

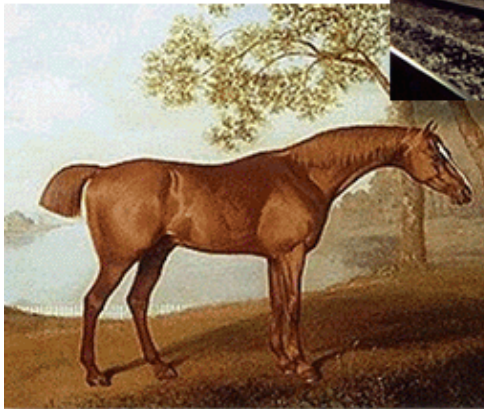
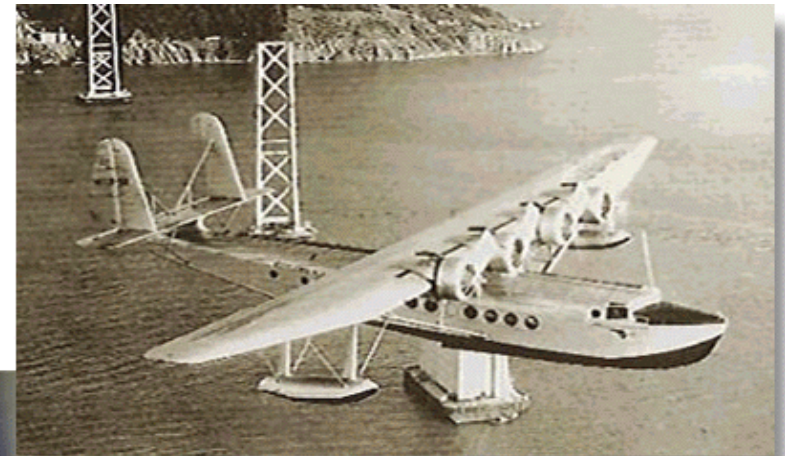


