

# Microbiology Introduction

## Significance

- Massively important in health, disease, and the environment
  - 2021 duh
- Differences matter
  - Bacteria free living (in environment), viruses are not (need host)
  - Individuals: a **bacterium** and a **virion**
- Range of shapes and sizes
  - Important for diagnostics
- Bacteria can be infected by viruses too
  - Use this to **our** advantage

## Infection Control Strategies

- Therapeutic Drugs
  - Antibiotics (e.g., Amoxycillin, Erythromycin)
  - Antivirals (e.g., Tamiflu, Acyclovir)
  - Treatment as well as control (limit spread)
- Prophylaxis e.g. vaccines
  - Prevent infection/reduce severity
  - Problems with compliance
- Best Options – Avoidance and Hygiene
  - Education and Infrastructure
  - High quality water and sewage treatment
  - Sanitation, personal hygiene, and food handling

## L1 Microbiology: Structure and Diagnostics

### Size, Shape and Structure

#### Viruses, Bacteria and Eukaryotes

| Structure       | Viruses                                                                                                          | Bacteria (Prokaryotes)  | Eukaryotes               |
|-----------------|------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|
| Nucleus         | No                                                                                                               | No                      | Yes                      |
| Genome          | Highly variable <ul style="list-style-type: none"><li>- RNA or DNA</li><li>- single or double stranded</li></ul> | Circular DNA chromosome | Linear DNA chromosome(s) |
| Ribosomes       | No ribosome                                                                                                      | 70s ribosomes           | 80s ribosomes            |
| Outer structure | Envelope (membrane) OR "Naked" nucleocapsid                                                                      | Complex cell wall       | Simple cell wall         |
| Replication     | Rely on host for replication                                                                                     | Binary fission          | Sexual reproduction      |

# Study Guide To Microbiology An Introduction

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