UNIVERSITY OF ALBERTA
FACULTY OF MEDICINE & DENTISTRY
Department of Surgery

2010 & 2011
ANNUAL REPORT

MISSION

To restore health through surgical intervention, *remembering patient dignity and comfort are integral to overall health.*

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MESSAGE FROM THE CHAIR

Dr. Douglas Hedden

Welcome back to our annual report. It's been a while since one was published and I think it is important to share with you all the good things that happen in the Department of Surgery.

I am now in my sixth year as chair of the department and clinical department head after completing my five year review and being recently reappointed to the position. After five years in this position, I'm constantly inspired by the great work our faculty and staff produces.

Over the past five years we have recruited a significant number of new faculty members. There have been 29 appointments to our clinical academic colleague category (previously called clinical faculty), three to the our new special continuing group and 21 to faculty positions (previously called geographic full time - GFT).

Because we have a limited number of faculty positions, recruitment remains a challenge. We have done well with resource neutral recruitment because we've had a few retirements and surgeons have made room for new recruits.

In this past year we have created two new divisions – Surgical Oncology headed by Todd McMullen and Surgical Transplantation lead by Norm Kneteman. Our present challenge is to establish a Division of Surgical Education and we are working with the faculty and university to make this happen.

These new divisions will bring like-minded people together with the intention of creating great educational experiences, encouraging collaborative research and providing excellent care. Paired with the new Alberta Transplantation Institute, our expertise in transplantation will only get stronger.

Through the hard work of Jonathan White we have revamped our undergraduate curriculum. We've seen results with our students scoring at the top of the national qualifying exam for the last two academic years.

Our Surgical Foundations curriculum is now refreshed under the guidance of Marcia Clark. There is a new emphasis on simulation to teach some of the basic skills outlined in the Royal College Objectives of Training for Surgical Foundations.

Our graduate program remains strong with Tom Churchill as our director. Our students are equally split between science students and residents pursuing either an MSc or PhD degree. Our graduate students are among the fastest to complete their degrees in the university. With the loss of some funding, our graduate program has faced some challenges and we are making it a focus of our fundraising efforts. Our priority is to keep the program strong.

We've had great success in filling our endowed chairs. Fred Berry joined us as the Shrine Chair in scoliosis research and Bin Zheng is our endowed chair in surgical simulation. Jonathan White is our inaugural Tom Williams Chair in Surgical Education. Adjunct to our department is Judith Hugh filling the role of chair in breast cancer surgery research and Dr. John Lewis as the inaugural Frank and Carla Sojonky Chair in Prostate Cancer Research.

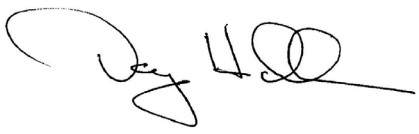
With the successful completion of our basic science labs in the Li Ka Shing research building we have wonderful new facilities for some of our basic science researchers. Under the watchful eye of Ray Rajotte, we have opened a new SMRI (Surgical Medical Research Institute). The new facility is a state of the art research centre that focuses on simulation.

Our research remains a major strength of our department. Since 2006 we have attracted $54 million to support our programs. We will continue to build on our strong research and explore new areas.

Many challenges lie ahead. Restriction of duty hours for residents and perhaps faculty weigh heavy on our minds. Moving towards competency based education will keep us busy and lead to tremendous opportunities as we need to be creative in our development of new programs. We must continue to deal with budget cuts and reorganization at both the government level and Alberta Health Services. This is not easy but we will look for cost saving measures that do not sacrifice positions or programs.

I want to thank everyone in our department for their tremendous efforts.

The proud tradition of the department will continue.



Douglas M Hedden, MD FRCSC
Walter Stirling Anderson
Professor and Chair
Department of Surgery
Faculty of Medicine and Dentistry
University of Alberta

Cardiac surgeons perform a heart transplant

DIVISION OF CARDIAC SURGERY

Divisonal Director: Dr. David Ross
Program Director: Dr. Roderick MacArthur

SUMMARY

The past two years was an inspiring and productive period for the Division of Cardiac Surgery and its home in the Mazankowski Alberta Heart Institute (MAHI) and Stollery Children's Hospital.

The division performs the full range of operations for acquired cardiac and thoracic aortic disease for Northern Alberta and is the Alberta centre for heart and lung transplantation. Adult transplantation services are also provided to the provinces of Manitoba and Saskatchewan.

The Edmonton thoracic transplantation program is one of the largest in Canada. It is the only pediatric cardiac transplantation program east of Toronto.

As part of the Western Canada Children's Heart Network, Edmonton is one of two pediatric cardiac surgery centres serving Western Canada and links weekly via teleconferencing with affiliated sites in Winnipeg, Saskatoon, Calgary and Vancouver.

The Canadian Institute for Health Information (CIHI) recently did a risk adjusted assessment of the results for common adult cardiac surgery procedures at all 26 centres in Canada performing these cases. Edmonton performed well, rating among the top in the country for most of the procedures assessed.

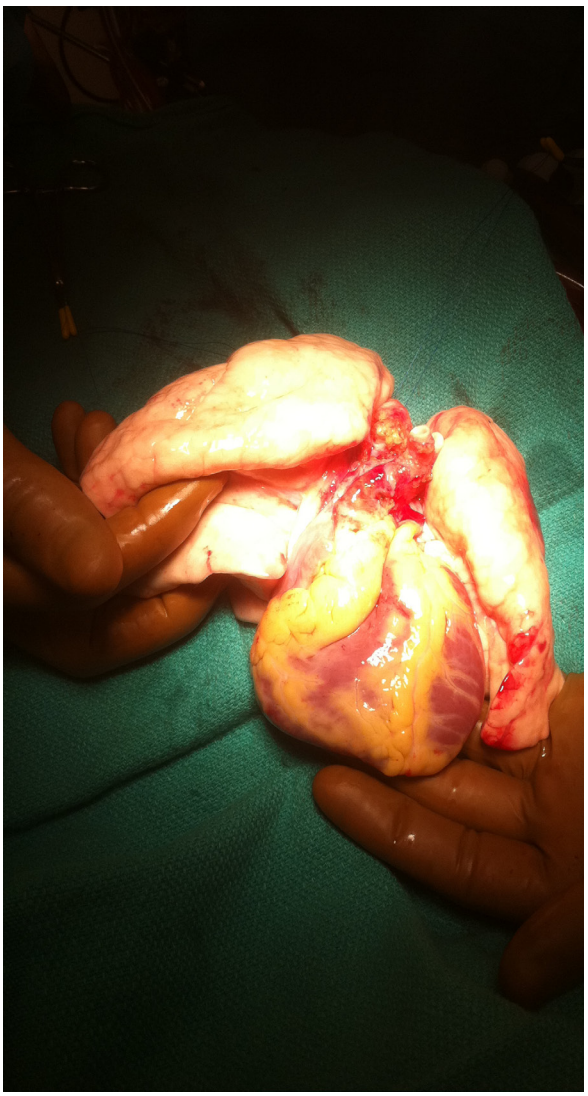
CLINICAL HIGHLIGHTS

Ventricular Assist Devices

The use of ventricular assist devices (VADs) is a procedure that is used to partially or completely replace the function of a failing heart. Surgeons within the division have recently seen a rise the number of these crucial devices installed in patients.

VADs are used in both pediatric and adult cases. These mechanical assist devices are used for both short term support and increasingly for longer periods of time. VADs may come to replace transplantation in a significant number of patients.

In fall of 2010, the division, along with Cardiology, Pediatric Cardiology and the MAHI hosted the first International Bridge to VAD Conference. This conference saw 200 attendees from as far as Argentina and Thailand engaged in learning more about



A pediatric heart lung block prior to implantation

DIVISION OF CARDIAC SURGERY STAFF
Back row (L to R) Kristen Reid, Emily Kuurstra, Alyssa Chappell, Nasim Boroumand. Front row (L to R) Barb Williams, Dr. Colleen Norris.

this rapidly expanding field. Special thanks to Dr. Holger Buchholz and Ms. Selvi Sinnadurai for organizing this conference and their leadership and support of the VAD program.

In February 2012, CBC Hockey Day in Canada featured a former patient on their program. In 2009, this former young hockey player received a Heartmate VAD device at the MAHI for his dilated cardiomyopathy.

Transcatheter Aortic-Valve Implantation (TAVI)

The division has seen an increase in demand for transcatheter aortic-valve implantations (TAVIs). This minimally invasive procedure is used on patients with a high risk for conventional surgery.

Edmonton continues to have a very active TAVI program. Surgeons here have performed over 50 procedures to date with two-thirds implanted via the femoral artery and the remainder by a small left minithoracotomy. The surgeon avoids the use of cardiopulmonary bypass.

The TAVI procedure is performed by a team including interventional cardiologists, echocardiographers and surgeons. Edmonton is the second Western Canadian Centre to start a TAVI program, which requires close collaboration between cardiac surgery, interventional cardiology, anesthesia and echocardiography.

Dr. Steven Meyer is the surgical lead of this procedure.

Youngest Heart-Lung Transplant in Alberta

In 2011, the youngest heart-lung transplantation in Alberta was performed on a four-year old at the MAHI. A team comprising of many specialities from both the MAHI and Stollery worked on this patient. The child, who experienced hypoxic cardiac arrest, was maintained on extracorporeal membrane oxygenation for 40 days until organs became available.

Dr. John Mullen performed the surgery and the child has since made a full recovery.

DIVISION OF CARDIAC SURGERY

RESEARCH

The division continues to expand its efforts in industry sponsored and investigator initiated clinical research.

Dr. Steven Meyer has a number of industry trials underway and is participating in a CIHR funded trial of steroids in cardiac surgery.

Dr. John Mullen has led the division's participation in a major NIH-CIHR funded network to conduct randomized clinical trials of surgical intervention in patients with atrial fibrillation coming for mitral valve surgery as well as the surgical treatment of ischemic mitral regurgitation.

Dr. Shaohua Wang and research assistant Xianshuo Lu lead the clinical trial of the Freedom Solo valve, a new type of stentless aortic valve. The MAHI is the North American training centre for installing this type of valve and Dr. Wang has trained surgeons from Calgary, Winnipeg and Vancouver.

Building the clinical research infrastructure is a priority of the division and its surgeons. Dr. Colleen Norris, a PhD in clinical epidemiology, was recently hired as a 0.5 FTE along with four research coordinators.

Dr. Jayan Nagendran operates a basic science laboratory located in the Li Ka Shing building. He was part of a group that received a $300,000 MAHI/UAH foundation team grant to perform research on the failing right ventricle. His other interests include an ex vivo resuscitation program for donor lungs and strategies to modulate chronic rejection in thoracic transplantation.

The division has developed a potentially productive collaboration with our colleagues in the cardiovascular intensive care unit (CVICU) led by Drs. Sean Bagshaw and Gurmeet Singh.

All neonates undergoing complex cardiac surgery in Edmonton are entered into a prospective neurodevelopmental follow up program initiated and led by Dr. Charlene Robertson from the Glenrose Rehabilitation Centre. This is one of the largest such programs in the world with over 700 infants entered. It has produced over 20 peer reviewed publications in the past decade which have led to major improvements in the outcomes for these children, including the prevention of hearing loss in survivors of first stage hypoplastic left heart surgery.

