

James IV Travelling Fellowship 2011



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Overall Summary of Fellowship

The overall aims of my James IV Travelling Fellowship were twofold: 1) to visit a number of internationally recognised pancreatic islet isolation / pancreatic islet transplant centres; and 2) to visit several world-leading Academic Paediatric Surgery Departments. This combination reflects my current clinical and research interests in Oxford, and the James IV Travelling Fellowship was an perfect opportunity to visit some centres that I have not visited before, as well as the chance to consolidate and foster several collaborations that I had previously initiated.

In order to balance the Travelling Fellowship with my ongoing work commitments, I divided my Fellowship into 2 parts. First, in February / March 2011, I visited a number of different transplant and paediatric surgery centres within Japan. These included Kyoto, Nara, Tokyo, and Fukushima. Little did I know when I planned this half of my Fellowship, that it would mean that I would experience at first hand the most powerful recorded earthquake to ever hit Japan, and be close to the epicentre only a few hours before the earthquake hit! Second, in September / October 2011, I went to Canada and the USA, visiting centres in Vancouver, Minneapolis, St Louis, and Boston.

PART 1 - JAPAN

1st March

Having spent a night in Tokyo, I transferred to Kyoto on the bullet train. This remarkable piece of engineering exemplifies many of the good aspects of Japanese Society - efficiency, simplicity, safety, and functionality.



2nd March

I spent the morning with Dr Teru Okitsu who is the Lead of the Kyoto Islet Isolation and transplant Programmes. He had previously worked in Baltimore where he had undertaken research on recurrent autoimmunity and islet grafts. He was now involved in a range of projects including optimisation of islet isolation using a novel Kyoto preservation solution, as well as exploring ways to widen the pool of pancreas donors in a country where rates of organ donation from heart-beating donors are significantly lower than in Western countries. It is to be remembered that following a controversy concerning the definition of brain death in a heart transplant donor in Sapporo in 1968, a ban on cadaveric organ donation in Japan lasted 30 years. Despite the fact that the Organ Transplant Law legalised organ procurement from brain dead donors in Japan in 1997, it has been hard to reverse some of the cultural opposition to organ donation. As a result, large numbers of living related renal and liver transplants are performed. Although the world's first and only living-related partial pancreatectomy, islet isolation, and islet transplant was performed in Kyoto in January 2005, this was not widely supported by the islet transplant community because of the inherent risk of leaving the donor diabetic at the same time as risking isolating insufficient islets from the partial pancreatic resection to render the recipient insulin-independent. Dr Okitsu and his colleagues were exploring a range of strategies including optimising outcomes from non-heart beating donors, as well as exploring novel alternative islet sources. Dr Okitsu was a charming host and we discussed a number of potential collaborations between the Kyoto and Oxford Programmes.

Kyoto University has an outstanding track record and worldwide reputation for stem cell research and tissue engineering. Indeed, Professor Shinya Yamanaka and his team at Kyoto University were the first people in the world to generate induced pluripotent stem cells (iPS cells). As the future of islet transplantation depends on alternative islet sources, as well as bioengineered scaffolds / capsules to prevent immune rejection, I was keen to spend some time meeting some experts in these fields. I therefore, met with Professor Shoichiro Sum and Professor Hiroo Iwata, both of whom work within the Institute for Frontier Medical Sciences in Kyoto University. Professor Sum is Head of the Department of Organ Reconstruction, and his Group is working on developing a bioartificial pancreas from a novel poly-vinyl alcohol (PVA) into which allo or zeno islets can be placed to avoid the need for recipient immunosuppression. His Research Group is also working on ways of differentiating islet-like cells from embryonic stem-cells. Professor Iwata is Head of the Department of Reparative Materials. His research focuses on constructing artificial environments that promote differentiation of embryonic and somatic stem cells into functional cells, taking advantage of biological interactions of cells with extracellular matrices, growth factors, and stromal cells, as well as engineering protein-based materials that can be used as semi-permeable membranes for use in immunoisolation of transplanted islets. These 2 researchers demonstrated some pioneering techniques to me that could have wide-reaching clinical application. It was a fascinating afternoon with these two senior scientists, and a real privilege to hear about their groundbreaking work.

