Department of Medical Imaging Annual Report 2000-2001

CHAIR'S REPORT	
DEPARTMENT OF MEDICAL IMAGING - UNIVERSITY OF TORONTO	5
Radiologists-in-Chief	5
Program Directors	5
Division Heads	5
Department Administrative Staff	5
COMMITTEES	6
Executive Committee	6
Promotions Committee	6
Undergraduate Teaching Committee	6
Specialty Training Committee	6
UNIVERSITY OF TORONTO FULLY AFFILIATED HOSPITALS AND INSTITUTES	7
DEPARTMENT OF MEDICAL IMAGING FACULTY	
THE DEPARTMENT OF MEDICAL IMAGING & THE UNIVERSITY OF TORONTO TEACHING	
HOSPITALS	
RESEARCH GRANTS	
PUBLICATIONS: PEER-REVIEWED PAPERS AND ABSTRACTS	
PUBLICATIONS: NON-PEER-REVIEWED, BOOKS, CHAPTERS	
INVITED PRESENTATIONS AND VISITING PROFESSORSHIPS	
SCIENTIFIC PRESENTATIONS: PEER-REVIEWED PAPERS, POSTERS AND EXHIBITS	
AWARDS AND SPECIAL RECOGNITION	50
RESEARCH PROGRAM	
Protected Research Time	51
Faculty Research Award	52
RSNA Resident/Fellow Research Award	52
Research Day	52
Positron Emission Tomography Centre, Centre for Addiction and Mental Health	52
Imaging/Bioengineering Research, SWCHSC	52
Faculty List	52
Grants	53
Publications	56
Original Scientific Presentations	58
Invited Papers and Professorships	61
Teaching Hours of Lectures	62
Department of Medical Imaging Annual Research Day 2001	63
RESIDENT TRAINING PROGRAM	
General description	66
PGY1	66
PGY2	66
PGY3	67
PGY 4	67
PGY5	67
Armed Forces Institute of Pathology	67
Physics Instruction	67
Conferences	68
Seminars and Half-Day Program	68
Research	68
Rounds	68
View Box Teaching	69
Journal Club	69
Visiting Professor Program	69
Organ Imaging Review Course	69

Program Evaluation	69
Program Supervision	69
Resident Evaluations	70
Resident Awards	70
Summary	71
RESIDENTS	
PGY1 Level	72
PGY2 (R1) Level.	72
PGY3 (R2) Level	73
PGY4 (R3) Level	73
PGY5 (R4) Level	73
NUCLEAR MEDICINE TRAINING PROGRAM	75
General Description	75
General Objectives	75
Dual Radiology and Nuclear Medicine Residency	75
RADIOLOGY SCIENTIST TRAINING PROGRAM	76
Objectives	76
Organization	76
Eligibility and Application Procedure	76
Remuneration	76
Selection of Research Project and Supervisor	76
Graduate Degrees	77
Clinical Responsibilities	77
OBJECTIVES OF TRAINING & SPECIALTY TRAINING REQUIREMENTS IN DIAGNOSTIC	
RADIOLOGY	
Definition	
General Objectives	
Specific Objectives	
Training in Canada	
SPECIALTY TRAINING REQUIREMENTS IN DIAGNOSTIC RADIOLOGY	
RESIDENT RESEARCH PROGRAM	
Seminar Series	
Support	
Presentation Day	85
Resident Research Awards	85
FELLOWSHIP PROGRAM	
UNDERGRADUA I E PROGRAM	
Year I	88
Y ear II	88
Y ear III	
Year IV	
CONTINUING EDUCATION DDOCD AM	
Organ Imaging Daviau	
Organ magning Review	
INVITED I ECTUDEDS VISITING DECESSEDS AND CITY WIDE DOUNDS	
INVITED LECTURENS, VISITING ENOPESSURS AND CITY-WIDE ROUNDS	/ ۲۲ ۵۵

CHAIR'S REPORT

Medical imaging is a very technology-dependant specialty. This year, I am particularly pleased with the physical developments in our department, especially in terms of its major technological advances. There have been major improvements in imaging equipment and space at all our teaching hospitals. These improvements in turn will allow our faculty to better fulfill their academic mandates. Our faculty will be able to better teach the latest and most modern techniques, and the availability of the best and most modern and innovative equipment will facilitate our research endeavors, while helping us attract new academically oriented faculty.

Even though physical resources are extremely important to our specialty, it is our people that continue to be its most important asset. Accordingly, as in previous years, I would like to highlight some of our faculty members, especially those that have distinguished themselves in teaching and research.

Our departmental teaching awards this year were: Dr. Matthew Lax was presented with the Edward L. Lansdown Award for Outstanding Teaching in the Residency Training Program. Dr. Mostafa Atri, Dr. Paul Babyn, Dr. Edna Becker, Dr. Dae-Gyun Chung, Dr. Lisa Ehrlich, Dr. Nimu Ganguli, Dr. Paul Hamilton, Dr. Kevin Ibach, Dr. Nasir Jaffer, Dr. Anne Keller, Dr. Matthew Lax, Dr. Andrew Lata, Dr. Walter Montanera, Dr. Derek Muradali, Dr. Martin O'Malley, Dr. Joel Rubenstein, Dr. Martin Yaffe and Dr. Leon Zelovitzky were recognized for outstanding teaching in the residency program; Dr. Derek Armstrong, Dr. Edna Becker, Dr. Susan Blaser, Dr. Alan Daneman, Dr. Anthony Hanbidge, Dr. C.S. Ho, Dr. John Kachura, Dr. Matthew Lax, Dr. Martin O'Malley, Dr. Daniel Rappaport, Dr. David Salonen, Dr. Kenneth Sniderman, Dr. Karel TerBrugge, Dr. Lawrence White, Dr. Robert Willinsky and Dr. Stephanie Wilson were recognized for outstanding teaching in the fellowship program; and Dr. Edna Becker, Dr. Matthew Lax and Dr. Martin O'Malley achieved distinction for outstanding teaching in both the residency and fellowship programs.

Our department increased the level of support of its faculty for protected research time. This bore fruit with a larger number of research awards, including major awards from the Canada Foundation for Innovation (CFI) and the Ontario Research and Development Challenge Fund (ORDCF). This year, the faculty members with departmentally sponsored research time were: Dr. Richard Farb (High Resolution Contrast Enhanced MR Angiography for the Evaluation of GDC Treated Cerebral Aneurysms), Dr. Masoom Haider (MRI Oxymetry and Dynamic Enhancement in Carcinoma of the Uterine Cervix: Correlation with Direct Interstitial Fluid Pressure Measurement and Tumor Oxygen Levels), Dr. Korosh Khalili (Preoperative Staging of Cholangiocarcinoma: A Prospective Comparative Study of Sonography, CT, and MRI), Dr. Derek Muradali (Contrast Enhanced Sonography of the Breast: Can Vascular Morphology Predict Malignancy?), Dr. Martin O'Malley (Evaluation of cystic pancreatic tumors with MRI including T1-weighted values), Dr. Rene Shumak (Usefulness of Magnetic Resonance Imaging in the Surveillance of Women at High Risk for Hereditary Breast Cancer), Dr. Lawrence White (Optimized Fast Spin-Echo Imaging of Meniscal Tears).

The academic promotions this year were (effective July 1, 2001): to Full Professor - Dr. Robert Willinsky, to Associate Professor – Dr. Susan Blaser, Dr. Peter Chait, Dr. David Mikulis, and

Dr. Daniel Rappaport and to Assistant Professor - Dr. Suzanne Laughlin and Dr. Martin O'Malley.

We welcomed several new faculty to our department: Dr. Douglas Cheyne – Hospital for Sick Children, Dr. Allan Fox – Sunnybrook and Women's College Health Sciences Centre, Dr. George Tomlinson - University of Toronto Office and Dr. Jeffrey Traubici – Hospital for Sick Children.

I have spent part of the last few months starting the strategic planning exercise for 2001 and beyond and I have concluded that the coming five years will present us with tremendous academic opportunities. Our specialty is dynamic and expanding, and funding opportunities have not been better in the last twenty years. Our infrastructure has never been better. Our current faculty continue to develop new talents, and new faculty have joined us with enthusiasm and great new ideas. I am looking forward to exciting and fulfilling times!

Walter Kucharczyk, M.D., F.R.C.P. (C) Professor and Chair

DEPARTMENT OF MEDICAL IMAGING - UNIVERSITY OF TORONTO

(as of June 30, 2001)

Chair	Kucharczyk, W.
Associate Chair	Shulman, H.

Radiologists-in-Chief

Hospital for Sick Children	Babyn, P.
Mount Sinai Hospital-University Health Network (Princess Margaret Hospital/	-
Toronto General Hospital/Toronto Western Hospital)	Bret, P.
St. Michael's Hospital	Common, A.
Sunnybrook & Women's College Health Sciences Centre	Shulman, H.S.

Program Directors

Hamilton, P.
Pugash, R.
Willinsky, R.
Hendler, A.
Clark, J.
Becker, E.
Wood, M.L.
Dowdell, T.
Jaffer, N.

Division Heads

Abdominal Imaging	Hanbidge, A.
Breast Imaging	Muradali, D.
Musculoskeletal Imaging	White, L.
Cardiothoracic Imaging	Merchant, N. & Shulman, H.S.
Neuroradiology	TerBrugge, K.G.
Nuclear Medicine	Hendler, A.
Pediatric Imaging	Manson, D.
Vascular and Interventional Radiology	Asch, M.

Department Administrative Staff

Business Officer	Sciortino, G.
Secretary	
Research Assistant	

COMMITTEES

Executive Committee

Kucharczyk, W. (Committee Chair) Babyn, P. Becker, E. Bret, P. Clark, J. Common, A. McGregor, C. (Chief Resident - July 1, 2000) Dowdell, T. Fong, K. Hamilton, P. Hendler, A. Jaffer, N. Pugash, R. Salem, S. Shulman, H. Wood, M.

Promotions Committee

Bret, P. Shulman, H. (Committee Chair) TerBrugge, K. Wilson, S. Yaffe, M.

Undergraduate Teaching Committee

Dowdell, T. (Committee Chair) Chan, R. Jaffer, N. Kachura, J. Lax, M. Montanera, W. Paul, N. Pearce, D. Weiser, W.

Specialty Training Committee

Becker, E. (Committee Chair) Clark, J. Hendler, A. Laughlin, S. MacDonald, C. Mikulis, D. Muradali, D. Noël de Tilly, L. Shumak, R. David, E. Layton, Z. Luong, A. McGregor, C. (Chief Resident) Ossip, M. Waddock, S.

UNIVERSITY OF TORONTO FULLY AFFILIATED HOSPITALS AND INSTITUTES

Hospital for Sick Children	. 555 University Avenue Toronto, Ontario M5G 1X8
Mount Sinai Hospital	. 600 University Avenue Toronto, Ontario M5G 1X5
St. Michael's Hospital	
Bond site	. 30 Bond Street Toronto, Ontario M5B 1W8
Sunnybrook & Women's College Health Sciences Centre	
Sunnybrook Campus	.2075 Bayview Avenue Toronto, Ontario M4N 3M5
Women's College Campus	. 76 Grenville Street Toronto, Ontario M5S 1B2
University Health Network	
Princess Margaret Hospital	. 610 University Avenue Toronto, Ontario M5G 2M9
Toronto General Hospital	. 200 Elizabeth Street Toronto, Ontario M5G 2C4
Toronto Western Hospital	. 399 Bathurst Street Toronto, Ontario M5T 2S8
Clarke Institute of Psychiatry	. 250 College Street Toronto, Ontario M5T 1B8
Positron Emission Tomography Centre	. 250 College Street Toronto, Ontario M5T 1B8

DEPARTMENT OF MEDICAL IMAGING FACULTY

Academic Rank as of July 1, 2001

NAME

<u>RANK</u>

Alton, D.J. Arenson, A.M. Armstrong, D. Asch, M.R. Ash, J.M. Atri, M. Babyn, P.S. Becker, E.J. Bell, S.D. Bird, B.L. Blaser, S. Blend, R. Bobechko, P.E. Bret, P. Bukhanov, K. Caldwell, C.B. Chait, P.G. Cheung, G. Chevne, D. Christakis. M. Chuang, S.H. Chui, M.C. Chung, D-G. Clark, J.A. Common, A.A. Connolly, B. Cooke, G.M. Cooper, P.W. Crawley, A. Damyanovich, A. Daneman, A. Deitel, W. Dowdell, T.R. Ehrlich, L.E. Farb. R. Fishell, E. Fong, K. Fox, A. Ganguli, N. Gilday, D.L. Ginzburg, B.M. Glanc, P. Goldberg, F. Goldberg, R.E. Gray, B. Greyson, N.D. Haider, M. Hamilton, P.A. Hanbidge, A. Hendler, A.L. Herman, S.J. Hershkop, M. Ho, C.S.

Assistant Professor Assistant Professor Assistant Professor Assistant Professor Associate Professor Associate Professor Associate Professor Associate Professor Assistant Professor Professor Emeritus Associate Professor Associate Professor Assistant Professor Professor Assistant Professor Assistant Professor Associate Professor Assistant Professor Associate Professor Assistant Professor Associate Professor Assistant Professor Lecturer Assistant Professor Professor Lecturer Assistant Professor Associate Professor Assistant Professor Assistant Professor Assistant Professor Professor Lecturer Professor Assistant Professor Assistant Professor Assistant Professor Assistant Professor Assistant Professor Associate Professor Assistant Professor Assistant Professor Assistant Professor Assistant Professor Associate Professor Assistant Professor Professor

DIVISION

Pediatric Imaging Abdominal Imaging Neuroradiology Vascular Imaging Pediatric Imaging Abdominal Imaging Pediatric Imaging Musculoskeletal Imaging Vascular Imaging

Neuroradiology Neuroradiology Musculoskeletal Imaging Abdominal Imaging Breast Imaging Research Pediatric Imaging Neuroradiology Pediatric Imaging Musculoskeletal Imaging Neuroradiology Neuroradiology Abdominal Imaging Vascular Imaging Vascular Imaging Pediatric Imaging Musculoskeletal Imaging Neuroradiology Research Research Pediatric Imaging Abdominal Imaging Musculoskeletal Imaging Nuclear Medicine Neuroradiology Breast Imaging Abdominal Imaging Neuroradiology Nuclear Medicine Pediatric Imaging Abdominal Imaging Abdominal Imaging Breast Imaging Abdominal Imaging Neuroradiology Nuclear Medicine MRI Abdominal Imaging Abdominal Imaging Nuclear Medicine Cardiothoracic Imaging Nuclear Medicine Vascular Imaging

HOSPITAL

Hospital for Sick Children Sunnybrook & Women's College Health Sciences Centre Hospital for Sick Children Mount Sinai Hospital Hospital for Sick Children University Health Network Hospital for Sick Children University Health Network Sunnybrook & Women's College Health Sciences Centre Hospital for Sick Children

University Health Network University Health Network Mount Sinai Hospital Mount Sinai Hospital Sunnybrook & Women's College Health Sciences Centre Hospital for Sick Children Sunnybrook & Women's College Health Sciences Centre Hospital for Sick Children Sunnybrook & Women's College Health Sciences Centre Hospital for Sick Children St. Michael's Hospital St. Michael's Hospital St. Michael's Hospital St. Michael's Hospital Hospital for Sick Children St. Michael's Hospital Sunnybrook & Women's College Health Sciences Centre University Health Network University Health Network Hospital for Sick Children St. Michael's Hospital St. Michael's Hospital Sunnybrook & Women's College Health Sciences Centre Hospital for Sick Children Mount Sinai Hospital Sunnybrook & Women's College Health Sciences Centre University Health Network University Health Network St. Michael's Hospital St. Michael's Hospital University Health Network Sunnybrook & Women's College Health Sciences Centre University Health Network University Health Network University Health Network University Health Network University Health Network

Holmes, R.B. Houle, S. Jaffer, N.M. Jong, R.A. Kachura, J. Kassel, E.E. Keller, M.A. Khalili, K. Khan, A. Kucharczyk, W. Lansdown, E.L. Lata, A.C. Laughlin, S. Lax. M. Leekam, R.N. MacDonald, C.E. Manson, D.E. Marcuzzi, D.W. Margolis, M. McCallum, R.W. Meema, H.E. Mehta, M.H. Merchant, N. Mikulis, D. Moes, C.A.F. Montanera, W. Muradali, D. Murphy, J. Murray, S.Y. Noël de Tilly, L. Nugent, P Olscamp, G.C. O'Malley, M. Pearce, D. Peto, R. Potts, D.G. Pugash, R.A. Rajan, D. Ranson, M. Rappaport, D. Reilly, B.J. Reilly, R.M. Rosen, I.E. Rowlands, J.A. Rubenstein, J.D. Saibil, E.A. Salem, S. Salonen, D.C. Salsberg, B.B. Samuels, T.H. Sanders, D.E. Sarrazin, J. Shankar, L. Shorter, A.M. Shuckett, B. Shulman, H.S. Shumak, R. Simons, M. Sniderman, K.W. Stewart, L. Temple, M. TerBrugge, K.G.

Professor Emeritus Associate Professor Associate Professor Assistant Professor Assistant Professor Associate Professor Assistant Professor Lecturer Lecturer Professor Professor Emeritus Assistant Professor Assistant Professor Lecturer Assistant Professor Assistant Professor Assistant Professor Assistant Professor Assistant Professor Professor Emeritus Professor Emeritus Lecturer Assistant Professor Associate Professor Professor Emeritus Associate Professor Assistant Professor Assistant Professor Assistant Professor Assistant Professor Lecturer Associate Professor Assistant Professor Lecturer Lecturer Professor Emeritus Assistant Professor Lecturer Assistant professor Associate Professor Professor Emeritus Associate Professor Assistant Professor Professor Associate Professor Assistant Professor Associate Professor Assistant Professor Lecturer Assistant Professor Professor Emeritus Assistant Professor Assistant Professor Lecturer Assistant Professor Professor Assistant Professor Assistant Professor Associate Professor Assistant Professor Lecturer Professor

Nuclear Medicine Vascular Imaging Breast Imaging Vascular Imaging Neuroradiology Abdominal Imaging Pediatric Imaging Neuroradiology Breast Imaging Cardiothoracic Imaging Neuroradiology Musculoskeletal

Pediatric Imaging Pediatric Imaging Vascular Imaging Abdominal Imaging

Cardiothoracic Imaging Neuroradiology

Neuroradiology Breast Imaging Abdominal Imaging Nuclear Medicine Neuroradiology Abdominal Imaging Abdominal Imaging Abdominal Imaging Musculoskeletal Cardiothoracic Imaging

Vascular Imaging Vascular Imaging Pediatric Imaging Cardiothoracic Imaging

Nuclear Medicine Abdominal Imaging Research/Medical Biophysics Musculoskeletal Imaging Vascular Imaging Abdominal Imaging Musculoskeletal Imaging

Breast Imaging

Cardiothoracic Imaging

Pediatric Imaging Cardiothoracic Imaging Breast Imaging Vascular Imaging Vascular Imaging Abdominal Imaging Pediatric Imaging Neuroradiology Clarke Institute of Psychiatry Mount Sinai Hospital Mount Sinai Hospital University Health Network Mount Sinai Hospital University Health Network University Health Network Hospital for Sick Children University Health Network Mount Sinai Hospital St. Michael's Hospital University Health Network University Health Network St. Joseph's Health Centre Hospital for Sick Children Hospital for Sick Children St. Michael's Hospital Mount Sinai Hospital St. Michael's Hospital

St. Joseph's Health Centre University Health Network University Health Network

University Health Network University Health Network Sunnybrook & Women's College Health Sciences Centre Sunnybrook & Women's College Health Sciences Centre St. Michael's Hospital Sunnybrook & Women's College Health Sciences Centre University Health Network University Health Network St. Michael's Hospital University Health Network

St. Michael's Hospital University Health Network Hospital for Sick Children Mount Sinai Hospital

University Health Network Sunnybrook & Women's College Health Sciences Centre Mount Sinai Hospital University Health Network St. Joseph's Health Centre Sunnybrook & Women's College Health Sciences Centre University Health Network Sunnybrook & Women's College Health Sciences Centre St. Joseph's Health Centre Sunnybrook & Women's College Health Sciences Centre Hospital for Sick Children Sunnybrook & Women's College Health Sciences Centre Sunnybrook & Women's College Health Sciences Centre University Health Network University Health Network Mount Sinai Hospital Hospital for Sick Children University Health Network

Thurston, W. Ting, G. Toi, A. Tomashpolskaya, J. Tomlinson, G. Traubici, J. Turchin, R. Wall, J. Weisbrod, G.L. Weiser, W.J. White, L. Willinsky, R.A. Wilson, C. Wilson, S.R. Wood, M.L. Wortzman, G. Wright, B.E. Yaffe, M.J. Yoo, S-J. Zalev, A.H. Zelovitzky, J.L.

