

The Surgical Spotlight

ON ALUMNI, FACULTY, RESIDENTS & FRIENDS OF THE DEPARTMENT OF SURGERY



FALL 2009

Three Decades of Outstanding Scientific Achievement



Richard Weisel

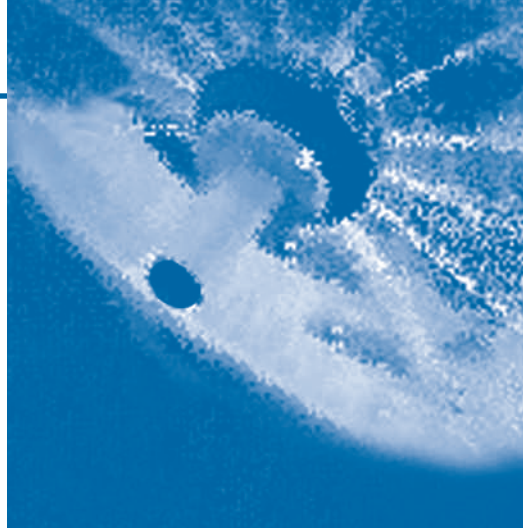
“Dear Richard, As the eighth recipient of the American Association for Thoracic Surgery Scientific Achievement Award, you will be joining Drs. John Kirklin, Norman Shumway, Michael DeBakey, Denton Cooley, Alain Carpentier, Gerald Buckberg and Andrew Wechsler as a recipient of the highest recognition this Association can bestow upon a member. The Association recognizes your pioneering work in myocyte culture and transplantation, your ability to elucidate the molecular events of myocardial ischemia-reperfusion injury and your efforts to embrace and bring molecular biology into

clinical cardiac surgery practice. In addition to these and your other scientific contributions to our specialty, you have trained and nurtured two generations of young surgical scientists, teaching them the importance of good questions, rigorous science and data analysis.”

So begins the letter to Richard Weisel from Alec Patterson, President of the AATS. Alec will present this award at the annual meeting of this distinguished international organization to be held in Toronto, May 1-5, 2010. The award celebrates three decades of diligent application of the scientific method to advance the practice of cardiothoracic surgery. Coincidentally, in the Canadian Institute for Health Research’s (CIHR) legacy review of the impact of its grants, a 1983 grant to Alec Patterson and Richard Weisel on heart and lung preservation was selected for a look back at what has happened to the field in 26 years.

The story begins with Steve Fremes and Shaf Keshavjee, when they were residents working in the lab on techniques to preserve hearts and lungs for transplantation. Both groups developed new preservation solutions which have been employed clinically.

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In addition, perfusion techniques were evaluated to preserve the heart and lung block. The early clinical applications of the perfusion techniques were not as successful. The heart and lungs were perfused in a modified fish tank and on one occasion, the tank developed a leak and the transport plane was forced to stop to find a fish store to fix the tank. On another occasion, one of the transplant surgeons had to donate their own blood to maintain the blood perfusion during transport. After these inauspicious beginnings, perfusion techniques were abandoned for many years. Recently, both heart and lung resuscitation has become popular with new perfusion equipment.

However, the concept of perfusing the heart continuously with warm blood persisted; it was evaluated initially in the laboratory, and then an important clinical trial was led by Steve Fremes and David Naylor. A series of clinical trials of blood cardioplegia led to the conclusion that the perfusate should be “neither too cold, nor too warm, but just right” and that the critical components for safe preservation during blood perfusion were potassium and magnesium.

The preservation solutions were evaluated in human cell cultures by resident John Ikonomidis. The cell culture technology had been developed by the laboratory director Renke Li who one day asked the outrageous question: “Why not inject the cells into the heart?” The problem following a myocardial infarction is cell loss, and once the cells are gone, half of the patients develop congestive heart failure following the infarction and half of those die by two years. The cellular injection has gone a long way in the past 13 years since it was presented at the STS. Extensive clinical trials have suggested that stem cell injections can improve cardiac function. However, the results achieved in the laboratory were considerably better than the results in the initial clinical trials, probably because the stem cells in young animals were very active, but the stem cells in old patients following a myocardial infarction were dysfunctional. Stem cells in old patients can be rejuvenated toward “younger cells using gene therapy”. Surgical resident Shafie Fazel demonstrated that restoration of marrow stem cells could restore heart function after a myocardial infarction, but would not restore the cardiomyocytes which were lost. A new development which could provide new beating cardiomyocytes for cardiac repair is the **induced pluripotent stem cells** (iPS) which are the subject of intense and enthusiastic experimentation. Shinya Yamanaka developed

the technique in Kyoto. In Toronto Gordon Keller, Janet Rossant, and others have improved the process of cellular production and differentiation to cardiomyocytes. The important upshot of this work is that cells from human embryos may not be necessary to restore the cardiomyocytes lost after a myocardial infarction, relieving investigators and clinicians of a troubling ethical quandary.

As Alec Patterson’s letter clearly states, two generations of academic surgeons have been “grown in the culture of Richard Weisel’s incubator.” Terry Yau, Vivek Rao, Gideon Cohen and Subodh Verma have joined Dick in our Division of Cardiac Surgery, while others have dispersed to important academic posts ranging from Charleston, South Carolina to Leipzig, Germany. Residents trained in this mode have received their PhD and developed skills comparable to those of their basic science mentors in the process. Following formal laboratory training, they maintained their link to the laboratory and to clinical investigations, publishing more after their laboratory years through collaboration and continued application of the scientific method to their work. Many cardiac surgical residents continue to perform laboratory research, but others are pursuing a PhD degree in clinical research. Anusha Jega is currently the Kirklin Fellow working with Chris Caldarone, Bill Williams and Eugene Blackstone to develop her skills in clinical epidemiology.

The next generation of trainees will probably follow a somewhat different pathway. Cardiac residents are learning percutaneous skills to insert valves and endovascular stents, helping to catalyze the change. Adoption of the modular approach undergoing preliminary testing in the Division of Orthopaedic Surgery will help with the time-management of training in cardiac and other subspecialties of surgery.

Richard continues his illustrious career as director of the Toronto General Research Institute. Under his leadership the Regenerative Medicine and Guided Therapeutics Programs have received over \$18 million from the Canadian Innovation Fund and additional funding has been received from Research Hospital Fund. A future feature article will describe the facilities, techniques and projects developing under Richard’s remarkable, internationally recognized leadership.

M.M.

Proudly Canadian

In October 2009, at the annual congress of the American College of Surgeons, Robin McLeod, a Regent of the ACS, organized a symposium on the Canadian Health Care system. The room was packed, predominantly with American surgeons. By coincidence, as we were speaking, the U.S. Senate was voting on Obama's health care reform bill.



Richard Reznick

The speakers, Rich Finley from the University of British Columbia, Bill Fitzgerald President of the Royal College, Hugh Scully from University of Toronto and I were poised for a backlash of anti-Canadian health care sentiment. After all, these past few months have seen a lot of scare-mongering propaganda, such as rumours of Canadian Death panels¹ and claims that Canadian doctors are deserting the profession en masse².

To our amazement, the reception we received was exactly the opposite. Our surgical colleagues were profoundly interested in our comments, by and large not very knowledgeable of our system, and somewhat in awe of the messages they received. Without question, most in the room left with what we believe is the right information; that Canadian surgeons are for the most part very pleased with our system and academic health care in Canada is thriving.

THE MESSAGES




The four speakers described the Canadian health care system with a focus on the academic health science centre. We emphasized that the Canada Health Act ensured Canadians of a system that is universal, portable, accessible, comprehensive and publicly administered. Rich Finley commented on the fact that when polled on who they most respected, more Canadians mentioned Tommy Douglas, the father of Medicare, than any other figure. Roy Romanow, in his 2002 report articulates what many Canadians feel about our system: "the principles of the Canada Health Act began as simple

conditions attached to federal funding for medicare. Over time, they became much more than that. Today, they represent both the values underlying the health care system and the conditions that governments attach to funding a national system of public health care. The principles have stood the test of time and continue to reflect the values of Canadians."

Our audience was especially interested in the differences between the Canadian and the U.S. systems. We acknowledged that those Americans who are insured enjoy better and more immediate access to health care services. Further, we underscored that repeated public opinion polls increasingly have shown that the greatest concern Canadians have about the existing publicly funded health care system is the perceived waiting times for diagnostic services, hospital care, and access to specialists. But better access to services in the U.S. comes at a dramatic cost. Some of these costs are easy to calculate, such as the fact that we spend roughly 10% of our GDP on health care whereas America spends 15%. Some of the costs are more difficult to put a value on, such as Canadians' immunity from financial devastation if they become ill and the stark reality that 40 million Americans are uninsured or under-insured. We spoke of the costs of administering our health care system, which are a fraction of the costs in the U.S. For example, most Canadian surgeons have one secretary who does all of the surgeon's billing as a small part of the job. In contrast, it is not uncommon for an American surgeon to employ three or more individuals whose sole job is to negotiate payments with insurance companies and administer a complex billing process. We were asked what our average receipts were for every dollar billed. When we answered roughly 99 cents on the dollar, our American colleagues were flabbergasted. The American system is so unwieldy that Blue Cross of Massachusetts employs more people to administer coverage for 2.5 million New Englanders than are employed in *all* of Canada to administer single payer coverage for 27 million Canadians.

