

Alyssa Catherine MacLean

B.Sc.(H), M.D., FRCSC

*Assistant Professor, Trauma & Acute Care Surgeon, Surgical Critical Care Physician
University of Colorado Hospital, Aurora CO*

POSTGRADUATE TRAINING & CLINICAL APPOINTMENTS

Assistant Professor,

Trauma & Acute Care General Surgeon / Surgical Critical Care Physician

2025 – present

University of Colorado Hospital, Aurora, CO

Surgical Critical Care Fellowship

2024 – 2025

University of Texas Health Science Center at Houston, Houston, TX

Trauma Surgery Fellowship

2023 – 2024

University of Texas Health Science Center at Houston, Houston, TX

General Surgery Residency

2018 – 2023

University of Alberta Faculty of Medicine & Dentistry, Edmonton, AB

EDUCATION

Master of Health Professions Education

2024 – 2026

University of Illinois Chicago, Chicago, IL

(in progress)

Doctor of Medicine

2014 – 2018

Queen's University School of Medicine, Kingston, ON

Bachelor of Science (Honours) in Life Sciences

2010 – 2014

Queen's University, Kingston, ON

CERTIFICATES & LICENSURE

American Board of Surgery Surgical Critical Care Certifying Examination

2025

Advanced Surgical Skills for Exposure in Trauma PLUS (ASSET +) Instructor

2025

American Board of Surgery Certifying Examination

2023

American Board of Surgery Qualifying Examination

2023

College of Physicians & Surgeons of Alberta: General Register Practice Permit

2023 – present

Fellow of Royal College of Surgeons of Canada (FRCSC)	2023 – present
Royal College of Physicians & Surgeons of Canada General Surgery Specialty Exam	2023
Advanced Surgical Skills for Exposure in Trauma (ASSET) Instructor	2023
Definitive Surgical Trauma Care (DSTC) Instructor	2023
Foundations of Endoscopic Surgery Examination	2023
Foundations of Laparoscopic Surgery Examination	2023
Advanced Surgical Skills for Exposure in Trauma (ASSET) Certification	2023 – present
Definitive Surgical Trauma Care (DSTC) Certification	2023 – present
Advanced Trauma Life Support (ATLS) Instructor Course	2022
Advanced Trauma Operative Management (ATOM) Course	2021
College of Physicians & Surgeons of Alberta: Resident Member Practice Permit	2018 – 2023
Royal College of Physicians & Surgeons of Canada Surgical Foundations Exam	2019
Medical Council of Canada Qualifying Examination Part 2 (MCCQE II)	2019
Medical Council of Canada Qualifying Examination Part 1 (MCCQE I)	2018
American College of Surgeons – Resident Member	2018 – present
Advanced Trauma Life Support (ATLS) Certification	2018 – present
Pediatric Advanced Life Support (PALS) Certification	2018 – present
Advanced Cardiac Life Support (ACLS) Certification	2018 – present

PUBLICATIONS

MacLean, A.C. & Cripps, M.W. (2026). Emergency General Surgery Considerations in Austere Microgravity Spaceflight Environments. *Space Surgery Association/SAGES Manual of Space Surgery – In Press.*

MacLean, A.C., Kwan, P., Ladak, A., Snelgrove, R., Wang, H., & Bradley, N.L. (2026). Expanding upon a novel reconstruction technique for severe traumatic scalp degloving injuries: omental free flap, split-thickness skin graft, and hair follicle autotransplantation. *Canadian Journal of Surgery – In Press.*

Rieger, W.D., **MacLean, A.C.**, Kao, L.S. Endocrine Changes in Critical Illness. (2025). Cameron and Cameron: Current Surgical Therapy, 15th edition. *Elsevier – In Press.*

MacLean, A., Churg, A. & Johnson, S. (2022). Bilateral pleural mesothelioma in situ and peritoneal mesothelioma in situ associated with BAP1 germline mutation: a case report. (2022). *Journal of Thoracic Oncology Clinical & Research Reports*, 100356.

MacLean, A.C., Ladak, A., Snelgrove, R., Wang, H., Power, H., & Bradley, N.L. (2022). Severe traumatic scalp avulsion requiring an uncommon reconstruction: omental free tissue transfer flap. *Trauma Surgery & Acute Care Open*, 7(1). e000895.