I then transferred to the Kyoto University Hospital (KUH) where I met with Professor Taira Maekawa. He is Director of the Department of Transfusion Medicine and Cell Therapy at KUH and is in charge of the GMP cell-processing facility in Kyoto, which contains the clinical islet isolation laboratory. He gave me a tour of this impressive 'state of the art' facility, and I met different members of his team. We had useful discussions about some of the different regulatory and scientific challenges of human islet isolation and islet transplantation.



Professor Maekawa, Director of Cell Therapy at Kyoto University Hospital

I spent the remainder of the afternoon with Professor Shinji Uemoto, Chairman of the Department of Surgery at KUH. His clinical interests are in HPB Surgery and Transplantation and he was performing a paediatric liver transplant. After this, I gave a talk to the Department of Surgery entitled '*Current Challenges in Human Islet Isolation*'. This was well attended with plenty of discussion afterwards. Following this, Professor Uemoto and his team took me to a classic Kyoto restaurant, where we sat seiza-style on tatami mats and ate a typical Kyoto-style meal with tofu as the signature dish.

3rd March

Professor Uemoto had most generously arranged for me to have a personalised limousine guided tour of Kyoto and the surrounding area during the day. Kyoto is a beautiful city with so many important historical sites to visit. This was a truly memorable experience and enabled me to understand better the political and cultural history of this fascinating country.



The Golden Temple in Kyoto

In the late afternoon, I transferred by train to the nearby city of Nara. Once in Nara, I was met at the station by the lead Paediatric Surgeon in Nara, Dr Hiromichi Kanehiro. He was a most generous host. After checking into the hotel, he took me to the annual Shuni-e fire ceremony (otaimatsu) in Nara. This spectacular Buddhist ceremony has been held every year since the year 752 and involves ten select believers shouldering large pine torches as long as 8 meters and weighing as much as 80 kilograms. Girded with swords and staves, the torchbearers climb a flight of stairs and run along the balcony of the Nigatsu-dō, showering sparks on the public below. It is thought that these sacred sparks will protect the recipient from evil. This event provided a fascinating insight into the deep-seated religious beliefs of the Japanese nation. Whilst the two main religions in Japan are Buddhism and Shinto, most people practice a combination of these different religions, something termed syncretism. Many Japanese would therefore, not see Buddhism and Shinto as 2 completely independent and competing faiths, but rather as a single, complex integrated religious system.

After viewing this spectacular ceremony, I was taken to a Japanese banquet at the Nara Hotel, which was hosted for me by Professor Yoshiyuki Nakajima the Chairman of the Department of Surgery at the Nara Medical University.

4th and 5th March

I included Nara into my itinerary as I had been invited as the International Guest Speaker at the Japanese Pancreas and Islet Transplant Association (JPITA) Annual Congress that was being held there. This well-run meeting provided an excellent opportunity for me to meet all the main individuals involved with islet isolation and clinical islet transplantation in Japan. Clinical islet transplantation had been put on hold in Japan for the previous few years due to regulatory issues concerning the production of the bacterial collagenase enzyme used during islet isolation. This had now been resolved and much of the meeting focussed on discussions about establishing clinical protocols for restarting the clinical programmes nationally. My talk was entitled '*How Can We Achieve Equitable Organ Allocation for Whole Pancreas and Islet Transplantation?*' This topic proved timely for JPITA as they were in the process of drawing up a new allocation scheme in Japan for pancreas donation. The Congress overall was a good balance between 'state of the art' science, and practical clinical management. I found it very beneficial. Once the Congress ended, I returned to Tokyo on the bullet train from Kyoto.



From left to right, Professor Mitch Gotoh (President of JPITA), Professor Yoshiyuki Nakajima, and Dr Hiromichi Kanehiro

6th March

This was a free day to explore Tokyo. The Department of Paediatric Surgery at Juntendo University had generously organised a sightseeing trip for me. This included many of the key sites in Tokyo. The juxtaposition of ancient and modern is striking in Tokyo, and it is a truly exciting city to explore.

