Transformation

I. Terms and Discovery
- Natural vs. Induced Transformation
- Competence, Donor, Recipient, Transformant
- Discovery- the Griffith Experiment

II. Competence (in *B. subtilis*)
- Regulation
- *comP*, *comA*
- Pheromones
- *comX*, *comQ*
- Timing
- Linear DNA Only (so plasmids don't get into naturally competent cells)

III. DNA Uptake
- Species specific vs non specific uptake (depends upon the bacteria)
- Mechanism of uptake
- Double stranded DNA binds
- Degraded into single stranded DNA when/soon after it enters the cell
- Recombination with homologous sequences
- transformasomes

IV. Why take up foreign DNA?
- Nutrition?
- Repair?
- Advantages to Sexual Reproduction?

V. Induced Competence
- Calcium/Heat Shock Induction
- Electroporation
- Induced Competence allows uptake of Double Stranded DNA

VI. Mapping/Gene Knockouts/Recombination
- Using competence as a tool