The Transformational Power of the Internet and Supercomputing

Caroline A. Kovac, PhD
Russell J. Ricci, MD

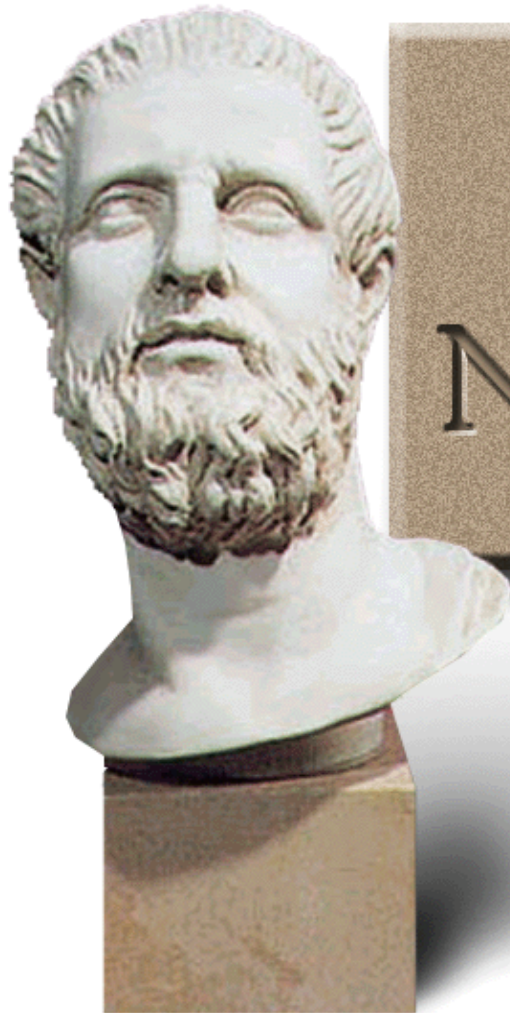


The Power of Technology to Transform





The First Medical Model

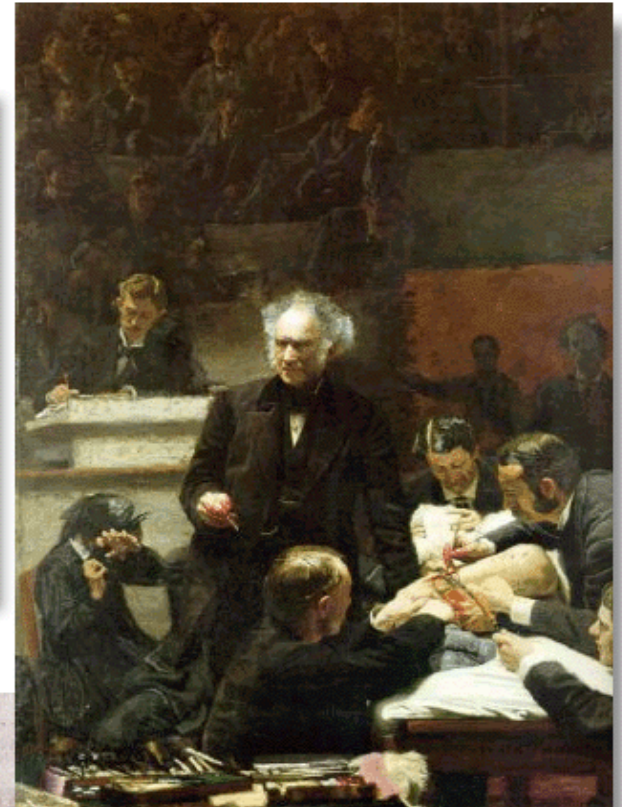
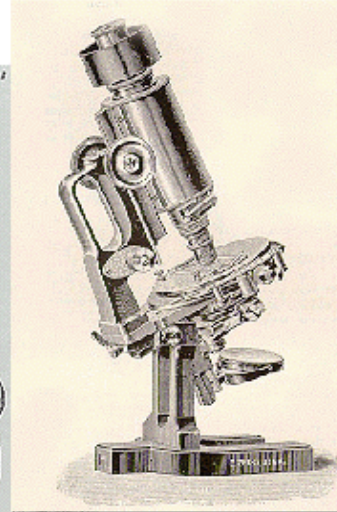