Assistant Professor Lecturer Associate Professor Lecturer Assistant Professor Lecturer Lecturer Lecturer Professor Professor Assistant Professor Professor Assistant Professor Professor Professor Professor Emeritus Assistant Professor Professor Professor Assistant Professor Assistant Professor

Abdominal Imaging Abdominal Imaging Abdominal Imaging Research/Biostatistics Pediatric Imaging

Abdominal Imaging Cardiothoracic Imaging Cardiothoracic Imaging Musculoskeletal Imaging Neuroradiology Breast Imaging Abdominal Imaging Research/Medical Biophysics Neuroradiology Breast Imaging Research/Medical Biophysics Pediatric Imaging Abdominal Imaging Cardiothoracic Imaging

St. Joseph's Health Centre Sunnybrook & Women's College Health Sciences Centre University Health Network Sunnybrook & Women's College Health Sciences Centre University of Toronto Office Hospital for Sick Children St. Joseph's Health Centre St. Michael's Hospital University Health Network St. Michael's Hospital Mount Sinai Hospital University Health Network University Health Network University Health Network Sunnybrook & Women's College Health Sciences Centre Mount Sinai Hospital Sunnybrook & Women's College Health Sciences Centre Sunnybrook & Women's College Health Sciences Centre Hospital for Sick Children St. Michael's Hospital University Health Network

Cross Appointments

Bronskill, M.J. Medical Biophysics Foster, S. Freedom R. Henkelman, R.M. McLaughlin, P.R. Noyek, A.M. Pharoah, M.J. Plewes, D.B. Trachtenberg, J

Medical Biophysics Pediatrics Medical Biophysics Medicine Otolaryngology Dentistry Medical Biophysics Surgery

<u>THE DEPARTMENT OF MEDICAL IMAGING & THE UNIVERSITY OF TORONTO</u> <u>TEACHING HOSPITALS</u>

The academic programs in the Department of Medical Imaging are integrated with its five major teaching hospitals: the University Health Network (UHN), Mount Sinai Hospital (MSH), St. Michael's Hospital, Sunnybrook & Women's College Health Sciences Centre, and the Hospital for Sick Children. The medical imaging departments at UHN and MSH were consolidated into a single operational unit under the leadership of Dr. Patrice Bret in 1997. The other hospitals' medical imaging departments are led by Dr. Harry Shulman, Dr. Andrew Common, and Dr. Paul Babyn. Short descriptions of each hospital department are presented below.

University Health Network/Mount Sinai Hospital - Department of Medical Imaging

The academic year 2000-2001 was a very active one in all aspects. The competition for manpower became more acute and we faced several tight situations that had some impact on both the academic program and the delivery of clinical services. Although our Department has been successful in recruiting nine radiologists during the course of the academic year, we continued to experience a shortage in the Divisions of Breast and Abdominal Imaging. Our Department continued to invest in the digitization of all modalities and computer applications related to image management. At the same time, the effort undertaken during the previous years to update obsolete equipment continued. Among the more visible projects completed in that domain: two new MRI systems at MSH; the redesign of Interventional Imaging at the TGH that will allow us to centralize biopsy, venous line placement and interventional procedures in a new redesigned space; the rollout of computed radiography (CR) technology throughout all 4 sites; the redeployment of Obstetrical and Gynecology Ultrasound at the point of care in the Hydro building immediately next to the Gynecology-obstetrical clinics. In May, the Academic Program was reviewed by the Royal College. The team of reviewers recognized both the outstanding performance of the Program Director, Dr. Edna Becker, who is a Staff Radiologist at UHN/MSH, and the many strengths that our Department brings to the Academic Program. Additional information can be found at http://www.uhn.on.ca

Sunnybrook and Women's College Health Sciences Centre (SWCHSC) is a 1200 bed hospital currently operating on three campuses – Sunnybrook, Women's College and Orthopedic and Arthritic. There are 23 full-time faculty radiologists. SWCHSC has two clinical MR systems, two research MR systems and three CT scanners. All of the modalities on the Sunnybrook and Women's campus are integrated with PACS and a RIS. The department performs 260,000 exams annually in support of the Hospital's five major programs; Oncology, Trauma, Heart and Circulation, Perinatal & Gynecology and Musculoskeletal. Construction is scheduled to begin this year that will eventually result in all inpatient beds relocating to the Sunnybrook campus with the Women's College site becoming an Ambulatory Care Centre. Additional information about the Hospital can be found at http://www.swchsc.on.ca

St. Michael's Hospital's Department of Medical Imaging has undergone considerable expansion and remodelling in the past few years, concomitant with the integration of programs and services from the Wellesley Central site. The annual tally of imaging examinations is over 240,000, excluding a very busy cardiac catheterization service which does over 4000 examinations per year. Virtually all of the imaging equipment has been replaced in the past few years, with two new helical CT scanners, two new MRI units, and three anio suites including a bi-plane neuro interventional facility. The general radiographic equipment has also been upgraded to PACS readiness, and PACS is budgeted for in the Hospital's Strategic Information Plan for the years 2002/2003. An aggressive recruiting campaign of subspecialist radiologists has brought staffing levels to 20 which will allow the department to better meet the needs of the University Residency and Fellowship Programs. St. Michael's is proud of its commitment to teaching and clinical excellence, with a lesser emphasis historically on research. The hospital has recently appointed a renowned critical care researcher as VP of Research, and there is renewed commitment to increasing the research profile of the hospital and of the imaging department in particular. Other unique programs which are reflected in the Medical Imaging Department at St. Michael's are the Inner City Health focus, the world-renowned Minimal Access Therapeutics Program, and the HHT Program.

The Hospital for Sick Children's Department of Diagnostic Imaging provides full imaging services for all children up to the age of 18 years. We currently perform approximately 130,000 examinations per year. The department has 17 full-time staff currently with pediatric subspecialists in neuroradiology, intervention, cardiology, and body-cross sectional imaging. The department has recently undergone a significant upgrade of almost all imaging equipment with two state of the art MR scanners, two CT scanners (including one multi-slice CT) along with a newly opened Image Guided Therapy suite. This suite is designed to allow both interventional radiology and minimally invasive surgical procedures to be combined, and consists of four rooms containing integrated CT fluoroscopy, a biplane unit, and two single plane fluoroscopic units with ultrasound. In addition the department has an active sonography service with eleven ultrasound units. There is an integrated PACS and RIS system providing image and report distribution throughout the department and the hospital. Research and training are active interests of the department with three imaging scientists and eleven fellows in subspecialty training from across the world.

RESEARCH GRANTS

Members of the Department of Medical Imaging (underlined) were investigators on the following grants, identified by the principal investigator, other investigators, project title, sponsor, total amount of grant, and start and end dates of the funding period.

Adams R, Olivieri N, <u>Blaser S</u>. Stroke Prevention Trial in Sickle Cell Anemia (STOP II) National Institutes of Health. US \$39,069 2000 – 2001.

Banwell B, Anderson P, <u>Blaser S.</u> Neuropsychological and MRI Characteristics of Pediatric Multiple Sclerosis. The Multiple Sclerosis Scientific Research Foundation. \$25,720.00 2000 – 2001.

Black SE, Levine BT, Picton TW, Stuss DT, Winocur G, Alain C, Bronskill M, <u>Caldwell C</u>, Craik F, Moscovitch M, Szalai J, Tulving E: Multidisciplinary approach to brain-behaviour relations in aging, dementia, and frontal damage, Medical Research Council Group Grant, \$1,293,630, 1998-2003.

Boyd NF, <u>Yaffe MJ</u>, + 4 other investigators: Mammographic densities and risk of breast cancer in Singaporean Chinese women, Canadian Breast Cancer Research Initiative, \$98,413. 2000–2001.

Boyd NF, <u>Yaffe MJ</u>. An explanatory clinical trial of breast cancer prevention – London, Vancouver, Windsor Sites, Canadian Breast Cancer Research Initiative, \$949,718, 2000–2003.

Boyd NF, <u>Yaffe MJ</u>. Mammographic densities and risk of breast cancer, National Institutes of Health/National Cancer Institute, US \$336,022, 1999–2002.

Boyd NF, <u>Yaffe MJ</u>. The Effect of Diet on Change in Mammographic Densities at Menopause, American Institute for Cancer Research, US \$113,771, 2000–2002.

Boyd NF, <u>Yaffe MJ</u>. The molecular epidemiology of breast tissue at increased risk of breast cancer, Susan G. Komen Breast Cancer Foundation, US \$245,739, 1999–2002.

<u>Bret P</u> (Principal Investigator), <u>Artho G</u>, Markus E (Co-Investigators). Appropriateness of resource utilisation in an oncology population with respect to chest imaging: DR-Chest X-R versus Chest-CT. October 10, 2000-July 2001.

<u>Bukhanov K.</u> Z-Tech breast cancer detection system using homologous electrical difference analysis (HEDA). Z-Tech (Canada) Inc. \$22,295.00. June 2001 - December 2001.

<u>Caldwell CB</u>, Mah K, Ung, YC, Ehrlich LE. Evaluation of fusion of nuclear medicine images with computed tomography images to enhance management of oncology patients. Industry Grant from Marconi Medical Systems, Inc. \$60,000. 1999-2000.

<u>Caldwell CB</u>, Ung YC, Mah K. Incorporating gamma camera coincidence images in CT-based radiotherapy planning for lung cancer, Canadian Cancer Society Feasibility Grant, \$34,808, 2000-2001.

<u>Farb RI</u>, Kim JK (Principal Investigators). Comparison of high resolution Gd-enhanced MRA and IADSA of the carotid arteries. The Physician's Services Incorporated Foundation. \$16,000. July 2000 – June 2001.

<u>Farb RI</u> (Principal Investigator). Spinal dural arteriovenous fistula localization using a technique of real-time auto-triggered elliptical centric ordered 3D Gd-MRA. The Canadian Heads of Academic Radiology. \$6,000 Grant-in-Aid. June 2001-2002.

Feldman B, Blanchette V, <u>Babyn P</u>. An open dose escalating factor VIII prophylaxis study assessing the Safety efficacy and cost effectiveness in young patients with severe hemophilia. Bayer, Healthcare Division \$416,243.00. October 1996 – 2002.

Fletcher J, <u>Blaser S</u>, Dennis M, Barnes M, Hetherington R. Spina Bifida: Cognitive and Neurobiological Variability. National Institutes of Health. US\$307,674. 1998 – 2001.

Goss PE, Thompson L (Principal Investigators), <u>Bukhanov K</u>, <u>Muradali D</u> (Collaborators). A protocol to study the effects of dietary flaxseed on mammographic density. Canadian Breast Cancer Research Initiative. \$218,165.00. April 1, 1998 – March 31, 2001.

Goss PE (Principal Investigator), Josse R, <u>Bukhanov K</u>, <u>Muradali D</u> (Collaborators). A randomized feasibility study of letrozole in postmenopausal women at increased risk for development of breast cancer as evidenced by high breast density. Novartis. \$433,880.00. Summer 1999 (end date unknown).

Henkelman RM (Principal Investigator), Jong RA (Consultant). Medical imaging for cancer. National Cancer Institute of Canada. \$C898, 803.00 per annum (for 8 investigators). 1996-2001.

Henkelman RM, Bronskill MJ, Burns PN, Foster FS, Plewes DB, <u>Rowlands JA</u>, Wright GA, <u>Yaffe MJ</u>. Medical imaging for cancer, National Cancer Institute of Canada – Terry Fox Program Project, \$4,647,735, 1996–2001.

<u>Houle S</u>, Vaccarino F. Depth-Encoded Advanced Research Tomograph, Canada Foundation for Innovation (CFI) \$1,450,000 and Ontario Innovation Trust (OIT) \$1,450,000. [PET component of a larger grant entitled "University of Toronto Functional Imaging Network (FIRN)", Stuss D (PI) totalling \$10,700,000 from each of CFI and OIT].

<u>Kucharczyk W</u>, Stuss D, Henkelman RM, Vaccarino F. (Principal Investigators) "Functional Imaging Research Network". Canadian Foundation for Innovation and Ontario Innovation Trust. Total Grant from CFI/OIT – \$21,400,000. Attributable to W. Kucharczyk - \$6,196,746. 2000-2004.

<u>Kucharczyk W</u>, Sherar M, Peters T, Ellis R. (Principal Investigators) "Ontario Consortium for Image Guided Therapy and Surgery" – "OCITS" Ontario Research Development & Challenge Fund. Total OCITS Grant from ORDCF - \$16,500,000. Attributable to W. Kucharczyk - \$948,000. Matching Private Sector Contribution to W. Kucharczyk - \$948,000. 2001-2005.

Levin H, <u>Blaser S</u>, Dennis M, Barnes M, Schachar R. Neuro-behavioural Outcome of Head Injury in Children. National Institutes of Health. US \$136,686 1998 – 2001.

Lilge LD (Principal Investigator), Jong RA (Co-Investigator). Optical transillumination spectroscopy of breast tissue to determine cancer risk in pre- and post-menopausal women. United States Army Medical Research and Materiel Command. \$200,000.00. 2000-2002.

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INVITED PRESENTATIONS AND VISITING PROFESSORSHIPS

<u>Armstrong D</u>. The Third National Conference on Shaken Baby Syndrome. . Little America Hotel, Salt Lake City, Utah Sept. 24-27, 2000

Babyn, P. Imaging of Bone Tumors in Fellowship. Queen's University, Kingston, Ontario, April 19-20, 2001.

<u>Blaser S</u>. "Temporal bone embryology and labyrinthine dysplasias", "Pediatric neurometabolic disorders: neonatal and childhood presentations", "Congenital brain: The cortical dysplasias", "Congenital spinal disorders", 3rd Congress of the Pan Arab Neuroradiology Society jointly with the 5th Jordanian Radiological Society Congress Amman, Jordan April 6-8, 2001.

<u>Blaser S</u>. "Neonatal encephalopathy: neurometabolic disorders presenting in infancy", "Imaging neurometabolic disorders in the older child", "Congenital spinal disorder", "Acquired pediatric spinal disorders", "Congenital brain". Seventh International MRI Course; Dahran, Saudi Arabia, April 2-4, 2001

<u>Blaser S</u>. "Acquired pediatric spinal disorders", "Congenital spinal disorders", "Pediatric neurometabolic disorders: neonatal and childhood presentations", "Imaging cortical dysplasias". First International Diagnostic Imaging Course; Dubai, United Arab Emirates, May 17-20, 2001.

<u>Blaser S</u>. Labyrinthine dysplasias. Westmead New Childrens Hospital, Sydney, Australia, September 2000.

<u>Blaser S</u>. Labyrinthine dysplasias. Brisbane Childrens Hospital, Brisbane, Australia, September 2000.

<u>Blaser S</u>. Acquired pediatric spinal disorders. Eastern Society of Neuro-radiology; Stowe, Vermont, August 27, 2000.

<u>Blaser S</u>. Acquired pediatric spinal disorders. Nordic Course in Pediatric Neuroradiology. 54th Congress Scandinavian Radiological Society; Helsinki, May 27-31, 2000.

<u>Blaser S</u>. Pediatric neuroimaging. 32nd International Diagnostic Course in Davos; Davos, Switzerland, March 25-31, 2000.

<u>Blaser S</u>. Introduction to neuroimaging in children. Pediatric Grand Rounds; Inselspital, Berne, Switzerland, March 24, 2000.

<u>Blaser S</u>. Labyrinthine dysplasia. Berne Neuroradiologists and Otolaryngologists Conference. Inspelspital, Berne, Switzerland, March 23, 2000. <u>Bret P</u>. "Imaging of the pancreas: US vs CT vs MRI", "Image management in the 21st century". Ontario Society of Diagnostic Medical Sonographers. White Oaks Conference Resort, Niagara-on-the-Lake, Ontario. November 4, 2000.

<u>Bret P</u>. Information technology and imaging. Perfectionnement en sciences hospitalières de l'Ecole de santé publique de l'UCL. Belgique. November 10, 2000.

<u>Bret P</u>. Visiting Professor. "Echographie, CT ou IRM en imagerie du pancréas", "Echographie et IRM des voies biliaires". Université de Montréal, Montréal, Québec. January 22-23, 2001.

<u>Bret P</u>. Informal Case Presentation. Biliary cases. Nineteenth Annual Practical Radiology Whistler. University of British Columbia, Whistler, British Columbia. February 11-16, 2001.

<u>Chait P</u>. Interventional Ultrasound Seminar with Hands-on Workshop. The Michener Institute for Applied Health Sciences, Toronto, Ontario. September 2000.

Chait P. XXIX Brazilian Congress of Radiology. Salvador, Bahia. November 2000

Chait P. XXXIV Congress of Paediatric Surgery of Argentina. Buenos Aires. November 2000.

Chait P. RSNA Refresher Course Presentations, Chicago, Illinois. November 2000

Chait P. RSNA Presentations, Chicago, Illinois. November 2000.

<u>Chait P</u>. Advances in Bowel Management: Antegrade Percutaneous Cecostomy: Technique, Outcomes and Follow-up. Spina Bifida Medical Update. Children's Hospital, Washington, DC. December 2000.

<u>Chait P</u>. Pediatric feeding tubes and other ostomies. Plenary Session: Nonvascular interventions SCVIR, San Antonia, Texas, March 2001.

<u>Chait P</u>. New Image guided procedures – what is the impact on pediatric patient care? Pediatric Update 2001. Toronto, Ontario, May 2001.

Chow G, Koirala B, <u>Armstrong D</u>, McCrindle B, Edgell D, Coles J, de Veber C. Survival and Neurological Outcome in Children following Extracorporeal Cardiac Life Support for Cardiac Indications. The 53rd Annual Meeting of the American Academy of Neurology. November 2000.

<u>Common AA.</u> 1st Canadian Symposium on uterine fibroid embolization. Course Director. September 23, 2000.

<u>Common AA.</u> An overview of UFE. 35th Annual Meeting of SOGQ, Mount St. Anne, PQ May 24, 2001.

<u>Connolly B</u>. "Basic Principles of Ultrasound Guidance", "Hands-on workshop of ultrasound guidance". Interventional Ultrasound Seminar with Hands-on Workshop. The Michener Institute for Applied Health Sciences, Toronto, Ontario. September 2000.

<u>Daneman A</u>. "Imaging of adrenal in children"; "Malrotation: Spectrum of presentations, techniques and pitfalls in diagnosis", XXIX Brazilian Congress of Radiology. Salvador - Bahia, Brasil, November 11-15, 2000.

<u>Daneman A</u>. "An Approach to the Imaging of Abdominal Masses in Children", "Intussusception: Issues and Controversies Related to Diagnosis and Reduction", "Neurosonography", "Malrotation: Spectrum of Appearances, Techniques and Pitfalls in Diagnosis". Health Sciences Centre, University of Manitoba. Winnepeg, Manitoba. February 28–March 2, 2001.

Daneman A. Imaging of the Acute Abdomen in Children. North York General Hospital (Branson Division) March 7, 2001.

<u>Daneman A</u>. Management of Intussesception in Pediatrics. Southlake Regional Hospital, Newmarket, Ontario, March 8, 2001.

<u>Daneman A</u>. Neonatal Neurosonography. Sonography in the Acute Abdomen in Pediatrics. Ontario Society for Diagnostic Medical Sonographers, March 24, 2001.

Dowdell TR. Family Medicine Forum 2000. College of Family Physicians of Canada. Ottawa, October 2000.

<u>Dowdell TR.</u> General radiology imaging seminars. 2 - 2 hour sessions. Vos Andes Hospital, Quito Ecuador, May 3-4, 2001.

Fox AJ. Accreditation Site Visitor for RCPSC, Université de Montreal, Neuroradiology. June 2001.

Golomb M, Domi T, <u>Armstrong, D</u>, McCrindle B, MacGregor D, Mayank S, de Veber GA. Presumed pre- or perinatal arterial ischemic stroke; risk factors and outcomes., Childs Neurology Society. St. Louis, Missouri. Oct. 25-28, 2000

<u>Goldberg R</u>. Medical imaging empowered by the internet. E-Health Summit University of Toronto. Mt. Tremblant, Québec. June 13-15, 2001.

<u>Greyson ND.</u> Chair - Symposium on cost effectiveness of nuclear cardiology. Society of Nuclear Medicine. St. Louis, Missouri June 5, 2000.

<u>Greyson ND.</u> Principles of nuclear medicine. Presented to training course of new licence inspectors for the Health Protection Branch, Federal Department of Health & Welfare. October 26, 2000.

<u>Hanbidge A</u>. "Adnexal masses in the adult", "Ultrasound of the peritoneum". Annual Meeting of Diagnostic Medical Sonographers. White Oaks Conference Resort, Niagara-on-the-Lake, Ontario. November 2000.

<u>Hanbidge A</u>. Practical tips in US: Abdomen. The peritoneal space. Refresher course: Annual Meeting of the Radiological Society of North America. Chicago, Illinois. November/December 2000.

Hanbidge A. Adnexal masses in pregnancy. Annual Women's Imaging Course. Toronto, Ontario. February 2001.

<u>Hanbidge A</u>. "Sonomorphology of adnexal masses: is it cancer or is it benign?", "Imaging the pancreas: Part 1", "Imaging the pancreas: Part 2", "Ultrasound of the peritoneum", "Interactive quiz". Annual Meeting of the Chilean Society of Radiology. Santiago, Chile. March 2001.

<u>Ho CS.</u> Radiofrequency ablation of hepatomas. Hong Kong Sanatorium and Hospital CME Seminar. Hong Kong. February 2001.

Huyer D, Mian M. <u>Armstrong D</u> "Is there a correlation between retinal findings and intracranial findings in SBS". The Israel Ophthalmological Society meeting on Pediatric Ophthalmology and Strabismus, November 1, 2000.

<u>Jaffer N.</u> Visiting Professor. Imaging of small bowel. Edmonton and District Radiological Society Meeting. University of Alberta. Hotel Macdonald, Edmonton, Alberta. February 22, 2001.

<u>Jaffer N</u>. Visiting Professor. Diseases of the bile ducts. University of Alberta: Radiology Grand Rounds. Royal Alexander Hospital, Edmonton, Alberta. February 22, 2001.

<u>Jaffer N</u>. Visiting Professor. Revisiting the lost art of barium. University of Alberta: Radiology Grand Rounds. University Hospital, Edmonton, Alberta. February 23, 2001.

