



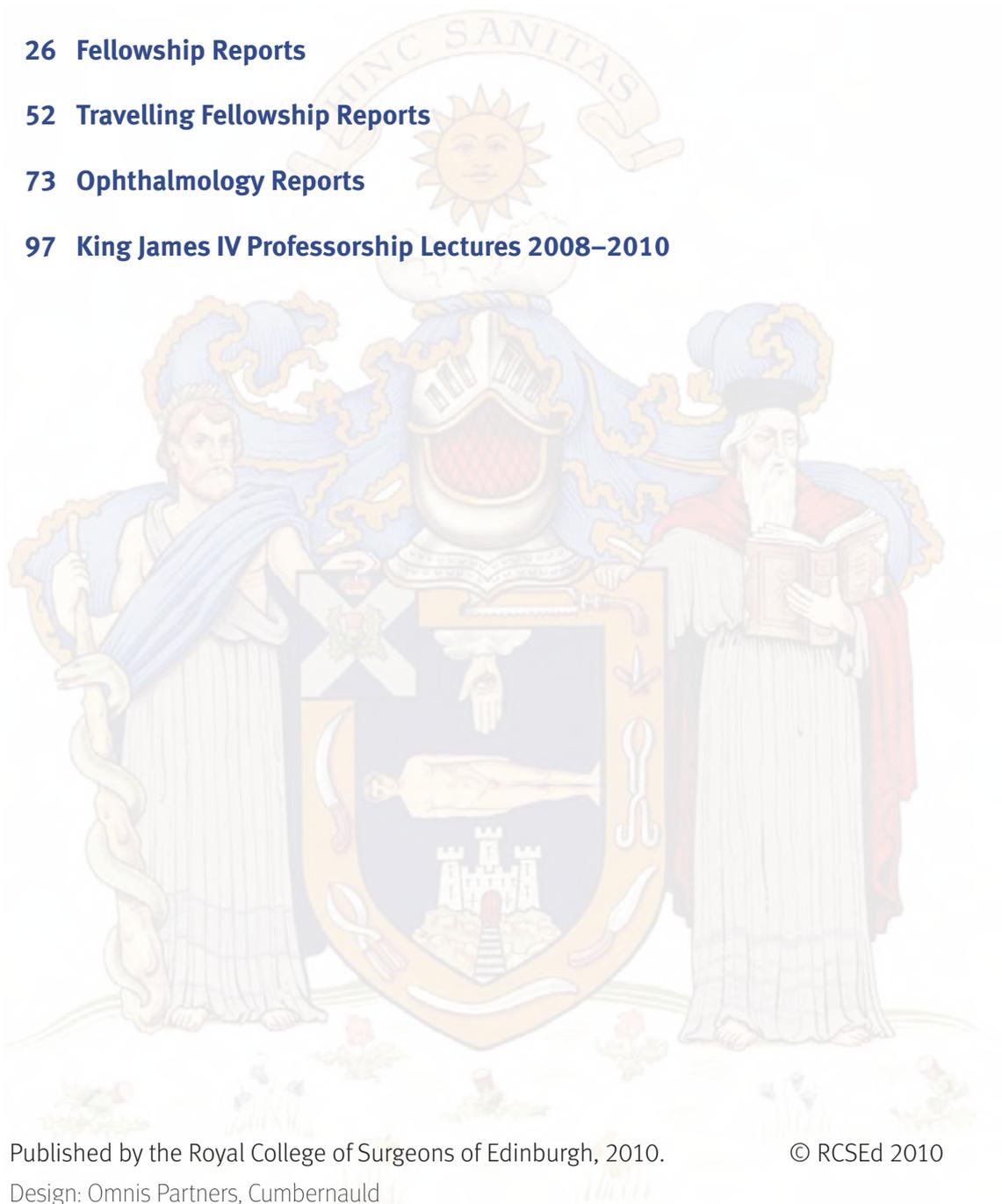
The ROYAL COLLEGE of  
SURGEONS of EDINBURGH

# Research Report 2008–2010

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# Contents

- 3 Foreword
- 4 Introduction
- 5 Research Board
- 6 Ophthalmology Sub-Committee
- 7 Donors
- 8 Grants and Awards**
- 26 Fellowship Reports**
- 52 Travelling Fellowship Reports**
- 73 Ophthalmology Reports**
- 97 King James IV Professorship Lectures 2008–2010**



## Foreword

David A Tolley, President, RCSEd

Support for Fellows and Members wishing to conduct surgical research remains a key College activity: the identification of funding lies second only to the College's role in ensuring that the research which it supports is of the highest possible standard and is ultimately relevant to the advancement of patient care.



I am therefore delighted to acknowledge the considerable efforts of the Research Board, led by Professor Ken Fearon, in assessing applications to ensure that the research activities sponsored by this College remain relevant and of high quality.

Identification of new funds to support research has never been more challenging and Council is developing initiatives to ensure that we can continue to maintain the level of awards that we make in the present economic climate. We continue to work in partnership with major grant-giving organisations in order to fund our Research Fellowships, but we also provide several smaller pump priming grants, so useful in the encouragement of younger researchers and for the development of new ideas. Much of the research we currently support frequently takes place on the bench rather than at the bedside and therefore we wish to increase the support we offer for work which falls within the category of translational research.

With this in mind, I want to highlight the establishment of a new Research Strategy Committee, a major Committee of Council which will determine our strategic direction over the next five years, develop new opportunities for raising funds and therefore provide guidance on the kind of activities we wish to support for our expert assessors. This is an important development as it will enable us to ensure that all aspects of College strategy are synergistic and will maximise our ability to identify further funding opportunities. Professor Fearon will be a member of the new Strategy Committee and will also lead a new Research Allocation Committee, thus ensuring that there is synergy between our strategic aims and the identification of research projects.

The Research Allocation Committee will also evaluate the quality of the research, which ensures that we make certain, on behalf of benefactors, that the research they underwrite will achieve maximum value for money. The existing Research Board will be disbanded and the new Research Strategy Committee will be chaired by Professor Bob Steele, Head of Academic Surgery, Centre for Academic Clinical Practice, Ninewells Hospital and Medical School.

