



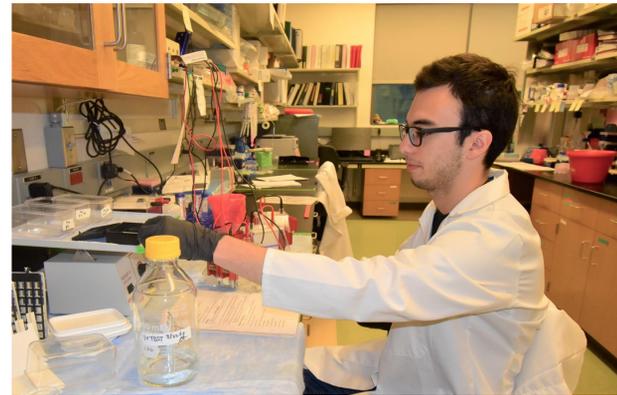
A Leading Infectious Disease: Challenges in the Eradication of Tuberculosis

Adrian Naoun, B.S. Biology, Fall 2020

Intellectual Achievement and Research

SUMMARY

Texas Biomed is a national leader among private, independent research institutes investigating infectious diseases. I had the privilege of engaging in several research projects from January 2019 to January 2020 as an intern in Dr. Schlesinger's lab. According to the WHO, *Mycobacterium tuberculosis* (*M.tb*) has infected one-fourth of the world's population. In 2017, there were 1.6 million deaths associated with this devastating infectious disease. My project investigated the regulation of an intracellular molecule known as cAMP, which mediates host immune suppression. The goal is to elucidate the cAMP signaling pathway in human macrophages during *M.tb* infection, which should aid in the development of novel host-directed therapies.



SPICES

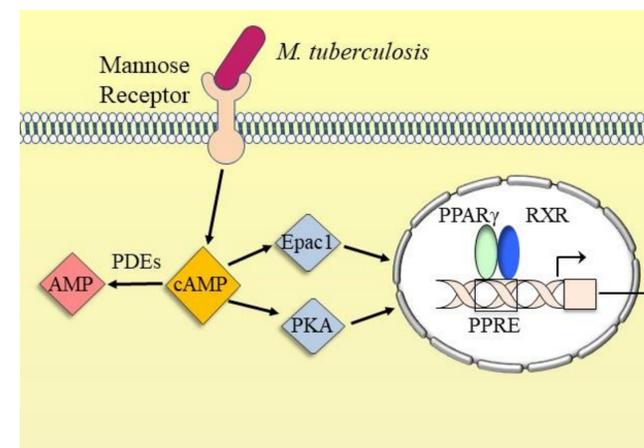
Scientific endeavors embody the Intellectual Achievement and Research category. Successful completion of our research project will result in a publication that will enhance the scientific community's knowledge of signaling events during *M.tb* infection.

HERBS

My research experience encompassed the ethical values of benevolence and honor. Resilience is indispensable to maneuver in the complicated fields of investigation. The ability to recover from unexpected results is an invaluable asset.

LEARNING OUTCOMES

Shadowing various mentors expanded my understanding of science. However, the most valuable lesson included the opportunity to reflect on my career choice. Dr. Schlesinger is a physician who also devoted his career to scientific research. Translational medicine facilitates the application of novel host-directed therapies developed in the laboratory. Therefore, recognizing the urgent need to eradicate infectious diseases contributed to my choice of pursuing a physician-scientist degree.



IMPACT

Tuberculosis remains the leading cause of death due to a single infectious agent, with particular lethality in immunocompromised patients. *M.tb* is an intracellular pathogen equipped with evolutionary traits to evade mechanisms of immunity. The rise of drug-resistant *M.tb* poses a considerable threat to humanity. Therefore, scientific research remains the only viable mechanism to target extensively- and multi-drug resistant strains. Further studies will demonstrate whether cAMP degradation could be employed as a novel host-directed therapy to help combat tuberculosis.

ADVICE

Perseverance, curiosity, and dedication are essential values to succeed in science. The direct application of some HERBS, such as resilience, contributed to my personal growth. Also, it is crucial to remember the biological foundations of life. Working on complicated projects should not detract from the theoretical framework.