

**DNA Day**  
**April 19, 2013**

**Celebrating Fox  
Chase Cancer Center  
NURSES in GENES**

**1953**



**2003**

**DNA  
discovered  
By Watson  
and  
Crick**



**50** *Years of DNA: From Double Helix to Health*  
A Celebration of the Genome

**In 50 short years  
Human Genome Project  
Completed**

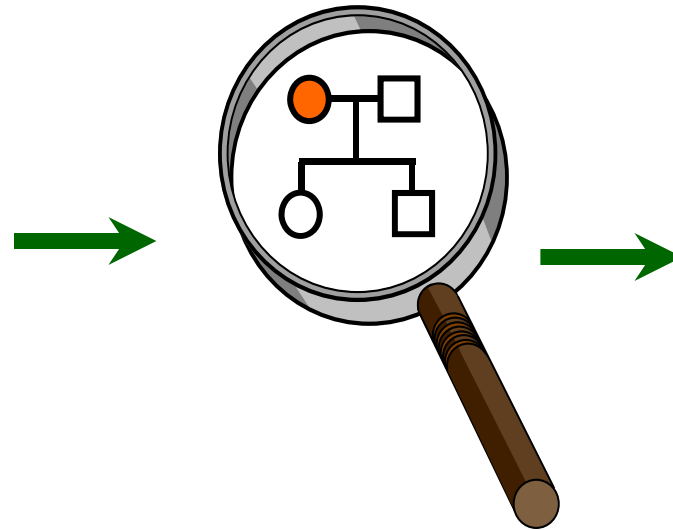
**Celebrating 10th Anniversary of  
the Completion of the Human  
Genome Project  
April 19, 2013**

# Where we have come from and where we are going

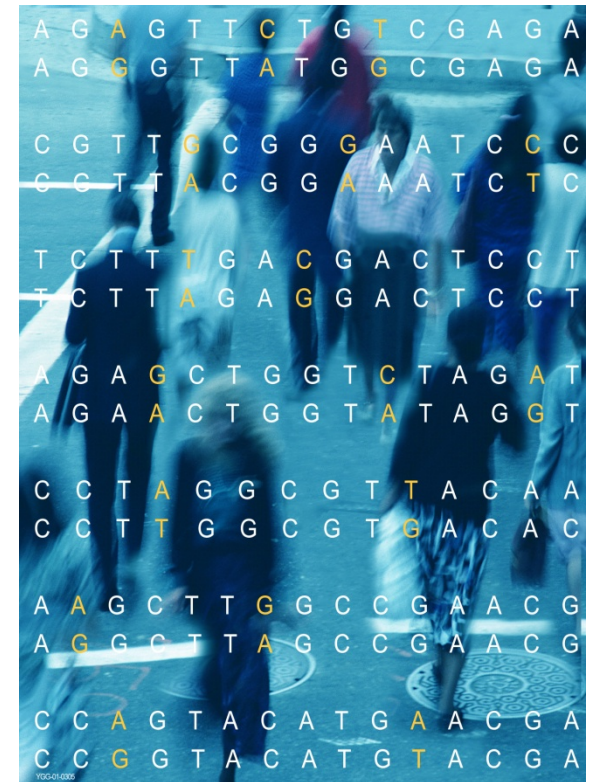
## Medical Era



## Genetic Era



## Genomic Era



Guttmacher, A.E. & Collins, F.S. (2002). Genomic medicine: A primer. New England Journal of Medicine, 347, 1512-1520

## Medical/Genetic Era

- Look at single genes
- Wait for symptoms
- Treat symptoms
- Shot gun/trial & error approach

## Genomic Era

- Interaction of genes with each other and the environment
- Risk reduction for genetic predisposition
- Treat cause
- Approach tailored to genetic/genomic profile

Guttmacher, A.E. & Collins, F.S. (2002). Genomic medicine: A primer. *New England Journal of Medicine*, 347, 1512-1520

# DEFINITIONS

- **Genetics – study of individual genes and their impact on relatively rare single gene disorders**
- **Genomics – study of all the genes in the human genome together, including their interactions with each other, the environment, and other psychosocial and cultural factors**

# Genomics and Oncology

## Oncology is Genetics/Genomics

Initiation and Proliferation

Cell Signaling

Oncogenes

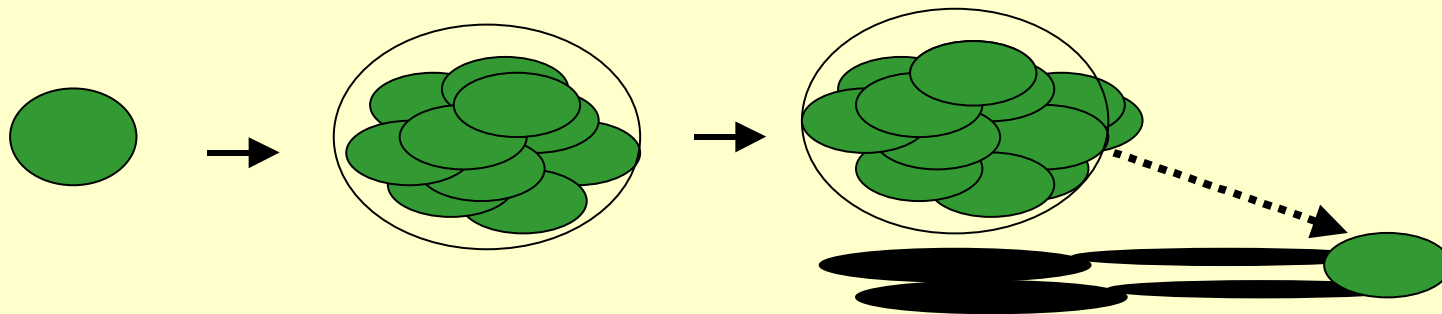
Cell adhesion genes

Tumor suppressor, repair genes

Angiogenesis

Metastasis

Chemoresistance genes



Mutations

Mutations

More Mutations