PROMOTIONS & RECRUITMENTS

The division welcomes Dr. Jayan Nagendran

The division was pleased to hire Dr. Jayan Nagendran in 2011. He was recruited from a staff position at Stanford University where he also completed a fellowship in thoracic surgery transplantation. Jayan obtained both his medical degree and his residency in cardiac surgery from the U of A where he was very productive in basic science and clinical research. Under the direction of Dr. Evangelos Michelakis, he obtained his PhD while completing his residency.

EDUCATION

Dr. Rod MacArthur, program director, has led the division's fully approved residency program for the past seven years. Dr. Steven Meyer leads the division's undergraduate education program and is active in the medical school's Gilbert Scholar programs.

The residency training program is six years in length. Most recent trainees have obtained either a PhD or a masters in clinical epidemiology during their residency.

Recent innovations in training have included the development of an annual Alberta-wide resident retreat held alternately in Calgary and Edmonton, as well as the introduction of simulation for both clinical and technical training.

AWARDS & ACHIEVEMENTS

FACULTY AWARDS

Officer of the Order of Canada
Dr. Arvind Koshal

Teacher of the Year Cardiac Surgery - 2011
Dr. Steven Meyer

Preceptor Excellence Award 4th year Medical Students 2010
Dr. David Ross

Teacher of the Year Cardiac Surgery - 2010
Dr. Shaohua Wang

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DIVISION OF GENERAL SURGERY

Divisonal Director: Dr. David Williams
Post-Graduate Program Director: Dr. Daniel Schiller

SUMMARY

The Division of General Surgery has increased dramatically and is now the largest division in the Department of Surgery with close to 100 faculty members. Each member is committed to the common goal of excellence in clinical care delivery, education and research.

Due to this commitment, tremendous innovation has taken place within the division. The development of acute care services at the University of Alberta and Royal Alexandra Hospitals has contributed greatly to the management of the acutely ill and injured patient, ensuring care is given in a timely fashion.

The Centre for the Advancement of Minimally Invasive Surgery (CAMIS) has brought minimally invasive surgery to a new level. Under the careful watch of Dr. Dan Birch, the centre has developed a world-class curriculum used for the training of surgeons from several surgical specialties. CAMIS has established a mentoring program, advancing surgeons' skills at a local, provincial, and national level.

Established programs within the division have continued to flourish such as hepatobiliary and pancreatic surgery, transplantation, trauma, surgical oncology, endocrine surgery, gastrointestinal surgery, head and neck surgery, vascular surgery, and breast surgery.

The division is widespread, operating within the Edmonton Zone at the University of Alberta Hospital, the Royal Alexandra Hospital, Misericordia Community Hospital, Grey Nuns Community Hospital, Sturgeon Community Hospital and the Ft. Saskatchewan Health Centre. Faculty members also have a presence in Grande Prairie, Lethbridge, Ft. McMurray and Lloydminster.

EDUCATION

Education is always a priority within the division and its members provide countless hours of teaching to both undergraduate and post-graduate students.

Dr. Dan Schiller is the program director for residency training in general surgery. He has made great strides in the standardization of the evaluation process based on CanMEDS competencies.

Resident Research Day 2011

A dedicated rural training stream is being developed within the residency training program, allowing for the instruction of dedicated rural surgeons.

A resident retreat is held annually. Dr. Ted Young from Hamilton, Ontario was the guest speaker for the 2011 retreat held in Jasper.

Dr. Young's discussion focused on the head and neck together with benign and malignant conditions of the esophagus.

The retreat speaker for 2010 was Dr. Ernest Moore. He spoke on the topic of trauma.

RESEARCH

The division continues its proud and strong tradition of both basic and clinical science research. Members of the division hold $25 million support in 60 grants.

Areas of research interest include translational research on inflammatory mediators, genetic mutational analysis as related to lymphangiogenesis in endocrine malignancies, islet cell transplantation, hepatitis C, tissue cryopreservation, and intestinal ischemia.

PROMOTIONS & RECRUITMENTS

With the growth of the division, many promotions and recruitments took place.

Promotions

Dr. Dan Birch, associate professor, July 2011.

Dr. Jonathan White, associate professor with tenure, July 2011.

Dr. Kamran Fathimani, special continuing assistant professor, July 2011.

Recruitments

Dr. Damian Paton-Gay was recruited as a clinical lecturer. He practices general surgery and critical care medicine at the Royal Alexandra Hospital.

Dr. Paul Engels was recruited as clinical lecturer. He practices general surgery and critical care medicine at the Royal Alexandra Hospital.

Dr. Parveen Boora was hired as a clinical lecturer. He practices general surgery and endoscopy at the Ft. Saskatchewan Hospital.

AWARDS & ACHIEVEMENTS

FACULTY AWARDS

Canadian Forces Decoration
Dr. Ron Brisebois

William Shandro Award for Teaching Excellence in Clinical Surgery 2011
Dr. David Olson

William Shandro Award for Teaching Excellence in Clinical Surgery 2010
Dr. Kelly Dabbs

General Service Medal; Government of Canada
Dr. Stewart Hamilton

AWARDS & ACHIEVEMENTS

FACULTY AWARDS

Meritorious Service Award (from the College of Physicians and Surgeons of Alberta)

Dr. Stewart Hamilton

Fellow of the Royal Society of Canada
Dr. James Shapiro

Excellence in Humanism Award
Dr. Jonathan White

John Provan Outstanding Canadian Surgical Educator Award
Dr. Jonathan White

DIVISION OF GENERAL SURGERY

AWARDS & ACHIEVEMENTS

FACULTY AWARDS

McCalla Professorship for Research in Teaching
Dr. Jonathan White

Provost's Award for Early Achievement of Excellence in Undergraduate Teaching Procedure
Dr. Jonathan White

Tom Williams Endowed Chair in Surgical Education
Dr. Jonathan White

Top Teacher Awards 2011

Dr. Erika Haase
Dr. Ghassan Hadi
Dr. Stewart Hamilton
Dr. Ramesh Juta
Dr. Shahzeer Karmali
Dr. Jaqueline Kennedy
Dr. David Olson
Dr. Dan Schiller
Dr. Jonathan White
Dr. David Williams

Top Teacher Awards 2010

Dr. Curtis Ciona
Dr. Kelly Dabbs
Dr. Chris de Gara
Dr. Stewart Hamilton
Dr. Gordon Lees
Dr. David Olson
Dr. Art Plewes
Dr. Clifford Sample
Dr. Dan Schiller
Dr. Jonathan White
Dr. David Williams

RESIDENT AWARDS

Teaching Excellence 2011
Dr. Sarah Lai

Teaching Excellence - 2010
Dr. Anna Borowiec
Dr. Athena Bennett

Stevens Norvell Prize Winner - 2011
Dr. Amir Yousef Taheri

Stevens Norvell Prize Winners - 2010
Dr. Troy Perry
Dr. Bonnie Tsang

Resident Research Day 2011

At the division's 2011 Resident Research Day, visiting professor and judge, Dr. Morad Hameed presented City Wide Rounds on *Trauma Surgery and Global Public Health*.

Dr. Hameed is assistant professor of surgery and critical care medicine and director of the general surgery residency program at the University of British Columbia.

Resident Research Day Awards 2011

Basic Science

First Prize
Dr. David Al-Adra
Second Prize
Dr. Allison Maciver
Third Prize
Dr. Dana Mihalicz

Clinical Science

First Prize
Dr. Marta McCrum
Second Prize
Dr. Andrey Vizhul
Third Prize
Dr. Bonnie Tsang

Resident Research Day 2010

The division invited Dr. Andrew McFadden to speak and adjudicate at the 2010 Resident Research Day. He presented Province Wide Rounds on *Learning to Operate for Grave's Disease*.

Dr. McFadden is associate professor in the Department of Surgery at the University of Saskatchewan.

Resident Research Day Awards 2010

Basic Science

First Prize
Dr. Michael McCall
Second Prize
Dr. Richdeep Gill
Third Prize
Dr. Namdar Manouchehri

Clinical Science

First Prize
Dr. Ali Cadili
Second Prize
Dr. Richdeep Gill
Third Prize
Dr. Jack Chiu

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DIVISION OF NEUROSURGERY

Divisonal Director: Dr. Keith Aronyk
Post-Graduate Program Director: Dr. Cian O'Kelly

SUMMARY

The last two years saw the Division of Neurosurgery establish a new intra-operative MRI unit, graduate University of Alberta's first female neurosurgeon and attract talented faculty to an expanding team.

A number of innovations were underway to improve neurosurgical care. Development of new surgical techniques and technology such as the implementation of intra-operative MRI and an operating microscope are expected to reduce surgery time, reduce or eliminate inpatient stay, and improve clinical outcomes.

The new Dan and Bunny Widney Intraoperative MRI unit at the U of A hospital will become active in 2012. This new unit is located in the Level Three Surgical Suite. The magnet is a 3 Tesla Siemens system mounted on overhead rails and capable of providing advanced neuro-imaging in the operating room or in a separate magnet bay.

EDUCATION

All members of the division participate in undergraduate medical education focused on the Discovery Learning and Gilbert Scholar programs. Training in the division also includes medical student electives on neurosurgery service and selective neurosurgical rotations. Dr. Cian O'Kelly oversees training as post-graduate program director.

In 2011, Dr. Jenny Souster became the first female graduate in the 50-year history of the division's neurosurgery program.

Nine new residents were enrolled in neurosurgery training during the 2011-2012 academic year while two were successful in the Royal College Examinations (Dr. Nathan Deis and Dr. Ahmed Quateen).