## Introduction

Professor Kenneth Fearon, Chairman, RCSEd Research Board



Surgery continues to evolve and with it the content and context of surgical research. The last two years has seen evolution of the role of research in surgical training. The concept of an academic track is now firmly established and the Research Board seeks to support such individuals with opportunities to gain Fellowships and small grants.

The Research Board views the prestigious Joint Fellowship schemes with the Medical Research Council, Arthritis Research UK, CRUK, RCPSG and RCSI as particularly important in this respect. Equally, the reaction against run-through training has re-established the importance of developing a competitive CV that continues to mature throughout the training period. Such needs can be met by a period of supervised research. Again, the Research Board aims to support individuals across the surgical specialties by access to a range of Fellowships, Travel Fellowships and small grants.

The importance of attracting academically-minded young students into surgical research (and hopefully into postgraduate training in surgery) is self evident, and it has been a pleasure to see a stream of very competitive applications for a growing number of summer bursary awards.

Equally, the Syme Medal for surgeons who have recently completed a higher degree has been very popular and highly competitive. The quality of applications has been so high that multiple medals have had to be awarded in the last two years. It has also been notable that the King James IV Professorship continues to attract a very fine stream of applicants. The Ophthalmology Sub-committee continues to provide a high level of grant support and attracts applications of a very high standard.

The activity of the Board and the number of awards made over the last two years has never been higher and we are extremely grateful to the donors of research funds who help sustain such vital activities. We recognise, however, that the financial reality of the next few years will mean that available resources will have to be managed carefully. The new Research Strategy Committee, a subcommittee of Council, will provide strategic direction for the new Research Allocation Committee which will decide on individual awards.

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## Research Board

### Chairman

Professor K C H Fearon, Professor of Surgical Oncology, University of Edinburgh, Department of Clinical and Surgical Sciences, Royal Infirmary Edinburgh

### Members

Professor F C Campbell, Professor of Surgery Queen's University of Belfast, Royal Victoria Hospital

Professor J H Dark, Professor of Cardiothoracic Surgery, University of Newcastle, Freeman Hospital

Dr J Burr, Clinical Epidermiologist, University of Aberdeen

Professor R A Little, Retired

Professor A H R Simpson, Professor of Orthopaedic Surgery and Head of Department of Orthopaedic Surgery, University of Edinburgh, Royal Infirmary of Edinburgh

Professor J P McDonald, Retired

Professor C M Steel, Retired

Professor R J C Steele, Professor of Surgery and Molecular Oncology, Ninewells Hospital & Medical School, Dundee

Mr C Widgerowitz, Senior Lecturer in Orthopaedics, Division of Surgery & Oncology, Ninewells Hospital & Medical School, Dundee

Mr Stephen Wigmore, Professor of Transplantation Surgery, Honorary Consultant Surgeon, Clinical and Surgical Sciences (Surgery), Edinburgh

Mr D A Tolley/Mr J L Duncan, Honorary Treasurer, RCSEd

Ms A Rooney, Chief Executive, RCSEd

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## Donors

Lady Fraser

Mr John Steyn and Family

The Cutner Memorial Bequest Fund

Healing Foundation

Maurice Wohl Foundation

Robertson Trust

Royal Blind and Scottish War Blinded

Mr Alastair Jamieson

Medical Research Council

Cancer Research UK

Arthritis Research UK

The Lorna Smith Charitable Trust Research Fellowship

Royal College of Surgeons in Ireland

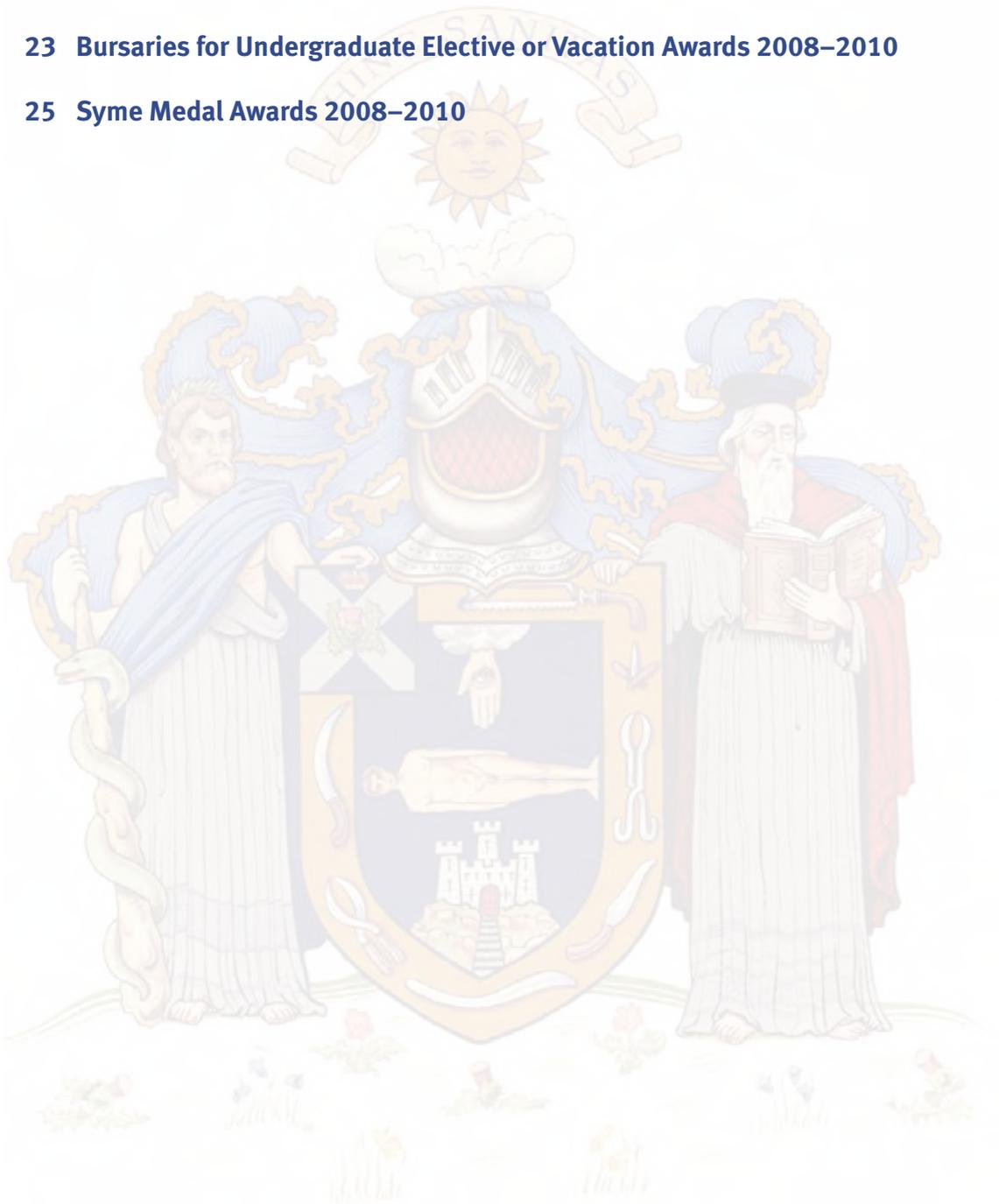
Royal College of Physicians and Surgeons of Glasgow