But does the American health care dollar buy better health? The answer is essentially no. Gord Guyatt, in a systematic review of studies comparing health outcomes in Canada and the United States, examined 10 recent "high quality" studies. He reported that of the ten,

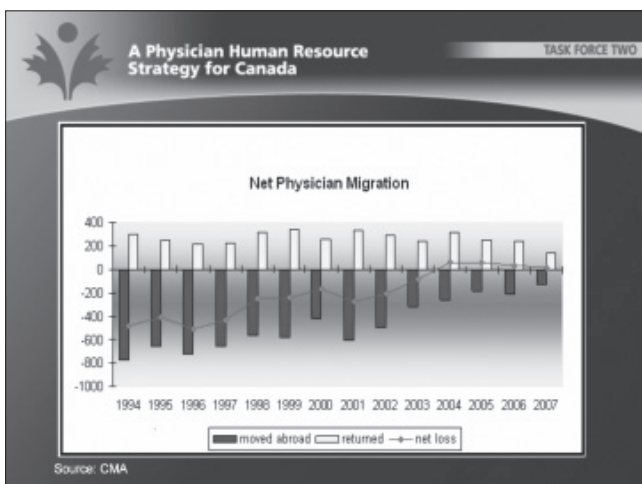
U.S. versus Canada

- Access to care 
- Value for Dollar spent 
- Universality 

five favoured outcomes in the Canadian system, two favoured outcomes in the American system and three were equivocal.⁴

The myth that Canadian doctors are escaping to the U.S. in droves still persists. I believe we dispelled that myth. Data from the Canadian Institute of Health Informatics show that the “brain drain” reversed in 2004. In 2001, 555 physicians left Canada whereas 334 returned. In 2004, 262 left and 317 returned and in 2005 185 left and 247 returned.

We also addressed the issues of governmental involvement in patient care. We emphasized that in our system patients choose their own doctor and the government does not participate in day-to-day care, nor do they collect any individual patient information. We took pains to indicate that everyone in our system receives the same level of care. Finally we stressed that when polled 86 %



Ten Greatest Canadians

1. Tommy Douglas
2. Terry Fox
3. Pierre Elliott Trudeau
4. Sir Frederick Banting
5. David Suzuki
6. Lester B. Pearson
7. Don Cherry
8. Sir John A. Macdonald
9. Alexander Graham Bell
10. Wayne Gretzky

CBC Canada 2004

of Canadians supported or strongly supported public solutions to make our public health care stronger.

A fair bit of the discussion was philosophical. We questioned what the barometers were of a civilized society and opined that one measure is the ability of a nation to look after its sick. We questioned the right of insurance companies to make large profits on the unfortunate victims of illness. We underscored that Canada’s health care system, which fully looks after 32 million people, costs roughly what the private-sector health insurance companies make in profits in the United States. And we talked of the medical mal-practice culture in the U.S. compared to Canada. In the U.S. it is estimated that court costs and judgments add 2 to 3% of GDP to the total medical tab⁵.

Our American colleagues were stunned when we reported the incomes of Canadian surgeons in the academic sector. Without question, our surgeons are making a much better living than they would as academic clinicians in just about any American jurisdiction. With a gross income of \$335,000 (2006 CMA data), approximately \$100,000 in salary support for a new academic recruit, a minimum of 20% protected time, average on-call duties of one in six, virtually no time spent on sourcing work, and malpractice premiums of \$12,000 -- by all measures, Canadian surgeons are doing well.

Finally, we discussed training and the looming HHR crisis in both our countries. While both nations are under the same strain with respect to physician shortages, we are much better positioned to respond to this prob-

lem. The root of the difference is the Balanced Budget Amendment in the U.S. which has ostensibly thwarted growth of residency programs. In contrast, Canada-wide, the numbers of surgical residency positions has grown from 1350 in 05-06 to 1550 in 08-09; an increase of 15%.

After one and one half hours of talks and a robust and animated question period, the session closed. All five of us, McLeod, Finley, Fitzgerald, Scully and Reznick remained for a long time to accommodate individuals who had additional questions for us. We were overwhelmed by their interest, upset by the depth of concern many expressed about their own system and immeasurably proud to be Canadian.

Richard K. Reznick
R.S. McLaughlin Professor and Chair

1. <http://thecaucus.blogs.nytimes.com/2009/08/18/death-panels-arent-the-half-of-it-says-senator-kyl/>: accessed Nov. 9, 2009
2. http://www.google.com/hostednews/canadianpress/article/ALeqM5jRNEXbCDOJNCa_L_56GCMqRDYehmw: accessed Nov. 9, 2009
3. www.hc-sc.gc.ca/hcs-sss/hhr-rhs/strateg/romanow-eng.php: (accessed Nov. 8, 2009)
4. Guyatt GH, Devereaux PJ, Lexchin J et al. A systematic review of studies comparing health outcomes in Canada and the United States. *Open Medicine*, Vol 1, No 1 (2007)
5. <http://network.nationalpost.com/np/blogs/francis/archive/2009/05/12/health-care-lies-about-canada.aspx> : (accessed Nov. 9, 2009)

Our Department's Global Footprint

In a stirring annual report on the status of the Department of Surgery, Richard Reznick surveyed the remarkable accomplishments of the faculty, residents and staff despite tightening fiscal constraints and the imminent political and pandemic plagues.

Ori Rotstein introduced St. Michael's Hospital's new CEO Robert Howard who reported progress on communication among our affiliated hospitals as "the LHINs are



The Department of Surgery's Global Footprint

sorting out, though the boundaries are not intuitive, and largely unknown to patients". He drew attention to the advantages of the Ontario choice to retain hospital boards, preserving institutional memory, tacit knowledge and fundraising opportunities, in contrast to regionalization moves in other provinces. He predicted that the monthly TAHSN (Toronto Academic Health Science Network) meetings will make the LHIN system more effective. Robert Howard succeeds the able Jeff Lozon who has finished his term at St. Michael's. He brings to his new position years of experience as a clinician, researcher and educator in cardiology. He has served as Chief Medical Officer and Executive Vice-President, Programs and Education at St. Michael's.

Richard thanked the excellent, largely unsung work of Robin Richards and his promotions committee, who reviewed and promoted to Full Professor **Christopher Caldarone** (Cardiac Surgery, Hospital for Sick Children), **Gail Darling** (Thoracic Surgery, University Health Network), **Peter Dirks** (Neurosurgery, HSC), **Andras Kapus** (Research, St. Michael's Hospital), **Peter Kim** (General Surgery, HSC), **Ronald Levine** (Plastic Surgery, St. Joseph's Health Centre), **James Mahoney** (Plastic Surgery, SMH), **Sydney Radomski** (Urology, UHN), **Carol Swallow** (General Surgery, Mount Sinai Hospital), and **Douglas Wooster** (Vascular Surgery, UHN). **Gideon Cohen** (Cardiac Surgery, Sunnybrook Health Sciences Centre), **Marc De Perrot** (Thoracic Surgery, UHN), **Annie Fecteau** (General Surgery, HSC), **Ted Gerstle** (General Surgery, HSC), **Raja Rampersaud** (Orthopaedic Surgery, UHN), **Paul Wales** (General Surgery, HSC), and **Frances Wright** (General Surgery, Sunnybrook) were promoted to Associate Professor. http://www.surgicalspotlight.ca/Article.aspx?ver=Spring_2009&f=Awards

Vice chair Ben Alman reported that there are 33 surgical residents in the Surgeon-Scientist program, of whom 84% have external support. The remainder are supported by the generous contributions of surgical alumni. The Surgeon-Scientist program will celebrate its 25th anniversary on May 6, 2010. Its global impact and the translation of its research into significant changes in patient care include targeted chemotherapy for colon cancer, perfidex preservation solution for lung transplantation, passive motion to ensure flexibility following healing of fractures through joint surfaces, warm cardioplegia, and stem cell treatment in a wide variety of applications. Allan Okrainec presented his internet teaching of minimal access surgery throughout the world. http://www.surgicalspotlight.ca/Article.aspx?ver=Winter_2009&f=AfricaSurgerySkype

Richard Reznick highlighted four important new programs developed during the past year.

1. The collaborative bariatric surgical program which will serve 900 patients per year in six hospitals. (http://www.surgicalspotlight.ca/Article.aspx?ver=Spring_2009&f=ChairColumn).

2. The restructure of the training of surgeons to competency-based curricula. The first version of the new program has been introduced in orthopaedic surgery. The program is based on 21 modules in which knowledge and skill is the constant rather than time. \$1.7 million has been granted by the province to develop and evaluate the program.

3. The spine program; (http://www.surgicalspotlight.ca/Article.aspx?ver=Winter_2008&f=SpineProgram)

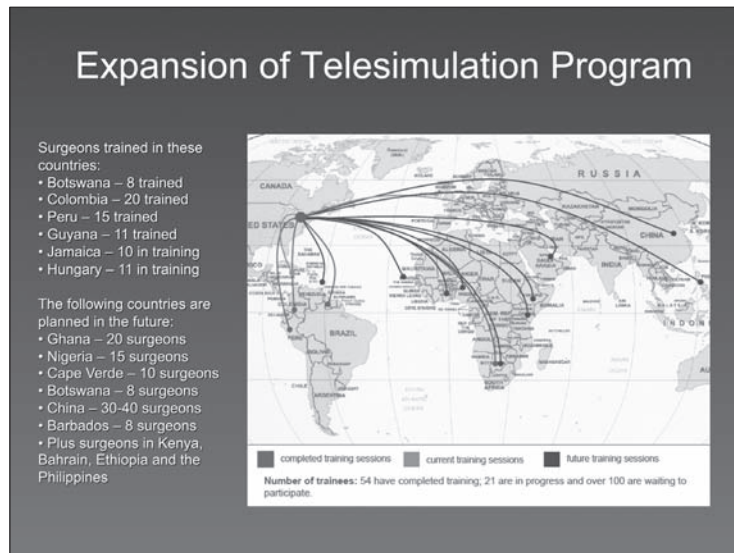
4. The checklist program. (http://www.surgicalspotlight.ca/Article.aspx?ver=Winter_2009&f=Main)

"I cannot recall a clinical care innovation in the past 30 years that has shown results of the magnitude demonstrated by the surgical checklist. This is a change ready right now for adoption by every hospital that performs surgery." Donald Berwick, IHI.