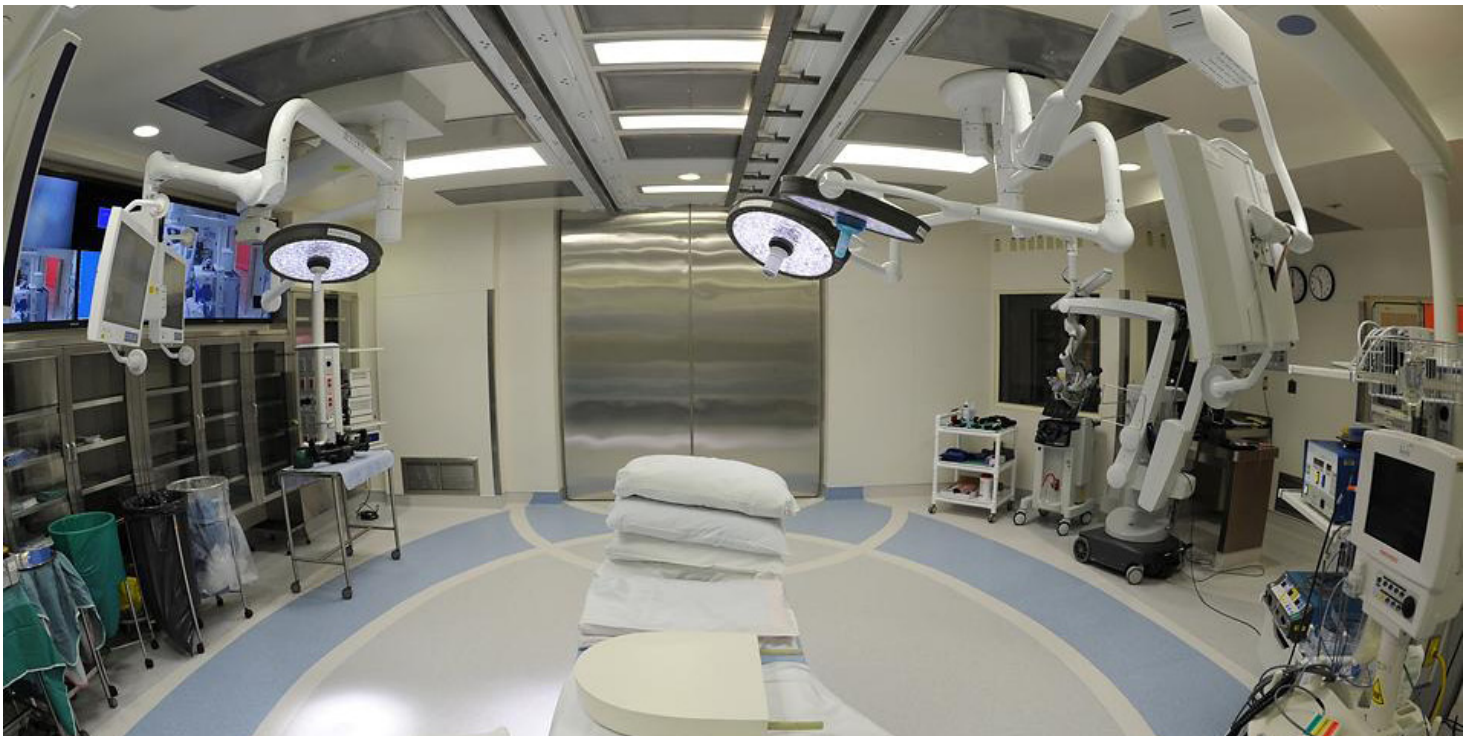
The Division of Neurosurgery Resident Research Day was held in conjunction with the Alberta Neurosurgical Society Meeting in Lake Louise in May 2012 and five University of Alberta Neurosurgery residents presented their research.

FELLOWSHIP

The division offers fellowship in various sub-specialties.

Spine fellowship positions commenced in the fall of 2010 at the Royal Alexandra Hospital.

In 2011, Dr. Ibrahim Al Naami became the first fellow in pediatric neurosurgery under the supervision of Dr. Keith Aronyk.



The new Dan and Bunny Widney Intraoperative MRI unit will allow surgeons to perform MRIs in the same room as surgery. It becomes functional in 2012.

DIVISION OF NEUROSURGERY

RESEARCH

Basic science and translational research was carried out within the molecular neuro-oncology laboratory, the hydrocephalus research lab and the clinical neurophysiology lab.

Eight clinical trials were underway during 2011.

FACULTY UPDATES

The division's faculty expanded to 13 full-time neurosurgeons. Its most recent members are Dr. Cian O'Kelly, Dr. Tim Darsaut and Dr. Tejas Sanker.

Dr. O'Kelly specializes in minimally invasive endovascular procedures which represent a major advance in the treatment of neurovascular conditions.

Dr. Darsaut rounds out the neurovascular service and provides a basic science research dimension to the neurovascular program. Dr. Darsaut joins Dr. Max Findlay, Dr. Michael Chow and Dr. Cian O'Kelly to form the neurosurgical component of the neurovascular service.

Dr. Tejas Sankar joined the Division of Neurosurgery on a part-time basis in March 2012. Dr. Sankar is in the second year of a Functional Neurosurgery Fellowship and has planned to complete a PhD in the Functional Neurosurgery Program in Toronto before returning to Edmonton to join the Division of Neurosurgery as a full time member in 2013.

Dr. Matt Wheatley was promoted to associate clinical professor.

Dr. Andrew Nataraj was promoted to assistant clinical professor.

Dr. Kenn Petruk retired from the Division as a clinical neurosurgeon but he remained active in the Division of Neurosurgery as a research associate. His basic science laboratory studies malignant brain tumors and he, along with his research associate, Dr. Hua Chen, continued to study the molecular oncology aspects of malignant gliomas.

The directorship of the Division of Neurosurgery is changing as Dr. Keith Aronyk accepted an Alberta Health Services (AHS) position as the head of the new Clinical Department of Neurosciences. Dr. Matt Wheatley is the acting divisional director and AHS section head.

AWARDS & ACHIEVEMENTS

FACULTY AWARDS

Lifetime Achievement Award - 2011
(from the Brain Centre)
Dr. Keith Aronyk

Top Teacher Awards 2011
Dr. Richard Fox

Excellence in Humanism Award, Faculty of Medicine and Dentistry - 2010
Dr. Richard Fox

Certification of Appreciation Faculty of Medicine and Dentistry - 2011
(*for his commitment to teaching the next generation of physicians)*
Dr. Vivek Mehta

Leonard Tow Humanism International Award -2011
Dr. Kenneth Petruk

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Division of Neurosurgery faculty

DIVISION OF ORTHOPAEDIC SURGERY

Divisonal Director: Dr. David Otto
Post-Graduate Program Director: Dr. Ed Masson

SUMMARY

The Division of Orthopaedic Surgery was pleased with its results for the past two years. It continued to add excellent faculty, conduct promising research and train talented residents.

A key highlight in the past two years was the opening of the Orthopaedic Surgery Centre, a stand alone hospital with four operating room (OR) theatres for hip and knee arthroplasty.

Also noteworthy was Dr. Marcia Clark's invitation to be part of the medical team for the downhill ski events at the 2010 Vancouver Winter Olympics.

EDUCATION

All faculty members were involved in the education of medical students at various levels of training including the Gilbert Scholar and Discovery Learning programs, the MSK block for pre-clinical students and the clinical rotations of the fourth year students. The division was home to local, national and international elective students.

The division trains approximately 20 residents. For the past two academic years, all chief residents passed the Royal College exams.

The division housed fellows in arthroscopy, spine, arthoplasty, trauma and pediatric spine.

RESEARCH

The four main research areas the division focuses on are:

- bone generation
- clinical
- joint regeneration
- spine

Exciting research conducted shows how mesenchymal stem cells are able to help bones heal. These same cells can regenerate articular cartilage and meniscus which are two key components to healthy joints.

The division has discovered a way to cold preserve joint cartilage and is working on a way to bank this tissue for transplantation.

Arthroplasty research is expanding and the division is examining various postoperative strategies and their impact on recovery and health services utilization.

Spine research centers on ways to treat scoliosis and how to make surgical correction safer.

Resident Research Day 2011

The division is also looking into new ways to manage pelvic and acetabular fractures.

An additional area of research is investigating medical education – from surgical simulation to methods of teaching future clinicians better communication skills.

More information on the division's research is available by viewing their research newsletter online at http://www.orthopaedicsurgery.ualberta.ca.

FACULTY DEVELOPMENT

The division holds an annual retreat at the Jasper Park Lodge. In 2011, guest alumni were Dr. Robert Purnell from the University of British Columbia and Dr. David Edwards (Plastic Surgery) from the University of Alberta. Dr. Cory Cundal from the University of Calgary was the guest alumnus in 2010.

PROMOTIONS & RECRUITMENTS

The division continues to attract talented faculty to its membership.

Joining the division were:

- Dr. Rob Chan - (elbow and wrist)
- Dr. Catherine Hui - (knee)
- Dr. Elizabeth Pedersen - (foot and ankle)
- Dr Carlo Panaro - (hip and pelvic reconstruction)
- Dr. Don Glasgow - (trauma)

AWARDS & ACHIEVEMENTS

FACULTY AWARDS

Certificate of Merit Award Canadian Association for Medical Education - 2011
Dr. Marcia Clark

Orthopaedic Surgery Teachers of the Year – 2011
Dr. Sukhdeep Dulai
Dr. John McIvor

Orthopaedic Surgery Teachers of the Year – 2010
Dr. Greg O'Connor
Dr. John McIvor

RESIDENT & GRADUATE STUDENT AWARDS

Alberta Orthopaedic Research Day - 2011

Basic Science

First Prize
Dr. Benjamin Herman

Clinical Science

First Prize
Dr. Khaled Almansoori

Honourable Mention
Dr. Matthew Souster

Myer Horowitz Graduate Students' Association Graduate Award -2011
Mr. Roger Croutze
(MSc student)

Alberta Orthopaedic Research Day, 2010

The division hosted the annual Alberta Orthopaedic Resident Research Day with guest adjudicator Dr. Graham King of the University of Western Ontario.

Basic Science

First Prize
Dr. Alexander Rezansoff
Second Prize
Dr. Khaled Almansoori

Clinical Science

First Prize
Dr. Holman Chan

Junior Resident Award
Dr. Matthew Souster
Canadian Orthopaedic Research Association Annual Meeting - 2010, Alexandra Kirkley Award

Second Prize
Dr. Julian Sernik

PUBLICATIONS

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DIVISION OF ORTHOPAEDIC SURGERY

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DIVISION OF OTOLARYNGOLOGY - HEAD & NECK SURGERY

Divisonal Director: Dr. Hadi Seikaly
Post-Graduate Program Director: Dr. Erin Wright

SUMMARY

The Division of Otolaryngology Head and Neck Surgery experienced much growth in the past two academic years. It continues to attract excellent faculty, residents and fellows. The amount of grants received increased significantly and research activity continues to be strong.

EDUCATION

Under the brilliant leadership of Dr. Erin Wright, the division continues to attract excellent residents.

In the past two years, Drs. Brittany Barber, Max Klein, Russ Murphy, Caroline Xu, and Han Zang joined the division's residency program.

FELLOWSHIP

The division was home to several high-caliber fellows.

In 2011, Dr. Danielle MacNeill trained in the advanced head and neck oncology and reconstruction fellowship.

Dr. Leigh Sowerby completed a rhinology and skull base fellowship and Dr. Zeinab Al-Qudehy finished a pediatric fellowship.

In 2010, Dr. Yaser Alrajhi, graduate of the University of McGill, completed an advanced head and neck oncology and reconstruction fellowship. Dr. Menachem Gross from Israel conducted his rhinology and skull base fellowship and Dr. Anura Manuel finished a pediatric fellowship.

RESEARCH

Research activity continues to be strong with 84 publications in 2011 and 72 in 2010.

Areas of research interest include functional surgical and reconstructive outcomes, microvascular head and neck reconstruction, submandibular gland transfer, medical modeling and digital surgical planning as it applies to the head and neck region, immunopathology of rhinosinusitis outcomes in sinusitis, nasal surgery medical and preoperative management of chronic rhinosinusitis, endoscopic management of sinonasal neoplasms, bio-absorbable dressings in sinus surgery, and research in surgical education.

FACULTY DEVELOPMENT

In 2010, the division hosted the Functional Head and Neck Reconstruction Course in Banff, the National Rhinology and Sinus Review in Winnipeg and the Family Practice CME Yearly Update of Otolaryngology in Edmonton.

