OUR OBJECTIVE
To profile the department’s initiatives, activities and accomplishments for the benefit of our staff, alumni, friends and community

CONTACT
Department of Surgery - University of Alberta
2D - Walter Mackenzie Centre
8440 - 112 Street
Edmonton, AB
Canada T6G 2B7
surgery.ualberta.ca

EDITOR
Mark W. Regier

CONTRIBUTORS
Curtis Comeau
Douglas Hedden
Amy Hewko
Gregory Kennedy
Dale MacMillan
Ross Neitz
Mark W. Regier
Richard Siemens

MESSAGE FROM THE CHAIR
Douglas Hedden’s summer message to the department

REBUILDING BODIES AND IMPROVING LIVES
A closer look at bionic prosthesis development at the U of A

IF I HAD 2 MILLION DOWNLOADS
Surgery 101 hits a major milestone

SURGICAL AWARDS DINNER RECAP
Coverage of our annual graduation and awards night

TOM WILLIAMS SURGICAL RESEARCH DAY
Find out who took home the top honours in 2015

FRESH FACES
Meet the new residents in surgery

GETTING SENIORS HOME SOONER
Highlighting the new ‘elder-friendly’ surgical unit

CALLING UP THE ROOKIES
U of A hosts the annual Neurosurgery rookie camp

FACULTY AND STAFF UPDATES
Get updated on recent staff changes and event dates
SUMMER IS AN EXCITING TIME where we are reminded of the virtues of education, allowing us to take a moment to appreciate the impact we collectively have on the community. It is a time of change and transition in the Department of Surgery. Residents we have mentored leave to begin new careers while eager new faces walk our hallways with a thirst for knowledge and innovative ideas. The cycle of quality individuals who flow through our doors, affecting the lives of those within our borders and beyond, gives life to the department’s mission of improving lives together.

The annual Surgical Awards Dinner in May stands as a marker for this changeover, and it gives us pause to celebrate our graduating group. I would like to congratulate all award winners on their achievements and thank each and every one of you for making it a successful and enjoyable evening. Tom Williams Research Day, hosted this year by the Division of Neurosurgery, proved to be an ideal start to the day with many thought provoking posters and presentations on hand. Congratulations are also in order for all the research day winners, with a special appreciation given to Peter Dirks, MD, PhD, FRCSC, Professor, Department of Surgery, University of Toronto, who joined us as guest judge for the research presentations.

It is not easy to say goodbye to those who we have spent the better part of five years guiding, but I have supreme confidence in our graduates. They are a spectacular group, and I wish only the best for each of them as they move even closer to having their career goals turn into reality. I am equally enthusiastic about getting to know the new surgical residents joining us, and welcomed the opportunity to meet many individuals at the PGY-I Welcome BBQ this July. I look forward to watching them self-challenge their full potential under the tutelage of our faculty and staff.

You may have noticed that Surgical Frontiers has acquired a new look. As part of our strategic plan, we are making a concentrated effort at improving the visual identity of the department, which includes a wide range of initiatives. To those who graciously signed up to be a part of the strategic planning process, I encourage you to continue being a part of the momentum we have created.

It is also important for us to take the summer to revitalize ourselves, and I trust you all have found the opportunity to enjoy this time of year with friends and family. Your continued hard work and dedication is appreciated by your colleagues, and continues to raise the profile of the department. For this, I thank you.

Douglas M. Hedden, MD FRCSC
Walter Stirling Anderson
Professor and Chair
Department of Surgery,
Faculty of Medicine & Dentistry
University of Alberta
OUR LIVES ARE SELDOM CONSTANT and change comes in many forms. The human body itself is remarkable in its ability to adjust in the wake of disease and trauma. While there are obvious limits to what the body can do on its own, advances in medical research and new developments in technology have served to bridge the gap.

An example of such a collaborative effort can be seen at the University of Alberta, where a team of researchers and surgeons are actively seeking to return as much natural ability as possible to those who have suffered the loss of upper extremities.