RCSEd and the Research Board gratefully acknowledges the donations from numerous Fellows of the College in the UK and Overseas.

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# Grants and Awards

- 9 Fellowship Awards 2008–2010
- 15 Travelling Fellowship Awards 2008 and 2009
- 19 Ophthalmology Awards 2009 and 2010
- 20 King James IV Professorship Awards 2008 – 2009
- 21 Small Research Grants 2008–2010
- 23 Bursaries for Undergraduate Elective or Vacation Awards 2008–2010
- 25 Syme Medal Awards 2008–2010



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**Ms Louise McCullough, North of Scotland Rotation,  
Raigmore Hospital, Inverness (£500)**

**To observe tumour resection and reconstructive surgical techniques in Florence,  
Italy and Toronto, Canada**

The Cutner Travelling Fellowship will provide me with an excellent opportunity to visit two centres at the forefront of management and research in musculoskeletal oncology. Musculoskeletal oncology is a specialist area of orthopaedic surgery, with three surgical centres in Scotland combining as one managed clinical network. I will be exposed to a much greater volume of primary tumours of bone and soft tissue than would be possible in Scotland.

The Orthopaedic Unit in Florence, Italy, treats 200–250 primary sarcomas per year. Resections and reconstructions are carried out by the Director of Surgery and four senior surgeons. Mount Sinai Hospital (Toronto, Canada) is a tertiary referral centre for primary tumours of bone and soft tissue. The University Musculoskeletal Oncology Unit comprises four surgeons, each of whom supervises fellowships. They have extensive experience in research and clinical knowledge relating to musculoskeletal oncology.

My aim is to learn new techniques in the multidisciplinary management of musculoskeletal tumours from each unit, which I will transfer to improve patient care through the Scottish Sarcoma Managed Clinical Network. I will be able to observe first hand the multidisciplinary team input required to optimally manage these difficult cases. This will enable me to compare and contrast practices and protocols for diagnoses, surgery and adjuvant therapy used in each unit to those employed within the Scottish Clinical Network. These visits, as well as developing my knowledge in this subspecialty, will establish contacts with a view to a longer-term fellowship in the future.

**John Steyn Travelling Fellowship in Urology  
Sponsored by the family of Mr John H Steyn**

**Dr Gerald Yau Min Tan, Associate Consultant, Tan Tock  
Seng Hospital, Singapore (£900)**

**Clinical Fellowship in robotic urologic oncology in  
New York, USA**



Commencing January 2009, I will undertake a 12-month clinical fellowship in robotic urologic oncology at the Weill Medical College of Cornell University (New York Presbyterian Hospital, New York, USA). This fellowship will be directed by Associate Professor Ash Tewari (Ronald P. Lynch Chair of Urologic Oncology and Director of the Cornell Institute of Robotic Surgery).

Dr Tewari is an internationally respected authority on robotic prostatectomy, having undertaken >2,500 of these procedures since 2002. The annual caseload at Weill Cornell Medical College comprises >600 robotic-assisted radical prostatectomies and 40 robotic-assisted radical cystectomies, one of the busiest centres for robotic urologic oncology in the world.

In addition, Dr Tewari also directs a highly prolific programme in translational and clinical research on the biology and treatment outcomes of prostate cancer. His team has won multiple awards in recent years for their work on novel approaches to improving

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potency and continence outcomes after robotic prostatectomy. This Fellowship offers a rigorous but undoubtedly rewarding academic and clinical experience.

**Report: see page 59**

Mr Hugh O’Kane, Department of Urology, Belfast City Hospital (£900)  
**Clinical Uro-oncology Fellowship specialising in robotic laparoscopy and pelvic oncology in Adelaide, Australia**



In recent years, urological surgeons have been at the forefront in introducing pioneering surgical procedures utilising robots to assist complex laparoscopic urological surgery for the treatment of cancers of the prostate gland, kidney and bladder. The use of robots allows superior magnification of the surgical field and more controlled movements of the surgical instruments compared with conventional laparoscopic surgery. The potential advantages to patients undergoing these robotically assisted procedures can include reduced blood loss, less postoperative pain, and a shorter stay in hospital.

Robotically assisted surgery has been introduced in few UK centres. The Royal Adelaide Hospital (Adelaide, Australia) is the largest teaching hospital in South Australia. It has a well-established programme in robotic surgery and has successfully trained previous Fellows in these complex procedures to a high standard. My aim after completion of this Fellowship is to obtain training in robotic laparoscopic surgery so I can hopefully benefit patients within the UK. I am very fortunate to have the opportunity to travel to Australia for this Fellowship.

