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LETTER FROM THE EDITOR

Dear Reader,

It is my great honor to present the fifth edition of the SMU Journal of Undergraduate Research (JoUR). During my second year as editor-in-chief, I have been continuously amazed by the incredible inventiveness of the student researchers housed on this campus.

This year's publication cycle has focused on a variety of goals set forth by our members. We have seen major improvements in our organization's outreach efforts to both inform and educate student researchers about the techniques and expectations of research article writing. Additionally, our team has developed relationships with a larger number of research programs on campus, specifically the Lyle Grand Challenge Scholars Program. Due to a greater working relationship with the Office of Engaged Learning, we were able to develop a more streamlined system for Undergraduate Research Assistant (URA) and Summer Research Assistant (SRA) papers to receive acceptance into the JoUR. This is reflected in the inclusion of two SRA Summer Research Fellows in our article authors for this edition.

Moving into the future, it is our collective hope that the JoUR will continue to flourish and grow. . As well, we are embarking on a journey to increase our funding through various pathways, with hopes that this will increase our reach here on campus so we can serve student researchers to the best of our capabilities.

In closing, I wish to thank the JoUR's undergraduate staff members for their tireless dedication and input. Additionally, Dr. David Son's leadership as our Faculty Fellow has provided unique insight that has assisted in our growth over the past year as we have developed the fifth edition. Finally, the continued support of The Office of Engaged Learning and Central University Libraries has allowed JoUR to develop and bring the journals to print.

Best,



Melina Corriveau
Editor-in-Chief
mcorriveau@smu.edu

LETTER FROM THE FACULTY FELLOW FOR UNDERGRADUATE RESEARCH PROGRAMS

Dear Members of the SMU Community:

It is my pleasure to introduce the next volume of the *SMU Journal of Undergraduate Research (JoUR)*. The journal operates through the Office of Engaged Learning (OEL), which plays a major role in providing undergraduate research support at SMU.

The present volume includes seven articles, all written by SMU undergraduates and describing their research in the humanities and sciences. In addition to these seven, numerous other articles have been received and are in various stages of review and editing. In order to accommodate the increasing number of publishable articles, plans are being developed to publish issues online in addition to print. Much undergraduate research at SMU is supported by the Office of Engaged Learning, and is a direct result of the Quality Enhancement Plan (QEP) of our latest accreditation reaffirmation. The growth of undergraduate research at SMU has been outstanding, and I expect this growth to continue in coming years.

Submissions to the JoUR are subjected to a review process as is typical in any academic journal. Manuscripts are evaluated by two reviewers, one of whom is faculty, and comments and suggested revisions are sent back to the author. Upon corrections, the manuscript is reviewed by the editors and copy-edited before final publication. Published articles receive a unique digital object identifier number (DOI), which links directly to the online version of the articles. The online version of the journal continues to be hosted on the SMU Scholar platform within Central University Libraries (CUL).

It has been a pleasure working on this student-run project with editor-in-chief Melina Corriveau, assistant editors Jessie Henderson, Jonathan Lindbloom, and Manqi Shi. I would also like to acknowledge the invaluable assistance provided by Jennifer Ebinger, Director of OEL, and Adam Neal, Assistant Director of OEL. Furthermore, I am very grateful to the faculty who contribute their time as reviewers and as undergraduate research mentors.

Happy reading!

Sincerely,



David Son, Ph.D.
Faculty Fellow, Undergraduate Research Faculty Steering Committee
Associate Provost for Curricular Innovation and Policy, *ad interim* and Professor of Chemistry
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SMU Research Programs

The Hamilton Undergraduate Research Scholars Program enables Dedman College's most promising students to collaborate with top faculty researchers and contribute to the creation of knowledge in significant and meaningful ways. Each faculty/student team submits a competitive proposal for the project to the Program Director in response to a call for proposals in August of each academic year. A small number of Hamilton Undergraduate Research Scholar Awards are also made for the summer with a request for applications going out in late April. Awards are up to \$3000/semester with matching funds available from the University Undergraduate Research Program. www.smu.edu/Dedman/DCII/Programs/Hamilton

