McGILL UNIVERSITY

MEDICAL PHYSICS UNIT

Annual Report : June 2009-December 2010

February, 2011

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1. *INTRODUCTION*

The main areas of interest in medical physics at present are: (i) treatment of cancer by ionizing radiation (radiation oncology physics); (ii) diagnostic imaging with x rays, ultrasound and nuclear magnetic resonance (diagnostic radiology physics); (iii) diagnostic imaging with radionuclides (nuclear medicine physics); and (iv) the study of radiation hazards and radiation protection (health physics). In recent years medical physics has grown into a complex multidisciplinary science with involvements and affinities to biomedical engineering, health and life sciences, systems biology and biophysics.

Medical physics is a rapidly expanding profession and job opportunities for graduates of medical physics programs remain excellent locally, nationally and internationally. McGill, as one of eight universities in Canada and one of 30 universities in North America with accredited graduate programs in medical physics, is playing an important role in academic training of professionals for this important, field involved with diagnosis and treatment of human disease. The training in medical physics at McGill is done under the auspices of the Medical Physics Unit (MPU), an academic unit in the Faculty of Medicine. The MPU graduate programs in medical physics were first accredited in 1993 for a period of 5 years and reaccredited in 1998, in 2003, and 2008 for an additional 5-year period. The current 5-year accreditation term will expire on December 31, 2013. McGill was the third university in North America with such accreditation and between 1993 and 2004 it was the only Canadian university with such an accreditation.

Since 1997 the MPU also provides a residency program in radiation oncology physics. In this program graduates in medical physics receive a structured clinical-professional training in radiation oncology physics. The program received its first accreditation in 2000, and was re-accredited in 2005 for a 5-year period. The current reaccreditation application is under review and another successful outcome is anticipated. McGill is one of seven institutions in Canada and one of 43 in North America with this type of accreditation.

The accreditation of graduate and residency programs in medical physics is provided by the *Commission on Accreditation of Medical Physics Educational Programs* (CAMPEP) sponsored by four organizations: the *American Association of Physicists in Medicine* (AAPM); the *American College of Medical Physics* (ACMP); the *American College of Radiology* (ACR); and the *Canadian College of Physicists in Medicine* (CCPM).

2. *FACTS-IN-BRIEF ON THE MEDICAL PHYSICS PROGRAMS AT McGILL*

Details regarding the graduate programs and research in medical physics can be found on the Medical Physics Unit website at: **www.medphys.mcgill.ca**.

Established:	September 1979 by the Faculty of Medicine of McGill University in Montréal	
Directors:	M. Cohen	*(September 1979 to August 1991)*
	E.B. Podgorsak	*(September 1991 to December 2008)*
	J. Seuntjens	*(January 2009 to present)*

GRADUATE PROGRAMS:

- ***Graduate Program Director (GPD):*** Jan Seuntjens, Ph.D.
- ***Degrees offered:*** M.Sc. & Ph.D. in medical physics
- ***Accreditation:*** CAMPEP* accredited the M.Sc. & Ph.D. programs since 1993
- ***Re-accreditation:*** CAMPEP* re-accredited both programs (1998, 2003 & 2008) for 5 years
- ***M.Sc. degrees conferred to date:*** **184**
- ***Ph.D. degrees conferred to date:*** **29**
- ***Current M.Sc. student enrollment:*** **25**
- ***Current Ph.D. student enrollment:*** **4**
- ***Number of mandatory courses:*** **12**
- ***Number of academic faculty (incl. 1 Emeritus Prof.):*** **6**
- ***Number of clinical faculty:*** **14**
- ***Number of affiliated members*** **2**

RESIDENCY PROGRAM IN RADIATION ONCOLOGY PHYSICS:

- ***Residency Program Director (RPD):*** William Parker, M.Sc.
- ***Accreditation:*** CAMPEP* accredited the Residency program (2000) for 5 years
- ***Re-accreditation:*** CAMPEP* re-accredited the program (2005, 2010) for 5 years
- ***Number of graduates to date:*** **31**
- ***Current enrollment:*** **5**
- ***Program duration:*** **2 years**
- ***Number of mandatory rotations:*** **4**
- ***Number of mandatory courses:*** **4**

* ***CAMPEP***, the ***Commission on Accreditation of Medical Physics Educational Programs***, is sponsored by:

- *American Association of Physicists in Medicine (AAPM)*
- *American College of Medical Physics (ACMP)*
- *American College of Radiology (ACR)*
- *Canadian College of Physicists in Medicine (CCPM)*

3. *GENERAL OBJECTIVES OF THE MEDICAL PHYSICS UNIT*

1. ***To promote the field of medical physics through teaching, research and clinical service***.

2. ***To encourage interest, education, training and research in medical physics***.

3. ***To join in one academic unit (Medical Physics Unit) the various members of McGill departments and McGill University Health Centre departments who, through their academic training in physics or a related science and through work in clinical and academic environments, support the objectives (i) and (ii) above***.

4. ***To offer a graduate program leading toward an M.Sc. degree in medical physics***.

5. ***To offer, in conjunction with McGill's Physics department, a graduate program leading toward a Ph.D. degree in medical physics***.

6. ***To offer a residency program in radiation oncology physics***.

7. ***To maintain CAMPEP accreditation of the M.Sc. and Ph.D. academic programs as well as the residency training program in radiation oncology physics***.

8. ***To offer support to other institutions wishing to provide a residency program in radiation oncology physics through affiliation with the CAMPEP-accredited McGill program***.

9. ***To encourage, promote and excel in research in the application of physics in diagnosis and treatment of human disease***.

10. ***To promote McGill as an important institution in the international medical physics community through excellence in teaching of, and research in, medical physics***.

11. ***To promote national and international medical physics organizations through active participation of the Medical Physics Unit and its members in these organizations***.

12. ***To encourage links and collaboration between medical physicists, clinicians and basic scientists with the goal of developing and improving methods for diagnosis and treatment of human disease***.

13. ***To provide medical physics consultation services to McGill institutions, national and international organizations and the general public, as required***.

14. ***To initiate a structured student recruitment program at the Ph.D. level and to provide a stimulating research environment to these candidates.***

15. ***To work with clinicians and basic scientists in the development of a strategic research program in radiation oncology***

4. *MEETING THE OBJECTIVES OF THE MPU FOR THE PAST ACADEMIC EVALUATION PERIOD*

The MPU is in relatively good shape: its teaching programs in medical physics on the M.Sc., Ph.D. and residency levels are accredited and respected around the world; the number of students is high; and the staff are very active on the local, national, and international level.

However, one of the issues faced over the past year has been the severe loss in terms of key academic faculty of the unit. To maintain the teaching program the MPU had to heavily rely on clinical faculty thereby creating even more severe budgetary problems. Despite these issues the MPU has been able to sustain and maintain its student enrolment and research programs. *However, the maintenance of vigorous research programs associated to tenure track academic medical physicists will become essential for the MPU to maintain its longstanding CAMPEP accreditation*.

On the positive side, in response to the longstanding budgetary problems of the MPU, the Faculty of Medicine has committed to a modest budget increase of 20 K per year. The faculty of graduate studies through its different recruitment programs has been helpful in student recruitment. In addition, the Research Institute of the McGill University Health Centre has helped with space increase at the MUHC (MGH) for student and academic work for an amount totaling in excess of 200 K.

There remains a shortage of medical physicists in North America; there is a significant pressure on the MPU by American and Canadian medical physics organizations to increase the number of graduates; there is considerable worldwide recognition of the quality of McGill's programs in medical physics. Maintaining this standard and truly helping to excel research programs in the future will require sustained and increased support from different institutional and extramural agencies.

5. *OBJECTIVES OF THE MPU FOR THE 2011-2012 ACADEMIC YEAR*

Despite the modest but appreciated support increases to the MPU budget the situation in terms of academic support is very fragile. The MPU has been able to survive over the last year with just two academic faculty in radiation oncology physics (instead of four) but this is at the expense of more involvement of clinical faculty, a solution which is acceptable *ad hoc* but does not improve or even maintain the same quality and depth as needed for an internationally recognized program.

The goals for the upcoming academic year are revolving around preparations for the 2013 re-accreditation exercise of the teaching program as well as the need to further develop the Unit's research capacity and support structure:

1) To continue rebuilding the academic program staffing after recent departure or retirement of key-faculty.
2) To study and initiate graduate program curriculum revisions commensurate recent developments in Medical Physics and its interaction with associated sciences.

3) To further improve the MPU's operating budget to cover adequately the teaching responsibilities of non-McGill clinical physics staff (rate at McGill is $1500 per credit).
4) To continue attempts to secure teaching assistantships to MPU graduate students for support of clinical faculty course teaching
5) To continue attempts to secure funds to equip two important laboratory courses ("Lab in Radiation Oncology Physics" and "Lab in Diagnostic Radiology Physics").
6) To maintain productivity with regard to standard academic indicators (number of publications, presentations, graduating students, etc.).

6. ***HIGHLIGHTS OF THE 2009-10 ACADEMIC YEAR***

1) Podgorsak, E.B. was awarded the MGH Award of Merit (May 2009 – awarded Jun 01/09).
2) Seuntjens, J. was awarded "Farrington Daniels Award for co-authoring Best Paper on Dosimetry" co-authored in the journal Medical Physics for 2009.
3) Seuntjens J and Parker W (student D. Fraser) were awarded the "Unfors Award of Excellence" for the best Radiation Measurements Article, 2009.
4) Seuntjens J was appointed to Chair a committee of the International Commission on Radiation Measurements and Units (ICRU) on "Radiation therapy using small fields Prescribing, Recording, and Reporting of Stereotactic Treatments with Small Photon Beams".
5) Parker W, was appointed as Director of the Medical Physics Residency Program.
6) Parker W, Devic S, DeBlois F, Stroian G, Patrocinio H and Soisson E were promoted to Assistant Professor (Dept. Oncology, Fac. Medicine).
7) Pike B, held the salary award - FRSQ – Bourses de chercheurs nationaux – l'Imagerie par resonance magnétique (IRM) anatomique et fonctionnelle du cerveau, 2006-2011.
8) Pike B, held the James McGill Professorship - McGill University 2007-2013.
9) Pike B, held the Killam Professorship – Montreal Neurological Institute, since 2003.
10) Student Awards:
    a. Fraser, D. : Young Investigator at EPI2KX 11th Intl Workshop on Portal Imaging, June 07-08, 2010;
    b. Sarfehnia, A. : Award for best poster at the Canadian Organization of Medical Physicists, Ottawa, June , 2010;
    c. Lee, S.: presentation Award at the John S. Laughlin Science Council Research Symposium at the Annual Meeting of the AAPM, July, 2010.

7. *THE 2009-2010 ACADEMIC YEAR*

7.A. Introduction

The 2009-2010 academic years were a difficult year as there were only two radiation oncology physics academic staff and a large student contingent. This has put additional pressure on clinical staff of the MUHC and hence on the operating budget of the MPU. In 2009 and 2010 combined, the MPU attracted 11 new students to its first-year class (4 from Quebec, 1 from another province, 5 from the US, and 1 originating from abroad) bringing the total registration of graduate students (M.Sc. and Ph.D.) to 25 students on September 1, 2010. Eight of the 11 first-year M.Sc. students successfully completed their didactic medical physics courses during the Fall and Winter terms of 2009-2010 and two have additional course requirements to complete. All second-year students are carrying out their M.Sc. thesis research, 7 at the Montreal General Hospital and the Jewish General Hospital in radiation oncology physics, and 2 at the Montreal Neurological Institute in imaging physics.

7.B. Medical Physics Bursaries

Recognizing the shortage of medical physicists in North America in general and in Quebec in particular, the Quebec government started a medical physics bursary program in 1999.

In each of the years 2009 and 2010, a M.Sc. student was recommended for a 2-year bursary at $17,000 per year by the MPU and their application was approved by the Quebec Ministry of Health. As the recipient has to commit to be employed in Quebec the bursary provides not only support to the student but also an important flow of graduates beneficial to Quebec. The bursary program is expected to continue for the next few years and will not only help Quebec hospitals find suitable candidates for their medical physics openings in the near future but will also help the MPU in playing an even more important role in training of medical physicists for Quebec institutions.

7.C. Travel Grants from the AAPM

The CAMPEP accreditation of the academic and residency training programs was again acknowledged by the American Association of Physicists in Medicine (AAPM) in the form of two travel grants in the amount of $1000 USD each, one intended for graduate students and one for a clinical medical physics resident, to help them attend the AAPM's annual summer meeting in Houston, Texas in July 2009. These grants were used to partially cover registration fees. Budget restrictions also at the AAPM, however, prevented the MPU to benefit from this support in 2010.

7.D. Staff of the Medical Physics Unit ..... *(Appendix I)*

The staff of the MPU consists of 22 staff members (20 internal, 2 affiliated) and a full-time administrative coordinator (Margery Knewstubb). The MPU administrative coordinator holds the only permanent staff position in the MPU, and organizes the day-to-day activities of the MPU, deals with graduate students on a daily basis, corresponds with potential applicants to the medical physics program, and records minutes of MPU staff meetings.

The MPU is run by a Director who is appointed by the Dean of Medicine. Since 1991 the directorship of the MPU is a part-time position, and until January 2009 the position was filled by the director of the *Medical Physics Department* of the McGill University Health Centre. Since January 2009, the two positions are filled by different individuals. Two committees help with the running of the MPU: the *graduate committee* and the *seminar committee*.

The **graduate committee** (Dr. J. Seuntjens, chairman; M. Knewstubb; Dr. G.B. Pike; Dr. E.B. Podgorsak; Dr. I El Naqa) evaluates applications to the academic programs, decides on the number of candidates to be accepted for a particular academic year, and recommends the most suitable candidates for admission. During the 2009-10 and the 2010-2011 academic years, 45 and 60 complete applications were received by the MPU, respectively, and the graduate committee recommended to McGill 23 and 26 candidates for admission into the 2009-10 and 2010-2011 academic cohorts, respectively. For more information, please see Section 8.C.

The **seminar committee** (current chairman: Dr. H Patrocinio, local arrangements MUHC: Dr. A. Sarfehnia; JGH: Dr. S. Devic) organizes the medical physics seminar series, a bi-monthly collection of seminars given by MPU staff, outside visitors or graduate students to staff and students of the MPU. The total number of medical physics seminars organized during the 2009-10 and the fall of the 2010-2011 were 21. A listing is given in *Appendix XIX.*

In the fall of 2010, the MPU has established an ad hoc **Curriculum Update Review Committee** for its M.Sc. program. The mandate of the committee is (1) to review the educational goals of the McGill Medical Physics M.Sc. program; (2) to review the content of the courses currently taught in the program and compare them with CAMPEP guidelines and modern status of the field of Medical Physics; and (3) to come up with a rationalized set of courses respecting these guidelines and current status of the field. It is hoped that a modernized and rationalized curriculum can be established and implemented within the next few years.

All academic members of the MPU, except for the two affiliated members, hold primary appointments in other major departments either of the McGill's Faculty of Medicine (Dr. S. Lehnert, Dr. J. Seuntjens, Dr. I. El Naqa - *Oncology, McGill University*; Dr. G.B. Pike, Dr. A. Reader - *Neurology & Neurosurgery, McGill University*) or McGill teaching hospitals (Dr. F. DeBlois, Dr. S. Devic, Mr. M.D.C. Evans, Dr. G. Hegyi, Mr. P. Léger, Ms. N. Tomic, Mr. W. Parker, Mr. H.J. Patrocinio, Mr. R. Ruo, Dr. G. Stroian, Dr. E. Soisson, Dr. J. Kildea - *Medical Physics, MUHC or JGH*; Dr. A. Gauvin – *Imaging, MUHC*; Dr. C. Janicki – *Radiation Protection, MUHC*).

The two affiliated members work outside McGill; Dr. R. Richardson at the Atomic Energy of Canada in Chalk River, Ontario and Dr. W. Wierzbicki at the Maisonneuve-Rosemont Hospital in Montreal. Both have special links with the MPU, Dr. Richardson as an academically inclined health physicist and Dr. Wierzbicki as a lecturer.

During the 2008-09 academic year one staff retirement occurred: Dr. E.B. Podgorsak retired from almost all of his MUHC and University obligations effective December 31, 2008. For the 2009-2010 academic year, he continued to teach the two core courses for which he has been primary instructor: MDPH 601 *Radiation Physics* and MDPH 602 *Applied Dosimetry*. For 2009-2010, he maintained his role as Director of the Residency

Training Program in Radiation Oncology Physics at the MUHC. As of June 2010, Dr. E.B. Podgorsak, retired is now an Emeritus Professor and maintains his status as member of the MPU. He continues to participate in teaching the course MDPH 601 (*Radiation Physics*) and is, for the Spring of 2011, teacher of the course MDPH 602. The directorship of the Medical Physcis Residency Program (RPD) has been assumed by Mr. William Parker (Chief of the MUHC Department of Medical Physics).

Appendix I provides a list of the MPU staff, their academic rank, divisional affiliation (clinical or imaging) and source of salary support (University, hospital or affiliated institution). Also given in *Appendix I* is a complete list of the staff of the Medical Physics Department of the MUHC.

The main responsibilities of clinical physicists are related to clinical aspects of radiation therapy; however, the clinical physicists get involved with teaching of didactic medical physics courses and laboratories, as well as with co-supervision of M.Sc. graduate students. The engineers are involved with teaching of medical electronics (Léger).

The current MPU staff of 22 consists of six academic members; 13 clinical physicists; one engineer; and two affiliated members. The mix of academic physicists, clinical physicists and engineers in teaching of M.Sc. courses has a positive effect on the students' progression through the M.Sc. program and helps them, in addition to academic knowledge, also to obtain a feeling for the role and duties of a medical physicist in a hospital environment.

7.E. Graduates of the MPU Graduate Programs .....*(Appendices II through V)*

Between June 2009 and December 31, 2010, 18 M.Sc. degrees in medical physics were granted through the MPU (*Appendix II*). Three graduating students are continuing with Ph.D. studies in medical physics, the other 15 have either found employment in the field of medical physics or are continuing in a residency program.

During the 2009-10 academic year, four Ph.D. degrees in medical physics were: I. Levesque, A. Sarfehnia and D. Fraser (Department of Physics) and E. Poon (Department of Electrical Engineering). I. Levesque is currently a postdoctoral fellow at Stanford University; E. Poon and A. Sarfehnia are Clinical Medical Physics staff at the MUHC; and D. Fraser took up a clinical residency position at The Ottawa Hospital Regional Cancer Centre.

The current overall number of McGill graduates in medical physics stands at 184 M.Sc. degrees and 29 Ph.D. degrees. Considering that the Canadian Organization of Medical Physics (COMP) counts a total of some 400 active members, it is obvious that McGill's MPU continues to play an important role in the training of medical physicists in Canada. It is interesting to note that over 50% of medical physicists practicing in Quebec received their degrees from McGill's MPU. A listing of the McGill M.Sc. and Ph.D. graduates in medical physics to date and their current employment are given in *Appendices III* and *IV,* respectively. A statistical summary providing the demographic data for all M.Sc. and Ph.D. graduates to date is shown in *Appendix V*.

7.F. Graduates of the Residency Training Program ..... *(Appendix VI)*

Between June 2009 and December 31, 2010, 2 residents completed the two-year Residency Training Program in Radiation Oncology Physics (K. Asiev, I. Aldahlawi). Since the Residency Training Program in Radiation Oncology Physics was first accredited, between 1999-2010, 17 residents have completed all requirements of the Training Program. A listing of the graduates and various relevant data are provided in *Appendix VI.*

8. ***PLANNING & PERFORMANCE***

8.A. Undergraduate & Project Student Teaching

While there is no formal undergraduate program in the Medical Physics Unit, numerous undergraduate students from a variety of universities Canada and around the world (including France, Ireland, Brazil, etc) complete short-term projects under the supervision of MPU faculty as part of their home university degree requirements. Typical student numbers in this category are 6-10 per academic year.

8.B. Teaching ..... *(Appendices VII and VIII)*

The teaching distribution during the 2009-10 academic year is shown in the list of instructors for didactic courses in *Appendix VII*. Between September 2009 and December 2010, all 12 mandatory graduate courses underwent evaluations by students. The results were circulated to staff, are filed in the MPU office, and their summaries without instructor identification are enclosed as *Appendix VIII*.

A total of 14 individual instructors were evaluated and also 2 courses, having several instructors each, were evaluated based on the course itself as opposed to an individual instructor. On a scale of 1 (bad) to 5 (excellent), the average evaluation (averaged over all students and all instructors) for the Fall semester 2009 was 3.82; for the Winter semester 2010 was 4.00; and for Fall semester 2010 was 4.34. The number of instructors for the two semesters adds up to 14 due to the fact a few instructors were teaching in all semesters and thus obtained more than one evaluation.

A conclusion can be made that the MPU students are reasonably satisfied with the quality of education they receive, but that they also send a message to certain instructors that improvements in their teaching methods and attitudes could be made. One can also notice an increasing trend in the evaluations as the MPU attempts to emerge from a transition period with regards to academic personnel. Considering that of the 14 individual instructors, who taught didactic or laboratory courses between Fall 2009 to Fall 2010, 12 come from the ranks of clinical physicists who essentially volunteer their time and efforts to the academic activities of the MPU, the teaching evaluations attest to an excellent collaboration between the academic and clinical physicists of the MPU as well as to considerable commitment from the clinical staff to offer good quality teaching.

8.C. Student Retention ..... *(Appendices IX through XI)*

On December 31, 2010 the MPU had 27 full time students (male : female ratio is 19 : 8) at various levels of their graduate studies (23 M.Sc. and 4 Ph.D.). Effective Fall 2010, first-year M.Sc. students are listed in *Appendix IX*, and second-year M.Sc. students are listed in *Appendix X*.

The four students at various stages of their Ph.D. thesis work are listed in *Appendix XI*. All Ph.D. students, except for Sankyu Lee, have already passed the preliminary examination, at the Physics department of McGill.

For the **current 2010-11 academic year** the MPU office received 60 completed applications to the M.Sc. program in medical physics, up approximately 30% from the number of applications as was received for the 2009-10 academic year. Of the 60 potential students, 23 were accepted for admission and to date 12 declined the admission and 14 registered to begin classes in September 2010. The average CGPA of an accepted student over the last two academic years amounts to 3.5 / 4.0 and represents a gradual increase in CGPA of students applying to the M.Sc. medical physics program.

8.D. Research ..... *(Appendices XII through XVII)*

The period 2009-10 in relation to teaching, research, and service was a normal period for the MPU, with all performance indicators fairly stable in comparison to previous academic years. As demonstrated by the list of **publications** (for calendar years 2009 and 2010) appearing in *Appendix XII* along with the list of **published abstracts** (for calendar years 2009 and 2010) given in *Appendix XIII*, **invited presentations** (for calendar years 2009 and 2010) in *Appendix XIV*, and **presentations at national and international conferences** (for calendar years 2009 and 2010) in *Appendix XV*, the MPU staff are productive, representing with distinction McGill's involvement in medical physics research.

