

Richter Scholar Program: A Transformative Summer of Research and Discovery

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Supplemental college-organized programs play a vital role in enriching undergraduate education by providing students with opportunities to expand their knowledge and develop skills beyond the classroom. Research-focused programs, in particular, offer an invaluable space for students to bridge theoretical learning with hands-on application, fostering both intellectual curiosity and professional development. One such program, Lake Forest College's Richter Scholar Summer Research Program, is a testament to the transformative power of early research engagement. Specifically designed for high-achieving first-year students, the program enables participants to undertake independent research under the mentorship of dedicated faculty, exploring diverse fields ranging from the natural sciences to the humanities. By covering room and board costs and providing a stipend, the program also ensures that students from all socioeconomic backgrounds have the opportunity to participate, making it a truly inclusive academic experience. More than just a summer research initiative, it serves as a launching pad for future academic and professional pursuits.

As an international student from Uruguay, my participation in the 2024 Richter Scholar Program marked my introduction to formal neuroscience research. Selected to work in Dr. Rebecca Delventhal's lab, I joined a project investigating the role of various EMC subunits in glial cells and their impact on brain development and function using *Drosophila melanogaster* as a model organism. The EMC protein complex remains relatively understudied, and previous findings in our lab linked EMC4 knockdown to a developmental delay, impaired locomotion and a severely reduced lifespan in fruit flies. My research expanded on these findings by testing EMC1, EMC2A, and EMC2B, with additional subunits under investigation. Contributing to an ongoing project in an active research setting was a rare and formative experience, one that deepened my appreciation for the complexity of scientific discovery.

Throughout the summer, I applied and expanded upon concepts from my coursework—integrating knowledge of molecular biology, genetics, and neurodevelopment to design and interpret experiments. More than just reinforcing classroom learning, this hands-on experience strengthened my technical skills, from working with microscopes and incubators to performing genetic manipulation and brain dissections. But beyond technical proficiency, it taught me resilience in the face of experimental challenges. Research is often nonlinear, requiring adaptability and problem-solving, and this program pushed me to embrace those aspects of scientific inquiry. These skills, both technical and cognitive, will serve me well in future lab experiences, whether in my post-college gap year or in graduate and medical school.

Prior to the Richter Program, I primarily viewed science through a clinical lens. Growing up in Uruguay, where research opportunities are scarce, I had little exposure to formal research training. However, this experience broadened my perspective, showing me that a passion for human biology is not limited to medicine alone—it can also thrive in the lab. This realization has led me to consider more research-intensive career paths, such as an MD-PhD, where I can integrate scientific discovery with patient care. The ability to engage deeply with scientific questions, collaborate across disciplines, and contribute to a growing body of knowledge is something I now recognize as central to my aspirations.

Beyond research, the program provided an unexpected but equally valuable benefit—confidence. Learning to articulate complex scientific concepts, troubleshoot experimental setbacks, and engage in discussions with peers and mentors helped me refine my ability to communicate scientific ideas effectively. This skill is indispensable not only for academic

success but also for interdisciplinary collaboration and public engagement.

The impact of undergraduate research programs like Richter extends far beyond a single summer. They cultivate critical thinking, fuel academic curiosity, and, perhaps most importantly, instill a sense of belonging in the scientific community. For students like me, who come from backgrounds where research opportunities are limited, such programs can be life-changing. As I continue my academic and professional journey, I carry with me a deep appreciation for the power of accessible research opportunities.

Looking ahead, I hope to see more programs like Richter implemented globally, particularly in countries like Uruguay, where research infrastructure remains underdeveloped. Expanding access to undergraduate research experiences would not only enrich individual academic trajectories but also contribute to scientific innovation on a broader scale. The value of such programs cannot be overstated—by investing in young researchers, institutions help shape the future of science, medicine, and beyond. I am grateful for the Richter Scholar Program and Dr. Rebecca Delventhal, not just for the skills and knowledge I gained, but for the possibilities they have opened in my mind and career.

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References

Lake Forest College. (n.d.). *Richter Scholar Program*. <https://www.lakeforest.edu/academics/student-honors-and-research/richter-scholar-program>