The nucleus of this team consists of researchers K. Ming Chan MD, FRCP(C) and Jacqueline Hebert, MD, FRCP(C), and surgeons Michael J. Morhart MD, MSc, FRCS(C), Jaret Olson MD, FRCS(C), Patrick Pilarski, PhD, computing scientist and Robert Steigelmar, BSc, MD, FRCS(C).

Through their combined efforts they are meshing surgical efforts with cutting-edge technology.

Upper limb protheses have typically focused on providing patients with the ability to once again physically interact with their environment. Past advances in these devices have made use of micro-motors and electrodes mapped to remaining muscle tissue, allowing users to simulate basic motions and manipulation.

"It's what you do with the surgery afterward that has really changed things," points out Jaret Olson, alluding to the progressive technique of rewiring the body's nervous system to interact with technology.

When an arm is amputated, the remaining nerves that once relayed information and controlled muscle movement in the hand can still be stimulated and relay information. The team's bionic arm takes full advantage of this by relocating those nerves, allowing them, and the signals they transmit, to interact with their prosthesis as fluidly as possible. By relocating these muscle-controlling nerves near the site of amputation and chaining them to sensors in the arm, patients can intuitively control micro-motors in the bionic arm with natural signals sent from the brain. This process provides significantly more natural movement, and circumvents the previous requirement of relearning which muscles to manipulate in order to create desired movements.

The process of rewiring the nerves
that dictate muscle control to interact with micro-motors opened the door to exploring how other sensory information could be transferred from an electronic device to the brain. Citing the point of inspiration, K. Ming Chan states that the team asked themselves a question: “In addition to allowing them to control the motors, what about hooking hand sensation in the bionic hand?” It was with this thought in mind that they began breaking new ground in restoring the sense of touch, a previously unheard of idea.

The team at the University of Alberta felt strongly that providing sensory feedback was the natural next step in giving people back more than just a physical tool of interaction. “The vast majority of [amputees] are young and healthy, they just get into accidents,” adds Chan, giving insight to the team’s motivation. Backed by the goal of helping patients once again realize their physical potential, the team focused their pioneering research on integrating bionics with the senses.

Further inspired by the technological advances brought forward by K. Ming Chan and Jacqueline Hebert, the surgeons on the team, Michael J. Morhart, Jaret Olson and Robert Stiegelmar discovered that the remaining nerves that relayed sensory information did respond in similar fashion to those that controlled movement. By identifying which nerves carried sensory information and replacing them in the skin of the patient’s amputation site, the team was able to allow their bionic prosthesis to relay sensory information back to users. Further still, it gave patients the ability to clearly identify individual fingers on the prosthesis without a visual check. This feedback is established by an advanced design which features sensors at the tips of each prosthetic finger. These individual sensors provide a level of awareness that was previously unavailable. Of all the bionic arms worldwide, including several already done at the University of Alberta as well as commercial models, the team’s foray into the field of restoring sensory ability was the first of its kind.

What we are currently witness to is a window into the future. While the foundations have been laid through advances in nerve rewiring surgery, the technology required to achieve more seamless levels of integration remains on a steadily advancing horizon. At this time the associated costs related to bionics are currently high, keeping accessibility to these artificial limbs limited for the time being. This is compounded by debates surrounding hand transplant surgeries, which come with their own unique risks and costs related to immunosuppression drugs, which can cost millions over a lifetime and harbour health risks that include early mortality. The team insists they are not at odds with alternative approaches. What they see are two actively researched routes to solve a problem faced by so many, and effort multiplied over time will eventually tell us which method serves patients best.

As technology continues to advance, and costs associated with bionic arms and power sources continue to lower with the curve, we will see this window open further to reveal an accessible reality. The design of the team’s arm illustrates this forward thinking approach, as it makes use of many 3D printed components, allowing for a reduction in cost.

Carved by minds that ask questions and seek answers under the banner of improving lives together, we eagerly anticipate the future that our team at the University of Alberta is creating.
JONATHAN WHITE HAS GAINED INTERNATIONAL FAME for his approach to surgical education as the mind and the voice behind Surgery 101, which has just celebrated two million downloads from more than 200 countries around the world.