MacLean, A., Ladak, A., Snelgrove, R., Wang, H., Power, H., & Bradley, N. (2021). Autologous omental harvest for microvascular free flap reconstruction of a severe traumatic scalp degloving injury: a case report. *Canadian Journal of Surgery*, 64, S42-S42.

Jiang, H. Y., **MacLean, A.**, Yoon, J., Hughes, S., Kim, M. J., Anantha, R. V., & Widder, S. L. (2020). Evaluation of trauma resources in rural northern Alberta identifies opportunities for improvement. *Canadian Journal of Surgery*, 65(5), E383.

MacLean, A., Jiang, H. Y., Yoon, J., Kim, M. & Widder, S. L. (2019). Rural trauma in northern Alberta: outcome of serial needs assessments and trauma preparedness surveys. *Canadian Journal of Surgery*, 62, S34-S34.

MacLean, A. C., Jiang, H. Y., Kim, M. J., Anantha, R. V., Yoon, J., Hughes, S. & Widder, S. L. (2019). Abstract: Evaluation of Rural Trauma Preparedness Throughout Northern Alberta Identifies Opportunities for Improvement. *Surgical Foundations Research Day Program*.

MacLean, A. & Widder, S. L. (2019). Abstract: Evaluation of Rural Trauma Preparedness Throughout Northern Alberta Identifies Opportunities for Improvement. *General Surgery Research Day Journal*.

RESEARCH IN PROGRESS

MacLean, A.C., Estrada Munoz, O., Drucker, N., Van Gent, J.M., Cotton, B., and Wandling, M. Biologic versus Synthetic Vascular Repairs in Major Traumatic Vascular Injuries: Comparison of Clinical Outcomes.

Two-center retrospective cohort study;

Memorial Hermann-Texas Medical Center (MH-TMC) and Brooke Army Medical Center (BAMC).

January 2018 – August 2024

Evaluate differences in clinical outcomes between biologic vascular repair (autologous vein, allogenic artery or vein, biologic tissue patch) and synthetic vascular repair (PTFE, Dacron®, polyurethane) among adult & pediatric trauma patients with major vascular injuries requiring operative intervention.

MacLean, A.C., Maggio, L. Incorporation of simulation training into surgical education: a scoping review. *Scoping Review; 2000-2025.*
Title, Abstract & Full-text article screening via Covidence.

LECTURES BY INVITATION

”Vascular Trauma Cases from Houston, Texas – Round Two”. *Toronto Multicenter Trauma Rounds: Guest Lecture.* June 2025. Virtual Format.

”TAC Rounds: Trauma Cases from Houston – Round Two”. *Trauma Association of Canada International Multicenter Trauma Rounds.* October 2024. Virtual Format.

”Vascular Trauma in Houston, Texas”. *Toronto Multicenter Trauma Rounds: Guest Lecture.* November 2023. Virtual Format.

”TAC Rounds: Trauma Cases from Houston, Texas”. *Trauma Association of Canada International Multicenter Trauma Rounds.* December 2023. Virtual Format.

”Edmonton Zone Trauma: City-Wide Trauma Rounds”. *Edmonton Multicenter Trauma Rounds.* September 2020. University of Alberta, Edmonton, AB. Virtual Format.

NATIONAL / INTERNATIONAL PRESENTATIONS

”Expanding upon a novel reconstruction technique for severe traumatic scalp degloving injuries: omental free flap, split-thickness skin graft, and hair follicle autotransplantation.” *Trauma Association of Canada Annual Scientific Meeting and Conference.* Poster Presentation. May 2024. Halifax, NS.

”Autologous omental harvest for microvascular free flap reconstruction of a severe traumatic scalp degloving injury: a case report” *Trauma Association of Canada Annual Scientific Meeting and Conference.* Poster Presentation. April 2021. Virtual format.

”Rural Trauma in Northern Alberta: Outcome of Serial Needs Assessments and Trauma Preparedness Surveys”. *Trauma Association of Canada Annual Scientific Meeting and Conference.* Podium Presentation. February 2019. Calgary, AB.

