Academic and Educational Opportunities Provided by the Undergraduate Research in Natural and Clinical Science and Technology (URNCST) Journal

Neethu Pavithran, Redwan Haque, Neha Dhanvanthry, Ankush Sharma,
Arjun Singh, Chun Ju Liang, Radha Sharma, Stephanie Nagy,
Harrison Nelson, Soumya Shastri, Saameh A. Siddique, Vedish Soni,
Chitrini Tandon, Molly H .R. Cowls, Alessandra Cutrone, Ayomide Fakuade,
Varnikaa Gupta, Halton Quach, Jessica B. Saini, *URNCST Journal*
Jeremy Y. Ng, *URNCST Journal*
Centre for Journalology, Ottawa Hospital Research Institute
McMaster University

Abstract

The Undergraduate Research in Natural and Clinical Science and Technology (URNCST) Journal was founded in 2017 and currently serves as a leading publisher of undergraduate research spanning broad and multidisciplinary fields. Unique to most undergraduate journals, the URNCST Journal publishes abstracts for undergraduate conferences and case competitions and promotes innovative undergraduate research education initiatives. The present article summarizes the contributions, opportunities, and achievements of the journal since its inception.

Keywords: *mentoring, research methods, undergraduate journals, undergraduate research, URNCST Journal*

The Undergraduate Research in Natural and Clinical Science and Technology (URNCST) Journal (2022e) is a peer-reviewed, open-access, scholarly journal that was established to support the publication of undergraduate research and to offer undergraduate research educational initiatives. As a leading publisher of undergraduate research, with over 175 published articles to date, the journal's aims and scope span broad and multidisciplinary fields within the natural and clinical sciences and technology disciplines. Founded in July 2017, the URNCST Journal provides opportunities for aspiring undergraduate researchers and undergraduate research conference and case competition planners to formally publish their work and meaningfully contribute to the academic research literature. The URNCST Journal is listed on the Council on Undergraduate Research (2021) Undergraduate Research Journal Listing, a collection of dozens of undergraduate research journals. In comparison to the other journals provided on this list, some key features that distinguish the URNCST Journal include the journal's scope of disciplines for acceptable research submissions, lack of affiliation with any specific academic institution, and its continuous publication frequency all of which provide unique opportunities for undergraduate students. All articles published in the URNCST Journal are indexed to Google Scholar within a month of publication, which increases the accessibility and visibility of published articles to a wide audience. The journal also aspires to be indexed in other bibliographic databases such as Scopus, Web of Science, EMBASE, and MEDLINE.

In addition, the URNCST Journal offers a variety of research education initiatives, including the Mentored Paper Initiative (MPI) and the newly launched Research Methods Primer (RMP). Over the past decade, studies have reported clear benefits for students who write and publish in undergraduate journals, and also for those who serve on editorial boards and mentor students throughout the publishing process. These studies have observed enhanced confidence, pride in contributions to an expanding body of knowledge, increased rates of employment and matriculation to graduate and professional institutions,

and the development of professional identities (Schofield and Burton 2015, 268; Weiner and Watkinson 2014, 2). The URNCST journal also provides opportunities for graduate students, postdoctoral fellows, and research faculty to support undergraduate students as program mentors, editorial board members, and peer reviewers. Graduate-level students and faculty involved in undergraduate publishing benefit from developing the ability to understand and navigate the professional publishing field (Ware and Burns 2008, 256). These individuals also are able to advance their supervisory skills, which offers opportunities for socioemotional and interpersonal gains (Good, Halpin, and Halpin 2000), and develop communication and research productivity skill sets through the collaborative efforts between mentors and mentees (Dooley, Mahon, and Oshiro 2004). This article describes the contributions, opportunities, and achievements of the URNCST Journal in the realm of undergraduate science research since its inception.