Hippocrates



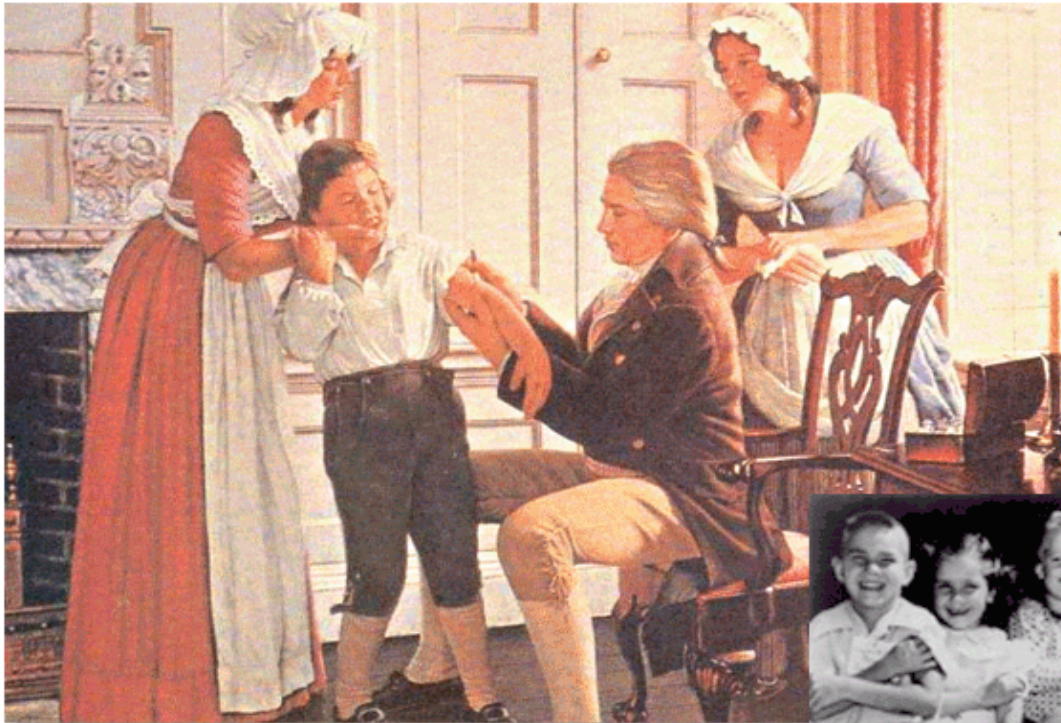


From the Dark Ages to the Scientific Method and Public Health





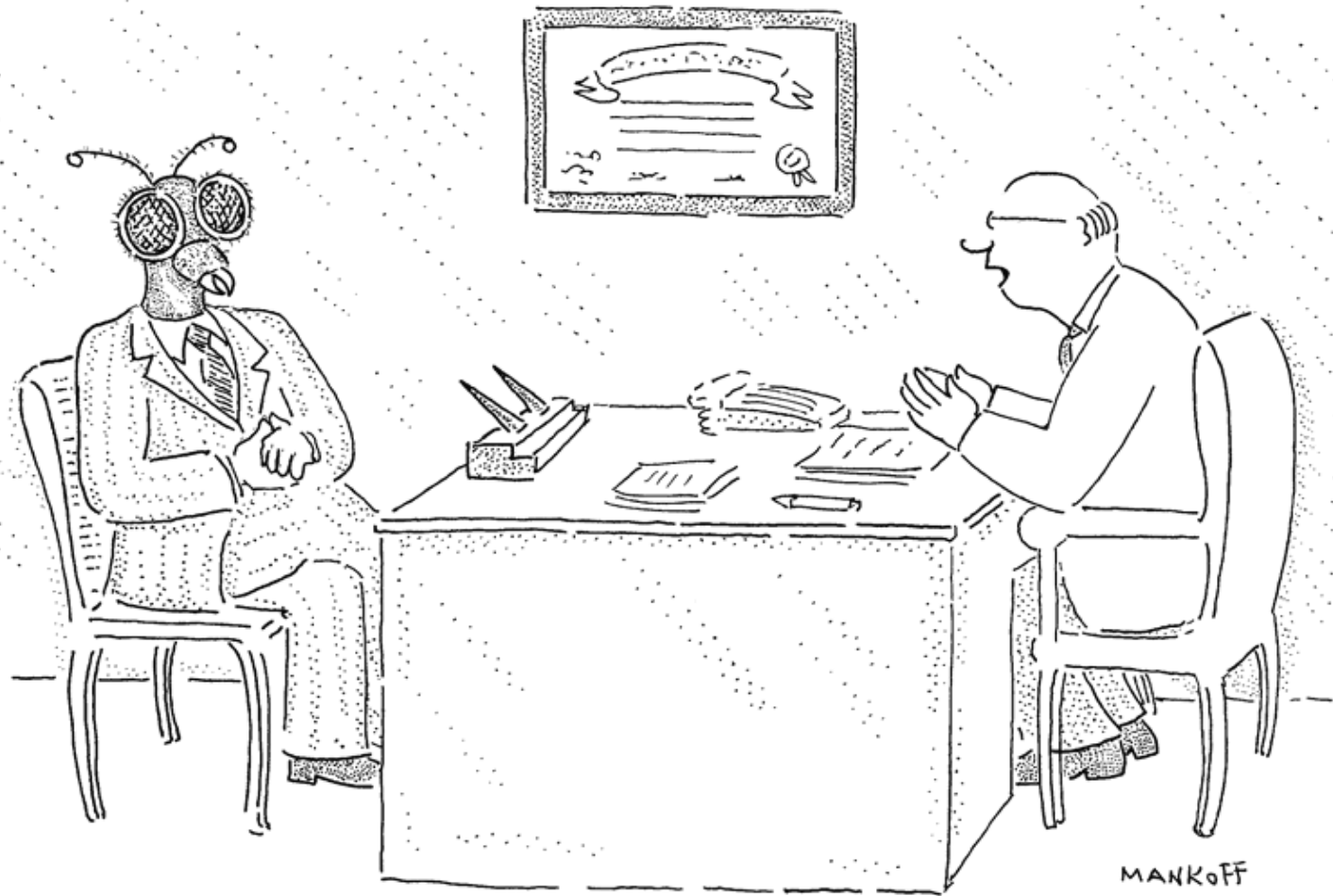
The Discovery of Targeted Treatments





The Explosion of High Cost "Carpet Bombing"