STATE / LOCAL PRESENTATIONS

“Management of the Open Abdomen: A Systematic Review with Meta-analysis and Practice Management Guideline from the Eastern Association for the Surgery of Trauma”. *Combined Trauma Surgery & Hernia / Abdominal Wall Reconstruction Journal Club*. February 2024. Houston, TX.

“Effect of Surgical Rib Fixation for Rib Fracture on Mortality: A Multicenter, Propensity Score Matching Analysis”. *Thoracic Surgery Journal Club*. May 2022. Edmonton, AB. Virtual Format.

“Selective Use of Pericardial Window and Drainage as Sole Treatment for Hemopericardium from Penetrating Chest Trauma”. *Combined Trauma Surgery & Cardiac Surgery Journal Club*. June 2021. Edmonton, AB. Virtual Format.

“A Multicenter, Prospective, Controlled Clinical Trial of Surgical Stabilization of Rib Fractures in Patients with Severe, Nonflail Fracture Patterns (Chest Wall Injury Society NONFLAIL)”. July 2020. *Division of General Surgery Journal Club*. Edmonton, AB.

“Evaluation of Rural Trauma Preparedness Throughout Northern Alberta Identifies Opportunities for Improvement”. *Surgical Foundations Research Day*. Podium Presentation. November 2019. Edmonton, AB.

“Evaluation of Rural Trauma Preparedness Throughout Northern Alberta Identifies Opportunities for Improvement” *General Surgery Research Day*. Podium Presentation. April 2019. Edmonton, AB.

“Impact of supportive knee brace use on athletic performance in healthy youth” *Queen’s Medical Student Research Showcase*. Poster Presentation. October 2016. Kingston, ON.

“Potential Biomarkers of Oxidative Stress in Double-Crested Cormorant (*Phalacrocorax auritus*) Seabirds”. *NSERC Summer Research Presentation*. Podium Presentation. August 2011. Kingston, ON.

CONTINUING MEDICAL EDUCATION LECTURES

“Acalculous Cholecystitis”. October 2025. *University of Colorado, Surgical Critical Care Lecture*. University of Colorado, Aurora, CO.

“Trauma Lecture for Medical Students”. March 2025. *McGovern Medical School, Medical Student Lecture*. University of Texas McGovern Medical School, Houston, TX.

“Trauma Case-Based Learning #2”. October 2024. *Division of Acute Care Surgery Resident Education Rounds*. University of Texas Health Science Center at Houston, Houston, TX.

“Trauma Case-Based Learning”. October 2024. *Division of Acute Care Surgery Resident Education Rounds*. University of Texas Health Science Center at Houston, Houston, TX.

“Penetrating Chest Trauma: Overview & Approach to Thoracic Injuries”. July 2024. *Division of Acute Care Surgery Resident Education Rounds*. University of Texas Health Science Center at Houston, Houston, TX.

“Pancreatic Neuroendocrine Tumours: Endocrinology, Diagnostic Workup and Operative Approaches”. *Resident Education Rounds*. November 2022. University of Alberta Hospital, Edmonton, AB.

“Surgical resident’s guide to non-clinical residency”. *Surgical Foundations Bootcamp*. July 2022. University of Alberta Hospital, Edmonton, AB.

“Interactive trauma simulation case: assessment and management of hemodynamically unstable patient with penetrating trauma”. *Canadian Association of General Surgeons (CAGS)*. June 2022. Virtual platform.

“Adrenal Masses: a comprehensive overview and operative considerations”. *Resident Education Rounds*. April 2022. University of Alberta Hospital, Edmonton, AB.

“Gallstone ileus & Bouveret syndrome”. *Resident Education Rounds*. March 2022. University of Alberta Hospital, Edmonton, AB.

“Emergency Department Thoracotomy”. *Resident Teaching Rounds*. January 2022. St. Michael’s Hospital, Toronto, ON. (Trauma & Acute Care Surgery elective)

“Procedural Skills for Surgical Residents”. *Resident Teaching Rounds*. November 2021. Hamilton General Hospital, Hamilton, ON. (Trauma & Acute Care Surgery elective)

“Surgical resident’s guide to non-clinical residency”. July 2021. *Surgical Foundations Bootcamp*. University of Alberta Hospital, Edmonton, AB.

“Overview of surgical rib fixation compared to non-operative rib fracture management”. *Resident Teaching Rounds*. April 2021. Foothills Medical Center, Calgary, AB.