**Sir James Fraser Travelling Fellowship**  
**Sponsored by Lady Fraser**

Dr Gerald Yau Min Tan, Associate Consultant, Tan Tock Seng Hospital, Singapore (£1,500)  
**To visit Edinburgh Western General Hospital, Cancer Centre and the Beatson Institute for Cancer Research in Glasgow, Scotland.**



**Report: see page 67**

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## **Syme Medal Awards 2008–2010**

Mr Peng Hong Tan, Clinical Lecturer in General Surgery, University of Oxford  
**Negative vaccines for treatment of diseases: potential strategies to induce an antigen-specific immunosuppression**

Dr Dae Kim, SpR in Otolaryngology, West Midlands Deanery  
**Pituitary tumour-transforming gene (PTTG), a novel oncogene in thyroid tumourigenesis**

Mr Bala Reddy, SpR General Surgery, Yorkshire Deanery  
**Intestinal barrier function and gut microflora in surgical patients**

Mr Siong-Seng Liau, SpR in General Surgery, West Suffolk Hospital  
**High-mobility group a1 (HMGA1) gene: a novel prognostic indicator and therapeutic target in pancreatic adenocarcinoma**

Mr Luke Devey, Academic of Medical Sciences/Health Foundation Clinician  
Scientist, University of Edinburgh.  
**Hard graft: trying to improve the organ donor crisis using science**

Dr Gerald Tan, Ferdinand C Valentine Fellow in Urologic Research, Weill Medical  
College of Cornell University, New York, USA  
**Multiphoton microscopy imaging of periprostatic tissue architecture for improving cancer clearance and potency outcomes of nerve-sparing radical prostatectomy**

Mr Jon Sen, Research Fellow in Neurosurgery, National Hospital, UCLH London  
**Intracerebral microdialysis studies in human acute brain injury**

## John Steyn Travelling Fellowship in Urology

Dr Gerald Yau Min Tan

Fellowship in Robotic Prostatectomy undertaken at LeFrak Institute of Robotic Surgery & Prostate Cancer Institute, Brady Foundation Department of Urology, Weill Medical College of Cornell University, New York, USA (January 2008–December 2009)



I recently completed my 24-month Fellowship in Robotic Prostatectomy at the LeFrak Institute of Robotic Surgery (Weill Medical College of Cornell University, New York, USA (Figure 1) under the supervision of Professor Ash Tewari, a world expert in robotic surgery (Figure 2). This Fellowship exceeded the very high expectations I had of it, and was a truly outstanding experience in every respect.



Figure 1 Weill Medical College of Cornell University, New York



Figure 2 Professor Ash Tewari

### Year 1: clinical and translational research

Professor Ash Tewari is an opinion leader in the areas of prostate cancer and robotic prostatectomy. My first year was spent in the research laboratory with five Research Fellows working on various clinical and translational research projects looking at ways to improve outcomes of patients undergoing robotic prostatectomy for early prostate cancer.

My primary research project was exploring the potential of a new laser imaging technology called multiphoton microscopy (Figure 3) to deliver real-time high-resolution images of the delicate nerves and tissues around the prostate gland responsible for erection. Together with Doctors Rajiv Yadav and Michael Herman, we carried out *ex vivo*

imaging of prostate glands from several recently killed male Sprague–Dawley rats, as well as fresh radical prostatectomy specimens taken straight from the operating room. We found a high degree of correlation between the images obtained with multiphoton microscopy and those obtained at final histology with routine haematoxylin & eosin (H&E) stains (Figure 4).

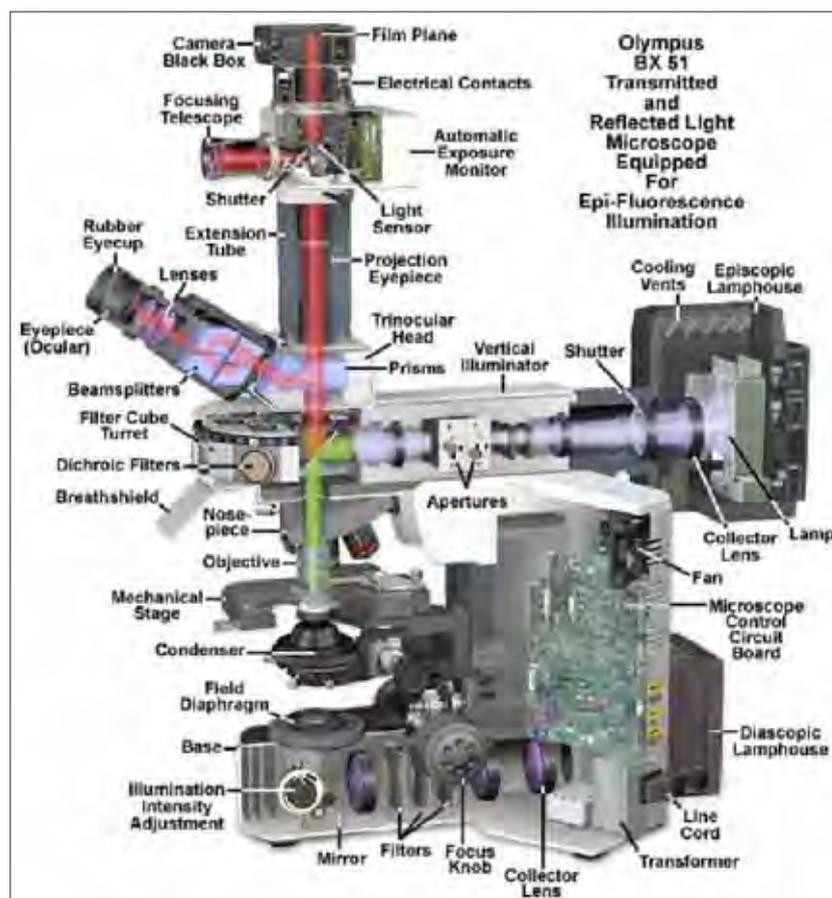


Figure 3 Multiphoton microscope.