DIVISION OF OTOLARYNGOLOGY - HEAD & NECK SURGERY

FACULTY DEVELOPMENT

In 2011, the division hosted the Functional Head and Neck Reconstruction Course in South Africa, the National Rhinology and Sinus Surgery Review in Edmonton and the Family Practice CME yearly update of Otolaryngology in Edmonton.

PROMOTIONS & RECRUITMENTS

The diversity and strength of the faculty continued to be increased with two key recruitments in the past two years.

Dr. Dan O'Connell, head and neck oncologic and reconstructive surgeon joined the division as well as Dr. David Côté, MPH Harvard, a general otolaryngologist with interest in rhinology.

GRANTS

From 2010 to 2011, the division saw an impressive leap in the amount of grants received.

The total divisional grants for 2010 were $165,000 and in 2011 that number rose to $373,524.

COMMUNITY SUPPORT

The 2011 Festival of Trees supported the Head and Neck Oncology Program at the University of Alberta with their *Changing the Face of Cancer Treatment* campaign.

Funds raised from this campaign will go towards cutting edge equipment in the operating room.

Resident Research Day 2011

AWARDS & ACHIEVEMENTS

FACULTY AWARDS

Top Teacher Awards 2011
Dr. Khalid Ansari
Dr. Hadi Seikaly
Dr. Erin Wright

Top Teacher Awards 2010
Dr. Khalid Ansari
Dr. Hadi Seikaly
Dr. Trina Uwiera

Outstanding Reviewer Award for the Canadian Journal of Otolaryngology - 2011
Dr. Khalid Ansari

Top Head and Neck Paper - Canadian Society of Otolaryngology Head and Neck Surgery 65th Annual Meeting, 2011
Dr. Hadi Seikaly and Dr. Dan O'Connell

Golden Apple Award 2011
Dr. Trina Uwiera

2011 Golden Scalpel Award for Best Clinical Teacher in the Otolaryngology – Head and Neck Surgery, Residency Program

Dr. Erin Wright

2010 Golden Scalpel Award for Best Clinical Teacher in the Otolaryngology – Head and Neck Surgery, Residency Program
Dr. Hadi Seikaly

Grey Nuns Hospital Teacher of the Year Award for 2010
Dr. Khalid Ansari

RESIDENT & GRADUATE STUDENT AWARDS

Resident Research Day 2011

The invited speaker was the distinguished Dr. Peter Hwang, professor of otolaryngology head and neck surgery from Stanford University. He spoke about *FESS after 25 Years: New Options, New Strategies*.

Resident Research Day Awards 2011

First Prize
Dr. Vincent Biron
Second Prize
Dr. Peter Dziegielewski
Honourable Mention
Dr. Praby Singh

Resident Research Day 2010

The division invited the distinguished Dr. Lorne Parnes as guest speaker. He is a professor of otolaryngology - head and neck surgery at Western University in London, Ontario. His speech was entitled *My Top Ten Favourite Things about being a Neurotologist.*

Resident Research Day Awards 2010

First Prize
Dr. David Côté
Second Prize
Dr. Praby Singh
Honourable Mention
Dr. Vincent Biron

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Photo by John Lucas, Edmonton Journal

Pictured is the longest standing pediatric patient in North America to be kept alive on a Berlin Heart. She has since recovered and no longer requires the device .

DIVISION OF PEDIATRIC SURGERY

Divisonal Director: Dr. William Cole

SUMMARY

The Division of Pediatric Surgery was established in 1999 and since then has recruited additional surgeons, many with research qualifications in each subspecialty area. The subspecialties include pediatric cardiac surgery, general surgery, neurosurgery, orthopaedics, otolaryngology head and neck surgery, plastic surgery and urology. The members of each subspecialty group are also members of their respective specialty divisions.

Many junior faculty members have joined the division in recent years. These appointments were made to provide additional clinical, research and educational expertise.

Each subspecialty group has surgeons with graduate qualifications in clinical epidemiology, educational research or laboratory research. These strategic appointments were made to provide the academic framework for modern innovative and high impact research.

EDUCATION

The main academic focus of the division is teaching and research. Many members continue to provide outstanding contributions to undergraduate and postgraduate teaching as well as taking part in continuing education activities locally, nationally and internationally.

Each subspeciality group holds their own fellows. For example, pediatric cardiac surgery has three clinical fellows, one clinical research fellow and two rotating cardiac surgery residents from the universities of Alberta and Winnipeg. It has a large number of students coming for electives from centres across Canada.

RESEARCH

Current research within the division focuses on the following areas:

- Short bowel syndrome
- Sleep apnea and nocturnal enuresis
- Bladder outlet obstruction
- Fast-tracking extubation
- Hypoplastic left heart syndrome valve function
- Atrioventricular septal defect patch coaptation
- Contegra infection factors
- MVO2
- Myocardial preservation
- Neurodevelopmental outcomes following infant cardiac surgery data

Dr. Bryan Dicken in the operating room

Short Bowel Syndrome

Dr. Bryan Dicken, a pediatric general surgeon, is establishing a program of innovative research in areas of high clinical impact. His interrelated projects include prevention of necrotizing enterocolitis (a cause of short bowel syndrome), the prevention of chronic liver disease from parenteral nutrition in children with short bowel syndrome and surgical elongation of the small intestine in children with short bowel syndrome.

Sleep Apnea and Nocturnal Enuresis

Sleep apnea and nocturnal enuresis are common problems in children. Drs. Trina Uwiera (pediatric otololaryngology head and neck surgery), Peter Metcalfe (pediatric urology) and Manisha Witmans (pediatric pulmonology) formed a collaborative group to investigate the association of these conditions that they had observed in their respective clinical practices.

Preliminary findings suggest that there is an association between sleep apnea and nocturnal enuresis. They are continuing to enroll children into this study that will focus on defining the nature of the association as well as defining the outcomes of interventions – airways, bladder or both. The findings from their studies are likely to have a high impact in the clinical management of these common conditions of childhood.

Bladder Outlet Obstruction

Partial bladder outlet obstruction is a common pediatric problem that is often secondary to spina bifida and posterior urethral valves. It can result in significant renal injury that occurs secondary to prolonged exposure to elevated bladder pressures.

Drs. Peter Metcalfe (pediatric urology), Edward Tredget (Division of Plastic and Reconstructive Surgery) and research collaborators investigated the sequential changes in the bladder using an animal model with physiologically relevant partial bladder outlet obstruction.

They observed distinct phases in bladder decompensation with an initial inflammatory response to the stress of partial bladder outlet obstruction, followed by smooth muscle hypertrophy to overcome the increased urethral resistance, and eventual decompensation due to fibrosis.

The time course of the inflammatory markers indicates the need for early intervention to prevent this from happening. Methods to target these observed physiological responses could lead to improved preventative strategies in patients with partial bladder outlet obstruction.

FACULTY DEVELOPMENT

Program staff representing all disciplines participated in the Pediatric Congenital Cardiac Retreat in May 2011. The retreat focused on identifying program issues and discussing solutions to improve clinical care, education and research.

CLINICAL HIGHLIGHTS

Due to the increasing complexity of pediatric congenital cardiac patients, Alberta Health Services announced the Pediatric Critical Care expansion in 2011. This expansion will open four additional pediatric ICU beds, increasing capacity for pediatric cardiac surgery patients with a goal to significantly reduce cancellations and wait times.

After almost two years in hospital, the longest standing pediatric patient in North America to be kept alive on a Berlin Heart was discharged. This patient's heart recovered, and following the successful process of being weaned off the Berlin Heart, the patient returned home to Winnipeg.

AWARDS & ACHIEVEMENTS

Excellence in Clinical Teaching 2011
Dr. David Ross

Lifetime Membership Canadian Association for Neuromonitoring - 2011
(for long term support of neuromonitoring in Canada)
Dr. Douglas Hedden

PUBLICATIONS

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DIVISION OF PEDIATRIC SURGERY

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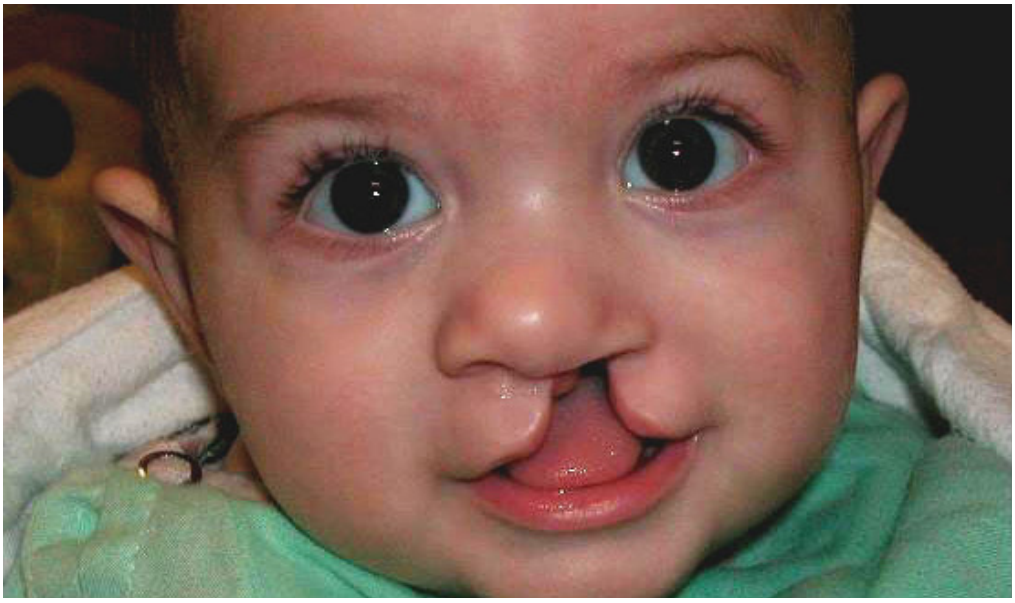

The Division of Plastic Surgery provides care for approximately 50 new babies a year born with a cleft

Surgeons within the division care for patients affected by injuries like the one seen above

DIVISION OF PLASTIC SURGERY

Divisonal Director: Dr. Gordon Wilkes
Post-Graduate Program Director: Dr. Jaret Olson

SUMMARY

The Division of Plastic Surgery continues to provide a wide range of services and acts as a referral centre for Central/Northern Alberta, Northeastern British Columbia, Nunavut and the Northwest Territories. It has one of the largest hand and facial trauma programs in the country. The Firefighter's Burn Unit continues to provide tertiary services to Northern British Columbia, Alberta, Saskatchewan and the territories. It is a pediatric referral centre particularly for cleft care, peripheral nerve surgery including facial reanimation and brachial plexus reconstruction and major ear reconstruction.

The division's major research interests continue to be related to wound healing, tissue engineering, and nerve physiology. Dr. E. Tredget leads the Wound Healing Research Group and Dr. J. Olson and Dr. M. Morhart are collaborating on peripheral nerve research with Dr. Ming Chan from the Division of Physical Medicine and Rehabilitation Center for Neurosciences. Further clinical research is being undertaken with surgical modeling with the close collaboration of the Institute for Reconstructive Sciences in Medicine (iRSM) at the Misericordia Hospital.

