

2009 ANNUAL REPORT

collaboration



The Department of Surgery





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Message from the Chair/Chief

“Complex puzzles are solved when we exchange ideas and bring several disciplines together.”

Dr. John Denstedt

Chair/Chief, Department of Surgery

As one of the largest clinical departments at the Schulich School of Medicine & Dentistry, the Department of Surgery provides the highest quality of surgical care to the people of London, Southwestern Ontario and beyond; trains and mentors the next generation of surgeons; and advances surgical knowledge through the pursuit of scientific discovery and innovation. Each day our surgeons in the Department work with a cadre of specialized team members, including nurses, bioengineers, technicians, administrative staff, residents, fellows, researchers, other physicians, and many others to provide expert care to patients. This interdisciplinary teamwork results in high quality and innovative care for our patients.

This year, we initiated a strategic planning process to create a roadmap for the next five years. Key leaders in the Department of Surgery identified nine directions as strategic areas of importance. These directions, goals, and supporting actions were further refined with the inclusion of feedback from across the Department, the Schulich School of Medicine & Dentistry, and the Hospitals to ensure organizational alignment and broad based consultation. The plan builds on the momentum we have achieved over the past six years and addresses the ever-changing environment in which we function, particularly changes in new technology; increased collaboration and interdisciplinary initiatives; changing demographics of trainees; financial resources; and increased accountability. The strategic plan will require us to not only achieve our goals individually, but will require us to work together toward a broader purpose. To that end, we will rely on the knowledge and expertise of colleagues not only from the Department of Surgery, but from a vast array of specialists at the University of Western Ontario, our two teaching hospitals – London Health Sciences Centre and St. Joseph’s Health Care, London, CSTAR (Canadian Surgical Robotics & Advanced Technologies), the Southwest Local Health Integration Network, the Southwestern Ontario Medical Education Network (SWOMEN), The City of London, the Province of Ontario, and our many outstanding industry partners.

Creating centres of excellence requires the coordinated input of many people. As time goes by, particularly in healthcare, teamwork involving multiple disciplines and partners will be paramount to success. The theme of this year’s annual report is *Collaboration* and highlights the ways in which our faculty members are working together, and with others across the university, research institutes, hospitals, and other organizations to advance surgical care. If we all worked in silos our impact would be negligible. Complex puzzles are solved when we exchange ideas and bring several disciplines together.

Throughout our history we have been very successful at building bridges with various specialties and I think this has helped us establish ourselves as leaders in our fields. We have seen this through the success of programs like the Hand and Upper Limb Centre, the Multi-Organ Transplant Program, the Trauma Program, the Fowler-Kennedy Sports Medicine Clinic, CSTAR, and of course throughout our eight surgical Divisions including: Cardiac Surgery, General Surgery, Orthopaedic Surgery, Paediatric Surgery, Plastic & Reconstructive Surgery, Thoracic Surgery, Vascular Surgery, and Urology. Clinicians in the Department

have also collaborated closely with basic scientists and this research model has increased the breadth and depth of our academic output. But there is more work to be done. As an Academic Health Science Centre we should always be looking at ways to improve what we are doing. Advances in technology and an increasingly global economy have driven unprecedented breakthroughs and I see significant opportunities in this new wave of innovation to establish ourselves as a centre of excellence in surgical simulation and surgical education.

We made substantial progress this year establishing a firm foundation for advancing our expertise in surgical simulation. Last winter, the CSTAR Simulation Research Group was developed, whose physicians and surgeons have protected time to conduct research in surgical simulator development and team-based simulation programming. In addition to this, CSTAR recently hosted Canada's first Simulation Industry Roundtable. The Roundtable is an initiative of the Canadian Patient Safety Institute and its recently-formed Canadian Network for Simulation in Healthcare. The first meeting included representatives from 16 simulation companies from the United States, Europe and Canada, including CAE Healthcare, METI and others. Also related to simulation, the Brent and Marilyn Kelman Centre at CSTAR will be opening in 2010 and will house a state-of-the-art, team-based, surgical simulation skills lab for our students, trainees and consultant surgeons.

The Department has also been very active in creating the infrastructure to increase our knowledge in the area of surgical education. This year CSTAR received accreditation from the American College of Surgeons as an Accredited Education Institution meaning they have met an internationally accepted benchmark for surgical education and training that covers all aspects of program development, delivery, evaluation and quality improvement. The accreditation also sets the stage for more meaningful interaction and collaboration with world-renowned surgical institutions. In addition to this, the Department also started recruitment of a Surgery PhD Educator to establish a successful research program with a focus on surgical education and simulation. The candidate will be based at the newly formed Schulich School of Medicine & Dentistry Centre for Education Research & Innovation and will collaborate with other members of the centre.

Increasing our international profile is another important strategic initiative of the Department and in October the Schulich School of Medicine & Dentistry signed a Memorandum of Understanding with the West China Hospital School of Medicine at Sichuan University in Chengdu, China. A team of leaders, including myself, traveled to Chengdu to sign the agreement, and met with representatives from the West China School of Medicine. The partnership will be very beneficial to the Department of Surgery, creating new exchange programs, joint research opportunities and other collaborative ventures to help further our international footprint and create a focused exchange strategy. It will also help with the university's mission led by Dr. Amit Chakma, to increase Western's international profile.

Finally, this year, we recruited seven surgeons from various centres across Canada. Recruitment and retention continue to be major priorities for the Department of Surgery and we are committed to attracting the best faculty. We will continue to work with the hospitals and the university to ensure the brightest minds are recruited in strategic areas to maintain outstanding teaching, research and clinical care.

In the coming year the Department will continue to work towards enhancing our expertise in simulation and surgical education to meet the changing needs of students. We will also lead the way in developing technology driven advances in surgery through interdisciplinary research and development, focused recruitment, and through collaboration between London Health Sciences Centre and St. Joseph's Health Care, London to quantify the impact and outcomes of these emerging technologies. The Department will also continue to foster our relationship with the West China Hospital School of Medicine at Sichuan University to facilitate new opportunities. And finally we will continue to fundraise for leadership positions to attract and retain the brightest minds in surgery and to support key Departmental strategies and initiatives at both the university and hospitals.

I am profoundly grateful to all of those who have contributed their time, ideas, good fortune and support to help us shape our vision for the next five years. While there are challenges that lie ahead, I am confident we have the talent, initiative, and determination to achieve our goals. I know that each of us strives to achieve our personal best; but it is collectively that we will advance the future of the Department of Surgery to the next level of success.

Sincerely,



John D. Denstedt, MD, FRCSC, FACS
Richard Ivey Professor and Chair/Chief
Department of Surgery
Schulich School of Medicine & Dentistry
The University of Western Ontario

The Division of Cardiac Surgery



The relationship between Cardiac Surgery, Cardiology, Cardiac Anaesthesia, OR Nursing and Perfusion has been strong, dating back to the inception of our cardiac surgical program in the 1970's, the transplant and arrhythmia surgery programs in the 1980's and currently with minimally invasive and robotic surgery. As technology develops, surgeons will continue to rely on the expertise of colleagues in various specialties perhaps more than ever as time goes by.

“Treating cardiac patients requires collaboration with so many people. In the OR it's a synchronized dance with cardiac surgery, cardiology, cardiac anesthesia, OR nursing, and perfusion. Then there's our work with the cardiac surgery recovery unit and an exceptionally skilled cadre of nurses, some of whom have been here since the day I first walked in the building in 1988,” says Dr. Richard Novick, Chair/Chief, Cardiac Surgery. “We also work very closely with CSTAR using their education and research facilities.”

The Division has several research projects currently underway. One study in particular offers insight into the true collaborative spirit of members from cardiac surgery and cardiology. An interdisciplinary medical team led by

Dr. Bob Kiaii, a cardiac surgeon, and cardiologist Dr. Bill Kostuk were the first in North America a few years ago, to complete two different procedures to clear blocked arteries during the same episode of care. Both a minimally invasive robotic-assisted coronary artery bypass surgery and angioplasty with stenting were performed sequentially in the same operating room. After performing the procedure on 58 patients, the team evaluated the feasibility of the procedure and found it to be both highly successful and safe for a select group. The study was published this past year in the *Journal of Thoracic and Cardiovascular Surgery*.

“The number one factor that allowed us to accomplish this milestone was our cohesive multidisciplinary team,” says Dr. Bob Kiaii, Director of Minimally Invasive and Robotic Cardiac Surgery. “The anesthetists, other cardiac surgery team-members, assistants, OR nurses, perfusionists, and cardiologists were all vital in achieving success. If we didn't have this type of collaboration in the operating room we wouldn't have been able to do it.”

Another significant outcome this year was the creation of the Transcatheter (Percutaneous) Aortic Valve Program, led by Dr. Michael Chu. Dr. Chu

completed one of his two fellowships in Leipzig, Germany, which has the world's largest experience with percutaneous aortic valve replacement. The procedure involves surgeons and cardiologists implanting a new stented aortic valve either through a femoral artery in the groin or a small incision on the left side of the chest without a sternotomy or the heart lung machine.

“This novel approach to aortic valve disease offers patients a much less invasive option for aortic valve replacement with the potential for less risk and much quicker recovery. It represents a major advancement and possible paradigm shift in the way we treat patients with aortic stenosis. During implantation, positioning of the valve with image guidance is critical to the success of the procedure. We are currently working on the role of augmented reality and image registration to improve our outcomes with these novel procedures. Drs. Chu and Kiaii worked very closely with interventional cardiologists, cardiac anesthetists and specialized OR and cath lab nurses to do the procedure.” says Dr. Novick.

The program involved a significant amount of training in Vancouver and at CSTAR with surgeons, perfusionists, nurses and cardiac anesthetists all taking part.

In another area of research, cardiac surgeon Dr. Ray Guo is working with Michael O'Neil, a perfusionist at London Health Sciences Centre, to investigate the effects of pulsatile versus nonpulsatile flow during cardiopulmonary bypass on sublingual mucosal microcirculation.

“One of the controversies in our specialty when a patient is undergoing cardiac surgery and they must be placed on the heart-lung machine, is whether there should be a non-pulsatile flow, which is standard practice, or whether there are benefits to having a pulsatile flow,” says Dr. Novick.

Results of the study are forthcoming, but researchers predict there may be benefits to pulsatile flow during cardiopulmonary bypass.

Residents in the Division are also avid researchers, and this year, one resident in particular stood out when he conceived and designed a randomized clinical trial.