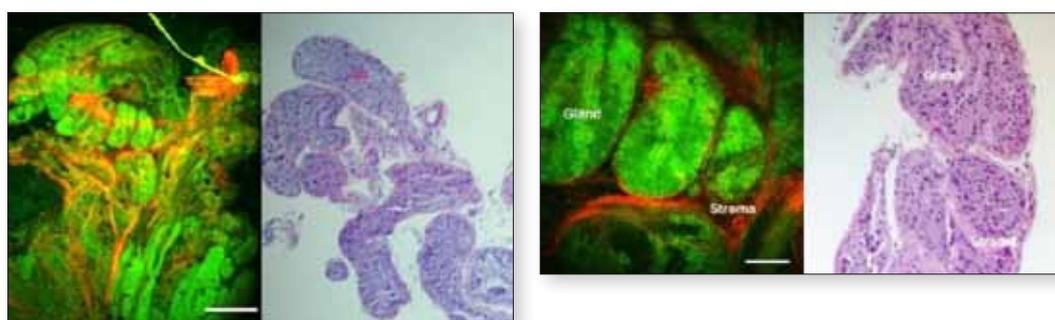


Figure 4 Multiphoton microscope images of the prostate gland. Gland of the rat correlated against those at final histology.

Our encouraging results were very well received by the scientific and urological surgical communities. We received numerous awards for this research (see below). We also secured a highly competitive Federal R01 grant from the US National Institutes of Health to explore the potential of this new imaging technology as a real-time endoscopic tool for use during minimally invasive pelvic surgery. This would allow the surgeon to identify and preserve key structures such as the periprostatic nerves.

I also looked at novel alternatives of diverting the urine after robotic prostatectomy to minimize the discomfort experienced by patients from their indwelling Foley catheters. We initially explored the use of a prototype suprapubic catheter to serve two functions: splint the newly fashioned anastomosis as well as secure the catheter for optimal urinary drainage. Our patients reported significantly less discomfort with this approach, so we experimented with various other types of suprapubic catheters and splint devices inserted during robotic prostatectomy. Our encouraging pilot results were viewed favourably, and we were awarded the prestigious Clarke Medal and Cutlers' Surgical Prize by the Royal College of Surgeons of England and the Worshipful Company of Cutlers (Figure 5).



**Figure 5 (a) Professor Tewari and myself receiving the Clarke Medal & Cutlers' Surgical Prize from the Master of the Worshipful Company of Cutlers in London and (b) the medal in detail.**

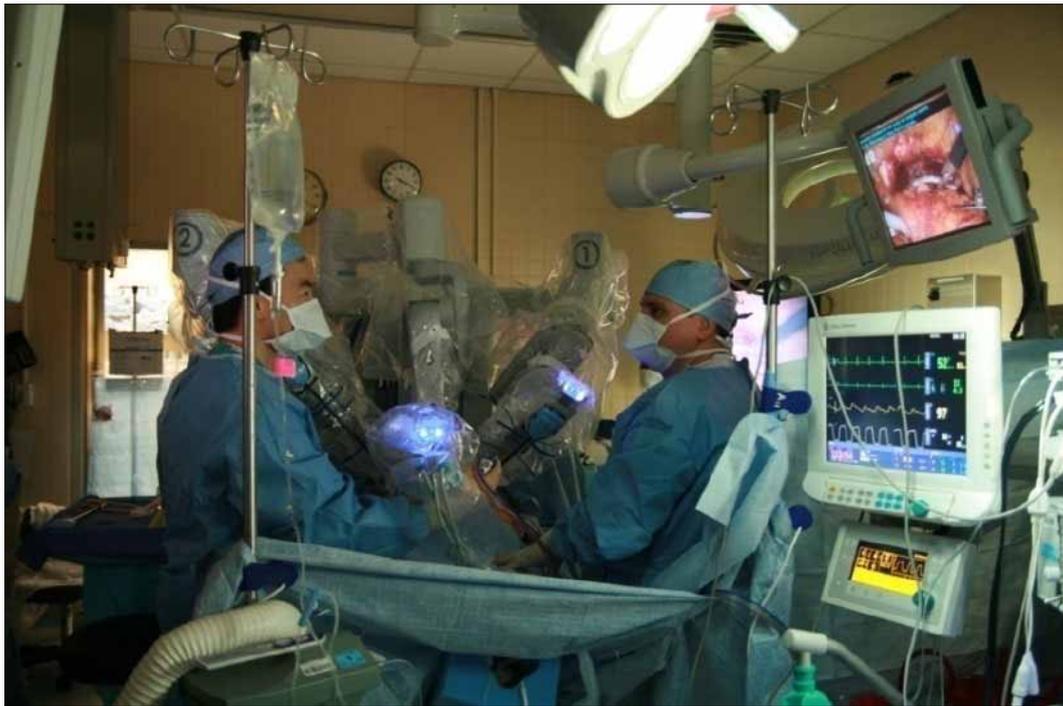
Throughout my two-year fellowship, I was involved in numerous other research projects, the results of which we presented at various conferences and which resulted in various awards (see below). I was involved in making videos of our surgical techniques for optimizing early return of urinary continence and erectile function, writing scientific articles and invited book chapters, and reviewing manuscripts for various journals. This was an immensely enriching and maturing academic experience for me.

### **Year 2: Clinical Fellow in Robotic Prostatectomy**

Professor Tewari carries out ~600 robotic prostatectomies a year. Together with his mentor Professor Mani Menon, they pioneered the technique of da Vinci robotic prostatectomy that has now become adopted worldwide.

My operating schedule was dominated by four robotic-assisted laparoscopic radical prostatectomies (RALP) per day on Mondays and Tuesdays, and four RALPs on Wednesdays and Thursdays. Fridays was a full-day clinic where we evaluated patients for sur-

gery. The fellowship was very focussed on surgical activity, and I began as the second assistant for 1 month before proceeding to operate at the robotic console (Figure 6). I was mentored through 302 cases at the console by Professor Tewari, being given 20–40 minutes for each case. I found this practice of focussed repetition of robotic manoeuvres under different and often challenging situations significantly helped my learning curve. I could carry out the same surgery confidently upon my return to Singapore, after having been involved in 358 cases at Weill Cornell.