EDUCATION

A number of new academic activities were introduced to the academic curriculum, including Resident Photo Rounds and Plastic Surgery Grand Rounds. Residents continue to regularly take part in the microvascular training program at SMRI (Surgical Medical Research Institute).

Currently there are 14 residents in the program, of which three are involved in the CIP program. In 2011, Dr. Moein Momtazi received his masters degree in experimental surgery. Dr. Peter Kwan is currently enrolled in a PhD program and Dr. Eric Fung is the newest recruit into the CIP program.

The division is now in the third year of a five year return-for-services agreement with the University of Saskatchewan and the Government of Saskatchewan.

FACULTY UPDATES

Dr. Jonathan Toy was welcomed back in 2010 following his completion of a fellowship at the University of Pittsburgh in body contouring surgery in the massive weight loss patient. Dr. Toy now practices at the Royal Alexandra Hospital and is involved with post-bariatric surgery patients. He is actively involved with the Residency Training Program.

Dr. Paul Schembri completed a fellowship in microvascular reconstruction in 2011 at the University of Pittsburgh, as well as a fellowship in aesthetic surgery at the University of Toronto.

Dr. Gorman Louie is actively involved teaching with the AO CMF Foundation , and is the president of the Education Foundation of the Canadian Society of Plastic Surgeons.

Dr. Gordon Wilkes continues his role as divisional director of the division and co-director of iRSM at the Misericordia

DIVISION OF PLASTIC SURGERY

Hospital.

Dr. Jaret Olson continues his long-standing efforts as program director for the Plastic Surgery Residency Program.

Dr. Edward Tredget continues as divisional director of Surgical Research and senior director of research, located at the University of Alberta.

Dr. Gerry Moysa recently retired from active practice after a long and distinguished surgical career in Edmonton. He practised at the University Hospital and the Grey Nuns Hospital.

After the reorganization of surgical services in Edmonton in 1995, a large part of his practice moved to the Misericordia Hospital. A former clinical lecturer and program director of the Division, Dr. Moysa was a keen teacher and noted for his dedication to his patients. He performed some of the first new flap procedures in Western Canada and was one of the earliest microsurgeons in the prairie provinces.

Dr. Moysa was a Royal College examiner for many years and past President of both the Canadian Society of Plastic Surgeons and the Canadian Society for Esthetic (Cosmetic) Surgery. As a longstanding member and president of the UAH Medical Staff Society, Dr. Moysa was a strong supporter of his colleagues and a collegial work environment.

AWARDS & ACHIEVEMENTS

Claudette Brown Award Established

The Claudette Brown Award for Excellence in Plastic Surgical Nursing and Rehabilitation was initiated in 2010. This annual award recognizes an allied healthcare provider who has demonstrated a significant commitment to plastic surgery in the way of patient care, mentoring or research. The 2010 recipient was Wendy Tilley, an occupational therapist from the University of Alberta Hospital. The 2011 recipient was Janet Wydareny, team leader in plastic surgery at the Misericordia Hospital Operating Room.

Resident Research Day 2011

FACULTY AWARDS

Overall Best Paper at Canadian Society of Plastic Surgeons 2010 Annual Meeting Meeting
Olson, J., Morhart, M., Gan, L.S., Kowalczewski, J., Ravid, E.N., & Prochazka, A. (2010). *Preliminary results of the first permanent human implant of the stimulus router system, a novel neural prosthesis*.

Best Hand Paper at Canadian Society of Plastic Surgery 2010 Annual Meeting
Morhart, M., Olson, J., Stiegelmar, R., & Hebert, J. (2010). *Targeted reinnervation for myoelectric prosthesis*.

Canadian Representative at Best Papers from Around the World
16th World Congress of the International Confederation for Plastic, Reconstructive and Aesthetic Surgery, : May 21-27, 2011, Vancouver, B.C.

Excellence in Clinical Teaching - 2010
Dr. Michael Morhart

Medical Students' Association Support Group Preceptor Excellence: Year 2 (2011)
Dr. Jaret Olson

GAM Canada Microsurgical Scholarship - 2010
Dr. Paul Schembri

Top Teacher Awards 2011
Dr. Jonathan Toy

RESIDENT AWARDS

Best Resident Poster, - 2010 Canadian Society of Plastic Surgeons Annual Meeting
Dr. Jay Zhu

Basic Science Category, Second Place, - 2010 Canadian Society of Plastic Surgeons Annual Meeting and GAM (Canadian Microsurgical Society) Meeting
Dr. Adil Ladak

Resident Research Day 2011

The division held its annual Resident Research Day on April 8, 2011. Visiting Professor Dr. Ken Murray, Associate Professor at the University of Manitoba presented rounds on *Things I Wasn't Taught and Never Thought I'd Do*.

Resident Research Day Awards 2011

Best Research Paper
Dr. Adil Ladak
Best Clinical Paper
Dr. Tara Lynn Stewart

Resident Research Day 2010
The Division held its annual Resident Research Day on April 9, 2010. Visiting Professor Dr. Bruce Bauer, Clinical

Professor of Surgery at the University of Chicago presented rounds on *Soft Tissue Expansion in Children*.

Resident Research Day Awards 2010

Basic Science Award
Dr. Peter Kwan
Clinical Award
Dr. Amera Murabit

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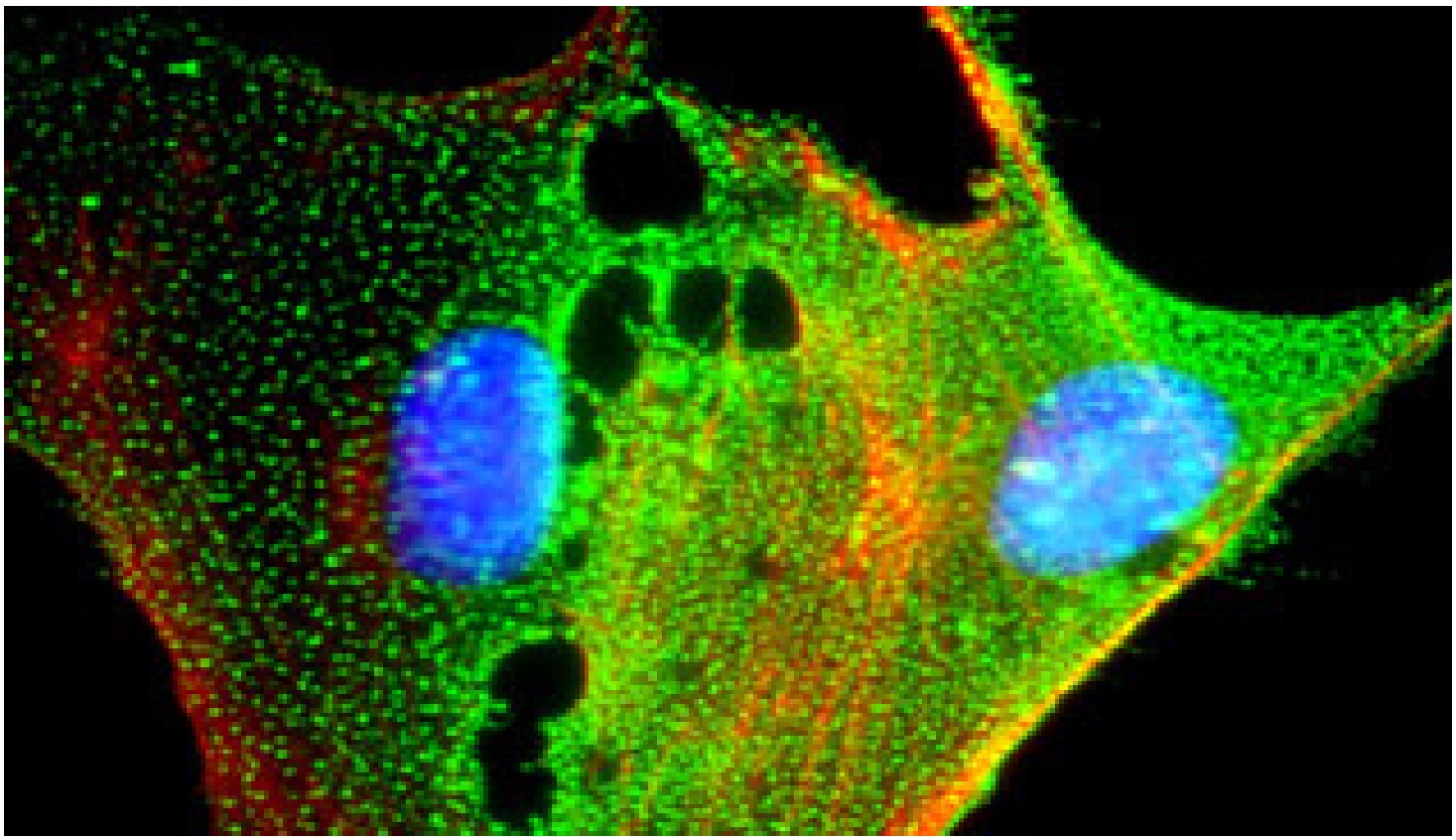

Endothelial stem cell. Photo taken in Dr. Edward Tredget's lab

DIVISION OF SURGICAL RESEARCH

Divisional Director: Dr. Edward Tredget

SUMMARY

In the past two academic years, the Division of Surgical Research was home to many outstanding achievements and accomplishments.

Many faculty members served as invited lecturers, hosted distinguished speakers or became committee members. 2010 saw the expansion and addition of many facilities including the new Surgical Medical Research Institute (SMRI), new surgical research labs and announcement of funding for the Cell and Tissue Innovation Research Centre.

In 2011, the division brought in $986,978 in research funding from various funding agencies including CIHR, Edmonton Civic Employees Charitable Assistance Fund (ECECAF) and the University Hospital Foundation.

CELL AND TISSUE INNOVATION RESEARCH CENTRE ESTABLISHED

The Canadian Foundation for Innovation (CFI) was awarded $10.6 million for the construction of the Cell and Tissue Innovation Research Centre (CTIRC) within the Alberta Diabetes Institute on campus. This award matches funds from the Alberta Science and Research Investments Program (ASRIP) and $5 million from the University of Alberta for a total of $26.2 million in funds.

Dr. Greg Korbutt will serve as project leader for this important project. The CTIRC will be the first good manufacturing practice (GMP) platform for cell and tissue production in Western Canada. It will support Dr. Korbutt's neonatal porcine islet program and will play a central role in transitioning the basic research in the application to a clinical setting. Co-applicant, Dr. Tredget, director of the Firefighters' Burn Treatment Unit, seeks to develop tissue engineered skin substitutes for human use in the GMP facility.

This GMP facility will have six manufacturing rooms with one dedicated to the expansion and differentiation of mesenchymal stem cells into insulin- producing tissue.

The CTIRC will also provide a much needed technology platform to expand the support for cell and tissue based clinical trials in Canada, accelerating the translation of discoveries in such research to clinical applications.