The meeting closed with a moving presentation by surgical oncology fellow Kurt Weiss, an orthopaedic oncologist from the University of Pittsburgh. (see related story on page 17)

There are 209 fellows from 59 countries in the department this year.

M.M



Expansion of Telesimulation Program to teach Minimal Access Surgery

WELCOME NEW SURGICAL RESIDENTS

A fantastic cohort of new residents has beaten the competition to enter the Gallie Program in July 2009. They have diverse and interesting backgrounds.

The Department of Surgery continues to grow with expansion of the number of trainees in many of the surgical specialties. The expertise and enthusiasm of their teachers and resident colleagues promise that our residents will be the best taught ever.

Forty-Five residents have entered the department – 33 male and 12 female. Thirty-four have come through the CaRMS match and are Canadian Medical School graduates. Ten have come through the IMG match and

include Canadians who have studied abroad and are returning to Canada for their surgical training as well as Permanent Residents who have obtained their MD in other countries and will be practicing in Ontario. One is a “visa trainee,” who will return to their home country following training. What a great gift this diverse group of bright young minds brings to our department. Welcome new residents!

Ronald H. Levine, MD
Director, Postgraduate Surgical Education
Department of Surgery



Shaikh Al Hashmi, P/S



Ilyas Aleem, O/S



Heather Baltzer, P/S



Reena Baweja, G/S



Bimal Bhindi, U/S



Paul Carter, P/S



Wiley Chung, G/S



Jossie Swett Cosentino, G/S



D. Rachel Fels Elliot, G/S



Simon Harris, O/S



Olivia Ho, P/S



Justin Hodgins, O/S



David Horovitz, U/S



Sumit Jhas, N/S



Arash Kashfi, G/S



Ahmed Kayssi, G/S



Karineh Kazazian, G/S



Laura Kember, O/S



Osama Khan, N/S



Teresa Langan, N/S



Jeremie Larouche, O/S



Justin Lee, U/S



Tim Leroux, O/S



Kenneth Leung, G/S



Clifford Lin, O/S



Aaron Lo, G/S



Grace Ma, G/S



Matthew McRae, P/S



Safraz Mohammed, N/S



Padraic O'Malley, U/S



Emily Partridge, G/S



Jennica Platt, P/S



Jamie Purzner, N/S



Hadi Sayedi Roshkhar, O/S



Wilfred Tam, U/S



Sebastian Tomescu, O/S



David Walmsley, O/S



David Wang, G/S



Cameron Yau, O/S



Ting Zhang, C/S



Nathan Zilbert, G/S

Not pictured:

- Nathalie Adabachi, G/S
- Herman Dhotar, O/S
- Amir Khoshbin, O/S
- Sydney Wong, G/S
- Roman Zassoko, G/S

From “*Norman Bethune*”, by Adrienne Clarkson
Penguin Canada, 2009, pp39-41.

Right after high school, Bethune, who loved sports and wasn't particularly interested in things intellectual, went to work for a year in a lumber camp in Algoma, in northern Ontario. It consolidated his love for the woods. Nature and the Canadian Shield represented to him not simply pleasant holidays, they were a fact of his life; he was born close to the wilderness and he could contend with it. A logging camp was nevertheless a tough place to live. He was a minister's son, and for the first time he learned what it was like to live day to day working in very dangerous circumstances – logging in deep snow, dragging logs to the river where they would form a huge boom, sawing the trees into lengths, rolling on logs, and giving orders in difficult situations to teams of immigrant men who did not speak English.

He took various jobs, interrupting his education for

up to a year at a time. He taught for six months in a one-room school in the village of Edgeley, near Toronto, and earned \$269, which was quite a sum of money. This, together with the logging money, financed his medical studies at the University of Toronto.

Then he went to work in camps with a specific purpose: Bethune taught his fellow workers reading and writing in the evenings as a member of Frontier College. Alfred Fitzpatrick had founded the movement in 1899.... ‘To many of the foreigners, the labourer-teacher is a new type of Canadian – clean in life and lip, yet straightforward and doing a man's work alongside them,’ wrote Fitzpatrick. ‘He stands for staunch Canadianism and British institutions, and teaches by example and daily wear and tear. He is measured by his worth, not his theory. Quietly and unassumedly, he is a molder of Canadianism.’

For more, see: http://www.surgicalspotlight.ca/Article.asp?x?ver=Summer_2009&cf=ClarksonBethune.

The White Rhinoceros

ACADEMIC SURGERY AS AN ENDANGERED SPECIES



Matthew Howard

The 2009 Wilfred G. Bigelow Lecture, given by Matthew Howard III, Professor and Head of the Department of Neurosurgery, Iowa State University examined the current status and challenges facing Academic Surgery. Dr. Howard compared the contemporary surgeon-scientist to the white rhinoceros, one of the first creatures to capture the public imagination as an endangered species. He highlighted data by Rangel et al demonstrating that compared to their colleagues, surgeons simply are not applying for NIH grants and when they do apply, they are not getting funded Fig 1. Whether it be the white rhino or the surgeon scientist, Dr. Howard argued that we need to gain knowledge of the animal and its environment, determine the causes of impending extinction and formulate a rescue plan.

The challenges facing surgeon scientists today include the apparent cognitive dissonance between surgical practice and scientific surgical investigation. There is a fundamental difference between the mental discipline necessary to run a busy clinical service and the creativity and free-thinking associated with the process of discovery. Wilfred Bigelow and Matthew Howard brilliantly illustrate how this tension can be resolved. Dr Howard also reminded us of the problem created by the strong financial incentives related to the remuneration of surgical productivity both for the hospital/institution as well as the individual surgeon, especially in the face of the mounting debt of contemporary medical trainees. Basic or clinical research, although intellectually satisfying, is often performed at the expense of the bottom line.

The arguments for surgical research are clear. Surgical practice and outcomes continue to improve as a direct consequence of surgical investigations. Without the efforts of Drs. Bigelow and Howard, we would not have

the insights to manipulate body temperatures intra-operatively nor to position leads accurately in beating hearts in a minimally-invasive manner. Surgeon-scientist Howard holds over 25 patents, six NIH grants totaling over \$5 million. He is the Editor-in-Chief of Clinical Neurosurgery and is the Director of the Human Brain Research Laboratory, University of Iowa.

The lecture mandate is to link the fields of cardiac surgery/cardiology with the mind/brain. Indeed, throughout his career, Dr. Howard has seamlessly crossed disciplines from neurosurgery to cardiac surgery to physics and engineering. The biotech company that he established, Stereotaxis (<http://www.stereotaxis.com>), is just one multidisciplinary example. His initial inspiration was the lack of a controlled method to guide probes in the brain. This line of investigation led to the development of a magnetic navigation technology coupled with fluoroscopic imaging to guide lead placement for electrophysiological procedures such as cardiac resynchronization therapy

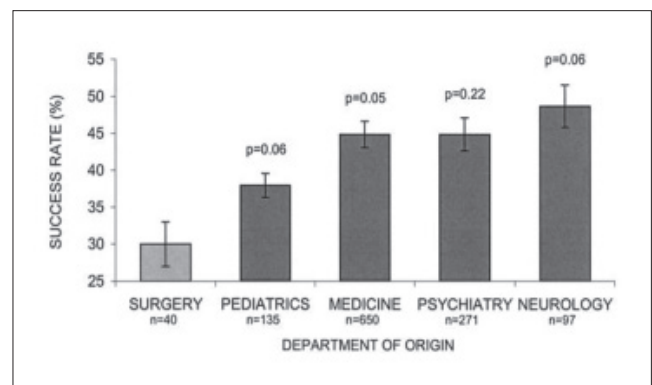
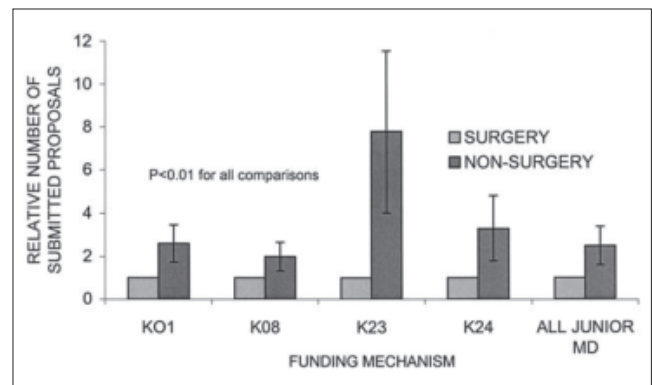


Fig 1. Number and success rate of NIH grants. K's are grant categories. Rangel et al.

Part of the solution to the challenge of rescuing our endangered species is for surgical departments to recruit leadership with research expertise and to encourage and mentor young surgeon scientists. Dr. Howard correctly identified the Department of Surgery, University of Toronto, as a “game preserve” for surgical scientists. This is a tribute to our leadership that has strongly supported academic pursuits of both staff surgeons and trainees for over four decades. The challenge will be to continue to nurture such endeavors.

The format of the talk was simple and informal, but to this young trainee, the message was clear-it was a call to arms for engagement in academia. Dr. Howard is, in the words of Dr. Christopher Caldarone, a triple threat: a first-class surgeon, an accomplished scientist and proven leader. To trainees aspiring to make a contribution as a clinician scientist, his words and demonstrated success are inspiring. Indeed this lecture was profoundly memorable as we strategize our own balance between clinical practice and discovery. We thank Dr. Howard for a thought-provoking and entertaining lecture.

Bobby Yanagawa
Cardiac Surgery Resident

1. Rangel SJ, et al. Recent trends in the funding and utilization of NIH career development awards by surgical faculty. *Surgery*, 2004; 136:232-239.