What started as a one-man podcast supported by office administration slowly grew into an app that offers users notes, mini-courses and the now-infamous videos featuring Muppets, Lego, zombies and more.

Bringing the videos to life is a feat: from start to finish, the process can take up to four weeks and challenges the team to utilize a variety of Adobe photo and video editing tools, DSLR cameras with multiple lenses, Go Pro cameras, a cinema camera, green screens, stop motion programs and, of course, favourite pop-culture icons.

"If you would have asked me a few years ago about the video stuff, I would have said it’s a massive headache because it’s so much more complicated than audio. Creating it, you have to take a totally different tactic,” White says. “Now, the podcast itself has become way less audio and much more visual, and I find I’m becoming much more focused on the visual aspects of surgery myself.”

White, who also teaches a variety of surgery courses at all stages of medical education, was named a 3M National Teaching Fellow in 2014, partially due to his work with Surgery 101. When he speaks of his work, it’s clear where his passion lies: “It’s my job to help students see behind the surgeon’s mask and inspire a wider range of students to learn about surgery,” White says. “I want to show learners that surgeons are made, not born. You don’t have to have a certain kind of hands or a special sort of heart. I’m trying to tell students that I’m an ordinary guy and if I can become a surgeon, maybe they can do the same—and they might be really good at it.”

White’s enthusiasm for sharing his work was part of what encouraged this year’s summer research students, Lucy Wang and Corey Luda, to get involved in Surgery 101.

“I went on iTunes and typed in ‘surgery’ because I was interested in going into medicine,” Luda, a pharmacology student, says of his introduction to Surgery 101 in 2009. “Surgery 101 popped up [and at that time] was still only a few podcasts.”

Wang and Luda assist in scripting, filming, editing, executing special effects and publishing the videos. “Corey is really excited about photography, lighting and setting up the shots,” explains Wang, a science student who will enter medical school in September. “I’m more excited about [Adobe] Premier and editing.” Jenni Marshall, the program assistant for digital education, notes that they will also create their own video on the CanMEDS framework; targeted to residents, it will be supplemented with Lego stop motion videos outlining principles and presentations from the annual resident teaching retreat in Banff.

Episodes are available free at the new Surgery 101 website and the Surgery 101 YouTube channel. The team has also developed a 99-cent Surgery 101 app for OS, Android and Windows Mobile operating systems; proceeds from the app are donated to the Tom Williams Endowed Chair of Surgical Education, which White currently holds.
THANK YOU TO THOSE WHO ATTENDED OUR ANNUAL AWARDS DINNER AND CONGRATULATIONS TO THE EVENING’S WINNERS

RE FRASER AWARD
Awarded to surgical residents with superior achievement in the residency training program who are entering the final two years of surgical training.

General Surgery: Johan Bolton
Specialty: David Saliken

COOPER JOHNSTON MEMORIAL SCHOLARSHIP
Awarded to an orthopedic resident with superior academic achievement and excellence in orthopedic medicine.

Ryan Paul

DR. MARTIN T. SPOOR AWARD
Awarded to a resident who is a Canadian citizen in year 3 or 4 of study in a surgical residency program.

Blaire Anderson

DR. MARTIN T. SPOOR AWARD
Awarded to individuals who embody the professional attributes and personal values held by Dr. Hunting.

Max Levine

COOPER JOHNSTON MEMORIAL SCHOLARSHIP
Awarded to an orthopedic resident with superior academic achievement and excellence in orthopedic medicine.

David Saliken

DR. HASTINGS MEWBURN POSTGRADUATE SCHOLARSHIP IN ORTHOPEDIC MEDICINE
Awarded based on outstanding merit in the field of orthopedic medicine.

SHAB PURI AWARD
Awarded annually to a cardiac surgery resident with overall outstanding performance in the program.

Wei Wang

MARSHALL HUNTING AWARD (VASCULAR SURGERY)
Awarded to trainees in the postgraduate program in Surgery based on a combination of academic achievements including research, clinical and educational endeavours.

Adam Kinnaird

DR. RAY RAJOTTE GRADUATE AWARD
Available annually to a full-time post graduate basic science student entering their second year of study in the Department of Surgery.