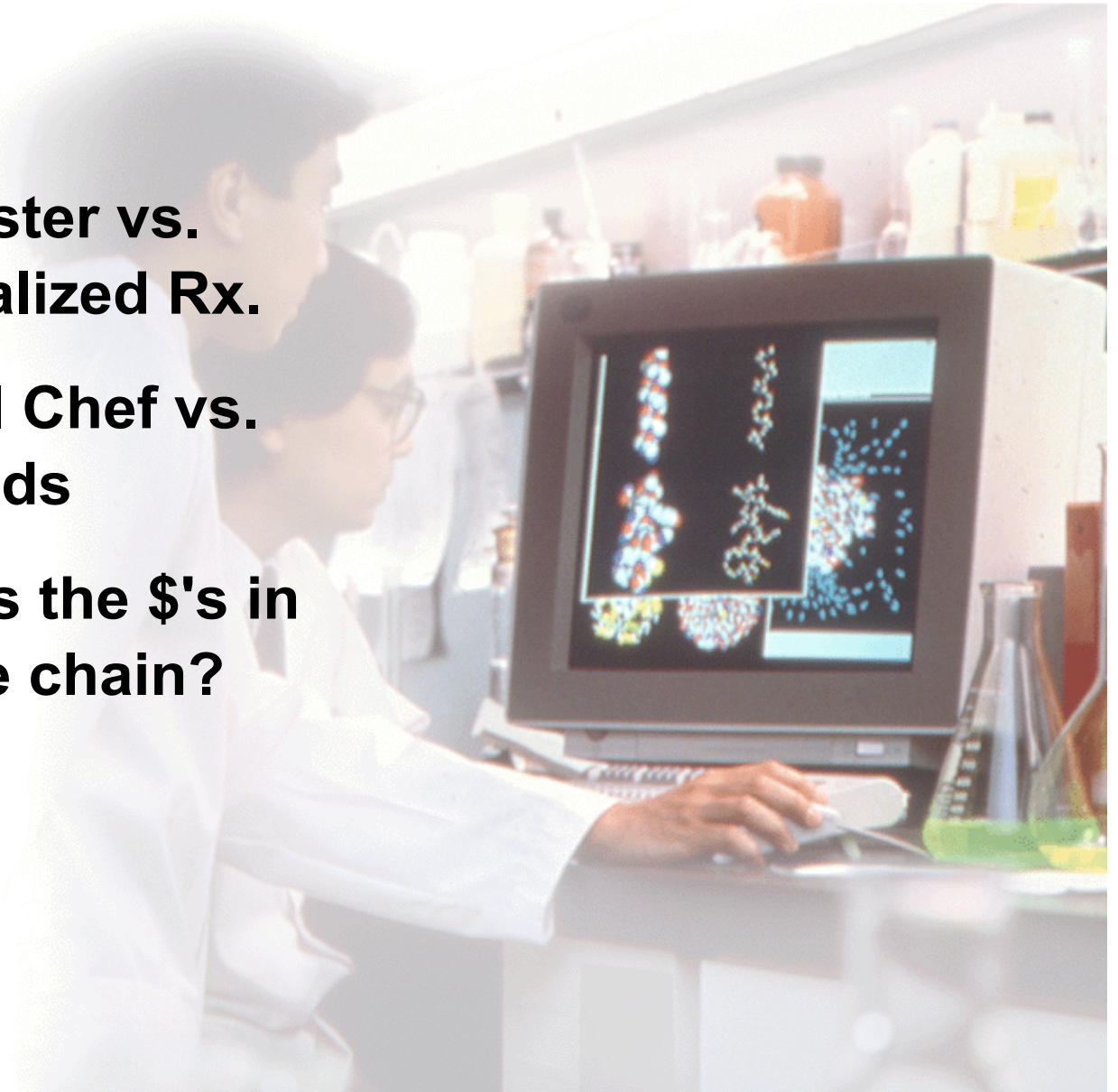


“We think it has something to do with your genome.”



