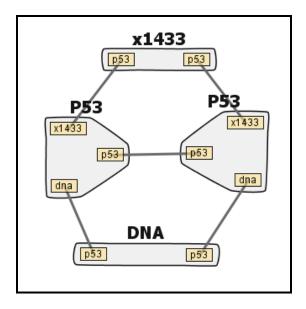






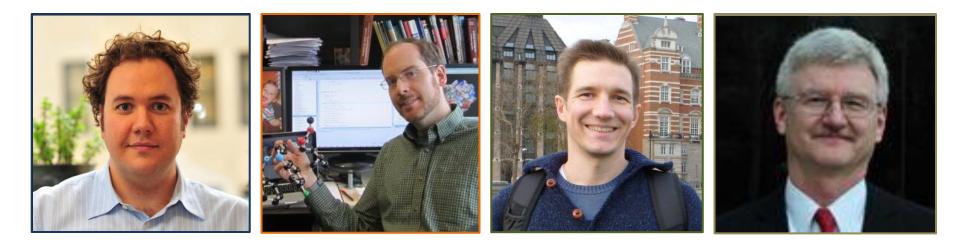
#### How do things work together?

#### Holistic vs. reductionist approach





### This ain't no jive, you'll dig it. Questions? – ask us today



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