Publishing Initiatives

Undergraduate Conferences and Case Competitions

Undergraduate conferences and case competitions provide opportunities for undergraduate students to showcase their scientific expertise and earn recognition for their work. Undergraduate conferences allow students to present research they have conducted, often by participating in a research study under the supervision of a principal investigator. In contrast, undergraduate case competitions do not require prior research experience, instead allowing students to pitch a research proposal in the form of an abstract in response to a research question or theme. However, unlike their professional-level counterparts, very few undergraduate conferences and case competitions publish their abstracts. Of those that do, an even smaller number index their abstract books to scholarly databases (e.g., Google Scholar), resulting in researchers being unable to find their work. The URNCST Journal addresses this issue by providing a unique platform for these conference and case competition participants to publish their abstracts free of charge. Although conference planners often reach out to the URNCST Journal to inquire about collaborative events, the journal also has a conference outreach team specifically tasked with finding conferences and competitions that may not know about the journal. The journal also provides downloadable templates for both abstracts and abstract books to assist conference planners and their participants in formatting their submissions. The journal helps support conference planners by promoting their events to its global audience and generating traffic that can contribute to higher abstract submission rates. The journal also helps students participating in conferences and competitions to build their reputation in the field of scientific research by highlighting their professional achievements. To date the URNCST Journal has published over 30 abstract books from undergraduate conferences and case competitions.

Mentored Paper Initiative

Launched in 2020, the URNCST Journal MPI (Fakuade et al. 2020) was developed in response to undergraduate students who were keen to partake in research endeavors but struggled to find meaningful mentorship, with the appropriate skill sets and competencies required to guide them through the researching and publishing processes. The MPI program helps to address this barrier to education and opportunity through its mentorship format; graduate-level mentors provide topics in which they have expertise for applicants to select from at submission. This qualifying level of expertise is based on two categories of guidance. Primarily, graduate students must be able to mentor MPI participants in a research method topic (or topics) that they have familiarized themselves with in their own graduate-level research work. The second category of guidance is research-specific, meaning that graduate mentors must be able to, for example, help their undergraduate student mentees understand the scientific process, write an abstract on their chosen topic, and select an appropriate research method to answer their research question. A number of studies on the efficacy of mentorship-based research education reports that mentored undergraduate students, in comparison to their non-mentored counterparts, are likely to be more satisfied with their academic major and profession trajectory (Koch and Johnson 2000); to persist to degree completion; to report higher levels of academic achievement and engagement with their institutions; and to pursue higher education aspirations (Larose et al. 2011; Lunsford 2012; Russell, Hancock, and McCullogh 2007; Schmidt, Marks, and Derrico 2007; Taraban and Logue 2012; Thomas and Gillespie 2008). Eighty-one percent of the students who participated in a similar mentored undergraduate research experience hosted by the University of Portland indicated that they were either somewhat or extremely likely to pursue graduate studies in the next five years (Dillon 2020). For undergraduate student mentees to feel more involved and take ownership of their responsibilities and learning experiences, while also being guided by their mentors, Farkas and Pashkova-Balkenhol (2021) stress the importance of creating infrastructure with streamlined goals and well-defined expectations. Recruiting graduate students to act as mentors for the URNCST Journal research education initiatives also offers higher relational quality, as having been undergraduate students recently themselves these graduate-level mentors are likely well positioned to empathize and provide authentic perspectives to their mentees (Liang et al. 2002). Throughout the duration of the MPI program, graduate mentors provide their expertise and support to guide their mentees through the process of writing a full-length research paper and responding to peer-reviewer feedback.

At the start of the application process for the MPI program, graduate researchers provide the scientific research questions they choose to mentor in, and these questions are published on the journal website for applicants to select from. Undergraduate students may choose to apply either individually or in teams of up to three to draft an original abstract that describes a potential research protocol or review paper on their selected research question. At this stage, applicants are assessed on their preparedness and readiness to learn by reviewing the relevant peer-reviewed literature on the topic, and on their academic writing ability. Mentors evaluate the abstracts received on their respective topics, assigning a score to each submission based on a rubric available on the submission form (URNCST Journal 2022d). The individuals or teams of applicants with the highest scoring abstracts will be invited to partake in the three-month mentorship period.