<u>Jaffer N</u>. Virtual colonoscopy: Where are we? Southern Society of Clinical Surgeons. Mount Sinai Hospital, Toronto, Ontario. May 03, 2001.

<u>Jaffer N</u>. Evidenced based medicine: What is the current status of virtual colonoscopy? Fourth Annual Northeastern Ontario Cancer Surgery Conference (CANCER CARE ONTARIO). Sudbury Regional Hospital, Sudbury, Ontario. May 5, 2001.

Jong RA. New directions in breast imaging. MICO Mammography Seminar. Mississauga, Ontario. April 21, 2001.

Jong RA. New breast imaging modalities. Diet and Breast Cancer Prevention Study Annual Education Evening. Toronto, Ontario. May 30, 2001.

<u>Kassel EE</u>, Bance M, Rutka J, Chen J. Dehiscence of the superior and posterior semicircular canals. American Society of Neuroradiology Annual Conference. Boston, Massachusetts. April 23, 2001.

<u>Kucharczyk W.</u> "Basic MRI Physics", "A pattern recognition approach for the differential diagnosis of white matter lesions", "Imaging for the diagnosis of pituitary and parasellar lesions", "Magnetic Resonance Imaging for the Guidance of Minimally Invasive Intracranial Procedures: Historical Perspectives, Current Status, and Future Trends", "Intracranial vascular malformations and fistulae". Royal Australasian College of Radiology Annual Meeting, Auckland, New Zealand. October 26-30, 2000.

<u>Kucharczyk W.</u> Neuroradiology Education in Canada. European Society of Neuroradiology XVII Congresso Nazionale. Genoa, Italy. December 14-17, 2000.

<u>Kucharczyk W.</u> "CNS Infections", "The Pituitary Gland", "Expert Film Panel". 9th International MRI Symposium. Garmisch, Germany. January 23-27, 2001.

<u>Kucharczyk W.</u> Prion Diseases in the CNS. University of British Columbia – Practical Radiology at Whistler. Whistler, British Columbia. February 13, 2001.

<u>Kucharczyk W.</u> "Basic MR Physics and K-Space", "MRI of the Pituitary Gland and Sella Turcica", "White Matter Disease", "AVM's and AVF's". Harvard MRI 2001 Clinical Update & Advanced Applications. Kauai, Hawaii. February 22, 2001.

<u>Kucharczyk W.</u> Image Guided Minimally Invasive Therapy – The University of Toronto Program. 24th Annual meeting of Japan Society for CNS Computed Imaging. Fukui, Japan. March 3, 2001.

<u>Manson DE</u>. Review of Paediatric Radiology. Update in Paediatric Emergencies. The Credit Valley Hospital. Mississauga, Ontario, November 8, 2000.

Merchant N. Visiting Professor. University of Ottawa. Ottawa, Ontario. October 2000.

<u>Merchant N</u>. "Current techniques and utility of CVMR", "CVMR: What the future holds". Mt. Tremblant Symposium on Interventional Cardiology. Mt. Tremblant, Québec. February 2001.

<u>Merchant N</u>. The value of MRI in congenital heart disease. International Society of Magnetic Resonance in Medicine Annual Meeting. Glasgow, Scotland. April 2001.

<u>Merchant N</u>. MRI is better than echocardiography in adult congenital heart disease. World Congress of Pediatric Cardiology. Toronto, Ontario. May 2001.

<u>Merchant N</u>. Cardiovascular MRI. Medical Grand Rounds. St Joseph's Hospital. Hamilton, Ontario. June 2001.

<u>Mikulis DJ</u>. Clinical applications of MRI. The Eastern Neuroradiological Society, 12th Annual Meeting. Stowe, Vermont. August 25, 2000.

<u>Mikulis DJ.</u> fMRI: A clinical bust? American Society of Neuroradiology 2001. Boston, Massachusetts. April 23-26, 2001.

<u>Muradali D</u>. "Sonography of TIPS and hepatic transplants", "Ultrasound artifact: Friend or foe?", "Sonography of the breast", "Sonography of renal transplants: Normal and abnormal". 2001 Perspectivas Del Ultrasounido, Sociedad Chilena De Radiologia. Santiago, Chile. March 8-10, 2001.

Muradali D. The renal transplant. The Michener Institute. Toronto, Ontario. May 12, 2001.

<u>O'Malley M</u>. Visiting Professor. "US of the bowel with CT correlation", "Imaging renal colic", "Renal cysts", "Pancreatic tumor imaging". Colombian Radiological Association. 25th Annual Scientific Assembly. Cartagena, Colombia. October 12-15, 2000.

Ochi A, Otsubo H, Citoku S, Hunjan A, Rutka JT, <u>Chuang SH</u>, Kamijo K-I, Yamazaki T, Snead, III OC Difference of EEG dipole propagation between spikes with myoclonic jerks and without jerks in patients with epilepsia partialis continua.. Presented at the American Epilepsy Society, Los Angeles, CA. Dec. 2000.

Otsubo H, <u>Chuang</u> SH, Xiang J, Sharma R, Holowka S, Pang E Ochi A, Elliott I, Snead O. Magnetoencephalography study for children to evaluate epilepsy surgery candidate. American Society of Neuroradiology Symposium and 39th Annual Meeting, Boston, MA, April 21-27, 2001.

Otsubo H, Ochi A, <u>Chuang SH</u>, Rutka JT, Jay V, Snead OC. Magnetoencephalography and surgery for lesional extrahippo-campal epilepsy in children. Biomag 2000, Laboratory of Biomedical Engineering, Helsinki University of Technology, Finland.

<u>Pugash RA.</u> Transcatheter embolotherapy of pulmonary arteriovenous malformations - 63^{rd} Annual Meeting of the Canadian Association of Radiologists. Toronto June 12, 2000.

Pugash RA. Venous access. Invited talk at meeting of Toronto IV Therapy Nurses, April 11, 2001.

<u>Rappaport D</u>. Multi-detector CT, applications and technique. University of Alberta teaching hospital rounds. Fantasyland Hotel, Edmonton, Alberta. September 2000.

<u>Rappaport D</u>. New developments in CT imaging. Ontario Thoracic Society Better Breathing Conference 2001. Sheraton Centre Hotel, Toronto, Ontario. January 2001.

<u>Simons ME</u>. Uterine artery embolization for symptomatic fibroids. GE Multiple Modality Seminar. Toronto, Ontario. 2001.

<u>Simons ME.</u> Role of interventional radiology in the management of problems in peritoneal dialysis patients. IX Congress of the International Society for Peritoneal Dialysis. Montréal, Québec. June 28, 2001.

<u>Stewart LK</u>. Sonography of the uterus. Ontario Society of Diagnostic Medical Sonographers, Spring Education Day. Toronto, Ontario. March 2001.

<u>Temple M.</u> Biopsy in the pediatric patient. Interventional Ultrasound Course, Michener Institute, Toronto, Ontario, November 2000.

<u>TerBrugge K</u>. "Imaging & endovascular management of acute stroke", "Imaging & treatment of intracranial aneurysms", "Neurointervention, imaging & management of vascular head & neck lesions", "Brain AVM: relationship of clinical symptoms to angioarchitecture", "Imaging & treatment of vascular lesions of the spine & cord, paediatric neurointervention", "Dural AVF: clinical symptoms, imaging & treatment strategies". Interventional Radiology Society of Australasia 2000. Penang, Malaysia. July 2-7, 2000.

<u>TerBrugge K</u>. "Imaging & endovascular management of acute stroke", "Imaging & endovascular management of intracranial aneurysms", "Classification, imaging and embolisation of vascular lesions of the spine & spinal cord", "Imaging: Clinical symptoms and embolisation of brain AVMs", "Classification, indications & endovascular treatment of intracranial dural AVMs". 4th Asian Pacific Congress of Cardiovascular & Interventional Radiology. Singapore. July 9-13, 2000.

<u>TerBrugge K</u>. 3D-DSA, Who needs it? The Eastern Neuroradiological Society, Twelfth Annual Meeting. Stowe, Vermont. August 25-27, 2000.

<u>TerBrugge K</u>. "Management of small size brain AVM's, Stroke management", "Dural AVM", "Venous vascular disease", "Vascular Lesions of head & neck, 3D DSA in INR procedures/Future trends in INR", "AVM clinical symptoms relationship to angioarchitecture". South African Interventional Neuroradiology Peer Review Group. Kruger Park, South Africa. September 12-14, 2000.

<u>TerBrugge K</u>. "Approach to intracranial dural arterio-venous malformations", "Endovascular treatment of arterio-venous malformations with particular reference to lesions of small size". Millenium Congress, Society of Neurosurgeons of South Africa. South Africa. September 15-17, 2000.

<u>TerBrugge K</u>. Vascular anatomy of the spinal cord and classification of spinal vascular malformations. LINC Course Houston-2000. Houston, Texas. October 14-17, 2000.

<u>TerBrugge K</u>. "Natural history of DAVs, venous injuries, thromboses and hemorrhages", "Para spinal and epidural lesions", "Spinal cord vascular tumors (Hemangioblastomas)". 2000-2001 International Master Degree in Neurovascular Diseases. Chiangmai, Thailand. October 29-November 3rd, 2000.

<u>TerBrugge K</u>. Complication of endovascular treatments in intracranial anuerysms. ABC/WIN Course. Val D'Isère, France. January 14-19, 2001.

<u>TerBrugge K</u>. Visiting Professor (Neuroradiology). Endovascular management of stroke and stroke prevention. Karolinska Hospital, Stockholm, Sweden. February 19-21, 2001.

<u>TerBrugge K.</u> "Imaging strategies of stroke, asymptomatic carotid stenosis", "Venous thrombosis", "Arterial dissection", "Vertebrobasillar insufficiency", "Ante-natal imaging of vascular diseases", "Brain AVM in children", "Aneurysms in children", "Vein of Galen Malformations", "Stroke in children", "Multiple brain AVMs in children". 2000-2001 International Master Degree in Neurovascular Diseases. Chiangmai, Thailand. March 18-23, 2001.

<u>TerBrugge K</u>. Endovascular treatment of acute stroke prevention, endovascular management of malformations affecting the central nervous system. Academy of Medicine, Hong Kong, China. March 26-28, 2001.

<u>TerBrugge K</u>. "The role of 3 dimensional angiography in the management of intracranial aneurysms", "Endovascular management of pediatric intracranial aneurysm". 2001 AANS Annual Meeting (The 70th Anniversary). Toronto, Ontario. April 21-26, 2001.

<u>TerBrugge K</u>. Visiting Professor (Neurosurgery). Endovascular management of stroke. University of Liden, Holland. May 21-22, 2001.

<u>Toi A, Haider M</u>. Advanced prostate imaging. Prostate Cancer Awareness Week. Ontario Science Centre, Toronto, Ontario. September 18, 2000.

<u>Toi A</u>. Prostate imaging. CLIMOA (Canadian Life Insurance Medical Officers' Association.) Royal York Hotel, Toronto, Ontario. April 23, 2001.

<u>Toi A</u>. Second trimester ultrasound as a follow-up in screen positive women. OB & Gyn Minisymposium. St. Joseph's Health Center, University of Western Ontario, London, Ontario. April 25, 2001.

<u>White LM.</u> MR imaging of bone and soft tissue tumors of the musculoskeletal system. Internal Derangements of Joints: Advanced and Intensive MR Imaging Course (D. Resnick). Toronto, Ontario. October 2000.

<u>White LM</u>. Postoperative imaging of the shoulder and knee: MR imaging of the postoperative meniscus. Categorical Course Presentation. Scientific Assembly and Annual Meeting of the Radiologic Society of North America. Chicago, Illinois. November/December 2000.

<u>White LM</u>. Technical considerations, limitations, and potential utility of advanced imaging in the assessment of osseous incorporation following total hip arthroplasty. 4th Annual OP-1 Research Meeting. Whistler, British Columbia. April 2001.

<u>Willinsky RA</u>. Visiting Professor. Spinal arteriovenous malformations: Endovascular treatment. Department of Neuroradiology, Neuroscience Rounds. Karolinska Institute, Stockholm, Sweden. September 6, 2000.

<u>Willinsky RA</u>. Brain Manifestation of HHT; Children and HHT. 8th Annual HHT Conference. Toronto, Ontario. September 22, 2000.

<u>Willinsky RA</u>. "Spinal arteriovenous malformations: A classification based on angioarchitecture", "Management of complications in GDC treatment of cerebral aneurysms". United Kingdom Neurointerventional Group. Oxford, England. November 3, 2000.

<u>Willinsky RA</u>. Management of spinal AVMs. First American-Japanese Cerebrovascular Meeting. Hawaii, U.S.A. February 9-12, 2001.

<u>Willinsky RA</u>. Visiting Professor. GDC embolization of intracranial aneurysm - Live demonstration. Department of Radiology, Health Sciences Centre, Winnipeg, Manitoba. May 31, 2001.

<u>Wilson SR</u>. Diagnostic radiologist with expertise in sonography. Medicine, Law & Other Things. Niagara-on-the-Lake, Ontario. August 24-26, 2000.

<u>Wilson SR.</u> "Imaging the vascular phase". "Liver clinical findings: Hemangioma", "Liver clinical findings: Cholangiocarcinoma". 2nd Symposium on Ultrasound Contrast for Radiological Diagnosis: Bubbles in Radiology-The State of the Art. Toronto Marriott Eaton Centre Hotel, Toronto, Ontario. October 23-24, 2000.

<u>Wilson SR</u>. "Hilar biliary obstruction: The utility of Levovist enhanced delayed sonography", "Ultrasound contrast agents: Their impact on liver mass characterization & detection". Society of Radiologists in Ultrasound, 10th Annual Meeting, Advances in Sonography. Loews L'Enfant Plaza Hotel, Washington, DC. October 27-29, 2000.

<u>Wilson SR</u>. "Biliary tree: What is the role for sonography?" "Microbubble contrast agents: Their role in characterization & detection of focal liver masses". Ontario Society of Diagnostic Medical Sonographers, Fall Education Weekend. Niagara-on-the-Lake, Ontario. November 4&5, 2000.

<u>Wilson SR</u>. "Acute biliary pathology: Sonographic assessment", "Sonography of AIDS", "Right lower quadrant pain: not always acute appendicitis", "Nongynecologic applications of transvaginal sonography", "The acute abdomen of hollow visceral origin: Sonography assessment." "Microbubble contrast agent and pulse inversion imaging: Their role in the detection of liver masses". Congresso Brasileiro De Radiologia. Salvador, Bahia, Brazil. November 11-15, 2000.

<u>Wilson SR.</u> "Blood flow evaluation with US: new methods and applications", "Sonography in the evaluation of focal liver masses." RSNA 86th Scientific Assembly and Annual Meeting. Chicago, Illinois. November 26-December 1, 2000.
<u>Wilson SR</u>. Microbubble contrast agents: their role in the characterization and detection of liver lesions. New England Society of Ultrasound. Boston, Massachusetts. December 12, 2000.

<u>Wilson SR</u>. Ultrasound contrast agents: Imaging the vascular phase. Echocontrast. Berlin, Germany. January 11-13, 2001.

<u>Wilson SR</u>. The vascular phase: Specificity is the key. 6th European Symposium on Ultrasound Contrast Imaging. Rotterdam, The Netherlands. January 25-26, 2001.

<u>Wilson SR</u>. "The acute abdomen of hollow visceral origin: Sonographic assessment", "Liver mass characterization and detection: The contribution of microbubble contrast agents", "Biliary sonography-Where are we today?", "Nongynecologic applications of TV sonography", "The rectum and anal canal-sonographic assessment". 2001 Perspectivas Del Ultrasounido, Sociedad Chilena De Radiologia. Santiago, Chile. March 8-10, 2001.

<u>Wilson SR</u>. "Inflammatory diseases of the small bowel and the colon", "Contrast agents in liver tumor imaging". AIUM 45th Annual Convention. Orlando, Florida. March 11-14, 2001.

<u>Wilson SR</u>. "GI controversies panel I: Hepatic imaging", "Contrast agents for ultrasound: Improved liver masses characterization and detection". Abdominal Radiology Postgraduate Course 2001. The Society of Gastrointestinal Radiologists and The Society of Uroradiology. Scottsdale, Arizona. March 25-30, 2001.

<u>Wilson SR</u>. "Sonographic evaluation of the patient with AIDS", "US contrast agents: Their use in liver mass characterization and detection", "The adnexal mass: Is it malignant or benign?". Michigan Sonographers' Society Symposium 2001. Novi, Michigan. April 27-28, 2001.

<u>Wilson SR</u>. Microbubble contrast agent and pulse inversion imaging : their impact on evaluation of focal liver masses. Hong Kong College of Radiologists. Scientific Seminar. Kowloon, Hong Kong. May 17, 2001.

<u>Wilson SR</u>. Microbubble contrast agent and pulse inversion imaging: their impact on evaluation of focal liver masses. Japan Society of Ultrasound in Medicine. Tokyo, Japan. May 19-21, 2001.

<u>Yoo SJ</u>. Sequential segmental analysis of congenital heart disease. Annual Meeting of the American Society of Pathology Technologists. Toronto. September 15, 2000.

<u>Yoo SJ</u>. "Normal cardiovascular anatomy for fetal echocardiography", "Sequential segmental approach to fetal congenital heart disease".. The 5th Refresher Course for Obstetric Sonography. Samsung Cheil Hospital, Seoul, Korea. May 6, 2001.

<u>Yoo SJ.</u> Cardiovascular MRI in children. Kangbook Samsung General Hospital, Seoul Korea. May 7, 2001.

Yoo SJ. Cardiovascular MRI in children. Sejong Heart Institute, Pucheon, Korea. May 8, 2001.

Yoo SJ. Cardiovascular MRI in children. Asan Medical Center, Seoul, Korea. May 10, 2001.

<u>Yoo SJ</u>. Fetal echocardiography made easy. Categorical Course in Obstetric Ultraound, Seoul, Korea. May 11, 2001

Yoo SJ. Obstetric ultrasound, when, why, for what and by whom? Jisan Memorial Lecture at the Annual Meeting of the Korean Society of Medical Ultrasound, Seoul, Korea. May 12, 2001.

<u>Yoo SJ</u>. Prenatal assessment and management of fetal aortic arch. Satellite Symposium on Advances in Fetal & Perinatal Cardiology, The 3rd World Congress of Pediatric Cardiology and Cardiac Surgery, Toronto. May 25, 2001.

<u>Yoo SJ</u>. Normal cardiac anatomy for imaging. The 3rd World Congress of Pediatric Cardiology and Cardiac Surgery, Toronto. May 27, 2001.

<u>Yoo SJ</u>. MR approaches to cardiovascular anatomy. The 3rd World Congress of Pediatric Cardiology and Cardiac Surgery, Toronto. May 29, 2001.

Zalev AH. Radiology of sword swallowing in the science of the circus. Ontario Science Centre. June 2001.

SCIENTIFIC PRESENTATIONS: PEER-REVIEWED PAPERS, POSTERS AND EXHIBITS

Amitai MM, <u>Haider MA</u>, <u>Rappaport DC</u>, <u>O'Malley ME</u>, Redston M, Gallinger S. The use of multidetector helical CT in preoperative assessment of liver metastases: is thinner better? Annual Meeting of the Radiological Society of North America. Chicago, Illinois. November-December 2000.

<u>Atri M</u>, Benjaminov O, <u>Rappaport D</u>, Hamilton P. Features of the normal appendix on helical CT examinations without oral, bowel or intravenous contrast. ARRS. Seattle, Washington. April/May 2001. (Abstract)

<u>Babyn PS</u>, Traubici J, Sherman C, Baskin KM, Mohanta A, McLorie G. Evaluation of contrast enhanced sonography with harmonic imaging in experimental pyelonephritis in a procine model. IPR, Paris, France May 2001.

<u>Babyn PS</u>, Boutis K., Jaramillo D., Alman B., Komar L., Schuh S. Comparison of a clinical examination with radiographic diagnosis in children with acute ankle injury (musculoskeletal). IPR, Paris, France May 2001.

Babul-Hirji R, Chitavat D, <u>Toi A.</u> Micrognathia, midfacial hypoplasia, hypotonia and severe developmental delay in brothers: a new x-linked or autosomal recessive condition? Am Soc Human Genetics Annual Meeting. Philadelphia, Pennsylvania. October 3-7, 2000.

Baron T, <u>Connolly B</u>, Read S. Insertion of gastrostomy tubes inproves medication compliance in patients with HIV infection. Canadian Pediatric Society, Vancouver, BC. June 2001.

Barrea C, <u>Yoo SJ</u>, Chitayat D, Smallhorn JF, Hornberger LK. Assessment of the thymus at echocardiography in fetuses at risk for 22q11.2 deletion. The 3rd World Congress of Pediatric Cardiology and Cardiac Surgery, Toronto. May 27-31, 2001.

Benjaminov O, <u>Atri M</u>, <u>O'Malley ME</u>, Lobo K. Cystic renal masses: CT features predicting malignancy and the interobserver agreement of different features. Annual Meeting of the Radiological Society of North America. Chicago, Illinois. November-December 2000.

<u>Bret P</u>. Electronic imaging using the internet. European Meeting of Nuclear Medicine (Congrès Européen de Médecine Nucléaire). Ateliers de Cardiologie Nucléaire. Grand Réfectoire de l'Hôtel Dieu, Lyon, France. September 8, 2000.

<u>Bret P</u>. Intégration des PACS et des SIR (RIS). Journées Françaises de Radiologie 2000. Paris, France. October 23-27, 2000.