March 7th

I was picked up early from my hotel by Dr Hiroyuki Koga one of the Paediatric Surgical Registrars at Juntendo University, and taken to the Department of Paediatric Surgery at Juntendo University Hospital. One of the striking things about arriving at the hospital was that Dr Koga placed his car in an automated underground car park on the hospital site. This involves leaving the car in an enclosed lift, and then typing in a security code for the car to be taken away underground and automatically parked. Simply re-typing in the code retrieves the car. Juntendo is one of the leading Paediatric Surgery Centres in Japan, and its Chairman, Professor Atsuyuki Yamataka (Yama) is a highly respected Paediatric Surgeon-Scientist. As will be outlined below, Yama was a truly outstanding host, and his kindness and generosity were demonstrated beyond the call of duty a few days later. On this day, after I had been shown around the hospital, I went to the operating theatres with Yama and another registrar Dr Go Miyano. I observed an elective general paediatric surgical list with a mixture of open and laparoscopic procedures being performed.

At lunchtime I gave a lecture in the Department of Surgery entitled: '*Pancreatic Islet Transplantation for Juvenile-Onset Diabetes - from bench to bedside*'. Again I was impressed with attendance, together with the depth of the questions asked.

I spent the afternoon in the operating theatre with Professor Hiroshi Imamura, an impressive pancreatiko-hepato-biliary surgeon in Juntendo. I watched him perform a Whipple's resection for a neuroendocrine tumour. It was interesting to see this, as I am involved in a multidisciplinary, Neuroendocrine Tumour service in Oxford, This same surgeon has published a series of 1056 hepatectomies without mortality.

In the evening Yama had arranged a dinner for me to which he had invited members of the Department of Paediatric Surgery and the Department of Hepatobiliary Surgery. It was a very enjoyable occasion that exemplified Japanese hospitality at its best.



Professor Atsuyuki Yamataka (Yama)

March 8th

I spent the day in the Department of Paediatric Surgery meeting residents and registrars, and discussing the research being conducted in the Department. There is a strong work ethic and little perception of the concept of the European Working Hours Directive!

In the afternoon, I was taken to one of the large district general hospitals in the outskirts of Tokyo. This hospital has a large neonatal unit that is served by the Paediatric Surgeons from Juntendo. The team had arranged a series of case-presentations of surgical neonates to be presented at a joint meeting between the Paediatric Surgeons and the Neonatologists. There was a range of interesting pathology. After the meeting, the two groups had dinner together at a restaurant that served food that was an interesting fusion between Italian and Japanese cuisines.

March 9th

I awoke to the gentle vibrations of an earthquake in Tokyo. My hotel room shook for about 3 minutes, but life in the hotel returned fully to normal almost immediately afterwards. I had experienced similar quakes when I had visited Tokyo before. During the day I transferred by bullet train to Fukushima in the North of Japan. The President of JPITA, Professor Mitch Gotoh, is Head of the Department of Surgery there, and I was keen to visit his Department and meet his islet transplant team.

Mitch met me at the hotel and took me to a classic Sashimi restaurant. I was introduced to a wide range of exotic sea-life during the evening, washed down with a variety of different types of saki! Once back at the hotel, I was woken dramatically at about 2am, by a strong earthquake. This

shook my hotel room aggressively, causing my suitcase to be thrown from the hotel luggage rack. Several of the hotel guests in the hotel rooms near mine ran into the corridor to try to find out whether we were supposed to evacuate from the 13th floor where our rooms were. On phoning reception, I was none the wiser as the receptionist spoke no English! However, after about 5 minutes, the shaking stopped, and people returned from the corridor to their rooms. It took a while to get back to sleep, and then at about 4am I was once again woken by a powerful quake. The intensity of this tremor was similar to the previous one and again it lasted about 5 minutes. This time it was hard to get back to sleep and I did wonder whether it was wise having a room on the 13th floor!



With Professor Mitch Gotoh in his office.

March 10th

I spent the day in the Department of Surgery at the Fukushima Medical University. My host was Dr Takayuki Anazawa (Taka), a Hepatobiliary and Transplant Surgeon and Clinical Lead for their islet transplant programme. I visited their islet isolation facility, as well as spending time on the Transplant and Paediatric Surgery wards. I also met different members of the research staff in the Department. There were reports of a further earthquake in the area. Although earthquakes are a frequent occurrence in Fukushima, the surgeons commented on the fact that it was unusual to have such strong earthquakes in such quick succession. Taka took me out for lunch at a restaurant outside the city. During the meal, a gentleman on an adjacent table collapsed during his meal and Taka and I had to resuscitate him. I was impressed at how quickly the paramedics arrived at the restaurant with a defibrillator. With this near-death episode occurring in the context of 3

significant earthquakes, it had certainly been a unusual 12 hours. In the afternoon I spent time with Mitch Gotoh. He is an impressive person who has had a key role in shaping the national islet programme in Japan. At the end of the day, I gave an invited lecture entitled: '*Current Challenges in Human Islet Isolation*'. This was well attended by a range of different clinical and research staff.