**Figure 6 (a) Myself as second assistant and (b) console surgeon being mentored through robotic-assisted laparoscopic radical prostatectomy.**

One of the highlights of the Fellowship was the opportunity to interact with many of the world's experts in robotic surgery at conferences (where they shared their insights and experiences in tackling difficult cases), as well as when they visited Weill Cornell to observe Professor Tewari carry out surgery. I was also able to spend time with Dr Michael Stifelman (New York University) to observe him undertake robotic partial nephrectomies.



**Figure 7 (a) Professor Tewari and his clinical team. (b) Professor Tewari and myself with Professor E. Darraccott Vaughan, Junior, Emeritus Chairman of Department of Urology, Weill Cornell Medical College.**

### The future

Upon completing my fellowship, I returned to work in my parent institution of Tan Tock Seng Hospital, Singapore, the second largest hospital in Singapore. Our hospital has acquired the da Vinci S HD® Robotic Surgical System (Intuitive Surgical, Sunnyvale, CA, USA). I have been tasked to roll-out the Robotic Urology programme. With various meta-analyses and maturing data from several large series validating the many benefits of robotic surgery, many urologic procedures are now being done with da Vinci robotic assistance. I look forward to expanding the scope of robotic urologic cases being done here in Singapore, and proctoring the local urologists undertaking such surgeries.

### Publications

- 1 Tan GY, Tewari AK. Nerve-sparing radical prostatectomy: elevation of the craft in a robotic era. *Curr Med Lit—Urol* 2010 (in press).
- 2 Grover S, Tan GY, Srivastava A, Leung RA, Tewari AK. Residency training program paradigms for teaching robotic surgical skills to urology residents. *Curr Urol Rep* 2010; 11: 87–92.
- 3 Tewari AK, Srivastava A, Mudaliar K, Tan GY, Grover S, El Douaihy Y, Peters D, Wysock J, John M, Leung R, Muir S, Yadav R, Ye DW, Amin MB, Vaughan D, Tu J, Rubin M, Akthar M, Shevchuk M. Anatomic retroapical technique of synchronous (anterior and posterior) urethral transection: novel approach for ameliorating apical margin positivity during robotic radical prostatectomy. *Brit J Urol Int* 2010. doi:10.1111/j.1464-410X.2010.09318.x
- 4 Tan GY, Goel RK, Kaouk JH, Tewari AK. Technological advances in robotic-assisted laparoscopic surgery. *Urol Clin N Am* 2009; 36: 237–249.
- 5 Tan GY, Jhaveri JK, Tewari AK. Anatomic restoration technique (ART): a biomechanics based approach for early continence recovery following minimally invasive radical prostatectomy. *Urology* 2009; 74: 492–496.
- 6 Tan GY, El Douaihy Y, Te AE, Tewari AK. Scientific and technical advances in continence recovery following radical prostatectomy. *Exp Rev Med Dev* 2009; 6: 431–453.
- 7 Rane A, Tan GY, Tewari AK. Laparo-endoscopic single-site surgery (LESS) in urology: is robotics the missing link? *Brit J Urol Int* 2009; 104:1041–1043.

- 8 Yadav R, Tan G, Tewari A. Screening for cancer of the prostate: do we have an answer? *Natl Med J India* 2009; 22: 184–187.
- 9 El Douaihy Y, Tan GY, Dorsey PJ, Jr, Patel ND, Tewari AK. Double pig-tail stenting of the ureters: technique for securing the ureteral orifices during robotic-assisted radical prostatectomy for large median lobes. *J Endouro* 2009; 23: 1975–1977.
- 10 Yadav R, Mukherjee S, Hermen M, Tan G, Maxfield FR, Webb WW, Tewari AK. Multiphoton microscopy of prostate and periprostatic neural tissue: a promising imaging technique for improving nerve-sparing prostatectomy. *J Endourol* 2009; 23: 861–867.
- 11 Tilki D, Schlenker B, John M, Buchner A, Stanislaus P, Gratzke C, Karl A, Tan GY, Ergun S, Tewari AK, Stief CG, Seitz M, Reich O. Clinical and pathological predictors of Gleason sum upgrading in patients after radical prostatectomy: results from a single institution series. *Urol Oncol* 2009. doi:10.1016/j.urolonc.2009.07.003.
- 12 Tewari A, Tan GY, Dorsey, Jr PJ, Yadav R, Ramanathan R, Patel N, Takenaka A. Optimizing erectogenic outcomes during athermal robotic prostatectomy: A risk-stratified tri-zonal approach. *Urol Times Clin Ed* 2008; 3: s4–s12.
- 13 Tan GY, Tewari AK. Words of wisdom. Re: Cumulative association of five genetic variants with prostate cancer. *Eur Urol* 2008; 54: 943–944.
- 14 Jhaveri JK, Tan GY, Scherr D, Tewari A. Robotic-assisted radical prostatectomy in the renal allograft transplant patient. *J Endourol* 2008; 22: 2475–2480.
- 15 Tewari AK, Jhaveri JK, Surasi K, Patel NA, Tan GY. Benefit of robotic assistance in comparing outcomes of minimally invasive versus open radical prostatectomy. *J Clin Oncol* 2008; 26: 4999–5000.

### **Invited book chapters**

- 1 Tan GY, Dorsey PJ Jr, Tewari AK. Difficult conditions during robotic-assisted radical prostatectomy. In: Al-Kandari A, Gill IS (Ed): *Difficult conditions in laparoscopic urologic surgery*. Springer (in press).
- 2 Tan GY, Jhaveri JK, Tewari AK. Functional restoration of the continence mechanism: ventral reconstruction. In John H, Wiklund P, Witt JH (eds): *Video atlas of robotic prostatectomy*. Springer Verlag (in press).
- 3 Tan GY, Jhaveri JK, Tewari AK. Neurovascular bundle preservation: grades of nerve sparing. In John H, Wiklund P, Witt JH (eds): *Video atlas of robotic prostatectomy*. Springer Verlag (in press).
- 4 Tan GY, Dorsey PJ Jr, Tewari AK. Methods and maneuvers during robotic assisted radical prostatectomy. In: Ghavamian R (ed): *Complications during robotic urologic surgery*. Humana Press (in press).
- 5 Tan GY, Grover S, Takenaka A, Tewari AK. Current concepts in cavernosal neural anatomy and imaging and their implications for improving nerve-sparing radical prostatectomy. In: Hemal AK, Menon M (ed): *Robotic urological surgery*. Springer (in press).
- 6 Jhaveri J, Tan GY, Tewari A. Reconstruction of the bladder neck during radical prostatectomy. In Staskin D (ed): *Atlas of bladder disease*. Current Medicine Group LLC. Chapter 18, pp 259–266.