<u>Bret P</u>. Anatomie d'un PACS à l'usage des radiologistes. Journées Françaises de Radiologie 2000. Paris, France. October 23-27, 2000.

<u>Bret P</u>. Update Course on PACS and Radiology Informatics: Getting from here to there "Change Management" in PACS. Annual Meeting of the Radiological Society of North America. Chicago, Illinois. November 26-December 1, 2000.

<u>Bret P</u>. PACS. La Journée de la Société Française de Radiologie Rhone-Alpes. Lyon, France. March 24, 2001.

Burns PN, <u>Wilson SR</u>, <u>Khalili K</u>. Contrast-enhanced pulse inversion imaging of the liver with a perfluorocarbon agent: protocols for the differential diagnosis of focal lesions. RSNA 86th Scientific Assembly and Annual Meeting. Chicago, Illinois. November 26-December 1, 2000.

Causer PA, <u>Muradali D</u>, <u>Bukhanov K</u>, <u>Samuels T</u>. Nodular ductal carcinoma in situ: Can it be differentiated from invasive ductal carcinoma on sonography? American Institute of Ultrasound in Medicine (AIUM) 45th Annual Convention. Orlando, Florida. March 11-14, 2001.

Chan R, <u>Asch M, Kachura J, Ho CS</u>, Greig P, Langer B, Sherman M, Wong F, Feld R, Gallinger S. Radiofrequency ablation of malignant hepatic neoplasms. Society of Cardiovascular and Interventional Radiology. San Antonio, Texas. March 5, 2001.

Chawla T, <u>Muradali D</u>, Cattral M, <u>Wilson S</u>. Poster: Sonography of pancreas transplants: Normal and abnormal. European Society of Gastrointestinal and Abdominal Radiology. Dublin, Ireland. June 2001.

<u>Cheung G</u>, Chow E, Finkelstein J, Danjoux C, Connolly R. MRT; Holden L, MRT Alton A, RN. Percutaneous Vertebroplasty/Cementoplasty-Sunnybrook Hospital Experience - a Video Presentation of the Procedure. 11th Annual Palliative Care Conference. Royal York Hotel Poster Presentation, Toronto Canada. April 22-24, 2001.

<u>Cheung G</u>, Chow E, Finkelstein J, Danjoux C, Connolly R. MRT; Holden L, MRT; Alton A, RN. Pain Relief and Prevention of Fractures in Cancer Patients with Painful Osteolytic Bone Metastases and Osteoporotic Patients with Percutaneous Vertebroplasty/Cementoplasty-A Review of the Literature. Annual Palliative Care Conference Royal York Hotel Poster Presentation Toronto, Canada. April 22-24, 2001

<u>Clark JA</u>, <u>Pugash RA</u>. Angiographic demonstration of the parabiliary venous system. 63rd Annual Meeting of the Canadian Association of Radiologists. Toronto June 10-14, 2000.

<u>Clark JA</u>, Caldwell C. Visual perception and radiology training. 63rd Annual Meeting of the Canadian Association of Radiologists, Toronto June 10-14, 2000.

<u>Common AA</u>. Resumption of menses and control of menorrhagia after UFE. Annual meeting of Canadian Society of Obstetricians and Gynecologists. June 2001.

<u>Connolly B</u>, Walsh S, Temple M, Restrepo R, <u>Chait PG</u>. Influence of arm movement on central tip location or peripherally inserted central catheters (PICCs). IPR, Paris, France. May 2001.

<u>Connolly B</u>, Temple M, <u>Chait PG</u>, Restrepo R. Insertion and management of the G and GJ tube. IPR, Paris, France. May 2001. Crook J, McLean M, Catton P, Milosevic M, Panzerella T, Jewett M, Tsihlias J, <u>Haider MA</u>, Tran T, Yeung I. Interobserver variation in post implant CT contouring effects quality assessment of prostate brachytherapy. 56th Annual Canadian Urological Association Meeting, 2001 and CARO 2001.

Crossin J, <u>Merchant N</u>, Webb, G. Poster: 3D Magnetic resonance angiography in complex congenital heart disease: Is it of value? Annual Meeting of the Radiology Society of North America. Chicago, Illinois. November/December 2000.

Crossin J, <u>Merchant N</u>, Veldtman G. Poster: MRI of tetralogy of Fallot: What is normal and abnormal. Annual Meeting of the Radiology Society of North America. Chicago, Illinois. November/December 2000.

Crossin J, <u>Muradali D</u>, Lily L, <u>Wilson S</u>. Poster: Sonography of liver transplants: Normal and abnormal. Radiologic Society of North America. Chicago, Illinois. November/December 2000. Magna Cum Laude Award.

Crossin J, <u>Merchant N</u>, Veldtman G. Poster: Quantitative analysis of post-surgical Fallot's patients. Society of Cardiovascular MR. Atlanta, Georgia. January 2001.

Crossin J, Warlow J. Arm swelling post stroke: Is deep venous thrombosis a cause? American Roentgen Ray Society Meeting. Seattle, Washington. April/May 2001.

Crossin J, <u>Merchant N, Zelovitsky J</u>. Poster: MRI of pericardium: Normal and abnormal. American Roentgen Ray Society Meeting. Seattle, Washington. April/May 2001.

<u>Damyanovich AZ</u>, Jaywant SM, Mason M, <u>Mikulis D</u>. Metabolite Quantitation Reproducibility in ¹H-MRSI Studies of Human Brain Using a Stereotactic Immobilization/Repositioning Frame. International Society of Magnetic Resonance in Medicine – 9th Annual Meeting and Exhibition, Glasgow, UK (April 21-27 2001).

<u>Damyanovich AZ</u>, Staples JR, Marshall KW, ¹H-NMR Spectroscopy Assessment of Human Synovial Fluid in Progressive Stages of Osteoarthritis. Orthopaedic Research Society – 46th Annual Meeting, Orlando, FL, USA. March 12-16, 2000.

<u>Deitel W</u>. Chronic pancreatitis mimicking pancreatic head carcinoma: are there suggestive clinical or imaging features? 63rd Annual Meeting of the Canadian Association of Radiologists. Toronto June 12, 2000.

<u>Deitel W.</u> Imaging of Burkholderia Cepacia pneumonia in lung transplant recipients with cystic fibrosis. 63rd Annual Meeting of the Canadian Association of Radiologists. Toronto June 10-14, 2000.

Diamond I, Wales P, Dutta S, Muraca S, <u>Chait P</u>, <u>Connolly B</u>, Langer J. Fundoplication and gastrostomy vs image guided gastrojejunal tube for enteral feeding in neurologically impaired children with gastroesophageal reflux. Amercian Pediatric Surgery Association 32nd Annual Meeting, Naples, Floriday, May 2001.

Easson AM, <u>Haider M</u>, Bell R, Wunder J, Couture J, Swallow C. Oral presentation. MRI for the preoperative assessment of sacral resection for pelvic tumors. Royal College of Physicians and Surgeons of Canada. Edmonton, Alberta. September 2000.

Fan L, Khalili K, <u>Muradali D</u>, Wanless I, <u>Hanbidge A</u>. Poster: Sub-capsular steatonecrosis of the liver in intraperitoneal insulin therapy: imaging features. European Society of Gastrointestinal and Abdominal Radiology. Dublin, Ireland. June 2001.

<u>Farb RI</u>, Kim JK, McGregor C, Derbyshire JA, <u>Willinsky RA</u>, <u>Cooper P</u>, <u>Cheung G</u>, Schwartz J, Wright GA. Real-time auto-triggered elliptical centric ordered 3D Gd-MRA for evaluation of intracranial AVMs. The First American-Japanese Cerebrovascular Meeting. Hawaii, U.S.A. February 9-12, 2001.

<u>Farb RI</u>, Kim JK, McGregor C, Derbyshire JA, <u>Willinsky R</u>, <u>Cooper P</u>, <u>Cheung G</u>, Schwartz M L, Wright GA. Real-time auto-triggered elliptical centric-ordered 3D gadolinium-enhanced MRA for evaluation of intracranial arteriovenous malformations. 39th Scientific Meeting of the American Society of Neuroradiology. Boston, Massachusetts. April 2001.

<u>Fox, AJ</u>. Invited Speaker, Vascular Neurosurgery Joint Section and ASITN, a)Giant Intracranial Aneurysms - Endovascular Therapy Approaches. New Orleans, 2000.

<u>Fox, AJ, K terBrugge K</u>, Tampieri D. Developing Stroke: Management Decisions Symposium at CAMRT, CAQR, SCEMD, a)Training for Intra-Clot Lysis. Toronto, 2000.

<u>Fox, AJ</u>. Post-Graduate Course, NYU "MRI: Clinical State of the Art", 2000 a)Hyperacute Stroke: Radiologists' Rapid Response to New Treatments: Immediate D Diagnostic Studies and the Role of Intra-arterial Thrombolysis

<u>Fox, AJ.</u> Invited Speaker, Imaging the Vulnerable Plaque Symposium, Centre for Vascular Imaging Research, Robarts Research Institute. 2000. a)The Vulnerable Carotid Plaque: Uses and Limitations of X-ray Angiography

Friedman J, Ahmed S, <u>Connolly B</u>, <u>Chait PG</u>, Mahant S. Complications associated with image guided insertion of gastrostomy and gastrojejunostomy tubes in children. Canadian Pediatric Society, Vancouver, BC. June 2001.

Friedman G, <u>Chait PG</u>, <u>Connolly B</u>. Complications associated with image guided insertion of gastrostomy and gastrojejunostomy tubes performed by retrograde percutaneous route. Canadian Pediatric Society, Vancouver, June 2001.

Goh V, <u>Rappaport D</u>. Exhibit: Adult living donor right lobe liver transplantation assessment before surgery with multidetector multiphase CT. United Kingdom Roentgen Conference. London, England. May 2001.

Goyal M, <u>Willinsky RW</u>, <u>ter Brugge KG</u>, <u>Montanera W</u>, Tymianski M. Dural arteriovenous fistulas simulating spinal cord tumor on MRI: report of 2 cases. European Society of Neuroradiology. Oslo, Norway. September 10-13, 2000.

<u>Greyson ND.</u> Uniqueness and cost effectiveness of nuclear medicine. 63rd Annual Meeting of the Canadian Association of Radiologists, Toronto June 12, 2000.

<u>Haider MA</u>. From PACS to presentation: Optimizing the process of producing presentations in the DICOM-based filmless environment. InfoRad Session. Annual Meeting of the Radiologic Society of North America. Chicago, Illinois. November/December 2000.

<u>Herman SJ</u>. Scientific Exhibit: Creation of a software application for the clinical radiologist. The 18th Symposium for Computer Applications in Radiology. Salt Lake City, UT. May 2001.

Hiew CY, <u>Armstrong D</u>, <u>Becker LE</u>. Poster: Unusual and rare paediatric head and neck tumors. Pot-Pouri of Paediatric Peculiarities. American Society of Neuroradiology 39th Annual Meeting and Scientific Symposium. Boston, Massachusetts. April 22-26, 2001.

Jong RA, Leduc B, <u>Shumak R</u>, Fishell E, Mawdsley G, <u>Yaffe MJ</u>. Stereoscopic vs stereotaxic targeting of microcalcifications. Radiological Society of North America Meeting. Chicago, Illinois. November 26-December 1, 2000.

Jong RA, Muradali D, Muzzammil T, Lockwood G, <u>Wilson C</u>. Clinical evaluation of digital mammography. American Roentgen Ray Society. Seattle, Washington. April 29-May 4, 2001.

<u>Kachura JR</u>, Chan RP, <u>Asch MA</u>, <u>Ho CS</u>, Gallinger S, Greig P, Langer B, Sherman M, Wong F, Feld R. Scientific Exhibit/Poster: Radiofrequency ablation of hepatic malignancies. Canadian Digestive Diseases Week/Canadian Association of Gastroenterology. Banff, Alberta. February 25, 2001.

<u>Kassel EE</u>, Bance M, Rutka J. Dehiscence of the superior and posterior semicircular canals. Eastern Neuroradiogical Society Meeting. Stowe, Vermont. August 25-27, 2000. Norman E. Leeds Award for the best presented paper.

<u>Kassel EE.</u> Percutaneous biopsies of head and neck lesions. 3rd Annual Neuroradiology Symposium. Toronto, Ontario. June 22, 2001.

<u>Khalili K, Wilson SR</u>, Dill-Macky MJ, Burns PN. Focal nodular hyperplasia: confirmatory diagnosis with Levovist? RSNA 86th Scientific Assembly and Annual Meeting. Chicago, Illinois. November 26 - December 1, 2000.

<u>Khan A</u>. Gray Scale and Color Doppler Evaluation of Ovarian Torsion1. American Roentgen Ray Society, Washington, D.C. May 12-17, 2000.

<u>Khan A</u>. Imaging of the Urinary Tract: Interactive CD-ROM. American Roentgen Ray Society, Washington, D.C. May 12-17, 2000.

<u>Khan A</u>. Pediatric Oncology CD-ROM in Body Imaging. Society of Pediatric Radiology, Naples, Florida, April 30 - May 6, 2000.

<u>Khan A</u>. Pediatric Oncology CD-ROM in Body Imaging. 63rd Annual Scientific Meeting: Canadian Association of Radiologists, Toronto, June 13, 2000.

Kim JK, Laliberte M, <u>Farb RI</u>, Wright GA. Cardiac-gated high spatial resolution 3D Gd-MRA technique for the carotid arteries. 9th Scientific Meeting of the International Society for Magnetic Resonance in Medicine. Glasgow, Scotland. April 2001.

Kim YM, Oh MH, Kim TH, <u>Yoo SJ</u>, Cho DJ, Kim WH, Lee YT. The quality and usefulness of spiral CT and 3D images in patients with central airway disease associated with congenital heart disease. The 3rd World Congress of Pediatric Cardiology and Cardiac Surgery, Toronto. May 27-31, 2001.

Kulkarni S, <u>Muradali D</u>, Huang M, Moore L. SonoCT compound imaging: Improved margin resolution and perilesional tissue visualisation of solid breast nodules. American Roentgen Ray Society, 101st Annual Meeting. Seattle, Washington. April 29-May 4, 2001.

Lan F, <u>Khalili K</u>, <u>Muradali D</u>, Wanless I, <u>Hanbidge A</u>. Sub-capsular steatonecrosis of the liver in intraperitoneal insulin therapy: imaging features. Annual Meeting of the European Society of Gastrointestinal and Abdominal Radiology. Dublin, Ireland. June 2001.

Lanthier S, Domi T, <u>Armstrong D</u>, deVeber G. Post-varicella arteriopathy of childhood: Natural history of stenosis. European Stroke Conference, Lisbon, Portugal. May 2001.

Law CHL, <u>Asch M, Kachura J, Simons M</u>, Ho CS, Stroz P, Couture J, Easson A, Swallow CJ. High rate of perforation complicating large diameter endoluminal stent placement for malignant colorectal obstruction. Canadian Society of Surgical Oncology. Montréal, Québec. April 21, 2001.

Lee S, <u>Willinsky R, terBrugge K, Farb R, Montanera W</u>, Porter P. Endovascular retrograde cortical venous approach to disconnect cortical venous reflux in patients with intracranial dural arteriovenous fistula. 39th Scientific Meeting of the American Society of Neuroradiology. Boston, Massachusetts. April 23-26, 2001.

Lum C, <u>Keller MA</u>, Tin M, Waldron J, O'Sullivan B, Pintilie M. MRI evaluation of nasopharyngeal carcinoma – study in a North American population. American Society of Neuroradiology. Boston, Massachusetts. April 2001.

<u>Manson DE</u>, Laxer R, <u>Ranson M</u>. Pulmonary Vasculitis in Children: A Radiographic Review and Classification Schema. The 4th International Pediatric Radiology Meeting. Paris, France, May 2001.

Matsubara S, Nagahiro S, <u>terBrugge K</u>, <u>Willinsky R</u>, <u>Montanera W</u>, Mandizia J, Faughnan M. Angiographic and clinical characteristics of patients with cerebral arteriovenous malformation

associated with heriditary hemorrhagic telangiectasia. The Fourth Annual Meeting of the AANS/CNS. Hawaii, U.S.A. February 9-12, 2001.

McDonald P, Porter P, Wallace C, <u>Montanera W, Willinsky R, terBrugge K</u>, Manninen P, Tymianski M. Utility of intraoperative angiography in the treatment of higher grade brain arteriovenous malformations. 2001 AANS Annual Meeting (The 70th Anniversary). Toronto, Ontario. April 21-26, 2001.

Meijboom L, Nollen G, <u>Merchant N</u>, Webb G, et al. Coronary ostial aneurysms after aortic root surgery in patients with Marfan Syndrome. World Congress of Pediatric Cardiology. Toronto, Ontario. May 2001.

<u>Merchant N</u>, Crossin J, Veldtman G, Wright G. Poster: MR imaging of congenital left to right shunts. Annual Meeting of the Radiology Society of North America. Chicago, Illinois. November/December 2000.

Millward SF, <u>Bell SD</u>, Valenti DA, Rasuli P, <u>Asch M</u>, Hadziomerovic A, <u>Kachura JR</u>. Gunther Tulip retrievable vena cava filter: results from the registry of the Canadian Interventional Radiology Association. Society of Cardiovascular and Interventional Radiology. San Antonio, Texas. March 8, 2001.

Milosevic M, <u>Toi A</u>, Sweet J, Bristow R, Warde P, McLean M, Crook J, Catton C, Catton P, Gospodarowicz M. Trans-rectal oxygen measurements in prostate cancer. Canadian Association of Radiation Oncologists Annual Meeting. Edmonton, Alberta. September 21-24, 2000.

Milosevic M, Parker C, <u>Toi A</u>, Panzarella T, Bristow R. Prostate cancer is hypoxic. Proceedings of the 48th Annual Meeting of the Radiation Research Society. Albuquerque, New Mexico. April 29-May 3, 2001.

<u>Muradali D</u>, Crossin J, Lilly L, <u>Wilson S</u>. Poster: Sonography of renal transplants: Normal and abnormal. Radiologic Society of North America. Chicago, Illinois. November/December 2000. Award: Certificate of Merit.

<u>Muradali D</u>, Kulkarni S, Huang M, <u>Stewart L</u>. SonoCT compound imaging: Improved margin resolution and perilesional tissue visualisation of solid breast nodules. American Institute of Ultrasound in Medicine (AIUM) 45th Annual Convention. Orlando, Florida. March 11-14, 2001.

<u>Muradali D</u>, Kulkarni S, Huang M, Moore L. Does SonoCT improve evaluation of the retroareolar tissue compared to conventional ultrasound? American Institute of Ultrasound in Medicine (AIUM) 45th Annual Convention. Orlando, Florida. March 11-14, 2001.

<u>Muradali D</u>, Kulkarni S, Huang M, <u>Bukhanov K</u>, O'Riordan E, Goldberg F, Moore L. Does SonoCT improve evaluation of the retroareolar tissue compared to conventional ultrasound? American Roentgen Ray Society, 101st Annual Meeting. Seattle, Washington. April 29-May 4, 2001. Myles RD, <u>Toi A</u>, Silver M, Lachman R, Thomas M, Pai A, Chitayat D. Prenatally diagnosed bowed long bones associated with non-lethal osteogeneis imperfecta. Am Soc Human Genetics Annual Meeting. Philadelphia, Pennsylvania. October 3-7, 2000.

Noseworthy MD, Sussman MS, <u>Haider MA</u>, Baruchel S. Dynamic contrast enhanced liver MRI using a motion tracking algorithm. ISMRM. Glasgow, Scotland. 2001.

<u>O'Malley ME</u>, <u>Wilson SR</u>. Exhibit: US of the gastrointestinal tract with CT correlation. RSNA 86th Scientific Assembly and Annual Meeting. Chicago, Illinois. November 26-December 1, 2000.

O' Riordan E, <u>Bukhanov K</u>, <u>Wilson C</u>, Sidlofsky S, <u>Muradali D</u>. Detection and characterization of microcalcifications with film screen and full field digital mammography. Radiologic Society of North America. Chicago, Illinois. November/December 2000.

O' Riordan E, <u>Bukhanov K</u>, <u>Muradali D</u>, <u>Goldberg F</u>. A comparison of reporting times for analog versus digital mammography</u>. Radiologic Society of North America. Chicago, Illinois. November/December 2000.

O'Riordan E, <u>Bukhanov K</u>, <u>Muradali D</u>. The impact of full-field digital mammography (FFDM) on imaging productivity. American Roentgen Ray Society, 101st Annual Meeting. Seattle, Washington. April 29-May 4, 2001.

Pai A, <u>Toi A</u>, Seaward G, Steele L, Chitayat D. Prenatal diagnosis of Apert syndrome: report of two cases. American Society of Human Genetics Annual Meeting. Philadelphia, Pennsylvania. October 3-7, 2000.

Pop M, Gertner M, Rendon R, <u>Kachura J</u>, Sweet J, Sampson H, Jewett M, Sherar M. Ex-vivo and in-vivo investigations to develop radiofrequency ablation for renal cell carcinoma. Radiation Research Society/North American Hyperthermia Society. San Juan, Puerto Rico. April 21, 2001.

<u>Rajan DK</u>, Leung DA, Goin GE, Sickles C, Soulen MC. Determinants of post-embolization syndrome following hepatic chemoembolization. MCVIR Annual Meeting. New Delhi, India. December, 2000.

<u>Rajan DK</u>, <u>Simons ME</u>, <u>Kachura JR</u>, Clark TW, <u>Sniderman K</u>. Procedural success and patency following percutaneous treatment of thrombosed Brescia-Cimino dialysis fistulas. Society of Cardiovascular and Interventional Radiology. San Antonio, Texas. March 6, 2001.