That evening, Mitch Gotoh hosted a banquet for me at the hotel where I was staying, which all the Surgical Leads from the Department of Surgery attended. It was also attended by the Diabetes lead. This was a most enjoyable occasion. We discussed the events of the previous 24 hours, and those assembled reassured me wholeheartedly that the recent cluster of earthquakes did not mean that a larger earthquake was on its way. I slept well that night, and if there were any earth tremors, they certainly did not wake me!



Members of the Department of Surgery in Fukushima at the banquet hosted for me on my last evening there.

March 11th

I was due to observe a Duhamel pullthrough procedure for Hirschprung's disease this morning. However, I was informed that this had been cancelled due to a shortage of beds and that there were no other cases being performed. As I was due to go back to Tokyo that afternoon anyway, I made a decision to get the 11am bullet train back to Tokyo rather than the afternoon one. This decision was a good one. After arriving back in Tokyo at lunchtime, I decided to go to the Tokyo Maritime Museum on Odaiba island. This decision was not as good! Odaiba is linked to the

mainland by the monorail, but is the only part of Tokyo surrounded by water. As I sat eating a sandwich outside the museum, the sky went very dark indeed. As I walked into the ticket office of the museum, I started to feel the ground roll under my feet. This felt very different from the other earthquakes I had experienced. The ground started to shake violently in all directions and it was hard to stand up. We were told to run outside and as we did so we could see buildings around us swaying like trees. Boats at the museum that were permanently moored as exhibits were ripped from their concrete holdings. The local people that I was with had never experienced anything like this previously (and that included an 80 year old man who had witnessed many earthquakes before). People immediately switched on their videophones to get information, and the emergency channel informed us that the epicentre had been just outside Fukushima where I had been a few hours previously, and where if the Duhamel procedure had not been cancelled, I would still have been. I feared for my colleagues in Fukushima. We were informed soon after that a huge Tsunami was predicted and that this could reach Tokyo. We were advised to get away from water (easier said than done when we were on a small island) and to seek high ground (Odaiba is totally flat!). We ran into the centre of the island and I waited with a small group of people who spoke some English. The initial prediction of a 50 ft tsunami in Tokyo, reduced to 10ft, and when it finally arrived in Tokyo it was only 1-2ft high. However, waiting for the unknown was frightening. Once the Tsunami risk had receded in Tokyo, news started to come through of the devastating impact of Japan's most powerful earthquake in the North of the country, including the nuclear plants in Fukushima. We were also informed that a bullet train travelling North from Fukushima had been swept away. It was sobering to recall that I had possibly travelled to Fukushima on the same train a few days before. The paradox between the seamless efficiency of man-made technology in Japan, and the stark reminder that the elements are totally unpredictable and uncontrollable, was tangible to everyone.

Tokyo came to a complete standstill. Public transport came to a halt, the monorail between Odaiba and the city stopped, and hotels were instructed to close. I had originally been due to meet up with Yama for dinner, before going to an airport hotel before my early flight back to the UK the next morning. However, the road to the airport was closed due to damage from the quake, as was the airport itself. I spent the next 16 hours getting off the island and eventually finding a room at Juntendo University to sleep in. This included hitching lifts, walking long distances across the city, spending time in a police station, and eventually being 'rescued' by Yama and his team. I will never forget the generosity and help that Yama showed to me as they stayed up all night to reach me.

The aftershocks continued every 15 -20 minutes throughout the next 48 hours. Everyone feared that there would be a massive aftershock worse than the first. Fortunately this did not happen. The

airport remained closed, as did the main road from Tokyo. The resilience of the Japanese people was remarkable. Many in Tokyo walked for over 12 hours to reach their homes. They continued to show dignity and honoured social norms. Indeed, an image that I will never forget was that of orderly queues still forming at the pedestrian crossings, with people waiting until the green man was flashing before crossing, despite the fact that the roads had been closed to cars after the quake!



View of Fukushima from my hotel window on the morning of the earthquake.