Robert Mayer Undergraduate Research Fellowships through the Dedman College Interdisciplinary Institute allow students to conduct research integrating two or more fields. Mayer Interdisciplinary Fellows will have access to \$1500 to use for research travel or for other expenses related to the development and completion of their research project. www.smu.edu/Dedman/DCII/Programs/Mayer

John G. Tower Center Student Fellowships provide a gateway for students to pursue work in politics and government. Undergraduate Fellows collaborate closely with faculty to develop research projects that either become published or presented for faculty or professional review. Fellows are accepted during the second semester of their sophomore year and serve as fellows during their junior and senior years. Selection is based on merit and determined by an application and interview process emphasizing ability and interest in research. Each fellow receives a stipend of \$750 per semester for a up to four consecutive semesters, a book allowance for documents related to the independent study project, and support for research expenses. www.smu.edu/TowerCenter/Students/TowerScholars

Maguire Public Service Interns are sponsored by the Maguire Center. The Maguire Center—with financial assistance from the Irby Family Foundation—awards summer internships to SMU students who wish to devote time to public service or research in the field of ethics. SMU Public Service Interns have volunteered in a vast number of diverse internship placements. Through such opportunities, students gain concrete information about others' needs, as well as differing perspectives on how to resolve them. Undergraduates receive a \$2000 grant for their internship. www.smu.edu/Provost/Ethics/Students/Fellowship

The Richter International Fellowship Program is funded by the Paul K. and Evelyn E. Cook Richter Memorial Funds and is awarded to members of the University Honors Program to conduct independent research, usually outside the United States. The project can cover any area of study, but should be international or multicultural in nature. SMU is one of only 12 schools offering Richter Fellowships, and only Honors students are eligible for the Fellowships. Richter Fellows receive funding for one to three months of research over winter or summer break, generally abroad.

Upon returning, Fellows write and submit a scholarly article based on their research with intent to seek publication. www.smu.edu/UndergradResearch/Programs/RichterFellowship

The McNair Scholars Program is a federally funded TRIO program that serves a diverse group of undergraduate students at 151 universities across the nation. The program was designed to prepare students typically underrepresented in graduate education for doctoral attainment through involvement in intensive undergraduate research. McNair Scholars complete a funded summer research opportunity, where they work closely alongside a faculty mentor. Additionally, the program provides academic and career advising, faculty mentoring, and assistance with graduate school applications. www.smu.edu/simmons/Community/CollegeAccessPrograms/McNairScholars/Eligibility

The Office of Engaged Learning

The Office of Engaged Learning offers significant curricular programs for both undergraduate research and entrepreneurship. In addition to the funding programs below, the office hosts opportunities for students to present research (Fall Research Symposium, Research Days Undergraduate Poster Session, and the Journal of Undergraduate Research). The office also hosts workshops for students to develop skills as researchers and entrepreneurs.

Through the **Big iDeas** Pitch Contest and Business Plan Competition, students can win seed money for starting a business, building a foundation, designing a product, or providing a service. Big iDeas winners receive full access to the **SMU Incubator** in Expressway Tower. At the Incubator, students benefit from professional development, access to office space, and mentoring from entrepreneurs-in-residence. <https://www.smu.edu/BigiDeas>

The **Engaged Learning Fellowship (ELF)** allows undergraduate students to engage in capstone-level scholarly research, creative projects, professional internships, or community service projects. SMU funds ELF's up to \$2000 per project and records their project titles on student transcripts and in commencement booklets. <https://www.smu.edu/Provost/EngagedLearning/Engaged-Learning-Fellowship>

The **Undergraduate Research Assistantship (URA)** and **Summer Research Assistantship (SRA)** program provides research opportunities for students in all disciplines. Students work side by side with faculty mentors, for whom the Office of Engaged Learning provides matching funds to a department, school, or research grant. Our research programs have supported thousands of students across the university, from first year to senior year. Student researchers have achieved numerous milestones such as conference presentations, co-authoring papers, and journal publications. <https://www.smu.edu/Provost/EngagedLearning/Undergraduate-Research/URA>

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