

## Biodiversity Chapter 19 - Viruses

- Viruses only reproduce in host cells
- Not really 'alive'
- Doesn't metabolize
- Viruses can wipe out entire species
- **Viral Evolution**
  - o Between life and chemicals - "Borrowed Life"
  - o Doesn't die - goes inactive
  - o Inserts genetic code into cells
  - o They evolve very quickly (must dodge immune systems)
  - o Started evolving after cells started evolving
  - o Transposons - chunks of DNA that jump around in cells
  - o Plasmids - DNA that exist independently and can be transferred between cells
- **The Plus side of viruses:**
  - o Biological Research
    - Genes are made up of nucleic acids (Hershey & Chase)
    - Molecular mechanisms of DNA replications
    - Agents of gene transfer in gene therapy (take out bad allele, put a good one in its place)
  - o They kill bacteria!! :D
- **Tobacco Mosaic Viruses**
  - o 1<sup>st</sup> Virus really discovered
  - o Sap filtered - no bacteria
  - o Since the sap is still diseased, and it's not bacteria, it must be something smaller than viruses
- **Virus Shapes:** Rod shaped, Capsuled, Membrane, Phage
- **Lytic Cycle:**
  - o Phage attaches
  - o Inserts DNA
  - o Bacteria produces more viruses, instead of doing virus things
  - o Bacteria Lyses (EXPLODES. Breaks open.)
  - o Releases Viruses
- **Lysogenic Cycle:**
  - o Phage attaches
  - o Inserts DNA
  - o Makes **Prophage** (Virus DNA/Bacteria DNA combo)
  - o Makes more bacteria, all with Prophage DNA
  - o Any one of these bacteria can then start the Lytic Cycle