The MPI mentorship period is divided into six two-week blocks, with deadlines at the end of each block for both mentor and mentees to complete specific deliverables. These biweekly deliverables consist of tasks that lead to the completion of the final full-length manuscript, such as drafting an outline, conducting literature searches, and writing the various subsections of the paper. The final blocks involve the completion of all revisions and formatting of the manuscript according to URNCST Journal submission guidelines, and finally submission to the URNCST Journal for consideration for publication. Further details of the timeline and block-associated deliverables can be found on the URNCST Journal MPI webpage (URNCST Journal 2022a).

Throughout the program, every effort is made to encourage and guide participants to develop an article deemed suitable for publication in the URNCST Journal. Mentors are provided with supervision guidelines in advance of meeting their mentees; the program schedule is structured in a block format that allows the journal staff to conduct regular progress checks; and multiple rounds of author revisions can be completed to fine-tune the final manuscript. After submission, all articles undergo peer review, having first met the following parameters: (a) the first author is (or was) an undergraduate student; (b) the manuscript meets article criteria outlined in the URNCST Journal "Instructions for Authors" on its website; and (c) the manuscript topic falls within the scope of the journal. Prior to peer reviewing an article, all reviewers are asked to complete peer-reviewer training offered by the Web of Science Academy (n.d.), which arguably goes beyond the training requirements for peer reviewers of even professional-level journals. At least two peer reviewers provide feedback for each submission. This peer-review process generally takes between two and three months to complete. Mentors then guide their mentees as they navigate addressing peer-review feedback and revise their manuscript.

The URNCST Journal does not levy any article submission fees. Authors pay a one-time publication fee to publish their article only after their submission is accepted for publication. These fees are the primary source of revenue for the URNCST Journal; it covers the associated costs of maintaining the journal's website, peer-review process, and open access system; copyediting; improving the visibility of the published articles; and publication association membership fees. Authors are able to review their manuscript proofs and request any final revisions before formal publication in the URNCST Journal. This involves assigning the article a digital object identifier (DOI) through the journal's membership with CrossRef, an official DOI Registration Agency of the International DOI Foundation, and promoting the publication on URNCST Journal social media platforms and the URNCST Journal website.

Research Methods Primer

The URNCST Journal RMP program (Pavithran et al. 2021), launched in 2022, was developed to address knowledge gaps observed in undergraduate-level research. For some undergraduate students, partaking in scientific research involves starting in the middle of a research study to assist in the data collection and analysis components of the project. Undergraduate students are often excluded from the initial processes of developing and implementing a research study, which includes conceiving a scientific project from scratch, identifying a research methodology suitable for the research question, and then designing and justifying the steps required to implement the study. A study published by Kardash in 2000 reported that undergraduate science students are primarily involved in setting up and conducting experiments within research apprenticeships, with little understanding of the rationale and methodology for the study design or the interpretation of study results. The ability to write and publish study results is also an integral component of the research process, which often is not part of undergraduate research (Walkington, 2012). Additionally, a study by Thiry, Laursen, and Hunter (2016) identified that many undergraduate students who had negative research experiences because they received little to no direction regarding their research activities subsequently changed their professional and academic plans, moving away from scientific fields. This fundamental knowledge gap prevents students from progressing to a stage in their career in which they are able to design a rigorous scientific study. It also poses a barrier to making an informed decision about pursuing further research education, for example, in graduate school.

The RMP program provides a guided environment in which undergraduate students can gain a deeper understanding of a commonly used scientific research method and learn to navigate the complexities of research methodology theory and practice. The RMP program pairs students with a graduate-level researcher to mentor them across a three-month

period. All mentors for the RMP initiative are recruited based on their familiarity with the research method topics they provide to the program, as demonstrated by relevant experience within their own graduate-level research work. Mentors must be able to guide their students on the utility of the method, associated challenges with its employment, and its limitations. The mentor recruitment process also assesses the graduate student's ability to provide academic support to their mentees as they gain an understanding of the scientific process, write the primer paper, and address peer-reviewed feedback. These precautions are taken when recruiting mentors to ensure that mentees receive an accurate and informative educational experience from someone with high levels of expertise in the research area.