Rendon RA, Gertner MR, Sherar MD, <u>Asch MR</u>, <u>Kachura JR</u>, Sweet J, Jewett MAS. Development of a radiofrequency technique for ablation of small renal tumors in an animal model. Society of Urologic Oncology. Bethesda, Maryland. December 3, 2000.

Rendon RA, Gertner MR, <u>Kachura JR</u>, Sherar MD, Sweet JR, Robinette MD, Tsihlias J, Trachtenberg J, Sampson H, Jewett MAS. Scientific Exhibit/Poster: Radiofrequency ablation techniques for renal cell carcinoma require further development. American Urological Association. Anaheim, California. June 2, 2001. Robinson P, <u>White LM</u>, <u>Lax M</u>, <u>Pearce D</u>, <u>Salonen D</u>. A pictorial review of glenoid labral cysts and associated nerve entrapment syndrome. Scientific Meeting of The Royal College of Radiologists. London, England. September, 2000. (Abstract)

Robinson P, <u>White LM</u>, <u>Salonen DC</u>, Ogilvie-Harris D, Daniels T. The accuracy of MR arthrography in evaluating anterolateral soft-tissue abnormalities of the ankle. Scientific Assembly and Annual Meeting of the Radiologic Society of North America. Chicago, Illinois. November/December 2000. (Abstract) RSNA Fellowship Research Award Musculoskeletal Radiology RSNA 2000.

Robinson P, <u>White LM</u>, Sundaram M, Kandel R, Wunder JS, Bell RS. Radiological and pathological correlation of periosteal chondroid tumors. Scientific Assembly and Annual Meeting of the Radiologic Society of North America 2000. Chicago, Illinois. November/December 2000. (Abstract)

Sahani DV, <u>O'Malley ME</u>, Bhatt S, Hahn PF, Saini S, Mueller PR. Exhibit: Contrast-enhanced MRI of the liver with mangafodipir trisodium: imaging techniques and results. Annual Meeting of the Radiological Society of North America. Chicago, Illinois. November/December 2000.

Sahani DV, <u>O'Malley ME</u>, Bhatt S, Hahn PF, Saini S, Mueller PR. Exhibit: Contrast-enhanced MRI of the liver with mangafodipir trisodium: imaging techniques and results. Annual Meeting of the American Roentgen Ray Society. Seattle, Washington. April/May 2001.

Satomi J, <u>terBrugge K, Willinsky RA, Montanera W</u>, Tymianski M, Porter P, Wallace MC. Natural history of benign intracranial DAVFs. The 4th Annual Meeting of the AANS/CNS. Hawaii, U.S.A. February 9-12, 2001.

Satomi J, <u>terBrugge K</u>, <u>Willinsky R.</u>, <u>Montanera W</u>, Tymianski M, Porter P, Wallace C. Natural history of benign intracranial DAVFs. 2001 AANS Annual Meeting (The 70th Anniversary). Toronto, Ontario. April 21-26, 2001.

Satomi J, <u>terBrugge K</u>, Wallace C, Henkelman M, Letarte M. Angioarchitecture in a murine model of heriditary hemorrhagic telangiectasia. 2001 AANS Annual Meeting (The 70th Anniversary). Toronto, Ontario. April 21-26, 2001.

Shroff, M.M, <u>Cheung, G. Farb, R., Cooper, P.</u>, Schwartz, M. Edmeads, J. Perioperative Safety and Complications of Carotid Artery Angioplasty and Stenting in 36 Symptomatic Patients Who Were Medically Unfit for Endarterectomy. Abstract Poster for American Society of Neuroradiology, 39th Annual Meeting. Boston. Poster 128. April 23-27, 2001

<u>Simons ME</u>, <u>Rajan DK</u>, Clark TW. The Woggle Technique: A new method of suture closure of hemodialysis arteriovenous grafts and fistulae, after percutaneous interventions. Society of Cardiovascular & Interventional Radiology Annual Meeting. San Antonio, Texas. March 2001.

Sklair-Levy M, <u>Muradali D</u>, Kulkarni S. Linear transducer harmonic imaging: improved characterization of breast cysts compared to conventional sonography. American Institute of Ultrasound in Medicine (AIUM) 45th Annual Convention. Orlando, Florida. March 11-14, 2001.

Sklair-Levy M, <u>Muradali D</u>, Kulkarni S. Linear transducer harmonic imaging: improved characterization of breast cysts compared to conventional sonography. American Roentgen Ray Society, 101st Annual Meeting. Seattle, Washington. April 29-May 4, 2001.

Sweet JR, Rendon RA, Gertner MR, <u>Kachura JR</u>, Sherar MD, Robinette MD, Tsihlias J, Trachtenberg J, Sampson H, Jewett MAS. Scientific Exhibit/Poster: Morphologic assessment of radiofrequency therapy for renal cell carcinoma reveals incomplete tumor ablation. American Urological Association. Anaheim, California. June 2, 2001.

<u>Temple M, Connolly B, Chait P</u>, Restrepo R. Ultrasound guided interventions in the musculoskeletal system. IPR, Paris, France. May 2001.

Thomas M, Pai A, <u>Toi A</u>, Sgro M, Barozzino T, Chitayat D. Early prenatal diagnosis of at risk case with Walker-Warburg syndrome. American Society of Human Genetics Annual Meeting. Philadelphia, Pennsylvania. October 3-7, 2000.

<u>Toi A</u>. At what gestational age can the normal corpus callosum be seen? ISUOG. Zagreb, Croatia. October 4-7, 2000.

Valsangiacomo E, Lervasseur S, McCrindle BW, Smallhorn JF, <u>Yoo SJ</u>. Evaluation of the pulmonary veins using contrast-enhanced magnetic resonance angiography. The 3rd World Congress of Pediatric Cardiology and Cardiac Surgery, Toronto. May 27-31, 2001.

<u>White LM</u>, Weishaupt D, Schweitzer ME, Kramer J, Marks PH. Prospective evaluation of conventional MR imaging, and indirect and direct MR arthrography in the diagnosis of recurrent meniscal tears. Scientific Assembly and Annual Meeting of the Radiologic Society of North America. Chicago, Illinois. November/December 2000. (Abstract)

<u>Willinsky R</u>, Goyal M*, <u>terBrugge K</u>, <u>Montanera W</u>, Wallace MC, Tymianski M. Embolization of small (<3 cm) brain arteriovenous malformations: Correlation of angiographic results to a proposed angioarchitecture grading system. The Eastern Neuroradiological Society, 12th Annual Meeting. Stowe, Vermont. August 25, 2000.

<u>Willinsky RW</u>, Goyal M, <u>ter Brugge KG</u>, <u>Montanera W</u>. Embolization of small size brain arteriovenous malformations: The Toronto Western Hospital experience (1984-1999). European Society of Neuroradiology. Oslo, Norway. September 10-13, 2000.

<u>Willinsky RA</u>, Vilela P, <u>Montanera W</u>, <u>terBrugge K</u>. Infantile multifocal dural arteriovenous fistula-role of venous stenting. 20th Annual W.I.N. Val D'Isère, France. January 19, 2001.

<u>Wilson SR</u>, <u>Khalili K</u>. Hilar biliary obstruction: the utility of Levovist? Delayed sonography. RSNA 86th Scientific Assembly and Annual Meeting. Chicago, Illinois. November 26/December 1, 2000.

<u>Wilson SR</u>, Burns PN, <u>Khalili K</u>. Characterization of liver masses with definity. RSNA 86th Scientific Assembly and Annual Meeting. Chicago, Illinois. November 26/December 1, 2000.

<u>Wilson SR</u>, <u>Khalili K</u>. Hilar biliary obstruction: The utility of Levovist® delayed sonography. Abdominal Radiology Postgraduate Course 2001. The Society of Gastrointestinal Radiologists and The Society of Uroradiology. Scottsdale, Arizona. March 25, 2001.

<u>Wilson SR</u>, <u>Khalili K</u>, Burns PN. Hemangioma: A challenge for microbubbles and ultrasound imaging techniques. Abdominal Radiology Postgraduate Course 2001. The Society of Gastrointestinal Radiologists and The Society of Uroradiology. Scottsdale, Arizona. March 25, 2001.

Withers SJ, Steele L, Ray P, Winsor E, Velsher L, Thomas M, Pai A, Myles D, Cushing D, Sonacher S, <u>Toi A</u>, Chitayat D. Prenatal counseling, investigative options and outcomes following fetal ultrasound finding of echogenic bowel. American Society of Human Genetics Annual Meeting. Philadelphia, Pennsylvania. October 3-7, 2000.

Xuling Q, Walker F, <u>Merchant N</u>, Webb G, et al. MRI assessment of ASD's in adults prior to device closure. International Society for Magnetic Resonance in Medicine. Glasgow, Scotland. April 2001.

Young A, <u>Merchant N</u>, Micklebourough L. MRI evaluation of left ventricular aneurysms. Annual Meeting of the Radiology Society of North America. Chicago, Illinois. November/December 2000.

AWARDS AND SPECIAL RECOGNITION

Crossin J, <u>Muradali D</u>, Lily L, <u>Wilson S</u>. Poster: Sonography of liver transplants: Normal and abnormal. Radiologic Society of North America. Chicago, Illinois. November/December 2000. **Magna Cum Laude Award.**

<u>Kassel EE</u>, Bance M, Rutka J. Dehiscence of the superior and posterior semicircular canals. Eastern Neuroradiogical Society Meeting. Stowe, Vermont. August 25-27, 2000. Norman E. Leeds Award for the best presented paper.

<u>Muradali D</u>, Crossin J, Lilly L, <u>Wilson S</u>. Poster: Sonography of renal transplants: Normal and abnormal. Radiologic Society of North America. Chicago, Illinois. November/December 2000. Award: Certificate of Merit.

RESEARCH PROGRAM

Many of the faculty, residents, and fellows in the Department of Medical Imaging devote considerable effort to research. Clearly, research is an important mission of the Department of Medical Imaging. The nature of this research depends primarily on the interest and expertise of individuals and on resources at particular hospitals. In addition, the department promotes certain research topics, including the development and evaluation of imaging methods, such as magnetic resonance (MR) imaging, percutaneous and transvascular treatment methods, use of contrast agents, and most recently, minimally-invasive diagnosis and therapy.

Approximately eight years ago, an aggressive program to enhance research within the Department was initiated. The Research Program was created in 1992 with two main objectives:

- to encourage more faculty to participate in research related to radiological observations and procedures;
- to allow at least a few of the faculty to perform intensive medical-imaging research

The two objectives are being pursued through several initiatives, involving contributions to the salary of a small number of faculty, shared access to certain resources, and an annual forum for highlighting research accomplishments. A synopsis of the key initiatives is presented below. Also included below are the research grants and publications of the faculty who are not listed with one of the affiliated hospitals.

Protected Research Time

Protected Research Time, our most successful initiative, allows a select group of radiologists to devote at least one day each week to a particular research project. The radiologists listed in the table below were awarded Protected Research Time in 2000-2001.

Award Holder	Hospital	Project Title
Richard Farb	TWH	High Resolution Contrast Enhanced MR Angiography for the
		Evaluation of GDC Treated Cerebral Aneurysms
Masoom Haider	PMH	MRI Oxymetry and Dynamic Enhancement in Carcinoma of the Uterine
		Cervix: Correlation with Direct Interstitial Fluid Pressure Measurement
		and Tumor Oxygen Levels
Korosh Khalili	TGH	Preoperative Staging of Cholangiocarcinoma: A Prospective
		Comparative Study of Sonography, CT, and MRI
Derek Muradali	TGH	Contrast Enhanced Sonography of The Breast: Can Vascular
		Morphology Predict Malignancy?
Martin O'Malley	TGH	Evaluation of Cystic Pancreatic Tumors with MRI Including T1-
		Weighted Values.
Rene Shumak	SWCHSC	Usefulness Of Magnetic Resonance Imaging In The Surveillance Of
		Women At High Risk For Hereditary Breast Cancer
Lawrence White	MSH	Optimized Fast Spin-Echo Imaging of Meniscal Tears

Faculty Research Award

In addition to the Protected Research Time initiative, the department provided support to allow Dr. David Mikulis, Dr. Shi-Joon Yoo, and Dr. Stephanie Wilson to devote 50% of their time to research.

RSNA Resident/Fellow Research Award

The RSNA Research and Education Fund offers an award annually to recognize and encourage outstanding residents and fellows in radiology research. The award is for one resident or fellow in each training program in North America who is deemed to have participated meaningfully in research during the previous year. Dr. Jae Kim was selected for this Award in 2000-2001.

Research Day

Our Annual Research Day, which was held on April 19, 2001, consisted of a record number of presentations from senior residents, the faculty who received Protected Research Time, and many other members of the department. The presentations are listed by title at the end of this section.

Positron Emission Tomography Centre, Centre for Addiction and Mental Health

The University of Toronto Positron Emission Tomography (PET) Centre is under the direction of Dr. Sylvain Houle. Investigations concentrate on schizophrenia, mood and anxiety disorders, cognitive neuroscience, aging and dementia, movement disorders, and PET methodology.

Imaging/Bioengineering Research, SWCHSC

Much of the department's research occurs under the auspices of Imaging/Bioengineering Research at Sunnybrook and Women's College Health Sciences Centre. Several faculty in the department make use of exceptional resources in conducting research involving X-ray, nuclear medicine, magnetic resonance, and ultrasound technology. The success of this research effort is demonstrated by the grants and publications listed below.

Faculty List

(Academic Rank as of July 1, 2000)

sor
;

Senior Scientist, SWCHSC Director, Research Program Senior Scientist, SWCHSC Director, PET Centre

Curtis B. Caldwell	Assistant Professor
George Tomlinson	Assistant Professor

Centre for Addiction and Mental Health Physicist, SWCHSC Biostatistics, Fitzgerald Building

SWCHSC: Sunnybrook and Women's College Health Sciences Centre

<u>Grants</u>

Members of the Department of Medical Imaging (underlined) were investigators on the following grants, identified by the principal investigator, other investigators, project title, sponsor, total amount of grant, and start and end dates of the funding period.

Black SE, Levine BT, Picton TW, Stuss DT, Winocur G, Alain C, Bronskill M, <u>Caldwell C</u>, Craik F, Moscovitch M, Szalai J, Tulving E. Multidisciplinary approach to brain-behaviour relations in aging, dementia, and frontal damage. Medical Research Council Group Grant, \$1,293,630, 1998-2003.

Boyd NF et al. Mammographic densities in Chinese and Caucasian women: A pilot study, National Institutes of Health, \$74,762 USD, 2000-2002.

Boyd NF, <u>Yaffe MJ</u>, et al. Mammographic densities and risk of breast cancer in Singaporean Chinese women, National Cancer Institute of Canada - Canadian Breast Cancer Research Initiative, \$98,413. 2000-2001.

Boyd NF, <u>Yaffe MJ</u>. An explanatory clinical trial of breast cancer prevention - (London, Vancouver, Windsor sites), National Cancer Institute of Canada - Canadian Breast Cancer Research Initiative, \$949,718, 2000-2003.

Boyd NF, <u>Yaffe MJ</u>. An explanatory clinical trial of breast cancer prevention, Ontario Ministry of Health, \$874,729, 2000-2002.

Boyd NF, <u>Yaffe MJ</u>. Mammographic densities and risk of breast cancer, National Institutes of Health / National Cancer Institute, \$336,022 USD, 1999-2002.

Boyd NF, <u>Yaffe MJ</u>. The effect of diet on change in mammographic densities at menopause, American Institute for Cancer Research, \$113,771 USD, 2000-2002.

Boyd NF, <u>Yaffe MJ</u>. The molecular epidemiology of breast tissue at increased risk for breast cancer, Susan G. Komen Breast Cancer Foundation, \$245,739 USD, 1999-2001.

<u>Caldwell CB</u>, Ung YC, Mah K. Incorporating gamma camera coincidence images in CT-based radiotherapy planning for lung cancer, Canadian Cancer Society Feasibility Grant, \$34,808 2000-2001.

Henkelman RM, Bronskill MJ, Burns PN, Foster FS, Plewes DB, <u>Rowlands JA</u>, Wright GA, <u>Yaffe MJ</u>. Medical imaging for cancer, National Cancer Institute of Canada Terry Fox Program Project, \$7,129,222, 2001-2006.

<u>Houle S</u>. Depth-encoded advanced research tomograph, Canada Foundation for Innovation (CFI), \$1,450,000 and Ontario Innovation Trust (OIT) \$1,450,000. [This is the PET component of a larger grant entitled, "University of Toronto Functional Imaging Network"].

Narod SA, <u>Yaffe MJ</u>, et al. Mammographic density and the risk of hereditary breast cancer, National Institutes of Health / National Cancer Institute, \$156,438 USD, 1999-2001.

Pisano ED et. al. Trial of digital mammography versus screen-film mammography, National Institutes of Health/ACRIN, \$27,000,000 USD, 2001-2004.

Plewes DB, <u>Wood ML</u>, et al. The Centre for Research using Magnetic Resonance at S&WCHSC, Medical Research Council Multi-user Maintenance grant, \$447,945, 1999-2002.

Pritchard KI, <u>Yaffe M</u>, et al. Sunnybrook and Women's College Comprehensive Multidisciplinary Breast Cancer Research Centre, Canada Foundation for Innovation, \$4,500,000 (infrastructure only), 2001-2004.

<u>Rowlands JA</u>, Nathan A, Kasap SO. Real-time x-ray imaging detectors, National Science and Engineering Research Council, \$499,500, 2000-2003.

Rowlands JA, Robert N. Image guided optimization of cardiac angiography, MRC/CIHR, \$219,891, 1999-2002.

Warner E, Plewes DB, <u>Yaffe MJ</u>, et al. Pilot study, Canadian Breast Cancer Research Initiative, \$53,797, 2000-2001.

<u>Wood ML</u>, Plewes DB. Development of MR imaging to measure arterial pulse pressure and vessel distension, Medical Research Council of Canada, \$227,563, 2000-2003.

<u>Wood ML</u>. Slice thickness encoding with wavelets in MRI, National Science and Engineering Research Council, \$81,890, 1997-2002.

Wright GA, Prato FS, + 32 other investigators including <u>Rowlands JA</u>. Ontario consortium for cardiac imaging, Ontario Government R&D Challenge Fund, \$15,591,218, 2001-2005.

<u>Yaffe MJ</u>, Burns PN, Boyd N, Catzavelos C, <u>Rowlands JA</u>, Plewes DB, Bronskill MJ, <u>Reilly R</u>, Wilson B, Cunningham I, Foster FS, Santyr G. Ontario centre of excellence in breast cancer imaging research, Ontario R&D Challenge Fund, \$4,683,357, 2001-2004.

<u>Yaffe M</u>J, Plewes DB. Computer-intelligent enhancement and display of digital mammograms, Canadian Breast Cancer Research Initiative, \$308,913, 1999-2002. Yaffe MJ, Rowlands JA, Tumer TO, Yin S, Kasap SO. Amorphous selenium detector for digital mammography, National Institutes of Health / National Cancer Institute, \$1,022,428 USD, 2000-2003.

Publications

(a) Peer-Reviewed:

Cunningham CH, Stainsby JA, Wright GA, <u>Wood ML</u>. Partial discrete Fourier transform (PDFT) multiband encoding Magn Reson Med. 2000; 44(5): 118-127.

Dancey JE, Shepherd FA, Paul K, <u>Sniderman KW</u>, Houle S, Gabrys J, <u>Hendler AL</u>, Goin JE. Treatment of nonresectable hepatocellular carcinoma with intrahepatic 90Y-microspheres. J Nucl Med 2000; 41(10): 1673-1681.

DaSilva JN, Burrow TE, Wilson AA, <u>Houle S</u>. Synthesis of R-[N-methyl-13C]SKF 82957 from [13C]methyl iodide and [13C]methyl triflate. J Labelled Cmpds Radiopharm 2000; 44: 701-710.

De Nil LF, Kroll RM, <u>Houle S</u>. Functional neuroimaging of cerebellar activation during single word reading and verb generation in stuttering and nonstuttering adults. Neurosci Lett. 2001; 302(2-3): 77-80.

De Nil LF, Kroll RM, Kapur S, <u>Houle S</u>. A positron emission tomography study of silent and oral single word reading in stuttering and nonstuttering adults. J Speech Lang Hear Res. 2000; 43(4): 1038-1053.

Fahrig R, Buttes K, <u>Rowlands JA</u>, Saunders R, Stanton J, Stevens GM, Daniels BL, Wen Z, Ergun DL, Pelc NJ. A truly hybrid interventional MR-x-ray system: feasibility demonstration. Journal of Magnetic Resonance Imaging 2001; 13: 294-300.

Fu CH, Reed LJ, Meyer JH, Kennedy S, <u>Houle S</u>, Eisfeld BS, Brown GM. Noradrenergic dysfunction in the prefrontal cortex in depression: an [150] H2O PET study of the neuromodulatory effects of clonidine. Biol Psychiatry. 2001; 49(4): 317-325.

Haus AG, <u>Yaffe MJ</u>. Screen-film and digital mammography - Image quality and radiation dose considerations. Radiologic Clinics of North America 2000; 38: 871-898.

<u>Houle S</u>, Ginovart N, Hussey D, Meyer JH, Wilson AA. Imaging the serotonin transporter with positron emission tomography: Initial human studies with [11C]DAPP and [11C]DASB. Eur J Nuc Med 2000; 27: 1719-1722.

Kasap SO, <u>Rowlands JA</u>. Photoconductor selection for digital flat panel x-ray image detectors based on the dark current. Journal of Vacuum Science and Technology 2000; A 18: 615-620.