Wenjing He & Jennifer Gyoba

TOP 10 TEACHERS

GENERAL SURGERY
Ghassan Alhassani
Dale Berg
Anna Borowiec
Klaus Butzenschoen
Dave Callaghan
Mike Châtenay
Jackie Kennedy
Dan Schiller
James Stewart
Walter Yakimets

SPECIALTY SURGERY
Mike Allegretto
Harold Chyczij
Hamdy El-Hakim
Eric Estey
Allan Ho
Niels Jacobsen
Rob Seemann
Blair St. Martin
Tim Wollin
Erin Wright
2015 Graduating Residents (left to right): David Al-Adra, Brandon Ball, Abdullah Saleh, Tyler Alford, Shaheed Merani, Ahmed Almamar, Stephanus Van Zyl, Johan Bolton, Phil Bach, Sayf Gazala, Khaled Alabbasi, David Saliken, Ashlee Dobbe, Kimberly Sun, Sharon Chiu, Tyler Parrington, Allison Hobbs, James McInnes, Ellen Forbes, Caroline Jeffery
Missing: Srujan Ganta, Russell Murphy, Amir Taheri
Tom Churchill poses with the Class of 2015 Graduate Students (left to right): Awrad Nasralla, Troy Perry, David Ko.

Tom Williams Surgical Research Day

AWARD WINNERS

CLINICAL SCIENCE ORAL AWARDS
1st prize – Angela Chan (top left with Peter Dirks)
2nd prize – Max Levine
3rd prize – Erica Lester

CLINICAL SCIENCE POSTER AWARDS
1st prize – Han Zhang (bottom left with Peter Dirks)
2nd prize – Trevor Haines

BASIC SCIENCE ORAL AWARDS
1st prize – Adam Kinnaird (top right with Peter Dirks)
2nd prize – David Lim
3rd prize – Boris Gala Lopez

BASIC SCIENCE POSTER AWARDS
1st prize – Antonio Bruni (bottom right with Peter Dirks)
2nd prize – Eric Fung
As we say goodbye and wish success to one crop of graduates, we also look forward to tomorrow by way of the new residents we have joining us this July.

Welcome to University of Alberta’s Department of Surgery!

**CARDIAC SURGERY**
Michiko Maruyama

**GENERAL SURGERY**
Chantalle Grant
Ariella Kleiman
Krista Lai
Mo Yu (Lanny) Li
Jordan Nostedt
Ashley Shaw

**NEUROSURGERY**
Jonathan Chainey
Abdullah Alarfaaj

**ORTHOPEDIC SURGERY**
Khalid AlMaazmi
Julia Bowes
Michael Goplen
Luke Heinrichs

**OTOLARYNGOLOGY – HEAD & NECK SURGERY**
Dustin Conrad
Malak Gazzaz
Scott Murray

**PLASTIC SURGERY**
Julie Beveridge
Andrew Mulherin

**UROLOGY**
Mark Assmus
Dylan Hoare
Ryan McLarty

**C.I.P.**
Matthew Curran
Resident under the supervision of Jaret Olson and K. Ming Chan

Kimberly Macala
Fellow under the supervision of Rachel Khadaroo
AFTER HER APPENDIX BURST last August, Susan Gokiert underwent emergency surgery and, due to unexpected and ensuing complications, spent three weeks in hospital. But the 70-year-old Westlock resident turned her experience into a positive for other seniors by joining a new research study aimed at getting elderly patients home sooner, stronger and with fewer complications after emergency general surgery — through the creation of an ‘elder-friendly’ emergency surgical unit at University of Alberta Hospital. “They took great care of me and got me up, moving and exercising right away,” says Gokiert. “They did a great job. I was in good condition when I went home.”

Her experience contributed to a new clinical research study called EASE — Elder-Friendly Approaches to the Surgical Environment — a collaboration between Alberta Health Services (AHS) and the Faculty of Medicine & Dentistry at the University of Alberta, led by Rachel Khadaroo, a surgeon-scientist, critical care specialist and assistant professor in the Department of Surgery. “We’re doing a reconditioning program for our patients, so they become stronger quicker, to prevent them from losing a lot of muscle mass,” says Khadaroo. “And then we’re doing early-discharge planning with our family, social worker, care coordinator and surgical team.”