“Comprehensive overview of Diverticular Disease”. *Resident Education Rounds*. January 2021. Grey Nuns Community Hospital, Edmonton, AB.

“Double bubble: overview and approach to congenital duodenal obstructions”. *Resident Education Rounds*. October 2020. University of Alberta Hospital, Edmonton, AB.

“Complex and interesting operative trauma cases”. *Edmonton Zone Trauma City-Wide Trauma Rounds*. September 2020. Edmonton, AB.

“Penetrating chest trauma: overview and approach to various penetrating injuries”. May 2020. *Division of Thoracic Surgery Education Rounds*. Royal Alexandra Hospital, Edmonton, AB.

MAJOR CLINICAL TEACHING & EDUCATIONAL ROLES

Assistant Professor	2025 – present
University of Colorado Hospital / University of Colorado Medical School, <i>Aurora, CO</i>	
Clinical Instructor	2023 – 2025
University of Texas / McGovern Medical School, <i>Houston, TX</i>	
Transition to Residency Course Instructor	2025
University of Texas / McGovern Medical School, <i>Houston, TX</i>	
Surgical Skills Instructor	2023 – present
University of Texas Health Science Center at Houston, <i>Houston, TX</i>	
Basic Endovascular Skills for Trauma (BEST) Instructor	2023 – present
International Certification	
Advanced Surgical Skills for Exposure in Trauma (ASSET) Instructor	2023 – present
International Certification	
Definitive Surgical Trauma Care (DSTC) Instructor	2023 – present
International Certification	
Simulated Trauma and Resuscitation Team Training (S.T.A.R.T.T.) Instructor	2022 – present
International Certification	
Stop The Bleed Instructor	2022 – present
International Certification	
Advanced Trauma Life Support (ATLS) Instructor	2022 – present
International Certification	
Surgical Ultrasound Course Instructor	2022 – 2023
University of Alberta Hospital, <i>Edmonton, AB</i>	

Surgery Head Start Program Instructor University of Alberta Hospital, <i>Edmonton, AB</i>	2022 – 2023
Surgical Foundations, Surgical Skills Bootcamp Instructor University of Alberta Hospital, <i>Edmonton, AB</i>	2021 – 2023
Resident Teacher Training Retreat Banff Center for Arts & Creativity, <i>Banff, AB</i>	2019
Medical Student Procedural Skills Lab Organizer Queen's University Faculty of Medicine, <i>Kingston, ON</i>	2016 – 2018

AWARDS & HONOURS

R.E. Fraser Award for Excellence in Teaching, Department of Surgery	2020 – 2021
Senior Resident of the Year, Division of General Surgery	2020 – 2021
Queen's University Dean's Honour List	2011 – 2013
Queen's University Academic All-Star	2010 – 2013
NSERC Undergraduate Research Award	2012
Queen's University Principal's Scholarship	2010 – 2012
Queen's University Dean's Honour List with Distinction	2010 – 2011
Engineers Nova Scotia Award for Combined Excellence in Science & Mathematics	2008 – 2009
House of Commons Recognition for Math, Science & Extracurricular Contributions	2008 – 2009

PROFESSIONAL ASSOCIATIONS

Fellow of Royal College of Surgeons of Canada	2023 – present
College of Physicians & Surgeons of Alberta: General Register Member	2023 – present
Association of Women Surgeons	2022 – present
Association for Surgical Education	2022 – present
Trauma Association of Canada	2018 – present

College of Physicians & Surgeons of Alberta: Resident Member	2018 – 2023
Canadian Association of General Surgeons	2018 – present
Canadian Medical Protective Association	2018 – present
American College of Surgeons: Resident Member	2018 – 2023
Professional Association of Resident Physicians of Alberta	2018 – 2023
Alberta Medical Association	2018 – present
Canadian Medical Association	2014 – present
Ontario Medical Association	2014 – 2018

