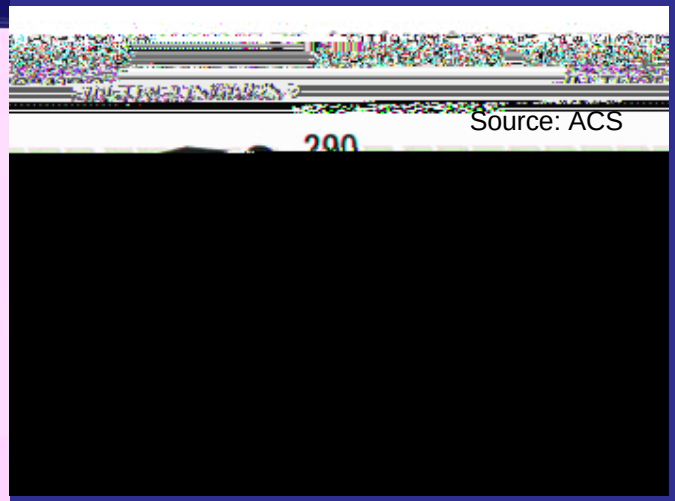
NIH: A Vision for the Future

2008 Budget Hearings
House Appropriations Subcommittee
on Labor/HHS/Education

Elias A. Zerhouni, M.D.
Director

Due to Advances of Past 30 Years

Americans are Living Longer and Healthier



For the second consecutive year, annual cancer deaths in the United States have fallen

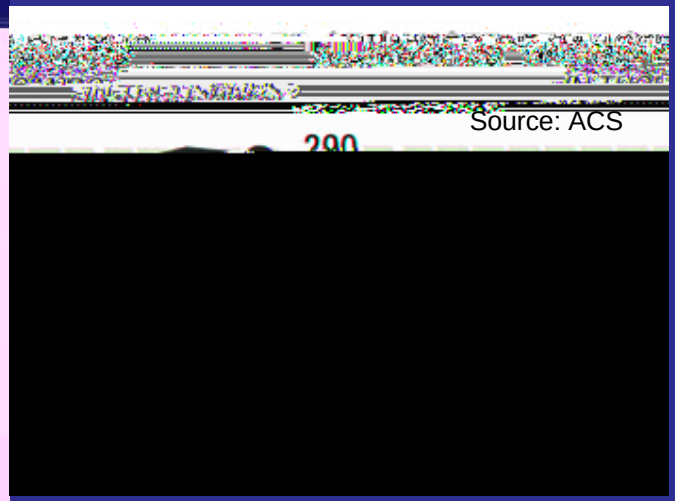
Cancer investment per American

~$9/yr

1974-2004

Due to Advances of Past 30 Years

Americans are Living Longer and Healthier



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Over 60% drop in mortality for heart disease and stroke – in

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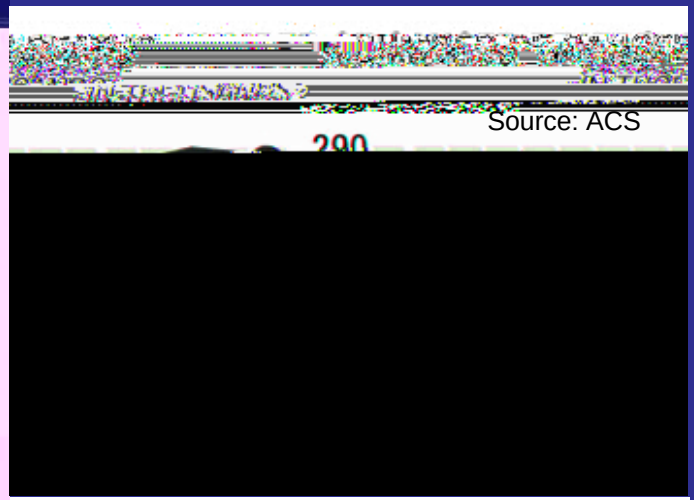