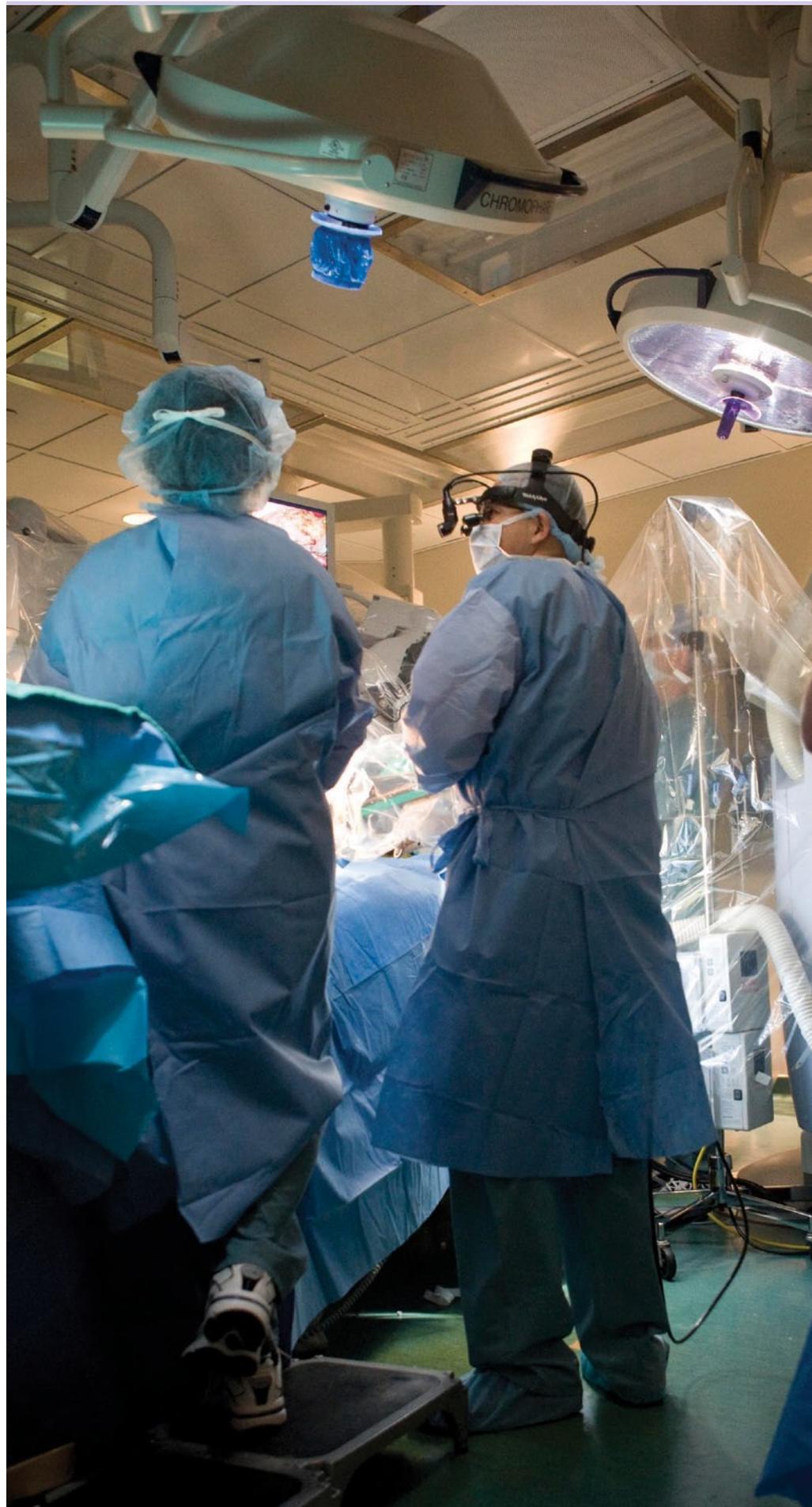
“Our chief resident Dr. Dave Nagpal initiated a study titled Starch or Saline after Cardiac Surgery: A Randomized Controlled Trial. It’s a large trial comparing saline versus starch for standard intravenous fluid bolus therapy for post-op cardiac surgery patients,” says Dr. Novick.

Dr. Nagpal and his team have started recruiting patients to examine clinical outcomes and weight gain after cardiac surgery, the premise being that patients given colloids such as starch should have less swelling, less weight gain and possibly improved outcomes after surgery.

“The distinguishing factor about this study is that it was completely conceived and designed by a resident, which doesn’t normally happen to this extent. Dr. Nagpal is now a principal investigator of a major randomized, controlled trial. We’re extremely proud of him for taking this initiative.”

As he completes his second and final term as Chair/Chief, Dr. Novick would like to see the percutaneous aortic valve program receive stable and predictable funding so surgeons can perform a larger number of cases. Dr. Novick also plans to continue the large-scale randomized controlled trials the Division is currently undertaking in collaboration with McMaster University and other centres in Canada and internationally.

“All of our research is collaborative. The days of a single faculty member doing research by himself or herself are over. A substantive research project is multidisciplinary, and only advances when you bring people in with different perspectives. That’s when the puzzle gets solved.”



SELECTED PUBLICATIONS

JOURNAL ARTICLES

Chitwood WR Jr., Rodriguez E, Chu MWA, Ferguson TB, Vos PW, Nifong LW. Robotic Mitral Valve Repairs in 300 Consecutive Patients. *J Thorac Cardiovasc Surg* 2008;136:436-41.

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HONOURS & AWARDS

Guo, Ray. Schulich School of Medicine & Dentistry. Department of Surgery Cardiac Surgery Division. The University of Western Ontario USC Undergraduate Teaching Awards.

Kiaii, Bob. Schulich School of Medicine & Dentistry. Department of Surgery Clinician Scientist Award.





The Division of General Surgery



The Division of General Surgery is the second largest in the Department of Surgery and is comprised of a diverse and dynamic group of surgeons with expertise in surgical oncology, trauma surgery, minimally invasive and robotic surgery, colorectal surgery, HPB surgery, transplantation and endocrine surgery. This year, members of the group continued to achieve excellence in patient care, teaching and research.

Dr. Ward Davies, Chair/Chief of the Division of General Surgery says one of the accomplishments he is most proud of this year was the ongoing development of a breast cancer assessment centre. The project will be a collaborative venture between the Division of General Surgery, the Department of Radiology, the Division of Plastic and Reconstructive Surgery, and the Department of Oncology.

“We have been working to establish a breast cancer assessment centre for almost a decade. We already have a very high success rate treating breast cancer, but this new program will allow us to further incorporate nurse practitioners, and will allow us to have better interaction with patients, faster diagnosis and faster treatment. Dr. Muriel Brackstone has been the Division’s lead on moving the project

forward, and she has done a phenomenal job,” says Dr. Davies.

The proposed new centre is still in the planning phase but once completed it will see breast care diagnostics and breast surgery consolidated at St. Joseph’s Health Care, London.

Another major coup for the Division this year was the hiring of three new surgeons to the Division – Drs. Steven Latosinsky, Elizabeth Saettler, and Roberto Hernandez-Alejandro. Drs. Latosinsky and Saettler are a husband and wife team specializing in surgical oncology and are based out of Victoria Hospital. Dr. Hernandez-Alejandro, based at University Hospital, is a transplant surgeon specializing in living related transplantation. With his appointment, the Division hopes to increase the number of living related transplants in the coming year.

The Division has a strong transplant program and this year, Dr. Bill Wall, a pioneering transplant surgeon, received Canada’s highest honour – The Order of Canada. Dr. Wall was recognized for his role in the development and advancement of liver transplantation in Canada and for promoting awareness of the need for organ donation. Dr.

Wall joined the department in 1977 and has been instrumental in building the Multi-Organ Transplant Program into a national leader.

The Division also continues to push the boundaries in other areas such as surgical robotics.

“Our series of robotic bile duct explorations is the largest in the world. And we are leaders in the country in outpatient appendectomies, which are done laparoscopically as opposed to doing them with larger incisions, allowing patients to recover more quickly,” says Dr. Davies.

Dr. Christopher Schlachta directed the second SAGES-sponsored minimally invasive surgery skills course at CSTAR for general surgery residents from throughout the country. The course has only been offered twice outside the United States and both times it has been held at The University of Western Ontario.

The Division has a strong transplant program and this year, Dr. Bill Wall, a pioneering transplant surgeon, received Canada’s highest honour – The Order of Canada.

Several faculty members and trainees are also doing research into surgical robotics. One example is Dr. Shiva Jayaraman, a Fellow in Minimally Invasive Surgery and Robotic Surgery. He is also a graduate of UWO’s General Surgery Program and currently is a student in the Faculty of Engineering. He is working with a colleague from the Faculty of Engineering to develop a training and skills assessment system for minimally invasive surgery, based on an assessment of the position and force profiles of laparoscopic instruments during the performance of standardized laparoscopic tasks.

General surgery residents are also involved in research. This year, the Division held its annual Resident

Research Day in April with keynote speaker Dr. Joseph Buell, Professor of Surgery & Chief of the Division of Transplantation at the University of Louisville. His talk was titled The Evolution of Minimally Invasive Liver Surgery. Resident Research Best Paper awards were presented to Dr. Jennifer Racz for Best Junior Paper Presentation, Dr. Paul Karanicolas for Best Clinical Paper Presentation, and Dr. Kyle Cowan for Best Basic Science Paper Presentation.

The Division also had a stellar year in education. All residents were successful in passing their Royal College exams and many have moved on to complete fellowships. Several teaching awards were handed out. The JH Duff Award for Teaching in General Surgery was given to Dr. Michael Ott; the GE Meads Award for Excellence in Technical Ability & Teaching in General Surgery Residency went to Dr. Paul Karanicolas; the DM Grace Award for Excellence in Clinical Care in General Surgery Residency was

presented to Dr. Robert Humphrey; the Stevens Novell Award for receiving the highest mark in the country on the CAGS exam went to Dr. Robert Leeper; and the CAGS/Covidien Resident Teaching Award was given to Dr. Robert Humphrey.

In the year ahead, Dr. Davies will focus on collaborating with colleagues to drive the breast cancer assessment centre plans forward; will work to increase the living related transplant program; and will continue to build the surgical oncology unit.

Sharing surgical lessons from the Canadian field hospital in Kandahar, Afghanistan

Lessons learned at the Canadian-run military hospital in Kandahar, Afghanistan could help surgeons prepare for civilian disasters, according to Dr. Vivian McAlister, who has served two tours at the hospital. He spent two months working at the Kandahar hospital in 2007 as a civilian surgeon before joining the Canadian Forces and doing a second tour at the hospital this past winter.

War surgeons have developed ways to deal with situations where many severely injured patients are brought to hospital at the same time. McAlister says this knowledge would be very useful in Canadian hospitals when

dealing with catastrophes such as a bus crash on the 401 or a roof collapse in a school.

Dr. McAlister prepared a course in catastrophic surgery which was offered in September at the Canadian Surgery Forum in British Columbia, so military surgeons could share these skills with their civilian colleagues.

“Combat surgery has taught us to rapidly transport patients to hospital resuscitating them along the way, to expedite life and limb-saving surgery, but then to send patients to the intensive care until their normal physiological status returns before attempting to

complete surgery,” says McAlister.

“More patients have been saved using these techniques known as ‘damage control resuscitation’ than if definitive surgery is done up front.”

