The lay descriptions below show some of the work we have done and are currently doing within CHMI in these areas:

1. Identify new ways to find alternatives to antibiotics
2. Understand how some fungi can lead to deadly infections
3. Study how to maintain health by modulating how our body responds to the microbes in and around us
4. Work out how we can avoid the loss of teeth in patients with gum disease

1. **EDWARDS LAB**: Antimicrobial resistance (AMR) is where microbes learn to resist the antibiotics we use to treat them. This resistance can turn treatable infections into deadly ones, posing a significant challenge to global health. Dr. Edwards focuses on how microbes in the gut could be used to fight infections without relying on antibiotics. Investigating how intestinal microbiota transplantation and phage therapy —transferring microbes in the gut from a healthy donor to a patient —can rebalance the gut to improve health, reduce infections and combat AMR.

2. **NAGLIK LAB**: The Naglik Laboratory studies how humans respond to infection caused by the fungal pathogen Candida albicans. During infection, C. albicans produces toxic products like one called candidalysin. The goal of our research is to understand the mechanism of action of candidalysin and how humans protect themselves from infection with this fungus. We have found how candidalysin causes damage to the human body and how it interacts with the immune system.

3. **MOYES LAB**: The Functional Microbiome group, led by Dr Moyes, investigates the interactions between humans and the communities of microbes that live in and on us. In particular, we look at how these communities change over time and how their impact on us changes. In doing so, we have identified how microbes can cause changes in the way our body works, which sometimes result in disease. We have also discovered how resistance to antibiotics develops and spreads through microbial communities. We now aim to understand how we can treat disease by modulating interactions between microbes and humans to more effectively "farm" our microbiome.

4. **NIBALI LAB**: The Periodontology Group is researching how to improve the treatment of gum (periodontal) disease. We have developed a minimally-invasive treatment called MINST, which aims to save teeth at high risk of being lost due to gum disease by using non-surgical procedures. We are currently researching into how to make MINST more effective for more people, thus avoding tooth loss or complex surgical procedures. This research involves treatment of patients with gum disease, as well as analysis of dental plaque, saliva and gum fluid, carried out in our labs.