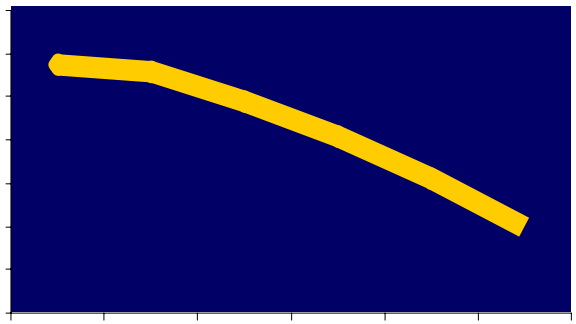

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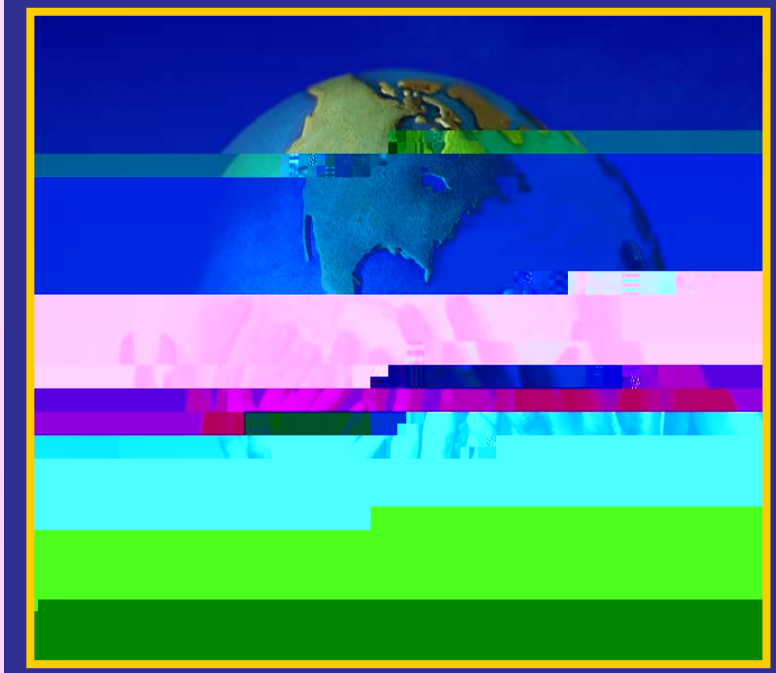
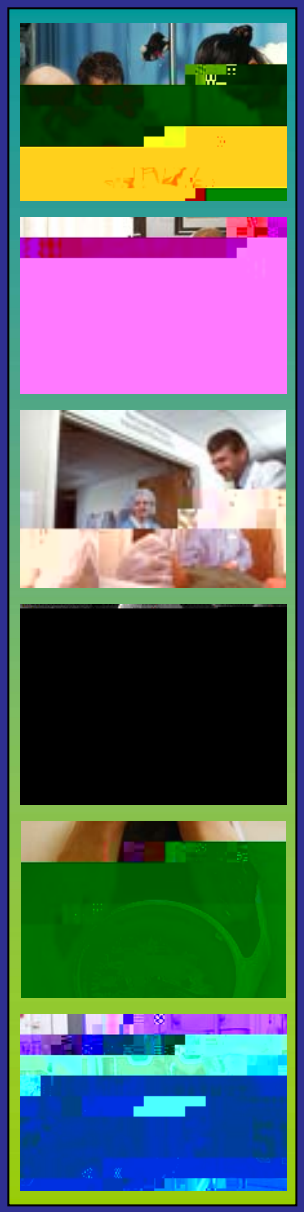
Over 60% drop in mortality for heart disease and stroke – in 2004, drop in deaths of women from Heart Disease from 1/3 to 1/4 reported

Major Factors Will Force a Transformation of Medicine and Health



- Socio-economics
- Demographics
- Landscape of disease
- Global health
- Scientific challenges and opportunities

