This project was written as part of my graduate research as a fellowship application to the National Institute of Health. It details the importance of my work and describes the steps I will take to make this research come to fruition. My research focuses on the improvement of biological heart valve replacements. Currently, patients are outliving their prosthetic heart valves and require a second surgery to replace the failed valve. My research aims to increase the lifespan of these prosthetics so that they do not fail within the patient’s lifespan. The use of the Fondren Library’s resources bolstered my ability to write this essay and gave me invaluable assets to design my research aims.

As a student of Rice University, the Fondren Library grants me access to a consortium of research journals. Without leaving my office, the resources from the library allow me access to thousands of primary research documents through online publications. Using websites such as PubMed and the Encyclopedia of Biological Chemistry, I was able to search for terms related to my work. Initially, I was looking for statistics and figures that showed the prevalence of heart disease and dysfunction. Through PubMed@Rice University I found countless resources that had comprehensive descriptions of heart valve prosthetic failure.

Some of the articles I wished to read I did not have access to. For instance, there was an article in the Journal of long-term effects of medical implants titled The Failure modes of biological prosthetic heart valves. This paper sounded perfect for my research interests so I used the Fondren Library’s Interlibrary Loan portal to request access to this paper. In a mere day, I was sent the pdf of this paper and gained critical knowledge on the failure mechanisms of prosthetic heart valves.
As I designed my three aims for my doctoral research, I also needed to review previous methods and find out where my research niche would lay. By using online patent and primary literature searches through Patent Scope and PubMed, I found previous designs to mitigate prosthetic valve failure and could tailor my own research to target holes in the current knowledge base.

To create a logical and well-reasoned argument for my research, I had to use the resources of the Fondren Library. Access to some of the highest impact journals related to my field allowed me to research and review the problems that currently face prosthetic implants and develop a strategy to combat them. By requesting further documentation through the Interlibrary Loans portal, I could review all articles that I felt were crucial to my research even if Rice University didn’t have immediate access to the journal. The Fondren library was instrumental to writing this fellowship and the resources I used allowed me to write a thoughtful and competitive application.