

## **Igniting Impact Guided Challenges**

### **1. Food Preservation and Processing Technologies for Subsistence Farmers**

Subsistence farmers grow food primarily for themselves and their families and do not make money by selling what they grow on the market (they trade some food for other goods). A current challenge is that many of these small farms are in remote and difficult-to-reach locations and the short shelf life of agricultural products make it difficult for these farmers' surplus food to reach a local market. We believe that better access to affordable equipment for food preservation and processing can assist these farming families escape the cycle of poverty by allowing them to sell surplus food.

### **2. Combatting Hidden Hunger**

People (especially children) in poverty may have a sufficient caloric intake in general, but their daily food intake may be deficient in vitamins and minerals that are required for good health. The exact combination of deficient micronutrients is location dependent, but the key targets are vitamin A, iodine, iron, and zinc. Health consequences of this hidden hunger include visual impairment, goiter, anemia, and weakened immune systems. We are seeking technologies that can cost-effectively combat chronic undernutrition for people with very low income.

### **3. Reduction of Healthcare-Associated Infections**

In Canada, 1 in 10 hospitalized patients develop an infection that they picked up at the hospital—this is troubling because making patients sick is opposite to what hospitals should do and because this extends hospital stays in an already strained healthcare system. Proper handwashing, equipment sterilization, and surface cleaning are all known ways to reduce the risk of these nosocomial infections, but infections still occur. We are looking for innovative technological solutions for infection prevention and control here in Canada and in healthcare facilities around the world.

### **4. Technology to Guide Antimicrobial Stewardship**

The emergence of superbugs—microbes resistant to many or all antimicrobial agents—is a major public health issue that may become a major public health crisis as more and more people become ill with untreatable infections. These superbugs emerge largely because of the overuse of antimicrobial agents such as antibiotics, as they encourage the natural selection of strains with drug resistance genes. Antimicrobial stewardship is the collection of strategies and interventions with the aim to improve the selection and use of antimicrobial agents by healthcare professionals in order to mitigate this evolutionary pressure. We are looking for innovative ideas of how technology can be used to encourage the proper use of antimicrobial agents.