Evolving Public Health Challenges



Shift from Acute to Chronic Conditions

Aging Population

Health Disparities

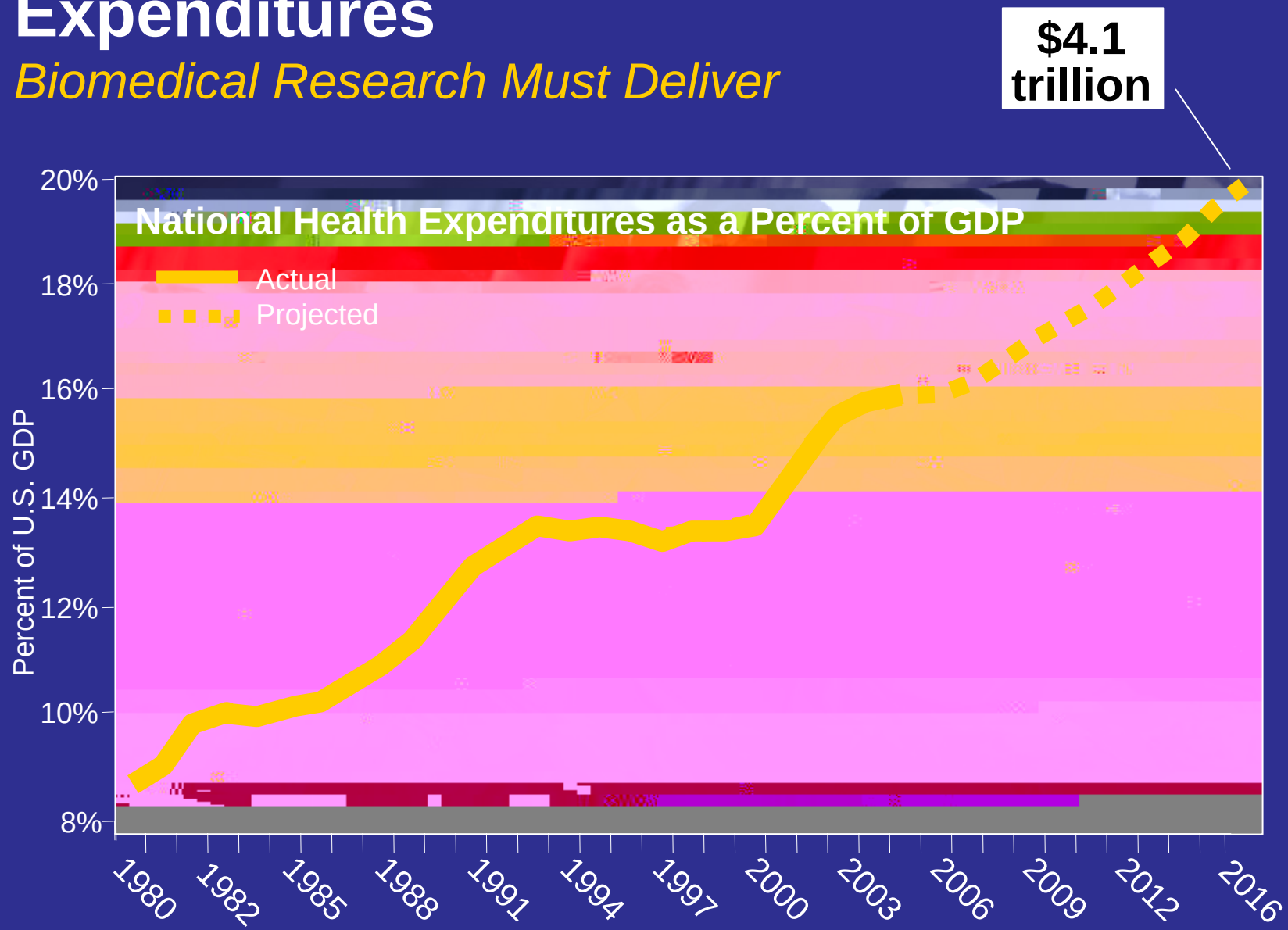
Emerging and Re-emerging Infectious Diseases