New surgical research labs

Dr. Adetola Adesida

DIVISION OF SURGICAL RESEARCH

ACHIEVEMENTS

In 2011, the division hosted Department of Surgery Grand Rounds on the topic of Clinical Research in the Department of Surgery. Attendees learned how to define clinical research, formulate clinical research questions and become involved in clinical research. They were educated on available resources and clinical research groups within the Department of Surgery.

Dr. Edward Tredget, senior director of the division, organized the meeting and introduced the concept of clinical research for the group.

Dr. Brian Rowe, associate dean of clinical research at the Faculty of Medicine and Dentistry, spoke of the health outcomes of clinical research in the FoMD.

Dr. William Cole gave an overview of clinical research and future opportunities in the Division of Pediatric Surgery.

Dr. Rachel Khadaroo presented information about the Acute Care Emergency Surgery (ACES) group. Developed in 2006, this group's goal is to decrease ER wait times and improve timeliness to surgery.

In 2010, Dr. Adetola Adesida spoke at Department of Surgery Grand Rounds. He lectured on joint regeneration and repair: cells and matrix in cell-based cartilage and meniscus repair. Dr. Adesida was invited by the Department of Chemical and Materials Engineering to lecture for CHE 582 – Introduction to Biomaterials, where he spoke about cell based tissue engineering for cartilage repair. Dr. Adesida also was the Discover Learning Facilitator for Med 523/DS 523 -MSK, a lecture in the Discovery Learning Series.

Dr. Gina Rayat, now director of SMRI, was involved with several committees and associations. She served as co-chair on the Animal Care Use Committee and was co-director of the Experimental Islet Isolation Core Lab. She was elected council member of the International Xenotransplant Association and served as chair for the basic science committee of the Canadian Society of Transplantation. Dr. Rayat was an invited speaker at the universities of Pittsburgh, Manitoba and Wisconsin.

Dr. Colin Anderson was an invited lecturer by the University of Western Ontario where he presented Autoimmunity: the danger of unleashing baby T cells. He hosted distinguished speaker, Dr. Nevl Sing from National Institute of Allergy and Infectious Diseases (NIAID), National Institutes of Health, Beseda (NIH). Dr. Anderson performed a Surgical Foundations lecture on immunology for first year residents.

Dr. Babita Agrawal was the basic science interviewer MMI (medical microbiology and immunity) for MD admissions.

Dr. Fred Berry's research focused on genetic factors that regulate growth and patterning of the axial skeleton.

DIVISION OF SURGICAL RESEARCH

AWARDS

Dean's CIHR Award -2011
Babita Agrawal

AHFMR Senior Scholar Award - 2011
Colin Anderson

PROMOTIONS & RECRUITMENTS

The division welcomed Dr. Bin Zheng as the Endowed Research Chair in Surgical Simulation.

Dr. Zheng collaborates with physicians, scientists and psychologists to develop simulation and simulation-based programs for surgical training. The long term goal of Dr Zheng's research is to promote the use of simulation in surgery for improving care quality and patient safety.

GRANTS

Successful research grants in the past two years include:

- In vitro cartilage formation via synergistic soluble paracrine factors (ECE -$9,000) - A Adesida
- Mechanisms of neutral peripheral tolerance of self and alloantigens. (AHFMR -$50,000) - C. Anderson
- Regulation of skeletal growth and patterning (CIHR - $589,780) – F Berry
- Improving outcomes in first episode psychosis: the role of genetic variation of NPAS3 (CIHR - $10,000) – F Berry
- Molecular analysis of growth and differentiation factors (GDFs). (ECE - $6,728) – F Berry
- A potential therapy for intestinal ischemia-reperfusion injury (UofAB UHF - $35,000) – T Churchill
- A transcriptomic analysis of intestinal-reperfusion injury (ECE - $10,000) – T Churchill
- Lipid droplets: a link between hepatic production of hepatitis C virus and very low density lipoprotein (CIHR - $593,493) – N Kneteman
- Cell and Tissue Innovation Research Centre.(CFI-$10,593,340) and Alberta Advanced Education & Technology (AAET-($10,603,945) – Principal investigator, G Korbutt, co-investigator E Tredget
- Can low energy X-rays prevent rejection of transplanted islets? (UofAB ADIPP - $25,000) – G Rayat
- Development of good manufacturing practice compliant and clinically scale-able protocols for the preparation of neonatal porcine islet grafts (NSESCN - $$74,750) – G Korbutt
- A study examining the efficacy of a combination of direct red 80 organic dye and anti-LFA-1 monoclonal antibody in preventing rejection of newborn pig islet xenografts in NOD Mice(ECE - $9,948) – G Rayat
- A potential therapy for ischemic gut: establishing clinical relevance. (ECE - $9,000) – T Churchill
- The effect of novel small inhibitory molecules in prolonging the survival of neonatal porcine islet xenografts in mice. (ECE -$9,000) – G Rayat

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DIVISION OF SURGICAL RESEARCH

PUBLICATIONS

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Dr. Scott Johnson performs a VATS lobectomy

DIVISION OF THORACIC SURGERY

Divisonal Director: Dr. Ken Stewart

SUMMARY

The Division of Thoracic Surgery experienced many milestones in the past two years.

The division, based at the Royal Alexandra Hospital, saw its size increase greatly and is now a clinical group of four with the addition of Dr. Scott Johnson. This extra support will facilitate a more productive academic environment for members.

Clinical activity grew with the successful institution of the Alberta Thoracic Oncology Program and the Expedited Lung Cancer Management Program being announced in December of 2011. This will lead to refinements in patient care in the foreseeable future for all Albertans as a result.

Plans are underway to recruit a fifth surgeon for the fall of 2012 to enhance the Lung Transplant program.

EDUCATION

Undergraduate and postgraduate students continue to find the division a desirable rotation and a fellowship position is offered in thoracic surgery and lung transplantation.

The division fosters excellence in research, sponsoring two residents in the Clinical Investigator Program. The first resident, Sayf Gazala, will finish his masters in 2012. The second resident, Rene Razzak, is working on the finishing touches of his doctorate.

RESEARCH

The division is part of a significant research initiative with the Royal Alexandra Hospital Foundation that should will support clinical research in a sustainable fashion.

FACULTY DEVELOPMENT

Dr. Eric Bédard continues with the mentorship of thoracic surgeons from across the country.

PROMOTIONS & RECRUITMENTS

Dr. Eric Bédard was promoted to associate professor.

DIVISION OF THORACIC SURGERY STAFF

TOM WILLIAMS RESEARCH DAY 2011

In May of 2011, the division hosted the department's Tom Williams Surgical Research Day.

Dr. Tom Waddell was the invited guest speaker and one of the judges of research day. He is professor and chair of the Division of Thoracic Surgery at the University of Toronto.

AWARDS & ACHIEVEMENTS

FACULTY AWARDS

Top Teacher Awards 2011
Dr. Ken Stewart
Dr. Azim Valji

Discovery Learning Preceptor Excellence Award 2010-2011 Year 2
Dr. Timothy Winton

Top Teacher Awards 2010
Dr. Eric Bédard
Dr. Ken Stewart

Certification of Appreciation, Faculty of Medicine and Dentistry - 2010
Dr. Eric Bedard

PUBLICATIONS

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Dr. Tom Waddell of the University of Toronto was the division's invited speaker and guest judge at the 2011 Tom Williams Surgical Research Day.

DIVISION OF UROLOGY

Divisonal Director: Dr. Gerry Todd
Post-Graduate Program Director: Dr. Keith Rourke

SUMMARY

The Division of Urology is committed to the improvement of health through excellence in patient care, leadership in education and research, and in preventative initiatives directed at the promotion of increased urological well being. All members of the division are faculty members and take the initiative to interact and educate residents, medical students and elective students.

The commitment to providing the best possible patient care is lead by Drs. Michael Hobart, Eric Estey, Howard Evans, Niels Jacobsen and Michael Chetner. Through their efforts, two da Vinci Surgical Systems have found a home within the Edmonton region. The da Vinci Surgical System consists of an ergonomically designed surgeon's console, and a patient-side cart with four interactive robotic arms. As the surgeon moves his hand while working in a console, his movements are scaled, filtered and seamlessly translated into precise movements of surgical instruments in the patient.

The Royal Alexandra Hospital and the University of Alberta Hospital, in conjunction with the division, have become national leaders and innovators in minimally invasive prostate surgery with the recent addition of the da Vinci Surgical System.

The focus to providing the best patient care in a timely manner has the lead the division to work in conjunction with the University Hospital Foundation, the Royal Alexandra Hospital Foundation and the Alberta Cancer Foundation on the Campaign for Prostate Health.

The goals for this campaign are to:

- Develop a rapid access prostate health clinic within a consolidated urology centre in the Edmonton Clinic at the University of Alberta Hospital site
- Build on surgical excellence and treatment options at the Royal Alexandra Hospital and the University of Alberta Hospital
- Foster innovation and discovery by supporting coordinated province-wide research initiatives through the Cross Cancer Institute

EDUCATION

The Division of Urology had three residents successfully complete the RCPSC Fellowship exams in 2011: Dr. Chasta Bacsu, Dr. Adrian Fairey and Dr. Troy Schultz. Dr. Bacsu is completing a fellowship in female urology in Australia and will continue with a fellowship in Dallas.

Dr. Fairey is completing a two year fellowship in oncology in Los Angeles.

Dr. Schultz has a community practice in Vernon.

The Division of Urology hosted the following lectures in 2011:

- *Prostate Brachytherapy Options* - Dr James Morris, Vancouver Cancer Centre
- *Lessons Learned from the Medical Management of Nephrolithiasis Patients* - Dr. Ryan Paterson, University of British Columbia
- *Renal Ischemia Reperfusion Injury; Bench to Bedside for the Urologist* - Dr. Patrick Luke, London Health Science Centre
- *Optimizing Care for Muscle-Invasive Bladder Cancer* - Dr. Wes Kassouf, McGill University
- *New Surgical Approaches for Patients with ED & What All Urologists Should Know about Men's Health* – Dr. Gerry Brock, St. Joseph's Health Centre, London, Ontario

Dr. Mike Leonard, a medical officer with CMPA was invited by the Division of Urology to speak at the Department of Surgery Grand Rounds on *Surgical Safety Checklists and Medico-legal Risks*.

The first Resident Research Day in Edmonton was held in fall 2011. Dr. Anne Gormley from Dartmouth Hitchcock Medical Center in New Hampshire was the guest speaker, adjudicator and 2nd JO Metcalfe Lecturer. She lectured on *Complications of Vaginal Mesh*.

RESEARCH

Basic science and clinical research have been a strong focus of the division, which is currently participating in a number of clinical trials both in urology and transplantation. Dr. Ron Moore is a leader in wet bench research in the fields of oncology, photodynamic therapy and laser technology.

Alberta Urology Institute Research Centre

A prime example of innovations is the Alberta Urology Institute Research Centre, a clinical research-oriented not for profit centre affiliated with the Alberta Urology Institute and the Northern Alberta Urological Foundation (NAUF).

Originally established in 1994 as the Edmonton Prostate Centre, the centre has expanded to conduct pharmaceutical and investigator initiated clinical research for all urological diseases. This institute is co-directed by Dr. Niels Jacobsen and Dr. Trevor Schuler. Many urologists practicing at the Alberta Urology Institute are also actively involved in clinical research studies.

