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DEPARTMENT OF SURGERY
RESEARCH HANDBOOK
FOR FACULTY AND RESIDENTS

University of Saskatchewan | Saskatchewan Health Authority

https://medicine.usask.ca/documents/surgery/SurgeryResearchHandbook.pdf

CONTENTS

PURPOSE OF THIS RESEARCH HANDBOOK

This handbook has been designed to facilitate applying for funding and to inform about the steps that need to be taken to apply for a grant. This handbook will be very helpful especially to those individuals that have never written a grant proposal before. Karen E. Mosier was hired as a Research Coordinator to increase research productivity and promote a dynamic research culture within the department. Her position was created to provide mentorship and research support for faculty and residents. She will facilitate, assist, support and enhance educational research capacity by providing practical advice, analysis, interpretation and assistance with identifying opportunities, communicating complex specialized information on major research funding programs, research policies, budgets and implementation issues. She will also provide assistance with the writing of proposals and offer assistance and guidance with obtaining research ethics approvals.

MESSAGE FROM THE RESEARCH DIRECTOR

As the Director of Research, I am pleased to provide this handbook for researchers in the Department of Surgery. A passion for study is an essential component of improving surgical care. With diverse backgrounds, experiences and training, our shared spirit of collaboration in Saskatchewan fosters innovation and excellence. From our undergraduate students to our established professors, our work should reflect a culture of inquisitiveness and a drive to address new challenges. With advances in technology and innovation, the future for surgery has never been brighter. I want to thank staff in the Department of Surgery, in particular Karen Mosier, for compiling and updating this handbook. Whether you are starting a research project for the first time, or are an established scientist, I hope that the information contained herein helps you to achieve your research goals in Saskatchewan. Please reach out to me or any of the Department of Surgery Research Committee Members if you have any questions.

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BEFORE YOU START YOUR RESEARCH

UNDERSTAND THE RESEARCH PROCESS AT THE UNIVERSITY OF SASKATCHEWAN

This is a summary of the series of structural changes that were made across the Office of the Vice-President Research on June 4, 2020. As part of this organizational change, the Office of the Vice-President Research reduced and redesigned several research support units. *As such, our former Research Services and Ethics Office, Strategic Research Initiatives, Innovation Enterprise, International Research, and International Partnerships units no longer exist as standalone units.*

RESEARCH EXCELLENCE AND INNOVATION

Research Excellence and Innovation, led by Dr. Dion Martens, has a two-part interrelated mandate: 1. Research Excellence: Supporting high-quality research activities, by helping researchers engage in strategic research partnerships, manage risk, and meet relevant ethics, legal and safety standards, and 2. Innovation: Creating significant and sustainable value for society, industry and the environment, by helping researchers turn their discoveries into solutions the world needs. *The core functions of this unit include animal care and research support, human ethics, industry engagement and partnerships, and legal services, as well as technology transfer and enterprise creation services.*
https://research.usask.ca/rei/

RESEARCH ADVANCEMENT AND STRATEGIC INITIATIVES

Research Advancement and Strategic Initiatives, which is led by Laura Zink, has a two-part interrelated mandate: 1. Research Acceleration: Enhancing participation and supporting faculty success in funding programs, including pre- and post-award support for individuals and major institutional competitions, and 2. Strategic Initiatives: Leading strategic institutional initiatives to support faculty research career and research group development, as well as engagement of undergraduate students in the institution's discovery mission. *The core functions of this unit include research grants (both pre- and post-award supports), large-scale grant facilitation and institutional programs (CRC, CFI, CERCs), undergraduate research, and select research services and supports. https://vpresearch.usask.ca/contacts/our-offices/research-acceleration-and-strategic-initiatives.php*

RESEARCH PROFILE AND IMPACT

Research Profile and Impact, led by Kathryn Warden, continues to share and mobilize university discoveries through strategic communications, impact storytelling, and initiatives that build research profile with key national and international audiences. *The core functions of this unit include institutional research communications strategy and storytelling, reputation and profile building, co-ordination of communications across research centres and colleges, and liaison with federal granting councils on communications protocol compliance, as well as funding announcement events and celebrations.*
https://vpresearch.usask.ca/contacts/our-offices/research-profile-and-impact.php

INTERNATIONAL OFFICE

The new International Office, led by Dr. Meghna Ramaswamy, aims to advance the university's international strategy and priorities by fostering cross-portfolio coordination on international research and partnerships. *The core functions of this unit include oversight to the university's International*
https://internationaloffice.usask.ca/

LEARN ABOUT RESEARCH APPROVAL PROCESSES

ELIGIBILITY TO APPLY FOR, HOLD AND ADMINISTER RESEARCH FUNDING

The College of Medicine wants to encourage faculty to conduct research and further enhance the College of Medicine's research profile. Faculty in Clinical Departments are eligible to apply for, hold and administer research funds provided their appointment includes the statement that he/she is allowed/required to conduct independent research for the College of Medicine. Your ongoing appointment will include the following statement: "…faculty appointment with the U of S grants you eligibility to conduct independent research for the College of Medicine…." ***You do need to note however that although we are granting you the ability to conduct research on behalf of the College this does not make you eligible to apply for all funding opportunities, as each funding agency has their own requirements. In order to determine your eligibility, it is important that you consult the Office of the Vice Dean Research or your Research Coordinator prior to beginning any application process.***

UNIVERSITY OF SASKATCHEWAN RESEARCH ETHICS BOARD APPROVAL

The university requires that all research conducted by its members conform to the highest ethical standards in the use of human subjects, animals and biohazardous materials. **Any research or study conducted at University facilities, or undertaken by persons connected to the University, involving human subjects, animals or biohazardous materials must be reviewed and approved by the appropriate University of Saskatchewan Research Ethics Board (REB) or Committee.**

STEP 1: DETERMINE IF YOUR PROJECT REQUIRES ETHICS REVIEW.

All research that involves human subjects requires review and approval by a Research Ethics Board (REB) in accordance with the Tri-Council Policy Statement 2 (http://www.pre.ethics.gc.ca/eng/policy-politique/initiatives/tcps2-eptc2/Default/) **before** the research is started.

Review is required for:

- Research involving living human participants
- Research involving human remains, cadavers, tissues, biological fluids, embryos or fetuses
- Observation of human behaviour in a natural environment
- Use of identifiable data
- Course-based research activities, including the primary purpose of which is pedagogical

Review is not required for:

- Research about a living individual involved in the public arena, or about an artist, based exclusively on publicly available information, documents, records, works, performances, archival materials or third-party interviews.
- Quality assurance studies, performance reviews or testing within normal educational requirements
- Publicly available reports, literature, STATS CAN data

STEP 2: DETERMINE WHICH RESEARCH ETHICS BOARD YOUR PROJECT SHOULD BE REVIEWED BY.

The University has established two Research Ethics Boards (REBs). The appropriate REB must approve any project involving the use of human subjects.

The Biomedical Research Ethics Board (Bio-REB) is responsible for the review of all protocols involving human subjects which include:

- Medically invasive physical procedures, invasive interventions and invasive measures (includes administration and testing of drugs)
- Physical interventions that have the potential for adverse effects such as drug, exercise and dietary interventions
- Surgical procedures such as biopsies, the collection of blood or other specimens
- Use of permanent health charts or records in accordance with provincial legislation.

The Behavioural Research Ethics Board (Beh-REB) is responsible for the review of all protocols involving human subjects which include:

- Non-invasive interventions and measures including interviews, surveys, questionnaires, psychological, social or behavioural interventions, non-invasive physiological measures (e.g. heart rate, blood pressure)
- Observation or descriptive research, including drug, dietary, and exercise protocols that are observational in nature with no intervention
- Audio and/or visual recording or other monitoring

STEP 3: ASSESS THE RISK LEVEL OF YOUR PROJECT (MINIMAL RISK OR ABOVE MINIMAL RISK).

Minimal risk means that the risk of harm anticipated in the proposed research are not greater, considering probability and magnitude, than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests. Risks of daily life mean those risks encountered in the daily lives of the subjects of the research, considering their actual life situations, as opposed to the daily life of "normal persons" or of "healthy volunteers" as the case may be.

STEP 4: SUBMIT AN ETHICS APPLICATION TO THE ETHICS OFFICE.

Researchers, residents and graduate students submitting their research proposals for human ethics review must prepare their submissions according to the appropriate guidelines and forms for the relevant Research Ethics Board located at https://vpresearch.usask.ca/researchers/forms.php. The selection of the correct guidelines for preparation of a research submission is important and is governed by the nature of the research, not the home department of the researcher.