Custom Cures

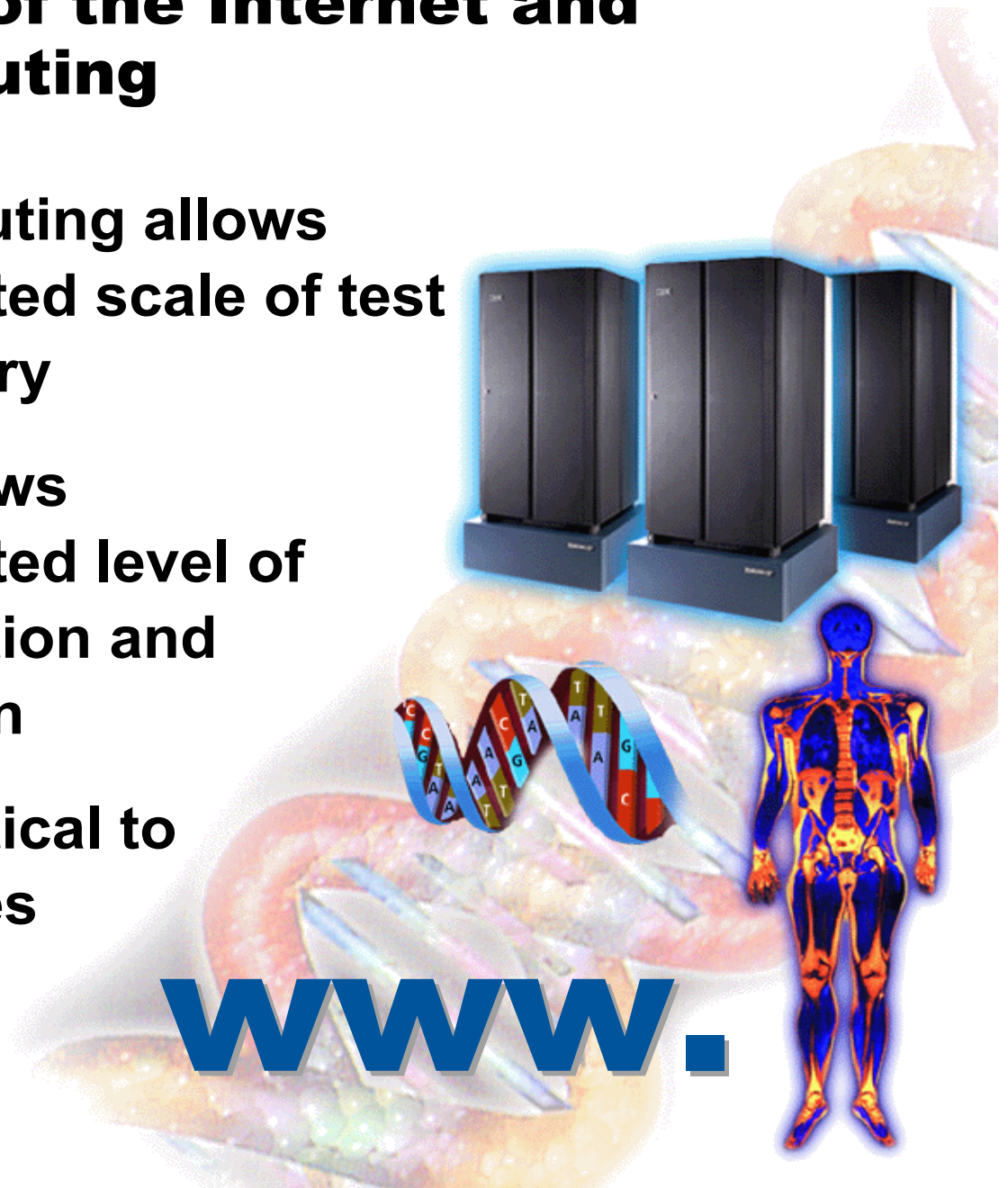
- Billion \$ Blockbuster vs. Individualized Rx.
- Personal Chef vs. McDonalds
- Who gets the \$'s in the value chain?