The Alberta Urology Institute (AUI) is a modernized clinic and office space located in the Hys Centre, which currently accommodates 13 urologists, support staff, the Alberta Urology Institute Research Centre, the residency program and the divisional office.

Resident Research Day 2011

Each clinic room has been outfitted with the latest computer equipment for ease of electronic media storage and retrieval system to better serve the patients. A recent initiative by the urologists at the AUI is the development of an AUI Emergency Clinic, which helps to streamline urological consults received from the regional emergency departments and provides enhanced patient care and access to urological resources.

AWARDS & ACHIEVEMENTS

FACULTY AWARDS

Best Teacher for Urology 2010-2011
Dr Tim Wollin

Top Teacher Awards 2011
Dr. Keith Rourke

Top Teacher Awards 2010
Dr. Gary Gray
Dr. Michael Hobart
Dr. David Mador
Dr. Keith Rourke
Dr. Tim Wollin

Teaching Excellence Award Year 2, 2009-2010
Dr. Keith Rourke

DIVISION OF UROLOGY

AWARDS & ACHIEVEMENTS

RESIDENT AWARDS

Frank Squires Scholarship in Urology - 2011
Dr Adrian Fairey
Dr. Chasta Bacsu

Marshall C Hunting Award in Vascular Surgery - 2011
Dr. Winston Teo

Resident Research Day Awards 2011

First Prize
Dr. Adam Kinnaird
Second Prize
Dr. Conrad Maciejewski

Resident Research Day Awards 2010

First Prize
Dr. Adrian Fairey
Second Prize
Dr. Conrad Maciejewski
Third Prize
Dr. Chasta Bacsu
Best Student Paper
Keith Lawson - University of Calgary

PUBLICATIONS

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Residents participate in the 2011 CANMEDS objective structured clinical exam (OSCE)

UNDERGRADUATE OFFICE OF SURGICAL EDUCATION

Senior Director: Dr. Jonathan White

SUMMARY

The past two academic years have seen tremendous growth in undergraduate medical education (UGME). The department's undergraduate surgical education remains one of the strongest and most innovative programs in the country, with faculty and students continuing to excel.

Undergraduate Medical Students Excel in the LMCC Examination

In the discipline of surgery, both graduating classes of 2010 and 2011 ranked number one nationally in the Part I LMCC examination. This examination is competitive and the students placed number one among 17 medical schools in Canada.

Graduating Medical Students Consistently Choose a Career in Surgery

Surgery remains a strong choice for graduating medical students. In the past two graduating classes, surgery was one of the top three career choices for students. The class of 2012 included 24 graduates entering surgical residency.

Online Education Initiatives Grow

In 2008, UGME launched the Surgery 101 podcast series. The podcasts are brief introductions of surgical topics for medical education.

A new episode of *Surgery 101* is broadcast each week and receives more than 1,000 downloads per day. In April 2012, the Surgery 101 app was launched for the iPhone and Android phones, and downloads of Surgery 101 exceeded 500,000 times in over 100 countries.

The podcasts picked up media attention and were covered featured in the Edmonton Journal, CBC and CMAJ.

The first 80 episodes of Surgery 101 have also been published as peer-reviewed learning resources on MedEdPortal. Podcasts can be accessed from www.surgery101.org and the iTunes Music Store.

UGME's online education initiative has also continued to grow, and the surgery clerkship websites now contain multiple learning resources, videos and reflective submissions written by U of A stu-

UNDERGRADUATE MEDICAL EDUCATION STAFF
(L to R) Dr. Rob Chan, Dr. Jonathan White, Katrina Pederson, Jenni Marshall, Tracy Smereka, Shannon Erichsen, Dr. Kamran Fathimatni

Dr. Jonathan White records a podcast episode of Surgery 101

UNDERGRADUATE OFFICE OF SURGICAL EDUCATION

dents. The wikis are available at surgeryanesthesia.org and specialitysurgery.org.

Team-based Education Expands

Team-based education is now established in both of the department clerkships with six teaching hospitals across Northern Alberta, with high-quality surgical teaching being offered in Edmonton, St. Albert and Fort Saskatchewan.

Research in Surgical Education

Research in surgical education continues to grow, with grant-funded research projects, publications, presentations and the award of a first master's degree in medical education. The Edmonton Civic Employees Fund (ECE), have supported a study towards the first publication on team-based education and assessment. A second research project funded by ECE is underway. This project entitled *Learning Surgery* will look at the determinants of excellence in surgical education.

Faculty Continue Their Commitment to Excellence in Surgical Education

The department's faculty continues to provide strong support and guidance to students. Faculty are involved in teaching in the Discovery Learning and Gilbert Scholars programs. During the 2010-2011 academic year, the department provided 1,568 learning encounters for medical students. An undergraduate education index is used to identify award educators with a Top 10 Teachers prize, both in both general surgery and specialty surgery. These teachers were honoured at the department's annual Surgical Awards Dinner in May 2012.

Dr. Jonathan White Appointed as Tom Williams Endowed Chair in Surgical Education

In 2011, Dr. Jonathan White was named as the university's inaugural Tom Williams Endowed Chair in Surgical Education. Dr. White's mandate is to further strengthen the surgical education programs, and to direct a program of surgical education research. To complete this mandate, Dr. White will work closely with Dr. Bin Zheng, the newly appointed chair in surgical simulation.

Former Students Expanding Skills

In May 2011, Dr. Simon Turner became the first resident in a surgery program at the U of A to complete a master's degree in medical education. His thesis was entitled *Examining the Resident-medical Student Shadowing Program: A Concurrent Triangulation Mixed Methods Randomized Control Trial.*

Other residents have enrolled in the new master's program in health sciences education. This will facilitate expansion of the education research program.

UOSE Hosts the National Canadian Undergraduate Surgical Education Committee (CUSEC) Conference

In November 2011, Undergratuate Office of Surgical Education (UOSE) hosted the annual CUSEC conference at the Westin Hotel in Edmonton. Nearly 100 delegates including surgeons, administrators, residents and medical students attended from across Canada.

Undergraduate Surgical education team changes and grows

In 2011, Shannon Erichsen was appointed administrative team lead for the undergraduate surgery team. In August 2011, two new clerkship directors were appointed. Dr Kamran Fathimani is clerkship director for the Year 3 General Surgery clerkship and Dr. Rob Chan is director for the Year 4 Specialty Surgery clerkship.

At the end of 2011, the Undergraduate Office of Surgical Education relocated to new offices in the Community Services Centre of the Royal Alexandra Hospital.

SURGICAL FOUNDATIONS RESIDENTS 2011-2012

POSTGRADUATE OFFICE OF SURGICAL EDUCATION

Senior Director: Dr. Erin Wright

Residency Education on the Rise

In the past two academic years, the Postgraduate Medical Education office has seen an increase in the number of residents enrolled in postgraduate surgical training. In 2010, the office coordinated 126 surgical residents and 208 off-service residents. In 2011, 131 surgical residents were enrolled in the program and the office housed 218 off-service residents.

Program Passes Tough Accreditation process

As part of its accreditation and oversight of postgraduate specialty training the Royal College conducts a formal, on-site survey of its accredited programs. As part of this process the College assesses to what degree residency programs meet the published Standards of Accreditation.

In 2011, from February 14th to 18th, an accreditation review took place at the University of Alberta. Hard work went into preparing for the review of all the surgical residency programs. The Office of Surgical Education executed the reviews flawlessly, despite working under a fairly complicated schedule. Overall the department's residency programs performed well and were favourably reviewed.

Core Surgery Program becomes the Surgical Foundations Program

In July 2010, the Core Surgery Program officially took on the designation of Surgical Foundations Program as outlined by the Royal College. Dr. Marcia Clark, program director for Surgical Foundations, was tasked with revising a new curriculum to ensure the new goals of the program were met.

Changes to this program are ongoing and have involved the incorporation of simulation training including four sessions developed with CAMIS, two sessions in trauma simulation, the implementation of an online *Fundamentals of Surgery* web curriculum course and an upcoming Airway Management simulation session in April 2012.

The plan for 2012-2013 is to roll out a two-year academic seminar series that will connect with those of the residents' home programs.

POSTGRADUATE MEDICAL EDUCATION ADMINISTRATIVE STAFF
Back row (L to R) Joy Wiebe, Kirsten Bauer, Val Masson, Front row (L to R) Valerie Andriowski, Sharon Dopolus, Kim Nicholas

POSTGRADUATE OFFICE OF SURGICAL EDUCATION

CaRMS Candidates Remain Strong

The department continues to field excellent residents through the CaRMS matching program.

In 2011, the nationally scheduled dates for CaRMS interviews were January 22-February 13, 2011. Approximately 200 candidates were interviewed for residency opportunities in our department. Out of those candidates, 23 were matched to the program and are working hard in their first year of training.

Residents Enhance their Education with Department Wide CanMEDS Seminars

The Department of Surgery CanMEDS Seminar series continued to be a success. This quarterly series is designed to introduce the residents to the non-medical expert CanMEDS competencies, including communicator, manager, health advocate, scholar and professional.

In the past two academic years, residents were educated in such topics as *The Surgeon and the Law, Residents Managing Stress* and *Teaching in the OR*.

Residents Assessed through CanMEDS OSCE

The evaluation of CanMEDS competencies through an objective structured clinical exam (OSCE) continues to be a successful assessment tool for residents' abilities and attitudes in the non-medical expert domains. This exam is a collaborative effort between program directors and program administrators of all surgical sub-specialties, and has proven to be a valuable instruction tool as well as a means of identifying potential areas for improvement.

In November 2011, 27 residents were assessed in the brand new Health Sciences Education & Research Commons in the Edmonton Clinic Health Academy. The Office of Surgical Education extends their thanks and appreciation to the examiners who put in their time.

Graduate student Richi Gill presents his research at Tom Williams Surgical Research Day

GRADUATE EDUCATION

Director: Dr. Tom Churchill

SUMMARY

Graduate education has maintained a steady enrolment. Half of master of science students are residents funded through the Clinical Investigator Program (CIP).

A number of PhD students are residents who also receive CIP funding for two years of their program.

Funding for the remainder of their program is dependent on grants and/or supervisor support.