During the 2009 and 2010 calendar years, the MPU staff members produced: 64 and 79 published papers, respectively, as well as 76 and 77 published abstracts, respectively. Academic productivity of MPU staff from 1996 to December 31, 2010 can be found at the following URLs:

http://www.medphys.mcgill.ca/academic/publication/papers.html :
list of published papers;
http://www.medphys.mcgill.ca/academic/publication/abstracts.html :
list of published abstracts;
http://www.medphys.mcgill.ca/academic/publication/inv_pres.html :
list of invited presentations;
http://www.medphys.mcgill.ca/academic/publication/conf_sem.html :
list of presentations at national or international meetings.

The listing of research and teaching grants held by the MPU staff (*Appendix XVI*) also attests to the respectable professional standing of the MPU staff members. Of course, it must be noted that the grants are generally attained under the auspices of the grantee's primary department. Current research interests of the 22 MPU academic staff members are shown in *Appendix XVII*.

8.E. Other activities of the MPU .....*(Appendix XVIII)*

Three **meetings of the MPU academic staff** were held between September 2009 to December 2010:

- *on September 09, 2009: start of the first semester of the 2009-10 academic year*;
- *on January 06, 2010: completion of the first and start of the second semester of the 2009-10 academic year*;
- *on May 05, 2010: completion of the second semester and start of M.Sc. thesis research work of the 2009-10 academic year*;
- *on September 29, 2010: start of the first semester of the 2010-11 academic year*.

The purpose of the staff meetings is to discuss the issues affecting the MPU in general and the performance of graduate students in particular. Minutes of each staff meeting are taken by the graduate coordinator and distributed to staff and the Dean of Medicine as soon as possible following each meeting. The minutes of all staff meetings are filed in the MPU office and available for inspection upon request.

Between Fall 2009 and Fall 2010, the MPU organized regular **medical physics seminars** given by staff, graduating students or visiting scientists. The frequency of the seminars averaged two per month in the Fall semester and one per week in the Winter semester (*location*: Osler Amphitheatre at the Montreal General Hospital; *the time*: Friday noon). The presentations are video linked to the JGH to allow MPU members there to attend without significantly disturbing their clinical activities. The attendance of seminars is mandatory for graduate students and is verified through a sign-in sheet. A seminar committee chaired by Dr. H. Patrocinio organizes the seminars and a listing of the MPU medical physics seminars is given in *Appendix XVIII*.

All McGill graduate students in medical physics are required to attend **weekly formal research presentation meetings** (Fridays at 9:15 a.m.). The presentations are given either by staff or students. At least once every three months each student presents his or her research work and results, and thus gains practical experience on organizing and giving scientific presentations. The speaker of a given seminar is introduced by the presenter of the previous seminar. Student attendance is compulsory and verified through a sign-up sheet. The senior Ph.D. student, who also serves as a student representative, organizes the weekly research seminars and organizes the sign-up sheet.

All graduate students attend the weekly **informal research meetings** (Thursday 11:30 am) where students discuss daily problems and solutions in their research projects or review journal papers. Discussions are performed in subgroups where students working on related subjects discuss. There are currently three subgroups of 3 to 5 students: (1) modulated electron therapy; (2) dosimetry and clinical; (3) imaging and radiobiology. In each group students are responsible to invite attendance of MPU staff suitable for their projects. Each fourth meeting is a group meeting of the entire group, with compulsory attendance of all students.

The weekly **clinical physics meetings** of the MUHC Medical Physics Department are open to graduate students and some with particular interests in radiation oncology attend them regularly. Students are also encouraged to attend the **weekly seminars** organized by the Radiation Oncology Department.

Students are encouraged to submit their work for presentation at national and international scientific meetings, either as regular presentations or as presentations during young investigator symposia. During the past 11 years, MPU students received 6 awards in the J.R. Cameron AAPM young investigator symposia, 4 awards in the J.R. Cunningham COMP/CCPM young investigator symposia, 1 award in the young investigator symposium of the ICCR, 1 award in the young investigator category at the EPI2KX 11th International Workshop on Portal Imaging, 1 award for best poster at the COMP Meeting, and 1 presentation award at the John S. Laughlin Science Council Research Symposium at the AAPM annual meeting.

8.F. Committees and Boards ..... *(Appendices XIX and XX)*

As shown in *Appendices XIX* and *XX*, the MPU staff members are active on committees and boards within and outside of McGill. These include chairing the Radiation Safety Committee for the MUHC, Board of the *Canadian College of Physicists in Medicine* (CCPM), Board of Editors of the journal *Medical Physics*, Board of Directors of the *Commission on Accreditation of Medical Physics Education Programs* (CAMPEP), AAPM Task groups, Work Groups, committees and subcommittees and International Advisory Committees for the IAEA.

Of the 22 MPU academic members, 4 are certified as Members of the CCPM and 8 are certified as Fellows of the CCPM. Two of the Fellows of the CCPM are also Fellows of the *American Association of Physicists in Medicine* (AAPM); four are also certified by the *American Board of Radiology* (ABR); two also by the *American Board of Medical Physics* (ABMP).

For a full list see *Appendices XIX* and *XX*.

9. ***EVALUATION OF PERFORMANCE***

As evident from the *Highlights* above and the *Appendices* to this report, the MPU staff and students have during the past academic year continued to bring some prestige to the University. They also fulfilled the basic objectives of the MPU. The MPU is known worldwide for its high quality teaching programs, and its M.Sc. and Ph.D. graduates generally do not have difficulties in finding suitable jobs upon graduation.

As shown in *Appendices III* through *VI*, graduates of McGill medical physics programs and the residency program are distributed in institutions throughout Quebec, Canada, North America and around the World; quite a number of them in leadership positions. This attests to high standards of the McGill programs, helps with the retention of the CAMPEP accreditation, and attracts high quality graduate students into the programs.

One may state that the 2009-2010 annual report period was relatively stable for the MPU in relation to teaching, research, and service, with all performance indicators similar to those of previous academic years, providing the M.Sc. and Ph.D. students in Medical Physics with the academic standards they expected from McGill.

10. *MAJOR STAFF ISSUES AFFECTING FUTURE ACCREDITATION OF MPU PROGRAMS*

Major problems with regard to tenure track academic staff reduction have a deleterious effect on the MPU's performance and retention of staff. As is apparent from this report, in recent years, at any given year, the total number of graduate students (M.Sc., Ph.D., clinical residency) in the McGill Medical Physics Program ranges anywhere between 25 and 30 students. This excludes the students that are performing short (3-6 month) Medical Physics internships or projects in undergraduate programs or international students or fellows, typically 10 within any given academic year. McGill Medical Physics when measured on number of students, is one of the largest Medical Physics schools and the second largest radiation oncology medical physics school in North America and this attests to great success and perseverance and important role of the clinical faculty in the Unit.

In sharp contrast with this, the number of academic faculty committed by the University to the Medical Physics Unit through the department of Oncology used to be traditionally at 4 full-time university faculty in radiation oncology physics but has dwindled to two due to a recent departure and retirement. Dr. F. Verhaegen left the MPU in September 2009 and maintains the status of Adjunct Professor in the Department of Oncology and associate member status in the Dept. of Physics. Dr. Ervin Podgorsak retired as of June 2010. We were fortunate to attract Dr. El Naqa from Washington University (St. Louis) who started his activities at the MPU in June 2010 thereby bringing the MPU faculty count in radiation therapy to two. The Faculty of Medicine has unfortunately effectively prevented the MPU from recruiting additional faculty despite our student numbers and despite great interest from very promising newly upcoming and competitive international faculty to come to McGill. In spite of this unsustainable situation, the M.Sc. and Ph.D. programs have continued thanks to an increased role of MUHC and JGH–based clinical faculty in the academic programs. Whereas the professional nature of part of the Medical physics profession requires the role of clinic-based teaching, a too large component of that also inevitably leads to a slow decline in the rigorous academic and research components of the programs. Academic faculty with vigorous research programs, are essential to keep the teaching programs to a standard required for McGill programs to maintain its CAMPEP accreditation. A potential for loss of CAMPEP accreditation of the Medical Physics programs is entirely preventable by the restoration of the two lost academic faculty positions in the Unit.

APPENDICES

APPENDIX I.

LIST OF FACULTY MEMBERS

MCGILL UNIVERSITY: MEDICAL PHYSICS UNIT

	FACULTY MEMBER	DIVISION	SALARY SUPPORT
1	**JAN P. F. SEUNTJENS**, Ph.D., FAAPM, FCCPM *Professor & Director, Medical Physics Unit*	Clinical	U
2	**FRANÇOIS DEBLOIS**, Ph.D., FCCPM *Assistant Professor, Department of Oncology*	Clinical	HP
3	**SLOBODAN DEVIC**, Ph.D., FCCPM *Assistant Professor, Department of Oncology*	Clinical	HP
4	**ISSAM EL NAQA**, Ph.D. *Associate Professor, Department of Oncology*	Clinical	U
5	**MICHAEL D. C. EVANS**, M.Sc., FCCPM *Assistant Professor, Department of Oncology*	Clinical	HP
6	**ALAIN GAUVIN**, M.Sc., MCCPM, DABMP, DABR *Lecturer*	Imaging	HP
7	**GYORGY HEGYI**, Ph.D. *Lecturer*	Imaging	HP
8	**CHRISTIAN JANICKI**, Ph.D. *Lecturer*	Clinical	HP
9	**JOHN KILDEA**, Ph.D. *Lecturer*	Clinical	HP
10	**PIERRE LÉGER**, B. Eng. *Chief Electronic Engineer, MUHC*	Clinical	HE
11	**SHIRLEY M. LEHNERT**, Ph.D. *Professor, Department of Oncology*	Clinical	U
12	**WILLIAM A. PARKER**, M.Sc., FCCPM *Assistant Professor, Department of Oncology;* *Chief, Department of Medical Physics /* *Director, Residency Training Program, MUHC*	Clinical	HP
13	**HORACIO J. PATROCINIO**, M.Sc., FCCPM, DABR *Assistant Professor, Department of Oncology*	Clinical	HP

MPU Faculty members (continued)

	FACULTY MEMBER	DIVISION	SALARY SUPPORT
14	**G. BRUCE PIKE**, Ph.D. *Professor, Department of Neurology & Neurosurgery*	Imaging	U
15	**ERVIN B. PODGORSAK**, Ph.D., FCCPM, DABMP, FACMP, FAAPM *Emeritus Professor*	Clinical	U
16	**ANDREW READER**, Ph.D. *Associate Professor, Brain Imaging Centre*	Imaging	U
17	**RICHARD B. RICHARDSON**, Ph.D. *Research Scientist, Internal Dosimetry Service*	Clinical	A
18	**RUSSELL RUO**, M.Sc., MCCPM, DABR *Lecturer*	Clinical	HP
19	**EMILIE SOISSON**, Ph.D., MMCPM, DABR, CMD *Assistant Professor, Department of Oncology*	Clinical	HP
20	**GABRIELA STROIAN**, Ph.D. *Assistant Professor, Department of Oncology*	Clinical	HP
21	**NADA TOMIC**, M.Sc., MCCPM *Lecturer*	Clinical	HP
22	**WIESLAW WIERZBICKI**, Ph.D., FCCPM *Chief Physicist, Department of Radiation Oncology, Hôpital Maisonneuve-Rosemont* *Lecturer, Medical Physics Unit*	Clinical	A

A	*Affiliated member*	(2)
HE	*Hospital engineering position*	(1)
HP	*Hospital clinical physics position*	(11)
U	*McGill University academic position*	(6)

LIST OF STAFF MEMBERS

McGILL UNIVERSITY HEALTH CENTRE : DEPARTMENT OF MEDICAL PHYSICS

Chief, Medical Physics Department	William Parker, *MSc, FCCPM (Assistant Professor)*
	Jan Seuntjens, *PhD, Director MPU, FCCPM, FAAPM (Professor)*
Administrative officer / Research Coordinator	Tatjana Nisic, *MA*
Administrative Assistant	Margery Knewstubb
Medical Physicists	Steve Davis, *PhD* Michael Evans, *MSc, FCCPM, Radiation.Safety Officer, Class II, MUHC* Gyorgy Hegyi, *PhD (Medical Imaging Physicist)* Maritza Hobson, *PhD* Horacio Patrocinio, *MSc, FCCPM, DABR* Russell Ruo, *MSc, MCCPM, DABR* Emilie Soisson, *PhD, CMD, MCCPM, DABR* Issam El-Naqa, PhD *(Associate Professor)* Ervin B. Podgorsak, *PhD, FCCPM, DABMP, FAAPM, FACMP (Professor Emeritus)*
Dosimetrists	Irene Marie Bélanger, *RTT* Line Comeau, *RTT), CMD* Colette Charrois, *RTT), CMD* Lioudmila Dychkant, *RTT* Chris Kaufmann, *RTT, CMD (Chief Dosimetrist)* Mamdouh Mansour, *RTT* Francesco Paolino, *RTT, BS* Dinesh Parmar, *RTT* Cenzetta Procaccini, *RTT*
Chief electronic engineer	Pierre Léger, *BEng*
Electronic technicians	Bhavan Siva, *BEng* Joe Larkin
Information systems technician	Suzana Darvasi, *BSc*
Machine shop technician	Robin Van Gils
Post Doctoral Fellow	Naeem Anjum, *PhD*
Current Residents	Joseph Holmes, *MSc* John Kildea, *PhD* Emily Poon, *PhD* Arman Sarfehnia, *PhD* Jonathan Thébaut, *MSc*

APPENDIX II.

M.Sc. DEGREES IN MEDICAL PHYSICS : June 2009-December 2010

1. **ALDELAIJAN, Saad (S. Devic)**
   Reference dosimetry of HDR Ir-192 brachytherapy source using radiochromic film
   Currently: Physicist, Dept Oncology, King Fahd Specialist Hospital & Research Center, Jeddah, Saudi Arabia

2. **CHAAL, Kahena (W. Parker, R. Ruo)**
   Film dosimetry for intensity modulated beams quality assurance
   Currently: Physicist, Dépt. d'oncologie, Centre Hospitalier Régional, Gatineau, Québec

3. **CHEN, Yong (F. Verhaegen)**
   Daily 3D ultrasound imaging for Monte Carlo based adaptive radiotherapy of prostate cancer
   Currently: Physicist, B.C. Cancer Agency Abbotsford Center, Abbotsford, British Columbia

4. **CHUNG, Eunah (E.B. Podgorsak, W. Abdel-Rahman)**
   Comparison of measured and Monte Carlo-calculated peak scatter factors for 10x10 cm2 field size in 6 MV and 18 MV photon beams
   Currently: Ph.D. student, Medical Physics Unit, McGill University, Montreal, Québec

5. **COHALAN, Claire (G.B. Pike)**
   Cerebral blood volume changes during human neuronal activation: A comparative study of VASO and VERVE
   Currently: Ph.D. / Residency

6. **CONNELL, Tanner (J. Robar, E.B. Podgorsak)**
   Low-Z target optimization for spatial resolution improvement in planar imaging and cone-beam CT
   Currently: Ph.D. student, Medical Physics Unit, McGill University, Montreal, Québec

7. **EL-JABY, Samy (J. Seuntjens, S. Devic)**
   An illustrated re-visitation of energy transfer and energy absorption in photon interactions with matter
   Currently: Ph.D. student, Royal Military College, Kingston, Ontario

8. **GILES, Matt (F. DeBlois)**
   Cone-beam computed tomography: Imaging dose during CBCT scan acquisition and accuracy of CBCT based dose calculations
   Currently: Physicist, Georgia Center for Total Cancer Care, Atlanta, Georgia

9. **HOLMES, Joseph (F. DeBlois)**
   Three-dimensional dose reconstruction using non-transmission and Monte Carlo calculations
   Currently: Resident, Dept Radiation Oncology, SMBD Jewish General Hospital, Montreal, Québec

10. **JELESCU, Ileana (G.B. Pike)**
    Measuring blood-brain barrier permeability in multiple sclerosis enhancing lesions
    Currently: Ph.D. student, France

11. KILDEA, John (M.D.C. Evans, E.B. Podgorsak)
An evaluation of NCRP Report No.151 - Radiation shielding design for radiotherapy facilities, and a feasibility study for 6 MV open-door treatments in an existing high-energy radiation therapy bunker
Currently: Resident, Dept of Medical Physics, McGill University Health Centre, Montreal, Québec

12. LAGMAGO-KAMTA, Gérard (B. Reniers)
Evaluation of Eclipse Monte Carlo dose calculation for clinical electron beams using heterogeneous phantoms
Currently: Physicist, Dept of Medical Physics, Hôpital Charles-Lemoyne, Brossard, Quebec

13. LANDRY, Guillaume (F. DeBlois, F. Verhaegen)
ImaSim, A simulation software package for the teaching of medical x-ray imaging
Currently: Ph.D. student, Maastro Clinic, Maastricht, The Netherlands

14. LAST, Jurgen (F. DeBlois, J. Seuntjens)
Cut-out manager - A stand-alone software system to calculate output factors for arbitrarily shaped inserts with the Monte Carlo technique
Currently: Physicist, Dept of Medical Physics, Hôpital Charles-Lemoyne, Brossard, Quebec

15. LEE, Sangkyu (J. Seuntjens)
Image-based dose correlation studies on radiation-induced lung...
Currently: Ph.D. student, Medical Physics Unit, McGill University, Montreal, Québec

16. MOHAMMED, Huriyyah (S. Devic)
Differential uptake volume histograms: A novel avenue towards delineation of biological target volumes (BTVs) in radiotherapy
Currently: Physicist, Trinidad & Tobago

17. THEBAUT, Jonathan (F. DeBlois)
Measurement driven, electron beam modeling and commissioning for Monte Carlo treatment planning system with improved accuracy
Currently: Resident / Physicist, Radiation Oncology, Jewish General Hospital, Montreal, Québec

18. XU, Mark (M. McEwen, S. Devic)
Commissioning of a GafChromic EBT film dosimetry protocol at Ionizing Radiation Standards group of NRC
Currently: NRC-IRAP internship, Best Theratronics, Kanata, Ontario

APPENDIX III.

M.Sc. DEGREES IN MEDICAL PHYSICS (1980-2010)

MEDICAL PHYSICS UNIT : McGILL UNIVERSITY

(supervisors are indicated in parentheses)

Degrees nos. 1-18 and 20-29 are Applied M.Sc. degrees based on course work (30 credits) and a small research project (12 credits). Degrees no. 19 and 30-169 are regular M.Sc. degrees based on course work (28 credits) and a research thesis (32 credits). All degrees were conferred through the *Medical Physics Unit* except for no. 19 which was conferred through the *Department of Electrical Engineering* and nos. 33, 34, 39, 42, and 51 which were conferred through the *Department of Physics*. The number of graduates per year is also shown in parentheses.

1980 (1 graduate)

1. **MOSSERI, Allen** *(M. Cohen)*
   Measurements for radiological quality control and for radiation protection in diagnostic radiology
   Current position: Clinical Physicist, Dept Medical Physics, O.C.I.,
   Princess Margaret Hospital, Toronto, ON

1981 (5 graduates)

2. **BEHMANN, Fadel** *(E.B. Podgorsak)*
   Some aspects of film and ionization dosimetry for the measurement of high energy electron beams
   Current position: Retired

3. **CONNORS, Sherry** *(S. Lehnert)* (AAPM, COMP) **FCCPM**
   Computer aided reconstruction from serial sections: Investigations into the growth characteristics of the KHT sarcoma in the lungs of C3H mice
   Current position: Medical Physicist, Dept Medical Physics,
   Cross Cancer Institute, Edmonton, AB

4. **FRECHETTE, Michel** *(E.B. Podgorsak)*
   Investigation des effets possibles des micro-ondes sur la réponse thermoluminescente du TLD-200
   Current position: Research Engineer, Service Cables et Isolants,
   Direction Recherche et Dévelopment, IREQ, Varennes, QC

5. **HERER, Arnold** *(M. Cohen)*
   Integral dose in external beam radiotherapy
   Current position: Vice-President, Ion Beam Applications (IBA) Technology Group,
   Louvain-la-Neuve, Belgium

6. **MAWKO, George** *(C.J. Thompson)* (AAPM, COMP) **FCCPM**
   Coincidence time calibration for positron emission tomography
   Current position: Dept Diagnostic Imaging, Queen Elizabeth II Health Centre,
   Victoria General Hospital, Halifax, NS

1982 (3 graduates)

7. AZIMOV, Philip *(G.W. Dean)*
Gamma ray scattering in a sphere
Current position: Computer Science Technology,
Vanier College, Ville St-Laurent, QC

8. KODERY, Balachandran *(M. Diksic)* (AAPM) **ABR**
Preparation and evaluation of lower fluoroalkanes as myeline tracers
Current position: Medical Physicist, Dept Radiology,
St Elizabeth Hospital, Elizabeth, NJ

9. KWA, William S.Y. *(S. Chenery)* (AAPM, COMP) **MCCPM**
The influence of scattered radiation on the CT numbers of bone on a scanner with a fixed detector array
Current position: Medical Physicist, Dept Medical Physics,
BC Cancer Agency, Vancouver, BC

1983 (2 graduates)

10. BLAGOEVA, Rossitsa *(M. Cohen)*
Calculation of dose distribution in a simulated body section in a computed tomography scan
Current position: Health Physicist, Dept Health Physics,
Hydro-Québec, Gentilly, QC

11. MERRITT, Robert *(S.G. Chenery)*
The effect of scatter artifact on quantitative CT with the EMI 7070 scanner
Current position: Medical Physicist, Dept Medical Physics,
Ottawa Regional Cancer Centre, Ottawa, ON

1984 (3 graduates)

12. CALDWELL, Curtis *(G.W. Dean)* (AAPM, COMP) **FCCPM**
A numerical approach to the problem of the equivalence of counts and volume in cardiac nuclear medicine
Current position: Medical Physicist, Dept Radiological Sciences,
Sunnybrook Health Sciences Centre, Toronto, ON

13. CLARK, John *(T.M. Peters)*
Real time image filtering for digital radiography
Current position: Radiologist, Dept Radiology/Diagnostic Imaging,
Wellesley Central Hospital, Toronto, ON

14. DOUESNARD, Jean-Maurice *(M. Cohen)* (COMP)
Un outil de contrôle de qualité en medecine nucléaire
Current position: Medical Physicist, Dépt Radiologie,
Hôpital Hôtel-Dieu, Montreal, QC

1985 (1 graduate)

15. EVANS, Michael D.C. *(E.B. Podgorsak)* (AAPM, COMP) **FCCPM**
The influence of phantom size on output peak-scatter-factor and percentage depth dose in large field photon irradiation
Current position: Medical Physicist, Dept Medical Physics, McGill University Health Centre;
Assistant Professor, Medical Physics Unit, McGill University, Montreal, QC

1986 (5 graduates)

16. BLAIS, Noël *(R. Carrier)* (AAPM, COMP) **MCCPM**
Epaisseurs équivalentes de mannequins en radiologie diagnostique: Analysée par méthode Monte Carlo
Current position: Medical Physicist, Service Radiothérapie, Hôpital Maisonneuve-Rosemont, Montreal, QC

17. MAJOLA-MATIMBA, Jongile *(E.B. Podgorsak)*
X-ray photon contamination in electron beams used for rotational total skin irradiation at McGill, and a possible solution using a magnetic beam transport system
Current position: Medical Physicist, Canadian Nuclear Safety Commission, Ottawa, ON