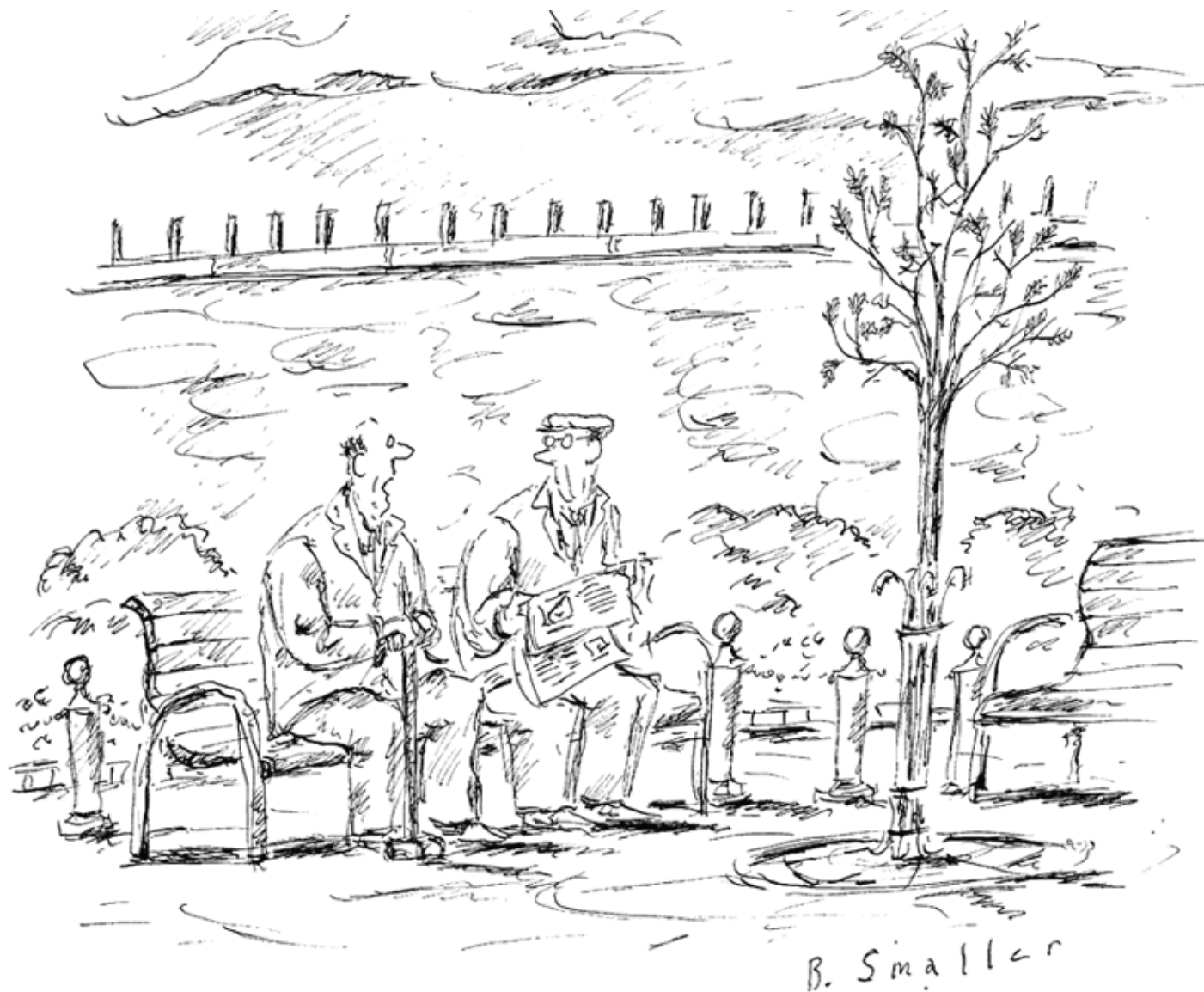




The Power of the Internet and Supercomputing

- Supercomputing allows unprecedented scale of test and discovery
- Internet allows unprecedented level of communication and collaboration
- Both are critical to custom cures