Graduate researchers provide the research method topic or topics they choose to mentor in, along with two to four peer-reviewed published articles that best articulate the topic. These topics and associated articles are then published on the URNCST Journal website (URNCST Journal 2022f) so that undergraduate students may make their selections. The RMP submission form requires students to write a short abstract that summarizes the key points of their selected topic, with guidance from the provided articles. Similar to the MPI, the RMP submission form includes a rubric at the end, used by the mentors to evaluate the abstracts. Applicants are assessed on their preparedness and readiness to learn about their selected research method as well as the academic writing ability reflected in their abstract submission. Based on the marking scheme outlined on the rubric, mentors assign a score between zero and ten to each abstract, and individuals with the top-scoring submissions for each topic are invited to participate in the three-month program. The RMP schedule (URNCST Journal 2022b) divides the three-month program into six two-week blocks with deadlines for deliverables from both mentors and mentees marking the end of each block. These biweekly deliverables ensure that mentors spend an adequate amount of time teaching mentees about their research method of focus and allow for the gradual completion of the final primer manuscript. Once the manuscript is submitted to the URNCST Journal, it is sent out for peer review, provided that the manuscript meets all submission requirements. After typically undergoing one or two rounds of peer review, reviewer reports are returned and mentees work with their mentors to ensure all feedback received is addressed appropriately. The revised primer manuscript is then returned to the URNCST Journal. If accepted, authors pay a one-time publication fee to cover associated publication and maintenance. They are able to review their manuscript proof and request any final minor revisions before their primer article is assigned a DOI, formally published in the URNCST Journal, and promoted on the journal website and social media platforms.

The RMP program allows students to contribute to an invaluable educational resource accessible to all future early-career researchers. The RMP and the MPI research education programs both provide undergraduate students with a thorough and detailed understanding of the manuscript writing and peer-review process involved in scientific publishing.

Journal Opportunities

The URNCST Journal offers several opportunities for undergraduate and graduate-level students. The journal gratefully attributes its growth and success to all student volunteers, editors, and advisory board members who have generously contributed their time and expertise over the years.

Editor-in-Chief

The URNCST Journal editor-in-chief oversees the direction and future trajectory of the journal and is responsible for final decisions on manuscripts submitted to the journal for publication consideration. The editor-in-chief also sets, reviews, monitors, and maintains journal policies with the rest of the editorial board. These policies provide transparent guidelines and protocols regarding authorship, peer review, quality control, and ethical issues.

Associate Editors and Peer Reviewers

Individuals currently enrolled in or graduates of master's or PhD degree programs, or highly research-oriented students or graduates from professional degree programs, are able to join the URNCST Journal team as peer reviewers. Eligibility for this role requires at least one publication in a peer-reviewed journal, considerable understanding of the scientific process, and excellent editing and writing skills in the English language. Graduate-level students and researchers also are invited to become mentors for the MPI and RMP research education programs. This is an opportunity to advance the invaluable supervisory skills expected of graduate trainees who seek faculty positions at academic institutions. Peer reviewers and mentors who have worked with the URNCST Journal to revise papers for at least one round of its research education initiatives are invited to serve as associate editors of the journal. Associate editor responsibilities include correspondence between authors and reviewers, reviewing and revising papers for relevance and quality, and providing recommendations about whether a submission is suitable for publication with respect to manuscripts received that are relevant to their specialist area(s).

Deputy and Assistant Editors

The URNCST Journal deputy editors work alongside the editor-in-chief to attract authors to submit quality manuscripts, ensure that journal processes are transparent to authors and journal collaborators, and assist with the processing of manuscript submissions and editorial content of the journal. They act as representatives of the URNCST Journal in national and international forums, such as on social media platforms and at academic and professional events and institutions. They also actively help plan future

collaborations, research initiatives, and the overall trajectory of the journal. Deputy editors manage teams of assistant editors who correspond with authors, editorial board members, and reviewers; manage the manuscript tracking system; communicate decisions to authors and handle queries; and ensure an efficient flow and management of manuscript submissions through the editorial office.