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### **Awards and prizes**

- 1 Outstanding Young Persons of Singapore Award (Medical Innovation), Junior Chamber International Singapore (2009).
- 2 James Syme Medal for outstanding research achievement, Royal College of Surgeons of Edinburgh (2009).
- 3 Clarke Medal and Cutlers' Surgical Prize for outstanding innovation and design of surgical instrument, Royal College of Surgeons of England and Worshipful Company of Cutlers (2009).
- 4 AACR–GlaxoSmithKline Outstanding Clinical Cancer Research Scholar Award, American Association of Cancer Research (2009).
- 5 Best Urology Video (Honorable Mention), Society of Laparoendoscopic Surgeons 18th Annual Meeting, Boston (Co-author) (2009).
- 6 Young Investigator (Silver) Award, National Healthcare Group 8th Annual Scientific Congress, Singapore (2009).
- 7 Best Oral Presentation (Surgical Disciplines) (Merit) Award, National Healthcare Group 8th Annual Scientific Congress, Singapore (2009).
- 8 First Prize, AUAACMI Gyrus Clinical Research Essay Award, American Urological Association (co-author) (2009).
- 9 Sir James Fraser Travelling Fellowship, Royal College of Surgeons of Edinburgh (2009).
- 10 National Institutes of Health Trainee Travel Award, American Society of Andrology Annual Meeting (2009).
- 11 Tan Tock Seng Hospital Scholarship, Tan Tock Seng Hospital, Singapore (2009).
- 12 Young Investigator Merit Award, National Healthcare Group 7th Annual Scientific Congress, Singapore (2008).
- 13 Best Oral Presentation (Surgical Disciplines), National Healthcare Group 7th Annual Scientific Congress, Singapore (2008).
- 14 John Steyn Travelling Fellowship in Urology, Royal College of Surgeons of Edinburgh, UK (2008).
- 15 Best Abstract (Basic Science Category), Sexual Medicine Society of North America Annual Meeting, Toronto, Canada (Presenting Author) (2008).
- 16 Best Scientific Paper (Urology), Society of Laparoendoscopic Surgeons 17th Annual Meeting, Chicago, USA (Presenting Author) (2008).
- 17 Best Video (Urology), Society of Laparoendoscopic Surgeons 17th Annual Meeting, Chicago, USA (Presenting Author) (2008).
- 18 SLS Scholarship Award, Society of Laparoendoscopic Surgeons 17th Annual Meeting, Chicago, USA (2008).
- 19 Grand Prize, International College of Surgeons Research Essay Award (2008).
- 20 Ferdinand C. Valentine Fellowship in Urologic Research, New York Academy of Medicine (2008). I was the first overseas urologist trained outside North America to receive this award in its 45-year history.

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### Research grants

- 1 Ferdinand C. Valentine Fellowship in Urologic Research, (10.2 months, US \$50,000), New York Academy of Medicine.  
Role: Co-investigator; Supervisor: Ashutosh K. Tewari  
**Novel use of multiphoton and second-harmonic generation for improving cancer clearance and potency outcomes during nerve-sparing radical prostatectomy**  
Despite technical and technological advances in the last decade, urologic surgeons still face the competing goals of achieving complete cancer clearance versus preservation of potency during nerve-sparing radical prostatectomy. We explored the potential use of multiphoton non-linear microscopy coupled with second-harmonic generation as a real-time intraoperative tool to improve visualization and thereby preservation of the periprostatic neural architecture during prostatectomy in rat models and human prostatectomy specimens.
- 2 R01 EB009388-01 (0.6 months, US \$851,135), NIH R01 from National Institute of Biomedical Imaging and Bioengineering.  
Role: Co-investigator; Supervisor: Ashutosh K. Tewari  
**Real-time multiphoton microscopy of periprostatic tissue architecture for improving surgical outcomes during nerve-sparing radical prostatectomy**  
The overall goal of this project was to explore the novel use of multiphoton microscopy on imaging periprostatic tissue, specifically identifying its potential for visualizing prostate cancer cells and the fine periprostatic nerves involved in erection. We also explored the safety profile and functional sequelae of multiphoton microscopy imaging of the cavernous nerve in a live rat model.

### Invited reviewer

- 1 British Journal of Urology International (Robotics and Minimally Invasive Surgery section)
- 2 Open Access Journal of Urology
- 3 Yonsei Medical Journal
- 4 Prostate Cancer Foundation of Australia (external grant reviewer)

### Acknowledgments

I am immensely grateful to the family of Dr John Steyn and the RCSEd for awarding me this Travelling Fellowship, and believe my experience has been worthy of this prestigious award.

## 2008/2009 Sir James Fraser Travelling Fellowship Report

Dr Gerald Yau Min Tan



This Travelling Fellowship, awarded biennially to a Fellow or Member of the College from Singapore, Malaysia or Borneo, arose from the generosity of the family of the late Sir James Fraser.

Sir James Fraser was born in Edinburgh, and completed his medical studies at Oxford University in 1948. After being trained in general surgery and urology in Edinburgh, he was appointed Consultant Surgeon to the Sarawak government in 1958. He then returned in 1963 as Senior Lecturer and Honorary Consultant Surgeon to the Royal Infirmary of Edinburgh, and was appointed as the Inaugural Chair of Surgery at the University of Southampton in 1969. He later returned to Edinburgh in 1980 as the Director of the Postgraduate Board of Medicine and Postgraduate Dean of the Faculty of Medicine at Edinburgh University, and served as President of this College from 1982 to 1985.