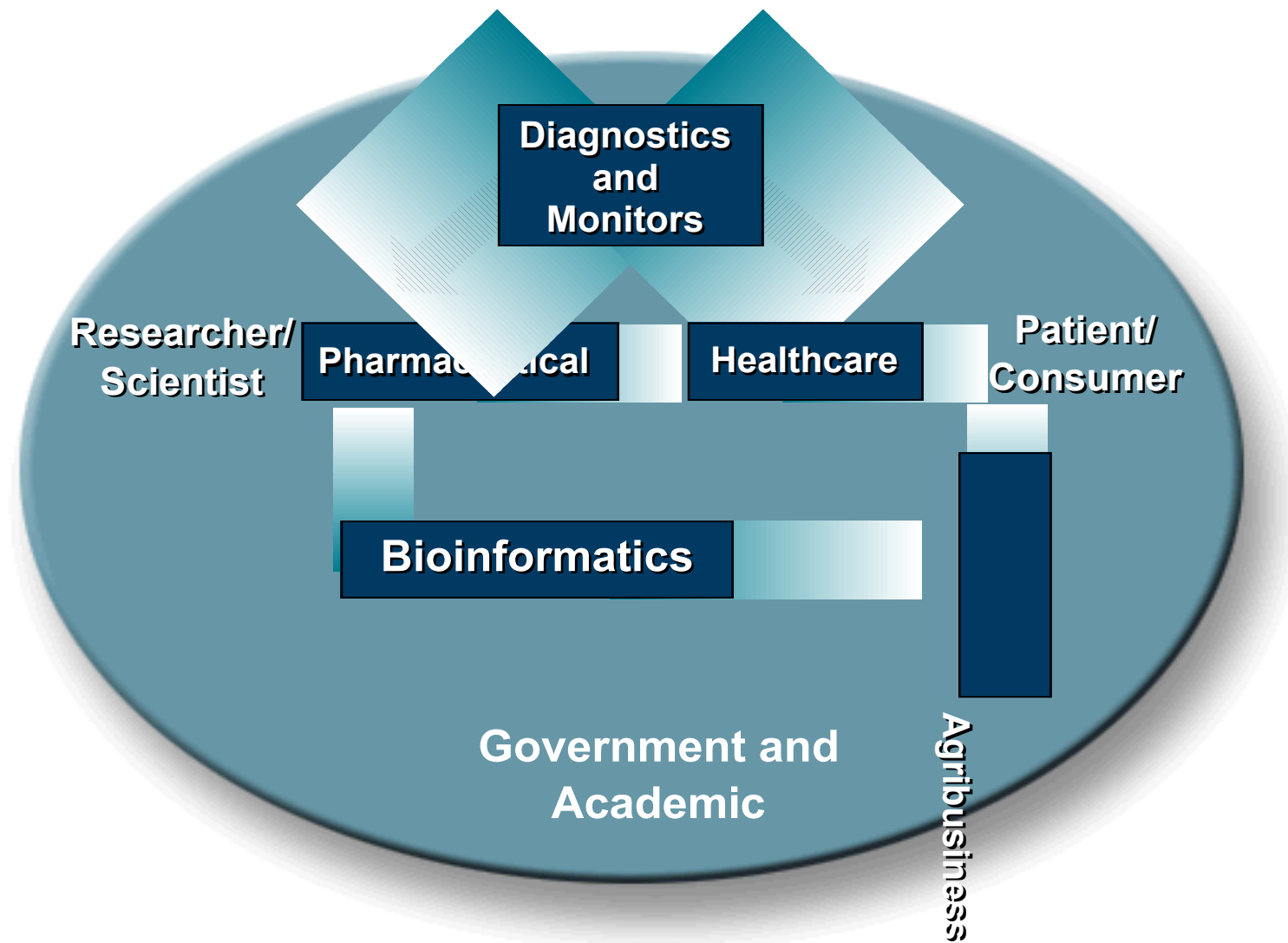




“My goal is to die before there's a technology breakthrough that forces me to live to a hundred and thirty.”



Life Sciences Global Value Chain





Forces of Change

- **New techniques in biology**
 - ▶ **Genomics & Proteomics Data explosion**
 - ▶ **'in-silico Biology'**
- **Cost pressure on drug development**
- **Rise of e-Health**
- **Personalized medicine**
- **Promoting wellness, not treating sickness**