He says combat surgery also incorporates methods to help patients, friends and staff deal with the stress of these awful situations in order to minimize harmful responses.

An article by McAlister on the history of military surgery in Canada and how the knowledge gained at the field hospital transfers to civilian hospitals was published in the June issue of the Canadian Journal of Surgery.



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▶ GENERAL SURGERY HONOURS AND AWARDS

- Colquhoun, Patrick. Schulich School of Medicine & Dentistry Department of Surgery. Best Teacher in General Surgery.
- Girotti, Murray. Martha Curgin Inspiration Award. London Health Sciences Foundation.
- Ott, Michael. JH Duff Teacher of the Year. Department of Surgery.
- Schlachta, Christopher. Finalist, GTEC 2008 Distinction Award. Government of Canada.
- Schlachta, Christopher. Young Investigators Award. World Congress of Endoscopic Surgeons.
- Vinden, Chris. Schulich School of Medicine & Dentistry. Department of Medicine USC Teaching Honour Roll Award of Excellence.
- Wall, William. The Order of Canada, The Government of Canada.
- Wall, William. Lifetime Achievement Award, Canadian Society of Transplantation.

The Division of Orthopaedic Surgery



The Division of Orthopaedic Surgery is the largest in the Department of Surgery with surgeons operating at all three hospital sites across the City of London. They are renowned experts in hand surgery, shoulder and elbow surgery, total joint reconstruction, paediatric orthopedics, foot and ankle surgery, spine surgery, trauma surgery and sports medicine.

Working closely with many divisions and departments in the hospitals and university, surgeons in the Division had an outstanding year with a number of significant achievements.

“This year in particular, many of our faculty members were the recipients of major awards for teaching, leadership, clinical care and research,” says Dr. Jim Roth, Chair/Chief, Division of Orthopaedic Surgery. “This couldn’t have been accomplished without the expertise of colleagues across the hospitals and the university.”

The Joint Replacement Institute had a stellar year, first winning the Schulich Dean’s Award of Excellence Team Award

in May and then opening a new state-of-the-art clinic in June. Surgeons on the joint replacement team work with PhDs, nurses and other researchers to treat patients with degenerative joint disease, arthritis of the hip and knee, or those requiring joint replacement. They have an excellent track record in research, leading the way in developing randomized clinical trials relating to hip and knee surgery and they are one of only a handful of labs with advanced orthopaedic imaging capabilities.

“Through their work, the Joint Replacement Institute has demonstrated a commitment to clinical excellence and innovative research and teaching,” says Dr. Roth. “Their care of patients with hip and knee disorders is also contributing to one of the province’s key wait-time strategies to increase the number of knee and hip joint replacements.”

Later in the year, the Joint Replacement Clinic at University Hospital opened the doors to its new state-of-the-art facility. Renamed the Rorabeck Bourne Joint Replacement Clinic, the institute was named after orthopaedic surgeons Dr.

Robert Bourne and Dr. Cecil Rorabeck, who each donated \$250,000. The clinic houses new state-of-the-art equipment and additional amenities to ease patient comfort. Approximately 1,300 joint replacements are performed at London Health Sciences Centre each year.

In other areas, the Orthopaedic Surgery Program graduated four residents this year and Dr. Ken Faber, Program Director of the Orthopaedic Program was awarded the 2009 Schulich Graduate/Postgraduate Award of Excellence in Education.

“Dr. Faber exemplifies all of the important attributes of an outstanding surgical educator,” says Dr. Jim Roth. “For several years, Dr. Faber has been identified as one of the best teachers with students identifying his patience, passion and genuine interest in surgical education as being exemplary.”

Dr. Cecil Rorabeck was also honoured this past year with an honorary degree (Doctor of Medicine) from The University of Western Ontario at convocation in October. Dr. Rorabeck is one of the world’s leading experts on hip and knee replacement surgery and currently serves as Roberts Research Institute Council Chair.

Approximately 1,300 joint replacements are performed at London Health Sciences Centre each year.

Orthopaedic surgeon Dr. Robert McMurtry, former Dean of Schulich, was also honoured with the James H. Graham award from the Royal College of Physicians and Surgeons of Canada, recognizing his significant career achievements.

In the coming year, Dr. Roth and members of the Division will work towards building on the momentum they have achieved in excellence in teaching, research, and clinical care.

▶ JOURNAL ARTICLES

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▶ SELECTED PUBLICATIONS

Whitehead TS, Willits K, Bryant D, Giffin JR, Fowler PJ. Impact of medial opening or lateral closing wedge tibial osteotomy on bone resection and posterior cruciate integrity during total knee arthroplasty: A cadaveric study. *Journal of Arthroplasty*. Epub 2008 Sep 25.

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▶ HAND AND UPPER LIMB CENTRE JOURNAL ARTICLES

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▶ **HAND & UPPER LIMB CENTRE BOOK CHAPTERS**

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▶ **ORTHOPAEDIC SURGERY HONOURS & AWARDS**

Athwal, George. Schulich School of Medicine & Dentistry. Department of Surgery. Orthopaedic Surgery Division. H.S. Cameron Award for Teaching Excellence.

Athwal, George. US Bone and Joint Decade Young Investigator Initiative Program.

Bailey, Christopher. Schulich School of Medicine & Dentistry. Department of Surgery. Orthopaedic Surgery Division. Cec Rorabeck Award 2008.

Faber, Kenneth. Schulich School of Medicine & Dentistry. Dean's Award of Excellence.

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Giffin, Robert. Top Canadian Achievement in Health Research (Clinical Category). Canadian Institutes of Health Research.

Giffin, Robert. The Dr. Joseph Gilbert Research Contribution of the Year Award. Lawson Health Research Institute.

King, Graham. Department of Surgery, University of Western Ontario. Clinical Scientist Award. Salary Support for Scientist in Department of Surgery.

Litchfield, Robert. CIHR Top Achievement. Canadian Institutes of Health Research.

Litchfield, Robert. The Dr. Joseph Gilbert Research Contribution of the Year Award. Lawson Health Research Institute.

MacDonald, Steven. Deans Award of Excellence, Team Award. Team Award of Excellence to Arthroplasty Group. University of Western Ontario, Schulich School of Medicine and Dentistry.

McAuley, James. Dean's Award of Excellence - Team Award. Team Award of Excellence to Arthroplasty Group. University of Western Ontario.

McCalden, Richard. Schulich School of Medicine & Dentistry. Dean's Award of Excellence - Team Award. Orthopaedic Surgery Division.

McCalden, Richard. John Insall Award. The Knee Society.

Naudie, Douglas. The John Insall Award 2008 (Knee Society Award for best clinical research paper).

Naudie, Douglas. The John Charnley Award 2008 (Hip Society Award for best clinical research paper).

Naudie, Douglas. Dean's Award of Excellence- Team Award. Adult Reconstruction Unit for exceptional performance in research, education, administration, innovation, and public service.

Willits, Kevin. The Joseph Gilbert Research Contribution of the Year Award. Lawson Health Research Institute.

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The Division of Paediatric Surgery



The Division of Pediatric Surgery, provides compassionate state-of-the-art pediatric surgical care to infants, children, and adolescents throughout Southwestern Ontario. Established just over four years ago, surgeons have expertise in a number of paediatric subspecialties, including general surgery, neurosurgery, otolaryngology, urology, orthopaedics, gynecology, plastic surgery, and dentistry.

This year, members of the Division were very busy, opening two new multidisciplinary paediatric surgery clinics. The first, a Craniosynostosis Clinic, was led by plastic surgeon Dr. Damir Matic, and Drs. Sandrine de Ribaupierre, and Adrianna Ranger from the Department of Clinical Neurological Sciences. It is one of only two multidisciplinary clinics in Ontario specializing in the care and treatment

of children born with all forms of craniosynostosis, a premature fusion of the cranial sutures that prevents normal growth of a baby's head. The clinic has resulted in a number of clinical research projects looking at the critical size defect in humans.

A Vascular Malformation Clinic was also recently established by plastic surgeon Dr. Arjang Yazdani, and colleagues Drs. Filler and Rieder from the Department of Paediatrics. The clinic is a unique collaboration involving surgeons and pediatricians and provides comprehensive and unique care for children with hemangiomas and other types of vascular anomalies. The clinic has also ignited research in the area and researchers have started to look at steroid pharmacokinetics in this population of children, with an eye towards studying how steroids affect hemangiomas.

In other research areas, Dr. Andreana Bütter continues to work with colleagues at CSTAR to investigate new ways to perform minimally invasive fetal surgery.

The clinic has also ignited research in the area and researchers have started to look at steroid pharmacokinetics in this population of children, with an eye towards studying how steroids affect hemangiomas.

This year, the Division also recruited a new paediatric general surgeon, Dr. Neil Merritt. Dr. Merritt completed an undergraduate degree at Queen's University followed by medical school

at McMaster University. He pursued further training in adult general surgery at Queen's University. This was followed by one additional year in pediatric trauma and critical care as well as two years of pediatric general and thoracic surgery. Dr Merritt completed his pediatric surgical training at the Children's Hospital of Eastern Ontario in Ottawa. His current area of interest is in pediatric trauma. Specifically he is interested in pediatric focused abdominal sonography for trauma and avoidance of radiation risk associated with more conventional forms of imaging in children.

This year, Dr. Kellie Leitch stepped down as Chair/Chief, and Dr. David Girvan, a paediatric general surgeon, stepped in to fill the role as Acting Chair/Chief. The search process is currently underway to fill the role on a permanent basis.

In the year ahead, the Division will continue to provide outstanding surgical care and brighter futures to children

and their families while investigating new and more precise ways to operate on children.



▶ SELECTED PUBLICATIONS

▶ JOURNAL ARTICLES

Al-Mandil M, Khoury AE, El-Hout Y, Kogon M, Dave S, Farhat WA. Potential complications with the prescrotal approach for the palpable undescended testis? A comparison of single prescrotal incision to the traditional inguinal approach/ *J Urol* 2008 Aug 18.

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Grieci T., Bütter, A. The incidence of inflammatory bowel disease in the pediatric population of Southwestern Ontario. *Journal of Pediatric Surgery*, 44(5), 977-980.

Leitch KK, Aldrige JM, Bhatia N, Solomon D. JOA-AOA Traveling Fellowship-"Fellows Log 2008". *Journal of Bone and Joint Surger (Am)* 2008.

Leitch KK, Carey TP, Bartley DL, Gunn V, Balck C, Herbert JNW. Evaluation of Paediatric Femur Fracture Techniques: rigid IM Nailing vs Flexible Femoral Nailing; "A Retrospective Study". *Journal of Bone and Joint Surger (Am)* 2008.

Leitch KK, Stevens P. The Impact of Obesity on Paediatric Orthopaedic Patients. *Journal Paediatric Orthopaedics*.

Leitch KK, Stivrins R, Carey TP, Bartley DL, Hora M. The Economic Impact of Wait Times in a Paediatric Orthopaedics Clinic. *Canadian Medical Association Journal*.