13th March

After 48 hours, I finally managed to get out to the airport. The aftershocks continued, and the airport building was being shaken regularly. I eventually managed to secure a place on the first British Airways plane leaving Japan. Even as we taxied out to take-off, another aftershock hit the runway, and we had to return to the terminal before finally taking off on a different runway. As we took off, there was a spontaneous round of applause throughout the plane. Once airborne, some of the devastation could be seen. We were the lucky ones. Thousands of people were not.

PART 2 - CANADA / USA

24th September

I arrived in Vancouver and transferred to the home of Professor Garth Warnock (Chairman of Surgery at Vancouver General Hospital (VGH)) and his wife Fay where I was generously hosted during my stay in Vancouver. Garth is a member of the James IV Association of Surgeons. I have known Garth for many years and we share a passion for islet transplantation, as well as a passion for flyfishing!

25th September

On this Sunday, Garth and his wife took me on a day trip to some of the areas North of Vancouver. In the evening, I was taken out to dinner by Professor Eric Skaarsgard (Professor of Paediatric Surgery at Vancouver Children's Hospital) and his wife Heather. Eric had been a James IV Traveller to Oxford a few years previously, and we had kept in touch since. We share a research interest in evidence-based paediatric surgery, and we have both been involved in establishing neonatal surgery reporting systems in our respective countries (CAPS-NET and BAPS-CASS).



Professor Eric Skaarsgard

26th September

I spent the day at Vancouver Children's Hospital meeting a wide range of clinicians and scientists in the fields of Paediatric Surgery and Islet Transplantation. I spent lunch with the trainees and they presented their research to me. They were an impressive group. I then gave an invited lecture to the staff of the Child and Family Research Institute (CFRI) entitled: *'The influence of donor variables on islet function and islet transplant outcomes'*. I then spent time with Bruce Verchere who is head of the Diabetes Research Program in the CFRI. His team has impressive facilities, and are conducting a wide-range of ground-breaking research of relevance to human islet isolation and clinical islet transplantation. I then had appointments with a number of members of his Department including Dr Francis Lynn, Dr Jan Ehse, and Dr Dan Luciani. This was a very useful day. In the evening I went out for dinner in Vancouver with Garth Warnock.

27th September

I spent the day in the Department of Surgery at the VGH, the Vancouver Coast Research Institute, and at the Ike Barber Human Islet Transplant Laboratory. After a tour of the different facilities, I spent time with the Director of the Human Islet Transplant Laboratory, Dr. Ziliang Ao and his team. Garth Warnock had then arranged for 8 research fellows from a range of different research groups to present their research to me. Many senior researchers were present too. This was of a very high standard and we discussed possible research collaborations together. A particularly interesting area was that of producing tissue-engineered scaffolds for islet engraftment.

I was impressed with the amount of new infrastructure for translational research in Vancouver. In the afternoon I visited the new Robert H.N. Ho Research Building, as well as the Blusson Centre for Spinal Cord Research.

In the evening, I was taken to the restaurant 'Seasons in the Park' that sits above Vancouver and offers stunning views over the city. A number of senior research and clinical staff were present. It was a memorable evening and the team were excellent hosts.



Professor Garth Warnock (left front) and members of his team.

28th September

At 7.00am, I gave a lecture at the Surgery Grand Rounds at the VGH. My lecture was entitled: *'Current Challenges of Human Islet Isolation for Transplantation'*. In addition to the main presentation in the large lecture theatre at the VGH, the Grand Rounds are screened live by video-link to surgeons in a range of different hospitals around British Columbia. Members of staff can also see the Grand Rounds via their computers at home or in their offices. Following this, I met some of the surgeons at the VGH.

29th September - 2nd October

Over this weekend, I went to Alberta, where I had a few relaxing days in Jasper and Banff National Parks. Garth Warnock had very generously lent me his log cabin in Canmore, a short distance outside Banff.

3rd October

I flew from Calgary to Minneapolis.