NOTE: Recently, Human Research Ethics processes moved to the UnivRS online database system. In the near future, all ethics applications will need to be submitted through UnivRS. In the meantime, all ethics review forms must be submitted electronically to Research Excellence and Innovation at ethics.office@usask.ca.

STEP 5: MAKE THE REQUESTED REVISIONS AS SUGGESTED BY THE RESEARCH ETHICS BOARD (IF NECESSARY)

During the Ethics Review Process the REB will often respond to the researcher with suggested revisions or modifications to the research protocol, consent form, recruitment protocol, etc. These revisions will need to be made and submitted for review **prior** to ethics approval being granted.
When submitting the requested revisions only one copy will need to be submitted to the Ethics Office. Revisions can be submitted electronically. Signatures are not required.

STEP 6: RECEIVE THE CERTIFICATE OF APPROVAL AND BEGIN THE PROJECT.

Approval is issued for the protocol and corresponding documents that are described in the application. Changes to any aspect of this protocol (i.e. a change in research method, recruitment of participants, participant population, consenting process, consent form, etc.) require approval from the appropriate REB. An Amendment Form describing the changes and the request for approval for the amended protocol should be submitted electronically to ethics.office@usask.ca. The Amendment Form is located at https://vpresearch.usask.ca/researchers/forms.php.

•Applications to the Behavioural and Biomedical REBs should be emailed to ethics.office@usask.ca
•Applications to the Animal REB should be emailed to uacc.office@usask.ca
•The physical location of the office is Room 223 Thorvaldson, 110 Science Place, Saskatoon SK S7N 5C9
•The Ethics Office phone number: 306-966-2975
•UACC (University Animal Care Committee) phone number: 306-966-4126

All other documents, including, amendments, modifications, annual report forms, study closure forms or unanticipated problem reports can also be submitted by email, followed by a paper copy for those documents requiring a signature. If you are concerned about the security of your emailed documents, please contact the Research Excellence and Innovation Ethics Office and we will discuss arrangements for secure transmission.

SASKATCHEWAN HEALTH AUTHORITY OPERATIONAL APPROVAL OF RESEARCH

HOW TO OBTAIN RESEARCH ETHICS APPROVAL

Research ethics approval is obtained from one of the Province of Saskatchewan's recognized Research Ethics Board (University of Regina, University of Saskatchewan or the Saskatchewan Health Authority REB). The ethics review ensures that the proposed study is scientifically valid, ethically sound, compliant with legislation, and most importantly, minimizes risk to participants (patients and staff).

Operational Approval (OA) provides assurance that the research can be carried out safely by the impacted departments, within their current workload, and when possible, provides a mechanism for the Saskatchewan Health Authority to recapture the direct costs of supporting the research in a manner that is fair and transparent to researchers.

HOW TO OBTAIN OPERATIONAL APPROVAL

The SHA Operational Approval (OA) to Conduct Research Application form should be completed AFTER the research ethics application has been submitted to the REB for review.

The researcher completes the online SHA OA form. The OA form must be signed by the researcher. If the research is being conducted by a student, the SHA OA form must be submitted under the name of the student's research supervisor.

The completed online SHA OA form and related documents will be reviewed by the Research Approval Coordinator (RAC) for completeness. The RAC will forward Departmental Approval requests to the impacted departments for approval.

Once all the Departmental Approvals have been received and the ethics certificate of approval or letter of exemption issued, a Letter of Authorization to Conduct Research is emailed to the researcher, and a copy is emailed to all of the affected or impacted departments listed on the application form.

QUALITY ASSURANCE/IMPROVEMENT, PROGRAM EVALUATION AND RESEARCH

Projects considered quality assurance/improvement or program evaluation may not require operational approval. Operational approval may be required depending on the scope of the project and the impact on SHA resources.

In some instances, the University of Saskatchewan Research Ethics Board (REB) may waive ethics approval and will provide the researcher with a letter of exemption. If the project has had ethics approval waived but still requires operational approval, documentation of this waiver must be provided with the Operational Approval application.

Be warned that if you try to disseminate results of a QI project as "research" (e.g. submission to a journal or peer-reviewed meeting), the journal or the scientific committee of the meeting may not accept a waiver as an ethics approval. Some journals and meetings do not accept waivers for QI work as ethics approval. If you are planning to present your work as a research project, you should endeavor to get Research Ethics Board approval from the University and not rely on an ethics waiver.

AMENDED APPROVAL

If a researcher has already received SHA (or SHR) approval for a research project and additional SHA departments/services/resources will be required or impacted by the study, they are to complete the Application for Amended Approval online form. All additional departments are identified, and approval is obtained from the manager(s). Once completed, an Amended Letter of Authorization will be sent out to the researcher.

NOTIFICATION OF STUDY CLOSURE

Once all data collection procedures involving SHA resources / services have been completed as per the study protocol, the study is considered closed. Please inform the Research Approval Coordinator once the study has closed.

The Research Approval Coordinator will send an acknowledgement of the closure to the departments affected by the study. The Research Approval Coordinator will also begin the final billing process to facilitate the affected department(s) reimbursement of study costs.

Contact information/Website links:
Saskatoon - shawna.weeks@saskhealthauthority.ca, 306-655-1442
https://www.saskatoonhealthregion.ca/locations_services/Services/research/Pages/Research-Approval.aspx

Regina – researchapproval@rqhealth.ca, 306-766-0893
http://www.rqhealth.ca/department/research-and-performance/operational-approval

UPDATE YOUR CANADIAN COMMON CV

All of the Tri-Councils (CIHR, NSERC and SSHRC) have migrated their legacy CV systems to the Canadian Common CV (CCV). In addition, over two dozen funding agencies, including the Canadian Foundation for Innovation (CFI) and the Saskatchewan Health Research Foundation (SHRF), also use the CCV system. The CCV is a web-based application that provides researchers with a single, common approach to gathering CV information required by a network of federal, provincial and not-for-profit research funding organizations. The CCV's processes, procedures and capabilities allow the input of CV information by researchers and the extraction of the CV data (with consent from the researcher) by member agencies to support their funding application process.

INSTRUCTIONS

STEP 1

Go to https://ccv-cvc.ca/indexresearcher-eng.frm. You will need to go to the top right hand corner and click on Login. If you are a new user, you will need to click on Register. Once you get a username and password set up you can sign in. Using your usask email as the username is highly recommended.

STEP 2

Go to the second row of the tool bar legend and hover over CV. Choose funding. Do not choose Generic as it asks for extra information that isn't always required by the funding agency. Click on Funding Source and pick your funding agency e.g., CIHR, SHRF, NSERC. For CV Type your type of CV e.g., Principal Investigator, Co-applicant. Click on Load.

STEP 3

You will need to manually enter your personal information e.g., language, address, telephone, email, etc. You will need to add your education, recognitions, employment, research funding history, presentations, publications, etc. To begin, start with Identification. Click on the pencil icon. Add the information. Click on done. This will bring you back out. You should see a green check mark beside Identification. Then you can go on to Language Skills. Repeat instructions as above. Do this for each required section. If you see a red X, click on the pencil icon and go back into that section as something needs to be fixed. Once you fix it and click done and come out again you should see a green check mark. **NOTE: There is a way to download most or all of your publications rather than manually typing them all in so ask your Research Coordinator how to do this.**

STEP 4

Once you are done entering all your information and you see green check marks beside each section, you can go to the top right and click on Preview. Have a look and if everything looks good you are ready to submit it. You need to submit it in order to get a PDF of your CIHR CV. If it is good after previewing it, click on submit. Check I agree. Write down the confirmation number displayed in green font. e.g., 847443

STEP 5

In the second row of the tool bar legend click on History. You will see one or more PDFs. Pick the one that has the same confirmation number. Click on the PDF symbol and open your CIHR CV and then save it to your desk or the appropriate file that you want it in.

NOTE: If you do not submit your CV and you use your Preview CV it will have the big words DRAFT printed across it. This is not acceptable. Please remember to submit your CV in order to avoid this problem.

ARE YOU INTERESTED IN A RESEARCH CAREER AS A CLINICAL INVESTIGATOR?

The Clinician Investigator Program (CIP) is a RCPSC certified program, and is available to residents that have demonstrated interest and potential for a career as a clinical investigator. The program accommodates training in diverse research areas ranging from basic and correlative science studies of disease pathogenesis to epidemiological investigations of social/population determinants of health.