Matic, D.B. and Power, S.M. The effects of gingivoperiosteoplasty following alveolar molding with a pin-retained Latham appliance versus secondary bone grafting on midfacial growth in patients with unilateral clefts. *Plast Reconstr Surg*, 122(3):863-70, Sept 2008.

Suoub, M., Dave, S., El-Hout Y. Distal hypospadias repair with or without foreskin reconstruction: A single surgeon experience. *J Pediatr Urol* 2008 Oct 4.

▶ HONOURS & AWARDS

Matic, Damir. Schulich School of Medicine & Dentistry. Department of Surgery. Best teacher within the Division of Plastic and Reconstructive Surgery.

Scott, Leslie. The University of Western Ontario. USC Teaching Honour Roll Award of Excellence.

The Division of Plastic and Reconstructive Surgery



The Division of Plastic & Reconstructive Surgery at the University of Western Ontario is dedicated to the provision of excellence in patient care, providing a superb educational experience for medical students, residents and fellows, and creating new knowledge in the area. Members of the Division hold subspecialty expertise in hand and upper limb surgery, reconstructive microsurgery, reconstructive breast surgery, adult and paediatric craniofacial surgery, burn care, peripheral nerve surgery, aesthetic surgery, wound healing, and cutaneous malignancies. Surgeons in the Division operate at all three hospital sites across the City of London.

“Plastic surgery is a unique specialty because we don’t have a defined anatomic area like most specialties. We are always collaborating with different areas. For instance we work very closely with the Division of General Surgery

particularly with breast reconstruction, and we work very closely with orthopaedic surgery in helping them with complex reconstructive surgeries,” says Dr. Doug Ross, Chair/Chief, Plastic & Reconstructive Surgery.

This year, surgeons in the Division of Plastic Surgery had a number of major achievements.

Dr. Damir Matic, in collaboration with Dr. John Yoo, from the Department of Otolaryngology, established a Facial Nerve Clinic, the largest and only multidisciplinary clinic of its kind in Ontario. The clinic treats patients with facial nerve weakness from a variety of causes including Bell’s Palsy, benign and malignant tumor extirpation, traumatic injury, or congenital abnormalities. Treatment is comprehensive and includes physiotherapy, biofeedback, injectables, and both static and dynamic facial

nerve reconstruction. The clinic has ignited several basic science and clinical research projects examining strategies to improve peripheral nerve recovery and the investigation of innovative and novel surgical techniques for total facial re-animation in paralysis patients.

A Vascular Malformation Clinic was also recently established by plastic surgeon Dr. Arjang Yazdani, and colleagues Drs. Filler and Rieder from the Department of Paediatrics. The clinic is a unique collaboration involving surgeons and pediatricians and provides comprehensive and unique care for children with hemangiomas and other types of vascular anomalies. The clinic has also spawned research in the area and researchers have started to look at steroid pharmacokinetics in this population of children, with an eye towards studying how steroids affect hemangiomas.

In other areas, Dr. Claire Temple is co-leading a major new project with Dr. Amit Garg, from the Department of Medicine to establish an ICES (Institute for Clinical Evaluative Sciences) “node” at Western. ICES utilizes population based health information to assess care delivery, patterns of service utilization, health technologies, drug therapies and treatment modalities. Dr. Temple is the inaugural site director for the planned centre in London. Together with a core group of clinician-scientists from across multiple Departments at Western, they anticipate to have the unit built, approved, and ready for research in approximately 18 months. Research will cover a broad range of topics such as evaluation of emerging surgical technologies, transplantation, diabetes, cardiovascular and renal disease.

On the education front, this year, the Division of Plastic Surgery graduated one resident, Dr. Kirsty Boyd, who will be completing three fellowships. The first is a Mentor Breast Reconstruction Fellowship in Ottawa; the second is

a Breast Fellowship in Toronto; and the third is a Hand/Peripheral Nerve/Microsurgery fellowship in St. Louis, Missouri. Dr. Boyd also recently won the CanMedica Award for Best Research Paper presented by a resident at the Annual Scientific Meeting of the Canadian Society for Reconstructive Microsurgery. It has been accepted for presentation at the American Society for Reconstructive Microsurgery in January.

The clinic treats patients with facial nerve weakness from a variety of causes including Bell's Palsy, benign and malignant tumor extirpation, traumatic injury, or congenital abnormalities.

Current resident Dr. Stephanie Power tied for first place at the annual Robert Zhong Department of Surgery Research Day for her presentation titled *Definition and treatment of the bulge deformity*

following primary cleft lip repair using real time high resolution ultra sound. She worked with Dr. Damir Matic on the project.

In other research areas, members of the Division were successful in securing a series of grants to conduct research in a number of areas including: surgical simulation and team based training; bone grafting in the treatment of scaphoid non-unions; avoiding apoptosis in cutaneous wound healing; an inducible POSN-expressing model of abnormal scarring; and postoperative cognitive dysfunction after major reconstructive surgery.

In the coming year, members of the Division will continue to provide the best patient care in new and existing clinics; an outstanding educational experience for medical students, residents and fellows; and they will continue to produce new research in the area of plastic and reconstructive surgery.

▶ SELECTED PUBLICATIONS

▶ JOURNAL ARTICLES

Chandarana, S., Fung, K., Franklin, J.H., Kotylak, T., Matic, D.B., Yoo, J. Effect of autologous platelet adhesives on dermal fat graft resorption following reconstruction of a superficial parotidectomy defect: A double-blinded prospective trial. *Head Neck* 31(4):521-30, Apr. 2009.

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▶ BOOK CHAPTERS

Byrd HS, El-Musa KA, Yazdani, A. Correction of Secondary Unilateral Cleft Lip and Nose Deformity. Losee, JE, Kirschner

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▶ HAND AND UPPER LIMB CENTRE JOURNAL ARTICLES

Bezuhly M, Claire Temple, Sigurdson LJ, Davis RB, Flowerdew G, Cook EF Jr. Immediate postmastectomy reconstruction is associated with improved breast cancer-specific survival: evidence and new challenges from the Surveillance, Epidemiology, and End Results database. *Cancer*. 2009 Jul 24.

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▶ PLASTIC SURGERY HONOURS AND AWARDS

Fortin, Amanda. University Student Council. USC Honour Roll Certificate Award.

Temple, Claire. Schulich School of Medicine & Dentistry. Plastic & Reconstructive Surgery Division. Waldo Stavrayk Award for Outstanding Teaching.

Gan, Bing. Schulich School of Medicine & Dentistry. Dean’s Fund Salary Award.

The Division of Thoracic Surgery



With the second highest thoracic cancer surgery volumes in Ontario, surgeons in the Division spend a vast majority of time treating patients with lung, esophageal, and gastric cancers, collaborating with a cadre of specialists from various disciplines.

“We partner with so many people and rely on expertise from colleagues at the London Regional Cancer Program, the Department of Otolaryngology,

scientists at the Lawson Health Research Institute, the Robarts Research Institute and scientists and engineers at CSTAR. Because of recent restructuring at hospitals in the region, we have teamed up with colleagues at hospitals in Windsor and Owen Sound through Telehealth rounds, which we hold monthly to ensure patients in rural areas receive the care they need. These numerous clinical collaborations have resulted in several partnerships

in research and teaching,” says Dr. Richard Incelet, Chair/Chief, Division of Thoracic Surgery.

“One of the more significant research trials we currently have underway is an esophageal cancer trial called QUINTET. We’re working with oncologists at the London Regional Cancer Centre to answer a very important question in the management of esophageal cancer,” says Dr. Incelet.

“The standard practice in London is to treat suitable patients who have resectable esophageal cancer, with surgical resection first, followed by radiation and chemotherapy. A review of the London experience, using this approach, demonstrated we were achieving good survival results. In contrast, other Canadian centers will treat similar patients with induction radiation and chemotherapy, followed by surgery. We were concerned with this second approach because administering chemotherapy and radiation to patients before surgery potentially could have a significant impact on preoperative health, resulting in more complications during or after surgery. This particular clinical trial is examining whether one treatment strategy is better, and will have major implications in the treatment of esophageal cancer. It’s London bred and only being done here,” says Dr. Incullet.

Another major accomplishment from the past year was a multi-centre study looking at the use of PET scans in the staging of lung cancer. The staging of lung cancer is critical in defining the anatomic extent of the disease at the time of diagnosis. The London thoracic research group worked in collaboration with colleagues from centers in Toronto, Hamilton, Ottawa, and Kingston and was the largest contributor to the trial. “The importance of this trial was that PET scanning in Ontario was a non-funded procedure. Up until this study, if you had a PET scan done, you were involved in a research trial. The

province would not fund PET scans for lung and esophageal cancers unless we could prove they were effective. So a trial was designed to prove PET scanning improved the staging of lung cancer that would ultimately permit more accurate decision making. PET scans allow us to find cancer that is sometimes undetectable by other imaging techniques. In some cases it can prevent unnecessary surgery.”

The Government of Ontario has now created a registry and funds PET scans for patients who are being investigated for potentially resectable lung cancer. The trial was recently published in the *Annals of Internal Medicine* in August.

In the area of Education, the Division successfully graduated, Dr. Rodney McGory, now practicing Thoracic Surgery in Saskatoon. The Division typically admits one resident every second year to the thoracic training program.

“We’re working with oncologists at the London Regional Cancer Centre to answer a very important question in the management of esophageal cancer,” says Dr. Incullet.

The Division also hosted the second annual Video Assisted Thoracic Surgery (VATS) course at CSTAR, providing modern didactic and hands-

on training for thoracic surgeons across the country, by bringing together top experts in the field to teach a well-defined, skills-oriented curriculum. The program was a collaborative effort and was attended by surgeons, nurses, and anesthesiologists.

Through the collaboration of the Division of Thoracic Surgery, Respiriology, and others at LHSC, the new technology of Endo-bronchial ultrasound (EBUS) was recently acquired and is presently being used at Victoria Hospital to direct biopsies of Mediastinal nodes to stage lung cancer. This will hopefully reduce the number of patients requiring staging mediastinoscopies in the operating room.

In the year ahead, Dr. Incullet and his team will continue to pursue work with their clinical trials and will continue to push the limits of minimally invasive thoracic surgery. Surgeons in the division are also interested in participating in telementoring, a learning technique that involves having an experienced surgeon guide another surgeon through a new procedure from a remote location as live video is sent from the operating room. They also plan to promote and understand the assessment training of surgeons in new technologies to determine how to best develop a standard process for thoracic surgery.

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▶ HONOURS AND AWARDS

Malthaner, Richard. Schulich School of Medicine & Dentistry Department of Oncology. Excellence in Teaching.

Malthaner, Richard. Schulich School of Medicine & Dentistry Department of Surgery. Clinical Clerkship Faculty Teaching Award.