18. MENON, Ravi *(T.M. Peters)*
Quantitative spin-spin relaxation images in nuclear magnetic resonance imaging
Current position: Medical Physicist, Robarts Research Institute, London, ON

19*. PIKE, Bruce *(T.M. Peters, E.B. Podgorsak)* (AAPM)
Three dimensional stereotactic intracavitary and external beam isodose calculation for treatment of brain lesions
Current position: Professor, Medical Physics Unit, McGill University, Montreal, QC; Director, Brain Imaging Centre, Montreal Neurological Institute, Montreal, QC

20. WILKINS, David *(H. Riml)* (AAPM, COMP)
Standardized colour magnetic resonance imaging
Current position: Medical Physicist, Dept Medical Physics, Ottawa Regional Cancer Centre, Ottawa, ON

1987 (3 graduates)

21. DRANGOVA, Maria *(T.M. Peters)* (AAPM, COMP)
Stereotactic neurosurgical planning using magnetic resonance imaging: Image distortion evaluation
Current position: Medical Physicist, Imaging Research Laboratories, Robarts Research Institute, London, ON

22. MITRA, André *(H. Riml)*
Application of fast Karhunen-Loeve transform block coding to medical image data compression
Current position: Consultant, Geometria Research & Design Inc., Ste. Catherines, ON

23. SITOMPUL, Tiur ni Ari *(E. El-Khatib)*
Effects of various configurations of attenuators on dose in homogeneous heterogeneous phantoms
Current position: Physician, Indonesia

1988 (3 graduates)

24. MOLDEN, Cheryl *(E. El-Khatib)* (AAPM, COMP) **MCCPM**
Electron beam inhomogeneity correction factors for lung density equivalent materials
Current position: Medical Physicist, Dept Medical Physics, Fraser Valley Cancer Centre (BCCA), Vancouver, BC

25. RANGER, Nicole *(C. J. Thompson)* (AAPM)
Evaluation of a masked orbiting transmission source for attenuation corrections in PET
Current position: Medical Physicist, Duke Advanced Imaging Laboratories, DUMC, Durham, NY

26. ROBERT, Normand *(H. Riml)*
The optical CT microscope
Current position: Medical Physicist, CardioView, Toronto, ON

1989 (4 graduates)

27. FUNG, Andrew *(M. Cohen)* (AAPM)
The role of filtration in diagnostic radiology
Current position: Medical Physicist, Dept Medical Physics, Sunnybrook Health Sciences Centre, Toronto, ON

28. HENRI, Chris *(T.M. Peters)* (AAPM, COMP)
Application of stereoscopic digital subtraction angiography to stereotactic neurosurgery planning
Current position: Director & Co-Founder, IntelRad, Montreal, QC

29. KHALFAN, Amin *(S. Lehnert)*
Assessment of lung density changes following irradiation
Current position: Unknown

30. VALCOURT, Sylvie *(E. El-Khatib)*
Protection and dosimetry of lungs during total body irradiation
Current position: College teacher (CEGEP), Quebec City, QC

1990 (4 graduates)

31. BARTZAKOS, Peter *(C.J. Thompson)*
Measuring the depth of interaction of PET annihilation photons in scintillation crystals
Current position: Medical Physicist, Dépt Radiophysique, Hôpital Maisonneuve-Rosemont, Montreal, QC

32. KEMP, Brad *(G.W. Dean)* (AAPM, COMP) **MCCPM**
Attenuation correction for SPECT imaging of the brain
Current position: Medical Physicist, Dept Nuclear Medicine, Mayo Clinic, Rochester, MN

33*. PODGORSAK, Matthew B. *(L.J. Schreiner)* (AAPM, COMP) **ABMP**
Fricke radiation dosimetry using nuclear magnetic resonance
Current position: Chief Medical Physicist, Dept Radiation Medicine, Roswell Park Cancer Institute, Buffalo, NY

34*. SIXEL, Katharina *(E.B. Podgorsak)* (AAPM, COMP) **MCCPM**
Physical parameters of narrow photon beams in radiosurgery
Current position: Chief, Dept Physics, Durham Regional Cancer Centre, Oshawa, ON

1991 (4 graduates)

35. AUDET, Chantal *(L.J. Schreiner)* (AAPM, COMP) **MCCPM**
NMR-based radiation dosimetry using polymer solutions
Current position: Medical Physicist, Dept Radiation Therapy
Palo Alto Medical Foundation, Palo Alto, CA

36. BISSONNETTE, Jean-Pierre *(L.J. Schreiner)* (AAPM, COMP) **MCCPM**
Percent depth dose for diagnostic radiology
Current position: Medical Physicist, Dept Radiation Therapy Physics
Princess Margaret Hospital, Toronto, ON

37. MacDONALD, Brennan *(B.G. Fallone)* (AAPM)
Surface charge characteristics of a radio-charged electret
Current position: Chief Medical Physicist, Dept Radiation Oncology,
Elliot Hospital, Manchester, NH

38. RYNER, Lawrence *(B.G. Fallone)* (COMP)
An electret dosimeter charged by radiation induced ionization in air
Current position: Medical Physicist, Institute for Biodiagnostics,
National Research Council, Winnipeg, MB

1992 (6 graduates)

39*. BUSSIERE, Marc *(L.J. Schreiner)* (AAPM, COMP)
Monte Carlo study of photon scatter for determination of depth doses at diagnostic energies
Current position: Medical Physicist, Dept Radiation Oncology,
Massachusetts General Hospital, Boston, MA

40. CADMAN, Patrick *(E.B. Podgorsak)* (AAPM, COMP) **MCCPM**
Target localization and treatment set-up verification in linear accelerator-based radiosurgery
Current position: Medical Physicist, Div Medical Physics,
Saskatoon Cancer Centre, Saskatoon, SK

41. CROOKS, Ian *(B.G. Fallone)* (AAPM) **ABR**
PC-based contrast enhancement of portal films
Current position: Medical Physicist, Dept Radiation Therapy,
Hospital of St Raphael, New Haven, CT

42*. GAUVIN, Alain *(T.M. Peters)* (AAPM, COMP) **MCCPM, ABR, ABMP**
Geometrical distortion of magnetic resonance images
Current position: Medical Physicist, Dept Medical Imaging,
McGill University Health Centre, Montreal, QC

43. MARKOVIC, Alexander *(B.G. Fallone)* (AAPM) **ABR**
X-ray-induced currents and conductivity effects in a radiation-charged electret ionization chamber
Current position: Medical Physicist, Department of Radiation Oncology,
Lutheran General Hospital, Park Ridge, IL

44. MORENO-CANTU, Jorge *(C.J. Thompson)*
Optimization of positron imaging systems through the use of tapered collimators
Current position: PET Group, VA Hospital, Minneapolis, MN

1993 (6 graduates)

45. COMEAU, Roch *(B.G. Fallone)* (AAPM, COMP)
The design and implementation of a three dimensional computerized treatment planning system
Current position: Director, Rogue Research, Montreal, QC

46. COURTEAU, Pierre *(C. Pla)* (AAPM, COMP) **MCCPM**
Electron arc therapy dose calculation using the angle-ß concept
Current position: Medical Physicist, Centre d'Oncologie Dr L Richard,
Hôpital Dr G-L Dumont, Moncton, NB

47. MURTHY, Kavita *(C.J. Thompson)* (COMP)
A study of the effects of detector width and depth on spatial resolution in PET
Current position: Licencing Inspector,
Canadian Nuclear Safety Commission, Ottawa, ON

48. PATROCINIO, Horacio *(L.J. Schreiner)* (AAPM, COMP) **FCCPM, ABR**
Evaluation of backscatter factors for diagnostic x-ray beams
Current position: Medical Physicist, Dept Medical Physics, McGill University Health Centre;
Lecturer, Medical Physics Unit, McGill University, Montreal, QC

49. VAFAEE, Manouchehr *(E. Meyer)* (AAPM)
Evaluation and implementation of an automated blood sampling system for PET studies
Current position: PET imaging, Aarhus, Denmark

50*. WANG, Hui *(B.G. Fallone)* (AAPM, COMP)
Automatic image segmentation and correlation in radiotherapy verification
Current position: Medical Physicist,
Upstate Medical Physics, Victor, NY

1994 (6 graduates)

51. CHARLAND, Paule *(T.M. Peters)* (AAPM, COMP)
Visualisation stéréoscopique d'images médicales
Current position: Clinical Physicist, Dept Medical Physics,
Grand River Regional Cancer Center, Kitchener, ON

52. KELLER, Brian *(L.J. Schreiner)* (AAPM)
Characterization of the NMR-based Fricke-gelatin radiation dosimeter
Current position: Medical Physicist, Dept Medical Physics,
Sunnybrook Health Sciences Centre, Toronto, ON

53. NARAYANAN, Sridar *(T.M. Peters)* (AAPM, COMP)
Image analysis for the assessment of stereotactic radiosurgery
Current position: Magnetic Resonance Spectroscopy Unit,
Montreal Neurological Institute, Montreal, QC

54. PICARD, Yani *(C.J. Thompson)*
Improving the precision and accuracy of Monte Carlo simulation in PET
Current position: Canadian Nuclear Safety Commission, Ottawa, ON

55. WANG, Xiaofang *(E.B. Podgorsak)* (AAPM, COMP) **MCCPM, ABMP**
Depth doses and photon contamination of electron beams in heterogeneous phantoms
Current position: Medical Physicist,
Northeastern Regional Cancer Centre, Sudbury, ON

56. ZANKOWSKI, Corey *(E.B. Podgorsak)* (AAPM, COMP)
Monte Carlo analysis of the 10 MV x-ray beam from a Clinac-18 accelerator
Current position: Product Manager/Treatment Planning,
Varian Medical Systems, Las Vegas, NV

1995 (6 graduates)

57. CURTIN-SAVARD, Arthur J. *(E.B. Podgorsak)* (AAPM, COMP)
Dose delivery uncertainty in photon beam radiotherapy
Current position: Co-Founder, Cardinal Medical Physics Services,
Montpelier, VT

58. FRENIERE, Normand *(E.B. Podgorsak, L.J. Schreiner)* (AAPM, COMP)
Radiation protection characteristics of high density concrete at 10 MV
Current position: Medical Physicist, Dépt Radiologie,
Centre Hospitalier Régional de Trois-Rivières, Trois-Rivières, QC

59. LU, Erlian *(E. Meyer)* (AAPM)
Radiation dosimetry computations for the planning of positron emission tomography procedures
Current position: Clinical Physicist, Dept Radiation Oncology,
Brigham & Women's Hospital, Boston, MA

60. LUKBAN, Andrew *(G.W. Dean)* (AAPM) **ABR**
Evaluation of SPECT/MR registration error from the internal landmark matching technique
Current position: Chief Physicist, Beth Israel Medical Center,
New York, NY

61. PARKER, William *(L.J. Schreiner)* (AAPM, COMP) **FCCPM**
Brachytherapy dosimetry with Fricke-gelatin and MRI
Current position: Chief, Dept Medical Physics, McGill University Health Centre;
Lecturer, Medical Physics Unit, McGill University, Montreal, QC

62. ROBAR, Vlado *(E.B. Podgorsak, M. Pla)* (AAPM)
Characteristic angle-beta concept in electron arc therapy
Current position: Medical Physicist, Dept Medical Physics
Institute of Oncology, Ljubljana, Slovenia

1996 (7 graduates)

63. CORNS, Robert A. *(R. Richardson)* (AAPM, COMP) **FCCPM**
An implementation of the ICRP66 respiratory tract model in internal dosimetry
Current position: Medical Physicist, Div Medical Physics,
British Columbia Cancer Agency, Vancouver, BC

64. DEBLOIS, François *(C. Pla)* (AAPM, COMP) **FCCPM**
Implementation of 3D photon external beam dosimetry in the McGill Planning System
Current position: Chief Physicist, Dept Radiation Oncology,
Sit M.B. Davis Jewish General Hospital, Montreal, QC

65. FALCO, Tony *(B.G. Fallone)* (AAPM, COMP)
Therapy imaging: Metal plate/film and amorphous selenium detectors
Current position: Co-Founder, Resonant Medical Inc.,
Montreal, QC

66. HOGE, Richard *(G.B. Pike)* (AAPM, COMP)
Fast acquisition strategies for functional magnetic resonance brain imaging
Current position: MGH-NMR Centre, Charlestown, MA

67. LACHANCE, Bernard *(R. Pouliot/U. Laval, E.B. Podgorsak)* (AAPM, COMP)
A new penumbra generator for matching of electron fields
Current position: Medical Physicist, Dépt Radio-Oncologie,
Hôpital Hôtel-Dieu du Québec, Quebec City, QC

68. ORFALI, Anas *(E.B. Podgorsak)* (AAPM)
Verification of a 3D external photon beam treatment planning system
Current position: Medical Physicist, Dept Radiation Oncology,
University of Michigan Medical Centre, Ann Arbor, MI

69. PISANI, Laura *(T.M. Peters)* (AAPM)
Incorporation of video into an image-guided neurosurgical system
Current position: Medical Physicist, Dept Radiology,
Stanford University, Stanford, CA

1997 (7 graduates)

70. ANCTIL, Jean-Claude *(B.G. Clark)* (AAPM, COMP)
Experimental characterization of a low dose-rate and a high dose-rate iridium-192 brachytherapy source using the AAPM TG 43 dosimetry protocol
Current position: Medical Physicist, Centre d'Oncologie Dr L Richard,
Hôpital Dr G-L Dumont, Moncton, NB

71. BARRY, Devin *(E.B. Podgorsak, M.D.C. Evans)*
Dynamic wedge dosimetry on a dual energy linear accelerator
Current position: Gaerttner Linac Laboratory,
Rensselaer Polytechnic Institute, New York, NY

72. BERGMAN, Alanah *(C.J. Thompson)* (COMP)
The evaluation of a positron mammography (PEM) system using images co-registered with x-ray mammograms
Current position: Medical Physicist, Div Medical Physics,
BC Cancer Agency, Vancouver, BC

73. BOURQUE, Daniel *(E.B. Podgorsak)* (AAPM)
Static conformal radiation fields in stereotactic radiosurgery
Current position: Emergency Medicine, Université de Montréal &
Hôpital Sacre-Coeur, Montreal, QC

74. LACHAINE, Martin *(B.G. Fallone)* (AAPM, COMP)
Monte Carlo optimization of a metal/amorphous-selenium portal imager
Current position: Medical Physicist, Resonant Medical Inc.,
Montreal, QC

75. OTTO, Karl *(B.G. Fallone)* (AAPM, COMP)
3-dimensional anatomy-based verification in stereotactic radiosurgery
Current position: Medical Physicist, Dept Medical Physics
BC Cancer Agency, Vancouver, BC

76. ROBAR, James *(C.J. Thompson)* (AAPM, COMP)
Construction and calibration of detectors for high-resolution metabolic breast cancer imaging
Current position: Medical Physicist, QE II Health Sciences Centre, Halifax, NS

1998 (6 graduates)

77. DOIRON, Annie *(S.M. Lehnert)*
Radiosensitization of a mouse tumor by implanted BrdU-polymer
Current position: Medical Physicist, Service de Radiothérapie, Centre Hospitalier Gatineau, Gatineau, QC

78. ST-JEAN, Philippe *(T.M. Peters)* (COMP)
Computer guidance for thalamotomy and pallidotomy
Current position: Postdoctoral Fellow, France

79. POFFENBARGER, Brett *(E.B. Podgorsak)* (AAPM)
The use of a teletherapy cobalt-60 unit for stereotactic radiosurgery
Current position: Medical Physicist, Palo Alto Medical Foundation, Palo Alto, CA

80. CLONDA, Diego *(A.C. Evans)*
Automatic thalamic labeling for image-guided neurosurgery
Current position: Dépt Physique, Université de Montréal, Montreal, QC

81. SIROIS, Luc *(B.G. Fallone)* (AAPM)
3-D automatic anatomy-based image registration in portal imaging
Current position: Medical Physicist, Dept Medical Physics, Elliot Hospital, Manchester, NH

82. ENGLISH, Michael *(S.M. Lehnert)*
The role of glutathione in Cisplatin and ^{60}C g-radiation
Current position: Actuarial firm, England

1999 (7 graduates)

83. CORBETT, Jean-François *(R.A. Corns)*
Local dosimetric modelling of radioactive coronary stents
Current position: Medical Physicist, Dept Medical Physics, O.C.I., Princess Margaret Hospital, Toronto, ON

84. ABDEL-RAHMAN, Wamied *(E.B. Podgorsak)* (AAPM) **MCCPM**
Scatter factors for megavoltage photon beams in various materials
Current position: Clinical Physicist, Dept Medical Physics, McGill University Health Centre, Montreal, QC

85. AZNAR, Marianne *(C.J. Thompson)*
Quantitative analysis of metabolic breast images from positron emission mammography
Current position: Physicist, Dept Radiation Research, University of Copenhagen, Copenhagen, Denmark

86. GÉLINAS, Dominic *(M.D.C. Evans)* (AAPM)
Commissioning a dynamic multileaf collimator on a linear accelerator
Current position: Medical Physicist, Dépt Radiologie,
Centre Hospitalier Régional de Trois-Rivières, Trois-Rivières, QC

87. DUBÉ, Frédéric *(E.B. Podgorsak)*
Spiral irradiation in stereotactic radiosurgery
Current position: Medical Physicist, Dept Medical Physics,
Elliot Hospital, Manchester, NH

88. HEGYI, Gyorgy *(R.B. Richardson)* (AAPM)
Size determination of alpha-emitting particles using CR-39
Current position: Medical Physicist, Dept Medical Physics, McGill University Health Centre;
Lecturer, Medical Physics Unit, McGill University, Montreal, QC

89. CAMPBELL, Jennifer *(G.B. Pike)*
Diffusion tensor imaging in MRI
Current position: Researcher, Dept Biomedical Engineering,
McGill University, Montreal, QC

2000 (6 graduates)

90. TREMBLAY, Hugo *(C.J. Thompson)*
La tomographie par émission de positrons à l'étude de la réponse hemodynamique temporelle induite par stimulation cérébrale
Current position: Medical Physicist, Dépt Radiologie,
Hôpital Notre-Dame, Montreal, QC

91. GILL, Bradford *(D.H. Hristov)*
Multislice perfusion-weighted brain imaging with applications to functional magnetic resonance imaging (fMRI)
Current position: Medical Physicist, Dept Medical Physics,
Windsor Cancer Clinic, Windsor, ON

92. DIMITRIADIS, Doris *(B.G. Fallone)* (AAPM)
Construction and dosimetric evaluation of compensators for intensity modulated fields
Current position: Medical Physicist, Dept Medical Physics,
Nicosia Hospital, Strovolos, Cyprus

93. THOMPSON, Heather *(B.G. Fallone)* (AAPM)
Numerically produced compensators for conventional and intensity modulated beam therapy
Current position: Medical Physicist, Dept Medical Physics,
Cross Cancer Centre, Edmonton, AB

94. BERCIER, Yanic *(D.H. Hristov)* (AAPM)
A multimodality image fusion and localisation system for radiosurgery treatments of arteriovenous malformations
Current position: Research Engineer, Dept Systems Engineering (PET/CT),
CTI, Knoxville, TN

95. BARKER, Jennifer *(E.B. Podgorsak)* **MCCPM**
A comparison study of multileaf and micro-multileaf collimators
Current position: Medical Physicist, Dept Radiation Oncology,
Jewish General Hospital, Montreal, QC

2001 (8 graduates)

96. LAMBERT, Denise *(M.D.C. Evans, M. Olivares)* (AAPM)
Dosimetry of irregular field sizes in electron beam therapy
Current position: Medical Physicist, Dept Radiotherapy,
Mount Diablo Medical Centre, Concord, CA

97. RIOUX, Alexandre *(C.J. Henri)*
Performance evaluation of a picture archiving and communications system
Current position: Consultant, IntelRad, Montreal, QC

98. RUO, Russell *(M.D.C. Evans, E.B. Podgorsak)* (AAPM) **MCCPM, ABR**
Quality aassurance of the DBD toolbox on a linear accelerator
Current position: Medical Physicist, Dept Medical Physics,
McGill University Health Centre, Montreal, QC

99. BÉLANGER, Philippe *(W.A. Parker)*
MR based Fricke-gelatin dosimetry: Uncertainty evaluation and computerised analysis of measured dose distributions
Current position: Medical Physicist, Dépt Radiologie,
Centre Hospitalier Régional de Trois-Rivières, Trois-Rivières, QC

100. DUCHESNE, Simon *(L. Collins, G.B. Pike)*
An appearance-based method for the segmentation of medial temporal lobe structures from MR images
Current position: Researcher, INSERM/INRIA Visages,
Rennes, France

101. CAMBORDE, Marie-Laure *(C.J. Thompson)* (AAPM)
Use of beta-gamma coincidence detection to improve the quality of transmission scans for PET
Current position: Medical Physicist, Dept Medical Physics, Radiation Oncology Victoria,
Melbourne, Australia

102. REINERTSEN, Ingerid *(L. Collins, G.B. Pike)*
Robust registration volumetric imaging data
Current position: Researcher, Dept Biomedical Engineering,
McGill University, Montreal, QC

103. DOUCET, Robert *(J.P. Seuntjens)*
Experimental verification of Monte Carlo calculated dose distributions for clinical electron beams
Current position: Medical Physicist, Dépt Radio-oncologie,
Hôpital Notre-Dame, Montreal, QC

2002 (7 graduates)

104. PETRIC, Peter *(G.B. Pike)*
Quantitative multislice cerebral perfusion imaging using arterial spin labeling magnetic resonance imaging
Current position: Medical Physicist, Dept Medical Physics, Radiation Oncology Victoria,
Melbourne, Australia

105. STEWART, Kristin *(J.P. Seuntjens)* (AAPM)
Acute radiation dosimetry using liquid or air filled plane parallel ionization chamber
Current position: Clinical Physicist, Dept Radiation Oncology, University of Saskatchewan,
Saskatoon, SK

106. SHAM, Edwin *(D.H. Hristov)*
Simulated annealing algorithm for inverse treatment planning
Current position: Clinical Physicist, QEII Health Sciences Center, Halifax, NS

107. PASKALEV, Kamen *(E.B. Podgorsak)* (AAPM)
Dosimetry of very small photon fields
Current position: Medical Physicist, Dept Medical Physics, Fox Chase Cancer Centre, Philadelphia, PA

108. AL-YAHYA, Khalid *(J.P. Seuntjens)*
Implementation and validation of Monte Carlo treatment planning for lung cancer patients
Current position: Physicist, King Faisal Specialist Hospital, Jeddah, Saudi Arabia

109. LAROUCHE, Renée-Xavière *(M.D.C. Evans, E.B. Podgorsak)* **MCCPM**
Total body photon irradiation with a modified cobalt-60 unit
Current position: Medical Physicist, Dept Radio-oncologie, Hôpital Notre-Dame, Montreal, QC

110. DAVIS, Stephen *(C. Ross, J.P. Seuntjens)*
High sensitivity lithium fluoride as a detector for environmental dosimetry
Current position: Physicist, Dept Medical Physics, McGill University Health Centre, Montreal, QC