EMPLOYMENT HISTORY

General Surgeon	2023 – present
Alberta Health Services; Alberta, Canada	
Locum General Surgery Attending shifts in Alberta, Canada throughout fellowship training	
Orthopedic Surgery Research Student	2014 – 2015
Kingston General Hospital & Hotel Dieu Hospital, <i>Kingston, ON</i>	
Summer Research Scholarship with Pediatric Orthopedic Surgeon between medical school semesters.	
Evaluated hip, knee, and ankle joint biomechanics with and without various supportive bracing devices during	
plyometric exercises. Biomechanics analyzed using wearable motion sensors, plotted in 3-dimensional space.	
Clinical Assistant	2013 – 2014
Kingston Institute of Psychotherapy & Neurofeedback, <i>Kingston, ON</i>	
Patients provided with EEG-delivered biofeedback therapy as complement to comprehensive Clinical Psychologist &	
Psychiatric care plans, pharmacotherapy & other psychotherapy modalities for wide variety of psychiatric conditions.	
Varsity Athletic Trainer	2013 – 2014
Queen's University Varsity Cheerleading Team, <i>Kingston, ON</i>	
Provided Varsity Athletes with strength-training programs and supportive bracing & taping during practices & games	
Cheerleading Coach	2011 – 2013
Kingston Elite All-star Cheerleading, <i>Kingston, ON</i>	
Assistant Coach for competitive cheerleading team that performed at national and international competitions	
Clinical Cancer Research Assistant	2012
Queen's Cancer Research Institute, <i>Kingston, ON</i>	
Organized and incorporated tumor microarray samples for breast cancer patients for cancer genomic analysis.	

NSERC Summer Research Student**2012***Queen's University and Royal Military College of Canada, Kingston, ON*

Independent research project evaluating potential Biomarkers of Oxidative Stress in Double-Crested Cormorant Seabirds (*Phalacrocorax auritus*). Project involved DNA & RNA extraction, gene replication using bacterial vectors, quantitative PCR amplification and manuscript presentation.

Lifeguard, Camp Counselor & Swimming Instructor**2008 – 2010***Dartmouth Sportsplex + Windsor Junction Community Center + Oakfield Beach Park, NS*

Worked at indoor pool complex in winters and outdoor beaches / community center in summers in Nova Scotia.

LEADERSHIP ROLES**General Surgery Wellness Committee: Co-Founder and Co-President****2019 – present***University of Alberta Division of General Surgery, Edmonton, AB***Class of 2018 Second Year Medical Student Council: Secretary****2015 – 2016***Queen's School of Medicine, Kingston, ON***Class of 2018 First Year Medical Student Council: Social Representative****2014 – 2015***Queen's School of Medicine, Kingston, ON***Life Sciences Student Council: 2nd, 3rd, 4th Year Representative****2011 – 2014***Queen's University, Kingston, ON***Orientation Week Leader****2011***Queen's University Faculty of Arts & Science, Kingston, ON***Campus Activities Committee****2010 – 2011***Queen's University, Kingston, ON*

VOLUNTEER WORK**Surgical Skills Instructor****2023 – present***University of Texas Health Science Center at Houston, Houston, TX***Basic Endovascular Skills for Trauma (BEST) Instructor****2023 – present***International Certification***Simulated Trauma and Resuscitation Team Training (S.T.A.R.T.T.) Instructor****2022 – 2023***University of Alberta Hospital, Edmonton, AB*

Stop The Bleed Instructor	2022 – 2023
University of Alberta Hospital, <i>Edmonton, AB</i>	
Surgical Ultrasound Course Instructor	2022 – 2023
University of Alberta Hospital, <i>Edmonton, AB</i>	
Surgery Head Start Program Instructor	2022 – 2023
University of Alberta Hospital, <i>Edmonton, AB</i>	
Surgical Foundations, Surgical Skills Bootcamp Instructor	2021 – 2023
University of Alberta Hospital, <i>Edmonton, AB</i>	
Ronald McDonald House Charities Volunteer	2009 – 2010
IWK Children's Hospital, <i>Halifax, NS</i>	
Orientation Week Leader	2011
Queen's University Faculty of Arts and Science, <i>Kingston, ON</i>	
VIDA Volunteers Medical Outreach	2011
Honduras, Central America	
Camp Kadimah French Camp Counselor	2009
<i>Barss Corner, NS</i>	
Junior Lifeguard	2007
Windsor Junction Community Center, <i>Windsor Junction, NS</i>	
Summer Camp Junior Counselor	2006
<i>Fall River, NS</i>	