It is expected that each CIP trainee will develop the specific skills and scholarly attitudes required to perform high quality health research. Scholarship implies an in-depth understanding of the area of research and the application of current knowledge to clinical practice. The quality of scholarship in the program will, in part, be demonstrated by a spirit of enquiry during clinical discussion, at the bedside, in clinics or in the community, and in seminars, rounds and conferences.

Two CIP training streams are offered. The Graduate Stream in which applicants enroll in graduate (MSc and PhD) programs at the University of Saskatchewan, and the Postdoctoral Stream designed for residents who already hold a PhD.

How to Apply

All residents who are enrolled in a Royal College Residency Training program are eligible to apply for the CIP.

The training involves a minimum of two years of mentored research intensive training that involves enrolment in a graduate degree program (graduate stream), to complete a thesis or equivalent, or in a postdoctoral fellowship program if the trainee already has a graduate degree (postdoctoral stream).

To apply, contact Dr. Gary Groot at gary.groot@usask.ca for an online application form - do not use the form in the CIP Manual.

For more information, please check out their website below.

https://medicine.usask.ca/programs/cip.php

ARE YOU INTERESTED IN DOING RESEARCH INVOLVING FIRST NATIONS, MÉTIS AND INUIT PEOPLES OF CANADA?

Are you writing a grant proposal and want to be inclusive of Indigenous knowledge, perspectives, and values in your research? Indigenous communities are very diverse, and many are interested in collaborative research partnerships.

A good place to start would be to visit the CIHR-funded Saskatchewan First Nations and Métis Health Research Network, housed at the University of Saskatchewan, for resources on the history of First Nations, Métis and Inuit people in Canada, contemporary issues in health and wellness, and principles on conducting health research in partnership with Indigenous communities.

https://research-groups.usask.ca/fmhrn/fmhrn/get-involved.php

Chapter 9: Research Involving the First Nations, Métis and Inuit Peoples of Canada, part of the Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans (TCPS2), a joint policy of Canada's three federal research agencies, provides guidance on ethical research policies and practices.

https://ethics.gc.ca/eng/tcps2-eptc2_2018_chapter9-chapitre9.html

The Tri-Councils' Panel on Research Ethics has also produced a Chapter 9 Learning Module.

https://ethique.gc.ca/eng/research-recherche_module9.html

You can learn more about the Tri-Council Policy Statement from their online course on research ethics.

https://ethics.gc.ca/eng/education_tutorial-didacticiel.html

The First Nations principles of OCAP® are a set of standards that establish how First Nations data should be collected, protected, used, or shared. They are the DE FACTO standard for how to conduct research with First Nations. Standing for ownership, control, access and possession, OCAP® asserts that First Nations have control over data collection processes in their communities, and that they own and control how this information can be used.

https://fnigc.ca/splash/
Visit the First Nations Information Governance Centre's website for more information and the Fundamentals of OCAP® online course.

https://fnigc.ca/training/fundamentals-ocap.html

Métis and Inuit communities may also have data sovereignty and governance agreements in place, or want to develop research agreements as part of partnering on research.

https://medicine.usask.ca/programs/cip.php#Overview

DESIGNING YOUR RESEARCH STUDY

CONSIDER USING AGGREGATE NSQIP DATA

In 2019, the Department of Surgery in Saskatoon began its participation in the National Surgical Quality Improvement Program (NSQIP).

NSQIP is a data-driven, risk-adjusted and outcomes-based quality improvement program and our participation in this internationally validated QI program gives us access to the aggregate data accrued from all participant NSQIP hospitals across North America and some other parts of the world.

Together, these NSQIP participant sites number more than 700 hospitals and hospital systems. Once a year, the NSQIP database allows researchers access to aggregate NSQIP data from all these 700+ participating hospitals and typically, the yearly numbers run into millions of cases with more than 100 variables. The de-identified data is available to all participating hospitals and by extension, the data is now available to Saskatchewan based clinicians, residents and research scientists as well. With its large sample size and robustness of statistical methods, this resource is a veritable "goldmine" of available data for research.

A PubMed search with "NSQIP" in the search field yields more than 2,500 publications, with more than 400 publications appearing every year. A large proportion of these publications use the aggregate data file that is available to participating NSQIP sites and the related publications have included (but are not limited to) - the use of this data to evaluate outcomes for patients with specific patient cohort characteristics and for specific procedures; using the data to derive risk calculators and risk assessment methodologies; outcomes prediction based on clinical or laboratory criteria defined by NSQIP variables; and effect of demographic variables on outcomes.

If you are interested in accessing the NSQIP database and getting more information about the research possibilities using aggregate NSQIP data, please contact our NSQIP SCR (surgical clinical reviewer) Sarah Clark at: sarah.clark@usask.ca.

Please also watch out for announcements of the Seminar that Dr. Francis Christian conducts twice a year about the research possibilities using aggregate NSQIP data.

DOES YOUR RESEARCH HAVE A POTENTIAL FOR COMMERCIALIZATION?

Intellectual property refers to the legal rights to ideas, inventions and creations in the industrial, scientific, literary and artistic fields. It also covers symbols, names, images, designs and models used in business. Commercialization is the process of introducing a new product or production method into commerce—making it available on the market. **For any questions regarding IP issues or commercialization of your technology arising from your research, please contact Dr. John Mapletoft, Tech Transfer Manager, Life Sciences, Research Excellence and Innovation at 306-966-4584 or at** john.mapletoft@usask.ca**.**

CONSIDER CONDUCTING PATIENT-ORIENTED RESEARCH

INTERESTED IN PATIENT-ORIENTED RESEARCH?

Patient-oriented research (POR) is research conducted in partnership with patients, which answers research questions that matter to patients, and aims to improve health care. Patient is an overarching term which includes individuals with personal experience of a health issue as well as informal caregivers, including family and friends. It may also include community/public representatives, individuals from patient organizations, and others who have lived experience with illness.

The goal of POR is to have patients, families, clinicians, researchers and policy-makers work together to identify research topics, do the research and then use the results of that research to improve patient care and the health system.

Collaborating with Patient Partners can guide research to more relevant questions, improve data collection methods, and improve data interpretation. Patients also have a role to play in knowledge translation. The contribution of health care practitioners and decision makers helps guide the research on a practical, sustainable path and their involvement in research speeds the process of translating new knowledge into policy and to the bedside.

HOW CAN YOU BECOME INVOLVED IN PATIENT-ORIENTED RESEARCH?

Visit the Patient & Researcher Connection Site (P&RCS)

The Patient & Researcher Connection Site (P&RCS) serves to connect patients with research teams to help advance patient-oriented research in Saskatchewan. Researchers post opportunities for patients to join research teams as Patient Partners or details of research projects they'd like to recruit participants for. Patients and family members can browse opportunities and become involved in health research. Go to patientandresearcherconnection.ca to learn more!

The Saskatchewan Centre for Patient-Oriented Research (SCPOR) provides supports to researchers who are interested in working alongside patients as partners on their projects, and we help patients who want to get involved in making positive changes in our healthcare system. SCPOR provides resources such as methodological expertise, data services, coaching and help with accessing and working with Patient Partners. They can also provide advice and connections for Indigenous research. Visit us at SCPOR.ca.

Get in touch with our Patient-Engagement team for assistance in connecting with Patient Partners and tips on how to effectively engage with them. Learn more at www.scpor.ca/patients/#who-is-a-patient.