2003 (8 graduates)

111. BOUCHARD, Hugo *(J.P. Seuntjens)*
Accurate dosimetry of intensity modulated radiation therapy beams using thimble ionization chambers
Current position: Medical Physicist, Dépt Radio-Oncologie, Hôpital Notre-Dame, Montreal, QC

112. BRODEUR, Marylene *(W.A. Parker)* **ABR, MCCPM**
Verification of IMRT beam delivery with a ferrous sulfate gel dosimeter and MRI
Current position: Clinical Physicist, Dept Medical Physics, McGill University Health Centre, Montreal, QC

113. DENISSOVA, Svetlana *(M. Yewondwossen, Halifax)* **MCCPM, DABR**
A gated breath-hold radiotherapy technique using a linear position transducer
Current position: Physicist, Dept Medical Physics, New York Beth Israel Medical Centre, New York, NY

114. HEATH, Emily *(J.P. Seuntjens)*
Evaluation of the PEREGRINE Monte Carlo dose calculation code for 6 MV photon beams
Current position: Postdoctoral fellow, DKFZ, Heidelberg, Germany

115. HOBEILA, Fadi *(J.P. Seuntjens)*
Monte Carlo study of ion chamber response in low energy photon beams
Current position: Chief Physicist, Dépt Radio-Oncologie, Centre Intégré de Cancérologie, Laval, QC

116. LEVESQUE, Ives *(G.B. Pike)*
Magnetization transfer imaging of multiple sclerosis
Current position: Postdoctoral Fellow, Stanford University, California

117. OLIVEIRA, Silvana *(H. Patrocinio, E.B. Podgorsak)* **ABR**
Comparison of three linac-based stereotactic radiosurgery techniques
Current position: Medical Physicist, Lehigh Valley Hospital,
John & Dorothy Morgan Cancer Centre, Allentown, PA

118. YUEN, Conrad *(M.D.C. Evans, E.B. Podgorsak)*
Characterization of the enhanced dynamic wedge
Current position: Physicist, Div Medical Physics, B.C. Cancer Centre,
Vancouver, BC

2004 (12 graduates)

119. HODEFI, Deborah *(N. Blais, Hopital Maisoneuve-Rosemont, Montreal)*
Evaluation of CADPLAN for electron beam treatment planning
Current position: Medical Physicist, Dépt Radio-oncologie,
Hôpital Maisonneuve-Rosemont, Montreal, QC

120. KUMARASWAMY, Lalith *(W. Parker)*
Comparative study of megavoltage imaging modalities for dosimetric treatment verification
Current position: Ph.D. student, Dept Medical Physics, State University of
New York at Buffalo, Buffalo, NY

121. TOMIC, Nada *(C. Thompson)*
The origin of the "block effect" which blurs images in positron emission tomorgraphy
Current position: Medical Physicist, Dept Radiation Oncology,
Sir Mortimer B. Davis Jewish General Hospital, Montreal, QC

122. WANG, Yi Zhen *(E.B. Podgorsak, M.D.C. Evans)* **MCCPM**
Photoneutrons and induced activity from medical linear accelerators
Current position: Clinical Physicist, Dept Radiation Oncology, Credit Valley Hospital,
Mississauga, ON

123. BOUDREAU, Chantal *(W.A. Parker)*
The use of inhomogeneity corrections for inverse planned IMRT
Current position: Medical Physicist, Dépt Radio-oncologie,
Hôpital Notre-Dame, Montreal, QC

124. ALBARET, Claude *(J.P. Seuntjens, F. Verhaegen)*
Automated system for Monte Carlo determination of cutout factors of arbitrarily shaped electron beams and experimental verification of Monte Carlo calculated dose distributions
Current position: Medical Physicist, Dépt Radio-oncologie,
Hôpital Notre-Dame, Montreal, QC

125. BÉLEC, Jason *(H.J. Patrocinio, F. Verhaegen)*
A Monte Carlo approach to the validation of a pencil beam algorithm used in treatment planning for conformal beam radiosurgery with static fields
Current position: Medical Physicist, Dépt Radio-oncologie,
Centre Hospitalier Régional Gatineau, Gatineau, QC

126. DAI, Jinxian *(J.P. Seuntjens)*
Validation of Monte Carlo techniques for 3D-CRT of lung cancer patients and comparative evaluation of treatment plans
Current position: Medical Physicist, Dept Radiation Oncology,
Credit Valley Hospital, Mississauga, ON

127. HINSE, Martin* *(C.J. Thompson)*
Improving the spatial resolution and image noise in densely pixilated detectors for positron emission mammography
Current position: Medical Physicist, Dépt Radio-oncologie,
Hôpital Notre-Dame, Montreal, QC

128. HUANG, Vicky *(J.P. Seuntjens, F. Verhaegen)*
Validation of total skin electron therapy by the Monte Carlo technique
Current position: Medical Physicist, Dept Medical Physics,
British Columbia Cancer Agency, Surrey, BC

129. LIANG, Li Heng *(T. Falco)*
Statistical analysis and biological effects of prostate motion in ultrasound image-guided external beam radiotherapy
Current position: Medical Physicist, Dept Radiation Oncology,
Sir Mortimer B. Davis Jewish General Hospital, Montreal, QC

130. POON, Emily *(F. Verhaegen)*
Validation of the GEANT4 Monte Carlo code for radiotherapy applications
Current position: Clinical Physicist, Dept Medical Physics, McGill University Health Centre,
Montreal, QC

2005 (6 graduates)

131. FRASER, Danielle *(W.A. Parker, J.P. Seuntjens)*
Characterizing ionization chamber dosimetry in inverse planned IMRT fields
Current position: Ph.D. student, Medical Physics Unit, McGill University,
Montreal, QC

132. ST-JAMES, Sara Thérèse *(C.J. Thompson)*
The block effect and the effect of changing gamma-ray interaction depth in PET
Current position: Medical Physicist, Dépt Radio-oncologie,
Centre Hospitalier Régional Gatineau, Gatineau, QC

133. STROIAN, Gabriela *(J.P. Seuntjens)*
Dual sensor-based infra-red tracking system as a tool for reducing respiratory motions effects in radiotherapy
Current position: Clinical Physicist, Dept Radiation Oncology,
Sir Mortimer B. Davis Jewish General Hospital, Montreal, QC

134. CEUSAN, Florin *(E.B. Podgorsak, M.D.C. Evans)*
An examination of peripheral dose in linac-based cancer treatment
Current position: Unknown, Montreal, Quebec

135. LEMIRE, Matthieu *(G. Hegyi, F. Verhaegen)*
Accurate surface dose measurements in CT examinations using high sensitivity MOSFET dosimeters calibration by Monte Carlo simulations
Current position: Clinical Physicist, Dépt Radio-oncologie, Hôpital Nôtre-Dame,
Montreal, QC

136. MARK, Clarisse *(F. Verhaegen)*
Image-guided radiotherapy using 2D and 3D ultrasounds combined with Monte Carlo dose calculations in prostate treatments
Current position: Ph.D. student, Dept Biomedical Engineering, McGill University, Montreal, QC

2006 (9 graduates)

137. DUCHESNE, Caroline *(W. Wierzbicki, M. Mondat)*
Electron arc therapy on an Elekta SL-25 linear accelerator
Current position: Clinical Physicist, Dépt Radio-oncologie, Hôpital Maisonneuve-Rosemont, Montreal, QC

138. CHIA, Charmaine *(G.B. Pike)*
Evaluation of in vivo magnetic resonance imaging based measurement of myelin water
Current position: Implementation consultant, McKesson's Medical Imaging Group, Vancouver, BC

139. SARFEHNIA, Arman *(E.B. Podgorsak)*
The use of orthogonal bremsstrahlung beams for imaging in radiation therapy
Current position: Ph.D. student, Medical Physics Unit, McGill University, Montreal, QC

140. ZAKIKHANI, Rumtin *(F. Verhaegen)*
Calculated perturbation factors for the NACP-02 plane-parallel ionization chamber irradiated in water by megavoltage electron beams
Current position: Cox Health, Hulston Cancer Centre, Springfield, MO

141. ALEXANDER, Andrew *(J.P. Seuntjens, F. DeBlois)*
MMCTP: A radiotherapy research environment for patient-treatment planning
Current position: Ph.D. student, Medical Physics Unit, McGill University, Montreal, QC

142. ELLIOTT, Adam Spencer *(J.P. Seuntjens)*
Investigation of properties of a new liquid ionization chamber for radiation dosimetry
Current position: Medical Physics, OnCURE Medical Corporation, Jacksonville, FL

143. FU, Luke *(D.L. Collins, G.B. Pike)*
Automated analysis of multi-site MRI data for the NIHPD
Current position: Resident, Medical Physics, University of Pennsylvania, Philadelphia, PA

144. LI, Rong Ding *(E.B. Podgorsak, W. Abdel-Rahman)*
Dynamic electron arc therapy with the Clinac-21EX linac
Current position: Southwest Oncology Center, Scottsdale, AZ

145. SUK, Joonyoung *(C.J. Thompson)*
Improving the resolution of the MicroPET R4 scanner by wobbling the bed
Current position: Ph.D. student, University of British Columbia, Vancouver, BC

2007 (9 graduates)

146. ASIEV, Krum *(W. Parker, S. Devic)*
Validation of a Monte Carlo based treatment planning system (TPS) for electron beams
Current position: Resident, Dept Radiation Oncology, SMBD Jewish General Hospital, Montreal, QC

147. REYNARD, Eric *(M.D.C. Evans, E.B. Podgorsak)*
Rotational total skin electron irradiation (RTSEI) with a 6 MeV electron linear accelerator
Current position: Clinical Physicist, Dept Radiation Oncology, SMBD Jewish General Hospital, Montreal, QC

148. MARGEANU, Monica *(J.P. Seuntjens, G. Stroian)*
A novel deformable phantom for 4D radiotherapy verification
Current position: Physicist, Dépt Radio-oncologie, Hôpital Maisonneuve-Rosemont, Montreal, QC

149. HANCOCK, Jason *(C.J. Thompson)*
Evaluation of the timing characteristics of various PET detectors using a time alignment probe
Current position: Research technician, Div Medical Physics, Cross Cancer Institute, Edmonton, AB

150. WOCH, Katherine *(C.J. Thompson)*
Use of Polaris Vicra for monitoring subject head movement during neurological PET scans
Current position: Resident, Dept Oncology, University of Wisconsin, Madison, WI

151. CHARPENTIER, Pierre *(E.B. Podgorsak, H. Patrocinio)*
Dosimetric evaluation of four techniques used in stereotactic radiosurgery
Current position: Clinical physicist, Dept Radiation Oncology, Maine Medical Center, Portland, ME

152. CHIN, Erika *(F. Verhaegen, J.P. Seuntjens)*
Calculation of water and graphite perturbation correction factors for the NACP-02 plane-parallel ionization chamber in high-energy electron beams
Current position: Ph.D. student, Medical Physics Unit, University of British Columbia, Vancouver, BC

153. LIU, Derek *(F. Verhaegen)*
Characterization of novel electronic brachytherapy system
Current position: Research technician, Dept Medical Physics, Cross Cancer Institute, Edmonton, AB

154. TANTOT, Laurent *(F. Verhaegen)*
Modelling ionisation chamber response to non-standard beam configurations
Current position: Physicist, Dépt Radio-oncologie, Hôpital Maisonneuve-Rosemont, Montreal, QC

2008 (5 graduates)

155. ALDAHLAWI, Ismail *(W. Parker, J.P. Seuntjens)*
Calibration of a radiobiological irradiator: The Faxitron cabinet x-ray system model CP160
Current position: Physicist, Damman, Saudi Arabia

156. BERTRAND, Marie-Joëlle *(F. Verhaegen, B. Reniers)*
Interseed and tissue-composition effects in permanent low dose rate brachytherapy
Current position: Physicist, Dépt Radio-oncologie, Centre Hospitalier de Chicoutimi, Chicoutimi, QC

157. BENSON, Richard *(M.D.C. Evans)*
A dosimetric analysis of the varian enhanced dynamic wedge for symmetric and asymmetric configurations
Current position: Physicist, DUBS Cancer Center, Medford, OR; & Spears Cancer Center, Grants Pass, OR

158. YAN, Jason *(F. Verhaegen)*
Dose distribution studies of rectal cancer patients treated with brachytherapy
Current position: Physicist, Dept Oncology, King Faisal Specialist Hospital, Jeddah, Saudi Arabia

159. SERRÉ, Luc *(W. Abdel-Rahman)*
Transfer of ionization chamber calibration coefficients in linac MV x-ray beams
Current position: Physicist, Dept Radiation Oncology, Windsor Regional Cancer Centre, Windsor, ON

2009 (17 graduates)

160. AYLES, Michael *(G. Stroian, J. Seuntjens)*
Minimizing errors in treatment planning and delivery during external beam radiotherapy for lung cancer patients
Current position: Clinical Physicist, Dépt Radio-oncologie, Hôpital Maisonneuve-Rosemont, Montreal, QC

161. BRUNET-BENKHOUCHA, Malik *(J-F. Carrier, F. Verhaegen)*
Tomosynthesis-based intraoperative dosimetry for low dose rate prostate brachytherapy
Current position: Clinical Physicist, Dépt Radio-oncologie, Hôpital Maisonneuve-Rosemont, Montreal, QC

162. CURTIS, James *(G.B. Pike)*
Whole brain isotropic arterial spin labeling magnetic resonance imaging in a transgenic mouse model of Alzheimer's disease
Current position: M.D.-Ph.D. student, Dept Biomedical Engineering, McGill University, Montreal, QC

163. PATER, Piotr *(H.J. Patrocinio, R. Ruo)*
Determination of internal organ motion in stereotactic body radiotherapy using electronic portal imaging
Current position: Clinical Physicist, Dépt Radio-oncologie, Hôpital Maisonneuve-Rosemont, Montreal, QC

164. STINSON, Eric *(G.B. Pike)*
Distortion correction for diffusion weighted magnetic resonance images
Current position: Ph.D. student, Dept Medical Physics, Mayo Clinic, Rochester, MN

165. SUTHERLAND, Justin *(J. Seuntjens)*
Investigating techniques to accurately calibrate non-standard beam
Current position: Ph.D. student, Dept Medical Physics, Carleton University, Ottawa, ON

166. CHAAL, Kahena *(W. Parker)*
Film dosimetry for intensity modulated beams quality assurance
Current position: Clinical Physicist, Dépt Radio-oncologie, Centre Hospitalier Régionale Gatineau, Gatineau, QC

167. CHUNG, Eunah *(E.B. Podgorsak, W. Abdel-Rahman)*
Comparison of measured and Monte Carlo-calculated peak scatter factors for 10x10 cm^2 field size in 6 MV and 18 MV photon beams
Current position: Ph.D. student, Medical Physics Unit, McGill University, Montreal, QC

168. LAGMAGO-KAMTA, Gérard *(B. Reniers)*
Evaluation of Eclipse Monte Carlo dose calculation for clinical electron beams using heterogeneous phantoms
Current position: Physicist, Dept Medical Physics, Hôpital Charles-Lemoyne, Brossard, QC

169. LAST, Jürgen *(F. DeBlois, J. Seuntjens)*
Cut-out manager: A stand-alone software system to calculate output factors for artibrarily shaped inserts with the Monte Carlo technique
Current position: Physicist, Dept Medical Physics, Hôpital Charles-Lemoyne, Brossard, QC

170. CHEN, Yong *(F. Verhaegen)*
Daily three-dimensional ultrasound imaging for Monte Carlo based adaptive radiotherapy of prostate cancer
Current position: Physicist, Dept Medical Physics, B.C. Cancer Agency Abbotsford Center, Abbotsford, BC

171. COHALAN, Claire *(G.B. Pike)*
Cerebral blood volume changes during human neuronal activation: A comparative study of VASO and VERVE
Current position: Ph.D. / Residency

172. CONNELL, Tanner *(J. Robar, E.B. Podgorsak)*
Low-Z target optimization for spatial resolution improvement in planar imaging and cone-beam CT
Current position: Ph.D. student, Medical Physics Unit, McGill University, Montreal, Québec

173. EL-JABY, Samy *(J. Seuntjens, S. Devic)*
An illustrated re-visitation of energy transfer and energy absorption in photon interactions with matter
Current position: Ph.D. student, Royal Military College, Kingston, ON

174. LANDRY, Guillaume *(F. DeBlois, F. Verhaegen)*
ImaSim, A simulation software package for the teaching of medical x-ray imaging
Current position: Ph.D. student, Maastro Clinic, Maastricht, The Netherlands

175. THEBAUT, Jonathan *(F. DeBlois)*
Measurement driven, electron beam modeling and commissioning for Monte Carlo treatment planning system with improved accuracy
Current position: Resident, Dept Radiation Oncology, Jewish General Hospital, Montreal, QC

176. XU, Mark *(M. McEwen, S. Devic)*
Commissioning of a GafChromic EBT film dosimetry protocol at Ionizing Radiation Standards group of NRC
Current position: NRC-IRAP internship, Best Theratronics, Kanata, ON

2010 (8 graduates)

177. KILDEA, John *(M.D.C. Evans, E.B. Podgorsak)*
An evaluation of NCRP Report No.151 - Radiation shielding design for radiotherapy facilities, and a feasibility study for 6 MV open-door treatments in an existing high-energy radiation therapy bunker
Current position: Resident, Dept Medical Physics, McGill University Heath Centre, Montreal, Québec

178. ALDELAIJAN, Saad *(S. Devic, W. Abdel-Rahman)*
Reference dosimetry of HDR Ir-192 brachytherapy source using radiochromic film)
Current position: Physicist, Dept Oncology, King Fahd Specialist Hospital & Research Center, Jeddah, Saudi Arabia

179. GILES, Matt *(F. DeBlois)*
Cone-beam computed tomography: Imaging dose during CBCT scan acquisition and accuracy of CBCT based dose calculations
Current position: Physicist, Georgia Center for Total Cancer Care, Atlanta, GA

180. HOLMES, Joseph *(B. Poffenbarger, F. DeBlois)*
Three-dimensional dose reconstruction using non-transmission and Monte Carlo calculations
Current position: Resident, Dept Radiation Oncology, Jewish General Hospital, Montreal, QC

181. JELESCU, Ileana *(G.B. Pike)*
Measuring blood-brain barrier permeability in multiple sclerosis enhancing lesions
Current position: Ph.D. student, France

182. LEE, Sangkyu *(J. Seuntjens)*
Image-based dose correlation studies on radiation- induced lung injury
Current position: Ph.D. student, Medical Physics Unit, McGill University, Montreal, Québec

183. MOHAMMED, Huriyyah *(S. Devic)*
Differential uptake volume histograms: A novel avenue towards delineation of biological target volumes (BTVs) in radiotherapy
Current position: M.Sc. student, Medical Physics Unit, McGill University, Montreal, Québec

184. DELAGE, Patrick *(G. Hegyi, S. Devic)*
Radiochromic film dosimetry system: From calibration to in vivo measurements and intensity-modulated radiation therapy quality assurance measurements
Current position: Clinical physicist, Dépt de radio-oncologie, Centre Hospitalier Université de Sherbrooke, Sherbrooke, Québec

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Expected to graduate in 2011

185. REMPEL, David *(G. Hegyi, S. Devic)*
Radiochromic film dosimetry of kilo-voltage x-ray beams
Current position: M.Sc. student, Medical Physics Unit, McGill University, Montreal, Québec

186. ALONSO ORTIZ, Eva (G.B. Pike)
(title "to be announced")
Currently: M.Sc. student, Medical Physics Unit, McGill University, Montreal, Québec

187. CARLINI, Lina (J. Nadeau)
(title "to be announced")
Currently: M.Sc. student, Medical Physics Unit, McGill University, Montreal, Québec

188. MITROU, Ellis (F. DeBlois)
(title "to be announced")
Currently: M.Sc. student, Medical Physics Unit, McGill University, Montreal, Québec

189. MORCOS, Marc (F. DeBlois)
(title "to be announced")
Currently: M.Sc. student, Medical Physics Unit, McGill University, Montreal, Québec

190. PAPACONSTADOPOULOS, Pavlos (J. Seuntjens)
(title "to be announced")
Currently: M.Sc. student, Medical Physics Unit, McGill University, Montreal, Québec

191. SHIN, Naomi (Parker)
(title "to be announced")
Currently: M.Sc. student, Medical Physics Unit, McGill University, Montreal, Québec

192. SINGH, Khushdeep (Devic)
(title "to be announced")
Currently: M.Sc. student, Medical Physics Unit, McGill University, Montreal, Québec

193. THAKUR, Varun (Parker)
(title "to be announced")
Currently: M.Sc. student, Medical Physics Unit, McGill University, Montreal, Québec

194. TWORK, Gregory (H.J. Patrocinio)
(title "to be announced")
Currently: M.Sc. student, Medical Physics Unit, McGill University, Montreal, Québec

APPENDIX IV.

Ph.D. DEGREES IN MEDICAL PHYSICS : 1983-2010

MEDICAL PHYSICS UNIT : McGILL UNIVERSITY

(year of Ph.D., major department, and supervisor are indicated in parentheses)

Twenty of the 29 Ph.D. degrees were conferred through the McGill Physics Department, one through Neurology-Neurosurgery, one through Electrical Engineering, and on through Biomedical Engineering. Currently, the MPU only accepts Ph.D. students through the Physics Department.

