

*Text from poster presented at the Great Exhibition Road Festival 2022 by the Institute of Infection at Imperial College.*

## Meet the Teams!

### The Pathogenic Pirates!

- If there are too many harmful microbes, our bodies can't fight them and we get ill. Their populations can grow incredibly quickly!
- **Bacteria** can cause illnesses like diarrhoea, pneumonia and sinus infections.
- **Viruses** cause colds, flu, and chickenpox. COVID-19 is caused by a virus.
- We can be **infected** by catching a pathogen from another person. Pathogens can also enter our body if we eat food (e.g., raw meat and out of date food) that has harmful microbes growing on it.
- Sometimes, microbes can evolve (**mutate**). This can prevent our immune system from recognising them, or can stop how well medicines can kill them. This is called **antimicrobial resistance**. Scientists are working hard to understand and prevent this.

### The Protective Pals!

- Our bodies have lots of special cells that help recognise and kill pathogens. This is our **immune system**.
- Cells called **T-cells** recognise a pathogen and signal the body to assemble a cellular army around it. One of these fighters is the **phagocytes**, which "eats up" up the invaders.
- The clever thing about our immune system is that, once it's fought of a certain pathogen, it can remember how to fight it!
- **Vaccines**, like the ones you got as a baby (or maybe recently for COVID-19), prepare your immune system for an infection. If you are exposed to that pathogen, your immune system is ready to attack!
- For some infections, certain medicines can kill microbes. One example is **penicillin** which is very good at killing many types of bacteria.
- Our bodies naturally contain **trillions** of microbes that are harmless (our **microbiome**). They are not only harmless, but actively protect us from the microbes that make us sick.
- For example, your digestive system is teaming with billions of "good" microbes, which help keep our digestive system health. They also stop harmful microbes from moving in.

**DID YOU KNOW?** Imperial College researchers are studying all aspects of disease - the biology of the microbes, how our immune systems fight disease, how to prevent drug resistance, how to develop new vaccines and drugs, how we can detect, diagnose, and treat infections, and how our microbiome can be used to protect us.