Liam Boyle
David Harron Herman Memorial Scholarship 2023 Winner

During the time I spent in Nižné Ružbachy, a small village in northern Slovakia that is home to my mother's family, I learned that accessible medical treatment was not as common as I had thought. After hearing about my family's struggles, I decided that I wanted to utilize my passion for engineering to improve access to medical technology and increase the standard of living for people who are afflicted with medical conditions.

After beginning 1ny college education, I met Dr. Peter Stupak, founder of the Main Engine Start nonprofit. When I heard about his work with the Matheny Children's School and Hospital, I knew that volunteering with his organization was a perfect opportunity to make a positive impact in my community. At Matheny, disabled children who suffered from neuromuscular degeneration were often unable to rotate their heads more than a few millimeters. We quickly discovered that there is no commercial solution for this problem. For nine months, my team has developed a universal wheelchair-mounted head support that electrically assists a patient's head rotation. This had the potential to directly impact the lives of the children at Matheny by providing access to a previously unattainable solution to their disability. By personally developing the mechanical design of a frame, precision gear system, and control system that mounted our system onto an existing headrest, I was able to work toward my goal of improving the lives of children in my community. With minimal effort, a child can activate the system and independently control their head movement. Soon, we hope to increase awareness of the effects of neuromuscular disease and the novel solution we developed by submitting our project to an international engineering organization for presentation and publication.

At the same time, I had the opportunity to start a research and development internship at Ethicon, a Johnson & Johnson medical device company. Through this internship, I have advanced experimental test methods used for the development of surgical patches that simplify the currently complicated process of surgical closing dural incisions. By assisting in the advancement of a less invasive wound-closure device, I have been able to directly contribute to a project that minimizes recovery time and increases the safety of patients across the globe. I have gained vital industry knowledge and perspective that will allow me to maximize the impact of my work and contribute to an international medical technology company.

In the future, I will continue to pursue opportunities that allow me to work toward my goal. Through my work, I am confident in my ability to develop universal technological solutions that lessen the effects of unique medical conditions. I plan on transferring from my community college into a mechanical engineering program at a four-year educational institution and pursuing graduate studies while continuing my work as an intern at Ethicon. Even though I will have a lot of late nights, stressful weeks, and seemingly impossible tasks ahead of me, I will do everything I can to establish equity and accessibility for those born into disadvantaged health positions. By making myself a valuable part of the medical device industry and continuing to volunteer for the Matheny Children's School and Hospital, I am confident that I can achieve my goal of employing engineering and mechanical design to improve my local community and global health care system.