Emerging Non-communicable Diseases - Obesity

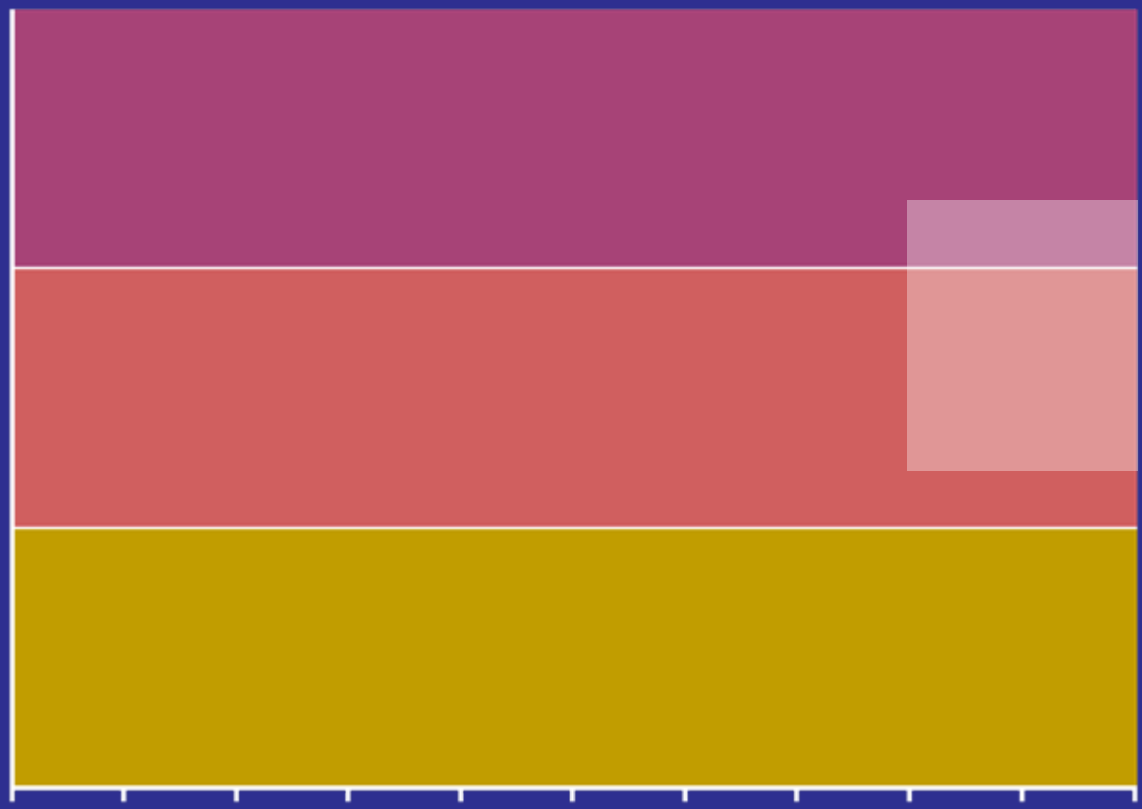
Biodefense

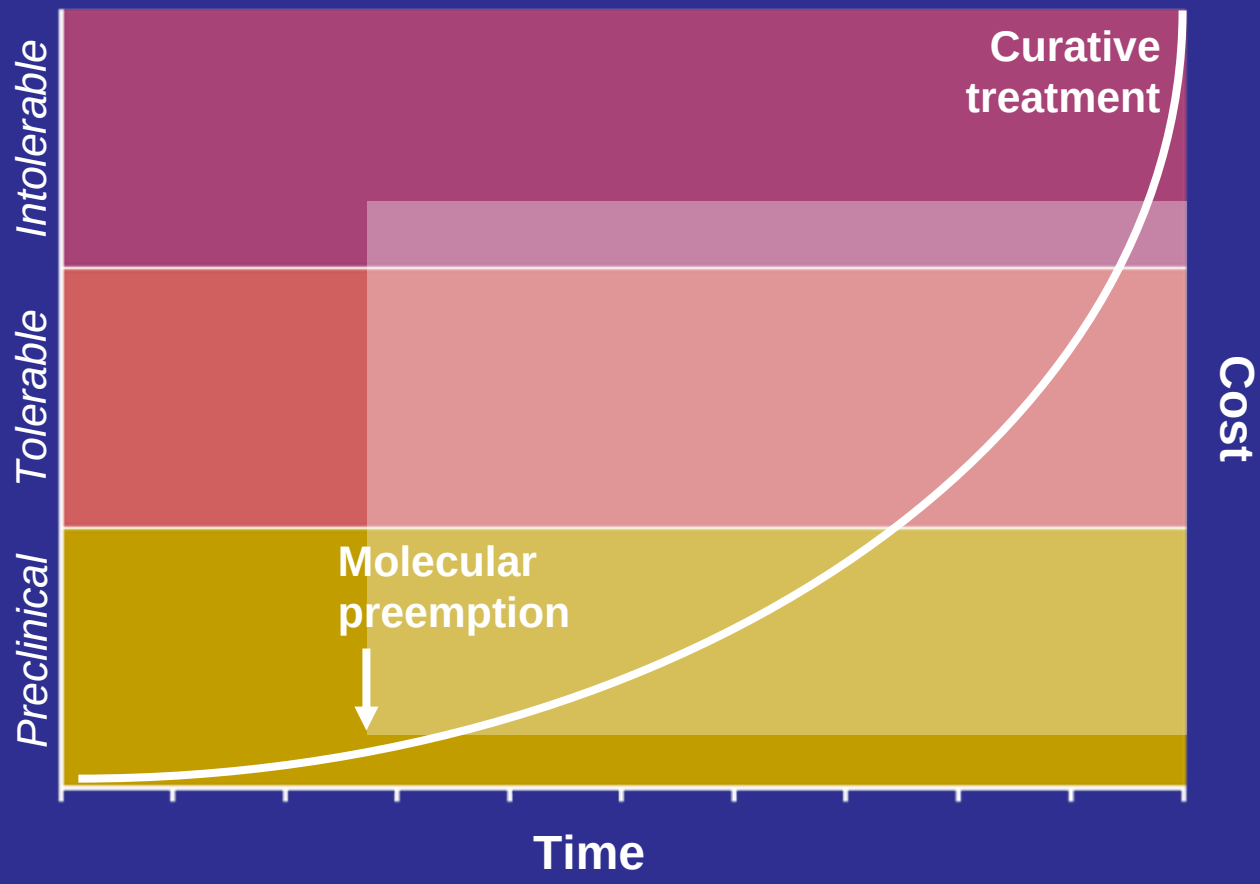
Challenge of Rising U.S. Health Expenditures