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1. **FALLONE, B. Gino** (1983: Physics - *E.B. Podgorsak*)
   Charge transport in electrostatic radiography
   Current position: Director of Medical Physics, Department of Medical Physics, Cross Cancer Centre, Edmonton, AB

2. **MAWKO, George** (1989: Ad Hoc: Neurology - *T.M. Peters*)
   Three dimensional analysis of digital subtraction angiograms for stereotactic neurosurgery planning
   Current position: Medical Physicist, Department of Diagnostic Imaging, Queen Elizabeth II Health Centre, Halifax, NS

3. **PIKE, G. Bruce** (1990: Electrical Engineering - *T.M. Peters*)
   Signal behavior in MR angiography using rapid field-echo sequences
   Current position: Director, McConnell Brain Imaging Centre, Montreal Neurological Institute, Montreal, QC

4. **BLAIS, Noël** (1990: Physics - *E.B. Podgorsak*)
   Modified Fermi-Eyges electron scattering in tissue-equivalent media
   Current position: Medical Physicist, Département. de Radio-Oncologie, CHUM / Hôpital Notre-Dame, Montreal, QC

5. **SIXEL, Katharina** (1993: Physics - *E.B. Podgorsak*)
   Measurements and Monte Carlo simulations of x-ray beams in radiosurgery
   Current position: Division of Medical Physics, Toronto Sunnybrook Regional Cancer Centre, Toronto, ON

6. **HENRI, Chris** (1993: Biomedical Engineering - *T.M. Peters*)
   Three-dimensional modelling and reconstruction of cerebral vasculature
   Current position: Director, IntelRad, Montreal, QC

7. **MACDONALD, Brennan** (1994: Physics - *B.G. Fallone*)
   Charge transport and storage in the radiation
   Current position: Chief of Medical Physics, Department of Medical Physics, Elliot Hospital, Manchester, NH

8. **AUDET, Chantal** (1995: Physics - *L.J. Schreiner*)
   NMR-dose response studies of gel systems for 3-D dosimetry with MRI
   Current position: Medical Physicist, Department of Radiation Oncology, Palo Alto Medical Foundation, Palo Alto, CA

9. **WANG, Hui** (1996: Physics - *B.G. Fallone*)
Development of a portal imager and of tools for radiation treatment verification
Current position: Medical Physicist,
Upstate Medical Physics, Victor, NY

10. **WANG, Bing** (1997: Physics - *C.J. Thompson*)
Measurement of evoked vascular response to cerebral activation PET
Current position: Clerical college, Kentucky

11. **ZANKOWSKI, Corey** (1997: Physics - *E.B. Podgorsak*)
Calibration of photon and electron beams with an extrapolation chamber
Current position: Product Manager, Treatment Planning Systems,
Varian Oncology Systems, Helsinki, Finland

12. **HRISTOV, Dimitre** (1998: Physics - *B.G. Fallone*)
Development of techniques for optimization and verification of radiation tomography
Current position: Siemens Medical Solutions, Inc., Oncology Care Systems,
Concord, CA

13. **CURTIN-SAVARD, Arthur** (1998: Physics - *E.B. Podgorsak*)
Delivery and verification of intensity-modulated x-ray beams in radiotherapy
Current position: Co-Founder, Cardinal Medical Physics Services,
Montpelier, VT

14. **FALCO, Tony** (1999: Physics - *B.G. Fallone*)
Analysis of metal/film and novel metal/a-Se portal detectors
Current position: Co-Founder, Resonant Medical, Inc.,
Montreal, QC

15. **LACHAÎNE, Martin** (2001: Physics - *B.G. Fallone*)
Portal imaging with a direct-detection active matrix flat panel imager
Current position: Medical Physicist, Resonant Medical, Inc.,
Montreal, QC

16. **DEBLOIS, François** (2001: Physics - *E.B. Podgorsak*)
Dose measurement in heterogeneous phantoms with an extrapolation chamber
Current position: Chief Physicist, Department of Radiation Oncology,
Sir M.B. Davis Jewish General Hospital, Montreal, Québec

17. **BERCIER, Yanic** (2002: Physics – *D.H. Hristov*)
Image fusion for radiosurgery of arteriovenous malformations
Current position: Research Scientist, Department of Systems Engineering (PET/CT),
CTI, Knoxville, TN

18. **ABDEL-RAHMAN, Wamied** (2004: Physics – *E.B. Podgorsak*)
A study of the build-up region of megavoltage radiation beams
Current position: Medical physicist, Department of Medical Physics,
McGill University Health Centre, Montreal, QC

19. **JARRY, Geneviève** (2007: Physics – *F. Verhaegen*)
Study of novel techniques for verification imaging and patient dose reconstruction in external beam radiation therapy
Current position: Medical physicist, Département de Radio-oncologie,
Hôpital Maisonneuve-Rosemont, Montreal, QC

20. **AL-YAHYA, Khalid** (2007: Physics – *J. Seuntjens*)
Energy modulated electron therapy: Design, implementation, and evaluation of a novel method of treatment planning and delivery
Current position: Medical physicist, Department of Radiation Oncology,
KFUPM, Riyadh, Saudi Arabia

21. **STEWART, Kristin** (2007: Physics – *J. Seuntjens*)
The development of new devices for accurate radiation dose measurement: A guarded liquid ionization chamber and an electron sealed water calorimeter
Current position: Clinical Physicist, Department of Radiation Oncology, University of Saskatchewan, Saskatoon, SK

22. **HEATH, Emily** (2008: Physics – *J.P. Seuntjens*)
4D Monte Carlo investigation of organ motion in radiotherapy for lung cancer
Current position: Postdoctoral Fellow, DKFZ, Heldelberg, Germany

23. **SHAM, Edwin O.H.** (2008: Physics – *E.B. Podgorsak, J.P. Seuntjens*)
Physical parameters of very small diameter 10 MV x-ray beams for linac-based stereotactic radiosurgery
Current position: Medical physicist, QE II Health Sciences Center, Nova Scotia Cancer Centre, Halifax, NS

2009 (4 graduates)

24. **BAZALOVA, Magdalena** (2009: Physics - *F. Verhaegen*)
The use of computed tomography images in Monte Carlo treatment planning
Current position: Post-doctoral Fellow, Stanford University, Stanford, CA

25. **JABBARI, Keyvan** (2009: Physics - *J. Seuntjens*)
Development of a fast Monte Carlo code for dose calculation in a treatment planning and feasibility study of high contrast portal imaging
Current position: Physicist, Tehran, Iran

26. **LEVESQUE, Ives** (2009: Physics - *G.B. Pike*)
(title "to be confirmed")
Current position: Post-doctoral fellow, Stanford University, Stanford, CA

27. **POON, Emily** (2009: Physics - *F. Verhaegen*)
(title "to be confirmed")
Current position: Resident, Department of Medical Physics, McGill University Health Centre, Montreal, QC

2010 (2 graduates)

28. **FRASER, Danielle** (Physics - *F. Verhaegen*)
Image guided radiation therapy applications for head and neck, prostate, and breast cancers using 3D ultrasound imaging and Monte Carlo dose calculations
Current position: Resident, Department of Medical Physics, Ottawa Hospital Cencer Centre, Ottawa, ON

29. **SARFEHNIA, Arman** (Physics - *J. Seuntjens, E.B. Podgorsak*)
(title "to be confirmed")
Current position: Resident, Department of Medical Physics, McGill University Health Centre, Montreal, QC

.

Graduation date "to be confirmed"

30. **ALEXANDER, Andrew** (Physics - *J. Seuntjens, F. DeBlois*)
(title "to be confirmed")
Currently employed: Ph.D. student, Medical Physics, McGill University, Montreal, QC

31. **CHUNG, Eunah** (Physics – *J. Seuntjens*)
(title "to be confirmed")
Currently employed: Ph.D. student, Medical Physics, McGill University, Montreal, QC

32. **CONNELL, Tanner** (Physics – *J. Seuntjens*)
(title "to be confirmed")
Currently employed: Ph.D. student, Medical Physics, McGill University, Montreal, QC

33. **LEE, Sangkyu** (Physics – *I. El Naqa, J. Seuntjens*)
(title "to be confirmed")
Currently employed: Ph.D. student, Medical Physics, McGill University, Montreal, QC

APPENDIX V.

BASIC DEMOGRAPHIC DATA

for the 184 M.Sc. and 29 Ph.D. GRADUATES

of the MEDICAL PHYSICS PROGRAMS

at McGILL UNIVERSITY

M.Sc. GRADUATES IN MEDICAL PHYSICS : 184

1980 – December 2010

MEDICAL PHYSICS UNIT : McGILL UNIVERSITY

Total number of M.Sc. graduates in medical physics:		**184**
Graduates' origin:	Quebec	61/184
	another Canadian province	57/184
	USA	10/184
	another country	56/184
Working in medical physics:		**162/184**
	in Quebec	65/162
	in another Canadian province	44/162
	in the USA	37/162
	in another country	16/162
Currently Ph.D. student:		12/184
Origin of M.Sc. graduates currently working in Quebec:		**65/184**
	Quebec	33/65
	another Canadian province	11/65
	USA	1/65
	another country	20/65
M.Sc. graduates of Quebec origin:		**61/184**
	working in medical physics	53/61
	in Quebec	35/61
	in another Canadian province	5/61
	in the USA	11/61
	in another country	2/61
Currently Ph.D. student:		1/61

Ph.D. GRADUATES IN MEDICAL PHYSICS : 29

1983 – December 2010

MEDICAL PHYSICS UNIT : McGILL UNIVERSITY

Total number of Ph.D. graduates in medical physics:		**29**
Graduates' origin:	Quebec	9/29
	another Canadian province	11/29
	USA	0/29
	another country	9/29
Working in medical physics:		**28/29**
	in Quebec	10/29
	in another Canadian province	6/29
	in the USA	9/29
	in another country	3/29
Origin of Ph.D. graduates currently working in Quebec:		**10/29**
	Quebec	5/10
	another Canadian province	2/10
	USA	0/10
	another country	3/10
Ph.D. graduates of Quebec origin:		**9/29**
	working in medical physics	9/29
	in Quebec	5/9
	in another Canadian province	1/9
	in the USA	3/9
	in another country	0/9

Graduates of the Accredited Two-year Residency Training Program in Radiation Oncology Physics at McGill

No.	Name	Date of grad	Background at entry	Current position	Current address
1	Belal Moftah, Ph.D.	Dec '99	Ph.D. (high energy physics) U. British Columbia	Chief physicist	Dept of Biomedical Physics, King Faisal Specialist Hospital & Research Centre, Jeddah, Saudi Arabia
2	Lara Dyke, Ph.D.	May '00	M.Sc. (medical physics) U. Alberta	Clinical medical physicist	Varian Medical Systems, Miami, Florida, USA
3	Tony Falco, Ph.D.	Dec '00	Ph.D. (medical physics) McGill U	Clinical medical physicist	Resonant Medical, Incorporated Montreal, Quebec
4	Slobodan Devic, Ph.D.	Mar '02	Post-graduate training Washington U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
5	Kavita Murthy, M.Sc.	May '02	M.Sc. (medical physics) McGill U	Clinical medical physicist	Canadian Nuclear Safety Commission Ottawa, Ontario
6	Jennifer Barker, M.Sc.	Dec '02	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
7	François DeBlois, Ph.D.	Jul '03	Ph.D. (medical physics) McGill U.	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
8	Siobhan Ozard, Ph.D.	Nov '03	Ph.D. (medical physics) U. British Columbia	Clinical medical physicist	Dept of Medical Physics, Windsor Regional Cancer Centre Windsor, Ontario
9	Wamied Abdel-Rahman, Ph.D.	Dec '05	Ph.D. (medical physics) McGill U.	Clinical medical physicist	Dept of Radiation Oncology, King Faisal Specialist Hospital, Damman, Saudi Arabia
10	Yizhen Wang, M.Sc.	May '06	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Credit Valley Hospital, Mississauga, Ontario
11	Li Heng Liang, M.Sc.	Aug '06	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
12	Nada Tomic, M.Sc.	Aug '06	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
13	Gabriela Stroian, Ph.D.	Aug '07	Ph.D. (theoretical physics) U Paul Sabatier, France	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
14	Eric Reynard, M.Sc.	Mar '09	M.Sc. (medical physics) McGill U	Clinical medical physicist	PEI Cancer Treatment Centre, Queen Elizabeth Hospital, Charlottetown, Prince Edward Island
15	Kristin Marchant, Ph.D.	Mar '09	Ph.D. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Allan Blair Cancer Centre, Regina, Saskatchewan
16	Krum Asiev, M.Sc.	Jun '09	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
17	Ismail Aldahlawi, M.Sc.	Jun '10	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, King Faisal Specialist Hospital, Damman, Saudi Arabia

Currently registered residents:

18	Emily Poon, Ph.D.	May '11	Ph.D. (medical physics) McGill U	Clinical medical physicist	Dept of Medical Physics, McGill University Health Centre Montreal, Quebec
19	Jonathan Thébaut, M.Sc.	May '11	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
20	John Kildea, M.Sc.	Feb '12	Postdoc (astrophysics) Harvard U	Clinical medical physicist	Dept of Medical Physics, McGill University Health Centre Montreal, Quebec
21	Arman Sarfehnia, Ph.D.	Feb '12	Ph.D. (medical physics) U Western Ontario	Clinical medical physicist	Dept of Medical Physics, McGill University Health Centre Montreal, Quebec
22	Stephen Davis, Ph.D.	Aug '12	Ph.D. (medical physics) U Wisconsin	Clinical medical physicist	Dept of Medical Physics, McGill University Health Centre Montreal, Quebec
23	Joseph Holmes, M.Sc.	Aug '12	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec

APPENDIX VII.

COURSE INSTRUCTORS : ACADEMIC YEAR 2010-2011

MEDICAL PHYSICS UNIT : McGILL UNIVERSITY

	Course #	Course Title	Instructor(s)
Fall semester			
1.	MDPH 601	*Radiation Physics* *	**E.B. Podgorsak, J. Seuntjens**
2.	MDPH 611	*Medical Electronics*	**P. Léger**
3.	MDPH 613	*Health Physics*	**J. Kildea, M.D.C. Evans**
4.	MDPH 614	*Physics of Diagnostic Radiology* *	**I. El Naqa**
5.	MDPH 615	*Physics of Nuclear Medicine* *	**S. Devic**
6.	MDPH 616D (Part I)	*Selected Topics in Medical Physics*	**E. Soisson, W. Parker**
Winter semester			
7.	MDPH 602	*Applied Dosimetry*	**E.B. Podgorsak**
8.	MDPH 603	*Laboratory in Radiation Physics*	**W. Parker, J. Seuntjens, M.D.C. Evans**
9.	MDPH 607	*Physics of Medical Imaging* *	**A. Reader, G.B. Pike**
10.	MDPH 608	*Lab in Diag. Radiol. & Nucl. Med.*	**G. Hegyi, G. Stroian**
11.	MDPH 609	*Radiation Biology*	**S. Lehnert**
12.	MDPH 612	*Computers in Medical Imaging*	**H.J. Patrocinio, F. DeBlois**
13.	MDPH 616D (Part II)	*Selected Topics in Medical Physics*	**E. Soisson, W. Parker**
14.	563-625 D	*Thesis Research*	**(*individual supervisors*)**

* designates core courses

APPENDIX VIII.

McGill University - Medical Physics Unit Teaching Evaluation Summary – Fall 2009

INSTRUCTOR	#1	#2	#3	#4	#5	#6	#7	TOT.	AVG.
Number of respondents per instructor	11	12	10	10	10	10	10		
A. Course material and presentation									
1. Individual classes are well organized.	4.1	4.3	4.0	4.4	2.6	4.0	2.9	**26.32**	**3.8**
2. Instructor develops matter in a logical manner.	3.8	4.3	3.6	4.4	3.0	3.9	2.9	**25.95**	**3.7**
3. Instructor makes material clear and interesting.	3.8	4.1	3.4	4.0	2.4	3.7	2.5	**23.90**	**3.4**
4. Instructor encourages and stimulates student thinking.	4.1	4.3	3.4	4.0	3.0	4.2	3.5	**26.44**	**3.8**
5. Instructor incorporates up-to-date information in course.	4.0	4.5	3.7	4.0	3.7	4.2	3.8	**27.88**	**4.0**
6. The pace of the course is satisfactory.	4.2	3.6	4.2	3.5	3.5	3.8	2.8	**25.57**	**3.7**
7. The instructor speaks clearly.	4.4	4.1	4.3	4.3	3.2	4.0	3.4	**27.69**	**4.0**
8. The instructor makes good use of the blackboard or audiovisual aids.	4.0	4.3	4.3	3.9	3.8	4.0	3.6	**27.92**	**4.0**
B. Interaction with instructor									
9. The instructor welcomes questions in class.	4.3	4.6	3.9	4.4	4.2	4.5	4.5	**30.42**	**4.3**
10. The instructor is available for consultation outside classes.	4.0	4.7	3.8	3.6	3.8	4.6	4.1	**28.43**	**4.1**
11. Consultation with the instructor is helpful.	4.0	4.5	4.2	3.9	4.0	4.3	3.9	**28.75**	**4.1**
C. Assignments and examinations									
12. The mid-term exam questions are fair.	4.3	3.8	4.0	3.0	3.2	4.0	3.0	**25.33**	**3.6**
13. The mid-term exam marking and grading are fair.	4.3	3.4	4.0	2.4	4.2	3.9	2.0	**24.19**	**3.5**
14. Assignments contribute substantially to students' understanding of course material.	4.0	3.3	4.0	2.7	4.0	3.8	3.3	**25.13**	**3.6**
15. Assignments are returned sufficiently promptly for the student to benefit from corrections.	4.5	5.0		4.0	4.0	4.0	3.9	**25.35**	**4.2**
D. Overall assessment									
16. Would like to take another course from the same instructor.	4.8	3.9	3.9	3.4	2.3	4.2	3.0	**25.57**	**3.7**
17. The instructor's overall teaching ability is excellent.	4.3	4.0	3.8	3.9	2.8	3.8	3.1	**25.66**	**3.7**
Overall average course rating for instructor.	4.16	4.16	3.90	3.75	3.39	4.05	3.31		
								Overall Average/5	***3.82***

McGill University - Medical Physics Unit Teaching Evaluation Summary - Winter 2010

INSTRUCTOR	#1	#2	#3	#4	#5	#6	#7	#8	#9	TOT.	AVG.
Number of respondents per instructor	7	9	7	10	15	10	15	8	7		
A. Course material and presentation											
1. Individual classes are well organized.	3.7	4.0	3.6	4.4	4.6	4.4	3.8	4.5	4.1	**37.13**	**4.1**
2. The instructor develops subject matter in a logical manner.	3.6	3.8	3.0	4.4	4.5	4.5	3.5	4.4	4.0	**35.69**	**4.0**
3. The instructor makes the material clear and interesting.	3.4	3.1	2.4	4.2	4.5	4.6	3.7	4.1	4.1	**34.17**	**3.8**
4. The instructor encourages and stimulates student thinking.	3.9	3.4	2.9	4.3	4.5	4.4	3.9	4.0	4.0	**35.33**	**3.9**
5. The instructor incorporates up-to-date information in the course.	3.7	3.8	3.3	4.4	4.7	4.6	4.4	4.1	4.0	**36.88**	**4.1**
6. The pace of the course is satisfactory.	3.9	3.7	3.6	4.5	4.3	4.2	3.6	4.3	3.7	**35.63**	**4.0**
7. The instructor speaks clearly.	3.7	4.0	3.0	4.4	4.4	4.6	4.1	4.3	4.1	**36.57**	**4.1**
8. The instructor makes good use of the blackboard or audiovisual aids.	3.5	4.0	3.1	4.5	4.6	4.6	3.5	4.3	4.0	**36.13**	**4.0**
B. Interaction with instructor											
9. The instructor welcomes questions in class.	4.3	4.1	3.7	4.5	4.7	4.8	4.6	4.5	4.3	**39.58**	**4.4**
10. The instructor is available for consultation outside classes.	3.4	4.3	4.5	4.3	4.5	4.7	4.3	4.5	3.6	**38.11**	**4.2**
11. Consultation with the instructor is helpful.	3.7	4.3	4.5	4.4	4.5	4.6	4.4	4.3	4.5	**39.23**	**4.4**
C. Assignments and examinations											
12. The mid-term exam questions are fair.				4.0	4.2		4.0	4.4		**16.58**	**4.1**
13. The mid-term exam marking and grading are fair.				4.5	4.2		3.8	3.1		**15.66**	**3.9**
14. Assignments contribute substantially to students' understanding of course material.	3.3	3.7	3.8	4.3	4.1	4.4	3.9	3.8	3.8	**35.05**	**3.9**
15. Assignments returned sufficiently promptly for students to benefit from corrections.	2.0		4.2	4.3	4.5	4.5	3.7	4.1	1.2	**28.54**	**3.6**
D. Overall assessment											
16. You would like to take another course from the same instructor.	2.9	3.2	2.1	4.4	4.4	4.6	3.9	3.6	4.0	**33.18**	**3.7**
17. The instructor's overall teaching ability is excellent.	2.9	3.4	3.0	4.4	4.5	4.6	3.9	3.9	4.2	**34.79**	**3.9**
Overall average course rating for instructor.	3.45	3.77	3.38	4.37	4.46	4.54	3.94	4.12	3.84		

Overall Average/5	***4.00***

McGill University - Medical Physics Unit Teaching Evaluation Summary – Fall 2010

INSTRUCTOR	#1	#2	#3	#4	#5	#6	#7	TOT.	AVG.
Number of respondents per instructor	12	13	11	13	13	12	12		
A. Course material and presentation									
1. Individual classes are well organized.	4.0	4.8	4.0	4.5	4.9	3.3	3.8	**29.39**	**4.2**
2. Instructor develops matter in a logical manner.	3.9	4.8	3.8	4.9	4.8	3.1	3.3	**28.68**	**4.1**
3. Instructor makes material clear and interesting.	4.3	5.0	3.4	4.8	4.6	2.6	3.2	**27.83**	**4.0**
4. Instructor encourages and stimulates student thinking.	4.3	4.6	4.3	4.8	4.7	4.2	4.3	**31.26**	**4.5**
5. Instructor incorporates up-to-date information in course.	4.2	4.4	4.5	4.3	4.8	4.4	4.5	**30.93**	**4.4**
6. The pace of the course is satisfactory.	4.7	4.8	3.9	3.6	4.7	3.5	4.0	**29.23**	**4.2**
7. The instructor speaks clearly.	4.8	4.8	3.9	4.8	4.8	2.9	4.3	**30.29**	**4.3**
8. The instructor makes good use of the blackboard or audiovisual aids.	3.7	4.9	4.2	4.6	4.8	2.9	4.0	**29.15**	**4.2**
B. Interaction with instructor									
9. The instructor welcomes questions in class.	4.8	5.0	4.9	5.0	4.9	4.2	4.8	**33.50**	**4.8**
10. The instructor is available for consultation outside classes.	4.9	4.7	4.8	3.5	4.9	4.6	4.2	**31.53**	**4.5**
11. Consultation with the instructor is helpful.	5.0	4.7	4.7	4.6	4.7	3.4	4.5	**31.57**	**4.5**
C. Assignments and examinations									
12. The mid-term exam questions are fair.	4.8	4.9	4.6	4.5	4.6	4.0	4.8	**32.14**	**4.6**
13. The mid-term exam marking and grading are fair.	4.8	4.9	4.6	4.4	4.8	4.3	4.3	**32.16**	**4.6**
14. Assignments contribute substantially to students' understanding of course material.	4.5	4.7	4.5	4.3	4.5	3.6	4.3	**30.38**	**4.3**
15. Assignments are returned sufficiently promptly for the student to benefit from corrections.	5.0	4.8	5.0	4.5	4.8	2.3	4.5	**31.06**	**4.4**
D. Overall assessment									
16. Would like to take another course from the same instructor.	4.5	4.9	3.8	4.7	4.8	2.6	3.6	**28.90**	**4.1**
17. The instructor's overall teaching ability is excellent.	4.3	4.8	3.8	4.8	4.8	2.5	3.4	**28.45**	**4.1**
Overall average course rating for instructor.	4.48	4.81	4.28	4.52	4.77	3.44	4.09		
								Overall Average/5	***4.34***

APPENDIX IX.