The Division of Urology



The Division of Urology is well known for its expertise in various facets of the specialty including renal transplantation, surgical oncology, stone disease/endourology, probiotics, paediatric urology, andrology, and minimally invasive laparoscopic robotic surgery. Much of this expertise has been born through ongoing collaboration between clinicians and basic scientists working together to make major breakthroughs to improve patient care.

The Division marked a number of achievements this past year. Researcher Dr. Peter Cadieux was named the inaugural Miriam Burnett Research Chair in Urological Sciences; Dr. Alp Sener, a new urological transplant surgeon was recruited; Dr. Patrick Luke was appointed Co-Director of the Multi-Organ Transplant Program; and Dr. Gregor Reid, who is cross-appointed to the Division of Urology was appointed to a new research chair in Human Microbiology and Probiotics. The Division also bid farewell to Dr. John Vallely, who retired after 30 years of practicing at St. Joseph's Health Care.

As a research-intensive division, the announcement of the two new urological research chairs came as great news to Dr.

Hassan Razvi, Chair/Chief of the Division of Urology.

"I was extremely pleased about the new research chairs," says Dr. Razvi. "One of my goals when I assumed the chair role was to forge even stronger linkages between basic scientists and the clinicians. Both of these endeavours with Drs. Cadieux and Reid will help foster this type of collaboration. As a clinician there is a necessity to better understand the underlying biology of various urological diseases to improve therapies for our patients. These two new chairs will help us do this."

The Miriam Burnett Research Chair in Urological Sciences granted to Dr. Peter Cadieux was generously funded through contributions from The W. Garfield Weston Foundation and the late Mrs. Miriam Burnett. Dr. Cadieux's previous work has included research on urological cancers, probiotics, device related urinary tract infections, bacterial biofilms and kidney stone disease. As Chair, he plans to focus his research on two major areas: bacterial biofilms in urology, and the role of microbes in bladder cancer development, prevention and treatment.

"I plan to use my research knowledge and experience to bring several key clinically relevant research areas including bacterial infections, bladder cancer and probiotics," says Cadieux. "Currently our research group has collaborations with basic scientists, clinicians and industrial partners both nationally and internationally and through this position I hope to understand and expand our network and further our research goals."

The second Chair, appointed to Dr. Gregor Reid, through a \$7 million gift from international yogurt maker Danone Group establishes a new research Chair in Human Microbiology and Probiotics at the Lawson Health Research Institute. Dr. Reid has been studying probiotics for over 25 years and has become a leading advocate for the role of good bacteria in human health.

In addition to Drs. Cadieux and Reid, others in urology are pioneering new methods of care. Clinical trials are currently underway in the area of stone disease, erectile dysfunction, prostate cancer, bladder cancer, and minimally invasive robotic surgery.

The Division's newest recruit is also an avid researcher. Dr. Alp Sener received a Clinician Scientist award when he joined the Division this summer. Apart from a general Urology practice with a focus on multi-organ transplantation, his appointment as a Schulich Clinician-Scientist will enable him to devote considerable time to continuing his research in the fields of T-cell mediated graft rejection and in developing methods of mitigating organ ischemia-reperfusion injury.

"One of my goals when I assumed the chair role was to forge even stronger linkages between basic scientists and the clinicians."

Dr. Sener, who was born in Turkey and moved to Canada at an early age, completed his PhD in renal physiology followed by his MD at the University of Calgary. He completed his residency

training at Western and recently returned from Baltimore where he undertook a fellowship in kidney and pancreas transplantation at the University of Maryland Medical Center.

On the education front, Dr. Gerry Brock took over this year as Program Director

for Urology and the Division graduated two residents - Dr. Petar Erdeljan and Dr. Mrinal Dhar. Dr. Erdeljan is currently in London at St. Joseph's Health Care completing a 2 year endourology fellowship and Dr. Dhar is at St. Vincent's Hospital in New York City undertaking a one-year fellowship in Endourology and Laparoscopy.

In the year ahead, Dr. Razvi plans to continue to build ties between basic scientist and clinicians. The division is actively recruiting an academic urologist with interest in urinary incontinence and urinary tract reconstruction.

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▶ JOURNAL ARTICLES

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HONOURS AND AWARDS

Brock, Gerald University Students' Council Teaching Award. Department of Medicine. The University of Western Ontario, Schulich School of Medicine & Dentistry.

Brock, Gerald. Urology Residents Teaching Award. Department of Surgery. The University of Western Ontario, Schulich School of Medicine & Dentistry.

Cadieux, Peter. Miriam Burnett Research Chair in Urological Sciences.

Denstedt, John. Third Prize, Endourology Society Essay Contest. Recipient: Geoff Wignall, Supervisor Fellow. Coherent scatter computed tomography for structured and compositional stone analysis: a prospective comparison with infrared spectroscopy.

Denstedt, John. University Student Council Teaching Honour Roll. The University of Western Ontario, Schulich School of Medicine & Dentistry.

Izawa, Jonathan. Distinguished Alumni Award. For a previous fellow that has significantly contributed to his/her specialty. MD Anderson Cancer Center.

Izawa, Jonathan. Teaching Excellence Award. Department of Oncology. The University of Western Ontario, Schulich School of Medicine & Dentistry.

Izawa, Jonathan. Surgery Clerkship Faculty Teaching Award. Department of Surgery. The University of Western Ontario, Schulich School of Medicine & Dentistry.

Izawa, Jonathan. University Students' Council Teaching Award. Department of Surgery. The University of Western Ontario, Schulich School of Medicine & Dentistry.

Izawa, Jonathan. Summer Research Training Program Supervisory Award. Department of Surgery. The University of Western Ontario, Schulich School of Medicine & Dentistry.

Izawa, Jonathan. Summer Research Opportunities Project. Department of Surgery. The University of Western Ontario, Schulich School of Medicine & Dentistry.

Luke, Patrick. Eminent Scientist of the Year. International Research Promotion Council.

Luke, Patrick. Montclair Who's Who. Registry of leaders in their respective fields published.

Pautler, Stephen. Medical Advisory Committee Award. For outstanding contributions to patient care at St. Joseph's Hospital.

Pautler, Stephen. Hippocratic Council Undergraduate Medical Education Committee Award of Excellence. The University of Western Ontario, Schulich School of Medicine & Dentistry.

Pautler, Stephen. Hall of Fame Inductee. Preston High School.

Pautler, Stephen: 2008 - 2009 The University Student's Council Teaching Honour Roll Certificate,

The University of Western Ontario.

Reid, Gregor. Research Chair in Human Microbiology and Probiotics.

Reid, Gregor. Best Presentation Award. Recipient: Ruben Hummelen, Supervised Student. EU Probio Conference, Krakow, Poland.

Reid, Gregor. Rated No.1 in the Top 25 Hottest Articles in Int Dairy J. Probiotics and prebiotics - progress and challenges. Int Dairy J 2008;18:969-975.

Reid, Gregor. Morgan Medal for Research, Dietitians of Canada. Recipient: Jaimie Hemsworth, Supervised Student. Canadian Foundation for Dietetic Research.



The Division of Vascular Surgery



Collaborative work between surgeons, anesthetists, interventional radiologists, and internists is advancing the treatment of complex vascular disease in Southwestern Ontario.

Dr. Tom Forbes, Chair/Chief of Vascular Surgery at the University of Western Ontario is pleased with the advancements he and his colleagues have made. Above and beyond treating patients, this year the Division bid farewell to former Division Chief and Department Chair Dr. Ken Harris; recruited a new vascular surgeon, Dr. Jeremy Harris; continued with clinical trials to advance aortic endovascular therapy; coordinated and funded a new student bursary; and vascular surgeon Dr. Kirk Lawlor received a Dean's Award of Excellence for distinction in education.

Like most surgical subspecialties, vascular surgery relies on expertise from other specialists to help diagnose and care for their patients. Vascular surgeons work closely with colleagues from the Department of Internal Medicine, the Department of Medical Imaging, and the Department of Anesthesia to allow for accurate preoperative planning as well as intraoperative decision making and

patient follow-up. This multifaceted work enables surgeons to treat very complicated vascular cases here in London – including endovascular repair of thoracic and thoracoabdominal aneurysms, typically the most intricate and complex cases to address. This team has developed the necessary expertise to allow for safer and more precise aortic surgery, with improved patient outcomes.

“Our vision for the next two years is to have more of these patients who would have previously been treated with bypass therapy to be treated with these minimally invasive therapies,” says Dr. Forbes.

Their success in this area dovetails perfectly with their newest recruit, Dr. Jeremy Harris, who joined the group this summer. Dr. Harris completed his vascular surgery training at Western, and recently returned from a fellowship at the Arizona Heart Institute in Phoenix, where he pursued additional training

in advanced interventional therapies for peripheral vascular disease. Dr. Harris pursued further endovascular training in the U.S. because he wanted to gain more experience primarily in peripheral endovascular interventions for infrainguinal, mesenteric, carotid and renal occlusive disease. The skill set and knowledge required for these procedures is equally applicable to the evolving treatment options for more complex thoracic and abdominal aortic pathologies. Expertise in these newer techniques requires a certain volume of cases that can be more easily obtained at highly specialized cardiovascular centers like the Arizona Heart Institute.

“Dr. Harris will not only bring his specialized training back to patients in London, but he will be able to teach all of us – surgeons and interventional radiologists – the new techniques and benefits of these therapies,” says Dr. Forbes. “Our vision for the next two years is to have more of these patients who would have previously been treated with bypass therapy to be treated with these minimally invasive therapies,” says Dr. Forbes.

In addition, Dr. Harris is currently working toward a Masters of Epidemiology at McMaster, which he will use to evaluate the clinical and cost effectiveness of these less invasive interventions.

Residents and trainees will also have the opportunity to learn new image guided vascular procedures as time goes by.

On the vascular education front this year, surgeons in the Division created and funded a bursary award to honour Dr. Ken Harris, who departed this year to take on the role of Director of Education with the Royal College of Physicians and Surgeons of Canada. The award was created to pay tribute to Dr. Harris's interest and leadership in education and will be awarded each year to a graduating medical student who demonstrates excellence in vascular surgery. This year's inaugural recipient was Dr. Virginia Gunn from the class of 2009.

Other members of the vascular group

also had an impressive year. Dr. Kirk Lawlor won an Undergraduate Award of Excellence in Education Dean's Award for his work with the Surgery Clerkship Program. Dr. Lawlor has been involved with undergraduate surgical education for some time. In 2005 he took up the post of Director of the Surgery Clerkship and has made a number of innovative changes while carrying on a busy vascular surgery practice.

This team has developed the necessary expertise to allow for safer and more precise aortic surgery, with improved patient outcomes.

Dr. Guy DeRose has continued in the role of Site Chief of Surgery at Victoria Hospital and was instrumental in instituting a surgical smoothing project that has significantly decreased same day cancellations of surgery. Such innovative strategies are essential as they continue to attempt to respond to increasing patient demands in the current Canadian healthcare environment.