Kasap SO, <u>Rowlands JA</u>. Properties of stabilized a-Se for use in flat panel x-ray imaging detectors. Journal of Non-crystalline Solids 2000; 266-269: 1163-1167.

Kennedy SH, Evans KR, Kruger S, Mayberg HS, Meyer JH, McCann S, Arifuzzman AI, <u>Houle</u> <u>S</u>, Vaccarino FJ. Changes in regional brain glucose metabolism measured with positron emission tomography after paroxetine treatment of major depression. Am J Psychiatry 2001; 158(6): 899-905.

Lourenco CM, <u>Houle S</u>, Wilson AA, DaSilva JN. Characterization of R-[11C]rolipram for PET imaging of phosphodiesterase-4: in vivo binding, metabolism, and dosimetry studies in rats. Nucl. Med. Biol. 2001; 28: 347-358.

Macgowan CK, <u>Wood ML</u>. Fast measurement of the motion and velocity spectrum of blood using MR tagging. Magn Reson Med. 2001; 45: 461-469.

Meyer JH, Kapur S, Eisfeld B, Brown GM, <u>Houle S</u>, DaSilva J, Wilson AA, Rafi-Tari S, Mayberg HS, Kennedy SH. The effect of paroxetine on 5-HT2A receptors in depression: an [18F]setoperone PET imaging study. Am J Psychiatry. 2001 Jan; 158(1): 78-85.

Pang G, <u>Rowlands JA</u>. Electronic portal imaging with an avalanche-multiplication based video camera. Medical Physics 2000; 27: 676-684.

Pawluczyk O and <u>Yaffe MJ</u>. Field non-uniformity correction for quantitative analysis of digitized mammograms. Medical Physics 2001; 28: 438-444.

Pisano ED, Cole EB, Hemminger BM, <u>Yaffe MJ</u>, Johnston RE, Williams MB, Aylward SR, Maidment ADA, Johnston RE, Williams MB, Niklason L, Conant EF, Fajardo LJ, Kopans DB, Brown ME, Pizer SM. Image processing algorithms for digital mammography - A pictorial essay. Radiographics 2000; 20: 1479-1491.

Pisano ED, Cole EB, Major S, Zong S, Hemminger BM, Muller KE, Johnston RE, Walsh R, Conant E, Fajardo LL, Feig SA, Nishikawa RM, <u>Yaffe MJ</u>, Williams MB, Aylward SR, Braeuning M.P, McLelland R, Pizer SM, Brown ME, Rosen E, Soo MS, Williford M, Niklason LT, Maidment ADA, Vermont A, Kornguth PJ, Kopans DB, Moore RH, Chakraborty D, <u>Jong R</u>, <u>Shumak R</u>, Staiger M, Plewes DB. Radiologist preferences for imaging processing algorithm for different clinical tasks for digital mammography display. Radiology 2000; 216(3): 820-830.

Pisano ED, <u>Yaffe MJ</u>, Hemminger BM, Hendrick RE, Niklason LT, Maidment ADA, Kimme-Smith CM, Feig SA, Sickles EA, Braeuning MP. Current status of full-field digital mammography. Academic Radiology 2000; 7: 266-280.

Wilson AA, Garcia A, Jin L, <u>Houle S</u>. Radiotracer synthesis from [11C]-iodomethane: a remarkably simple captive solvent method. Nucl Med Biol 2000; 27(6): 529-532.

Wilson AA, Jin L, Garcia A, DaSilva JN, <u>Houle S</u>. An admonition when measuring the lipophilicity of radiotracers using counting techniques. Appl Radiat Isot. 2001 54(2): 203-208.

Wilson AA, Jin L, Garcia A, DaSilva JN, <u>Houle S</u>. Carbon-11 labelled cholecystokininB antagonists: radiosynthesis and evaluation in rats. Life Sci. 2001 Feb 2; 68(11): 1223-30.

(b) Books or Book Chapters

Boyd NF, Lockwood GA, Martin LJ, Byng JW, <u>Yaffe MJ</u> and Tritchler DL. Mammographic density as a marker of susceptibility to breast cancer: a hypothesis. In: Miller AB, Bartsch H, Boffetta P, Dragsted L, Vainio H (eds). Biomarkers in Cancer Chemoprevention. IARC Scientific Publications, 2001, #154, pp 163-170.

Boyd NF, Martin L, Lockwood G, Greenberg C, Tritchler DL, Byng JW and <u>Yaffe M</u>. Dietary fat and breast cancer risk. In: Fentiman IS (ed). Breast Cancer. Oxford: Blackwell Science, 1999, pp 42-55.

Kasap SO, <u>Rowlands JA</u>. Amorphous chalcogenide photoconductors in imaging technologies. In: Boolchand P (ed). Insulating and Semiconducting Glasses. World Scientific Press, 2000.

<u>Rowlands JA</u>, Yorkston J. Flat panel detectors for digital radiology. In: Beutel J, Kundel HL, Van Metter RL (eds). Medical Imaging Volume 1. Physics and Psychophysics. Bellingham: SPIE, 2000. pp. 223-328.

<u>Yaffe MJ</u> and Byng JW. Quantitative image analysis for estimation of breast cancer risk. In: Bankman, I (ed). Handbook of Medical Imaging. Academic Press, 2000, pp 323-340.

<u>Yaffe MJ</u>. Digital Mammography. In: Beutel J, Kundel HL and Van Metter RL (eds). Handbook of Medical Imaging, Volume 1. Physics and Psychophysics. SPIE Press, 2000, pp 329-372.

Original Scientific Presentations

(a) Peer-Reviewed

<u>Caldwell CB</u>, Mah K, Ung YC, Danjoux CE, Balogh JM. FDG-PET/CT Integration: Impact on Tumour Localization and Dose Volume Histograms in Radiation Therapy" World Congress on Medical Physics and Biomedical Engineering, Chicago, July 2000.

Cunningham CH, <u>Wood ML</u>. Feasibility of adaptive resolution coronary artery imaging. ISMRM Ninth Scientific Meeting and Exhibition, Glasgow, Scotland, April 2001.

Cunningham CH, Wright GA, <u>Wood ML</u>. Shortening multiband RF pulse duration for reduced motion sensitivity. ISMRM Ninth Scientific Meeting and Exhibition, Glasgow, Scotland, April 2001.

DaSilva JN, Burrow TE, Wilson AA, <u>Houle S</u>. N-[11/13C]methylation versus O-[11/13C]methylation using [11/13C]methyl iodide or methyl triflate in molecules containing both amino and phenol/catechol groups. 14th International Symposium on Radiopharmaceutical Chemistry, Interlaken, CH, June 2001. Ginovart N, Wilson AA, Hussey D, Cheung K, <u>Houle S</u>, PET characterization of [11C]-DASB for in vivo visualization of the serotonin transporter in cats. 12th International Symposium on Radiopharmacology, Interlaken, CH, June 2001.

Ginovart N, Wilson AA, Meyer JH, Hussey D, <u>Houle S</u>. PET quantification of [11C]-DASB binding to the serotonin transporter in humans. Society of Nuclear Medicine 48th Annual Meeting, Toronto, June 2001.

Haus A, <u>Yaffe MJ</u>, Feig SA, Hendrick RE, Butler P, Wilcox-Buchalla P, Bansal S. Relationship between phantom failure and radiation dose in mammographic accreditation. World Congress on Medical Physics and Biomedical Engineering, Chicago, July 2000.

<u>Houle S</u>, Ginovart N, Meyer JH, Hussey D, Guttman M, Kish S, Wilson AA. Imaging of the serotonin transporter in the human brain with the radioligand [11C]-DASB. 12th International Symposium on Radiopharmacology, Interlaken, CH, June 2001.

Leduc B, Jong RA, Mawdsley GE, Yaffe MJ, Shumak RS. Using a 3-D visualization technique to target microcalcifications with greater accuracy. Radiological Society of North America 86th Scientific Assembly and Annual Meeting, Chicago IL, November 2000.

Macgowan CK, Henkelman RM, <u>Wood ML</u>. Pulse-wave velocity measured in one heartbeat using MR tagging. ISMRM Ninth Scientific Meeting and Exhibition, Glasgow, Scotland, April 2001.

Meyer JH, Wilson AA, Ginovart N, Goulding V, Hussey D, Hood K, <u>Houle S</u>. Occupancy of Serotonin Transporters by Paroxetine and Citalopram During Treatment of Depression: A [11C] DASB PET Imaging Study. Canadian College of Neuropsychopharmacology, June 17-21, 2001.

Meyer JH, Wilson AA, Ginovart N, Goulding V, Hussey D, Hood K, <u>Houle S</u>. Occupancy of Serotonin Transporters by Paroxetine and Citalopram During Treatment of Depression: A [11C] DASB PET Imaging Study. Biological Psychiatry 2001; 49: 152S.

Meyer JH, Wilson AA, Ginovart N, Goulding V, Hussey D, <u>Houle S</u>. Occupancy of the serotonin reuptake sites by paroxetine during treatment of depression: a [11C]-DASB study. Society of Nuclear Medicine 48th Annual Meeting, Toronto, June 2001.

Sanci V, <u>Houle S</u>, DaSilva JN. Effect of dopamine released by amphetamine on the in vivo binding of D1 agonist R-[11C]-SKF 82957 in rat brains. Society of Nuclear Medicine 48th Annual Meeting, Toronto, June 2001.

Tang CM, Fewell T, Jennings R, Fahrig R, Jaffray D, <u>Yaffe MJ</u>. Experimental and simulation results of two-dimensional prototype anti-scatter grids for mammography. World Congress on Medical Physics and Biomedical Engineering, Chicago, July 2000.

Wilson AA, Garcia A, Bell T, Harris-Brandts T, <u>Houle S</u>. Further progress on a remarkably simple captive solvent method for [11C]-methylation. 14th International Symposium on Radiopharmaceutical Chemistry, Interlaken, CH, June 2001.

Wilson AA, Ginovart N, Hussey D, <u>Houle S</u>. Further characterization of the PET radioligand for the serotonin transporter [11C]-DASB. Society of Nuclear Medicine 48th Annual Meeting, June 2001.

Yin S, Tumer TO, Maeding D, Mainprize JG, Mawdsley GE, <u>Yaffe MJ</u>, Gordon EE, Hamilton WJ. Direct conversion CdZnTe and CdTe detectors for digital mammography. IEEE Nuclear Science Symposium and Medical Imaging Conference, Lyon France, Oct 15-18, 2000.

(b) Non-Reviewed

Boyd NF, Stone J, Martin L, Jong R, Fishell E, Minkin S, <u>Yaffe M</u>. Risk factors for breast cancer as determinants of blood level growth hormone, IGF-1 prolactin. Reasons for Hope 2001, Quebec City, Canada, May 3-5, 2001.

Boyd NF, Martin L, Stone J, <u>Yaffe M</u>, Minkin S. A longitudinal study of the effects of the menopause on mammographic densities. Reasons for Hope 2001, Quebec City, Canada, May 3-5, 2001.

Boyd NF, Stone J, Martin L, Fishell E, Jong R, Yaffe M, Minkin S. Hormones and growth factors associated with mammographic densities. Reasons for Hope 2001, Quebec City, Canada, May 3-5, 2001.

Goss P, Thompson L, <u>Yaffe M</u>, Yu X, Dell C, Diaz R. The effects of dietary flaxseed on mammographic density. Reasons for Hope 2001, Quebec City, Canada, May 3-5, 2001

Stone J, Gunasekhara A, Martin L, Dite G, Hopper J, <u>Yaffe M</u>, Boyd NF. Mammographic densities: a heritable risk factor for breast cancer. Reasons for Hope 2001, Quebec City, Canada, May 3-5, 2001.

Warner E, Plewes D, <u>Shumak R, Yaffe M</u>, Narod S, Cutrara M, Ramsay E, Chart P, Cole D, Taylor G, Catzavelos C, DiProspero L, Goel V. Pilot study of breast MRI and ultrasound in addition to conventional surveillance for women at high risk for hereditary breast cancer: results of two annual screens. Reasons for Hope 2001, Quebec City, Canada, May 3-5, 2001.

Invited Papers and Professorships

<u>Caldwell CB</u>. Current status of coincidence gamma camera imaging - the physics. Annual Meeting of the Ontario Association of Medical Radiation Technologists, Toronto, Ontario, 4 May 2001.

<u>Caldwell CB</u>. PET for radiation therapy treatment planning. 31st Annual Spring Meeting of the Mid-eastern Chapter, Society of Nuclear Medicine, Rockville, MD, 21 April 2001.

<u>Houle S</u>. Current and future applications of PET in Psychiatry. SNM Prairie Provinces Chapter, Edmonton, September 2000.

Houle S. PET and psychiatry. Society of Nuclear Medicine 48th Annual Meeting, Toronto, June 2001.

<u>Houle S</u>. TEP et psychiatrie. XIXe Colloque, Association des Médecins Spécialistes en Médecine Nucléaire du Québec. Oxford, QC, May 2001.

<u>Houle S</u>. TEP: Un outil de recherche en psychiatrie. Centre de Recherche Clinique du Centre Hospitalier Universitaire de Sherbrooke, Sherbrooke, May 2001.

<u>Rowlands JA</u>. Fundamental physics of flat panel x-ray detector physics, Radiological Society of North America 86th Scientific Assembly and Annual Meeting, Chicago IL, November, 2000.

<u>Yaffe MJ</u>. Detectors for digital radiography. IEEE Medical Imaging Conference Lyon, France Oct 15-17, 2000.

<u>Yaffe MJ</u>. Digital mammography - Radiological Society of North America 86th Scientific Assembly and Annual Meeting, Chicago IL, Nov. 27, 2000.

<u>Yaffe MJ</u>. Digital mammography technologies - which ones will survive? 2000 Breast Imaging Conference New Orleans, Oct 4-6, 2000.

<u>Yaffe MJ</u>. The 2001 MQSA equipment regulations: will your unit comply? 2000 Breast Imaging Conference New Orleans, Oct 4-6, 2000.

<u>Yaffe MJ</u>. Using The ACR manual for troubleshooting quality control. 2000 Breast Imaging Conference New Orleans, Oct 4-6, 2000.

Teaching -- Hours of Lectures

Faculty Member	Students	Residents, Fellows, Faculty	Technologists
C.B. Caldwell	10	1	2
S. Houle	10	20	10
J.A. Rowlands	2	3	
M.L. Wood		4	
M.J. Yaffe	10	38	3

Department of Medical Imaging Annual Research Day 2001

Date: Thursday, April 19, 2001 Location: Sadowski Auditorium, 18th floor of the Mount Sinai Hospital Starting Time: 12: 30 pm with welcome from Dr. Walter Kucharczyk

Session I: Neuroimaging and Pediatric Imaging Moderator: Karel terBrugge

12:35	Cheemun Lum	Investigating Agenesis of the Corpus Callosum Using Functional MRI
12:45	Richard Farb	Spinal Dural Arteriovenous Fistula Localization using a Technique of Real-Time Auto-Triggered Elliptical Centric Ordered 3D Gd-MRA: An Initial Assessment
12:55	David Mikulis	MRI of Cerebro-Vascular Reactivity: Efficacy in a Patient with Moya-Moya Disease
1:05	Allan Fox	Development of 3-D Computed Rotational Angiography (CRA)
1:15	James Haroun	The Role of Routine MRI of the Brain in Evaluating the Safety of Carotid Artery Stenting
1:25	Jae Kim	Cardiac-Gated High Spatial Resolution 3D Gd-MRA Technique for the Carotid Arteries
1:35	Nir Stanietzky	Imaging of Maxillofacial Fractures by Helical CT
1:45	Manu Shroff	Pituitary Duplication: MR Findings in Four New Cases and a New Associated Finding of Basilar Artery Duplication
1:55	Shi-Joon Yoo	MR Evaluation of the Pulmonary Veins in Children: Value of Contrast-Enhanced Angiography

Session II: Breast Imaging and Nuclear Medicine Moderator: David Mikulis

2:25	Petrina Causer	Nodular Ductal Carcinoma In Situ: Can it be Differentiated from Invasive Ductal Carcinoma on Sonography?
2:35	Derek Muradali	Optison Enhanced Sonography of the Breast: Can Vascular Morphology Differentiate Benign from Malignant Breast Nodules?
2:45	Supriya Kulkarni	SonoCT Compound Imaging: Improved Margin Resolution And Perilesional Tissue Visualization Of Solid Breast Nodules
2:55	Rene Shumak	Pilot Study of the Use of MRI in Addition to Conventional Surveillance for Women at High Risk for Hereditary Breast Cancer
3:05	Raymond Reilly	Targeted Auger Electron Radiotherapy of Breast Cancer
3:15	Nimu Ganguli	The Utility of CT Image Co-Registration in the Interpretation of FDG PET Images with an Integrated Triple Head Coincidence Camera

Session III: Vascular and Interventional Radiology Moderator: Andrew Common

3:25	Murray Asch	Recovery Filter: Initial Human Experience
3:35	Raymond Chan	Radiofrequency Ablation of Malignant Hepatic Neoplasms
3:45	John Kachura	Radiofrequency Ablation of Renal Cell Carcinoma
3:55	Hilarie Broom	Reuse of Transjugular Liver Biopsy Instruments: Does Sterilization Eliminate the Hepatitis Virus?
4:15	Soe Lwin Kyone	Relationship of an Angiographically Based Vascular Index to Uterine Fibroid Size and Response to Uterine Arterial Embolization

Session IV: Abdominal Imaging and Musculoskeletal Imaging Moderator: Anthony Hanbidge

4:35	Martin O'Malley	Primary Cystic Pancreatic Tumors: Radiologic-Pathologic Correlation
4:45	Korosh Khalili	Work in Progress: Hilar and Hepatic Biliary Obstruction: Contrast Enhanced Ultrasound vs. MR Imaging
4:55	Stephanie Wilson	Hemangiomas: A Challenge for Microbubble Contrast Agents
5:05	Tanya Chawla	Pancreatic Transplant: Is Sonography an Optimal Modality for Assessing Complications?
5:15	Max Ryan	Dropped Gallstones Following Laparoscopic Cholecystectomy Mimicking Peritoneal Seeding: Computed Tomography and Ultrasound Features
5:25	Elizabeth David	Level of Training and its Impact on Resident Interpretation of On Call Abdominal Trauma CT's: A Quality Assurance Study – Preliminary Results from S&WHSC
5:35	Anoosh Sharif	The Friday Syndrome: Fact or Fiction?
5:45	Gilbert Chow	Ultrasonographic Evaluation of Fetal Anatomy: Is There a Difference Between 16, 18, and 20 weeks?
5:55	David Jacobs	Predicting the Response of Liver Metastases to Chemotherapy using MRI Perfusion
6:05	Lawrence White	Digital Versus Analog Templating of Images Preceding Primary Hip Arthroplasty
6:15	Teresa Loucks	Radiographic Progression following Bulk Osteochondral Allograft to the Knee: Normal Incorporation and Evidence of Complications

RESIDENT TRAINING PROGRAM

General Description

There were 48 residents in our program in the 2000-2001 year. The five-year program consists of one year of preliminary clinical training (PGY1), followed by four years of training in medical imaging.

The university-wide integration and rotational system ensures that each resident will have access to all the strengths of our large and expert faculty and the huge volume of clinical pathology. Residents have the opportunity to train at several large modern hospitals, doing so in groups of 5 - 10 trainees of all levels, thus maintaining a close working environment with peers and faculty. All hospitals are equipped with state-of-the-art equipment. Residents work daily with the best of general radiographic, ultrasound, CT and MRI technology. Several hospitals have digital image archiving and communication systems.

<u>PGY1</u>

PGY1 Clinical training is divided into two blocks, one eight-nine month block at core teaching hospitals and a two-three month block at a community hospital. During 2000 - 2001, the core teaching hospitals have been the Mount Sinai Hospital and the St. Michael's Hospital. Community training is principally done at the North York General Hospital. The content of the PGY1 program included Medicine (General Medicine and Respirology); Surgery (General Surgery, Orthopaedics, Urology, Neurosurgery, Obstetrics and Gynaecology); one month of Paediatrics; one month of Anatomy at the U of T Anatomy Department; and two months of elective choices. In the final month of PGY1, all residents come together for a Radiology Orientation Program, which introduces the trainees to physics, imaging equipment, clinical lectures, program issues and the core hospitals. The PGY1 rotation opportunities are reviewed annually, attempting to make the best of training choices in the clinical services.

PGY2

This is the first year of training in medical imaging. During 2000 - 2001, a PGY2 trainee spent the entire year at one or two of the three core teaching Departments (Mount Sinai – University Health Network, Sunnybrook and Women's College Health Sciences Centre and St. Michael's Hospital). There is a graduated increase in responsibility over the course of the year. In order to prepare residents to take night call (which starts in September), the year begins with a 10 week introductory program covering thoracic, GI, GU, CNS, MSK, CT and nuclear imaging. The remainder of the year consists of one or two month rotations in each of the above organ systems, as well as a one-month rotation in ultrasound.

PGY3

In 2000 - 2001, residents in this training year divided their rotations into three to six month blocks at hospitals different from that of their PGY2 training year. This allows the trainee an opportunity to see a different spectrum of pathology and to work with a different group of faculty. Rotations during the PGY3 year have included Breast Imaging, Neuroradiology, Ultrasound, Vascular-Interventional, and Nuclear Medicine as well as additional training in CT, MSK, GI and Chest. MRI training is included within all organ system rotations and is a strong component of all core hospitals.