STUDENTS BEGINNING THEIR FIRST YEAR OF M.Sc. STUDIES IN MEDICAL PHYSICS IN SEPTEMBER 2010

(*major department and supervisor are indicated in parentheses; number following the major department indicates year of M.Sc. study in Fall 2010*)

1. **ARCHAMBAULT, Laurie** (MPU-1, *"TBA"*)
   (title of thesis not yet available)
2. **BEKERAT, Hamed** (MPU-1, *"TBA"*)
   (title of thesis not yet available)
3. **BERMAN, Avery** (MPU-1, *Pike*)
   (title of thesis not yet available)
4. **CARRIER-VALLIÈRES, Martin** (MPU-1, *"TBA"*)
   (title of thesis not yet available)
5. **DYESS, Amanda** (MPU-1, *"TBA"*)
   (title of thesis not yet available)
6. **KHATCHADOURIAN, Rafael** (MPU-1, *"TBA"*)
   (title of thesis not yet available)
7. **LEDUC, Vincent** (MPU-1, *"TBA"*)
   (title of thesis not yet available)
8. **LETOURNEAU, Étienne** (MPU-1, *"TBA"*)
   (title of thesis not yet available)
9. **MILROY, Desmond** (MPU-1, *"TBA"*)
   (title of thesis not yet available)
10. **NASONKIN, Sergey** (MPU-1, *"TBA"*)
    (title of thesis not yet available)
11. **RENAUD, James** (MPU-1, *"TBA"*)
    (title of thesis not yet available)
12. **TOLTZ, Allison** (MPU-1, *"TBA"*)
    (title of thesis not yet available)
13. **WATSON, Peter** (MPU-1, *"TBA"*)
    (title of thesis not yet available)

These students started their studies in September 2010, thus will only select their supervisor(s) and start their M.Sc. thesis research work in May 2011.

APPENDIX X.

STUDENTS CONTINUING THEIR SECOND YEAR OF M.Sc. STUDIES IN MEDICAL PHYSICS IN SEPTEMBER 2010

(*major departments and supervisors are indicated in parentheses; number following the major department indicates year of M.Sc. study in Fall 2010*)

1. **ALONSO ORTIZ** (MPU-2, *Pike*)
   (title of thesis not yet available)
2. **CARLINI, Lina** (MPU-2, *Nadeau*)
   (title of thesis not yet available)
3. **MITROU, Ellis** (MPU-2, *DeBlois*)
   (title of thesis not yet available)
4. **MORCOS, Marc** (MPU-2, *DeBlois*)
   (title of thesis not yet available)
5. **PAPACONSTADOPOULOS, Pavlos** (MPU-2, *Seuntjens*)
   (title of thesis not yet available)
6. **SHIN, Naomi** (MPU-2*, Parker*)
   (title of thesis not yet available)
7. **SINGH, Khushdeep** (MPU-2, *Devic*)
   (title of thesis not yet available)
8. **THAKUR, Varun** (MPU-2, *Parker*)
   (title of thesis not yet available)
9. **TWORK, Gregory** (MPU-2, *Patrocinio*)

These students began their M.Sc. tudies in September 2009, completed the Fall and Winter didactic semesters of the 2009-2010 academic year, and are currently completing their M.Sc. thesis research. All are expected to submit their theses by June 2011.

APPENDIX XI.

STUDENTS CURRENTLY WORKING ON Ph.D. PROJECTS IN MEDICAL PHYSICS

(*major department and supervisors are indicated in parentheses*)

1. **ALEXANDER, Andrew** (Physics – *J. Seuntjens*)
   (title not yet available)
   Expected to submit thesis: June 2011 (began Ph.D. studies in September 2006)

2. **CHUNG, Eunah** (Physics – *J. Seuntjens*)
   Dosimetry and non-compliant beams
   Expected to submit thesis: date not yet available (began Ph.D. studies in January 2009)

3. **CONNELL, Tanner** (Physics – *J. Seuntjens)*
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2009)

4. **LEE, Sangkyu** (Physics – *I. El Naqa, J. Seuntjens*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2010)

APPENDIX XII.

PUBLICATIONS

by members of the Medical Physics Unit : 2009 calendar year
(*names of MPU staff members are underlined, students are indicated by* †)

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1. M.S. Gossman, J. Seuntjens, K.J. Christian, M.F. Serban, R.C. Lawson, M.A. Robertson, J.P. Lopez, T.E. Justice, *Dosimetric effects near implanted vascular access ports: an examination of external photon beam dose calculations*, J. Appl. Clin. Med. Phys. **10**(3) 3-15 (2009).
2. D. Fraser†, W. Parker, J. Seuntjens, *Characterization of three ionization chambers for patient specific IMRT QA*, J. Appl. Clin. Med. Phys. **10**(4), 241-251 (2009).
3. S. Lotfipour, E. Ferguson, G. Leonard, M. Perron, G.B. Pike, L. Richer, J.R. Séguin, R. Toro, S. Veillette, Z. Pausova, T. Pau, *Orbitofrontal cortex and drug use during adolescence: Role of prenatal exposure to maternal smoking and BDNF genotype*, Arch. Gen. Psych. **66**(11), 1244-1252 (2009).
4. P.S. Giacomini, I. Levesque†, L. Ribeiro, S. Narayanan, S. Francis, G.B. Pike, D.L. Arnold, *Measuring demyelination and remyelination in acute multiple sclerosis lesion voxels*, Arch. Neurol. **66**(3) (2009).
5. S.J. Spencer, D. Almiron Bonnin, J.O. Deasy, J.D. Bradley, I. El Naqa, *Bioinformatics methods for learning radiation-induced lung inflammation from heterogeneous retrospective and prospective data*, J. Biomed. Biotech. **2009**, Article ID 892863 (2009).
6. R. Toro, M. Chupin, L. Garnero, M. Perron, G.B. Pike, A. Pitiot, L. Richer, G. Leonard, S. Veillette, Z. Pausova, T. Paus, *Brain volumes and Val66Met polymorphism of the BDNF gene: Local or global effects?* Brain Structure & Function, Epub February 10, 2009; **213**(6), 501-509 (2009).
7. P. Rosa-Neto, B. Wängler, L. Iovkova, G. Boening, A.J. Reader, K. Jurkschat, E. Schirrmacher, *[18F]SiFA-isothiocyanate: A new highly effective radioactive labeling agent for lysine-containing proteins*, Chem. Biochem. (10), 1321-1324 (2009).
8. X. Hu, D.M. Macdonald, P.C. Huettner, Z. Feng, I. El Naqa, J.K. Schwarz, D.G. Mutch, P.W. Grigsby, S.N. Powell, X. Wang, *An miR-200 microRNA cluster as prognostic marker in advanced ovarian cancer*, Gynec. Oncol. **114** (3), 457-464 (2009).
9. A. Hervé, G. Leonard, M. Perron, G.B. Pike, A. Pitot, A. Richer, S. Veillette, Z. Pausova, T. Paus, *Handedness, motor skills and maturation of the corticospinal tract in the adolescent brain*, Human Brain Mapping, ePub date February 25, 2009; **30**(10), 3151-3162 (2009).
10. I.R. Leppert, C.R. Almli, R.C. McKinstry, R.V. Mulkern, C. Pierpaoli, M.J. Rivkin, G.B. Pike, The Brain Development Cooperative Group, *T_2 relaxometry of normal paediatric brain development*, J. Magn. Reson. Imag. **29**(2), 258-267 (2009).
11. J.J. Chen, G.B. Pike, *Human whole blood T_2 relaxometry at 3 tesla*, J. Magn. Reson. Med. **61**(2), 249-254 (2009).
12. I.R. Leppert, R.C. Almli, R.C. McKinstry, R.V. Mulkern, C. Pierpaoli, M.J. Rivkin, G.B.Pike, Brain Development Cooperative Group, *T2 relaxometry of maturing brain*, Response to Xiao-Qi Ding's Letter to the Editor, J. Magn. Reson. Imag. 912 (2009).
13. I. Levesque†, G.B. Pike, *Characterizing healthy and diseased white matter using quantitative magnetization transfer and multi-component T2 relaxometry: A unified view via a four-pool model*, J. Magn. Reson. Med. **62**(6), 1487-1496 (2009).
14. M.N. Anjum†, W. Parker, R. Ruo, I. Aldahlawi†, M. Afzal, *IMRT quality assurance using a second treatment planning system*, Med. Dosim. (2009) [Epub ahead of print].
15. D. Yang, S.R. Chaudhari, S.M. Goddu, D. Pratt, D. Khullar, J.O. Deasy, I El Naqa, *Deformable registration of abdominal kilovoltage treatment planning CT and tomotherapy daily megavoltage CT for treatment adaptation*, Med. Phys. **36**(2), 329-338 (2009).
16. S. Devic, N. Tomic, C. Soares, E.B. Podgorsak, *Optimizing the dynamic range extension of a radiochromic film dosimetry system*, Med. Phys. **36**, 429-437 (2009).

17. K. Jabbari, P. Keall, J. Seuntjens, *Considerations and limitations of fast Monte Carlo electron transport in radiation therapy based on pre-calculated data,* Med. Phys. **36**, 530-40 (2009).
18. W. Abdel-Rahman, M.D.C. Evans, L. Serré, J.P. McCaffrey, E.B. Podgorsak, J. Seuntjens, *Clinic-based transfer of the $N_{D,W}$ calibration coefficient using a linear accelerator,* Med Phys **36**, 929-938 (2009).
19. S. Portnoy, S. Kale, A. Feintuch, C.L. Tardif, G.B. Pike, M. Henkelman, *Information content of SNR/resolution tradeoffs in three dimensional magnetic resonance imaging*, Med. Phys. **36**(4), 1442-1451 (2009).
20. C. Furstoss, B. Reniers, M.J. Bertrand, E. Poon†, J-F. Carrier, B.M. Keller, J.P. Pignol, L. Beaulieu, F. Verhaegen, *Monte Carlo study of LDR seed dosimetry with an application in a clinical brachytherapy breast implant,* Med. Phys. **36**, 1848-1858 (2009).
21. E. Poon†, F. Verhaegen, *Development of a scatter correction technique and its application to HDR ^{192}Ir multicatheter breast brachytherapy,* Med. Phys. **36**, 3703-3713 (2009).
22. E. Poon†, F. Verhaegen, *A correction-based analytical dose calculation method for HDR ^{192}Ir brachytherapy,* Med. Phys. **36**, 3982-3994 (2009).
23. H. Bouchard, J. Seuntjens, J-F. Carrier, I Kawrakow, *Ionization chamber gradient effects in non-standard beam configurations,* Med. Phys. **36**(10), 4654-4663 (2009).
24. J. Seuntjens**,** S. Duane, *Photon absorbed-dose standards*, Review Metrologia **46**(2), S39-S58 (2009).
25. B. Aubert-Broche, C. Grova C, G.B. Pike, D.L. Collins, *Clustering of atlas-defined cortical regions based on relaxation times and proton density*, NeuroImage, E-pub, 523-532 (2009).
26. C.L. Tardif, L. Collins, G.B. Pike, *Sensitivity of voxel-based morphometry analysis to choice of imaging protocol at 3 Tesla*, NeuroImage **44**(3), 827-838 (2009).
27. U. Yoon, V.S. Fonov, D. Perusse, A.C. Evans, Brain Development Cooperative Group, *The effect of template choice on morphometric analysis of pediatric brain data*, NeuroImage, Epub January 6, 2009; **45**(3), 769-777 (2009).
28. J. Perrin, G. Leonard, M. Perron, G.B. Pike, A. Ptiot, S. Veillette, Z.Pausova, T. Paus, *Sex differences in the growth of white matter during adolescence*, NeuroImage, **45**(4), 1055-1066 (2009).
29. K. Oishi, A. Faria, H. Jiang, X. Li, K. Akhter, J. Zhang, J.T. Hsu, M.I. Miller, P.C.M. van Zijl, M. Albert, G. Lyketsos, R. Woods, A.W. Toga, G.B. Pike, P. Rosa-Neto, A. Evans, J. Mazziotta, S. Mori, *Atlas-based whole brain white matter analysis using large deformation diffeomorphic metric mapping: Application to normal elderly and Alzheimer's disease participants*, NeuroImage, **46**(2), 486-499 (2009).
30. J.J. Chen, G.B. Pike. *Origins of the BOLD post-stimulus undershoot*, NeuroImage **46**, 559-568 (2009).
31. G. Massaweh, E. Schirrmacher, C. la Fougère,, M. Kovacevic,, C. Wängler, D. Jolly, P. Gravel, A.J. Reader, A. Thiel, R. Schirrmacher, *Improved work-up procedure for the production of [18F]flumazenil and first results of its use with a high-resolution research tomograph in human stroke*, Nucl. Med. Biol. **36**(7), 721-727 (2009).
32. J.J. Chen, G.B. Pike, *BOLD-specific cerebral blood volume and blood flow changes during neuronal activation in humans*, NMR in Biomed. **22**, 1054-1062 (2009).
33. I. El Naqa, P. Grigsby, A. Apte, E. Kidd, E. Donnelly, D. Khullar, S. Chaudhari, D. Yang, M. Schmitt, R. Laforest, W. Thorstad, J.O. Deasy, *Exploring feature-based approaches in PET images for predicting cancer treatment outcomes*, Pattern recognition, **42**(6), 1162-1171 (2009).
34. F. Huang, W. Parker, C.R. Freeman, *Feasibility and early outcomes of supine position craniospinal irradiation*, Pediatric Blood & Cancer, **54**(2). 322-325; DOI 10.1002/pbc.22215; 1-4 (2009).
35. I. El Naqa, J.D. Bradley, P.E. Lindsay, A.J. Hope, J.O. Deasy, *Predicting radiotherapy outcomes using statistical learning techniques*, Phys. Med. Biol. **54**, 9-30 (2009).
36. G. Poludniowski, G. Landry†, F. DeBlois, P. Evans, F. Verhaegen, *SpekCalc: A program to calculate photon spectra from tungsten anode x-ray tubes*, Phys. Med. Biol. **54**(19), pp. N433-N438 (2009).
37. D. Westerly, E.T. Soisson, Q. Chen, K. Woch, L. Schubert, G. Olivera, T. Mackie. *Treatment planning to reduce the impact of delivery errors in helical tomotherapy*, Int. J. Radiat. Oncol. Biol. Phys. **43**, 1290- 1297 (2009).
38. N. Grotus, A.J. Reader, S. Stute, J.C. Rosenwald, P. Giraud, I. Buvat, *Fully 4D list-mode reconstruction applied to respiratory-gated PET scans*, Phys. Med. Biol. **54**(6), 1705-1721 (2009).
39. L.K. Schubert, D.C. Westerly, W.A. Tomé, M.P. Mehta, E.T. Soisson, T.R. Mackie, M. Ritter, D. Khuntia, P.M. Harari, B.R. Paliwal, *A comprehensive assessment by tumor site of patient setup using daily MVCT imaging from over three thousand eight hundred helical tomotherapy treatments*, Int. J. Radiat. Oncol. Biol. Phys. **73,** 1260-1269 (2009).
40. R.J. Myerson, M.C. Garofalo, I. El Naqa, R.A. Abrams, A. Apte, W.R. Bosch, P. Das, L.L. Gunderson, T.S.

Hong, J.J. Kim, C.G. Willett, L.A. Kachnic, *Elective clinical target volumes for conformal therapy in anorectal cancer: A radiation therapy oncology group consensus panel contouring atlas*, Int. J. Radiat. Oncol. Bio. Phys. **74**(3), 824-830 (2009).

41. I. Karam, S. Devic, M. Hickeson, D. Roberge, R.E. Turcotte, C.R. Freeman, *PET/CT for radiotherapy treatment planning in patients with soft tissue sarcomas*, Int. J. Radiat. Oncol. Biol. Phys. **74**, 817-821 (2009).
42. I. Yau, T. Vuong, A. Garant, T. Ducruet, P. Doran, S. Faria, S. Liberman, C. Richard, F. Letellier, P. Charlebois, R. Loungnarath, B. Stein, S. Devic, *Hypogonadism risk from scatter radiation during pelvic radiation for patients with rectal cancer*, Int. J. Radiat. Oncol. Biol. Phys. **74**, 1481-1486 (2009).
43. W. Parker, M. Brodeur, D. Roberge, C.R. Freeman, *Standard and non-standard craniospinal radiotherapy using helical tomotherapy*, Int. J. Radiat. Oncol. Biol. Phys. **77**(3), 926-931 (2009).
44. D. Yang, J. Zheng, A. Nofal, Y. Wu, J.O. Deasy, I. El Naqa, *Techniques and software tool for 3D multimodality medical image segmentation*, Int. J. Radiat. Oncol. Infor. **1**(1), 1-22 (2009).
45. S.M. Goddu, S. Yaddanapudi, L.L. Pechenaya, S.R. Chaudhari, E.E. Klein, D. Khullar, I. El Naqa, S. Mutic, S. Wahab, L. Santanam, I. Zoberi, D.A. Low, *Dosimetric consequences of uncorrected setup errors in helical tomotherapy treatments of breast cancer patients*, Radioth. Oncol. **93**(1), 64-70 (2009).
46. E.T. Soisson, O. Sobering, D. Lucas, E. Chao, G. Olivera, W.A. Tomé, *Quality assurance of an image-guided intracranial stereotactic positioning system*, Technol. Cancer Res. Treat. **8**, 39-50 (2009).
47. J. Tang, R.M. Rangayyan, J. Xu, I. El Naqa, Y. Yang, *Computer-aided detection and diagnosis of breast cancer with mammography: Recent advances*, IEEE Trans Inform. Technol. Biomed. **13**(2), 236-251 (2009).
48. J.G. Brankov, Y. Yang, L. Wei, I. El Naqa, M.N. Wernick, *Learning a channelized observer for image quality assessment*, IEEE Trans. Med. Imag. **28**(7), 991-999 (2009).
49. C. Yang, R. Bach, J. Zheng, I. El Naqa, P.K. Woodard, Z.Z. Teng, K. Billiar, D. Tang, *In vivo IVUS-based 3D fluid-structure interaction models with cyclic bending and anisotropic vessel properties for human atherosclerotic coronary plaque mechanical analysis*, IEEE Trans. Biomed. Engin. **56**(10) (2009).
50. J.H. Oh, A. Apte, R. Al-Lozi, J.D. Bradley, I. El Naqa, *Towards prediction of radiation pneumonitis arising from lung cancer patients using machine learning approaches*, J. Radiat. Oncol. Infor. **1**(1), 30-43 (2009).
51. C. Lawton, J. Michalski**,** I. El-Naqa, D. Kuban, W.R. Lee, S. Rosentahal, A. Zietman, H. Sandler, W. Shipley, M. Ritter, R. Valicenti, C. Cattan, M. Roach, T. Pisansky, M. Seider, *Variation in the definition of clinical target volumes for pelvic nodal conformal radiation therapy for prostate cancer*, Int. J. Radiat. Oncol. Biol. Phys. **74**(2), 377-382 (2009).
52. C. Lawton, J. Michalsky, I. El-Naqa, M. Buyyounouski, W.R. Lee, C. Menard, E. O'Meara, S. Rosenthal, M. Ritter, M. Seider, *RTOG GU radiation oncology specialists reach consensus on pelvic lymph node volumes for high-risk prostate cancer*, Int. J. Radiat. Oncol. Biol. Phys. **74**(2), 383-387 (2009).
53. I. El Naqa, M. Vaidya, A. Apte, F. Dehdashti, J.O. Deasy, J.D. Bradley, *Predicting response in lung cancer from FDG-PET uptake characteristics,* Proceedings of the 11th World Congress on Medical Physics & Biomedical Engineering, Munich, Germany, September 07-12, 2009.
54. D. Yang, I. El Naqa, A. Apte Y. Wu, S.M.G. Sasa, Mutic, J.O. Deasy, D. Low, *DIRART: A software suite for deformable image registration and adaptive radiotherapy research*, Proceedings of the 11th World Congress on Medical Physics & Biomedical Engineering, Munich, Germany, September 07-12, 2009.
55. C.L. Tardif, J.B. Richardson, C, Lepage, A.C. Evans, G.B. Pike, *Quantitative postmortem MR imaging of cortical multiple sclerosis lesions*, MIAMS (Medical Image Analysis in Multiple Sclerosis) 2009 MICCAI (Medical Imaging Computing and Computer Assisted Intervention), London, UK, September 20-24, 2009.
56. V. Fonov, I. Leppert, G.B. Pike, D.L. Collins. *Voxel-wise T2 relaxometry of normal pediatric brain development in 326 healthy infants and toddlers*, 12th International Conference on Medical Image Computing & Computer Assisted Intervention (MICCAI) 2009: Image Analysis for the Developing Brain Workshop (IABD), London, UK, September 20-24, 2009.
57. P. Mamayyez Siahkal, J.S.W. Campbell, P. Savadjiev, G.B. Pike, K. Siddiqi, *Beyond crossing fibres: Probabilistic tractography of complex subvoxel fibre geometries*, 12th International Conference on Medical Image Computing & Computer Assisted Intervention (MICCAI) 2009, Diffusion Modelling & the Fibre Cup Workshop, London, UK, September 20-24, 2009.
58. J.H. Oh, R. Al-Lozi, I. El Naqa, *Application of machine learning techniques for prediction of radiation pneumonitis in lung cancer*, Proceedings of the International Conference on Machine Learning & Applications (ICMLA), Miami, FL, November 2009.
59. T.W. Schiller, Y. Chen, I. El Naqa, J.O. Deasy, *Improving clinical relevance in ensemble support vector machine models of radiation pneumonitis risk*, Proceedings of the International Conference on Machine Learning & Applications (ICMLA), Miami, FL, November 2009.

60. J.H. Oh, I. El Naqa, *Bayesian network learning for detecting reliable interactions of dose-volume related parameters in radiation pneumonitis*, Proceedings of the International Conference on Machine Learning and Applications (ICMLA), Miami, FL, November 2009.
61. S. Mutic, S. Oddiraju, P. Parikh, R. Brame, I. El Naqa, D. Low, B. Wu, *Long-term impact of electronic near-hit and error reporting system on process improvement and patient safety in radiation oncology*, Proceedings of the International Conference on Modern Radiotherapy, Versailles, France, December 02-04, 2009, pp. 104-105.
62. J.S.W. Campbel, K. Siddiqi, G.B. Pike, *Applications and limitations of crossing fibre diffusion MRI*, Proceedings of the International Society for Magnetic Resonance in Medicine, 18th Scientific Meeting & Exhibition, Honolulu, Hawai'i, 2009, pp. 04-06.
63. C.G. Soares, S. Trichter, S. Devic, *Radiochromic film*, Chapter 23, AAPM Summer School, Clinical Dosimetry Measurements in Radiotherapy, Colorado College, Colorado Springs, CO, USA (2009).
64. I. El Naqa, J.H. Oh, Y. Yang, *Online learning of relevance feedback from expert readers for mammogram retrieval*, Proceedings of the Asilomar Conference on Signals & Systems, Monterey, CA, 2009.