4th October

Professor Bernhard Hering fetched me from my hotel. I have known Bernhard for many years having got to know him when I was a Research Fellow and he was based in Giessen, Germany. He is currently the Director of the Schulze Diabetes Institute in Minneapolis and one of the leading islet transplanters in the world. He is an outstanding clinician-scientist and his outcomes

of islet transplantation are amongst the very best. I spent the morning seeing around his department and meeting his staff. We then met some of his patients who had been insulin independent for many years following their islet transplants. In the afternoon, I spent time in the Porcine Islet Isolation Facility. Bernhard helps lead a project in Minnesota termed Springpoint, which is pushing forward to perform the first pig to man islet transplants. The Porcine Facility is central to this xenotransplant research programme. Following this, I spent the remainder of the day with Dr. A.N.Balamurugan Appakalai, who is Director of the Islet Core in Minneapolis. He is a world-leading islet isolator, and my team has collaborated with him previously. It was good to discuss ongoing collaborations and to be updated about his current work. He kindly took me for dinner that evening.



Dr. A.N.Balamurugan Appakalai

5th October

I spent most of the day at the Amplatz / Fairview Children's Hospital. In the morning I was shown around the hospital by Dr Srinath Chinnakotla, Director of Paediatric Transplantation. I accompanied him on his ward round and we saw a number of interesting patients. I then met up with Dr Melena Bellin, who is an Assistant professor of Paediatric Endocrinology. For many years, under the directorship of David Sutherland, Minneapolis has been the leading centre worldwide for islet auto-transplantation following total pancreatectomy. More recently, they have extended this programme from adults to children, and now have a fairly large programme of children undergoing total pancreatectomy for benign disease followed by auto-islet re-

implantation. From the clinical point of view, the paediatric programme is run by Melena. I attended her islet auto-transplant clinic, and met a new referral from outside Minnesota. I then attended the listing meeting for the adult and paediatric islet auto-transplants, which is held weekly at the University of Minnesota Medical Centre. This was very informative, and enabled me to meet all the staff involved in the islet auto-transplant programme. The programme is impressive, and it was useful to discuss some practical issues with the team as we are currently initiating an islet auto-transplant programme in Oxford. Following this meeting, Melena kindly hosted me for dinner.

6th October

This morning I visited the Non Human Primate Facility at the St Paul's campus. I was hosted by the Facility's Director, Melanie Graham, and met the members of her team. Melanie has pioneered novel procedures and protocols that prevent stress to the animals, both from an animal cruelty perspective, as well as for ensuring that the animals maintain normal metabolism and glycaemic control. The training of the animals is meticulous and impressive, and Melanie's approach should provide the gold-standard for this type of work.

I then visited the Clinical Human Islet isolation Facility, where I was hosted by the Assistant Director of the Isolation Core, Josh Wilhelm. We had useful discussions on FDA and European regulations for Tissue Processing.

Following this, I transferred back to the Minneapolis campus, where I visited the Stem Cell Institute. I was hosted by Dr Meri Firpo. I also had the opportunity to spend time with the Institute's Director, Jonathan Slack, who is a leading pancreas developmental biologist and who was previously based in Oxford.

In the evening, I was taken out for dinner by Dr Brian Flanagan, who is now the Scientific Program Director for the Schulze Institute. He had previously worked for the Juvenile Diabetes Research Foundation, where I had collaborated with him on an isolation project. We had a most enjoyable evening.

7th October

This morning I gave a lecture to the Department of Surgery at the University of Minnesota Medical Centre. This was entitled: 'Islet Isolation and Islet Transplantation - current status and future prospects'. Following this, I spent time with David Sutherland, previously Head of Transplantation in Minneapolis. It was very good to catch up with him and see him maintain his high levels of enthusiasm and energy for pancreas and islet transplantation. I then met up with Dr Raja Kandaswamy, who is Director of pancreas Transplantation in Minneapolis, and also a fellow

member of the Council of International Pancreas and Islet Transplant Association (IPITA). I also had the opportunity to meet Professor Selwyn Vickers, who is Chairman of the Department of Surgery in Minneapolis. He had previously been a registrar in Oxford and we had good discussions together.

In the evening I was generously hosted by Bernhard Hering and his wife Nicole at their home. It was a delightful evening.

8th October

This was a free day, and Bernhard Hering had arranged for a guide to take me fly-fishing on the Mississippi River. We caught wide-mouthed bass and it was a truly memorable day.

9th October

I flew from Minneapolis to St Louis.