<u>PGY 4</u>

During this year, each resident spent a four-month block in Paediatric Radiology at the world famous Hospital for Sick Children. The other eight months is at one or two of the core hospitals. This year includes a two-month block of dedicated Angio-Interventional training. The resident also has four to six months of General Radiology rotations. The Armed Forces Institute of Pathology (AFIP) six-week rotation for Radiology-Pathology is scheduled during the General radiology time.

<u>PGY5</u>

The resident is usually allowed to use this year for electives, but this is conditional upon the resident having achieved an acceptable standard of competence in medical imaging. It may be spent concentrating on areas of relative weakness, or on subspecialty areas. Most residents include electives in obstetric ultrasound, cardiac imaging and Body MRI in this final year.

Armed Forces Institute of Pathology

All residents are encouraged to attend the Armed Forces Institute of Pathology in Washington, D.C., where they receive a six-week, intensive, didactic course in pathology correlated to imaging. This generally occurs during the PGY4 year. Some financial support is available. To date, we have been successful in reserving a sufficient number of positions at AFIP to permit all of our residents to attend at some point in their training.

Physics Instruction

All residents must be knowledgeable about the physics of medical imaging. To that end, intensive physics instruction is provided. One week courses are provided for the PGY1 and PGY3 years and there is also a five-day review course in the PGY3 or PGY4 year of training. These courses are organized by Martin Yaffe, Ph.D. (Department of Medical Imaging) and taught by the faculty of our department, the faculty of the Department of Medical Biophysics, and guest speakers.

Conferences

Residents are encouraged to attend imaging conferences, both to be involved in presenting papers or posters and also for the benefit of knowledge and interaction with the imaging community at large. During the PGY3 year, each resident is given the opportunity to attend a major imaging conference with the provision of financial support. The resident is not required to present at the conference to receive this support but does prepare a report following the meeting to highlight what they gained in their attendance. In addition, residents presenting papers or posters at recognized meetings generally receive financial support through affiliations with hospital imaging departments.

Seminars and Half-Day Program

Wednesday afternoons from September to June have been the focus for the academic program. There is a formal two to three hour weekly clinical seminar for PGY1, PGY2 and PGY3 residents. Most seminars are organized around organ systems and imaging modalities.

As well, there are special sessions for all resident years on non-clinical topics such as ethical and legal issues, practice management and career planning. Speakers from outside the Department add interest to the content of these featured sessions.

A 10 hour review series is provided for PGY5 residents each spring in preparation for the ABR and Royal College examinations.

Research

Residents in Medical Imaging are required to have a good foundation of research methodology and critical appraisal in order to either critically evaluate scientific medical literature or pursue independent research activities. Principles and issues of health technology assessment, quality improvement and clinical audits are also core components of the clinical research curriculum. Dr. George Tomlinson, statistician, has recently joined the Department, and with the resident Research Committee under Dr. David Mikulis, is responsible for the design and delivery of the course curriculum, workshops, tutorials and lectures on these topics. Instruction in this curriculum is given throughout the Residency Program. In total, residents in Medical Imaging receive over 30 hours of course instruction.

Each resident is required to become involved in a research project beginning no later than the PGY3 year. All residents receive protected time to work on their project. The research is conducted in conjunction with one or more staff persons with a view to presenting the project during the PGY4 or PGY5 years at our Annual Research Day. The residents are encouraged to publish their results and to present them at national or international meetings.

Rounds

Teaching rounds, or small group conferences, are held at each of the core hospitals once or twice a day. University Division rounds are held for the entire department six to eight times annually at a central location.

View Box Teaching

Every resident in the PGY2 through to the PGY5 years receives daily teaching from faculty at the view box and in the procedure rooms. Teaching is based on the day's cases, but may be supplemented with related cases from faculty teaching files. The amount of teaching varies from rotation to rotation but on average there are one to two hours of this type of one-to-one teaching daily. This program is widely recognized for the quality of teaching provided to residents. In addition, residents learn to teach others and are expected to teach students and observers in the Department.

Journal Club

This is organized by the residents and is held approximately five times annually.

Visiting Professor Program

This program of six lectures between October and April is organized by the CME Director of our department and is provided for all imaging specialists including community radiologists. Residents attend the lecture and reception. Visiting Professors from outside Toronto usually present resident teaching sessions at two or three of the teaching hospitals during their visits to Toronto.

Organ Imaging Review Course

This is a week-long, internationally recognized review course. It is given in September or October of each year. It is primarily intended as a CME course for practicing radiologists but also contains a wealth of valuable teaching material for residents. All residents are given some time off clinical services to attend, and can do so at no cost.

Program Evaluation

In addition to that carried out by the Radiologists-in-Chief and the teaching co-ordinators at each hospital, the residents complete an assessment of each rotation, and an annual assessment of the faculty's teaching.

Program Supervision

This is the direct responsibility of the Program Director who is, in turn, responsible to the Departmental Chair and the Departmental Executive Committee. The Program Director is assisted by the Resident Training Committee, which is composed of a representative from each of the teaching hospitals, a PGY1 coordinator responsible for all PGY1 issues, as well as from Nuclear Medicine and the Research Committee. In addition, the University of Toronto Chief Resident in Medical Imaging and a resident representative from each year of training are full members of the committee.

There are Division Heads appointed for Cardiothoracic, Musculoskeletal, Abdominal, Pediatric, Vascular-Interventional, Breast Imaging and Neuroradiology. These Division Heads and the

Program Director for Nuclear Medicine are responsible for rotation goals and objectives, suggested reading lists and recommendations regarding the resident lectures and seminars. Division Heads advise the Program Director and Resident Training Committee.

Resident Evaluations

Evaluation consists of the following:

- An in-training evaluation completed following each rotation.
- A summary in-training evaluation at the end of each year of training.
- Results of the American College of Radiology multiple choice in-training examination, taken in the spring of each year.
- Results of a yearly oral examination based on the Royal College format (PGY2-5).
- Results of a written examination in physics following the PGY1 course.
- A practice OSCE examination in the spring of each year (PGY3-5).

Resident Awards

Outstanding residents are recognized by awards for clinical excellence, teaching and research.

1) Gordon Potts Award

This award of a commemorative plaque is made to the outstanding final-year resident, based on a combination of the following academic and personal strengths: Interpersonal skills, willingness to explore new methods and ideas, dedication to patient service and academic activities, intellectual capacity and publications in residency. 2000 - 2001 winner: Dr. Caitlin McGregor, PGY5

2) Resident Teacher-Mentor Award

This award will be made to a final year graduating resident, based on a combination of the following strengths and contributions: dedication to teaching, resident advocate and mentor, contribution to Resident Program and commitment to personal continuing educational growth.

2000 - 2001 winner: Dr. Mark Fruitman, PGY5

3) Research Awards

Each year a second-year resident is nominated to attend the RSNA/AUR/ARRS program entitled 'Introduction to Research'. 2000 – 2001 winner: Dr. Tareng Sheth, PGY3 Each year residents as well as fellows are nominated to receive the RSNA Research Award for Research excellence within the University of Toronto Department of Medical Imaging. 2000 – 2001 winner: Dr. Jae Kim, PGY4

Summary

The University of Toronto training program in Medical Imaging is designed to provide the best possible training in all aspects of imaging. The program is an intensive one, with considerable emphasis on teaching, in addition to exposure to a huge volume of clinical pathology. The university-wide integration and rotational system ensures that each resident will have access to all of the strengths of our departments.

RESIDENTS

PGY1 Level

Susan Armstrong, MD University of Toronto, 2000 Debra Chang, MD University of Toronto, 2000 Marc Freeman, MD University of Toronto, 2000 Aaron Glickman, MD University of Western Ontario, 2000 Anish Kirpalani, MD McMaster University, 2000 Sarah Koles, MD University of Calgary, 2000 Vikash Prasad, MD Dalhousie University, 2000 Michael Stefanos, MD University of Toronto, 2000

PGY2 (R1) Level

Peter Ballyk, MD University of Toronto, 1999 Carrie Betel, MD University of Toronto, 1999 Anita Chae, MD University of Western Ontario, 1999 Zdenko Filakovic, MD **Ontario International Medical Program**, 1999 Angela Ho, MD University of Toronto, 1999 Zeinab Layton, MD University of Western Ontario, 1999 Selina Lem, MD Queen's University, 1999 Bonnie O'Hayon, MD University of Toronto, 1999 Markian Shulakewych, MD University of Manitoba, 1994 Steven Singer, MD University of Ottawa, 1998 Sameh Tadros, MB, BCh **Ontario International Medical Program**, 1999 Lana Wilkinson, MD McMaster University, 1999
PGY3 (R2) Level

Frederick Lan, MD University of Toronto, 1998 Erika Mann, MD Queen's University, 1998 Marc Ossip, MD University of Toronto, 1998 Jillian Pugh, MD Dalhousie University, 1998 Tarang Sheth, MD University of Toronto, 1998 Vincent Shin, MD University of Ottawa, 1998 Robert Yu, MD University of Toronto, 1998

PGY4 (R3) Level

Hilarie Broom, MD University of Ottawa, 1997 Elizabeth David, MD University of Toronto, 1997 David Jacobs, MD Queen's University, 1996 Jae Koul Kim, MD University of Toronto, 1997 Teresa Loucks, MD University of Ottawa, 1997 Nikunj Patel, MD Queen's University, 1997 Anoosh Sharif, MD University of Western Ontario, 1997 Nir Stanietzky, MD University of Ottawa, 1997

PGY5 (R4) Level

Gilbert Chow, MD Queen's University, 1996 Mark Fruitman, MD University of Western Ontario, 1996 Christopher Guest, MD University of Toronto, 1996 James Haroun, MD George Washington University, 1996 Soe Lwin Kyone, MD University of Toronto, 1996 Angela Luong, MD University of Toronto, 1996 Caitlin McGregor, MD University of Toronto, 1996 James Meindok, MD University of Toronto, 1996 Andrea Miller, MD McMaster University, 1996 Angeline Young, MD Dalhousie University, 1996 Eugene Yu, MD University of Toronto, 1996

NUCLEAR MEDICINE TRAINING PROGRAM

General Description

Nuclear medicine is a branch of medical practice primarily concerned with the use of unsealed radioactive sources in the study, diagnosis, and treatment of disease. Our program currently provides dual-certification in radiology and nuclear medicine. This is a six year (including PGY1) program with two years of subspecialty training in nuclear medicine (provided that the subspecialty training is taken following the completion of at least 18 months in Diagnostic Radiology, effective June 1, 1998).

The Nuclear Medicine Program provides formal instruction and training for both radiology and nuclear medicine residents. Formal lectures cover various aspects of nuclear medicine including cardiac and oncologic nuclear medicine, functional neuroimaging, radiopharmacy, nuclear physics, and general nuclear medicine. Residents have specific goals, objectives and reading lists during their rotation at one of the teaching hospitals. There are weekly or biweekly teaching rounds for both radiology and nuclear medicine residents at these hospitals. Also, there are citywide nuclear medicine rounds held every Friday morning at the Hospital for Sick Children. The residents acquire skills by participating in daily clinical work. Didactic instruction is supplemented by teaching files at each hospital. In addition, there are monthly teaching rounds during the academic year at Mount Sinai Hospital. These rounds are given by internationally renowned guest speakers, who also present evening lectures on current topics in nuclear medicine at the Toronto Nuclear Medicine Society Meeting.

The Nuclear Medicine Program is actively involved in clinical and basic science research including functional neuroimaging with SPECT and PET, cardiac, oncologic, and pediatric nuclear medicine, and radiochemistry. Residents are encouraged to participate in these research activities.

General Objectives

The goal of the nuclear medicine resident is to be able to function independently as a medical specialist with the ability to advise on, supervise, perform, and interpret all diagnostic procedures, and to achieve a level of competence in the performance of radiotherapy with unsealed radioactive sources so as to act as a consultant to referring physicians. The resident must acquire excellent communication and technical skills, and the knowledge and professionalism appropriate to a lifetime career in nuclear medicine.

Dual Radiology and Nuclear Medicine Residency

Applicants will be considered from candidates who are already in the Diagnostic Radiology Training Program at the University of Toronto, usually, one slot per year is reserved for the dual certification program.

RADIOLOGY SCIENTIST TRAINING PROGRAM

Objectives

The purpose of the Radiological Scientist Training Program (RSTP) is to provide a small group of radiology residents with the opportunity to develop skills important to the pursuit of independent research. These skills encompass research methodology, publications, grant writing, and presentations. The research training is intended to complement the excellent clinical training for which the Department of Medical Imaging is already recognized.

Organization

The RSTP is a six-year program with two years of research and four years of clinical training. The Royal College of Physicians and Surgeons of Canada will accept one year of research towards fulfilling the requirements of the five year program in diagnostic radiology. The RSTP is able to accommodate as many as two residents per year. The first two years of the RSTP are identical to the regular radiology training program. The difference is in the PGY3 and PGY4 years which, in the RSTP, are entirely devoted to research. Research opportunities are available in many departments relevant to radiology. Under certain circumstances, residents in the RSTP may pursue a M.Sc. or Ph.D. degree. The final two years, PGY5 and PGY6, are designated for clinical training to fulfil the requirements of the Royal College of Physicians and Surgeons of Canada.

Eligibility and Application Procedure

Applications will be considered from candidates already accepted into the regular radiology training program and will occur during the PGY2 training year. A maximum of two places per year will be reserved for residents in the RSTP. Applicants need not have prior experience in research or a special background, but are expected to be self-motivated.

Remuneration

Residents in the RSTP will be remunerated commensurate with residents in the regular radiology training program, up to a maximum of the PGY5 level.

Selection of Research Project and Supervisor

Residents in the RSTP should select a project and a supervisor as soon as possible, and before the PGY3 year. The Director of Research and the Chair of the department can offer assistance with this selection. A supervisor may be selected from various University of Toronto departments, including Medical Imaging, Medical Biophysics, Anatomy, Physiology, Biochemistry, Computer Science, Clinical Epidemiology, or Electrical Engineering, specifically the Institute of Biomedical Engineering. The supervisor must have operating funds to support the research, but is not expected to provide remuneration for the resident. Candidates will be strongly encouraged also to apply for a fellowship from an agency such as the Medical Research Council, but acceptance into the RSTP will not be conditional upon success in obtaining such a fellowship.

Graduate Degrees

Residents in the RSTP are encouraged to pursue a graduate degree. The procedure depends somewhat on the department in which the research is to be conducted, but requires a separate application to that department and the School of Graduate Studies or Institute of Medical Sciences. Residents are responsible for fulfilling all requirements of the department in which they are registered as graduate students.

Clinical Responsibilities

During the two years of research training, residents in the RSTP will have minimal clinical responsibilities, probably limited to one on-call evening/night per week. In addition, residents in the RSTP are encouraged to maintain contact with clinical activities through attendance at select departmental rounds and teaching sessions. Such attendance will not be compulsory for RSTP residents in the two research years, as it is for residents in the regular training program.

OBJECTIVES OF TRAINING & SPECIALTY TRAINING REQUIREMENTS IN DIAGNOSTIC RADIOLOGY

Definition

Diagnostic Radiology is a branch of medical practice concerned with the use of imaging techniques in the study, diagnosis and treatment of disease.

General Objectives

On completion of the educational program, the graduate physician will be competent to function as a consultant in Diagnostic Radiology. This requires the physician to have the ability to supervise, advise on and perform imaging procedures to such a level of competence, and across a broad range of medical practice, as to function as a consultant to referring family physicians and specialists.

Communication skills, knowledge, and technical skills are the three pillars on which a radiological career is built, and all are dependent on the acquisition of an attitude to the practice of medicine which recognizes both the need to establish a habit of continuous learning and a recognition of the importance of promoting a team approach to the provision of imaging services.

Residents must demonstrate the knowledge, skills and attitudes relating to gender, culture and ethnicity pertinent to Diagnostic Radiology. In addition, all residents must demonstrate an ability to incorporate gender, cultural and ethnic perspectives in research methodology, data presentation and analysis.

Specific Objectives

At the completion of training, residents will have achieved the following competencies so as to function effectively as:

i) Medical Expert/Clinical Decision-Maker General Requirements

- Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
- Access and apply relevant information to clinical practice so as to have competence in clinical radiological skills.
- Demonstrate effective consultation services with respect to patient care, education and legal options.

Specific Requirements

- Understand the nature of formation of all types of radiological images, including physical and technical aspects, patient positioning, contrast media.
- Knowledge of the theoretical, practical and legal aspects of radiation protection, including other imaging techniques and their possible harmful effects.

- Knowledge of human anatomy at all ages, both conventional and multi-planar, with emphasis on radiological applications.
- Knowledge of all aspects of clinical radiology, including understanding of disease, appropriate application of imaging to patients, importance of informed consent, complications such as contrast media reactions, and factors affecting interpretation and differential diagnosis.
- Understand the fundamentals of quality assurance in radiology.
- Understand the fundamentals of epidemiology, biostatistics and decision analysis.
- Show competence in manual and procedural skills and in diagnostic and interpretive skills.
- Demonstrate the ability to manage the patient independently during a procedure, in close association with a specialist or other physician who has referred the patient. The radiologist should know when the patient's best interests are served by discontinuing a procedure, or referring the patient to another physician.
- Understand the acceptable and expected results of investigations/and or interventional therapy as well as unacceptable and unexpected results. This must include knowledge of and ability to manage radiological complications effectively.
- Understand the appropriate follow-up care of patients who have received investigations and/or interventional therapy.
- Show understanding of a sound and systematic style of reporting.
- Competence in effective consultation, conduct of clinico-radiological conferences, and the ability to present scholarly material and lead case discussions.

ii) Communicator

- Establish appropriate therapeutic relationships with patients/families.
- Listen effectively.
- Obtain the appropriate information during consultation with referring physicians in order to be able to make recommendations regarding the most appropriate testing and/or management of patients.
- Discuss appropriate information with patients/families and the health care team, and be able to obtain informed consent for tests and procedures when this is needed.

Specific Requirements

- Have the ability to produce a radiological report which will describe the imaging findings, most likely differential diagnosis, and when indicated, recommend further testing and/or management.
- Understand the importance of communication with referring physicians, including an understanding of when the results of an investigation or procedure should be urgently communicated.
- Communicate effectively with patients and their families and have a compassionate interest in them.

• Recognize the physical and psychological needs of the patient and their families undergoing radiological investigations and/or treatment, including the needs of culture, race and gender.

iii) Collaborator

General Requirements

- Consult effectively with other physicians and health care professionals.
- Contribute effectively to other interdisciplinary team activities.

Specific Requirements

• Have the ability to function as a member of a multi-disciplinary health care team in the optimal practice of radiology.

iv) Manager

- Utilize resources effectively to balance patient care, learning needs, and other activities.
- Allocate finite health care resources wisely.
- Work effectively and efficiently in a health care organization.
- Utilize information technology to optimize patient care, life-long learning and other activities.

Specific Requirements

- Be competent in conducting or supervising quality assurance including an understanding of safety issues and economic considerations.
- Be competent in computer science as it pertains to the practice of radiology.

v) Health Advocate

General Requirements

- Identify the important determinants of health affecting patients.
- Contribute effectively to improve the health of patients and communities.
- Recognize and respond to those issues where advocacy is appropriate.

Specific Requirements

- Understand and communicate the benefits and risks of radiological investigation and treatment including population screening.
- Recognize hen radiological investigation or treatment would be detrimental to the health of a patient.
- Educate and advise on the use and misuse of radiological imaging.

vi) Scholar

General Requirements

- Develop, implement and monitor a personal continuing education strategy.
- Critically appraise sources of medical information.
- Facilitate learning of patients, house staff/students and other health professionals.
- Contribute to development of new knowledge.

Specific Requirements

- Competence in evaluation of the medical literature.
- The ability to be an effective teacher of radiology to medical students, residents, technologists and clinical colleagues.
- The ability to conduct a radiology research project, which may include quality assurance.
- Appreciation of the important role that basic and clinical research plays in the critical analysis of current scientific developments related to radiology.

vii) Professional

General Requirements

- Deliver highest quality care with integrity, honesty and compassion.
- Exhibit appropriate personal and interpersonal professional behaviours.
- Practice medicine ethically consistent with the obligations of a physician respecting the needs of culture, race and gender.

Specific Requirements

- Be able to accurately assess one's own performance, strengths and weaknesses.
- Understand the ethical and medical-legal requirements of radiologists.

Training in Canada

The foregoing represents the general and specific objectives that all candidates for the Royal College examinations in Diagnostic Radiology are expected to meet. For those training in Canadian programs, these objectives will be accomplished in a staged manner. Residents in Canadian programs may obtain the document describing this approach from their program directors.

SPECIALTY TRAINING REQUIREMENTS IN DIAGNOSTIC RADIOLOGY

These specialty training requirements apply to those who began training on or after 1 June 1997.

The five years of approved training require, at first, a closely supervised practice, with the opportunity for increasing responsibility in the final years, so that the resident near the end of training can function as a general radiology consultant, requesting help from staff radiologists when necessary. The residency may be followed by one or more years of fellowship training in a subspecialty discipline, as the residence training is not intended to provide a subspecialty level of expertise.

This period must include:

1) one year of basic clinical training.

The purpose of this year is to give the resident a degree of independent responsibility for clinical decisions; an opportunity for further development of the skills required in making effective relationships with patients; the consolidation of competence in primary clinical and technical skills across a broad range of medical practice; and an understanding of the nature of the relationship between a referring physician and a clinical radiological consultant.

2a) three years of approved resident training in "general diagnostic imaging", this must include:

Respiratory, cardiovascular, gastro-intestinal and biliary, genitourinary, musculoskeletal, mammography, neurological and pediatric radiology, as well as the following modalities: fluoroscopy, ultrasound, CT and MR imaging.