RESOURCES FOR DESIGNING YOUR RESEARCH STUDY

- Abramson, E. L., Paul, C. R., Petershack, J., Serwint, J., Fischel, J. E., Rocha, M., Treitz, M., McPhillips H., Lockspeiser, T., Hicks P., Tewksbury L., Vasquez, M., Tancredi D. J., Li, S-T. T. (2018). **Conducting Quantitative Medical Education Research: From Design to Dissemination.** Acad Pediatr 18(2):129-139. doi: 10.1016/j.acap.2017.10.008.
- Biau, D. J., Jolles, B. M., Porcher, R. (2010). **P value and the theory of hypothesis testing: an explanation for new researchers.** Clin Orthop Relat Res 468(3):885-92. doi: 10.1007/s11999-009-1164-4.
- Bragge, P. (2010) **Asking good clinical research questions and choosing the right study design.**
- Injury Volume 41, Supplement 1, Pages S3-S6. doi:10.1016/j.injury.2010.04.016
- Detsky, M. E. & and Detsky, A. S. (2007) **Encouraging medical students to do research and write papers.** CMAJ 176 (12) 1719-1721; DOI: https://doi.org/10.1503/cmaj.061628
- Elston, D. M. (2018). **Study design and statistical analysis.** Letter from the editor. Journal of the American Academy of Dermatology Volume 79, Issue 2, Page 207.
- Gelling, L., Engward, H. (2015). **Planning a research project.** Nursing Standard (2014+); London Vol. 29, Iss. 28, 44. DOI:10.7748/ns.29.28.44.e8834
- Kendall, J. M. (2003). **Designing a research project: randomised controlled trials and their principles.** Emerg Med J 20: 164-168. DOI: 10.1136/emj.20.2.164
- Lane, S. (2018). **A good study starts with a clearly defined question: Research question 1 of 2: how to pose a good research question.** International Journal of Obstetrics and Gynaecology 1057. doi: 10.1111/1471-0528.15196
- Luciani, M., Campbell, K., Tschirhart, H., Ausili, D., Jack, S. M. (2019). **How to Design a Qualitative Health Research Study. Part 1: Design and Purposeful Sampling Considerations.** Prof Inferm. 72(2):152-161.
- Luckett, S. Jr., Ramsey C; Prorock-Ernest A., Ornato J. P., Elizabeth Ripley E. (2011). **Getting Started with Research TIPS FOR SUCCESS.** JEMS 36(10): 56–61. doi: 10.1016/S0197-2510(11)70261-3
- Macfarlane, M. D., Steve Kisely, S., Loi, S., Macfarlane, S., Merry, S., Parker, S., Power, B., Siskind D., Smith, G., Looi, J. C. (2015). **Getting started in research: designing and preparing to conduct a research study.** Australasian Psychiatry. Vol 23(1) 12-15. DOI: 10.1177/1039856214562075
- Mattick, K., Johnston, J., de la Croix, A. (2018). **How to…write a good research question.** The Clinical Teacher. 15(2): 104-108. doi: 10.1111/tct.12776.
- Noordzij, M., Dekker, F. W., Zoccali, C., Jager, K. J. (2019). **Study designs in clinical research** Nephron Clin Pract 113(3):c218-21. doi: 10.1159/000235610.
- Telford, K., Marlow, N. (2004). **Planning a research project.** Current Paediatrics 14(6):475–481. DOI: 10.1016/j.cupe.2004.07.011
- Toledo-Pereyra, L. H. (2012). **Research Design.** Journal of Investigative Surgery (September 2012) 25:5, 279-280. DOI: 10.3109/08941939.2012.723954
- Wright, S., O'Brien, C., Nimmon, L., Law, M, Mylopoulos, M. J. (2016). **Research Design Considerations.** Grad Med Educ 8(1):97-8. doi: 10.4300/JGME-D-15-00566.1.

FACULTY
RESEARCH FUNDING OPPORTUNITIES

TRI-COUNCIL (CIHR, NSERC AND SSHRC)

The Tri-Agency is made up of the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council of Canada (NSERC) and the Social Sciences and Humanities Research Council (SSHRC). They are a major source of research funding for post-secondary institutions across Canada. Additionally, the CRC (Canada Research Chair program CERC (Canada Excellence Research Chairs) and NCE (Network of Centres of Excellence) are jointly administered by the three granting agencies.

CANADIAN INSTITUTES OF HEALTH RESEARCH

As the Government of Canada's health research investment agency, the Canadian Institutes of Health Research (CIHR) supports excellence across all four pillars of health research: biomedical; clinical; health systems services; and population health. As stated in the *CIHR Act*, CIHR's mandate is to "excel, according to internationally accepted standards of scientific excellence, in the creation of new knowledge and its translation into improved health for Canadians, more effective health services and products and a strengthened Canadian health care system."
http://www.cihr-irsc.gc.ca/e/193.html

To apply for CIHR funding, all applicants must apply through ResearchNet. Current CIHR funding opportunities can also be viewed in Research Net.
https://www.researchnet-recherchenet.ca/rnr16/LoginServlet?language=E

NATURAL SCIENCES AND ENGINEERING RESEARCH COUNCIL OF CANADA

NSERC aims to make Canada a country of discoverers and innovators for the benefit of all Canadians. The agency supports university students in their advanced studies, promotes and supports discovery research, and fosters innovation by encouraging Canadian companies to participate and invest in postsecondary research projects. NSERC researchers are on the vanguard of science, building on Canada's long tradition of scientific excellence. The Natural Sciences and Engineering Research Council of Canada (NSERC) helps make Canada a country of discoverers and innovators for the benefit of all Canadians. To check out NSERC's funding opportunities go to their website at: http://www.nserc-crsng.gc.ca/index_eng.asp. To access NSERC's online system go to their Research Portal login page: https://portal-portail.nserc-crsng.gc.ca/s/login.aspx.

SOCIAL SCIENCES AND HUMANITIES RESEARCH COUNCIL OF CANADA

The Social Sciences and Humanities Research Council (SSHRC) is the federal research funding agency that promotes and supports postsecondary-based research and research training in the humanities and social sciences. Through its Talent, Insight and Connection programs, and through partnerships and collaborations, SSHRC strategically supports world-leading initiatives that reflect a commitment to ensuring a better future for Canada and the world. SSHRC also oversees the delivery of a number of tri-agency programs, including the Canada Research Chairs and other research chairs programs, and the New Frontiers in Research Fund, which supports international, interdisciplinary, fast-breaking and high-risk research.

SSHRC's role is to promote and support postsecondary-based research and training in the social sciences and humanities; and advise the minister on matters relating to social sciences and humanities research. Through grants, fellowships and scholarships, SSHRC helps Canada's researchers do what they do best: train the next generation of talented, creative thinkers and doers; build knowledge and understanding about people, cultures and societies; and drive the innovations that address the challenges of today and tomorrow.
http://www.sshrc-crsh.gc.ca/home-accueil-eng.aspx

INTEGRATED CALENDAR OF AGENCY AND INTERAGENCY FUNDING OPPORTUNITIES

Canada's federal research funding agencies—the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council (SSHRC)—together with the Canada Foundation for Innovation (CFI), offer a wide-range of funding opportunities for researchers postdoctoral fellows, graduate students and research institutions.

The integrated calendar lists the principal funding opportunities offered by the four agencies, including agency-specific programs and ones that are jointly administered. The table includes links to the related program web page for more information on each opportunity. The Search tool and filters can be used to quickly return results of specific interest, such as agency-specific or interagency programs with upcoming deadlines.
https://www.canada.ca/en/research-coordinating-committee/program-calendar.html?fbclid=IwAR1NkE4yMhgRj2R6s2jdNrcJBy_7H10KSvpb3wRTtMsreFmyr0o43SbQsqo

NEW FRONTIERS IN RESEARCH FUND

The Canada Research Coordinating Committee designed the New Frontiers in Research Fund (NFRF) following a comprehensive national consultation, which involved Canadian researchers, research administrators, stakeholders and the public. The NFRF is administered by the Tri-agency Institutional Programs Secretariat, which is housed within the Social Sciences and Humanities Research Council (SSHRC), on behalf of Canada's three research granting agencies: the Canadian Institutes of Health Research, the Natural Sciences and Engineering Research Council and SSHRC. The fund will invest $275 million over 5 years (2018-2023), and $65 million ongoing, to fund international, interdisciplinary, fast-breaking and high-risk research.

NFRF is composed of three streams to support groundbreaking research.

- **Exploration** generates opportunities for Canada to build strength in high-risk, high-reward and interdisciplinary research;
- **Transformation** provides large-scale support for Canada to build strength and leadership in interdisciplinary and transformative research; and
- **International** enhances opportunities for Canadian researchers to participate in research with international partners.

https://www.sshrc-crsh.gc.ca/funding-financement/nfrf-fnfr/index-eng.aspx

SASKATCHEWAN HEALTH RESEARCH FOUNDATION

SHRF is the provincial funding agency that funds, supports and promotes the impact of health research that matters to Saskatchewan. SHRF receives funding from the Government of Saskatchewan through Innovation Saskatchewan. They collaborate with stakeholders to contribute to the growth of a high-performing health system, culture of innovation and the improved health of citizens by strengthening research capacity and competitiveness, increasing the investment in health research in Saskatchewan and aligning research with the needs of our stakeholders.

Their investments in research will contribute to the improved health of Saskatchewan citizens through a high-performing health system with a robust culture of health research and innovation. They accomplish this purpose through their strategic goals to: strengthen research capacity and competitiveness; increase investment in research and innovation; and align research with stakeholders' needs. https://www.shrf.ca/

ROYAL UNIVERSITY HOSPITAL FOUNDATION

The Royal University Hospital Foundation Research Fund is supported by Royal University Hospital Foundation through annual donations and investment earnings on donor endowments. The Foundation's Research Grant Program supports clinically relevant research projects that will ultimately benefit patients who are, for the most part, treated at Royal University Hospital.