Some assistant editors are delegated to oversee copyediting, typesetting, and production procedures of the received manuscripts under the supervision of the production manager. Preparing these articles for publication involves ensuring that the structure, formatting, and wording of all manuscripts comply with the authorship guidelines of the URNCST Journal; checking that all references, tables, and illustrations are properly cited; and otherwise making certain that the article is complete. Once an article has been published, this team also creates announcements for the URNCST Journal website and journal social media platforms.

Engagement Team

The URNCST Journal promotional team plays a leading role in ensuring that undergraduate students around the world are made aware of URNCST Journal research education initiatives. The team consists of engagement leads (ELs) who manage and delegate tasks to engagement officers (EOs), entirely comprised of volunteer undergraduate students. They are responsible for promoting the initiatives on various social media platforms frequented by undergraduate students, including Facebook, Instagram, LinkedIn, and Discord. As many of the EOs are students with institutional affiliations and have access to academic platforms, the initiatives also are often promoted in university-affiliated groups and student organizations centered around scientific research. ELs also are responsible for collecting and sorting submissions the journal receives from its various research education initiatives; scouting for undergraduate research conferences and case competitions with which the journal can collaborate; and promoting research placements and field-relevant career opportunities available for undergraduate science students across the world.

External Research Opportunities

To support undergraduate science students venturing into the field of scientific research and academia, the URNCST Journal created a Facebook forum, "Researching in URNCST—Global Undergraduate Research Opportunities'" (URNCST Journal 2022b), to act as a community network for students, conference planners and delegates, researchers, and employers. EOs screen all member requests for the forum, which provides access for sharing relevant and current research, academic, and career opportunities for students, including volunteer, credit-based, and paid roles within the natural and clinical science and technology fields. The URNCST Journal also invites undergraduate conference and case competition planning committees and their participating delegates to join and promote their events within the forum. All posts are monitored by the URNCST Journal team; the posts require a short summary of the opportunity with keywords that enable its searchability and a working link to additional information. The EOs also actively contribute to the platform, as they are tasked with adding new opportunities to the forum on a weekly basis. Examples of forum posts include summer internships, research positions, research conferences and case competitions, academic seminars, undergraduate research scholarships and grants, expertise on finding and participating in research activities, and resources for conducting research.

Discussion and Conclusion

The URNCST Journal is now entering its sixth year as a leading publisher of undergraduate research, with a unique publishing model that continues to provide meaningful opportunities for undergraduate and graduate students. The journal has developed and launched two research education initiatives, the MPI and the RMP, which are open to undergraduate students internationally and provide them with unique opportunities to participate in programs that offer detailed and personalized guidance, exposure, and insight into graduate-level research and research theory; scientific manuscript writing; and an understanding of the peer review and publishing process. The URNCST Journal also works in collaboration with several organizations that are host to undergraduate scientific research conferences and case competitions, to showcase their students' work and establish a visible legacy for their future events. There also exists a number of opportunities to join the internal teams of the URNCST Journal. Undergraduate students are able to contribute to the journal as assistant editors, ELs, and EOs; graduate students are invited to contribute as peer reviewers, associate editors, and mentors for the journal's research initiatives. To provide increased exposure to research-related opportunities and networks for undergraduate students alongside the URNCST Journal's initiatives, the journal maintains a regularly updated public Facebook forum that promotes events and opportunities offered by external organizations, undergraduate conferences and case competitions, researchers, and academic institutions.

To sustain the growth of the URNCST Journal, it is important to consistently reflect on and assess the efficacy and impact of the journal's activities on the target student populations (Farkas and Pashkova-Balkenhol 2021). Future directions may involve capturing evaluative data on existing and future research education initiatives and programs. These evaluations may help the URNCST Journal team assess the needs of the undergraduate student population; their motivations for pursuing research opportunities; barriers to entry in the scientific field; and benefits

experienced by participants in the journal's programs (e.g., employability, matriculation to graduate or professional programs, or comfort pursuing a thesis or fourth-year research courses).

The URNCST Journal has published over 175 articles since it was first founded in July 2017, including research articles and abstract books from leading undergraduate research conferences and case competitions. As the journal continues to advance itself in the future, the team looks forward to continued growth in supporting and promoting undergraduate research-related opportunities.

