| | | | |
|---|---|---|---|
| **Topic** | Microbes and Scale | **Level** | GCSE (or any course for students aged 11-16) |
| **Outcomes** | 1. To convert between µm, mm and mm<br>2. To build scale models of different microbes<br>3. To consider the biological advantages of being small | | |

# Microorganisms and Scale

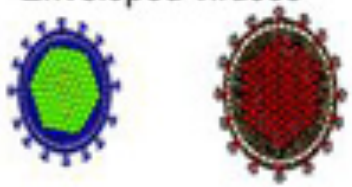
# Microorganisms

***Routes of Exposure:***
***Ingestion, Injection, Inhalation***

## Virus

DNA viruses RNA viruses

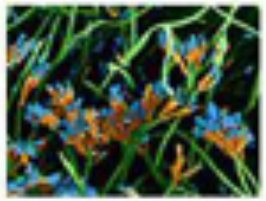
Enveloped viruses



## Bacteria

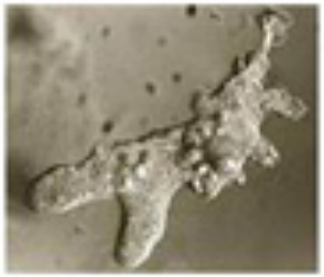
***E. coli***

## Fungi



***Penicillin Mold***

## Protists



***Amoeba***

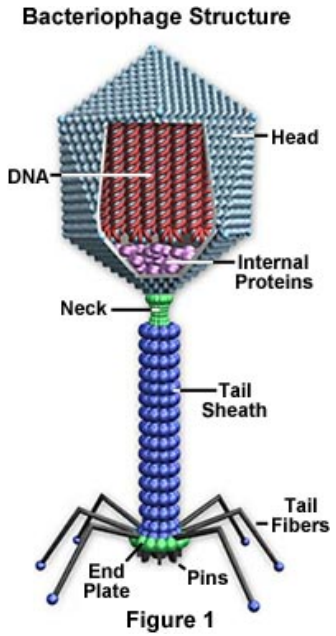
# Just How Small are They?

1 km = 1000 m

1 m = 100 cm

1 cm = 10 mm

1mm = 1000 µm (micrometre)




Q1) How many µm in 2 mm?

Q2) How many µm in 1 cm?

| Object | Approximate Length (µm) | Scaled Length (cm/mm) |
|---|---|---|
| Ant | 1000 | 100 cm |
| Human Hair | 100 | |
| Human Cell | 10 | |
| Yeast Cell | 5 | |
| Bacterium | 1.0 | |
| Polio Virus | 0.02 | |

Assume 1000 micrometres = 1 metre

Make 2D scale drawings of each of the objects so you can get an idea of just how small they are.

| Object | Approximate Length (µm) | Scaled Length (cm/mm) |
|---|---|---|
| Ant | 1000 | 100 cm |
| Human Hair | 100 | 10 cm |
| Human Cell | 10 | 1 cm |
| Yeast Cell | 5 | 0.5 cm |
| Bacterium | 1.0 | 1 mm |
| Polio Virus | 0.02 | 0.2 µm |

Assume 1000 micrometres = 1 metre

Make 2D scale drawings of each of the objects so you can get an idea of just how small they are.

What have you realised about microbes and their size?

How does their small size make them successful?