Eligible applicants include:

- Royal University Hospital allied health care professionals, nurses and physicians with clinical practice at RUH that are eligible to hold funds at the U of S or through Research Department at the SHA
- University of Saskatchewan residents and fellows (including postdoctoral fellows) based at RUH throughout the term of the grant are eligible to be co-applicants with a primary supervisor able to hold research funds at the U of S or within the Research Department at the SHA. U of S graduate students are not eligible to be co-applicants
- University of Saskatchewan faculty whose study outcomes have direct clinical impact on programs managed primarily at RUH
- If you have been funded in previous years from the RUH Foundation, please indicate outcomes of the last research project

Please contact Mia Cavanagh by email at mia.cavanagh@ruhf.org or call 306.655.6521 with any questions. RUHF Grants & Scholarships website: https://ruhf.org/grants-scholarships/

LIST OF RESEARCH FUNDING OPPORTUNITIES AVAILABLE FOR USASK FACULTY

See below for a list of research funding opportunities available for USask faculty. If you have any questions, or know of any other opportunities, please contact Research Acceleration and Strategic Initiatives at research.services@usask.ca.

https://vpresearch.usask.ca/events/funding-deadlines.php#OpportunitiesbyMonth

COLLEGE OF MEDICINE RESEARCH AWARD (COMRAD)

PURPOSE

The College of Medicine Research Award (CoMRAD) provides seed funding for novel pilot and/or feasibility studies that will facilitate future applications to provincial, national, and global funding opportunities.

FUNDING

Applicants may request up to $30,000. The number of projects selected for funding will be dependent on the following criteria: proposed topics, budgets requested, number of applications, and quality of applications. In order to be considered for funding, all applications must comply with the guidelines and meet the minimum required adjudicator score of 70%.

DURATION

Projects may be up to one year in length – to be completed between January 1 and December 31. All unused balances remaining at the end of the funding period will be returned to the OVDR. Extensions will only be available in cases of institutionally approved leaves (e.g. family-related or medical leaves, etc.).

ELIGIBILITY

Faculty must have a primary academic appointment in the CoM that will continue until the end of the full granting period. All CoM faculty are eligible to apply, including those employed by ACFP, other contracts, or USFA, who do not hold primary academic appointments outside of the CoM.

ADJUDICATION PROCESS

Applications will be assessed by 2 – 3 reviewers external to the University of Saskatchewan with a range of expertise in the following research fields: Biomedical Sciences, Clinical Sciences, Health Services and Education, and Social, Cultural, Environmental, and Population Health. All applicants must ensure they use language understandable to adjudicators who may be outside their field of research and to write their project description as clear and well-organized as possible, avoiding unnecessary jargon and explaining abbreviation.

EVALUATION CRITERIA

The following evaluation criteria will be used: 1.Strength of Research Team (20%); 2.Research Proposal (60%) A. Research Question, Background and Objectives (20%) B. Research Design, Methods and Planning (20%) C. Expected Outcomes, Impact and Outputs (20%); 3.Budget Justification (20%)

HOW TO APPLY

To get the most updated information on this funding opportunity, and/or to apply please check out the CoMRAD website at: https://medicine.usask.ca/research/comrad.php.

COLLEGE OF MEDICINE VIRTUAL CONFERENCE FUNDING

The OVDR is proud to offer a virtual conference funding opportunity open to all faculty members with a primary academic appointment in the College of Medicine. This initiative has been created based on feedback from faculty and the increased desire to attend or host conferences virtually during these unprecedented times. Through the Office of the Vice Dean of Research (OVDR), this program will aid in alleviating the costs that are incurred by planning an event virtually.

The OVDR recognizes that there are many existing groups, clusters, departments, and individuals in the College of Medicine who are interested in organizing virtual conferences, seminars, symposiums, workshops, or webinars amidst the pandemic. In providing this opportunity, the OVDR aims to advance the College's research profile by facilitating further learning opportunities for our students and faculty, aligning with the CoM's strategic plan. Each award is worth up to $500 and will support any costs associated. This opportunity will be offered from May 1, 2020, forward as an ongoing call. Please contact com.rad@usask.ca with any inquiries.

DEPARTMENT OF SURGERY NEW FACULTY SEED FUNDING

The deadline to apply for New Faculty Seed Funding Grant competition is **May 1st, 2021.** Grants of up to $20,000 are available. Newer faculty (within 5 years of their appointment to the Department of Surgery) are eligible to apply. Only 1 application per faculty member is permitted. If you need an application please check the Surgery Research Intranet or contact Karen Mosier at karen.mosier@usask.ca. All requests must be reviewed by the Research Committee prior to approval.

DEPARTMENT OF SURGERY PUBLICATION FUND

The purpose of the Department of Surgery Publication Fund Award is to help faculty recover the costs of publication charges. The maximum award is $1000 per faculty member per calendar year.

The Department of Surgery research committee will only fund publications from peer-reviewed and respectable publishers. The journal should be PubMed indexed and preferably have an impact factor unless it is a relatively new journal. Surgery faculty members can apply for a Publication Fund award of up to $1000 per faculty member per calendar year.

Furthermore, the research committee does not want to discourage publications of case reports, but unfortunately we must prioritize funding support for publications of primary papers due to our small publication fund budget. Therefore we will not award publication funding for case reports.

IMPORTANT: In order to be eligible to apply for our Department of Surgery Publication Funding, you will be required to have a "public" Google Scholar profile and an updated Department of Surgery webpage (with a Google Scholar button linked to your Google Scholar profile). It is important to note that the College of Medicine uses metrics collected from "public" Google Scholar profiles for each department to use in their annual research report. Please contact Karen Mosier at karen.mosier@usask.ca if you need any help setting up an account.

If you need an application please check the Surgery Research Intranet or contact Karen Mosier at karen.mosier@usask.ca. All requests must be reviewed by the Research Committee prior to approval.

RESIDENT
RESEARCH FUNDING OPPORTUNITIES

DEPARTMENT OF SURGERY RESIDENT RESEARCH AWARD

The purpose of our Department of Surgery Resident Research Award is to support our residents to do research. Money is available for resident research projects. Awards are available for up to $5000. Applications must include a project lay summary, time frame, education/training/career objectives, a detailed project description, resident's annotated CV, budget justification, and supervisor statement.

This competition will be held once a year. The deadline to apply is December 1, 2020. All requests must be reviewed by the Research Committee prior to approval. If you need an application please check the Surgery Research Intranet or contact Karen Mosier at karen.mosier@usask.ca. If you are awarded a Resident Research Award, please acknowledge the Department of Surgery Resident Research Award in all your presentation materials.

DEPARTMENT OF SURGERY RESIDENT RESEARCH PUBLICATION AWARD

The purpose of the Resident Research Publication Award is to encourage more residents to publish papers. This $1000 award is for the publication deemed of the highest caliber as determined by the research committee. For the 2021 competition, surgery resident papers published between September 1, 2020 and August 31, 2021 will be eligible for this competition. The winner will be announced at the Resident Research Day in the fall. If you need an application to apply please check the Surgery Research Intranet or contact Karen Mosier at karen.mosier@usask.ca.

DEPARTMENT OF SURGERY RESIDENT RESEARCH INCENTIVE PROGRAM

The Resident Research Incentives Program (RRIP) allows residents to receive monetary incentives based on how much of a research project is completed as follows: submit an ethics application $400; collect data for a project $200; and submit an article for publication $400. For publications, the article has to be submitted to a peer-reviewed journal (and confirmed to undergo review) but it does not have to be accepted for publication in order to be compensated. The total award is for $1000. Three projects per year (maximum) per resident are eligible to qualify for a research incentive. **The money can be used for academic related purposes (i.e., to pay for non-approved courses, to supplement travel funds; to buy equipment for research; to purchase books; for publication fees, etc.).** The supervisor does not have to be a Department of Surgery faculty member for the resident to be eligible to apply for a RRIP award.

You can submit an application for this program at any time. For this year's funding cycle, money will be paid retroactively for resident work done from July 1, 2020 to June 30, 2021. If you need an application form please check the Surgery Research Intranet or contact Karen Mosier at karen.mosier@usask.ca.

RESIDENT TRAVEL AWARD

The Department of Surgery has funding for residents for travel to present their research. Travel funding will not be given to present another person's work at a conference/meeting. Travel requests (up to $1750 CAN) are reviewed on a case-by-case basis by the Research Committee. Residents are allowed to apply for only one travel award per fiscal year (July – June). You can apply for this award at any time. You must apply for travel funding prior to attending your conference/meeting.