Aberrant Signaling and Metabolism in Malignant Brain Tumours

Joseph Lister worked patiently on controlling the development of osteomyelitis in open fractures through application of the scientific method. He knew Pasteur’s method of using heat to kill bacteria would not be safe, so he experimented with antiseptics. The Lister Prize is awarded to a senior investigator in our department who has shown outstanding and continuing productivity of international stature. Ab Guha has been working patiently to understand the molecular basis of malignant brain tumors, with the hope this knowledge will lead to novel therapies. Here’s how Ab told the story at a recent University Rounds.



Ab Guha, winner of the Lister Prize

After thanking his family, mentors, colleagues and lab members, Ab praised the Surgeon Scientist Program and the culture of academic excellence in surgery he experienced during his training and later as he mentors the next generation of surgeon-scientists.

Ab’s research has focused on the molecular basis of primary malignant brain tumours, the most common of which is the Glioblastoma Multiforme (GBM). GBMs occur in ~12/100,000 people. Despite treatment by surgery, radiation and chemotherapy, the median survival remains 12-16 months. There are two or more ways that a GBM can arise. Though pathologically indistinguishable, they harbour molecular differences including overexpressed and/or mutated growth factor receptors and intracellular signaling pathways. Ab’s research has focused on two of these aberrant receptors (PDGFR- Platelet Derived Growth Factor Receptor; EGFR- Epidermal Growth Factor Receptor), which have been shown to be overexpressed and activated, leading to increased tumorigenic signals. Biological therapies, based on pre-clinical work by Ab and others, has led to clini-

cal trials with drugs that inhibit these receptors. Since GBMs are not driven by a single genetic alteration, Ab predicted targeting one receptor or pathway will likely not succeed, and will require therapies against multiple targets.

Ab's work has demonstrated activation of Ras, a key intracellular signaling pathway from these receptors, which carries tumorigenic signals to the cell's nucleus. Therapies inhibiting this pathway are under clinical trials. Ab's lab has developed transgenic mouse brain tumour models, based on the molecular alterations found in human GBMs. These models have been used to examine interactions between these molecular alterations to determine which are driving the tumour growth and which are bystander alterations, which ones initiate the tumour vs. which ones makes them progress. In addition to testing the relevance of the known molecular alterations, these mouse models, can also be used to discover new genetic alterations in human tumours. Ab stressed the point about the critical node that surgeon-scientists hold in tumour banking and facilitating their own research, and the work of other basic scientists who do not have ready access to these precious clinical materials.

Ab described how tumours utilize glucose for energy vs. normal cells. In tumours such as GBMs, energy is derived from glycolysis outside the mitochondria. Although less efficient in making ATP this form of glucose utilization allows the tumour cells to survive and accumulate building blocks of further growth, including lipids, amino-acids and nucleic acids. Ab's group has demonstrated the enzyme Hexosekinase2 to be an important mediator of abnormal glucose metabolism in human GBMs. Pharmaceutical companies are increasingly interested in targeting these aberrant metabolic pathways in tumours as potential anti-cancer agents.

Ab wrapped up his talk with a forward look at the field of neuro-oncology to which he and his colleagues have made significant contributions.

Prostate Cancer

WHAT MEN OVER 40 SHOULD KNOW



Robert Nam, winner of the George Armstrong-Peters Prize

Recently a large randomized trial demonstrated a significant 20% reduction in prostate cancer mortality among patients who underwent prostate cancer screening with a blood test called prostate specific antigen (PSA).¹ This finding coupled with another randomized trial demonstrating men undergoing radical prostatectomy versus watchful

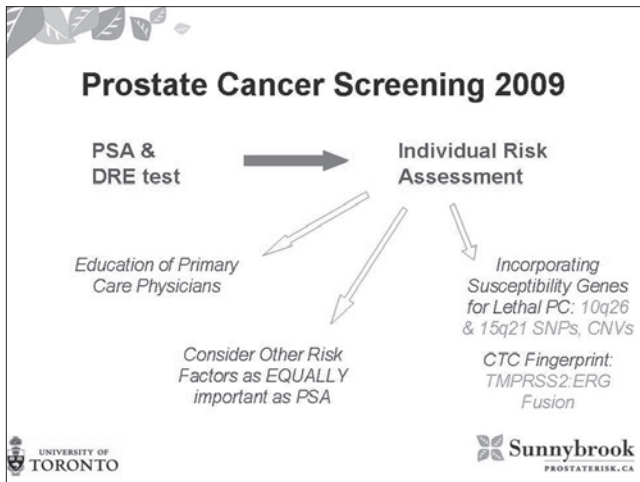
waiting had a 50% reduction in prostate cancer mortality would seem to suggest the pathway for success in prostate cancer is clear: screen aggressively with PSA and treat aggressively with surgery.² However, as Dr. Nam points out, the solution may not be that clear.

PSA is not an ideal biomarker for screening. Initially after its inception in 1987 it was very effective. The 'cutoff' of normal PSA at 4 ng/mL identified many of the men who were harbouring prostate cancer for years. However, since that harvest period, we've learned that prostate cancer is still prevalent even at low PSA values. The majority of cancers detected in 2009 occur in men with PSAs below 4.0 ng/mL.

Simply lowering the cutpoint for a normal PSA would certainly capture more prostate cancers, however it would mean many more men would undergo prostate biopsy in order to find these cancers. In his study of Ontario-wide data, Dr. Nam found the rate of complications after prostate biopsy is increasing, perhaps due to the increasing prevalence of drug-resistant bacterial strains. In 2006, 4% of men undergoing a prostate biopsy were subsequently admitted to hospital with sepsis, compared to 1% in 1996.

Given this screening conundrum, Dr. Nam suggests the medical community needs more refined 'selective screening' and prostate cancer genetic markers may help. He has worked extensively in developing a better screening

instrument that incorporates PSA and other risk factors and tumour markers for prostate cancer. He developed a prostate cancer risk calculator that performs better than PSA alone. There have been several gene markers that have been associated with prostate cancer. A recent study demonstrated 5 single-nucleotide polymorphisms (SNPs) were strongly associated with prostate cancer.³ A man possessing all 5 SNPs has 9 times the risk of being diagnosed with prostate cancer compared to those without any of the 5 SNPs. In breast cancer our understanding of these genes is profound enough to make clinical decisions (e.g. offering prophylactic mastectomy for carriers of the BRCA-1 mutation); our understanding of



Prostate Cancer Screening 2009

genes in prostate cancer is not mature enough yet. For example, we don't know the biological function of the actual genes in which these SNPs reside; the predictive value of using the SNPs is not that much greater than our current conventional risk factors (age, family history, rectal exam and PSA); and the SNPs do not help delineate those harbouring high grade aggressive tumours.

The ability to distinguish those with high grade tumours versus those with low grade tumours is the key issue in prostate cancer. Those with high grade tumours are much more likely to die from prostate cancer. Dr. Nam has taken the concept of using genetic markers one step further. Using state of the art Genome Wide Associations Studies (GWAS) he identified several new SNPs associated in particular with high grade tumours. These SNPs at 10q26 and 15q21 are significantly associated with aggressive forms of prostate cancer.

Combinations of these risk alleles were found to have a 3-fold increase in risk for aggressive prostate cancer. This is the first time SNPs have been found to be predictive of high grade prostate cancer. In a related research pathway, Dr. Nam is studying what happens when two genes, TMPRSS2 and ERG, fuse in a variable way. Variants in the TMPRSS2:ERG fusion transcript have been associated with prostate cancer, and in particular progression of cancer after surgical treatment. If TMPRSS2:ERG is identified in circulating tumour cells of men who present for screening, then they are at substantially increased risk of having an aggressive form of prostate cancer.

In summary, Dr. Nam feels we must work towards more selective screening and selective treatment to better identify men who will benefit from prostate biopsy and radical treatment of their cancer. This selective screening must begin with educating the primary care physicians to identify men at risk. Then an individual risk assessment must be done using traditional risk factors and eventually incorporating susceptibility genetic markers like the SNPs and circulating tumour cell profiles to maximize the yield of men undergoing prostate biopsy in hopes of identifying early those with high risk prostate cancer.

Robert Hamilton
PGY-5, Urology

1. Schroder FH, Hugosson J, Roobol MJ, et al. Screening and prostate-cancer mortality in a randomized European study. *N Engl J Med* 2009;360(13):1320-8.
2. Bill-Axelson A, Holmberg L, Ruutu M, et al. Radical prostatectomy versus watchful waiting in early prostate cancer. *N Engl J Med* 2005;352(19):1977-84.
3. Zheng SL, Sun J, Wiklund F, et al. Cumulative association of five genetic variants with prostate cancer. *N Engl J Med* 2008;358(9):910-9.

Accelerating Fracture Healing

Segmental bone loss at fracture sites continues to be one of the most vexing and resistant problems for orthopaedic and trauma surgeons. Though healing can be accomplished by resection of damaged and devascularized segments, shortening the extremity to heal the fracture in a healthy soft-tissue envelope results in deformity that is not generally acceptable to patients. Grafting is inappropriate in traumatic injuries because of the risk of infection. Secondary approaches following initial shortening include the use of distraction frames complemented with the use of pro-osteogenic factors. About 10% of traumatic injuries result in segmental defects requiring a long period of repair. The combination of the injury and its correction frequently takes a year of the patient's life.



Emil Schemitsch

St. Michael's Orthopaedic Division Head Emil Schemitsch has been working on this problem since he was an orthopaedic resident at the University of Toronto. His research project with Robin Richards examined the effectiveness of muscle flaps to accelerate fracture healing. He later completed a fellowship in arthroplasty at Brigham and Women's Hospital in Boston and a trauma fellowship at Harbourview Hospital in Seattle. When he returned to Toronto he added bone blood-flow techniques learned in Seattle to the fracture healing model. As his study of this problem evolved and deepened, Emil added molecular and cellular interventions in collaboration with cardiologist Duncan Stewart. Recent work with vascular endothelial growth factor in transfected fibroblasts, and endothelial progenitor cells led to national and international awards for his advances toward a solution to this difficult problem.