PUBLICATIONS

by members of the Medical Physics Unit : 2010 calendar year
(*names of MPU staff members are underlined, students are indicated by* †)

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1. I. El Naqa, J.C. Bradley, Y. Mu, E. Huang, P.E. Lindsay, A.J. Hope, A. Apte, J. Alaly, J.O. Deasy, *Datamining approaches for modeling tumor control probability*, Acta Oncol. (2010), early online 1-11.
2. N. Palmour, W. Affleck, E. Bell, C. Deslauriers, G.B. Pike, J. Doyon, E. Racine, *Informed consent for MRI and fMRI research: Analysis of a sample of Canadian consent documents*, J. BMC Med. Ethics **12**, 1 (2010).
3. F. Cury, M. Duclos, A. Aprikian, H.J. Patrocinio, L. Souhami, *Prostate gland edema after single-fraction high-dose rate brachytherapy before external beam radiation therapy*, Brachytherapy **9**(3), 208-212, 2010.
4. J.J. Chen, G.B. Pike, *Global cerebral oxidative metabolism during hypercapnia and hypocapnia in humans: Implications for BOLD fMRI*, Accepted by the J. Cereb. Blood Flow Metab., Epub April 7, 2010, 30(6):1094-9, June 2010.
5. S. Faria, L. Souhami, H.J. Patrocinio, B. Joshua, M. Duclos, M. David, F. Cury, G. Shenouda, *Searching for optimal dose-volume constraints to reduce rectal toxicity after hypofractionated radiotherapy for prostate cancer*, Clin. Oncol. **22** (10), 810-817 (2010).
6. E.T. Soisson, M.P. Mehta, W.A. Tomé, *A comparison of helical tomotherapy to circular collimator based linear-accelerator radiosurgery for the treatment of brain metastase*s, Amer. J. Clin. Oncol. [Epub, February 2010.]
7. T. Vuong, C. Richard, T. Niazi, S. Liberman, F. Letellier, N. Morin, K. Hu, D. Anderson, S. Devic, *High dose rate endorectal brachytherapy for patients with curable rectal cancer*, Seminars in Colon & Rectal Surgery (2010), doi:10.1053/j.scrs.2010.01.009.
8. T. Vuong, T. Niazi, G. Artho, C. Richard, F. Lettelier, S. Liberman, D. Anderson, N. Morin, S. Devic, *Local pelvis relapses after neoadjuvant high dose rate endorectal brachytherapy (HDREBT) for patients with operable rectal cancer*, Curr. Colorectal Cancer Reports **6**, 228-234 (2010).
9. C. Deslauriers, G.B. Pike, J. Doyon, E. Bell, N. Palmour, E. Racine, *Perspectives of Canadian researchers on ethics review of neuroimaging research*, J. Empirical Res. Hum. Res. Ethics, 49-66 (2010).
10. T. Paus, I. Nawaz-Khan, G. Leonard, M. Perron, G.B. Pike, A. Pitiot, L. Richer, E. Susman, S. Veillettte, Z. Pausova, *Sexual dimorphism in the adolescent brain: Role of testosterone and androgen receptor in global and local volumes of grey and white matter*, Horm. Behav. **57**(1) 63-75 (2010).
11. C.L. Tardif, D.L. Collins, G.B. Pike, *Regional impact of field strength on voxel-based morphometry results*, Human Brain Mapping **31**, 943-957 (2010).
12. M. Trovo, A. Linda, I. El Naqa, C. Javidan-Nejad, J.D. Bradley, *Early and late lung radiographic injury following stereotactic body radiation therapy (SRBT)*, Lung Cancer **69**(1), 77-85 (2010).

13. I. Levesque†, C.L.L. Chia, G.B. Pike, *Reproducibility of in vivo magnetic resonance imaging-based measurement of myelin water*. J. Magn. Reson. Imag. **32**(1), 60-68 (2010).
14. I. Levesque†, P.S. Giacomini, S. Narayan, L.T. Ribeiro, J.G. Sled, D.L. Arnold, G.B. Pike, *Quantitative magnetization transfer and myelin water imaging of the evolution of acute multiple sclerosis lesions*, Magn. Reson. Med. **63**(3), 633-640 (2010).
15. C.I. Mark, M. Slessarev, S. Ito, J. Han, J. Fisher, G.B. Pike, *Precise control of end-tidal carbin dioxide and oxygen improves BOLD and ASL cerebrovascular reactivity measures*, Magn. Reson. Med. **64**(3), 749-56 (2010).
16. I. Levesque†, J.G. Sled, S. Narayanan, P.S. Giacomini, L.T. Ribeiro, D.L. Arnold, G.B. Pike, *Reproducibility of quantitative magnetization-transfer imaging parameters from repeated measurements*, Magn. Reson. Med. **64**(2), 391-400 (2010).
17. M.N. Anjum†, W. Parker, R. Ruo, I. Al Dahlawi†, M. Afzal, *IMRT quality assurance using a second treatment planning system*, Med. Dosim. **35**(4), 274-279 (2010).
18. E.T. Soisson, T. Kammeyer, P. Hoban, D.C. Westerly, J. Kapatoes, W.A. Tomé, *A treatment planning technique for stereotactic tadiosurgery treatment planning using tomotherapy*, Med. Dosim., available online February 2010 (in press).
19. T. Connell†, J. Robar, *Low-Z target optimization for spatial resolution improvement in megavoltage imaging,* Med. Phys. **37(**1), 124-131 (2010).
20. D. Yang, S.M. Goddu, W. Lu, O.L. Pechenaya, Y. Wu, J.O. Deasy, *Deformable image registration on partially matched images for radiotherapy applications*, Med. Phys. **37**(1), 141-145 (2010).
21. S. Devic, M.R. McEwen, *Radiochromic film is superior to ion chamber arrays for IMRT quality assurance*, Med. Phys. **37,** 959-961 (2010).
22. N. Tomic, S. Devic, F. DeBlois, J. Seuntjens, *Reference radiochromic film dosimetry in kilo-voltage photon beams during CBCT image acquisition*, Med. Phys. **37,** 1083-1092 (2010).
23. A. Sarfehnia†, J. Seuntjens, *Development of a water calorimetry-based standard for absorbed dose to water in HDR 192Ir brachytherapy,* Med. Phys. **37**(4), 1914-1923 (2010).
24. A. Sarfehnia†, I. Kawrakow, J. Seuntjens, *Direct measurement of absorbed dose to water in HDR 192Ir brachytherapy: Water calorimetry, ionization chamber, Gafchromic Film, and TG-43*, Med. Phys. **37**(4), 1924-1932 (2010).
25. S. Devic, S. Aldelaijan†, H. Mohammed†, N. Tomic, L. Liang, F. DeBlois, J. Seuntjens, *Absorption spectra time evolution of EBT-2 model GAFCHROMIC^{TM} film*, Med. Phys. **37,** 2207-2214 (2010).
http://scitation.aip.org/getpdf/servlet/GetPDFServlet?filetype=pdf&id=MPHYA6000037000005002207000001&idtype=cvips
26. E. Chung†, H. Bouchard, J. Seuntjens, *Investigation of three radiation detectors for accurate measurement of absorbed dose in nonstandard fields*, Med Phys. **37**(6), 2404-2413 (2010).
27. N. Tomic, S. Devic, F. DeBlois, J. Seuntjens, Correspondence Comment on "Reference radiochromic film dosimetry in kilovoltage photon beams during CBCT image acquisition", Med. Phys. **37** (6) 3008 (2010). DOI: 10.1118/1.3427316
http://scitation.aip.org/getpdf/servlet/GetPDFServlet?filetype=pdf&id=MPHYA6000037000006003008000001&idtype=cvips
28. A. Sarfehnia†, B. Clasie, E. Chung†, H-M. Lu, J. Flanz, E. Cascio, M. Engelsman, H. Paganetti, J. Seuntjens, *Direct absorbed dose to water determination based on water calorimetry in scanning proton beam delivery,* Med. Phys. **37**(7), 3541-3550 (2010).
http://link.aip.org/getpdf/servlet/GetPDFServlet?filetype=pdf&id=MPHYA6000037000007003541000001
29. S. Aldelaijan†, S. Devic, H. Mohammed†, N. Tomic, L. Liang, F. DeBlois, J. Seuntjens, *Evaluation of EBT-2 model GAFCHROMIC^{TM} film performance in water*, Med. Phys. **37**, 3687-3693 (2010).
http://link.aip.org/getpdf/servlet/GetPDFServlet?filetype=pdf&id=MPHYA6000037000007003687000001
30. J.H. Oh, Y. Yang, I. El Naqa, *Adaptive learning for relevance feedback: Application to digital mammography*, Med. Phys. **37**(8), (2010).
31. S. Mutic, R.S. Brame, S. Oddiraju, P. Parikh, M.A. Westfall, M.L. Hopkins, A.D. Medina, J. Danieley, J.M. Michalski, I. El Naqa, D.A. Low, B. Wu, Med. Phys. **37**(9), (2010).
32. J. Verhaeghe, A.J. Reader, *PET projection data supersets for reconstruction with acquisition motion*, Med. Phys. 3005-3011 (2010).
33. S. Lotfipour, G. Leonard, M. Perron, G.B. Pike, L. Richer, J.R. Séguin, R. Toro, S. Veillette, Z. Pausova, T. Paus, *Prenatal exposure to maternal cigarette smoking interacts with a polymorphism in the α6 nicotinic*

acetylcholine receptor gene to influence drug use and striatum volume in adolescence, Mol. Psych. **15**(1), 6-8 (2010).

34. T.W. Schiller, Y. Chen, I. El Naqa, J.O. Deasy, *Modeling radiation-induced lung injury risk with an ensemble of support vector machines*, Neurocomputing **73** (10-12), 1861-1867 (2010).
35. Z. Caramanos, V. Fonov, S.J. Francis, S. Narayanan, G.B. Pike, D.L. Collins, D.L. Arnold, *Gradient distortions in MRI: Characterizing and correcting for their effects on SIENA-generated measures of brain volume change*, NeuroImage **49**(2), 1601-1611 (2010). (Corrigendum: NeuroImage **49**(4), 3498, February 15, 2010).
36. Y. Zhang, J. Zhang, K. Oishi, A.V. Faria, H. Jiang, X. Li, K. Akhter, P. Rosa-Neto, G.B. Pike, A. Evans, A.W. Toga, R. Woods, J.C. Mazziotta, M.I. Miller, P.C.M. van Zijl, S. Mori, *Atlas-guided tract reconstruction for automated and comprehensive examination of the white matter anatomy*, Epub May 24, 2010; NeuroImage **52**(4), 1289-301 (2010).
37. J.J. Chen, G.B. Pike, *MRI Measurement of the BOLD-specific flow-volume relationship during hypercapnia and hypocapnia in humans*, Neuroimage, epub July 17, 2010; **53**(2), 383-91 (2010).
38. C.I. Mark, J.A. Fisher, G.B. Pike, *Improved fMRI calibration: Precisely controlled hyperoxic versus hypercapnic stimuli*, NeuroImage, epub September 2010**.**
39. C. La Fougère, S. Grant, A. Kostikov, R. Schirrmacher, P. Gravel, H. Schipper, A.J. Reader, A. Evans, A. Thiel, *Where in-vivo imaging meets cytoarchitectonics: The relationship between cortical thickness and neuronal density measured with high-resolution [18F]flumazenil-PET*, Neuroimage, Epub ahead of print, 2010.
40. B. Radlinska, S. Ghinani, I. Leppert, G.B. Pike, A. Thiel, *Diffusion tensor imaging, pyramidal tract damage and outcome in subcortical stroke*, Neurology **75**, 1048-1054 (2010).
41. E.T. Soisson, N. Hardcastle, W.A. Tomé, *Quality assurance of an image guided intracranial stereotactic positioning system for radiosurgery treatment with helical tomotherapy*, J. Neuro-Oncol. **98**, 227-285 (2010).
42. H. Zaidi, I. El Naqa, *PET-guided delineation of radiation treatment volumes: A survey of image segmentation techniques*, Eur. J. Nucl. Med. Mol. Imag. **37**(11), 2165-2187 (2010).
43. E. Eldebawy, H.J. Patrocinio, M.D.C. Evans, R. Hashem, S. Nelson, R. Sidi, C.R. Freeman, *Stereotactic radiotherapy as an alternative to plaque brachytherapy in retinoblastoma*, Pediatric Blood Cancer **55**, 1210-1212 (2010).
44. M.N. Anjum†, W. Parker, R Ruo, M Afzal, *Evaluation criteria for film based intensity modulated radiation therapy quality assurance,* Phys Med. **26**(1), 38-43 (2010). http://scitation.aip.org/getpdf/servlet/GetPDFServlet?filetype=pdf&id=MPHYA6000037000006002404000001&idtype=cvips.
45. J. Verhaeghe, P. Gravel, R. Mio, R. Fukasawa, P. Rosa-Neto, J.P. Soucy, C.J. Thompson, A.J. Reader, 2010 *Motion compensation for fully 4D PET reconstruction using PET superset data*, Phys. Med. Biol. **55**, 4063-4082 (2010).
46. A. Alexander†, F. DeBlois, J. Seuntjens, *Toward automatic field selection and planning using Monte Carlo-based direct aperture optimization in modulated electron radiotherapy,* Phys. Med. Biol. **55**(16), 4563-4576 (2010). doi: 10.1088/0031-9155/55/16/S10 .
47. J. Verhaeghe, A.J. Reader, *AB-OSEM reconstruction for improved Patlak kinetic parameter estimation: A simulation study*, Phys. Med. Biol. **55**, 6739-6757 (2010).
48. J. Verhaeghe, P. Gravel, A.J. Reader, *Task-oriented quantitative image reconstruction in emission tomography for single- and multi-subject studies*, Phys. Med. Biol. **55**, 7263-7285 (2010).
49. H. Bouchard, J. Seuntjens, I. Kawrakow *A Monte Carlo method to evaluate the impact of positioning errors on detector response and quality correction factors in nonstandard beams*, Phys. Med. Biol (accepted) (2010).
50. S. Devic, *Radiochromic film dosimetry: Past, present, and future*, Review Paper, Physica Medica (2010), doi: 10.1016/j.ejmp.2010.10.001
51. D. Luck, L. Buchy, Y. Czechowska, M. Bodnar, G.B. Pike, J. Campbell, A. Achim, A. Malla, R. Joober, M. Lepage, *Fronto-temporal disconnectivity and clinical short-term in first episode psychosis: A DTI-tractography study*, J. Psych. Res., epub, August 11, 2010.
52. W. Parker, M. Brodeur, D. Roberge, C.R. Freeman, *Standard and non-standard craniospinal radiotherapy using helical tomotherapy*, Int. J. Radiat. Oncol. Biol. Phys. **77**(3), 926-931 (2010). (doi:10.1016/j.ijrobp.2009.09.020).

53. S. Devic, N. Tomic, S. Faria, S. Menard, R. Lisbona, S. Lehnert, *Defining radiotherapy target volumes based on FDG-PET/CT scan: Still a Pandora's box?*, Intl. J. Radiat. Oncol. Biol. Phys. (2010), doi:10.1016/j.ijrobp.2010.02.015.
54. T. Vuong, K. Waschke, T. Niazi, C. Richard, J. Parent, S. Liberman, S. Mayrand, R. Loungnarath, B. Stein, S. Devic, *The value of Botox-A in acute radiation proctitis: Results from a phase I/II study using a 3 Dimension scoring system*, Intl. J. Radiat. Oncol. Biol. Phys. (2010), in press.
55. W. Abdel-Rahman, E.B. Podgorsak, *Energy transfer and energy absorption in photon interactions with matter revisited: A step-by-step illustrated approach*, Radn. Phys. Chem. **79**, 552-566 (2010); doi:10.1016/j.radphyschem.2010.01.007.
56. C. Dehing-Oberije, D. De Ruysscher, S. Petit, J. Van Meerbeeck, K. Vandecasteele, W. De Neve, A.M.C. Dingemans, I. El Naqa, J. Deasy, J. Bradley, E. Huang, P. Lambin, *Development, external validation and clinical usefulness of a practical prediction model for radiation-induced dysphagia in lung cancer patients*, Radioth. Oncol. **97**(3), 455-61 (2010).
57. N.J. René, M. Brodeur, W. Parker, D. Roberge, C.R. Freeman *A comparison of optic nerve dosimetry in craniospinal radiotherapy planned and treated with conventional and intensity modulated technique*, Radioth. Oncol. (2010) (in press) http://download.journals.elsevierhealth.com/pdfs/journals/0167-8140/PIIS0167814010005487.pdf
58. J.M. Michalski, C. Lawton, I. El Naqa, M. Ritter, E. O'Meara, M.J. Seider, K.W.R. Lee, S.A. Rosenthal, T. Pisansky, C. Catton, R.K. Valicenti, A. L. Zietman, W.R. Bosch, H. Sandler, M.K. Buyyounouski, C. Menard, *Development of RTOC consensus guidelines for the definition of the clinical target volume for post-operative conformal radiation therapy for prostate cancer*, Int. J. Radiat. Oncol. Bio. Phys. **76**(2), 361-368 (2010).
59. Y. Lawrence, X.A. Li, I. El Naqa, C.A. Hahn, L. Marks, T.E. Merchant, A.P. Dicker, *QUANTEC: Radiation dose volume effects in the brain*, Int. J. Radiat. Oncol. Bio. Phys. **76**(3), S20-27 (2010).
60. L.B. Marks, S.M. Benrzen, J.O. Deasy, F-M.S. Kong, J.D. Bradley, I.S. Vogelius, I. El Naqa, J.L. Hubbs, R.D. Timmerman, M.K. Martel, A. Jackson, *QUANTEC: Radiation dose volume effects in the lung*, Int. J. Radiat. Oncol. Bio. Phys. **76**(3), S70-76 (2010).
61. M. Roach III, J. Nam, G. Gagliardi, I. El Naqa, J.O. Deasy, L.B. Marks, *QUANTEC: Radiation dose effects in the penile bulb*, Int. J. Radiat. Oncol. Bio. Phys. **76**(3), S130-134 (2010).
62. T. Crabtree, C.E. Denlinger, B.F. Meyers, I. El Naqa, J. Zoole, A.S. Krupnick, D. Kreisel, G.A. Patterson, J.D. Bradley, *Stereotactic body radiation therapy vs surgical resection for stage I non-small cell lung cancer*, J. Thoracic & Cardiovas. Surg. **140**(2), 377-386 (2010).
63. G. Chan, J. Seuntjens, G. Kaufman, N. Tran-Khanh, A. Butler, A. Li, H. Wang, M. Buschmann, E. Harvey, J. Henderson, *Mesenchymal stem cell transplantation to promote fixation of orthopaedic implants*, Tissue Engineering (2010) (submitted).
64. R. Al-Lozi, X.A. Li, J. White, A. Apte, A. Tai, J.M. Michalski, W.R. Bosch, I.El Naqa, *Tools for consensus analysis of experts' contours for radiotherapy structure definitions*, Radioth. Oncol. **97**(3), 572-578 (2010).
65. R. Chen, J.J. Parry, W.J. Akers, M.Y. Berezin, I. El Naqa, W.B. Edwards, B.E. Rogers, *Multimodality imaging of gene transfer using a receptor-based reporter gene*, **51**(9), 1456-1463 (2010).
66. L. Rittner, J. Campbell, G.B. Pike, R. Lotufo, *Segmentation of thalamic nuclei based on tensorial morphological gradient of diffusion tensor fields*, ISBI (International Symposium on Biomedical Imaging) 2010, Rotterdam, Netherlands, April 14-17, 2010.
67. M.D.C. Evans, J. Kildea†, W. Beckham W. Parker, E.B. Podgorsak, *Feasibility study for open door low energy treatments using maze-type bunkers designed for dual energy linacs*, Proceedings of the Annual Meeting of the Canadian Organization of Medical Physicists (COMP) and the Canadian College of Physicists in Medicine (CCPM), pp 133-136, Ottawa, Ontario, June 17-20, 2010.
68. J. Kildea†, F. DeBlois, W. Parker, E.B. Podgorsak, M.D.C. Evans, *Determination of realistic workload and use factors using the Varian ARIA database*, Proceedings of the Annual Meeting of the Canadian Organization of Medical Physicists (COMP) and the Canadian College of Physicists in Medicine (CCPM), pp 174-177, Ottawa, Ontario, June 17-20, 2010.
69. H.J. Patrocinio, M.D.C. Evans, R. Ruo, E.T. Soisson, I. AlDahlawi†, J. Seuntjens, *Use of a micro liquid ionization chamber for commissioning of radiosurgery beams*, Proceedings of the Annual Meeting of the Canadian Organization of Medical Physicists (COMP) and the Canadian College of Physicists in Medicine (CCPM), pp 174-177, Ottawa, Ontario, June 17-20, 2010.
70. C.L. Tardif, D.L. Collins, S.F. Eskildsen, J.B. Richardson, G.B. Pike, *Segmentation of cortical multiple sclerosis lesions on MRI using automated laminar profile shape analysis*, MICCAI 2010, 13th International

Conference on Medical Image Computing Computer Assisted Intervention, Beijing, China, September 20-24, 2010.

71. V.S. Fonov, A. Janke, Z. Caramanos, D.L. Arnold, S. Narayanan, G.B. Pike, D.L. Collins, *Improved precision in the measurement of longitudinal global and regional volumetric changes via a novel MRI gradient distortion characterization and correction technique*, MIAR, 5th International Workshop on Medical Imaging and Augmented Reality, Beijing, China, September 19-20, 2010; Lecture Notes in Computer Science **6326**, 324-333 (2010).
72. J. Deasy, J. Oh, A. Apte, I. El Naqa, *Tools for extracting and analyzing dose-volume outcomes relationships: Improvements to the Dose Response ExplorEr System (DREES),* ICCR 2010, Amsterdam, 2010.
73. I.S. Dasanayake, I. El Naqa, J.S. Li, *Kalman filtering for IMRT optimization*, IEEE Control Systems Society Conference (CDC), 2010.
74. J.H. Oh, J. Craft, R. Al-Lozi, M. Vaidya, Y. Meng, J.O. Deasy, J.D. Bradley, I. El Naqa, *Predicting local failure in lung cancer using Bayesian networks*, ICMLA, Washington DC, 2010.
75. P. Aditya, P Apte, R. Al-Lozi, G. Pereira, M. Johnson, D. Mansur, I. El Naqa, *Methods for assessing margin definition from daily image deformations*, ICMLA, Washington DC, 2010.
76. T. Paus, Z. Pausova, M. Abrahamowicz, J. Almerigi, N. Arbour, M. Bernard, D. Gaudet, P. Hanzalek, P. Hamet, A.C. Evans, M. Kramer, L. Laberge, S. Leal, G. Leonard, J. Lerner, R.M. Lerner, J. Mathieu, M. Perron, G.B. Pike, A. Pitiot, L. Richer, J.R. Séguin, C. Syme, R. Tremblay, S. Veillette, K. Watkins, *Maternal smoking, genes and adolescent hrain and hody: The Saguenay youth study*, Chapter in "Development and Prevention of Behaviour Problems: From Genes to social Policy", pp. 61-112, ed. R.E. Tremblay, M.A.G. van Aken, W. Koops, Psychology Press, Sussex UK, 2009.
77. C.G. Soares, S. Trichter, S. Devic, *Radiochromic film*, Chapter 23, 2009 AAPM Summer School, "Clinical Dosimetry Measurements in Radiotherapy", Colorado College, Colorado Springs, Colorado.
78. T. Vuong, T. Niazi, S. Liberman, P. Galiatsatos, S. Devic, *Diagnosis and treatment of rectal cancer*, Chapter 14, in "Metastasis of Colorectal Cancer", ed. N. Beauchemin & J. Huot, Springer Science+Business Media B.V. 2010, DOI 10.1007/978-90-481-8833-8_14.
79. T. Vuong, S. Devic, E.B. Podgorsak, *High-dose-rate preoperative endorectal brachytherapy for patients with rectal cancer*, Chapter 17 in "Current Clinical Oncology", ed. B.G. Czito & C.G. Willett, Humana Press, DOI: 10.1007/978-1-60761-567-5_17.