HOW TO WRITE A SUCCESSFUL RESEARCH GRANT

LOOK AT SUCCESSFUL U OF S RESEARCH GRANT APPLICATIONS

The University of Saskatchewan has its own grants repository. You can view successfully-awarded tri-agency (CIHR, NSERC, SSHRC) grant applications. You will need an NSID to sign into the grants repository.

Here is the link to the University of Saskatchewan Grants Repository:
https://share.usask.ca/go/ovpr/grants_repository/Pages/default.aspx

CHECK OUT ARCHIVED WORKSHOPS, WEBINARS, AND TIP SHEETS

The office of the Vice President Research website has archived workshops, webinars, and tip sheets for applying for tri-council funding. You can access this information by clicking on the link below.

https://vpresearch.usask.ca/research-process/planning-and-preparing.php

PARTICIPATE IN U OF S INTERNAL REVIEW

The U of S Internal Review Program is open to all researchers applying to selected funding opportunities. This program is a strategic investment in U of S researcher success and supports institutional aims to encourage and facilitate research excellence. The U of S Internal Review Program aims to provide high quality feedback to researchers in both the early and final stages of grant development.

Our "College of Reviewers"—U of S faculty members with experience adjudicating, reviewing, and/or applying for Tri-Agency funding—provide expert feedback to U of S faculty applying for the following Tri-Agency programs:

- CIHR Project Grant
- CIHR Strategic Calls
- NSERC Discovery Grant
- NSERC Research Tools and Instruments (RTI) Grant Program
- NSERC CREATE
- NSERC Alliance (large-scale)
- SSHRC Insight Grant
- SSHRC Insight Development Grant
- SSHRC Partnership Grants
- NFRF Transformation
- Canadian Foundation for Innovation (CFI) John R. Evans Leadership Fund (JELF)
- Canadian Foundation for Innovation (CFI) Innovation Fund (IF)

For more information regarding the internal review process, please contact your Research Coordinator.

WORK WITH YOUR RESEARCH COORDINATOR

The Research Coordinator position was created to provide mentorship and research support for faculty and residents and to promote a dynamic research culture within the department.

NAVIGATE YOU THROUGH THE GRANT WRITING PROCESS

- Identify available research funding sources
- Review grant proposals prior to grant submission
- Assist with budget development and budget justification
- Provide resources for grantwriting
- Act as a liaison between faculty members, research groups, external granting agencies, Research Services and Graduate Studies, and internal departments & agencies

PROVIDE MENTORSHIP FOR RESEARCH-RELATED ACTIVITIES

The Research Coordinator has been hired to facilitate, assist, support and enhance educational research capacity by providing practical advice and assistance for research-related inquiries. She can provide mentorship and advice in areas such as:

- Applying for Department of Surgery Faculty Research Awards
- Applying for Department of Surgery Resident Research and Travel Awards
- Applying for Ethics approval or SHA Operational Approval
- Filling out a Researcher or Clinician profile to update your webpage
- Developing a Google Scholar profile
- Networking with researchers in other departments, colleges and universities
- Finding a medical student to work on your research project
- Getting access to the Surgery Research Intranet

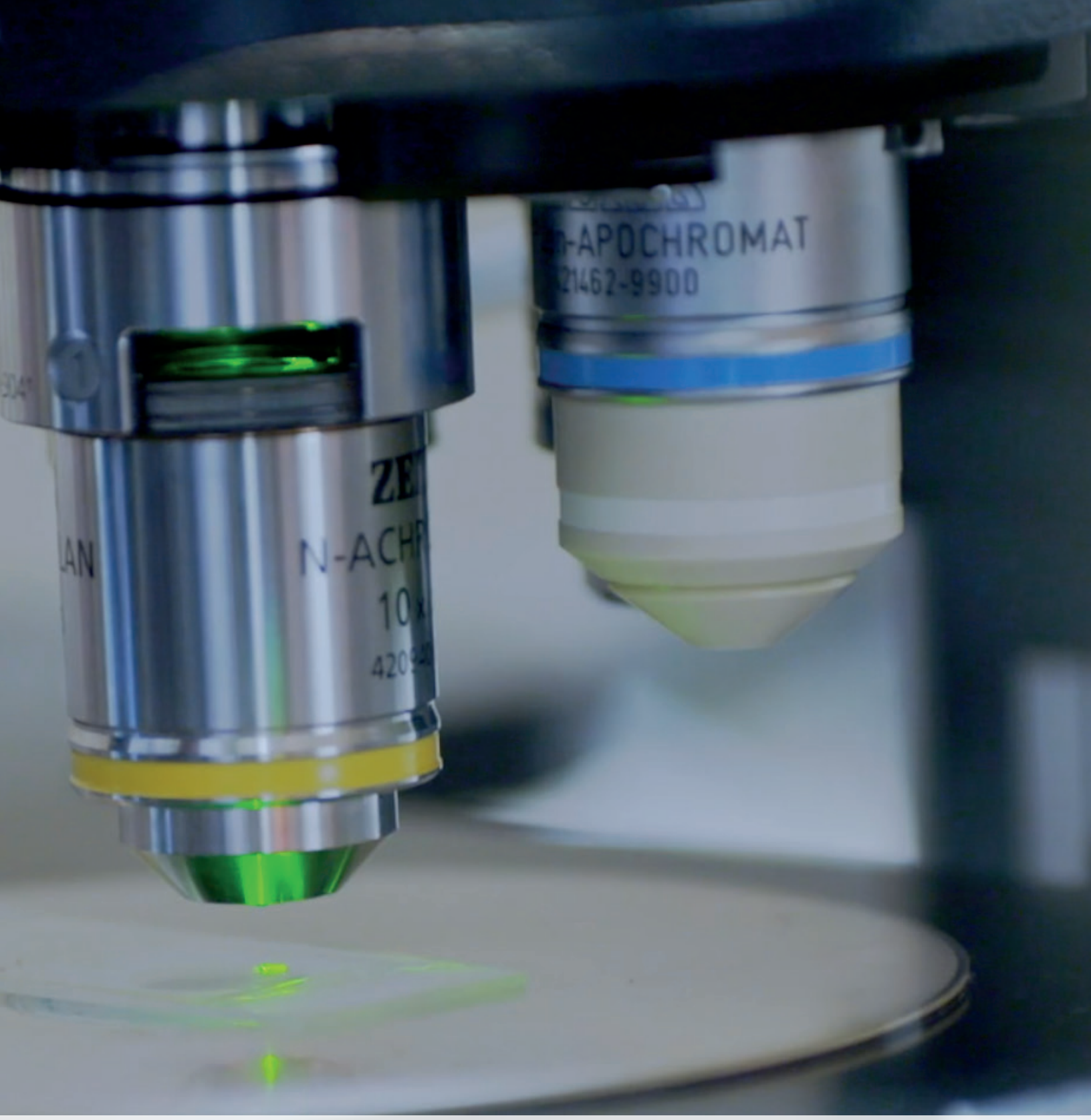
CONTACT INFORMATION

Karen E. Mosier BA MSc
Research Coordinator
Rm B442
Department of Surgery
College of Medicine
Tel: 306-966-8935
Email: karen.mosier@usask.ca