Biomedical Research Must Deliver



http://www.cms.hhs.gov/NationalHealthExpendData/downloads/proj2006.pdf




Intolerable
Tolerable
Preclinical
Curative treatment
Molecular preemption
Cost
Time

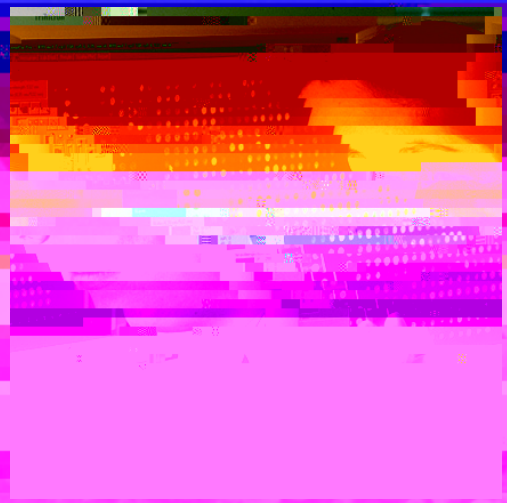
The Value of Molecular Preemption

Early Rheumatoid Arthritis | Intermediate Rheumatoid Arthritis | Late Rheumatoid Arthritis

Courtesy of J. Cush, 2002

The Future Paradigm: The 4 P's

Transform Medicine from Curative to Preemptive



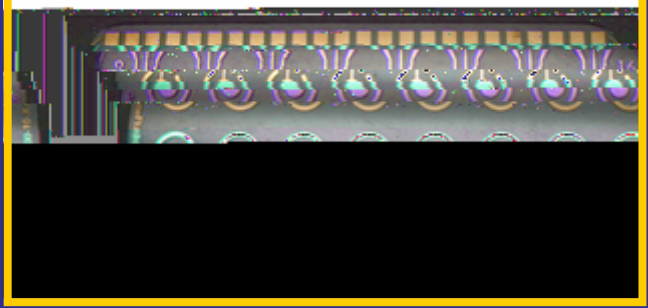
Predictive ⟷ Personalized ⟷ Preemptive

Participatory

Era of Precision Medicine

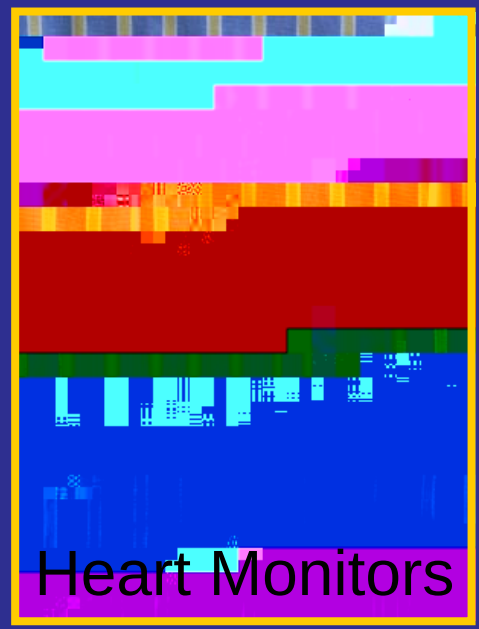
Where Are We Today?