In studies with Bob Byrick, Emil showed that fat embolism results not from the intramedullary nailing of femoral fractures, but from the initial trauma. More recently,

with research engineer Rad Zdero he has applied finite element modeling to fracture healing in the biomechanics lab and computer navigation to perfect the positioning of hip prostheses during resurfacing. Only 2% of surgeons in North America use computer navigation in the resurfacing operation. His current resident in the surgeon-scientist program, Aaron Nauth, is working on cell-based gene therapy. Aaron has won five grants. Emil is conducting multi-centre randomized clinical trials on orthopaedic trauma with his partner Michael McKee, Mo Bandari from Hamilton and other surgeons across Canada. The Canadian Orthopaedics Society is a world leader in orthopaedic randomized clinical trials. Their recent 1300 patient Sprint trial showed the value of limited intramedullary reaming for internal fixation of tibial fractures.

Emil is married to Maureen, a former intensive care nurse at Sunnybrook. Their daughter Laura is at McMaster. Their 17-year-old son Geoffrey is billeted in Owen Sound where he plays for the Owen Sound Attack. Daughter Christine is at deLaSalle Academy and son Thomas is a Triple A hockey player for the Northrup Rangers. There is a lot of hockey commuting in the Schemitsch family.

During the week of my interview, Emil spent Monday in the fracture clinic, Tuesday in the operating room performing two hip resurfacings and one total hip replacement, Wednesday was spent doing three revision joint replacements, Thursday in orthopaedic clinic and Friday chairing a course for community orthopaedic surgeons at the Hotel Intercontinental. In addition to his research and busy practice, Emil hopes to strengthen and unify the practice of arthroplasty surgery in Toronto where 6000 joint replacements are performed each year. He is grateful to his mentors, principally Robin Richards and Jim Waddell, and looks forward to mentoring additional residents in clinical and laboratory research.

See a related story in an earlier issue of the Spotlight: http://www.surgicalspotlight.ca/Article.aspx?ver=Winter_2009&f=OsteoimmunologyFracture

M.M.

Advances in Vascular Surgery at Sunnybrook

The Division of Cardiac and Vascular Surgery at Sunnybrook has recently recruited two young vascular surgeons to their program with advanced endovascular training.

Andrew Dueck, following his initial surgical training at the University of Toronto in general and vascular surgery, was recruited to Sunnybrook Health Sciences Centre in 2007 (http://www.surgicalspotlight.ca/Article.aspx?ver=Winter_2009&cf=NewStaff). Following fellowship training in vascular surgery in Toronto, he traveled to Phoenix, Arizona to pursue advanced endovascular training under Dr. Ted Dietrich at the Arizona Heart Institute (AHI). AHI is a state-of-the-art facility designed to provide open vascular, endovascular, and cardiac procedures together in one location. There are four operating rooms each equipped with C-arms for imaging, carbon fiber tables and the full range of the latest devices and stents for cardiac and vascular interventions.

“The dramatic changes required to train one individual in such a broad range of skills would be disruptive to current university training programs, the hospital and the practice of vascular surgery and radiology, but those barriers were never encountered. Wayne Johnston, Tom Lindsay, Richard Reznick, Robin Richards and Robert Maggisano made this unusual training regimen possible. They just made it happen.” Giuseppe Papia has also recently pursued the Endovascular Fellowship at the Cleveland Clinic. This is a high volume operative fellowship available only to fully trained vascular or cardiovascular surgeons. He was appointed to the group at Sunnybrook this year. “Working together is an amazing experience for us. We know that Drs Reznick and Lindsay are doing things that we don’t even know which are facilitating our success.”

At Sunnybrook, cardiologists, cardiac surgeons and vascular surgeons had always worked under the administrative umbrella of the Schulich Heart Program. The question of which rooms could be used for hybrid cardiac and vascular procedures was immediately answered thanks to Brian Gilbert, head of the Schulich Heart Program, and Eric Cohen, director of the cath lab. They



Endovascular Suite at Sunnybrook

were well aware of recent advances in the field of endovascular surgery and were early and enthusiastic supporters. “The cardiologists and cardiac surgeons helped us build a centre that is equipped even better than the one I worked in at the Arizona Heart Institute”.

Andrew’s colleague and office-mate Giuseppe Papia (http://www.surgicalspotlight.ca/Article.aspx?ver=Summer_2009&cf=NewStaff) worked in two dedicated endovascular suites for vascular intervention in Cleveland. Overall there are 11 surgeons performing hybrid procedures in five specially equipped rooms at the Cleveland Clinic. Joe performed over 300 endovascular procedures “from skull base to the toes with every possible device available that you can imagine.” There he worked with Roy Greenberg, a pioneer and world expert in branched aortic endovascular aneurysm repair (EVAR) for thoracoabdominal aneurysms. At the Cleveland Clinic they performed three to five of these complex cases per week. “The team spirit and efficiency at both of these centres was outstanding. If the surgeon is seen as the lead paddler of the canoe there was never anyone behind dragging a paddle or an anchor -- the rest of the team provided an outboard motor. Turnover time was generally eleven minutes. The dress code in the Cleveland Clinic operating room simplified communication. Staff surgeons wear white, residents wear blue and industry representatives wear orange. Everyone on the team takes great pride in the clinic and patients feel the esprit de corps.”

Endovascular procedures are not new. Joe and Andrew emphasize that their vascular radiology colleagues have been performing angioplasty since the 1980s, and endovascular stenting for abdominal aortic aneurysms has become the standard of practice throughout Canada.

They are now pushing the envelope in terms of more complex hybrid interventions such as endovascular-aorto-bifemoral procedures, and catheterization through patches over profundoplasties to facilitate the introduction of balloons and stents in both directions. For example this allows “aorto-bifemoral bypasses” to be performed with two small groin incisions. These multilevel interventions allow patients to go home quickly, often in one to two days. More importantly they are spared the long period of recovery at home associated with open procedures. “The novelty is not choosing one or the other, open or endo, but being able to combine the best of both endovascular and open surgery for each individual patient. As the specialty evolves, the surgeons must also evolve. Daryl Kucey and Robert Maggisano were the pioneers at Sunnybrook who broke the ground with the radiologists, raised money for the equipment and the cardiac surgeons and cardiologists at the Schulich Centre. Dr. Maggisano became a tireless fundraiser, sharing his vision with a broad range of potential donors. Major donors became infected with Dr. Maggisano’s contagious enthusiasm, bought into the vision early and offered financial support, which in turn encouraged additional donations. These efforts enabled the purchase of the initial equipment. Brian Gilbert and Eric Cohen provided key administrative support to developing additional infrastructure. The diaphragm and the heart lung machine are no longer defining boundaries between vascular and cardiac surgery. These two surgical specialties have been one division at Sunnybrook for the past four years, and collaborate to perform cases in a combined fashion. There is a strong relationship with the division of cardiology with Drs. Madan, Dick, Strauss, Cohen and Radhakrishnan all playing an active clinical and research role. Most recently, the cardiac surgeons, cardiologists and vascular surgeons have come together to form a team for the performance of transfemoral aortic valve surgery.

In addition to the multilevel collaboration amongst specialties in the operating room and endovascular suites, Joe’s presence in the cardiovascular ICU also helped bond the services together. He has especially good rapport with surgeons in the ICU and when attending in the ICU has helped nonsurgical staff understand the unique culture and values that inform post-op surgical care. Everyday at the Heart and Vascular Institute at Cleveland Clinic

Foundation there are different trans-disciplinary rounds that build team cooperation. Tuesdays -- vascular medicine and surgery, Wednesdays -- aortic rounds with the cardiologists and cardiac surgeons, Thursdays -- carotid rounds with all disciplines including neurosurgery. “These provided an incredible educational forum where different disciplines treating the same disease discussed cases and approaches together. The spirit was that the patients belonged to the Clinic, not individual physicians, therefore everyone worked together to ensure they received the best treatment possible.”

The Trauma service is another important area of synergy at Sunnybrook. “The trauma surgeons are excellent at vascular repair. They call the vascular surgeons only for replacement, bypass or reconstruction of unsalvageable, unreparable vessels. It helps that we are friends who trained together and that they are so good at what they do.”

The research agenda is a collaborative one. Andrew is working with Graham Wright and his imaging sciences group, a well-funded and productive research team developing measurement tools to replace older standards familiar to many surgeons such as the anklebrachial index. These measurements will introduce techniques that will allow assessment of microvascular disease essential to determine and predict the fate of more proximal interventions, and potentially a mechanism to evaluate stem cell therapies. Other important collaborative research includes the quest for developing non-contrast imaging for renal patients, a 3-dimensional model of the vascular tree using intravascular ultrasound that looks forward rather than only at cross-sectional images, and translational research to be sure that the advances in understanding and treatment are brought to the population throughout the province. Joe’s research is focused on his background in intensive care and his interest in patient safety and minimizing harm to patients through the standardization of process. With the support Rob Fowler and the Department of Critical Care Medicine, and Robin Richards, Joe has recently completed training at the Institute for Healthcare Improvement in Boston with Dr. Don Berwick and his team. “Don Berwick is probably the most respected physician in America and an absolutely inspirational speaker when it comes to patient safety. *Escape Fire: Lessons for the Future of Healthcare* is a must read for anyone who takes

care of patients.” His focus is on standardizing process for “handovers”-- the critical points in the care cycle where everything can potentially go wrong for patients. He is working on a formal process for handing over patients from the Operating Room to the ICU. He works in the Patient Safety Scholar program with Ed Etchells and Kaveh Shojania. Joe is also currently piloting and working on the implementation of the WHO Surgical Safety Checklist at Sunnybrook’s two sites, and is working with the provincial SSCL working group. He is collaborating with Sherry Espin, Associate Professor of Nursing at Ryerson University, on evaluating the implementation process of the WHO checklist across the province as well as its effect on operating room culture.

M.M.