Conflict of Interest Statement

All authors declare that they were or are staff members of the URNCST Journal.

Acknowledgments

References

Council on Undergraduate Research. 2021. "Undergraduate Research Journal Listing." Accessed July 31, 2022. https://www.cur.org/engage/undergraduate/journals/listing

Dillon, Heather E. 2020. "Development of a Mentoring Course-Based Undergraduate Research Experience (M-CURE)." *Scholarship and Practice of Undergraduate Research* 3(4): 26–34. doi: 10.18833/spur/3/4/7

Dooley, D. A., R. M. Mahon, and E. A. Oshiro. 2004. "An Undergraduate Research Opportunity: Collaboration between Undergraduate and Graduate Students." *Journal of Food Science Education* 3: 8–13.

Fakuade, Ayomide, Stephanie Nagy, Neethu Pavithran, Saameh Siddique, and Jeremy Y. Ng. 2020. "Introducing a Novel Undergraduate Research Education Initiative: The URNCST Journal Mentored Paper." URNCST Journal 4(11). doi: 10.26685/urncst.232

Farkas, Kerrie R. H., and Tatiana Pashkova-Balkenhol. 2021. "The Problems and Possibilities of Creating and Sustaining a Multidisciplinary, Undergraduate, Digital Journal." *Scholarship and Practice of Undergraduate Research* 4(4): 50–58. doi: 10.18833/spur/4/4/3

Good, M. Jennifer, Glenelle Halpin, and Gerald Halpin. 2000. "A Promising Prospect for Minority Retention: Students Becoming Peer Mentors." *Journal of Negro Education* 69: 375–383. doi: 10.2307/2696252

Kardash, CarolAnne M. 2000. "Evaluation of an Undergraduate Research Experience: Perceptions of Undergraduate Interns and Their Faculty Mentors." *Journal of Educational Psychology* 92: 196-197. doi: 10.1037//0022-0663.92.1.191

Koch, Chris, and W. Brad Johnson. 2000. "Documenting the Benefits of Undergraduate Mentoring." *CUR Quarterly* 20(4): 172–175.

Larose, Simone, Diane Cyrenne, Odette Garceau, Marylou Harvey, Frédéric Guay, Fanny Godin, George M. Tarabulsy, and Claire Deschênes. 2011. "Academic Mentoring and Dropout Prevention for Students in Math, Science and Technology." *Mentoring & Tutoring: Partnership in Learning* 19: 419–439. doi: 10.1080/13611267.2011.622078

Liang, Belle, Allison J. Tracy, Catherine A. Taylor, and Linda M. Williams. 2002. "Mentoring College-Age Women: A Relational Approach." *American Journal of Community Psychology* 30: 271–288. doi: 10.1023/A:1014637112531

Lunsford, Laura Gail. 2012. "Doctoral Advising or Mentoring? Effects on Student Outcomes." *Mentoring & Tutoring: Partnership in Learning* 20: 251–270. doi: 10.1080/13611267.2012.678974

Pavithran, Neethu, Ankush Sharma, Vedish Soni, Umair Majid, and Jeremy Y. Ng. 2021. "Introducing a Novel Research Education Initiative: The URNCST Research Methods Primer." URNCST Journal 5(11). doi: 10.26685/urncst.330

Russell, Susan H., Mary P. Hancock, and James McCullough. 2007. "Benefits of Undergraduate Research Experiences." *Science* 316: 548–549. doi: 10.1126/science.1140384

Schmidt, Michelle E., Jaime L. Marks, and Lindsay Derrico. 2007. "What a Difference Mentoring Makes: Service Learning and Engagement for College Students." *Mentoring & Tutoring: Partnership in Learning* 12: 205–217.