Because of the varying training programs in the recognized university training centres, these 36 months may be allocated as block periods of at least three months or their equivalents.

- 2b) one year of approved residency that may consist of one to twelve month periods in any of the following, as long as these are appropriately integrated by the Residency Training Committee.
 - further training in diagnostic radiology
 - diagnostic ultrasound
 - CT
 - MR
 - nuclear medicine
 - cardiac and/or vascular radiology
 - interventional radiology
 - neuroradiology
 - pediatric radiology
 - pathology or other clinical specialty relevant to the practice of radiology (for up to three months)

• a full-time research project, relevant to diagnostic imaging, and acceptable to the program director and the Credentials Committee.

NOTE: In view of the amount and variety of radiology to be covered and the skills required at the time of the final examination, it will seldom be appropriate to spend the entire 12 months of the fifth year in any one of these areas.

RESIDENT RESEARCH PROGRAM

While training in clinical radiology remains the main focus of the residency, research is considered to be of paramount importance as well. It is essential that residents gain experience in as many aspects of research as possible, including searching the literature, data analysis and manuscript preparation. A resident cannot know if he/she would enjoy an academic career without firsthand experience. The feeling of satisfaction that accompanies completion of a project, and contribution of information to the medical/scientific literature, can only be appreciated if personally experienced.

The Research Program consists of three aspects; a seminar series, resident support, and a formal presentation day.

Seminar Series

Residents in Medical Imaging are required to have a good foundation of research methodology and critical appraisal in order to either critically evaluate scientific medical literature or pursue independent research activities. Principles and issues of health technology assessment, quality improvement and clinical audits are also core components of the clinical research curriculum. Workshops, tutorials, and lectures on these topics are organized by the department's epidemiologist who is responsible for the design and delivery of the course curriculum. Attendance at these sessions is compulsory and instruction of this curriculum is given throughout the Residency Program.

Support

Department faculty are asked to submit research topics from which residents may choose a project, which he or she finds interesting. The residents are given the opportunity to create their own topic or to choose one from this faculty-generated list. Residents are freed from clinical responsibilities for their work. Each resident presents a short, informal outline of the intended project to the Resident Research Committee in November of their PGY3 year so that project feasibility can be assessed before too much time has been devoted to it. Helpful suggestions are offered by Committee Members. Data collection for the project begins in January of the PGY3 year and extends to December of the same year. During June, the residents present an interim report, again informal, to the Committee, to confirm that data collection has begun and is progressing satisfactorily. In November/December the residents present a third informal discussion for assessment of project status and to determine if an abstract can be generated for submission to a national/international meeting. It is at this time that the Committee determines if the project is satisfactory. Incomplete studies may be considered satisfactory depending on the circumstances described by the resident. Finally, the study is presented formally in the following Spring at the Annual Research Day.

Presentation Day

Our 13th annual Department of Medical Imaging Research Day held at the Sadowski Auditorium, 18th Floor of the Mount Sinai Hospital on April 19, 2001 was the venue for excellent resident research presentations. Support for the event was provided by Nycomed Amersham (Canada) Inc. The presentations included:

1.	James Haroun	The Role of Routine MRI of the Brain in Evaluating the Safety of Carotid Artery
	(resident)	Stenting
2.	Jae Kim	Cardiac-Gated High Spatial Resolution 3D Gd-MRA Technique for the Carotid Arteries
	(resident)	
3.	Nir Stanietzky	Imaging of Maxillofacial Fractures by Helical CT
	(resident)	
4.	Hilarie Broom	Reuse of Transjugular Liver Biopsy Instruments: Does Sterilization Eliminate the
	(resident)	Hepatitis Virus?
5.	Soe Lwin Kyone	Relationship of an Angiographically Based Vascular Index to Uterine Fibroid Size and
	(resident)	Response to Uterine Arterial Embolization
6.	Elizabeth David	Level of Training and its Impact on Resident Interpretation of On Call Abdominal
	(resident)	Trauma CTs: A Quality Assurance Study – Preliminary Results from S & WCHSC
7.	Anoosh Sharif	The Friday Syndrome: Fact or Fiction?
	(resident)	
8.	Gilbert Chow	Ultrasonographic Evaluation of Fetal Anatomy: Is There a Difference Between 16, 18,
	(resident)	and 20 Weeks?
9.	David Jacobs	Predicting the Response of Liver Metastases to Chemotherapy using MRI Perfusion
	(resident)	
10	Teresa Loucks	Radiographic Progression following Bulk Osteochondral Allograft to the Knee:
	(resident)	Normal Incorporation and Evidence of Complications

While presentation at this meeting is an end unto itself, many of the projects have since been presented at national and international meetings and have been published in peer-reviewed journals. Since the research program was instituted, 56 of the resident's projects have appeared in peer-reviewed journals. Of those not published, many have been presented either orally or as a poster at national/international meetings.

Resident Research Awards

The faculty have observed that the research performed and presented by the residents was of high quality. Some of the residents have received awards recognizing outstanding research, therefore independently confirming the faculty's impressions. The following is a list of such rewards obtained by the residents in the 2000-2001 academic year:

Jae Kim RSNA Resident/Fellow Research Award June 2001.

FELLOWSHIP PROGRAM

With access to several thousand inpatient beds, the affiliated hospitals of the University of Toronto form one of the largest teaching facilities in the world, thereby serving as an ideal setting for advanced subspecialty training in Medical Imaging. The program has national and international stature both clinically and in research, and attracts fellows from around the world.

In 2000-2001 the seven divisions of the University of Toronto Department of Medical Imaging offered a comprehensive array of fellowships:

- Abdominal Imaging
- Cross-sectional Imaging
- Breast Imaging
- Women's Imaging
- Magnetic Resonance Imaging
- Musculoskeletal Imaging
- Neuroradiology
- Pediatric Imaging
- Thoracic Imaging
- Vascular/Interventional Radiology
- Research

The flexibility of the program permits tailoring of the fellowship experience to accommodate most needs. Research is encouraged as an integral component of the fellowship program and to this end protected research time is available to all Medical Imaging fellows.

2000–2001 Department of Medical Imaging Fellows

Abdominal Imaging Fellows

- Giovanni Artho
- Marianne Amitai
- Ofer Benjaminov
- Petrina Causer
- Tanya Chawla
- Vicky Goh
- Elaine O'Riordan
- Max Ryan
- Ben Taylor

Cross-sectional Imaging Fellows

- Peter Law
- Weldon Liu
- Susan Ward

Breast Imaging Fellow

• Viviane Massad

Women's Imaging Fellows

- Supriya Kulkarni
- Miriam Sklair-Levy
- Eulla Tu

Musculoskeletal Imaging Fellows

- David Elias
- Kathrin Hammer
- David Simpson

Vascular/Interventional Radiology Fellows

- Raymond Chan
- Paul Hagen
- Robert Lim
- Maurice Voss

Thoracic Imaging Fellow

• TaeBong Chung

Neuroradiology (diagnostic) Fellows

- Justin Cross
- Chee-Yan Hiew
- Cheemun Lum
- Manu Shroff

Neuroradiology (interventional) Fellow

. Seon-Kyu Lee

Magnetic Resonance Imaging Fellow

• Andreas von Ritschl

Pediatric Imaging Fellows

- Walid Abou Reslan
- Pedro Albuquerque
- Andrea Doria
- Ricardo Faingold
- David Koff
- Lisa Raviv-Zilka
- Ricardo Restrepo
- Bradley Wood
- Jeffrey Traubici
- Conor Murray
- Leslie MacPherson

UNDERGRADUATE PROGRAM

Year I

Anatomy – Radiology Seminars

A large number of staff from all the teaching hospitals delivered a total of 72 hours of seminars again this year. Anatomy-radiology seminar sessions included: the thorax, abdomen, lumbar spine, pelvis and urinary tract, leg, arm and head and neck. The seminars are conducted in the Medical Sciences Building, Department of Anatomy.

Imaging Exhibit

A multi-panel multi-imaging exhibit concentrating on chest and cardiac imaging was set up and displayed to the first year students during the initial six weeks of their anatomy course. This display is stationed in the Anatomy museum at the Medical Science Building, and emphasizes multidisciplinary imaging, the algorithmic approach to imaging, as well as the economic aspects of modern imaging. Modern modalities such as CT, MRI and nuclear medical studies are included.

PBL Tutor: Foundations of Medical Practice Course

Drs. Jane Wall, Wayne Deitel and Danny Marcuzzi provided 102 hours of teaching time as tutors, plus an additional 55 hours of preparation for this course.

Year II

Teaching

Year II teaching generally centers around the two main programs in the Year II curriculum: The Pathobiology of Disease (the first half of the year), and The Foundations of Medical Practice (the second half of the year).

The Pathobiology of Disease Course

The aim of our department is to develop the material and teaching methods that would be appropriate for delivery for this PBL oriented curriculum.

Pathobiology-Imaging Viewer

A series of images with annotations is exhibited on a viewer opposite the main lecture theatre at the Medical Science Building. The content of this series roughly parallels and/or emphasizes the imaging aspects of the material given in the Pathobiology of Disease course.

Full Class Lectures: Chest Imaging

A full class lecture is given by Dr. S. Herman at the beginning of the Pathobiology of Disease Course. It includes anatomy, physiology, pathophysiology of the lungs and of lung disease, along with numerous imaging examples of common lung diseases.

Foundation of Medical Practice Course

This course has major radiologic input. At least seven Medical Imaging Packages have been assembled by various radiologists for use in the Foundations course. These packages serve to instruct both the PBL tutors and their students, and serve as the basis for small group discussions which are centered at each of the Academy radiology departments.

Year II Seminars:

Chest Seminars

A number of Chest seminars, generated as part of the Year II Foundations course "Respiratory Week" were given at the various teaching hospitals. Up to 10 radiologists served as seminar leaders, with a total teaching time of about 20 hours.

Pathology Imaging Exhibits

This series of exhibits demonstrates common radiologic pathology, and serves to emphasize and give examples of the kinds of diseases and processes discussed during the Year II of the new curriculum. Initially designed for the old curriculum, this material compliments the Year II students' learning experience, and has proved very useful to Year I as well as Years III and IV medical students.

Radiology Case of the Week

Unknown cases are periodically put up on a viewer in the medical student lounge adjacent to the main lecture theatre. These cases parallel areas of pathology and organ system teaching that is currently being presented to the students. These cases offer the student the opportunity to correlate their knowledge of anatomy, physiology and pathology with diagnostic imaging.

Year III

Elective Students

A significant number of third year medical students at the University of Toronto took electives in radiology at the various teaching hospitals during the 2000-2001 Academic year.

Hospital Based Seminars

As part of the new curriculum, various Year III seminars have been held in the teaching hospitals as part of their Medicine - Surgery block rotation. These include a series of chest seminars, as well as neuroradiology seminars.

Year IV

University of Toronto Electives

Sixty eight University of Toronto students took an elective in their clerkship year in radiology at the various teaching hospitals during the 2000-2001 academic year.

Visiting Elective Students

Forty non-University of Toronto students, many of these overseas foreign students in their senior undergraduate year, took part in visiting electives during the 2000–2001 academic year.

Total Undergraduate Elective Students

More than one hundred and ten elective students were taught by the Department of Medical Imaging in this academic year.

Hospital Seminars

Although somewhat informal, and arranged on a teaching hospital rather than on a university level, a number of senior student seminars are given at the various teaching hospitals. These generally are based on organ system coverage of disease, or coverage of the imaging aspects of cardinal signs and symptoms.

An example of such programs are ones given at St. Michael's hospital to the clinical clerks on the Principles of Chest Radiology. This consists of a series of six one-and one-half hour sessions given by Dr. W.J. Weiser and Dr. A. Zalev. Similar series of Chest Seminars are given to the residents and elective students on the Respirology service and the Anaesthesiology service during the academic year.

The Bruce Tovee LMCC Review Lectures

The Undergraduate Committee in radiology has been involved in this review course for some years now. Three hours of radiology review lectures are given to final year medical students. The majority of these are University of Toronto students. However, the review course has been very well received and final year students from McMaster and other local medical schools routinely attend. The program is carried out in the evening at the main lecture theatre of the University. The radiologic content includes:

- i) Musculoskeletal radiology
- ii) Chest radiology
- iii) Gastrointestinal radiology

This program was organized by Dr. David Salonen, with Dr. Greg Olscamp, Dr. Daniel Rappaport, and Dr. David Salonen delivering these lectures.

The final year students have had access to a series of notes, the MCCQE Study Guide. This lecture series and syllabus are updated and revised annually under the direction of Dr. David Salonen.

Other Teaching Activities and Involvement

Physiotherapy Student Seminars

A series of seminars is given to the physical therapy students at the University of Toronto. Dr. William J. Weiser gives a series on Chest Radiology at the Fitzgerald Academy. At the Wightman Academy, Dr. David Salonen gives a series on Musculoskeletal Imaging and Dr. Walter Montanera a series on Imaging of the Spine.

Career Sampling Electives in Radiology

On a somewhat informal basis, undergraduate students, many in Year I, have spent various periods of time, from several days to weeks, in all of the teaching hospital radiology departments as part of a career sampling experience.

Undergraduate Teaching Computer File for Radiology

A comprehensive interactive computerized teaching program, called **Radiofile** has been developed by the Department of Medical Imaging. This program allows undergraduate students to have a uniform exposure to core medical imaging teaching material. The students can access this program either in the various radiology departments, or in the Academy computer laboratories. The program is available centrally, in the computer laboratory in the Medical Sciences Building.

Other Undergraduate Computer Learning Projects

Many computerized learning projects are underway in the Department of Medical Imaging.

An authoring module had been developed, which allows the easy and rapid preparation of computer based teaching programs for use by our students for self directed learning.

Collaboration is underway in the preparation of a central teaching case registry. This database will be developed and made available via networking and telecommunication to all the Academy

radiology departments. Such a core radiology database will further ensure the uniform exposure of core teaching material to our students.

The Internet and Undergraduate Education in Radiology

The Department of Medical Imaging has a web site on the internet, and various program descriptions are posted there. Considerable interest has been expressed to demonstrate some of the Department of Medical Imaging teaching programs on the internet and to promote the Department of Medical Imaging and computer assisted learning at the University of Toronto.

This Radiology Teaching site has several cases at present demonstrating basic medical imaging and interesting case material. It is primarily aimed at radiology residents and senior medical students. It will be developed on a continuing basis.

The Future Direction of the Medical Imaging Undergraduate Teaching Program

Efforts are currently under way to standardize the major components of the undergraduate medical imaging teaching program through the development and implementation of standardized curriculum and electronic teaching tools. This approach will be ongoing and promises to further optimize the efficiency, scope and value of the undergraduate teaching program in Medical Imaging.

CONTINUING EDUCATION PROGRAM

Organ Imaging Review September 10–14, 2000

Course Description

This four day course focuses on aspects of primary interest to both radiologists and radiologistsin-training. The course content includes general concepts of diagnostic imaging with emphasis on recent advances. The participant learns new ideas and has the opportunity to enhance their knowledge in selected common clinical situations. The participant is also able to participate in problem-solving with daily case reviews in each of the organ systems.

Course Chairman:	Walter Kucharczyk, M.D.
Course Director:	Daniel Rappaport, M.D.

University of Toronto Faculty

Armstrong, Derek, M.B., B.S. Assistant Professor Asch, Murray, M.D., Assistant Professor Atri, Mostafa, M.D. Associate Professor Becker, Edna J., M.D., Associate Professor Bukhanov, Karina, M.D., Assistant Professor Christakis, Monique, M.D., Assistant Professor Clark, John, M.D., Assistant Professor Common, Andrew, M.D., Assistant Professor Crossin, Jane, M.B., BCh, Clinical Fellow Daneman, Alan, M.B., BCh., Professor Farb, Richard, M.D., Assistant Professor Ginzburg, Brian, M.B., BCh., Assistant Professor Glanc, Phyllis, M.D., Assistant Professor Herman, Stephen J., M.D., Associate Professor Jong, Roberta, M.D., Assistant Professor Kachura, John, M.D., Assistant Professor Kucharczyk, Walter, M.D., Professor and Chairman Manson, David, M.D., Assistant Professor Merchant, Naeem, M.D., Assistant Professor Mikulis, David, M.D., Associate Professor Moore, Lori, M.D., Lecturer Muradali, Derek, M.D., Assistant Professor Murphy, John, M.D., Assistant Professor Noël de Tilly, Lyne, M.D., Assistant Professor Pearce, Dawn, M.D., Lecturer Pugash, Robyn, M.D., Assistant Professor Ranson, Marilyn, M.D., Assistant Professor

Rappaport, Daniel, M.D., Associate Professor Rubenstein, Joel, M.D., Associate Professor Saibil, Eric, M.D., Assistant Professor Salem, Shia, M.D., Associate Professor Salonen, David, M.D., Assistant Professor Samuels, Taube, M.D., Assistant Professor Shumak, Rene, M.D., Assistant Professor Simons, Martin, M.D., Assistant Professor TerBrugge, Karel, M.D., Professor Toi, Ants, M.D., Associate Professor Weiser, William, M.D., Professor White, Lawrence, M.D., Assistant Professor Willinsky, Robert, M.D., Professor Wilson, Christine, M.D., Assistant Professor Wilson, Stephanie R., M.D., Professor Wright, Barbara, M.D., Assistant Professor Yoo, Shi-Joon, M.D., Ph.D., Professor

Invited Clinical Speakers

Burns, Peter, PhD Professor Department of Medical Biophysics

Geerts, William H., M.D. Associate Professor Division of Respiratory Diseases Department of Medicine

Wright, Graham, PhD. Associate Professor Department of Medical Biophysics

Guest Faculty

McAdams, H. Page, M.D. Associate Professor Department of Diagnostic Radiology Duke University Medical Center Durham, North Carolina

7th Annual Interventional/Vascular Radiology Course October 26-28, 2000

Course Description

This live video course is designed for practicing interventionalists, as well as for residents and fellows pursuing a career in angiography and interventional radiology. The emphasis is on learning by observing live cases and through informal discussion, with limited formal didactic material. Technologists and nurses working in intervention will also benefit from the excellent audiovisual presentation and the informal nature of the discussion.

Course Director:	Andrew Common, M.D.
Co-Director:	Robyn Pugash, M.D.

Faculty

Asch, Murray, M.D., Assistant Professor Bell, Stuart, M.D., Assistant Professor Benko, Andrew, M.D., Assistant Professor Chisolm, Robert, M.D., Associate Professor Clark, John, M.D., Assistant Professor Gray, Bruce, M.D., Assistant Professor Ho, C.S., M.D., Professor Jaffer, Nasir, M.D., Associate Professor Kachura, John, M.D., Assistant Professor Lossing, Alan, M.D., Associate Professor Marcuzzi, Danny, M.D., Assistant Professor Montanera, Walter, M.D., Associate Professor Noël de Tilly, Lyne, M.D., Assistant Professor Saibil, Eric, M.D., Assistant Professor Simons, Martin, M.D., Assistant Professor Sniderman, Kenneth, M.D., Associate Professor Strauss, Bradley, M.D., Associate Professor Stroz, Peter, M.D., Lecturer

Guest Speakers

David W. Hunter, M.D. Director of Cardiovascular & Interventional Radiology Fairview University Medical Center Minneapolis, Minnesota Mahmood K. Razavi, M.D. Director of Fellowship Program Cardiovascular & Interventional Radiology Stanford University Medical Center Stanford, California

Lawrence A. Stein, M.D. Division Head of Vascular & Interventional Radiology McGill University Health Centres Montreal, Quebec

INVITED LECTURERS, VISITING PROFESSORS AND CITY-WIDE ROUNDS

October 16-18, 2000	Dr. David A. Lynch Department of Radiology University of Colorado Health Sciences Center
	"Idiopathic Interstitial Pneumonias: Classification and CT Features"
	"High Resolution CT of Diffuse Lung Disease: Value and Limitations"
	"Lung Disease Associated with Collagen Vascular Disease"
November 6, 2000	Dr. Lynne S. Steinbach Department of Radiology University of California at San Francisco
	"MRI of the Knee Excluding Menisci"
	"MRI of the Shoulder: Instability and SLAP Lesions"
	"MRI of the Ankle: Tendons and Ligaments"
January 8-9, 2001	Dr. Peter F. Hahn Department of Radiology Massachusetts General Hospital
	"Imaging of Abdominal Infection"
	"Upper Abdominal MRI: Looking Beyond the Liver"
	"MR and CT of Colorectal Carcinoma"

February 5-6, 2001	Dr. James Barkovich Chief of Pediatric Neuroradiology University of California at San Francisco
	"Imaging of Hypoxic and Ischemic Injuries in Neonates and Children"
	"Imaging of Pediatric Epilepsy" Derek Harwood-Nash Annual Lecture in Neuroradiology
	"Neuroimaging of the Phakomatoses"
March 5-6, 2001	Dr. A. Thomas Stavros
	Department of Radiology
	University of Colorado School of Medicine
	"The Fundamentals of Breast Ultrasound"
	"Sonographic Characterization of Solid Breast Nodules"
	"Sonographic Evaluation of Complex Breast Cysts"
April 30-May 1, 2001	Dr. Murray Dalinka
	Department of Radiology
	University of Pennsylvania School of Medicine
	"MR of the Ankle"
	"MR of the Hips"
	"MR of the Lumbar Spine"

JOURNAL CLUB

October, 2000

MRI of the breast

December, 2000

Aortic stent grafts

February, 2001

Screening for HCC, US, CT MRI