Proceedings of Manitoba's Undergraduate Science and Engineering Research

Editorial Board Editor-in-Chief *Matthew J. D. Doering*

Associate Editor Chloé W. Schmidt

Layout Adriana-Stefania Ciupeanu Akif Ahmed Yeyoung Won

Sections Hossaena D. Ayele River Guillas Nicholson Jeke Kyle J. Morris Joseph Tonin David Zirangey

Volunteers *Kenny So*

Sponsorship

Faculty of Agricultural and Food Sciences Endowment Fund

River Guillas Faculty of Science

Science Students' Association

Sponsoring organizations and individuals vary with each publication year and are credited in each published issue. Sponsoring organizations include universities, faculties, departments, alumni associations, student groups, corporations, and any other party that sees value in our goals

goals.
To discuss becoming a sponsoring organization or individual, please contact the editor-in-chief at pmuser@umanitoba.ca.

About PMUSER

Proceedings of Manitoba's Undergraduate Science and Engineering Research (PMUSER) is an open-access refereed journal that is published annually and hosted by the University of Manitoba. The journal accepts research or review manuscripts written by undergraduate students from any science or engineering related faculty or manuscripts on any topic concerning or related to science or engineering. Upon submission, each manuscript undergoes a double blind peer-review process by two undergraduate/graduate students from a pool associated with the respective research area. Our mission is to provide opportunities for student communities to explore the frontiers of undergraduate research and add additional value and learning opportunities to students' degree programs through rigorous exploration, analysis, and presentation.

Aims & Scope

The focus of PMUSER is three fold: author, reviewer, editor. Through preparing and revising a manuscript, students are recognized for their research, have an opportunity for outof-classroom learning, and further develop communication skills. Through learning the role of a peer-reviewer and reviewing manuscripts, students learn to critically evaluate the scientific literature and to critique ideas in the broader world. Through the editorial board, an interdisciplinary team arises to provide mentorship to undergraduate students and valuable leadership and teamwork skills. The three prongs of our focus unite in preparing students for careers in science or beyond, and the stepping stones to get there. Available online: http://ojs.lib.umanitoba.ca /pmuser/about/editorialPolicies

#focusAndScope.

Image Credits David Zirangey, cover Ashley Ammeter, pages 6 & 7

Copyright Info

For Authors

PMUSER is licensed under a Creative Commons Attribution—Share Alike 4.0 International License:

https://creativecommons.org/licenses/by-sa/4.0.

The authors hold the copyright to published articles without restriction, and retain publishing rights.

For Readers

Author(s) grant readers access to published articles freely as long as the original authors and citation details are identified. The article and associated content are published under a Creative Commons Attribution—Share Alike 4.0 International License:

https://creativecommons.org/licenses/by-sa/4.0.

Journal Website

http://ojs.lib.umanitoba.ca/pmuser Electronic edition: http://ojs.lib.umanitoba.ca/pmuser/issue.

Publication Info

ISSN 2561-1127 (Print) ISSN 2561-1135 (Online)

PMUSER publishes one volume per year. PMUSER is published online with support and hosting provided by the University of Manitoba Libraries, University of Manitoba, Winnipeg, MB, Canada, R3T 2N2.

PMUSER is published in print with funding provided by external sources and sponsoring organizations. The print publication is part of PMUSER's outreach and marketing strategy. Email: pmuser@umanitoba.ca

Open Access Policy

This journal provides immediate open access to its content on the principle that making research freely available to the public supports a greater global exchange of knowledge. Available online:

http://ojs.lib.umanitoba.ca /pmuser/about/editorialPolicies #openAccessPolicy.

Indexed In

PMUSER is indexed in Google Scholar.

Instructions for Authors

Undergraduate authors are encouraged to submit research or review articles in or related to any science or engineering discipline. Detailed instructions are available online: http://ojs.lib.umanitoba.ca/pmuser/about/submissions.

Peer-Reviewers

PMUSER's peer-reviewers apply each year and are primarily graduate and undergraduate students, with expertise supplemented by faculty. Training is provided through a University of Manitoba Co-Curricular Record certified workshop. Those interested in reviewing for the journal should email the editor-in-chief for application forms. Peer-reviewers for Volume 4 were: John P. Aguilar, Sarah Arnold, Kevin R. Bairos-Novak, Jennifer Doering, Keri Everitt, Kristen Fleet, Andrew Hogan, Kat Kratzer, Janelle Boram Lee, Duc Minh Nguyen, Ogidi, Franklin Michaela Palmer, Davinder Partola, and Rani Ramachandran.

About the Cover

The cover image features Zijing Guo, 2018 graduate of the agroecology program of the Faculty of Agricultural and Food Sciences at the University of Manitoba. Guo is featured in a profile in this special issue and submitted a research paper, based on his undergraduate research project, to PMUSER in 2018.