Learning About Sarcoma



Kurt Weiss and family

Orthopaedic surgery oncology fellow Kurt Weiss is working with Jay Wunder, Peter Ferguson and Ben Deheshi. Kurt will take responsibility for clinical and basic science research in bone sarcomas when he returns to the University of Pittsburgh, where he completed his orthopaedic residency training. Kurt’s interest and commitment to orthopaedic surgical oncology came from very personal experience; he developed an osteogenic sarcoma when he was a high school student in his home

town of Pittsburgh, Pennsylvania. Kurt studied the molecular biology of orthopaedic malignancies for one year as a pre-medical student at Notre Dame University, one year as a graduate student at the National Institutes of Health, and a third year in the laboratory during his surgical residency working with orthopaedic oncologists Mark Goodman and Richard McGough. These colleagues and his long-time mentor Richard Lackman at the University of Pennsylvania encouraged him to come to the University of Toronto – “the best place in North America to study orthopaedic surgical oncology”. His mentors here are Bob Bell, the founder of the program, Jay Wunder, the dynamic Surgeon-in-Chief of Mt. Sinai Hospital whose laboratory is focused on the molecular biology and signaling pathways in musculoskeletal tumours, and Peter Ferguson, a gifted clinical surgeon conducting clinical and laboratory research on soft-tissue sarcomas. A recent recruit to the group is Ben Deheshi who completed an orthopaedic surgical oncology fellowship in Toronto three years ago following orthopaedic residency in Ottawa. The research engine of this spectacular group is coordinated by Anthony Griffin who manages the 30-year prospective data bank started by Bob Bell in 1989.

Kurt grew up in Perrysville, outside Pittsburgh, the youngest of three children. His father is a metallurgical engineer, his mother an elementary school teacher. His sister is a chemical engineer and his brother a dentist. His wife Laura graduated from Notre Dame two years after Kurt. They met when Kurt was in medical school in Philadelphia and Laura was working for a publishing company; as it turned out, she had written a story about the molecular genetics work of Kurt’s laboratory mentor Christopher Evans several years earlier. Kurt’s children, 9-year-old Connor and daughter Annaliese age 5 are enjoying the new experience of living in Toronto, learning French and enjoying the diversity and friendly culture of a great city.

M.M.

New Developments in Transplant Ethics



Linda Wright and David Rodriguez-Arias Vailhen

Should elective surgery patients be offered the opportunity to donate a kidney to a patient on the waiting list? If only 3% of patients scheduled for laparoscopic cholecystectomy agreed to donate, the waiting list would disappear. Since the risks of anesthesia and incisions have already been accepted, the only incremental risk is loss of a kidney by laparoscopic nephrectomy. Should the donor meet the potential recipient? Should the donor be reimbursed?

These questions, recently debated at the University of Chicago MacLean Center for Clinical Medical Ethics, are typical of the high voltage transplant ethics issues and complex quandaries that Assistant Professor of Surgery Linda Wright addresses routinely in her role as UHN Director of Bioethics. A widely acknowledged authority on transplant ethics, Linda receives calls from across Canada, the US, and abroad. Should an anonymous donor be allowed to donate against the wishes or without the knowledge of her spouse? How should public solicitation and internet based donation be managed ethically? How should domino transplants be managed to maintain confidentiality and avoid the potential problem of donors backing out once their spouse has secured a kidney? Should altruistic liver donors be reimbursed?

Linda and her colleagues wrote the guidelines for living organ donors.¹

Linda began her career as a social worker in nephrology in Montreal, gaining a large experience with the ethical and social issues related to decisions about dialysis and transplantation. She then began working in the heart transplant program at the Royal Victoria Hospital. She came to Toronto and completed her masters degree in bioethics at the Joint Centre for Bioethics. Following a clinical fellowship, she was appointed to the bioethics program at the University Health Network. In addition to her work on transplantation, the bioethics programme works with all of the other services, teaching, developing policy, and dealing with a wide range of issues from innovation and research to neurosurgical interventions to treat depression. Her work has been substantially facilitated by the addition of Kyle Anstey, a PhD ethics scholar trained in Australia, (<http://www.jointcentrefor-bioethics.ca/people/anstey.shtml>) and the recent arrival from Spain of David Rodriguez-Arias Vailhen, PhD, as an ethics postdoctoral fellow.

David finished his PhD in philosophy at the University of Paris-Descartes in December of 2008. He received a scholarship from the Spanish government offered to post-doctoral candidates to go anywhere in the world to study. The plan was to reduce the inbreeding in multiple fields. David's goal is to strengthen his already excellent English, and to gain clinical exposure. The University of Toronto Joint Centre for Bioethics was well-known to him by reputation. Abdallah Daar put him in contact with Linda, a bioethicist with practical expertise in clinical transplantation. David's thesis was a scholarly, largely abstract work on brain death and transplantation. David learned about Linda while studying in Cleveland; he visited the Joint Centre after an overnight bus trip and was attracted to the learning opportunity. He finds their skill-sets complementary. Linda is an expert on living donors and David on deceased donors, Linda on practical issues and David on theoretical frameworks. He hopes to participate as an observer in clinical consultations and operations.

He is interested in conceptual boundaries between animal and human, male and female, life and death, all of

which are partly objective, and partially constructed by social factors and institutions. His philosophical interests are in constructivism, pragmatism, and utilitarianism - all relevant frameworks for transplantation ethics. In the U.S. last year there was a presidential council white paper that questioned the appropriateness of brain death and suggested that this definition of death might be abandoned.

The brain death construct was developed by a committee at Harvard University that led to a bifurcated definition of death. Cardiorespiratory death is the irreversible loss of circulation, while brain death is the irreversible loss of the functions of the entire brain. The committee cited two reasons for defining brain death: 1. the burden on the patient, family, and institution of keeping such patients alive; 2. obsolete criteria for the definition of death that led to controversy in obtaining organs for transplantation. [After performing Japan's first heart transplant, cardiac surgeon Juro Wada was arrested for murder when he removed the heart from a "brain dead donor", a western concept not yet accepted in Japan.]

David finds Toronto a model of integration of cultures, far beyond anything he saw during his five years in Paris where "there are many people from many countries, but they are more segregated." He loves the mosaic of Toronto where 107 languages are spoken and the people are genuinely friendly, polite and helpful. On his return, David will go back to teach at the University of Salamanca, the third oldest university in the world after Bologna and Paris. His goal is to strengthen the connection between the University of Toronto and his university as he has done in connecting the University of Paris with Salamanca.

M.M.

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Advancing Surgical Oncology

In his role as provincial head of surgical oncology for Cancer Care Ontario, Jon Irish works with surgeons of all specialties. His overall goal is to improve access and quality of care. He works with other strong surgical leaders: Robin McLeod, as the Lead for Quality Improvement and Knowledge Transfer; David Urbach, as the Lead for Cancer Prediction and Planning; Barry Rosen, as the Lead for Informatics; Frances Wright, as the Lead for Multidisciplinary Cancer Conference implementation; and Andy Smith in quality improvement for colorectal cancer services in the Province. Many of the quality initiatives in general surgery were initiated by Hartley Stern and Bernie Langer and continued by



Jonathan Irish and family

the new team over the last three years. These include significant advances in node sampling and tumour margin clearance for colorectal cancer. Gail Darling is active in thoracic oncology quality improvement focusing on mediastinal node staging, and there are important advances in improving margins in surgery of the prostate throughout the province with Neil Fleshner taking a major leadership role in this area. Optimizing surgical margin rates and looking at survivorship quality of life are major areas of exploration and potential for quality improvement in prostate cancer.

The general approach is to measure performance, define the standards, identify and then close the gap. Wait times for all cancers are measured regularly and then recorded on the Ministry of Health website. (http://www.health.gov.on.ca/transformation/wait_times/public/wt_public_mn.html#)

Jon has advocated on behalf of surgeons to provide adequate funding for surgical oncology research, and academic repair funds for academic surgeons. The effect of the repair funds over five years has recently been reported to the Ministry of Health and a position paper in preparation will be summarized in the Spotlight. Jon has been active in human resources planning for cancer care in the province. New models of care are being developed using physician extenders in anaesthesia and surgery. General practitioners specializing in oncology (GPOs) are working actively in clinics, especially in breast cancer. These human resource advances are outlined in an eight-point plan http://www.health.gov.on.ca/transformation/wait_times/providers/reports/cancer_ep_report_0905.pdf It emphasizes human resources, quality improvement, closing the gap, and investing in technology such as laser, nanotechnology and robotics.

At UHN Jon has been engaged in the GTX (Guided Therapeutics) Program with a multidisciplinary team from interventional radiology, imaging, physics, radiation oncology and surgery. The theme of the GTX program is “create, innovate, translate, evaluate and educate.” A recent example is Kazuhiro Yasufuku’s minimal access endobronchial ultrasound-guided needle biopsy of mediastinal nodes. Other major initiatives employing robotics, real-time imaging and ablation are being led by Michael Jewett, John Trachtenberg and Walter Kucharczyk in the areas of prostate and kidney cancer therapeutics. Michael Fehlings, Mike Tymianski and Fred Gentili are part of the GTX programs thrust in spinal and skull base surgery. As Irish states, “Just as not all new cancer therapy drugs in development ultimately lead to an established position in the therapeutic armamentarium, it is important for interventions in surgery, radiology and other disciplines to explore similar pathways of discovery. We should not feel a sense of failure if a given innovation doesn’t work, but

keep exploring new approaches.” Jon uses the Enabling Innovation pathway for the introduction of new technology. (<http://www.surgicalspotlight.ca/Shared/PDF/Winter06.pdf> – page 15)

Jon’s clinical practice is focused on head and neck surgical oncology. He practices in collaboration with other otolaryngologists as well as Lorne Rotstein from general surgery and Stefan Hofer from plastic and reconstructive surgery. He treats patients every day and loves his clinical work as much as he did when he started 18 years ago. He works in a very collaborative practice with radiation and medical oncology and allied health members such as speech-language pathologist.⁵

His management responsibilities include the oversight of 52 surgical oncologists in all disciplines ranging from ENT to gynaecology to orthopaedics, head and neck surgery, general surgery (HPB, breast, colorectal, sarcoma), urology, and thoracic surgery. Surgical oncology has expanded rapidly in recent years thanks to the work of Sherif Hanna, Andy Smith, David McCready and other leaders across the Province.