In the coming year, the Division of Vascular Surgery and their colleagues plan to advance and strengthen minimally invasive vascular therapies with Dr. Harris taking the lead, with the hopes of not only advancing its clinical applications but to also evaluate

the associated costs and outcomes. This will result in improvements in patient care and strengthening of the Division's academic and education related enterprises.



▶ SELECTED PUBLICATIONS

▶ JOURNAL ARTICLES

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▶ HONOURS & AWARDS

Harris, Jeremy. Schulich School of Medicine & Dentistry. University Student's Council Teaching Honour Roll Award of Excellence.

Lawlor, Kirk. Schulich School of Medicine & Dentistry. Department of Surgery Schulich Undergraduate Award of Excellence in Education-Educator.

Lawlor, Kirk. Schulich School of Medicine & Dentistry. Department of Surgery Surgery clerkship faculty teaching award.

CSTAR (Canadian Surgical Technologies & Advanced Robotics)



Collaboration between surgeons, researchers, engineers, physicians, members of industry and specialized staff is one of the many things that make CSTAR a true hub of innovation. Located at University Hospital, it is a 22,500 square-foot state-of-the-art research and training facility whose sole purpose of existence is to improve patient care.

“CSTAR’s success is born out of the growing realization that surgical programs, research and validation only move forward when there is an effort on the part of many people working together,” says John Parker, Director of CSTAR. “We have opened the doors to entertain any manor of collaboration across each of our key strategic areas - research, validation and education.”

A major coup this year was achieving accreditation as an Education Institute of the American College of Surgeons. One of only three in Canada and approximately 40 worldwide, the accreditation provides recognition CSTAR has met a rigorous set of standards laid out by the American College of Surgeons, setting the stage for more meaningful interaction with other institutions. Accreditation was awarded following a comprehensive

evaluation of CSTAR, including a submission review, a site survey, and careful deliberation of the Accreditation Review Committee.

Another major achievement this year was hosting for a second time a SAGES resident workshop in endoscopic surgery. The 2-day program, with The Society of American Gastrointestinal and Endoscopic Surgeons (SAGES), was only the second time this SAGES course was held outside the United States and included some of the most respected endoscopic surgeons in the world. In addition to the SAGES course, CSTAR hosted over 30 other surgical programs and courses with colleagues for undergraduate medical students, residents, fellows, surgeons and OR nurses.

Many of CSTAR’s relationships have developed in the past few years, including those with other departments, faculties, and industry partners. They have become particularly close with the Faculty of Engineering.

“Advances in technology have driven unprecedented breakthroughs in various multidisciplinary areas, particularly in minimally invasive surgery, surgical simulation and

team learning. The collaboration of surgeons, engineers, and other scientists is revolutionizing the way we think about and approach surgical care, research and education. We probably have Canada’s most successful and closest working relationship with an outstanding Faculty of Engineering.” says Dr. Christopher Schlachta, Medical Director, CSTAR.

“When we think about the bench-to-bedside research model, it should really be referred to as ‘bedside-to-bench to-bedside’, because ultimately necessity should be the mother of invention.” says Schlachta. “How do you take a promising new idea and actually bring it into clinical practice? You need support in translating research into clinical usefulness, and the inspiration for these new ideas has to be focused on clinical need. CSTAR and Engineering have a profound relationship and that’s where the close collaboration comes from. We have had several examples of this, but one great example is the development of an instructional pointer with our engineering colleagues.”

“CSTAR’s success is born out of the growing realization that surgical programs, research and validation only move forward when there is an effort on the part of many people working together.”

“One of the challenges we face in advanced minimally invasive surgery or any type of surgery that requires the use of a video monitor in the OR is that often times when you’re operating, both hands are occupied holding instruments,” says Schlachta. “If you’re working with an assistant or trying to teach a student while you’re operating, you can’t let go of the instruments. I approached Dr. Rajni Patel, Director of Engineering at CSTAR, and asked him if we could develop a multi-monitor hands-free pointer for MIS that’s head-mounted. We applied to the Western Innovation Fund and received funding.

In the next year we hope to have a lightweight prototype that a surgeon can wear on his or her head. When you look at your video monitor, by moving your head you can move the pointer around the screen. The pointer that appears on your screen will also appear on all the other screens in the room. We already have evidence that this makes us better teachers. It is a simple idea with enormous potential impact.”

Surgeons from LHSC and researchers from the Faculty of Engineering also came together this year at CSTAR to present collaborative work they are currently undertaking to advance minimally invasive surgery and robotics. CSTAR’s Surgery Engineering Research Collaboration Forum showcased the importance of interdisciplinary collaboration between

these two very distinct yet inter-related groups. Clinicians and researchers presented a number of ground-breaking studies currently underway and shared ideas for future collaboration.

In addition to all of this, faculty and staff at CSTAR have a number of other projects currently underway. For instance, the CSTAR Industry Roundtable has grown significantly since it was created in 2007 and now includes over 25 companies, represented by industry, the provincial and federal governments, academia and the research community.

CSTAR is also working with the National Research Council and the Canadian Patient Safety Institute to explore how the health care community and the simulation industry can work

more closely together. Members of CSTAR have also had meetings with the Ministry of Health and Long Term Care and the Ministry of Innovation to explore opportunities to work towards developing specific health technology assessments for new surgical procedures and CSTAR researchers recently received Ministry funding to pursue a program of health technology assessment of emerging surgical technologies.

In the year ahead, the group will continue to collaborate with industry partners, researchers and others to facilitate the development of new surgical innovations. Members also look forward to the completion of the Brent and Marilyn Kelman Centre for Advanced Learning, slated to open in 2010.

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Guiraudon, G. M., Douglas L. Jones, Daniel Bainbridge, John T. Moore, Chris Wedlake, Cristian, Cristian Linte, Andrew Wiles and Terry M. Peters. Off Pump, Atrial Septal Defect Closure Using the Universal Cardiac Introducer® (UCI). Creation and Closure of an ASD in a Porcine Model: Access and Surgical Technique. *Innovations* 2008;4:20-26

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Tavakoli, M., RV Patel, M Moallem, A Aziminejad. Haptics-Based Systems for Robot-Assisted Surgery and Telesurgery: Design, Control, and Experimentation. *World Scientific Publishers in the*

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Trejos A.L., J Jayender, M Perri, MD Naish, RV Patel, and RA Malthaner. Robot-assisted tactile sensing for minimally invasive tumor localization. *International Journal of Robotics Research — Special Issue on Medical Robotics*, vol 28, no 9, pp 1118-1133, 2009.

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Yousef, B., RV Patel, M Moallem. An Ultrasound Probe Holder for Image-Guided Robot-Assisted Prostate Brachytherapy. *ASME Journal of Medical Devices*, vol 2, 2008.

Surgical Education



*The Graduating Class of 2009 (Left to right): Matt Snider, Gladys Chan, Scott Wotherspoon, Kirsty Boyd, Abdullah Ali, Mrinal Dhar, John Sostaric, Scott Hamilton, Darrin Payne, Ben Isserlin, Damian Micomonaco, and Jeff Shum
Absent: Kyle Cowan, Paul Karanicolas, Ajay Manjoo, Rodney McGory, Petar Erdeljan, Jeremy Harris*

The Office of Surgical Education is a key resource for residents, faculty, and medical students ensuring all programs run smoothly and efficiently. With the country's leading Surgery Clerkship in place, and Residency Programs running well within each Surgical Division, Dr. Doug Ross, Director of Surgical Education, has a mandate to expand scholarly work in the area of surgical education and simulation.

The Department of Surgery already has a number of simulation initiatives underway, with plans to develop more on an ongoing basis.

There has been, and continues to be, major changes in the delivery of surgical education. Simulation has been used in several highly specialized industries,

such as the airline industry, for decades. Conversely, simulation is a relatively new phenomenon in the field of medicine. Trainees in the aerospace industry spend countless hours practicing basic and advanced skills on simulators before hands-on training at the controls of an aircraft. In the military, combat pilots as well as submarine and tank crews are required to demonstrate competence in simulated environments before being charged with the operation of billions of dollars worth of equipment. Surgical simulation has evolved considerably over the past two decades and now plays a major role in training medical students, residents and practicing surgeons, allowing them to acquire new skills and knowledge outside the clinical environment. Many factors have driven these changes, including patient safety, OR time constraints, and financial resources.

The Department of Surgery already has a number of simulation initiatives

underway, with plans to develop more on an ongoing basis. The Ministry of Health and Long-term Care has given approval for construction of the Brent and Marilyn Kelman Centre, and construction is currently underway. It is anticipated to open in spring 2010, and will house a state-of-the-art surgical simulation skills lab. This past winter, the CSTAR Simulation Research Group was established, whose surgeons have protected time to devote to research in surgical simulator development and team-based simulation programming. In addition to this, CSTAR recently received accreditation from the American College of Surgeons as an Accredited Education Institution.

This year, the Department also started recruitment of a PhD Educator to establish a successful research program with a focus on surgical education and simulation. The candidate will be based at the newly formed Schulich School of Medicine & Dentistry Centre for

This year, the Department also started recruitment of a PhD Educator to establish a successful research program with a focus on surgical education and simulation.

Education Research & Innovation and will collaborate with other members of the centre.

“We are gradually setting the mandate to increase research in surgical education and simulation,” says Dr. Doug Ross, Director of Surgical Education. “It’s very important to first align the appropriate team. All of us are looking forward to recruiting a Surgery PhD Educator as it will be an impetus for surgeons to collaborate with him or her to increase our knowledge in this very important area.”

In other areas of education, the Department of Surgery Resident Celebration Dinner was held on June 26th at the London Hunt and Country Club. All residents were successful in passing their Royal College exams.

This year, two faculty members were recognized with Dean’s Awards of Excellence for distinction in education. The Schulich Undergraduate Award of Excellence in Education – Educator went to Dr. Kirk Lawlor, Director of the Surgery Clerkship Program; and the Schulich Graduate/Postgraduate Award of Excellence in Education – Educator was awarded to Dr. Ken Faber, Program Director for the Division of Orthopaedic Surgery. Both awards are based on demonstrated excellence as a teacher; commitment to education; involvement in curriculum design and changes; innovative approaches to teaching; and leadership abilities.

In the coming year, the Surgical Education Office will continue to work towards expanding research into simulation, education, and team based-learning, working with colleagues in each division of surgery, CSTAR and others across the Western campus.