RESOURCES FOR GRANT WRITING

- Browning, B. A. (2016). **Grant Writing for Dummies.** 6th Edition. John Wiley & Sons, Inc.
- Brownson, R. C., Colditz, G. A., Dobbins, M., Emmons, K. M., Kerner, J. F., Padek, M., . . . Stange, K. C. (2015). **Concocting that Magic Elixir: Successful Grant Application Writing in Dissemination and Implementation Research.** Clinical and Translational Science, 8(6), 710-716. doi:10.1111/cts.12356
- Burrow-Sánchez, J. J., Martin, J. L., & Imel, Z. E. (2016). **Applying for Grant Funding as a Counseling Psychologist.** The Counseling Psychologist, 44(4), 479-524. doi:10.1177/0011000015626272
- Clarke, C. A. (2009). **StoryTelling for GrantSeekers: A Guide to Creative Nonprofit Fundraising.** 2nd Editor. Jossey-Bass. San Francisco, CA
- Colwell, J. C., Zimmaro Bliss, D., Engberg, S., Moore, K. N. (2005). **Preparing a Grant Proposal-Part 5. Organization and Revision.** Journal of Wound, Ostomy and Continence Nurses Society. September/October.
- Cuschieri, S., Schembri-Wismayer, P., & Grech, V. (2018). **WASP (Write a Scientific Paper): Writing a Research Grant – 2, Drafting the Proposal.** Early Human Development, 127, 109-111. doi:10.1016/j.earlhumdev.2018.07.014
- Devine, E. B. (2009). **The art of obtaining grants.** American Journal of Health-System Pharmacy, 66(6), 580-587. doi:10.2146/ajhp070320
- Friedland, A. J. (2009). **Writing Successful Science Proposals,** Second Edition. Yale University Press.
- Gemayel, R., & Martin, S. J. (2017). **Writing a successful fellowship or grant application.** The FEBS Journal, 284(22), 3771-3777. doi:10.1111/febs.14318
- Ali Gholipour, A., Lee E. Y. & Warfield S. K. (2014). **The anatomy and art of writing a successful grant application: a practical step-by-step approach.** Pediatric Radiology volume 44, pages 1512–1517(2014). DOI: 10.1007/s00247-014-3051-8
- Gotley, D. C. (2000). **Grantsmanship: Achieving success in research funding.** ANZ Journal of Surgery, 70(4), 297-301. doi:10.1046/j.1440-1622.2000.01815.x
- Higdon, J., & Topp, R. (2004). **How to Develop a Budget for a Research Proposal.** Western Journal of Nursing Research, 26(8), 922-929. doi:10.1177/0193945904269291
- Hippel, T. V., & Hippel, C. V. (2015). **To Apply or Not to Apply: A Survey Analysis of Grant Writing Costs and Benefits.** Plos One, 10(3). doi:10.1371/journal.pone.0118494
- Inouye, S. K., & Fiellin, D. A. (2005). **An Evidence-Based Guide to Writing Grant Proposals for Clinical Research.** Annals of Internal Medicine, 142(4), 274. doi:10.7326/0003-4819-142-4-200502150-00009
- Karsh, E. & Fox A. S. (2019). **The Only Grant-Writing Book You'll Ever Need.** Hatchette Book Group, Inc.
- Knafl, K. A., & Deatrick, J. A. (2005). **Top 10 tips for successful qualitative grantsmanship.** Research in Nursing & Health, 28(6), 441-443. doi:10.1002/nur.20099
- Lee, Y. (2016). **Tactics for Seeking and Obtaining Funding in Academia.** Family and Consumer Sciences Research Journal, 45(1), 12-16. doi:10.1111/fcsr.12177

- Liu, J. C. (2016). **Grant-Writing Pearls and Pitfalls: Maximizing Funding Opportunities.** Doi:10.1177/0194599815620174Lusk, S. L. (2004). Developing an Outstanding Grant Application. Western Journal of Nursing Research, 26(3), 367-373. doi:10.1177/0193945903261843
- Lusk, S. L. (2004). **Developing an Outstanding Grant Application.** Western Journal of Nursing Research, 26(3), 367-373. doi: 10.1177/0193945903261843
- Mbuagbaw, L., Morfaw, F., Kunda, J. E., Mukonzo, J. K., Kastner, J., Zhang, S., Kokolo, M., Thabane, L. (2013). **Tips for Charting the Course of a Successful Health Researcher Career.**
- Monte, A. A., & Libby, A. M. (2018). **Introduction to the Specific Aims Page of a Grant Proposal.** Academic Emergency Medicine, 25(9), 1042-1047. doi:10.1111/acem.13419
- O'Neal-McElrath, T. (2013). **Winning Grants Step by Step.** 4th Edition. Jossey-Bass.
- Patil, S. G. (2017). **How to plan and write a budget for research grant proposal?** Journal of Ayurveda and Integrative Medicine. doi:10.1016/j.jaim.2017.08.005
- Payne, M. A. (2010). Grant Writing DeMYSTiFied. The McGraw-Hill Companies, Inc.
- Pequegnat, W. (2010). **Grantsmanship: Necessary but Not Sufficient Strategies for Success. How to Write a Successful Research Grant Application,** In W. Pequegnat et al. (eds.), How to Write a Successful Research Grant Application: A Guide for Social and Behavioral Scientists. DOI 10.1007/978-1-4419-1454-5 Springer Science+Business Media
- Robbins, V. (2010) **101 Tips for Aspiring Grant Writers.** Creative Resources & Research.
- Roberts, J. A., & Kaack, M. B. (2000). **Grantsmanship.** The Journal of Urology, 1544-1548. doi:10.1097/00005392-200005000-00048
- Sandler, R.S. (2002). **Writing Clinical Grant Applications.** Inflammatory Bowel Diseases, 8(3): 196-200.
- Sandler, R. S., Lewis, J. D., Robuck, P. R., & Sands, B. E. (2005). **Funding and Grantsmanship.** Inflammatory Bowel Diseases, 11. doi:10.1097/01.mib.0000184847.54063.fe
- Sauer, R. M., & Gabbi, C. (2018). **Grantsmanship: What? Who? How?** European Journal of Internal Medicine, 57, 22-24. doi:10.1016/j.ejim.2018.10.006
- Schembri-Wismayer, P., Cuschieri, S., & Grech, V. (2018). **WASP (Write a Scientific Paper): Writing a Research Grant – 1, Applying for Funding.** Early Human Development, 127, 106-108. doi:10.1016/j.earlhumdev.2018.07.013
- Schepers, J. S., Sadler, E., & Raun, W. R. (2000). **Grantsmanship Hints.** Agronomy Journal, 92(1), 1. doi:10.2134/agronj2000.9211
- Smith, N. & Works, E. (2012). **The Complete Book of Grant Writing.** Sourcebooks, Inc.
- Streiner, D. L. (1996). **"While Youre Up, Get Me a Grant": A Guide to Grant Writing.** The Canadian Journal of Psychiatry, 41(3), 137-143. doi:10.1177/070674379604100302
- Walters, M. W. (2009). **Write an effective funding application: A guide for researchers and scholars.** Baltimore: Johns Hopkins University Press.
- Wescott, L., & Laskofski, M. (2011). **Grant Writing Tips for Translational Research.** Methods in Molecular Biology Molecular Profiling, 379-389. doi:10.1007/978-1-60327-216-2_25
- Wisdom, J. P., Riley, H., & Myers, N. (2015). **Recommendations for Writing Successful Grant Proposals.** Academic Medicine, 90(12), 1720-1725. doi:10.1097/acm.0000000000000811



ANALYZING YOUR DATA

DO YOU NEED HELP WITH ANALYZING YOUR DATA?

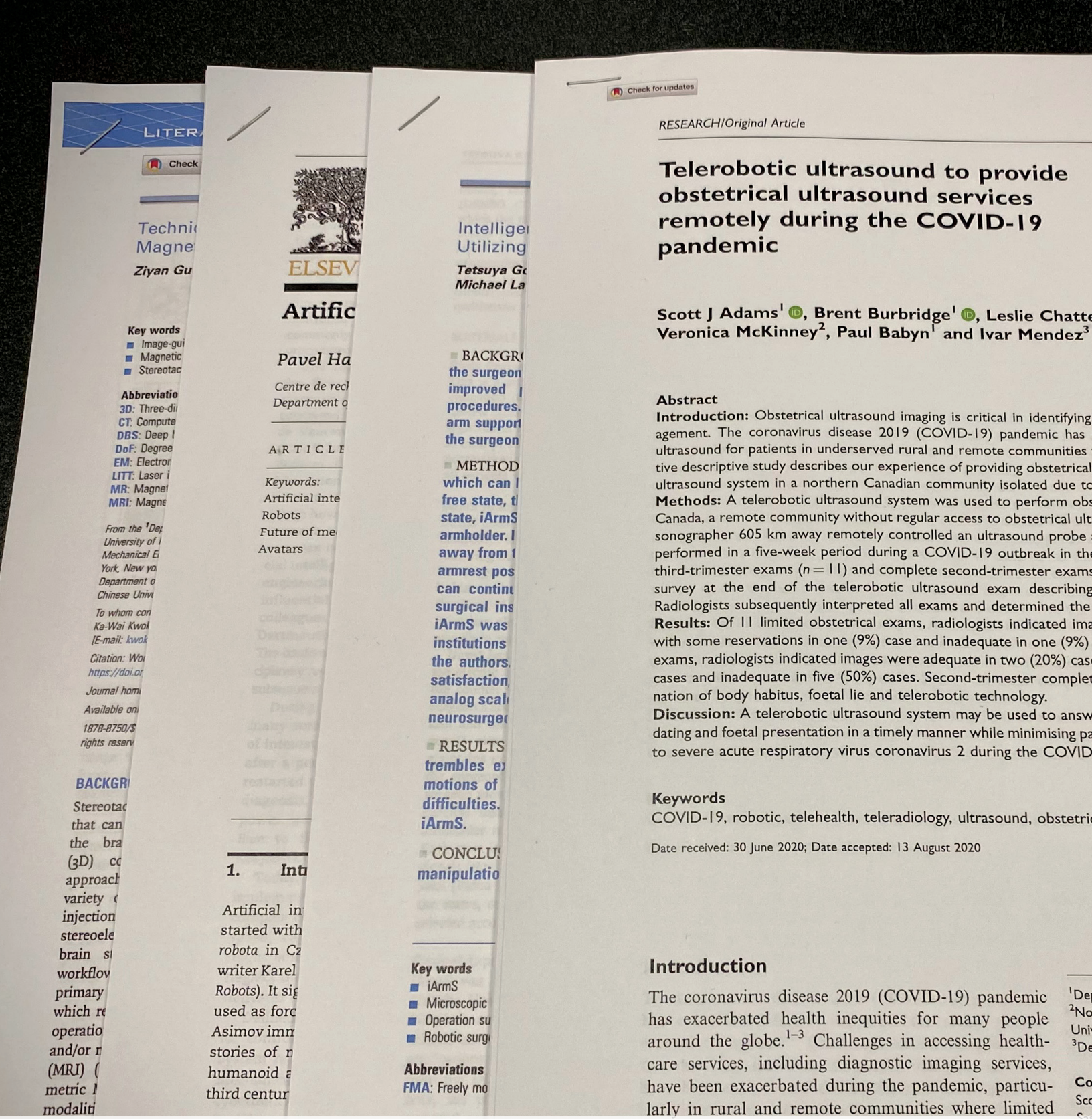
Alex Cheng was hired as a part-time Statistician for the Department of Surgery on August 1, 2018. He is currently doing his PhD in Biostatistics at the University of Saskatchewan. He provides statistical support to department faculty and residents and to any graduate students or medical students supervised by a surgery faculty member.

