

iGEM IISER-Tirupati 2020

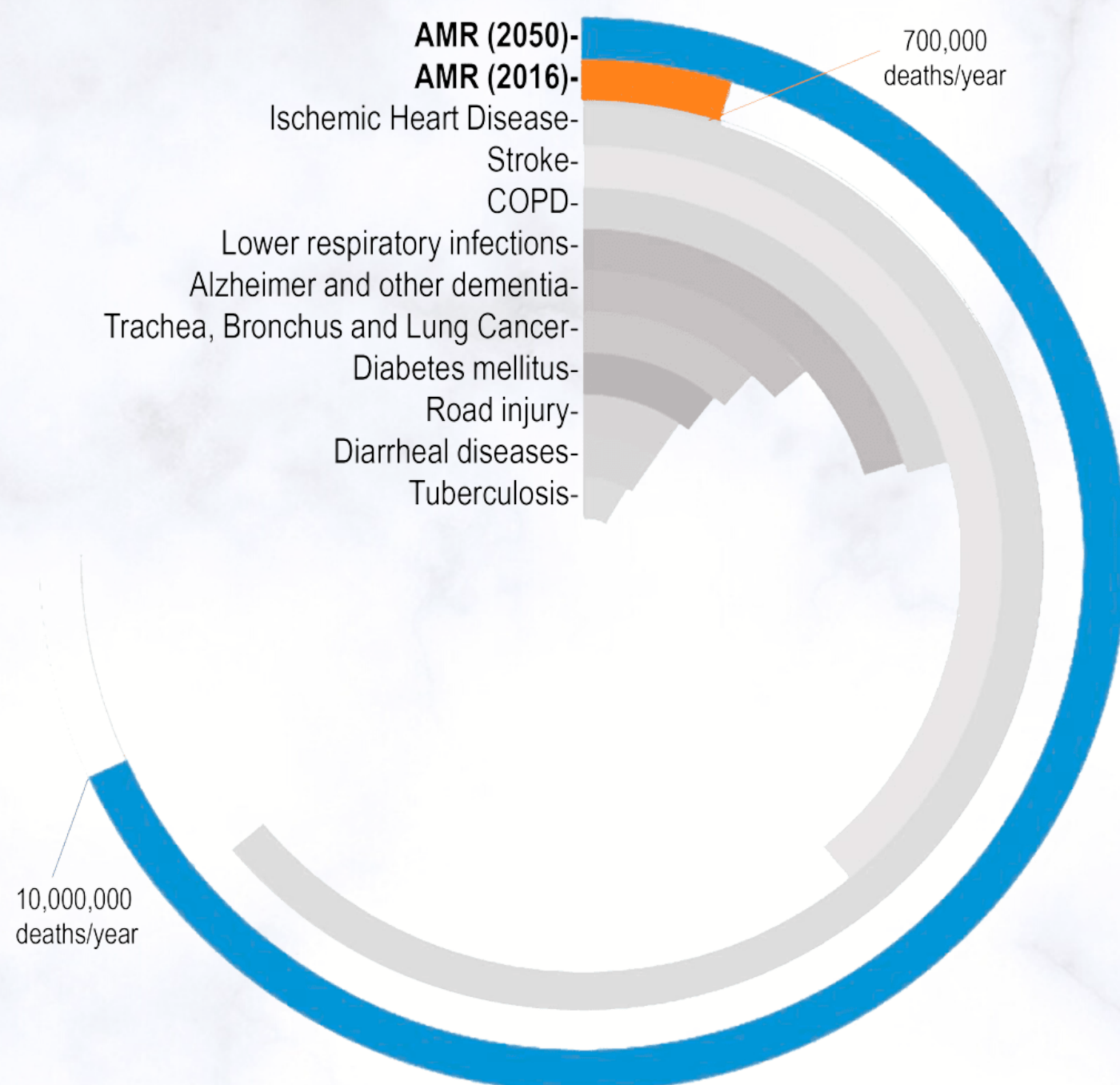
Coli Kaze



INTRODUCTION

Antibiotics are the 'wonder drugs' used to combat and treat a variety of bacterial infections and diseases. However, during the past 5 decades, both the use and misuse of antibiotics in human and veterinary healthcare has resulted in the emergence of antimicrobial-resistant bacteria. These resistant pathogens pose a huge risk for public and animal health, as they could develop into ferocious superbugs causing widespread epidemics with seemingly no cure. Thus, addressing the issue of antimicrobial resistance (AMR), is one of the most urgent priorities in the field of public health.

THE STATISTICS



The larger threat lurking behind the ongoing COVID-19 pandemic is the hidden threat from antibiotic resistance. A recently published study looked at hospitalized patients in Wuhan, China, that had been diagnosed with COVID-19. The researchers found that almost half of the patients who died also had a secondary bacterial infection. Owing to AMR, fatality rates of most of the infectious diseases have skyrocketed. Thus, mitigating antibiotic pollution is the need of the hour.

Current Antibiotic degradation technology involves brute force solutions, like incineration and digestion of farm waste. These methods are costly, time-consuming and unreliable as they may lead to the further leakage of antibiotics into the environment and also cause air pollution.

we plan to create a cost-effective, environment friendly and sustainable method of antibiotic degradation, whose by-products can be reused. We aim to create awareness, add to the current database and mathematically model the spread of AMR, to address this global issue.

Our project involves a multifaceted synthetic bio-engineering based approach to tackle this problem. We will be using and developing mathematical models to theoretically predict the most feasible options to tackle this issue. Fieldwork, data sampling and outreach will lead us to newer unexplored horizons through which we would learn and grow as a team and spread awareness. It is this synergy of diverse elements that make our project an interesting and challenging adventure.