► CONGRATULATIONS TO THE CLASS OF 2009

Cardiac Surgery

Dr. Darrin Payne is at Laval Hospital completing a fellowship in open and endovascular aortic repair and reconstruction

Dr. Scott Wotherspoon will be completing a La Trobe Knee Fellowship in Melbourne, Australia and then an Adidas Sports Fellowship in Auckland, New Zealand

General Surgery

Dr. Paul Karanicolas is at Sloan-Kettering undertaking a Surgical Oncology Fellowship

Dr. Ajay Manjoo is completing a Trauma Fellowship at London Health Sciences Centre

Dr. Abdullah Ali is at McMaster University doing a Pediatric Fellowship

Plastic Surgery

Dr. Kirsty Boyd is doing three fellowships: the first is a Mentor Breast Reconstruction Fellowship in Ottawa; the second is a Breast Fellowship in Toronto; and the third is a Hand/Peripheral Nerve/Microsurgery fellowship in St. Louis, Missouri

Dr. Kyle Cowan is at The University of Ottawa completing a Pediatric Surgery Fellowship

Dr. Jeffrey Shum is at The University of Western Ontario completing an ICU Fellowship

Thoracic Surgery

Dr. Rodney McGory is practicing as a thoracic surgeon in Saskatoon

Dr. Ben Isserlin is at The University of Western Ontario doing a Vascular Fellowship

Urology

Dr. Petar Erdeljan is currently at St. Joseph’s Health Care, London completing a 2-year endourology fellowship

Dr. John Sostaric is at St. Thomas General Hospital practicing as a community surgeon

Orthopaedic Surgery

Dr. Gladys Chan will be doing a 6 month foot and ankle fellowship in Iowa City, Iowa and will then head to Sydney, Australia for six months for a foot and ankle fellowship

Dr. Mrinal Dhar is doing an Endourology and Laparoscopy Fellowship at St. Vincent’s Hospital in Manhattan, New York

Dr. Matthew Snider will be doing a 6 month Sports Medicine fellowship at the Adidas Sport Medicine Centre in Auckland, New Zealand

Vascular Surgery

Dr. Jeremy Harris accepted a position with the Department of Surgery at London Health Sciences Centre and the Schulich School of Medicine & Dentistry as a Vascular Surgeon

Hand and Upper Limb Centre



Of the twelve surgeons who work at the clinic, 8 are orthopaedic surgeons and 4 are plastic surgeons.

The Hand and Upper Limb Centre (HULC) is a unique multidisciplinary surgical facility dedicated to treating patients with upper extremity disorders from the shoulder to the tips of the fingers. Of the twelve surgeons who work at the clinic, 8 are orthopaedic surgeons and 4 are plastic surgeons. They are the largest such unit in Canada, annually treating approximately 40,000 out-patients and performing approximately 4,000 operative procedures.

In addition to treating thousands of patients each year, HULC has an outstanding comprehensive research program with three independent research labs: The Bioengineering Research Laboratory, the Clinical Research Laboratory, and the Cell & Molecular Biology Laboratory.

The Bioengineering Research Laboratory is focused on a wide range of studies, including joint kinematics, fracture and implant fixation, implant development, and tendon biomechanics. The lab is directed by Dr. Jim Johnson, a mechanical engineer, and orthopaedic surgeons Dr. Graham King and Dr. David Chess.

This year, Dr. Johnson and Dr. King received a Canadian Institute of Health Research (CIHR) grant for their study Computer Assisted Surgery of the Elbow. Replacement of the fractured or diseased elbow with implants is becoming an increasingly popular treatment, with the intent to restore function and reduce disability and pain. However, failure to correctly align the implant to bone may result in detrimental changes in both the loading and motion characteristics of the joint, potentially leading to implant failure. The alignment of elbow implants may be enhanced via image and computer assisted technology. The objective of their study is to validate image and computer assisted surgical techniques for surgery of the elbow, and to determine the efficacy of these procedures using comparative biomechanical tests. Researchers anticipate these advances in surgical technique will lead to improved outcomes in patients who have undergone ligament repairs and reconstructions, fracture fixation and joint replacements.

The HULC Clinical Research Laboratory is under the direction of Dr. Ruby Grewal and Dr. Joy MacDermid. The lab produces clinical research on measuring, predicting and reducing upper extremity disability with a focus on surgery and rehabilitation.

This year, Dr. Ruby Grewal and Dr. Joy MacDermid received a Canadian Institute of Health Research (CIHR) grant

for their project Identification of Risk of Adverse Activity Transition Following a Distal Radius Fracture. Distal radius, or wrist fractures (DRF) are common and thought to be inconsequential, but can cause significant disability. Drs. Grewal and MacDermid's study will establish the reliability of bone quality, mobility, and activity measures in patients ranging from 50-80 years of age under treatment for a DRF to determine the relative importance of baseline physical impairments, activity level, social support and personal injury factors on loss of activity. Their work will help launch a large cohort study and research program on helping older adults successfully resume a healthy lifestyle following a distal radius fracture.

The Cell and Molecular Biology Laboratory led by Dr. David O'Gorman and Dr. Bing Gan focuses on a range of basic and clinical studies related to wound healing and musculoskeletal diseases. In particular, work is aimed at understanding the molecular mechanisms of Dupuytren's contracture and wound healing.

The lab had another successful year, receiving a CIHR/IMHA Catalyst Grant and a Plastic Surgery Education Foundation Grant to supplement their current CIHR operating grant. Brett Thurlow, a graduate student, received an Internal Research Fund salary award and two summer students, Justin Crawford (now a graduate student in the lab) and Kiarash Mohajer (now a 4th year student in the lab), were awarded CIHR summer studentships in musculoskeletal research. Amongst four publications in 2009, the laboratory's report of periostin interactions in Dupuytren's Contracture (Experimental Cell Research, July 2009) were presented at the European Tissue Repair Society/Wound Healing Society joint meeting in Limoges, France, the birthplace of Baron Guillaume Dupuytren.

These HULC research highlights are just a snapshot of the groundbreaking work being done by HULC faculty members. A full research list can be found in the Orthopaedic Surgery and Plastic & Reconstructive Surgery Division areas of this report.

Multi-Organ Transplant Program

For over 30 years, the transplant team has built and maintained the Multi-Organ Transplant Program as one of the best in the world. Having performed over 4,100 organ transplants at London Health Sciences Centre, their efforts have been translated into thousands of added years to patients' lives.

The collaborative nature of the clinical program cannot be overemphasized. There are dedicated surgeons, physicians and clinician-scientists from Nephrology, Hepatology, Cardiology, Pediatrics, Infectious Disease, and Pathology, as well as eight surgeons from the Divisions of General Surgery, Cardiac Surgery, and Urology. Members of the team are credited with many pioneering transplant procedures.

Dr. Patrick Luke, a transplant surgeon, and Dr. Anthony Jevnikar, a nephrologist, were recently appointed as Co-Directors of the Multi-Organ Transplant Program. This year, the transplant group had a number of significant achievements.

Transplant surgeon Dr. William Wall received Canada's highest civilian honour, the Order of Canada. Dr. Wall was recognized for his contributions to the development and advancement of liver transplantation in Canada, and for promoting awareness of the need for organ donation. Dr. Wall is known for having performed the longest surviving liver transplants in Canada as well as performing the first liver transplants that used living donors. Today more than 1,500 liver transplants have been performed at University Hospital.

The transplant group also welcomed two new transplant surgeons, Drs. Roberto Hernandez-Alejandro and Alp Sener, to the program this year. Dr. Hernandez-Alejandro specializes in liver transplantation and will strengthen the general surgical, hepatobiliary, and pancreatic group as well as bring new expertise in the field of living related transplantation. Dr. Sener is a urologist who specializes in kidney and pancreas transplantation. He was also appointed as a Schulich Clinician-Scientist, which will enable him to devote considerable time to continuing his research in the fields of T-cell mediated graft rejection



and in developing methods of mitigating organ ischemia-reperfusion injury.

In the year ahead, the transplant group will work on integrating their clinical and basic science programs to bolster translational transplant research.

In the past five years, the Multi-Organ Transplant Program has attained \$32 million of peer-reviewed funding, including funds from the Canadian Institutes of Health Research, the Kidney Foundation of Canada, the Heart and Stroke Foundation, Natural Sciences and Engineering Research Council, and the National Institutes of Health. This year, Dr. Tony Jevnikar from the Department of Medicine, was named as the new Clinical Research Chair in Transplantation to find ways to improve outcomes of organ transplants for patients. Co-funded by Wyeth Pharmaceuticals and the Canadian Institutes of Health Research, the \$1.1 million Chair will fund research by Dr. Jevnikar and his team to look at how and why organs and tissues are

damaged during transplant surgery in order to find ways to extend the life of a transplanted organ. The group also had a remarkably strong representation at the Canadian Society of Transplantation and the American Transplant Congress meetings, including four Young Investigator Awards.

The high school education program, One Life...Many Gifts, which was originally developed by the Transplant Program ten years ago, received additional funding from the Ministries of Education and Health. Within the next two years, this program will be available at all public, Catholic and French secondary schools in the province.

In the year ahead, the transplant group will work on integrating their clinical and basic science programs to bolster translational transplant research. They have also started raising funds for the Robert Zhong Chair in Surgical Transplantation Innovation. Construction of the Matthew Mailing Centre for Translational Transplant Studies is also currently underway with plans to open in 2010.

The Trauma Program



The strength of the trauma program lies with its people. Administrative and clinical team leaders Dr. Murray Girotti, Dr. Daryl Gray, Dr. Tim Carey, Kathrine Grant, Lisa Harkness and Kristine Hooghiem work closely to treat the region's most severely injured patients. With a focus on patient care, injury prevention, as well as research and education, both adults and children receive care at Victoria Hospital and Children's Hospital, two of the province's 13 trauma centres.

Working with surgeons, nurses, physicians, administrative staff, social workers and many others, the trauma program treats approximately 500 patients with severe life or limb-threatening injuries each year. Of those 500 patients, approximately 100 are children.

According to Medical Director Dr. Girotti, who has been working at London Health Sciences Centre since the program began in 1989, the team's 'busy season' runs from the Victoria Day long weekend right up until Thanksgiving.

"We don't call them accidents. Our main focus is on injury prevention. Nonetheless, when people are outdoors, when people are on the road, when

people are doing things they shouldn't be doing – things happen," says Dr. Girotti. "We have a very unique group of people who come together to treat our patients. If I were injured there's no other place I would want to be."

The trauma program collaborates with various services at any one time in managing their patients and providing them the best care possible. From a clinical perspective, they work with members from the emergency departments, critical care, orthopaedic surgery, general surgery, plastic surgery, and occasionally vascular surgery, thoracic surgery and urology.

With a focus on patient care, injury prevention, as well as research and education, both adults and children receive care at Victoria Hospital and Children's Hospital, two of the province's 13 trauma centres.

The trauma program team enjoys a unique culture. What sets them apart is the fact that they were one of the first services with a team model led by

a nurse practitioner. Since the team model was developed 13 years ago, Lisa Harkness has been in the role. She is often the first point of contact for trauma patients and their families

"Lisa gets out there and begins treating trauma patients. She's our leader and keeps us, and the residents on a focused and cohesive path," says Dr. Girotti.

Lisa's experience has also led other hospitals to seek out her expertise in implementing similar programs. Another key member of the care team is the trauma social worker, Karen Pierre who has been with the program for about 10 years and provides invaluable support for patients and their families as well as planning for safe discharge of patients with appropriate community supports to ensure the best possible outcomes.