He is hired through the Clinical Research Support Unit. If you require his services please click on the link below to fill out an intake form:

https://medicine.usask.ca/forms/CRS-intake-form.php

RESOURCES FOR DATA ANALYSIS

- Castleberry, A, Nolen, A. (2018) **Thematic analysis of qualitative research data: Is it as easy as it sounds?** Curr Pharm Teach Learn. 2018 Jun;10(6):807-815. doi: 10.1016/j.cptl.2018.03.019.
- Jarmin, K. H. (2013). **The Art of Data Analysis: How to Answer Almost Any Question Using Basic Statistics.** John Wiley & Sons, Inc. Hoboken, New Jersey.
- Labani, S., Wadhwa, K., Asthana, S. (2017). **Basic Approach to Data Analysis and Writing of Results and Discussion Sections.** MAMC Journal of Medical Sciences 3(1):6. DOI: 10.4103/mamcjms.mamcjms_50_16
- Niraula, S. R. (2019) **A review of research process, data collection and analysis. Insights in Biology and Medicine.** 3: 001-006. DOI: 10.29328/journal.ibm.1001014
- Simpson, S. H. (2015). **Creating a Data Analysis Plan: What to Consider When Choosing Statistics for a Study.** Can J Hosp Pharm. 2015 Jul-Aug; 68(4): 311–317.doi: 10.4212/cjhp.v68i4.1471
- Sutton, J. (2015). **Qualitative Research: Data Collection, Analysis, and Management** Can J Hosp Pharm. 2015 May-Jun; 68(3): 226–231.doi: 10.4212/cjhp.v68i3.1456
- Tang, W., He, H., Tu, X. M. (2012). **Applied Categorical and Count Data Analysis.** CRC Press: Taylor & Francis Group. Boca Raton, FL.
- Yin, L. K., Lieng, T. C., Cheong, W. K. (2006) **How To Analyse Your Research Data? Illustrations With Hands-On Exercises Using Spss.** Fam Physician. PMID: 27570593
- Zulfiqar, A., Bhaskar, S. B. (2016). **Basic statistical tools in research and data analysis.** Indian J Anaesth 60(9): 662-669.



RESEARCH/Original Article

Telerobotic ultrasound to provide obstetrical ultrasound services remotely during the COVID-19 pandemic

Scott J Adams[1], Brent Burbridge[1], Leslie Chatte
Veronica McKinney[2], Paul Babyn[1] and Ivar Mendez[3]

Abstract

Introduction: Obstetrical ultrasound imaging is critical in identifying
agement. The coronavirus disease 2019 (COVID-19) pandemic has
ultrasound for patients in underserved rural and remote communities
tive descriptive study describes our experience of providing obstetrical
ultrasound system in a northern Canadian community isolated due to
Methods: A telerobotic ultrasound system was used to perform obs
Canada, a remote community without regular access to obstetrical ult
sonographer 605 km away remotely controlled an ultrasound probe
performed in a five-week period during a COVID-19 outbreak in the
third-trimester exams ($n = 11$) and complete second-trimester exams
survey at the end of the telerobotic ultrasound exam describing
Radiologists subsequently interpreted all exams and determined the
Results: Of 11 limited obstetrical exams, radiologists indicated ima
with some reservations in one (9%) case and inadequate in one (9%)
exams, radiologists indicated images were adequate in two (20%) cas
cases and inadequate in five (50%) cases. Second-trimester complet
nation of body habitus, foetal lie and telerobotic technology.
Discussion: A telerobotic ultrasound system may be used to answ
dating and foetal presentation in a timely manner while minimising pa
to severe acute respiratory virus coronavirus 2 during the COVID

Keywords

COVID-19, robotic, telehealth, teleradiology, ultrasound, obstetri

Date received: 30 June 2020; Date accepted: 13 August 2020

Introduction

The coronavirus disease 2019 (COVID-19) pandemic has exacerbated health inequities for many people around the globe.[1–3] Challenges in accessing health-care services, including diagnostic imaging services, have been exacerbated during the pandemic, particularly in rural and remote communities where limited availability of health-care services forces patients to travel to larger centres for the care they need,

PUBLISHING YOUR RESEARCH FINDINGS

WATCH OUT FOR PREDATORY OR SUSPICIOUS PUBLISHERS

The Tri-Agencies (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council, and Social Sciences and Humanities Research Council) Open Access Policy states that within 12 months of publication, any peer-reviewed journal articles based on that Agency-supported research must be made freely available.

http://www.science.gc.ca/default.asp?lang=En&n=F6765465-1

Recipients can do this through one of the following routes:

1. Online Repositories
2. Journals

This has created a lot of pressure for researchers to publish in open access journals. There are a lot of questionable, scholarly open-access publishers. “Predatory" publishers use deceptive practices to lure authors to publish with them. They exploit the open access author-pays business model for their own profit and conduct little or no peer review or editing work.

Always carefully assess an unfamiliar publisher before submitting your work to them. Here are some useful checklists and resources to help you, and ask colleagues for their opinion.

Use this Think/Check/Submit Checklist to assess an unfamiliar journal:
https://thinkchecksubmit.org/sample-page/check/

The Directory of Open Access Journals (DOAJ) is a highly regarded, quality-controlled list of reputable open access journals. DOAJ has been criticized in the past for letting some questionable journals slip onto the list. In 2014, they undertook a significant overhaul requiring all journals to reapply for inclusion. The new criteria for inclusion are much more rigorous.
**Please be aware that some disreputable journals claim to be listed in DOAJ but are not.
https://www.doaj.org/

Legitimate open access publishers are usually members of Open Access Scholarly Publishers Association (OASPA)
https://oaspa.org/

To find out more information about a particular journal title try Ulrich's Periodicals Directory. It is an authoritative knowledgebase of information about more than 300,000 serials of all types from around the world from academic and scholarly journals, peer-reviewed titles, open access journals, online publications, newspapers and other resources. Bibliographic records provide details including ISSN and title, publisher, online availability, language, subject area, abstracting & indexing coverage, searchable tables of contents, and full-text reviews.
http://ulrichsweb.serialssolutions.com/

Your liaison librarian may also be able to advise you. You can contact the staff at the Leslie and Irene Dubé Health Sciences Library at uaskhsl@library.usask.ca.

UNIVERSITY OF SASKATCHEWAN INSTITUTIONAL REPOSITORY

HARVEST is the University of Saskatchewan's research archive (institutional repository). The University Library is leading this campus-wide partnership. It is a technology and service platform that contributes to the mission of the University community by enabling sharing and long-term preservation of research, scholarly, and artistic works.

If you are interested in finding how to submit your research please click on the link below: https://harvest.usask.ca/page/submit.