GRADUATE STUDENTS

Students who successfully completed candidacy exam:

- Eric Loo – June 30, 2011
- Mathew Varkey – September 20, 2011
- Mahra Nourbakhsh – September 28, 2011
- David Al-Adra – October 5, 2011
- Richdeep Gill – October 6, 2011
- Telford Yeung – October 6, 2011

Students who successfully defended MSc Degree:

- Amir Mohajerani – *Immortalized human hepatocyte, a new model to study HCV in vivo and in vitro.* (October 27, 2010) [Supervisor: Dr Norman Kneteman, Co-Supervisor: Dr Donna Douglas]
- Sonal Asthana – *Development of an ex vivo assay of hepatitis C specific T-cell responses using QuantiFERON®* (November 24, 2010) [Supervisor: Dr Norman Kneteman, Co-Supervisor: Dr Atul Humar]
- Chao Chen – *Effects of macrophages and noggin suppression on the BMP-2 induced osteogenesis of human bone marrow mesenchymal stem cells.* (December 14, 2010) [Supervisor: Dr Harry Jiang]
- Mohammed Ahmed – *Optimizing cultural conditions for duct cells* (May 20, 2011) [Supervisor: Dr Gregory Korbutt]
- Andrey Vizhul – *Effects of gastric bypass and gastric banding on lipid absorption and their influence on glucose metabolism* (June 7, 2011) [Supervisor: Dr Daniel Birch, Co-Supervisor: Dr Richard Lehner]

GRADUATE EDUCATION

STUDENTS REGISTERED

	CDN/PR* Basic Science MSc	International Basic Science MSc	Resident MSc	Total MSc	CDN/PR* Basic Science PhD	International Basic Science PhD	Resident PhD	Total PhD	Total Student Enrolment
Fall 2010	5	4	9	18	5	3	4	12	30
Winter 2011	5	3	9	17	5	3	4	12	29
Fall 2011	7	1	9	17	7	3	4	14	31
Winter 2012	5	5	9	19	6	5	4	15	34

*CDN - Canadian, PR - Permanent Resident

- Allison Maciver – *Sirolimus-eluting, hydrogel-impregnated mesh reduces intra-abdominal adhesion formation in a mouse model* .(June 15, 2011) [Supervisor: Dr James Shapiro]
- Moein Momtazi – *Characterization of hypertrophic scar formation in nude and knockout mice deficient for T, B, natural killer and natural killer T-Cells.* (June 15, 2011) [Supervisor: Dr Ted Tredget]

Students who successfully defended MSc degree:

- Dana Mihalicz – *The potential of novel small inhibitory molecules to prevent the rejection of neonatal porcine islets in mice*. (June 20, 2011) [Supervisor: Dr Gina Rayat, Co-Supervisors: Dr Raymond Rajotte & Dr David Williams
- Kevin Bayrack – *Evaluation of the protection induced by a monotherapy of Anti-LFA-1 Monoclonal antibody and co-transplantation of neonatal porcine islets with sertoli cells.* (December 12, 2011) [Supervisor: Dr Gina Rayat]

Students who successfully defended PhD degree:

- Michael McCall – *Enhancing engraftment of islets of Langerhans and other cellular therapies for diabetes.* (June 8, 2011) [Supervisor: Dr James Shapiro]
- Govindarajan Thangevelu – *Pivotal role of co-inhibitory molecules in immune tolerance*. (August 24, 2011) [Dr Colin Anderson]

PRESENTATIONS

For the 2010-11 academic year, students have presented at local, provincial, national and international conferences.

MSc students have given oral or poster presentations at 14 local or provincial conferences. Another 14 presentations were given at national or international conferences.

PhD students presented oral or posters at nine provincial or local conferences. Another 26 presentations were given at the national or international level.

AWARDS & ACHIEVEMENTS

Graduate students were successful in receiving awards at faculty, university, provincial and national levels.

In 2010 graduate students were awarded $137,000.

Award recipients for 2010 were:

Cara Ellis, David Al-Adra, Dana Mihalicz, Govindarajan Thangavelu, Conrad Maciejewski, Mathew Varkey, Mylvaganem Jeyakanthan, Sarah Anderson, Kevin Bayrack, David Chapman, Andrey Vizhul and Telford Yeung.

Awards for 2011 were similarly successful at $140,000.

Recipients in 2011 included:

Govindarajan Thangavelu, Dana Mihalicz, Cara Ellis, David Chapman, Sonia Cader, Richdeep Gill, Shakti Singh, Eric Loo, Kevin Bayrack, Roger Croutze, and Boris Gala Lopez.

Congratulations to these award-winning students.

TOM WILLIAMS SURGICAL RESEARCH DAY WINNERS

2011

Basic Science

First Prize
Peter Kwan
Second Prize
David Al-Adra
Michael McCall
Poster
Allison Maciver

Clinical Science

First Prize
Adrian Fairey
Second Prize
Peter Dziegielewski
Poster
Morgan Langille

GRADUATE EDUCATION

TOM WILLIAMS SURGICAL RESEARCH DAY WINNERS

2010

Basic Science

First Prize
Michael McCall
Second Prize
Richdeep Gill
Poster
Dana Mihalicz

Clinical Science

First Prize
Peter Dziegielewski
Second Prize
Conrad Maciejewski
Poster
Karolyn Au

PUBLICATIONS

Graduates students within the Department of Surgery continue to have their research articles successfully published.

MSc students were the first authors on eight different journal publications. Anotherstudents have co-authored publications.

PhD students were the first author on 47 journal publications. Another 15 publications were co-authored by doctoral students.

Al-Adra DP, Anderson CC. Mixed chimerism and split tolerance: mechanisms and clinical correlations. Chimerism. 2011;2(4): 89-101.

Al-Adra D, Bennet A, Gill R, Lees G. Pediatric metastatic sacrococcygeal chordoma treated with surgery. European Journal of Pediatric Surgery. 2011; 21(3):196-198.

Al-Adra DP, Chan WF, Anderson CC. Nonobese diabetic natural killer cells: a barrier to allogeneic chimerism that can be reduced by rapamycin. Transplantation. 2011; 92(9):977-84.

Al-Adra D, Mokhammad A, Anderson C. The role of natural killer cells in chimerism induction in the non-obese diabetic mouse. 2011. Canadian Journal of Surgery. 53(4):S87.

Chapman D, Moore R, Klarenbach S, Braam B. Residual renal function after partial or radical nephrectomy for renal cell carcinoma. Canadian Urological Association Journal, 2010 Oct;4(5):p.337-43.

Gill RS, Karmali S, Sharma AM. Treating type-2 diabetes mellitus with sleeve gastrectomy in obese patients. Obesity 2011;Apr;19(4):701-2. Epub 2010 Oct 21.

Gill RS, Birch DW, Shi X, Sharma AM, Karmali S. Sleeve gastrectomy and type-2 diabetes mellitus: a systematic review. SOARD 2010 Nov-Dec;6(6):707-13.

Gill RS, Al-Adra DP, Birch DW, Hudson M, Shi X,Sharma AM, Karmali S. Robotic-assisted bariatric surgery: a systematic review. Int J Med Robot Comp Assist Surg 2011. (Epub June 15th, 2011) DOI: 10.1002/res.400.

Gill RS, Al-Adra DP, Campbell S, Olson DW, Rowe BH. Povidone-iodine irrigation of subcutaneous tissues may decrease surgical site infection in elective colorectal operations: a systematic review. Gastroenterology Res 2011;4(3):97-106.(DOI):10.4021/gt319e.

Gill RS, Gill S, Mangat H, Logsetty S. Gastric perforation associated with tuberculosis: a case report. Case Reports in Medicine. 2011;Article ID 392769, 3 pages, Doi:10.1155/2011/392769.

Gill RS, Mangat H, Al-Adra DP, Evans M. Hydrostatic rectosigmoid perforation: a rare personal watercraft injury. J Ped Surg 2011;46:402-404.

Gill RS, Al-Adra DP, Mangat H, Wang H, Shi X, Sample C. Image inversion and digital mirror image technology aid laparoscopic surgery task performance in paradoxical view: a randomized controlled trial. Surg Endosc 2011;DOI:10.1007/s00464-011-1754-6.

Gill RS, Sharma AM, Al-Adra DP, Birch DW, Karmali S. The impact of obesity on diabetes mellitus and the role of bariatric surgery. Maturitas 2011; 69(2):137-140. Curr Diab Rev 2011;7(3):185-189 (Epub 2011 April 14).

Gill RS, Sharma AM, Gill S, Birch DW, Karmali S. The impact of obesity on diabetes mellitus and the role of bariatric surgery. Maturitas 2011; 69(2):137-140. (Epub 2011 April 12).

Gill RS, Whitloc K, Al-Adra DP, Ball C, Karmali S. Laparoscopy: new developments, procedures and risks. Editors: Hana Terzic, Nova Publishers 2011;(Book Chapter) ISBN: 978-1-61470-849-0.

Kwan P, Ding J, Tredget EE. Decorin gene therapy has the potential to improve wound healing. Canadian Journal of Plastic Surgery. 2011;19(A):35A.

Kwan P, Ding J, Tredget E. Decorin gene therapy has the potential to improve wound healing. Canadian Journal of Plastic Surgery. 2010;19(A):35A.

McCall MD, Shapiro AMJ. Advances in islet transplantation. Current Medical Literature-Diabetes 2010; 27(3):73-78.

Maciver AH, McCall M, Edgar R, Thiesen A, Bigam D, Churchill TA, Shapiro AMJ. Sirolimus-eluting, hydrogel-impregnated mesh reduces intra-abdominal adhesion formation in a mouse model. SURGERY (in press, 2011).

Momtazi M, et al. A nude mouse model of hypertrophic scar formatin demonstrates histological and morphologic characteristics of human hypertrophic scar. Canadian Journal of Plastic Surgery. 2010;19(A):34A.

Momtazi M, et al. Investigation of an aythymic mouse model of human hypertrophic scar formation. Plastic and Reconstructive Surgery 2011;127 supp:58.

Nourbakhsh M, Douglas D, Lewis J, Mohajerani SA, Kneteman NM. HCV infection leads to altered triglyceride mobilization/secrection of Huh7.5 cells. Can J Gastroenterol. 2010; Vol.24 Suppl A, 119A.

Thangavelu G, Anderson CC. Blocking graft versus host but not graft versus leukemia T cells with aonist BTLA co-inhibitory signals. Chimerism. 2011 Jan;2(1):29-32.

Thangavelu G, Murphy KM, Yagita H, Boon L, Anderson CC. The role of co-inhibitory signals in spontaneous tolerance of weakly mismatched transplants. Immunobiology. 2011.

Thangavelu G, Parkman JC, Ewen CL, Uwiera RR, Baldwin TA, Anderson CC. J Autoimmun. 2011 May; 36(3-4):301-12.

Varkey M, Ding J, Tredget EE. Differential collagen-glycosaminoglycan matrix remodeling by superficial and deep dermal fibroblasts: potential therapeutic targets for hypertrophic scar. Biomaterials. 2011 Oct;32(30):7581-91.

Varkey M, Tredget EE. The role of osteopontin, angiotensin-II, PPAR-y, keratinocyte-derived factors and mechanical tension in skin wound healing and fibrosis: recent advances. Advances in Wound Care: Volume 2. Edited by CK Sen, published by Mary Ann Liebert Inc. 2011.

Young PY, Groeneveld A, Chan P, Smith S, Khadaroo RG. Risk factors for surgical site infections following colon surgery: a retrospective chart review. Canadian Journal of Surgery. 2011 Aug;54 (Suppl):S17.

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UNIVERSITY OF ALBERTA
FACULTY OF MEDICINE & DENTISTRY
Department of Surgery

DEPARTMENT OF SURGERY

Faculty of Medicine & Dentistry
2D Walter C Mackenzie Health Sciences Centre
8440 - 112 Street
Edmonton, Alberta
Canada T6G 2B7

P: 780.407.6605
F: 780.407.7394

surgery.med.ualberta.ca