Patient rooms will also create a more senior-friendly environment, with low-height beds, larger clocks, communication aids and frequent comfort rounds to personally check on well-being. To gather data and results, the outcomes of patients in the new elder-friendly unit at the University of Alberta Hospital will be compared to those of patients receiving usual care at Foothills Medical Centre in Calgary. “We want to show that we’re actually having a positive outcome in terms of decreasing complications and death rates,” says Khadaroo. “We’re doing cost analysis on this too, and believe our approach will add value to health care without costing any more money.”

The Canadian Journal of Surgery, a publication of the Canadian Medical Association, has also just posted online the latest research by Khadaroo and her colleagues Mackenzie C. Lees, Shaheed Merani and Keerit Tauh. The paper — Perioperative factors predicting poor outcome in elderly patients following emergency general surgery: a multivariate regression analysis — will be published in its October edition.

The University of Alberta Hospital clinical trial is being funded by $750,000 through The Partnership for Research and Innovation in the Health System (PRIHS), a joint venture between Alberta Innovates – Health Solutions (AIHS) and Alberta Health Services (AHS) that aims to improve health outcomes for patients across Alberta. Earlier seed funding came from the M.S.I. Foundation ($50,000) and the University Hospital Foundation ($32,000). Researchers working on this project are also affiliated with the Seniors’ Health Strategic Clinical Network (SCN).

“Elder-friendly care would be impossible without our frontline staff,” says Natalie McMurtry, Executive Director of Medicine & Surgery Adult Inpatient Services for AHS in Edmonton Zone. “Their dedication to our Patient First Strategy — putting patients and their families at the centre of everything we do — is what enables us to advance health care here in Alberta.”
CALLING UP THE ROOKIES
ROOKIE CAMP GIVES CANADA’S NEUROSURGERY RESIDENTS A SAFE OPPORTUNITY TO PRACTICE CRITICAL SKILLS

STORY BY ROSS NEITZ

AN INTENSIVE TWO-DAY TRAINING COURSE IS HELPING
Canada’s neurosurgery trainees hone their skills before they take control of an operating room for the first time. Eighteen of Canada’s top neurosurgery residents have gathered at the University of Alberta’s Faculty of Medicine & Dentistry for the Canadian Neurosurgery Rookie Camp.

“This opportunity will assist them in what’s sometimes a stressful transition, namely, transitioning from being a medical student to a neurosurgery resident responsible for sick patients with critical brain injuries and neurosurgical pathologies,” explains Cian O’Kelly, an assistant professor in neurosurgery in the Faculty of Medicine & Dentistry at the University of Alberta and one of the event organizers. “It’s a very hands-on, skills-oriented camp that gives them essential life-saving skills.”

The Neurosurgery Rookie Camp is hosted by the Faculty of Medicine & Dentistry and the Royal College of Physicians and Surgeons. This year’s Neurosurgery Rookie Camp is the fourth to be held in Canada, and the first to be run outside of Halifax. Organizers hope to establish Edmonton as the western Canadian site for the event in the future.

The first part of camp is focused on technical skills where residents are exposed to the tools of their trade and gain experience in how to use them. Some of the skills include drilling skulls and using plating systems to repair bone. While some of the skill sessions involve highly accurate simulations, others are decidedly more low-tech.

“We have a type of coagulation forcep that we use to pick up a blood vessel before pressing a coagulation button. We actually teach the residents using grapefruits,” explains O’Kelly with a laugh. “We cut grapefruits in half and we give them the bi-polar forcep. They practice coagulating little strands of grapefruit. It’s a good model for learning because it replicates what we do—and it also happens to smell good.”

After the basic skills sessions, neurosurgery residents focus on sub-specialty skills within neurosurgery. Each station is realistic and clinically focused. Along with an emphasis on medical knowledge, the trainees also gain experience in problem solving, teamwork and managing acute medical crises.