As a urologist from Tan Tock Seng Hospital, Singapore, with a keen interest in research and therapies for prostate cancer, and currently a Clinical Fellow in the Robotic Prostatectomy Programme at the Weill Medical College of Cornell University (New York, USA), I had the good fortune of being awarded the 2008/2009 Travelling Fellowship to visit centres of urologic excellence in Edinburgh and Glasgow. Having graduated from Edinburgh University 13 years ago, this was also a wonderful opportunity to renew many cherished friendships. My five-day visit in June 2009 was hosted by Doctors Alan McNeill and Duncan McLaren at the Western General Hospital, Edinburgh; Professor Hing Leung at the Beatson Institute of Cancer Research, Glasgow; and surgeons from the Beatson West of Scotland Cancer Center in Glasgow.

Despite the promise of summer, I arrived at Edinburgh Airport amidst rain and dreary skies. Thankfully, the legendary Scottish warmth and hospitality more than compensated for the bleak reception. The College extended the kindness of accommodating me at the College Residences at 5 Hill Place adjacent to Surgeons Hall, and I was pleasantly surprised to find on the taxi ride into town that not much had changed visibly in Edinburgh over the last decade. Even Central Fish and Chip in Teviot Place across the Old Medical School and Royal Infirmary still serves the same menu as they had done 18 years ago when I was a hungry first-year medical student!

After settling in, I proceeded to spend a fruitful day with Dr Duncan McLaren at the WGH Cancer Center, Edinburgh. I learnt much about the multicentre clinical trials the Medical Oncology Unit was involved in, and observed the daily running of cancer clinics for patients with metastatic prostate cancer. This was followed 2 days later by the opportunity to attend the Multi-Disciplinary Prostate Cancer Meeting for planning comprehensive care for patients at different stages of prostate cancer. Whittling through an exhausting list of 30 patients over 2 hours, I was very impressed by how the facility enabled real-time interaction with urologists from the Borders and other district general hospitals via wireless telephony to construct treatment plans for individual patients, as well as by the informed discussions from oncologists and surgeons regarding complex cases. My regrets were not being able to attend sessions in the operating rooms and brachytherapy facility due to time constraints.



**Figure 1 Dr Duncan McLaren (left), his clinical trials nurse coordinator, and myself at Edinburgh's Western General Hospital Cancer Center: happy after a long clinic!**

I then visited Professor Hing Leung at the Beatson Institute of Cancer Research in their state-of-the-art facility on the Garscube Estate in Glasgow. Professor Leung is recognized as one of the leading academic urologists in the UK for his work in the tumour biology of prostate cancer. He was awarded the 2008 Karl Storz–Harold Hopkins Golden Telescope Award by the British Association of Urologic Surgeons (BAUS) for his outstanding contributions to urology.

Arriving at the Beatson Institute, I was first stunned by the architectural boldness of the building, and then later on by the vast capabilities of the Institute. Set against a backdrop of tranquil greenery, the Institute houses numerous groups conducting research in various aspects of cancer invasion, as well as the proliferation, growth, survival and death of cells. Professor Leung's group has been working on elucidating specific signaling pathways in prostate cancer to develop better prognostic biomarkers and therapeutic targets such as FGF receptor and ERK5 using *in vitro* and *in vivo* models.



**Figure 2 Professor Hing Leung kindly hosted my visit to the Beatson Institute.**

Professor Leung had kindly planned an itinerary for me to meet with various investigators at the Beatson Institute to exchange research ideas, as well as with his urology SpRs who were undertaking their doctoral studies in his laboratory. Dr Imran Ahmad, an MRC Clinical Research Fellow, is currently developing the first transgenic prostate cancer mouse model in Scotland. While not having the same ambience as downing

pints of McEwan's lager at the local pub, the session in the Institute's cafeteria with these dynamic SpRs who had chosen a career in academic urology was the most memorable part of the visit. It afforded many valuable reflections on how the current urologic training programme in our respective countries should not just centre around the acquisition of technical skills and provision of clinical services, but should train the minds of surgeons to direct scientific research to answer the many 'black boxes' still surrounding prostate cancer. Professor Leung himself was an inspiration to be with because he shared with me his motivations and reflections on pursuing a career in academic urology.

I was then privileged to be able to present our group's research in the potential of real-time multiphoton microscopy imaging of periprostatic tissue as a tool for improving potency and cancer clearance during nerve-sparing radical prostatectomy to members of the Urology Unit at the Beatson West of Scotland Cancer Center. Many of the senior urologists had vast experience carrying out open retropubic radical prostatectomy, and were intrigued by the possibility of this new technology working in tandem with the three-dimensional optical capabilities of the da Vinci® robotic system to address a common clinical dilemma faced by oncologic urologists. Observing that there are currently 8 da Vinci robots in the City of London alone but none in Scotland, much lively debate ensued on whether robotic prostatectomy delivers superior outcomes to standard open surgery, and who should pay for the high running costs of such a surgical system. On my last night in Edinburgh, I was treated to a lovely Italian dinner in Comely Bank by Iain Fraser, son of the late Sir James Fraser, and his family. I was speechless to find out that he was the owner of the Elephant House, the place of inspiration where JK Rowling had spent many hours writing her early novels hours in the back room overlooking Edinburgh Castle. Iain had grown up in Borneo and lived in the Far East for many years, speaking fluent Cantonese and Mandarin, and having an impeccable grasp of Asian culture.



**Figure 3 Dinner with Iain Fraser and his family in Comely Bank, Edinburgh.**

The Travelling Fellowship was a great experience to return to Scotland, witness a refreshing approach to providing cost-effective (yet comprehensive) prostate cancer care, exchange research ideas and clinical experiences, and relive many fond memories with old friends (now with their young ones in tow!). I sincerely hope the College will continue to afford this valuable opportunity to future generations of surgeons from the Far East.