Schofield, Cathy, and F. L. Burton. 2015. "An Investigation into Higher Education Student and Lecturer Views on Research Publication and Their Interest in the Production of a College Partnership Science Journal." *Innovations in Education and Teaching International* 52: 265–276. doi: 10.1080/14703297.2013.808405

Taraban, Roman, and Erin Logue. 2012. "Academic Factors That Affect Undergraduate Research Experiences." *Journal of Educational Psychology* 104: 499–514. doi: 10.1037/a0026851

Thiry, Heather, Sandra L. Laursen, and Anne-Barrie Hunter. 2016. "What Experiences Help Students Become Scientists? A Comparative Study of Research and Other Sources of Personal and Professional Gains for STEM Undergraduates." *Journal of Higher Education* 82: 357–388. doi: 10.1080/00221546.2011.11777209

Thomas, Elizabeth, and Diane Gillespie. 2008. "Weaving Together Undergraduate Research, Mentoring of Junior Faculty, and Assessment: The Case of an Interdisciplinary Program." *Innovative Higher Education* 33: 29–38. doi: 10.1007/s10755-007-9060-x

URNCST Journal. 2022a. "Current and Accepted Mentored Paper Participants." Accessed July 31, 2022. https://www.urncst.com/index.php/urncst/current_accepted_mentored_paper

URNST Journal. 2022b. "Current and Accepted Research Methods Primer Participants." Accessed August 1, 2022. https://www.urncst.com/index.php/urncst/current_accepted_research_methods_primer

URNCST Journal. 2022c. "Researching in URNCST—Global Undergraduate Research Opportunities." Facebook. Accessed July 31, 2022. https://www.facebook.com/groups/urncst

URNCST Journal. 2022d. "Submit an Abstract for the URNCST Journal Mentored Paper." Accessed July 31, 2022. https://www.

urncst.com/index.php/urncst/mentored_paper_submit_abstract

URNCST Journal. 2022e. Undergraduate Research in Natural and Clinical Science and Technology Journal (website). Accessed July 31, 2022. https://www.urncst.com

URNCST Journal. 2022f. "URNCST Journal Research Methods Primer." Accessed July 31, 2022. https://www.urncst.com/index.php/urncst/research_methods_primer

Walkington, Helen. 2012. "Developing Dialogic Learning Space: The Case of Online Undergraduate Research Journals." *Journal of Geography in Higher Education* 36: 547–562. doi: 10.1080/03098265.2012.692072

Ware, Mark, and Susan Burns. 2008. "Undergraduate Student Research Journals: Opportunities for and Benefits from Publication." In *Developing, Promoting, and Sustaining the Undergraduate Research Experience in Psychology*, ed. Richard Miller and Robert Rycek, 253–256. Washington, DC: Society for the Teaching of Psychology.

Web of Science Academy. "Course Content." Accessed July 31, 2022. https://clarivate.com/webofsciencegroup/solutions/web-of-science-academy

Weiner, Sharon, and Charles Watkinson. 2014. "What Do Students Learn from Participation in an Undergraduate Research Journal? Results of an Assessment." *Journal of Librarianship and Scholarly Communication* 2(2): eP1125. doi: 10.7710/2162-3309.1125

Jeremy Y. Ng
URNCST Journal, editor@urncst.com

Jeremy Y. Ng, MSc, PhD, is the founding publisher and editor-in-chief of the URNCST Journal. He holds a PhD in health research methodology from McMaster University, a master's degree in pharmaceutical sciences from the University of Toronto, and an honors bachelor's degree from McMaster University.

Neethu Pavithran, HBSc, MSc student, Redwan Haque, BMSc student, Neha Dhanvanthry, BSc student, Ankush Sharma, BSc student, Arjun Singh, BSc student, Chun Ju Liang, BSc student, Radha Sharma, BSc student, Stephanie Nagy, BScN, RN, DO student, Harrison Nelson, BSc student, Soumya Shastri, BHSc student, Saameh A. Siddique, BASc, MBS student, Vedish Soni, BHSc student, and Chitrini Tandon, BSc student, are current staff members of the URNCST Journal.

Molly H. R. Cowls, HBSc, MD student, Alessandra Cutrone, BSc, Ayomide Fakuade, BSc, MD student, Varnikaa Gupta, BASc, Halton Quach, BSc, MSc student, and Jessica B. Saini, BHSc, are former staff members of the URNCST Journal.