O’Kelly believes the experience is great preparation for their work to come. “The residents are in a position where they now have to make decisions and it’s an abrupt transition. Then you throw in a whole new set of skills that perhaps they’ve only maybe seen briefly. It can be stressful if you’re trying to acquire those skills in the real world and during critical situations where stress is high,” says O’Kelly.

“Having a chance to practice these skills in a safe environment where you can stop in the middle of a procedure and say, ‘Am I doing this right?’ and get some immediate feedback from national experts is tremendously valuable.”
IN MEMORIAM

Joseph Moreau
1920 - 2015

It is with sadness that we announce the passing of Joseph Moreau, a preeminent figure in Orthopedics. He passed away peacefully on March 23, 2015. Joseph Moreau was born in Hoey, Saskatchewan in 1920. He completed his undergraduate training at Université Laval followed by medical school at the University of Alberta. During WWII, he enlisted in the military and was stationed in Vancouver. After the war, he completed his orthopedic training with Edouard Samson in Montreal.

In 1949 Joseph returned to Edmonton and worked at the Edmonton General Hospital, where he held the position of chief of orthopedics for over 40 years. He and his wife Marie raised their eight children just blocks away from the General. In addition to the many patients he helped, he also taught medical students, interns and residents. Outside from his medical career, Joseph also had a strong interest in francophone education in Edmonton. Ecole Joseph Moreau Junior High is named in his honour. He is survived by his wife of 67 years, Marie, his eight children, and his 25 grandchildren and 17 great-grandchildren.

Jim McMillan
1945 - 2015

It is with heavy hearts that we announce the passing of Jim McMillan, who passed away on March 27, 2015. Jim was regarded by many to be a “larger than life figure” in Edmonton Orthopedics.

Born in 1945, he grew up in Lac La Biche, and completed his undergraduate training, medical school and residency at the University of Alberta.

His clinical practice began at the Charles Camsell Hospital, where he worked for 17 years prior to moving to the Royal Alexandra Hospital in 1992, followed by the Misericordia Hospital in 2000.

Jim was an Assistant Clinical Professor in the Department of Surgery. He was a past president of the Alberta Orthopedic Society and served as a member of the board of the Alberta Medical Association from 1991-1998. He is survived by his wife Jan, whom he married in 1968, and their 3 children, David, Cathy and Jill and their 5 grandsons.

ACADEMIC PROMOTIONS
Adetola Adesida - Associate Professor and Tenure
Rachel Khadaroo - Associate Professor and Tenure
Martin Osswald - Associate Professor and Tenure
Nadr Jomha - Professor

CLINICAL PROMOTIONS
Richard Beekman - Assistant Clinical Professor
Par Boora - Assistant Clinical Professor
Jeff Bury - Assistant Clinical Professor
Donald Dick - Associate Clinical Professor
David Edwards - Associate Clinical Professor
Catherine Hui - Assistant Clinical Professor
Ramesh Juta - Assistant Clinical Professor
Frank Kortbeek - Associate Clinical Professor
Rob Perlau - Assistant Clinical Professor
Jonathan Toy - Assistant Clinical Professor

NEW ROLES
Mark Evans
Divisional Director - Division of Pediatric Surgery and Site Chief of Surgery
Colin Anderson
Divisional Director - Division of Surgical Research

RETIREES
Stewart Hamilton
Larry Hunka
John McIlvor
Raj Narang

ADDITIONAL STAFF AWARDS
David Lim - Harry M. Vars Award - best oral presentation and manuscript for research on neonatal parenteral nutrition associated liver disease.
OWN A PIECE OF OUR HISTORY

This book details the first 50 years of the department against the background of world and regional events. It’s the story of the University and surgical department during two world wars, the great depression and into Alberta’s oil boom.

Author Robert A. Macbeth was born and educated in Edmonton, AB. From 1960-1975 he was professor and chair of the department of surgery at the University of Alberta and director of surgical services at University Hospital.

To purchase a copy contact Jocelyn Reekie at 780-407-6605 or jreekie@ualberta.ca
IMPROVING LIVES TOGETHER