"We have been very fortunate in developing positive relationships with our colleagues and our collaboration with the surgical residents, nursing and the staff has been tremendous. I think it's because people realize it could be them lying in that bed, or one of their loved ones. An unexpected injury can happen to anyone."

This year, nine trauma program team members received a number of awards at the combined meeting of the Trauma Association of Canada Annual Scientific Meeting and the Australasian Trauma Society, held in Auckland, New Zealand. The team won 3 out of 4 research and injury prevention prizes for papers relating to paediatric injuries and focused prevention; lessons learned from the implementation and evaluation of a Shaken Baby Syndrome prevention program; and research into compartment syndrome and its effects on organ injury.

In addition to receiving these accolades, the trauma group this year celebrated the 20th anniversary of the IMPACT (Impaired Minds Produce Action Causing Trauma) program led by Jane Harrington. IMPACT aims to reduce drinking and driving among teenagers and to heighten their awareness to the potential consequences of high-risk behaviour.

Another cause of injury that received attention this year was Abusive Head Trauma in Children, formerly known as Shaken Baby Syndrome.

“Program lead Denise Polgar conducted some research and saw there were programs out there to prevent abusive head trauma in children so we got in touch with the experts and worked with the heads of these organizations to examine what would be best for London. We adopted an existing evidence based, best practice program called the Period of PURPLE Crying. Implementation at LHSC was lead by Denise Polgar, with assistance from Tanya Charyk Stewart and a multidisciplinary planning committee,” says Dr. Girotti.

This year, nine trauma program team members received a number of awards at the combined meeting of the Trauma Association of Canada Annual Scientific Meeting and the Australasian Trauma Society, held in Auckland, New Zealand.

Researchers realized a common trigger to shaking a baby was inconsolable crying in between the ages of 2 weeks and 3 months. The trauma group then devised a plan to use this already established program that has been proven to give mothers and fathers strategies to cope with inconsolable crying in children. Since April 2008 more than 5000 parents have received the program in London. In the coming year, the trauma group plans to evaluate this prevention program to determine its effectiveness in reducing Abusive Head Trauma.

Going forward this year, members of the trauma program team will continue to provide care for the region’s most severely injured patients while continually trying to change high-risk behaviour in children, teens and adults.



Dr. Peter Cadieux named inaugural Miriam Burnett Research Chair in Urological Sciences



Dr. Peter Cadieux, a researcher in the Departments of Surgery (Division of Urology) and Microbiology & Immunology at Western and the Lawson Health Research Institute has been awarded the inaugural Miriam Burnett Research Chair in Urological Sciences to conduct research in two major areas: bacterial biofilms in urology, and the role of microbes in bladder cancer development, prevention and treatment. The Chair was made possible through gifts from The W. Garfield Weston Foundation and the late Mrs. Miriam Burnett.

Cadieux plans to use his research knowledge and experience to bring together several key, clinically-relevant research areas including bacterial infections, bladder cancer, probiotics and kidney stone disease. Currently, his research group has collaborations with basic scientists, clinicians and industrial partners both nationally and internationally.

Despite millions of dollars and several decades of research targeted at their prevention and elimination, infections due to bacterial biofilms remain

the major cause of urological device failure. Many strategies have been aimed at improving device design and composition, as well as the application of anti-fouling and antimicrobial coatings, but have been largely dodged by microbes and their numerous attachment, host invasion and resistance strategies.

“Bacteria predominantly exist in two forms, either free swimming or congregated in communities called biofilms. Typically, if a person gets an infection in the urinary tract, they go to the doctor to get antibiotics and the infection is cleared. But if you acquire an infection in the presence of a urinary tract device such as a urinary catheter, stent or prosthetic, bacteria will attach to the device and begin forming a biofilm on the surface. During this process the organisms reproduce and secrete substances including sugars called exopolysaccharides that form a sticky, protective slime, resulting in the development of strongly-attached mini-communities. If you treat the patient at this time with antibiotics, you’ll only kill the single, free swimming cells and a portion of those exposed on the

surface of the biofilm. The cells buried within the biofilm are protected by the slime, which can not only prevent the antibiotics from penetrating, but also inactivate them so they are no longer effective.”

In collaboration with Drs. Hassan Razvi, John Denstedt and Gregor Reid, Cadieux’s laboratory has investigated several biofilm prevention strategies and determined that a multi-faceted approach is likely the key to success. Over the next several years as Chair, Cadieux will continue this work, focusing on identifying novel bacterial genes critical for biofilm formation and the ability of probiotic organisms and their secreted factors to disrupt existing biofilms. This work will not only benefit the urological field, but can be applied to numerous other biofilm-related infections, such as those involving orthopaedic implants, burns and cystic fibrosis.

Dr. Cadieux’s other main area of research will involve bladder cancer. Risk factors for bladder cancer include long term toxin exposure (ie. smoking) and persistent inflammation, with chronic infections believed to play a critical role in a portion of cases. Interestingly, the consumption of probiotics has been shown in several international studies to significantly prevent tumour recurrence in treated patients, possibly due to anti-inflammatory effects from factors secreted by the probiotic organisms. Cadieux’s lab plans to use sensitive DNA-based techniques to look for potential bacterial pathogens in bladder tumour biopsies and identify factors from probiotic strains that can reduce bladder inflammation and potentially prevent tumour formation.

“Both areas of my research have a solid probiotic component to them”, says Cadieux. “Numerous studies have already demonstrated the ability of probiotic organisms to inhibit pathogenic biofilms and prevent bladder tumour recurrence, and we plan to identify specific mechanisms involved in these health benefits.”

Dr. Gregor Reid appointed Chair in Human Microbiology and Probiotics through \$7 M gift from Danone Group

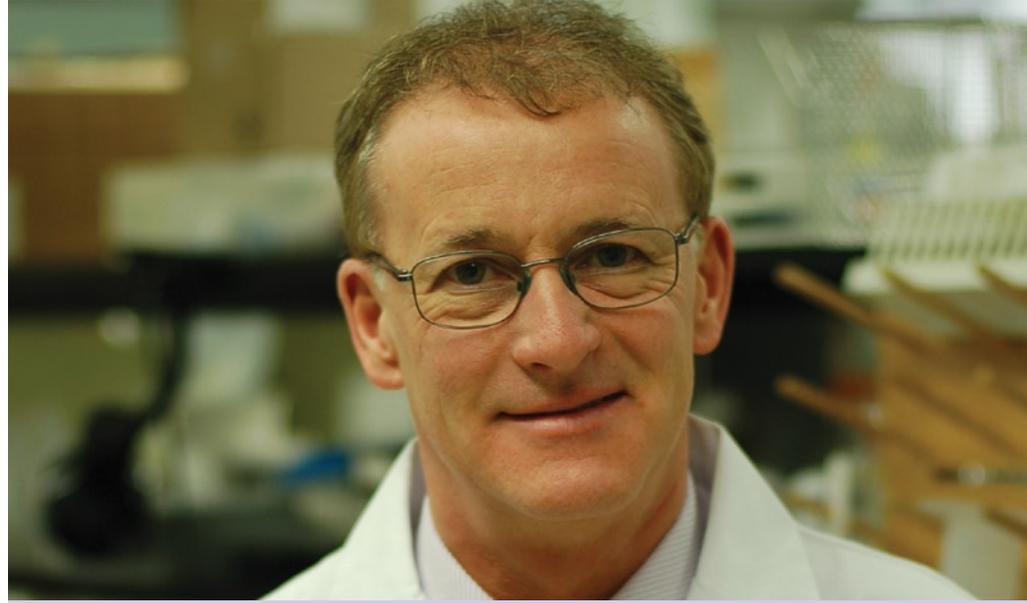
Dr. Gregor Reid has been studying probiotics since 1982 when he arrived in Canada after completing his PhD in New Zealand. Since then he has become a leading advocate for the role of ‘good bacteria’ in human health. He came to the University of Western Ontario in 1990, joining the Lawson Health Research Institute in 1996. This past year, he was appointed the first research chair in Human Microbiology and Probiotics at Lawson thanks to a \$7 million donation from international yogurt maker Danone Group.

“The endowment means we have secured a legacy of probiotic research here in London”, said Reid, “and it’s particularly exciting as it gives us access to the incredible resources of Danone around the world.”

As an example, Reid has visited the Grameen-Danone factory in Bangladesh and Soweto project in South Africa which produces highly nutritious food for the impoverished population. These visits help his research in Mwanza, Tanzania, and also make it possible for him to share the successes of the Western Heads East (WHE) project with others.

“When Bob Gough assembled the WHE project at first, I proposed we use fermented milk supplemented with a probiotic *Lactobacillus*, in response to a call for efforts to help people in African communities plagued by the HIV/AIDS epidemic. He and his incredible volunteers, especially student interns have taught local mothers how to make a probiotic yogurt. Students of many backgrounds including nutrition, business, microbiology, social science, and medicine have spent up to a year in the city and have overseen some wonderful things. The yogurt is now used by an orphanage for severely malnourished children, by over 125 HIV/AIDS adults as a means to provide energy and nutrition and to reduce diarrhea, and by others totaling 350 every day,” says Dr. Reid.

Reid’s research applies microbiology to areas of clinical importance in urology,



gastroenterology, and obstetrics & gynaecology. Throughout his career, Dr. Reid has been devoted to translating his research into tangible benefits for people.

“That’s why probiotics are such a great vehicle, as they are safe and can be delivered as foods and supplements. My work has primarily focused on the vaginal microbes and how administration of lactobacilli can stabilize the flora and prevent the many infections suffered by women, especially bacterial vaginosis which increases the risk of preterm labour and sexually transmitted infections.” The benefits of this approach have been verified by studies in Brazil, Nigeria, Tanzania, Austria, Russia, Croatia and Holland.

“Research by others in Germany has shown that probiotics can reduce complications and hospital stays for seriously ill surgical patients undergoing liver transplants, abdominal surgery and pancreatic surgery.” This is encouraging because when a patient comes in for surgery they’re often given antibiotics to prevent harmful bacteria causing an infection. But, such treatments also kill off the beneficial bacteria that are critical to human health. We need to take a different approach and consider giving

probiotics to such patients to help them recover more quickly, including through enhancing their immunity.”

“Probiotics also have implications for urological practice. For instance, the most common types of kidney stones are formed when oxalate is produced in the gut, is absorbed and goes to the kidney where it binds with calcium to create the stones. The stones then block urine flow and cause severe pain. A research group in the U.S. has found that a certain bacterial type, when present in the gut, can dissolve the oxalate. Thus, the idea is to administer these bacteria as probiotics with a view of preventing stones in susceptible patients. Other studies have shown that regular probiotic use can reduce recurrences of bladder cancer and urinary tract infections.”

In the coming years, Dr. Reid hopes his group will expand to train many students and fellows about the importance of beneficial bacteria and probiotics. To this end, he has recruited Dr. Wayne Miller to help oversee his many research projects. Reid’s ultimate goal is to “translate our findings into tangible benefits for people here and around the world, including and perhaps especially in developing countries.”



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