

# Lecture 4: Chapter 3, Section 4

## Designing Studies

### (Focus on Experiments)

---

- Definitions
- Randomization
- Control
- Blind Experiment
- Pitfalls
- Specific Experimental Designs

# Looking Back: *Review*

---

- **4 Stages of Statistics**
  - Data Production
  - Displaying and Summarizing
  - Probability
  - Statistical Inference

# Looking Back: *Review*

---

## □ 2 Types of Study Design

- **Observational study:** record variables' values as they naturally occur

- **Drawback:** confounding variables due to self-assignment to explanatory values

- **Example:** *Men who drink beer are more prone to lung cancer than those who drink red wine*  
*(what is the confounding variable here?)*

- **Experiment:** researchers control values of explanatory variable

- *If well-designed, provides more convincing evidence of causation.*