There is a strong fellowship program in surgical oncology with 49 current fellows in all disciplines. 50% are international fellows from the US, UK, the mid-east, Australia and Asia. The strong fellowship program particularly in the area of General Surgery that has developed over the last 10 years is due to the leadership of Carol Swallow. The Royal College has approved a certificate of special competence in surgical oncology, so far only for general surgery, whereas the America boards credit several of the subspecialties.

Jon’s management background is derived from the informal common sense school and from the example of role models like Pat Gullane, Bob Bell, Hartley Stern, Bryce Taylor, Bernie Langer, Alan Hudson and Robin McLeod. He felt that the physician leadership course in the Department of Health Policy, Management and Evaluation was a validation of the informal curriculum, but feels practical experience and proven competence are required as background before management training is appropriate for young surgeons. A surgeon who has earned the respect of peers and students as an educator

and clinician can then consider adding management training. The natural progression through residency and staff responsibilities provides this essential background.

Jon's research includes deploying molecular biological techniques for prediction of clinical outcomes using micro-array analysis in collaboration with Dr. Suzanne Kamel-Reid. He is studying quality of life outcomes in head and neck cancer patients with the Psycho-oncology group at Princess Margaret Hospital, population-based outcome studies in collaboration with Dr. Patti Groome and Brian O'Sullivan, and a multidisciplinary approach to guided therapeutics with Dr. David Jaffray and Walter Kucharczyk.

Jon is married to Rosemary Martino, a PhD speech language pathologist and University of Toronto clinical epidemiologist who is a Professor in the Faculty of Speech Language Pathology. Their son Matthew, 22, is in law school at the University of Western Ontario; Brendan, 20, is an undergraduate at Queen's University; and daughter Liz, 16, is a high school student at the University of Toronto School.

M.M.



"I wish you a happy holiday, Ed, even though the leading indicators don't point to it."

Caption: © Henry Martin/Condé Nast Publications/www.cartoonbank.com

NEW STAFF



Tulin Cil

A graduate of the University of Western Ontario Medical School in 2000, Tulin received her general surgery training at the University of Toronto and UWO from 2000-2005. She became a fellow of the Royal College of Physicians and Surgeons of Canada in 2005. After completing her general surgery training, she undertook research studies as a master's graduate student in medical education at the Ontario Institute for Studies in Education (UofT), and received her MEd. in 2008. She also completed a clinical fellowship in Breast Surgical Oncology at the University of Toronto during this period. She began her general surgery staff appointment at Women's College Hospital and the University Health Network in 2008.

Her clinical practice is devoted to the care of patients with breast disease. She is affiliated with the Wilson Centre at UHN where her research is in surgical education, focusing on innovative teaching strategies and mechanisms of learning surgical skills.

Tulin and her husband, Dr. Peter Howard, have a very busy home life. They have just welcomed twin boys on August 5th, 2009, in addition to their 3-year-old daughter, Ela.

The Department of Surgery welcomes Dr. Ralph George. Ralph was recruited from Queen's University to take on the position as Medical Director of the CIBC Breast Centre at St. Michael's Hospital. He received his professional education at Queen's University, and completed his endoscopy and surgical oncology fellowships at the



Ralph George

Roswell Park Cancer Institute. He is well known for his teaching and has contributed tremendously as chair of the Continuing Professional Development Committee

for the Canadian Association of General Surgeons, where he focuses on quality improvement in surgical practice.

*Avery B. Nathens
Division Head General Surgery & Director of Trauma,
St. Michael's Hospital
Medical Director, Ontario Critical Program*



Anand Ghanekar

The Division of General Surgery and the Solid Organ Transplant Programme are pleased to announce the appointment of Anand Ghanekar.

Anand completed training in general surgery at the University of Toronto, followed by a HPB and transplant fellowship, also at U of T. After training extensively in solid abdominal organ trans-

plant (liver, kidney, pancreas, intestine) at the University of Toronto he underwent training in laparoscopic donor nephrectomy at the University of Wisconsin. Anand is appointed to the Divisions of General Surgery at the University Health Network and Hospital for Sick Children. His clinical practice is focused on living and deceased donor abdominal organ transplantation in adults and children.

Anand is an Affiliate Scientist at the Toronto General Research Institute and has an active research interest in the role of stem cells in diseases of the liver including hepatocellular carcinoma.

*Lorne Rotstein, MD, FRCSC
Professor of Surgery
Peter A. Crossgrove Chair in General Surgery*

Rebecca Gladdy is a surgeon-scientist and surgical oncologist who joined the Division of General Surgery at Mount Sinai Hospital, Toronto in July 2009. Her scientific and clinical interests are in the area of sarcoma.

Rebecca is a graduate of the medical school at Queen's University, and obtained her general surgery training at the University of Toronto, graduating from



Rebecca Gladdy

our program in 2005. She is also a graduate of the Surgeon Scientist Training Program at the University of Toronto, and obtained her PhD in 2003, under the supervision of Jayne Danska and Cindy Guidos. Her doctoral studies focused on the early genetic changes in leukemia, including how different molecular signatures influenced the behaviour of leukemic stem cells.

Following her general surgery training, she completed a brief period of postdoctoral research at the Lunenfeld Institute at Mount Sinai Hospital, assessing cytogenetic characteristics of malignant cells haploinsufficient for the tumour suppressor polo-like kinase 4. Rebecca then completed a two-year fellowship in surgical oncology at Memorial Sloan-Kettering Cancer Center in New York, where her interest in sarcoma as a research and clinical focus emerged. Her research work while at MSKCC included studies of radiation associated sarcoma and the natural history of leiomyosarcoma. In addition, she completed additional postdoctoral training to acquire techniques to establish mouse models of sarcoma, and formed ongoing collaborations with basic scientists in New York.

Upon joining the faculty of the Department of Surgery here at the University of Toronto as an Assistant Professor, Rebecca successfully competed for a substantial award as a Clinician Scientist in the Selected Therapies Program of the Ontario Institute for Cancer Research and obtained a career development fellowship from the American Surgical Association. She has already established an independent laboratory as an Associate Scientist at the Lunenfeld Institute, and is developing a Functional Genomics program with the goals of defining which molecular signatures of sarcoma can be utilized for the development of novel therapies. Her scientific mentor is Dan Durocher and her clinical mentor is Carol Swallow.

*Carol Swallow
Mount Sinai Hospital*

The Division of General Surgery is delighted to announce the appointment of Dr. Catherine O'Brien.

Catherine obtained her BSc from McGill University in 1994, her MD (1998) and MSc (2002) from the University of Western Ontario. She completed training in General Surgery at UWO and became a fellow of the Royal College of Physicians and Surgeons of Canada in 2003. Catherine obtained her certificate in surgical



Catherine O'Brien

oncology at the University of Toronto in 2005 and is presently pursuing her PhD at the Institute of Medical Science under the supervision of Drs. John Dick and Steven Gallinger. Catherine joins the Division of General Surgery as a Surgeon-Scientist. She has developed an impressive research track record during her training, including a CIHR four-year, post-doctoral fellowship grant, a PSI grant, and Canadian Society of Surgical Oncology first prize for basic science presentation. Catherine's publications are equally impressive with a first author paper in *Nature*. Catherine's research interest centres on the identification of the colon cancer stem cell, while clinically she has an interest in GI malignancies.

Lorne Rotstein, MD, FRCSC

Professor of Surgery

Peter A. Crossgrove Chair in General Surgery



Farewell to Julie Roorda



Julie Roorda

With this issue, our assistant editor Julie Roorda leaves the Surgical Spotlight. She has contributed exceptional intelligence, humour and good judgement to the department for the past nine years. Julie has published two

books of poetry and two of fiction while working half-time with us. She recently received a grant from the Toronto Arts Council to write another novel and launch her career as a full-time author. Richard Reznick, Bryce Taylor and I, along with the department members and staff thank Julie and wish her well in her career. Ed.

DUNDAS STREET BRIDGE

I was crossing the Dundas Street bridge
at an alchemical moment of zero
that slicked the gritty concrete below
my feet and I nearly slid over the edge.

I latched to the guardrail while the roar
of heavy streetcars shook the road
and the six o'clock Go-train ferried its load
of commuters to their bedrooms in Aurora.

The riders were immune to the needles of twilight
Shooting pink dye through veins of the old
papery skin of snow. And just as the cold
Conjures invisible breath to sight,

The half-light luminized the flux beneath
the surface of steady brick warehouses,
colour of dried blood, a flow rousing
new buds of rust on the remaining teeth

of broken trucks and machinery in a fenced
lot. They bloomed while I watched;
the growth of hibernation hatched
in that moment between now and the present.

Julie Roorda
From "*Eleventh Toe*",
Guernica, 2001

Tribalism



Martin McKneally

Most people believe that civil society is organized by jurisdictions and corporations, and governed by councils, parliaments and boards. While formally true, I believe there is a more important fundamental unifying element. Primitive and powerful tribal organizations preceded these structures, and tribalism persists today, influencing our decisions

and trust relationships. The tribes are not limited to the “tribal areas” of the developing world. We all live in tribal societies, where values, beliefs and codes of conduct are socially inherited and learned through close contact. The knowledge-intensive work of surgery involves tacit knowledge -- “task specific experiences that cannot easily be articulated or stored in documents”. This knowledge is difficult to share without first hand experience through close contacts. People who share these experiences are more likely to trust each other, based on a variety of qualities and characteristics. Demographic and social-contextual factors that led to their co-location and group membership reinforce the shared experience that binds them to their tribes.