10th October

I was picked up early from the hotel by Professor Brad Warner, who is Chairman of Paediatric Surgery at the St Louis Children's Hospital. Brad had also visited Oxford as a James IV Travelling Fellow a few years previously, and we had kept in touch since then. After showing me around the hospital, he took me to the operating rooms where I attended his operating list. I saw a range of different paediatric surgical operations. St Louis has one of the highest rates of paediatric gun crime and several children with blast injuries were inpatients on the paediatric surgery wards. In the afternoon, I visited the Paediatric Surgery Research Laboratories, where I met members of Brad's research team. Brad is interested in bowel growth and his team are undertaking impressive research in this area.

Following this I gave a lecture to the whole Department of Paediatric Surgery, to which the Paediatric Endocrine team had also been invited. My lecture was entitled: '*Pancreatic Islet Transplant for Juvenile Onset Type I Diabetes – from Bench to Bedside*'. The Paediatric Surgery faculty and fellows then took me out for dinner at a local restaurant. I very much enjoyed spending time with this group.

11th October

I spent most of the day with the Transplant Team. Initially I met Dr Kristina Klein, who is one of the transplant nephrologists. I then met with Jason Wellen who heads the Whole Pancreas Transplant Programme. He then took me along to the Mid-America Transplant Services Centre (MTSC), an extraordinary facility based a few miles away from the Hospital. This pioneering

centre, has completely revolutionised organ donation in Illinois, Missouri, and Arkansas. Instead of sending organ retrieval teams to the different donor hospitals, the 'brain dead' donors are transported to this Facility where they are investigated and stabilised, before the local retrieval team travel the few miles from the hospital to retrieve the organs. As a result, cold ischaemia times are kept to a minimum, retrieval is a planned, semi-elective procedure, and donors can be optimised before donation commences. Housed within a Business Park, this Facility houses up to 4 ITU-type beds, and contains a specific cardiac catheterisation lab for optimising the cardiac function of the donors, and an MRI scanner for pre-retrieval imaging. Visiting the centre was a remarkable experience.

Following the visit, I met with one of the founders of the MTCS, Professor Will Chapman. Will is Head of Transplantation at St Louis, and outlined what an enormous difference MTSC had made to his clinical programme. At lunchtime, I gave a talk to the Department of Transplantation entitled: “Current Challenges of Human Islet Isolation for Transplantation”.

That evening I was hosted for dinner at Brad Warner's home. His wife Barbara demonstrated wonderful hospitality, and I am most grateful to them both for their generosity.



Professor Brad Warner

12th October

I flew from St Louis to Boston, via Detroit.

13th October

I spent the day in the Department of Transplantation at the Massachusetts General Hospital (MGH). Jim Markmann, who is Chief of Transplantation at the MGH and a leading islet

transplanter, hosted me. He had arranged an interesting programme for me. In the morning, I met with Dr Ji Lei, Director of the Human Islet Isolation Facility. He showed me the Facility, and I spent time with his team. At lunchtime, Jim had arranged for 5 of his team to present their research to me. This session demonstrated some of the high quality research being conducted by this group. After lunch, I had a series of useful appointments with different members of the Department, including Dr Joren Madsen, Dr Christian Schuetz, Dr Shaoping Deng, and Dr Tatsuo Kawai. Following this, I was generously hosted for dinner at a restaurant in Boston. A number of the transplant team attended, including Paul Russell who was a previous Chief of Surgery at the MGH. It was a real privilege to spend time with him.

14th - 16th October

I attended the American Association of Paediatrics at the Boston Convention and Exhibition Centre. I had been given the privilege of being awarded an Honorary Fellowship of this Association the previous year, and it was good to be able to meet and catch up with a number of leading Paediatric Surgeons from the USA during this Congress.

17th October

I flew back to the UK

Conclusions

My James IV Travelling Fellowship provided a unique opportunity for me to visit a number of leading centres around the world, and to meet a number of inspirational figures, in the fields of Islet Transplantation and Paediatric Surgery. The lessons I learnt during my visits, and the collaborations that I established, have already been of enormous benefit for my clinical and research roles in Oxford. The Fellowship was also a time to experience and learn from different health-care systems and social cultures, and to develop lasting friendships with surgeons and scientists in Japan, Canada, and the USA. In addition to these more predictable benefits however, my experience with the Japanese earthquake left a profound mark on me, and has ensured a particularly special bond with my colleagues in Fukushima, and with Yama in Tokyo.

I am extremely grateful to the James IV Association of Surgeons for giving me the enormous privilege of being a Travelling Fellow, and can assure you that I will continue to be a strong ambassador for this important organisation.