Biosensor Chip

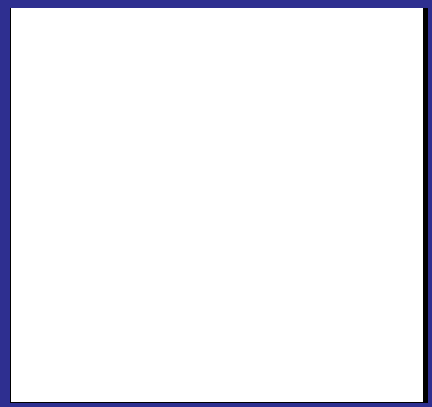


Lab
on a Chip

Remote
Glucose
Monitor



Heart Monitors



Warfarin: An anticoagulant drug used to reduce the risk of clots causing strokes or heart attacks in millions of patients

Take too little: clots, stroke

Take too much: bleeding/death

Genomic experiments revealed: two different genetic variations that predict best dose

Scientific Challenge:

Tackling Biological Complexity

Cell's Response to Damage

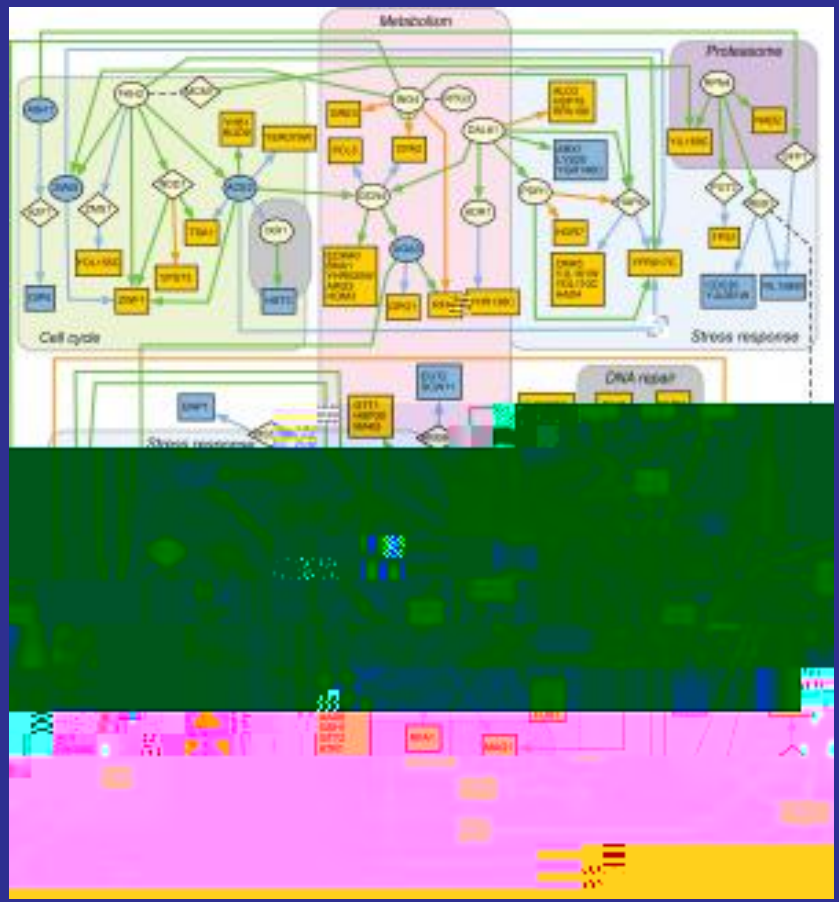
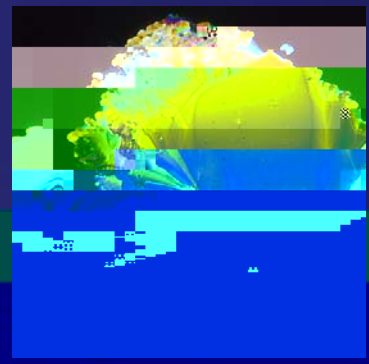
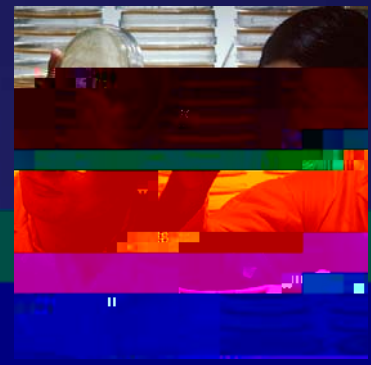


Image courtesy of UCSD

Electronic Diagram



NIH *Transforming medicine and health through discovery*