I am a third-year Biochemistry major and am minoring in Anthropology. Throughout my academic career, I have been very interested in biomedical research related to protein biochemistry. This interest was first sparked in my high school biology class during our discussions of subjects related to protein folding. Proteins are the most chemically diverse macromolecules in living organisms. Their malfunction has been associated with a number of neurodegenerative disorders including Alzheimer's Disease. A number of my immediate family members have been affected by Alzheimer's Disease, and as such, I am very interested in research areas related to the development of therapeutics against these devastating disorders.

As a high school student, I participated in a number of volunteer opportunities that introduced me to biomedical research. As a research intern at Wright State University, I assisted a Biochemistry graduate student in analyzing protein samples using Nuclear Magnetic Resonance (NMR). Using this approach, we were able to outline the effects of different disease-causing mutations on the structure of alpha synuclein protein. The results provided insights into how these mutations can lead to neurodegeneration in Parkinson's Disease. More generally, this opportunity allowed me to gain first-hand experience in experimental design and interpretation of biochemical data. It was largely based on this rewarding experience that I decided to pursue the study of Biochemistry as an undergraduate.

During my time as an undergraduate at the University of Rochester, I have taken the opportunity to participate in a number of activities related to biological research. During the spring semester of my freshman year, I volunteered in the Chen laboratory in the Biology Department where I gained valuable experience in analyzing protein samples using different chromatography strategies. I am an active member of the Society of Undergraduate Biology Students (SUBS) and regularly attend their research seminars and workshops. Furthermore, I have participated in a number of outreach activities where I mentor high school students and expose them to opportunities in STEM-related fields.

In the future, I am very interested in pursuing a career in biomedical research. It is my goal to enter graduate school upon the completion of my undergraduate degree. Because of this, I believe it is very important for me to gain hands-on experience in research during my time at the University of Rochester. I have really enjoyed my research volunteer work and my Biology courses that have included a laboratory component (for example, Introductory Biochemistry and Genetics). At this stage of my academic career, I am very interested in getting involved in a more immersive research experience where I carry out an independent research project in a full-time summer position. I believe that such an opportunity will act as a springboard to future research opportunities and improve my chances of successfully applying to Biochemistry graduate programs. I am therefore very interested in the Discover program and the opportunities it

provides for full-time summer research at the University of Rochester.

I believe that the Chen laboratory in the Biology Department provides the perfect environment for my summer research. This laboratory conducts biochemical research on neurodegenerative disorders, including prion diseases. I have previously volunteered for one semester in this laboratory and have formed a productive working relationship with Dr. Chen and members of his research group. The project that I have described in the Research Description section was developed in consultation with Dr. Chen. The proposed experiments take advantage of the technical expertise of the Chen lab in mass spectrometry-based proteomics to gain insights into the pathogenic mechanisms of prion diseases. This project will provide me the opportunity to pursue my interests in neurodegenerative disorders, while learning a number of new methodologies including mass spectrometry.

As a first-generation university student, I have had to face significant challenges during my time at the University of Rochester.   - Although I have found the curriculum at this university to be very challenging, I have benefited from many opportunities to gain exposure to biomedical research and advance my academic career. I am very excited about the opportunities afforded by the Discover grant and am looking forward to carrying out my proposed project under the mentorship of Dr. Chen.