Tribal instincts rather than rational analyses can lead to suspicion or even hostility between tribes. As a resident at the University of Minnesota, my occasional clandestine Saturday trips from Minneapolis to the Mayo Clinic to watch the gifted O.T. Claggett perform thoracic surgery were viewed as seditious by my tribal chief, surgery chairman Owen Wangansteen. Corporate mergers between Cornell and Columbia in New York City, or Massachusetts General and “The Brigham” in Boston did not extinguish tribal boundaries maintained and guarded by their surgeons.

Canadian surgeons are more collaborative than those in the US, where entrepreneurial marketing enhances institutional and personal incomes. Nevertheless, tribal boundaries are palpable. Residents quickly adopt the customs and biases of the service they are on - to gain acceptance as initiates and accelerate their progress toward increased responsibility and operative experience. Fellows who are recruited to the faculty help break down barriers as they scrub in and

operate, especially when hired across tribal boundaries.

When Andy Smith was taking the message to surgeons across Ontario that “negative nodes in colon cancer means twelve or more nodes were resected and all are negative,” he encountered resistance. (see page 7 at <http://www.surgicalspotlight.ca/Shared/PDF/Winter07.pdf>) So he hung his clothes in their lockers, put on the tribal greens of their hospitals and operated with local surgeons. The policy was widely adopted because of trust based on “first hand experience through close contact”, not through evidence and rational argument presented on Powerpoint slides in a formal conference room.

In their book on Tribal Leadership, David Logan and his colleagues describe the taxonomy and characteristics of five levels of tribal development. Click on his excellent TED TALK (http://www.ted.com/talks/david_logan_on_tribal_leadership.html) to see how effective leaders “nudge tribes forward” from “we’re great; you’re not” to more advanced levels of reconciliation and unity.

Martin McKneally

3. Polanyi, M. 1967 www.infed.org/thinkers/polanyi.htm
4. Logan, David. Tribal Leadership. Harper Collins, 2008

From “Tribal Leadership”, by Dave Logan et al.
Harper-Collins, 2008, p.181

- There are two ways to seek core values. The first is for a Tribal Leader to tell a value-laden story, which triggers others to tell similar stories about their values.
- The second way is to ask questions such as “What are you proud of?” and ask three to five open-ended questions.
- The Tribal Leader’s goal is to find shared values that unite the tribe.
- A noble cause is what the tribe is “shooting for”. There are two ways to find a tribe’s noble cause. The first is to keep asking, “in service of what?”
- The second way is to ask the Big Four Questions of people in the tribe. They are “What’s working well?” “What’s not working?” “What can we do to make the things that aren’t working, work?” and “Is there anything else?” These questions capture a group’s current assessment of its situation and its aspirations about what should change and why. The noble cause will often emerge out of people’s answers to the questions.
- The goal of determining values and a noble cause isn’t agreement; it is alignment, which produces coordinated action married with passionate resolve.

FAMILY AND ALUMNI NEWS



Aydin and Emre

Tulin Cil and her husband, Peter Howard are delighted to announce the birth of their twin boys, Aydin and Emre on August 5th, 2009. Their big sister Ela is thrilled with her little brothers. We would like to thank everyone at Mount Sinai for their excellent care as well as our friends and colleagues for their help.



Miranda

Miranda Audrey Whatley-Langer, granddaughter to Jack Langer and great-granddaughter to Bernie Langer, was born on August 31, 2009.

HONOURS / AWARDS / ACCOMPLISHMENTS

Shady Ashamalla (GenSurg) won the CAGS/Covidien Resident Award for Excellence in Teaching at the Canadian Association of General Surgeons meeting this past September.

Ivan Diamond (GenSurg) won the Clinical Research Paper Award (1st prize) at the Canadian Association of Paediatric Surgeons meeting in Halifax, Nova Scotia for his paper “Does the Colon Play a Role in Intestinal Adaptation in Infants with Short Bowel Syndrome? A Multiple Variable Analysis” (Supervisor: Paul Wales).

Ivan also won the 2009 SickKids Research Institute Exceptional Research Trainee Award.

Cagla Eskicioglu (GenSurg) and **Shawn Forbes** (ColorectalSurg) won the CSCRS/Genzyme Canada Inc. Best Paper Podium Presentation at the Canadian Society of Colon and Rectal Surgeons Paper Session at the Canadian Surgical Forum in Victoria, BC, September 9-12th, 2009.

Michael Fehlings (NeurSurg) has received the 2009 Olivecrona Award for his contributions to spinal cord injury research. This award, given by the Karolinska Institute in Stockholm, recognizes an outstanding neurosurgeon/scientist who has contributed with excellence to the neurosurgical field, based on development of microneurosurgical techniques, pedagogical skills or scientific contributions.

Michael has also been awarded the North American Spine Society’s 2009 Leon Wiltse Award for excellence in leadership and/or clinical research in spine care.

Patrick Gullane (ENT) has been awarded an Honourary Fellowship of the Royal College of Surgeons of England. This is one of the College’s highest awards which recognizes outstanding contributions to surgery.

Barbara Haas (GenSurg) received the award for the best clinical paper in the American College of Surgeons Committee on Trauma Regional Resident Paper Competition. Her work entitled “Survival of the fittest: Overcoming survivor bias in evaluating the transfer process” improves upon prior methodological approaches in assessing the mortality attributable to undertriage of major trauma.

Tom Lindsay (VascSurg) won the Canadian Society for Vascular Surgery’s John L. Provan Educational Award, for a project done in conjunction with Kevin Molloy. This award recognizes the best project pertaining to medical education.

Andres Lozano (NeurSurg) has been named a fellow of the Royal Society of Canada, the oldest association of scientists and scholars in the country.

Vanessa Palter (GenSurg) received the CIHR Masters award and the Royal College medical education research grant.

Cho Pang (PlasSurg) received the Plastic Surgery Education Foundation Award for Outstanding Achievement in Basic and Translational Research. This award was established to recognize outstanding achievements in basic and translational research impacting the practice of plastic surgery. This prestigious award recognizes an investigator whose novel and significant work has had or may have a far-reaching impact on the treatment of surgical disorders and the practice of plastic surgery.

Fayez Quereshey (GenSurg) received the Canadian Association of General Surgeons Resident Teaching Award this year.

Richard Reznick (GenSurg) has been elected as Vice President of the RCPS in charge of education, for a 3-year term

Postdoctoral Fellow **Praphulla C Shukla**, PhD, mentored by Subodh Verma was one of the finalists of the 2009 American College of Cardiology Young Investigators Award. His project is titled “BRCA1 is a novel regulator of cardiac function”,

Postdoctoral Fellow **Krishna K Singh**, PhD, mentored by Subodh Verma has won the 2009 American Heart Association-Vivien Thomas Young Investigator Award. His project is titled “BRCA1 is a novel regulator of endothelial function and limits atherosclerosis”.

Marvin Tile (OrthSurg) has been appointed to the Order of Canada. He is recognized for his contributions as a clinical orthopaedic surgeon, teacher and groundbreaking researcher. He is a world authority on the treatment of pelvic and acetabular trauma and has trained clinicians from around the world.

Leonard Tse (VascSurg) won the the Canadian Society for Vascular Surgery’s Cook Research Award. This award recognizes the best project in clinical or basic science research pertaining to Endovascular Surgical therapeutic strategies.

Subodh Verma (Cardiac Surgery, SMH) was recently featured in the Rediff India Abroad’s Power List of 30 most Influential Indo Canadians.

Douglas Wooster (VascSurg) won the Canadian Society for Vascular Surgery’s Gore Research Award, given for the best project in clinical or basic science research. Douglas also won the the Sigvaris President’s Award which recognizes the most outstanding abstract dealing with venous disease presented at the Annual Meeting.

GRANTS / FELLOWSHIPS

Wigdan Al-Sukhni (GenSurg Resident) has been awarded an American Hepato-Pancreato-Biliary Association (AHPBA) Oncology Research Grant (\$30,000) and a Canadian Society for Surgical Oncology (CSSO) Resident Research Grant (Operating grant - \$25,000).

Subodh Verma (CardSurg) was recently awarded a CIHR Phase I Proof of Principle Grant (\$149,998) for the project titled "Evaluation of BRCA1 as a Novel Therapeutic Strategy for Endothelial Dysfunction and Atherosclerosis".



Save The Date
May 6 & 7, 2010

SHARP MINDS SKILLED HANDS DINNER **Celebrating Excellence in Surgery**

Westin Harbour Castle, May 6,
reception 6pm, dinner 7-11pm

Celebrate the rich history of achievement in the Department of Surgery as we mark the 25th anniversary of the landmark Surgeon Scientist Program, which trains doctors to become skilled caregivers and passionate researchers driven to improve care and save lives through innovation and excellence. The event will bring together current and former faculty members, alumni, current residents, friends and supporters of the Department for an evening of celebration.



THE 36TH ANNUAL GALLIE RESEARCH DAY & AWARDS RECEPTION

MaRS Discovery District, May 7, 8am-7pm

Our annual Gallie Research Day will feature a lecture from the 2010 Gordon Murray Lecturer Dr. Joe Vacanti (Boston, MA), the Gallie-Bateman & McMurrich Research Presentations, poster judging and visits from various Surgeon Scientist Program alumni. The day will close with a cocktail and departmental awards reception.

For more information, please contact
medicine.advancement@utoronto.ca
or call 416-978-7142

The deadline for the Winter 2009 Surgery Newsletter is December 30, 2009. All members of the Department are invited to submit news items, articles, pictures, ideas or announcements. You may reach us by:

***voice mail: 416-946-8084, fax: 416-978-1911 or
e-mail: julie.roorda@utoronto.ca.***

Please provide your name and telephone number so that we may contact you if we have any questions.

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