APPENDIX XIII.

PUBLISHED ABSTRACTS

by members of the Medical Physics Unit : 2009 calendar year
(names of MPU staff members are underlined, students are indicated by †)

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1. G. Poludniowski, F. Deblois, G. Landry†, P. Evans, F. Verhaegen, *SpekCalc: A free and user-friendly software program for calculating x-ray tube spectra*, Med. Phys. **36**, 2472 (2009).
2. N. Tomic, J. Seuntjens, F. DeBlois, S. Devic, *Reference dosimetry during CBCT acquisition using radiochromic film,* Med. Phys. **36**(6), 2478 (2009).
3. S. Devic, N. Tomic, F. DeBlois, *Brachytherapy TPS QA using EBT model GafChromic film,* Med. Phys. **36**(6), 2528 (2009).
4. A. Alexander, F. DeBlois, J. Seuntjens, *Energy modulated electron therapy using few leaf collimator: Plan optimization*, Med. Phys. **36**, 2554 (2009).
5. J. Thebaut†, F. Deblois, A. Alexander†, J. Seuntjens, *Measurement driven, electron beam modeling and commissioning for Monte Carlo treatment tlanning with improved accuracy*, Med. Phys. **36**, 2621 (2009).
6. E.T. Soisson, P. Hoban, T. Kammeyer, A. Basavatia, D. Westerly, W.A. Tomé, *An efficient planning technique for tomotherapy based stereotactic radiosurgery*, Med. Phys. **36,** 2646 (2009).
7. R. Benson, M.D.C. Evans, *Off-axis correction factors for the enhanced dynamic wedge*, Med. Phys. **36**(6), 2669 (2009) [SU-FF-T-627].
8. G. Landry†, F. DeBlois**,** M. Bazalova, F. Verhaegen, *ImaSim: An animated tool for teaching tmaging*, Med. Phys. **36**, 2696 (2009).
9. E. Chung†, H. Bouchard, J. Sutherland, J. Seuntjens, *Advanced techniques to determine plan-class specific reference field correction factors for accurate dosimetry of nonstandard beams*, Med. Phys. **36**, 2731 (2009) [TU-D-BRB-02].
10. J. Seuntjens, J. Gibbons, I. Das, *New dosimetry measurements: New developments*, Med. Phys. **36**, 2752 (2009) [WE-A-211A-01].
11. W. Abdel-Rahman, L. Liang, I Aldahlawi†, J. Seuntjens. *Practice aspects of commissioning and calibration of clinical orthovoltage units*, Med. Phys. **36**(6), 2789 (2009).
12. A Sarfehnia†, J. Seuntjens, *Towards an absorbed dose-based calibration for Ir-192 brachytherapy dosimetry-Development of a primary standard water calorimeter*, Med. Phys. **36,** 2810 (2009) [TH-D-BRB-04].
13. N. Tomic, J. Seuntjens, F. DeBlois, S. Devic, *2D CBCT dosimetry using XR-QA model Gafchromic film,* Med. Phys. **36**(9), 4307 (2009).
14. M.N. Anjum†, W. Parker, R. Ruo, I. Aldahlawi, M. Afzal, *Using a second treatment planning system for dose calculation verifications in IMRT patient specific quality assurance*, Med. Phys. **36**(9), 4318 (2009) [Sci—Thurs PM: Planning—02].
15. A. Sarfehnia†, J. Seuntjens, *Realizing absorbed dose directly for HDR Ir-192 brachytherapy: Water calorimetry and comparison to ion chamber, Gafchromic Film,* Med. Phys. **36**(9), 4323 (2009) [SCI-FRI AM(2): Brachy-02: and TG-43].
16. S. Devic, N. Tomic, F. DeBlois, *Commissioning of brachytherapy TPS using EBT model GafChromic film,* Med. Phys. **36**(9), 4323 (2009).
17. D.A. Cuthbert, T. Vuong, S. Devic, G. Artho, T. Alcindor, P. Charlebois, B. Stein, *Patterns of failure in patients with anal canal carcinoma treated with 3D-based radiotherapy using conformal therapy or intensity modulated radiation therapy in combination with chemotherapy*, Intl. J. Radiat. Oncol. Biol. Phys. **75**(1), S168-S169 (2009).
18. T. Vuong, K. Waschke, S. Liberman, C. Richard, J. Parent, M. Bouin, S. Mayrand, P. Charlebois, B. Stein, S. Devic, *Potential value of Botox-A in radiation induced proctitis: A phase I/II study,* Intl. J. Radiat. Oncol. Biol. Phys. **75**(1), S520 (2009).

19. H. Al-Halabi, E. Poon†, L. Portelance, M. Duclos, L. Souhami, *Comparison between cone beam CT based three-dimensional planning and modified Monte Carlo dose calculations in intracavitary brachytherapy for cervical cancer*, Int. J. Radiat. Oncol. Biol. Phys. **75**, S623 (2009).
20. A. Garant, T. Vuong, I. Yau, P. Doran, S. Devic, *Risk of hypogonadism from scatter radiation during pelvic radiation for patients with rectal cancer*, Radioth. Oncol. **90**(3), S39 (2009).
21. E. Poon†, F. Verhaegen, *An analytical dose calculation method for HDR ^{192}Ir breast brachytherapy*, Radiother. Oncol. **91**(1), S40 (2009).
22. S. Devic, N. Tomic, S. Faria, R. Lisbona, E.B. Podgorsak, *FDG based glycolytic biological target volume Definition for Radiotherapy Treatment Planning of NSCLC*, Radioth. Oncol. **90**(3), S47-S48 (2009).
23. T. Vuong, K. Waschke, S. Liberman, C. Richard, J. Parent, M. Bouin, A. Wisniewski, S. Mayrand, P. Charlebois, B. Stein, S. Devic, *A phase I/II study testing the value of Botox-A in radiation induced proctitis*, Radioth. Oncol. **90**(3), S74 (2009).
24. N. Tomic, J.F. Wan, U. Saragovi, S. Devic, *Output calibration of radiobiological experiments using radiochromic film*, Radioth. Oncol. **90**(3), S97 (2009).
25. F. Verhaegen, B. Reniers, C. Furstoss, D. Liu, E. Poon†, M. Bazalova, M. D'Amour, H. Afsharpour, J.P. Pignol, J. Carrier, L. Beaulieu *The role of Monte Carlo simulation in brachytherapy with low-energy sources*, Radiother. Oncol. **91**(1), S14 (2009).
26. A. Sarfehnia†, J. Seuntjens, *A robust water calorimeter-based technique to determine absorbed dose from high dose rate brachytherapy sources,* 5e Journée Scientifique de l'Association québécoise des physician(ne)s médicaux cliniques (AQPMC), Québec City, Québec, April 17, 2009, p. 19.
27. I. Levesque†, G.B. Pike, *Characterizing white matter pathology with quantitative magnetization transfer imaging: Insight from a four-pool model*, Proceedings of the 17th Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Honolulu, Hawaii, April 18-24, 2009, p. 182.
28. Z. Caramanos, I. Leppert, S. Narayanan, G.B. Pike, D.L. Arnold, *MRI evidence that gadolinium-enhancing lesions seen twelve weeks after commencing rituximab treatment are associated with lower blood-brain-barrier disruption than those seen prior to treatment in patients with relapsing-remitting multiple sclerosis*, 17th Scientific Meeting of the International Society for Magnetic Resonance in Medicine, multimedia E-Poster, Honolulu, Hawaii, April 18-24, 2009.
29. C. Cohalan†, J.J. Chen, G.B. Pike, *Neuronal activity-induced cerebral blood volume changes in humans: Measurements with VASO and VERVE*, 17th Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Honolulu, Hawaii, April 18-24, 2009.
30. J.J. Chen, G.B. Pike, *Does global cerebral oxygen metabolism change during hypocapnia and hypercapnia in awake humans?*, 17th Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Honolulu, Hawaii, April 18-24, 2009.
31. J.J. Chen, G.B. Pike, *BOLD-specific flow-volume relationship during hypercapnia and hypocapnia in humans*, 17th Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Honolulu, Hawaii, April 18-24, 2009.
32. S. Spencer, D. Almiron-Bonin, J. Bradley, J. Deasy, I. El Naqa, "A proteomics and systems biology approach for biomarker discovery in radiation-induced lung inflammation", Undergraduate Research Symposium at Washington University in St. Louis, St. Louis, MO, April 25, 2009.
33. C. Denlinger, J. Bradley, I. El Naqa, J. Zoole, S. Krupnick, D. Kreisel, A. Patterson, B. Meyers, T. Crabtree, "Stereotactic body radiation therapy vs. surgical resection for early stage non-small cell lung cancer in high risk patients", 89th Annual Meeting of the American Association for Thoracic Surgery (AATS), Boston, MA, USA, May 9-13, 2009.
34. Z. Caramanos, I. Leppert, S. Narayanan, G.B. Pike, D.L. Arnold, *MRI evidence for decreased blood-brain-barrier disruption in the cerebral lesions of patients with multiple sclerosis following treatment with rituximab*, 4th Annual CIHR Neuroinflammation Symposium, May 22, 2009.
35. W. Affleck, C. Deslauriers, N. Palmour, J. Doyon, G.B. Pike, J. Kimmelman J, Racine E. *Informed consent for functional neuroimaging research: Review of Canadian practices*, Canadian Bioethics Annual Meeting, Hamilton, Ontario, June 11-14, 2009.
36. J.J. Chen, G.B. Pike, *Evidence of CMRo2 invariability during end-tidal CO2 manipulations in humans*, 15th Annual Meeting of the Organization for Human Brain Mapping, San Francisco, California, June 18-23, 2009.

37. J.J. Chen, G.B. Pike, *Venous CBF-CBV relationship during end-tidal CO2 manipulations in humans and its significance for BOLD fMRI*, 15th Annual Meeting of the Organization for Human Brain Mapping, San Francisco, California, June 18-23, 2009.
38. S. Lotfipour, E. Ferguson, G. Leonard, M. Perron, G.B. Pike, L. Richer, J.R. Séguin, R. Toro, S. Veillette, Z. Pausova, T. Paus, *Orbitofrontal cortex and drug use during adolescence: Role of prenatal exposure to maternal smoking and BDNF genotype*, 15th Annual Meeting of the Organization for Human Brain Mapping, San Francisco, California, June 18-23, 2009.
39. V.S. Fonov, I.R. Leppert, G.B. Pike, D.L. Collins, *Voxel-wise T2 relaxometry of normal pediatric brain development*, 15th Annual Meeting of the Organization for Human Brain Mapping, San Francisco, California, June 18-23, 2009.
40. A. Sarfehnia†, J. Seuntjens, *Realizing absorbed dose directly for HDR 192Ir brachytherapy: Water calorimetry and comparison to ion chamber, Gafchromic film, and TG-43*, Proceedings of the 55th Annual Scientific Meeting of the Canadian Organization of Medical Physicists (COMP), Victoria, British Columbia, July 21-24, 2009, pp. 73.
41. N. Tomic, J. Seuntjens, F. DeBlois, S. Devic, *2D CBCT dosimetry using XR-QA model Gafchromic film,* 55th Annual Meeting of the Canadian College of Physicists in Medicine (CCPM), Victoria, British Columbia, July 21-24, 2010, pp. 4307.
42. S. Devic, N. Tomic, F. DeBlois, *Commissioning of brachytherapy TPS using EBT model GafChromic film,* 55th Annual Meeting of the Canadian College of Physicists in Medicine (CCPM), Victoria, British Columbia, July 21-24, 2010, pp. 4323.
43. N. Tomic, J. Seuntjens, F. DeBlois, S. Devic, *Reference dosimetry during CBCT acquisition using radiochromic film,* 51st Annual Meeting of the American Association of Physicists in Medicine (AAPM), Anaheim, California, July 26-30, 2009, pp. 2478.
44. S. Devic, N. Tomic, F. DeBlois, *Brachytherapy TPS QA using EBT model GafChromic film,* 51st Annual Meeting of the American Association of Physicists in Medicine (AAPM), Anaheim, California, July 26-30, 2009, pp. 2528.
45. Z. Caramanos, I. Leppert, S. Narayanan, G.B. Pike, D.L. Arnold, *Semi-quantitative magnetic-resonance-imaging evidence that rituximab decreases blood-brain-barrier disruption in lesions that form on treatment in patients with relapsing-remitting MS,* 25th Congress of the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS), Düsseldorf, Germany, September 9-12, 2009; Multiple Sclerosis, 15(suppl.9), S102.
46. J. Oh, S. Spencer, C. Lichti, R. Townsend, C. Craft, J. Deasy, J. Bradley, I. El Naqa, "Discovery of blood biomarkers for radiation pneumonitis by proteomics analysis," ASTRO Translational Advances in Radiation Oncology and Cancer Imaging in St Louis, MO, September 11-12, 2009.
47. C. Deslauriers, E. Bell, N. Palmour, J. Doyon, G.B. Pike, E. Racine, *Perspectives of researchers on ethics review of neuroimaging research in Canada*, Brain Matters: New Directions in Neuroethics International Conference, Halifax, Nova Scotia, September 24-26, 2009.
48. E. Klepousniotou, G.B. Pike, M.D. Pell, *A neuroimaging investigation of anger and fear in speech prosody*, 1st Neurolobiology of Language Conference, Chicago, Illinois, October 15-16, 2009.
49. E. Klepousniotou, G.B. Pike, M.D. Pell, *Anger and fear in speech prosody: An fMRI investigation*. Neuroscience 2009, Chicago, Illinois, October 17-21, 2009.
50. S. Appenzeller, G.B. Pike, G. Leonard, M. Veilleux, A.E. Clarke, *Prevalence and types of cognitive impairment in young women with systemic lupus erythematosus (SLE)*, American College of Rheumatology, Philadelphia, Pennsylvania, October 17-21, 2009.
51. S. Appenzeller, G.B. Pike, G. Leonard, M. Veilleux, A.E. Clarke, *Thalamic volumes predict cognitive impairment evaluated by speed processing tasks in systemic lupus erythematosus*, American College of Rheumatology, Philadelphia, Pennsylvania, October 17-21, 2009.
52. S. Appenzeller, G.B. Pike, G. Leonard, M. Veilleux, A.E. Clarke, *Prevalence and types of cognitive impairment in young women with systemic lupus erythematosus (SLE)*, American College of Rheumatology, Philadelphia, October 17-21, 2009.
53. S. Appenzeller, G.B. Pike, G. Leonard, M. Veilleux, A.E. Clarke, *Thalamic volumes predict cognitive impairment evaluated by speed processing tasks in systemic lupus erythematosus*, American College of Rheumatology, Philadelphia, October 17-21, 2009.

54. A. Apte, J Deasy, W Bosch, I El Naqa, "Tools and methods for consensus generation from experts' contours for radiotherapy structure definition," AAPM, Anaheim, CA, 2009.
55. E.X. Huang, P. Lindsay, A. Hope, I. El Naqa, J.D. Bradley, J.O. Deasy, "The effect of Monte Carlo-based dose calculations on tumor control probability modeling," AAPM, Anaheim, CA, 2009.
56. E.X. Huang, J.D. Bradley, I. El Naqa, M. Trovo, J.O. Deasy, "Validating normal tissue complication probability models: a study of generalizability and datapooling for predictive radiation pneumonitis modeling," AAPM, Anaheim, CA, 2009.
57. S. Oddiraju, S. Mutic, I. El Naqa, D. Low, "Modeling and error analysis of the clinical process in radiation therapy," AAPM, Anaheim, CA, 2009.
58. S. Mutic, S. Oddiraju, P. Parikh, S. Brame, I. El Naqa, D. Low, B. Wu, "Experience with Error Reporting and Tracking Database Tool for Process Improvement in Radiation Oncology," AAPM, Anaheim, CA, 2009.
59. I. El Naqa, Mu Vaidya, Au Apte, Su Fergus, J.O. Deasy, J.D. Bradley, "A multimodality imaging approach for predicting radiation induced lung injury," AAPM, Anaheim, CA, 2009.
60. M. Vaidya, J.D. Bradley, A. Apte, D. Yang, I. El Naqa, "Predicting tumor local control in lung cancer from pre-treatment PET/CT image features," AAPM, Anaheim, CA, 2009.
61. I. El Naqa, J.D. Bradley, J.O. Deasy, "Nonlinear kernels as a visual analytics tool for radiotherapy treatment outcomes," AAPM, Anaheim, CA, 2009.
62. D. Yang, I. El Naqa, W. Lu, S. Goddu, O. Pechenaya, J.D. Deasy, D. Low, "Inverse consistency deformable image registration on partially matched images," AAPM, Anaheim, CA, 2009.
63. D. Yang, I. El Naqa, A. Apte, Y. Wu, S. Goddu, S. Mutic, J.D. Deasy, D. Low, "DIRART - a software suite for deformable image registration and adaptive radiotherapy research," AAPM, Anaheim, CA, 2009.
64. J. Craft, S. Spencer, R. Al-Lozi, J.D. Bradley, J.O. Deasy, I. El Naqa, "Integrating serum biomarkers and dose-volume metrics to predict radiation pneumonitis", ASTRO, Chicago, IL, 2009 (accepted for oral presentation).
65. E.X. Huang, J.D. Bradley, I. El Naqa, W. Bosch, J. Matthews, W. Sause, M.V. Graham, J.O. Deasy, "Predicting the risk of acute esophagitis based on dose-volume factors: Combined modeling of RTOG 93-11 and institutional data, ASTRO, Chicago, IL, 2009.
66. E.T. Soisson, D.C. Westerly, W.A. Tomé, *Comparison of a new tomotherapy based stereotactic radiosurgery planning technique and conventional planning using circular collimators*, Abstract #125, CARO 2009.
67. E.X. Huang, J.D. Bradley, I. El Naqa, W. Bosch, J. Matthews, W. Sause, M.V. Graham, J.O. Deasy, "Predicting the risk of acute esophagitis based on dose-volume factors: Combined modeling of RTOG 93-11 and institutional data, ESTRO, Maastricht, Netherland, 2009.
68. J. Verhaeghe, P. Gravel, R. Mio, R. Fukasawa, P. Rosa-Neto, J-P. Soucy, C.J. Thompson, A.J. Reader, "Motion-compensated fully 4D PET reconstruction using PET data supersets", IEEE Nuclear Science Symposium Conference Record, art. No. 5401590, pp. 3000-3004, 2009. *(Oral presentation, Orlando 2009)*
69. J. Verhaeghe, A.J. Reader, "PET projection data supersets for reconstruction with acquisition motion", IEEE Nuclear Science Symposium Conference Record, art. No. 5401586, pp. 3005-3011, 2009. *(Oral presentation, Orlando 2009)*
70. P. Gravel, J. Verhaeghe, A.J. Reader, "Impact of fully 4D reconstruction on kinetic parameter estimates", IEEE Nuclear Science Sypmosium Conference Record, art. No. 5401812, pp. 3546-3549, 2009. *(Poster presentation, Orlando 2009)*.
71. S. Devic, N. Tomic, S. Faria, R. Lisbona, E.B. Podgorsak, *FDG based glycolytic biological target volume Definition for Radiotherapy Treatment Planning of NSCLC*, 4th International Conference on Translational Research & Pre-Clinical Strategies in Radiation Oncology, Geneva, Switzerland, 2009, S47-48 (abstract 119).
72. N. Tomic, J.F. Wan, U. Saragovi, S. Devic, *Output calibration of radiobiological experiments using radiochromic film*, 4th International Conference on Translational Research & Pre-Clinical Strategies in Radiation Oncology, Geneva, Switzerland, S97 (abstract 222), 2009.
73. J. Seuntjens, D.W.O. Rogers, *Monte Carlo applications in measurement dosimetry*. 2009 Summer School on Clinical Measurement Dosimetry, Chapter 5, American Association of Physicists in Medicine, Medical Physics Publishing, pp. 147-180.
74. J. Seuntjens, M.M. McEwen, *The calibration chain: Role of BIPM, PSDLs and ADCLs*, 2009 Summer School on Clinical Measurement Dosimetry, Chapter 17, American Association of Physicists in Medicine, Medical Physics Publishing. 10 pages.

75. J.O. Deasy, M Trovo, E. Huang, Y. Mu, I. El Naqa, J.D. Bradley, *Predicting radiation pneumonitis: The effect of heart, lung, and bronchial dose-volume variables*, Proceedings of the International Conference on Translational Research & Pre-Clinical Strategies in Radiation Oncology (ICTR), Geneva, Switzerland, 2009.
76. J.O. Deasy, I. El Naqa, J.D. Bradley, *Image-based modeling of tumor control and normal tissue complication probability*, Proceedings of the International Conference on Translational Research and Pre-Clinical Strategies in Radiation Oncology (ICTR), Geneva, Switzerland, 2009.

PUBLISHED ABSTRACTS

by members of the Medical Physics Unit : 2010 calendar year
(names of MPU staff members are underlined, students are indicated by †)

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1. J.P. Soucy, P. Rosa-Neto, G. Massarweh, A. Aliaga, E. Schirrmacher, M.A. Bédard, M. Sanchez-Legaspi, P. Gravel, A.J. Reader, *Imaging of cholinergic terminals in the non-human primate brain using 18F-FEOBV PET: development of a tool to assess cholinergic losses in Alzheimer's disease*, Alzheimer's & Dementia **6**, S286 (2010).
2. D.M. Giles†, G. Jarry, S. Devic, J. Seuntjens, P. Mondalek, F. DeBlois, N. Tomic, *Comparison of dose deposition from KV x-rays during CBCT scans between two commercially available on-line imaging systems*, Med. Phys. **37**, 3092 [SU-DD-A4-04] (2010).
3. A. Sarfehnia†, B. Clasie, E. Chung†, H. Lu, J. Flanz, E. Cascio, M. Engelsman, H. Paganetti, J. Seuntjens, *Direct measurement of absolute absorbed dose in scanning proton beams based on water calorimetry*, Med. Phys. **37**, 3095 (2010) [SU-EE-A2-01].
4. A. Sarfehnia†, I. Kawrakow, J. Seuntjens, *Evaluating AAPM TG-43 in-water HDR 192Ir brachytherapy reference dosimetry: A comparison study*, Med. Phys. **37**, 3096 [SU-EE-A2-03] (2010).
5. R. Alfonso et al., *Present status of IAEA/AAPM recommendations on small and composite field dosimetry*, Med. Phys. **37**, 3096 (2010) [SU-EE-A2-02] http://online.medphys.org/mphya6/v37/i6/p3096_s1.
6. N. Tomic, T. Vuong, T. Niazi, B. Bahoric, L. Liang, F. DeBlois, J. Seuntjens, S. Devic, *Evaluation of treatment shifts for prostate and rectum patients undergoing CBCT guided IGRT using KV CBCT*, Med. Phys. **37**, 3159 (2010) [SU-GG-J-63].
7. E.T. Soisson, B. Paliwal, L. Schubert*, D. Westerly, W.A. Tomé, R. Tolakanahalli, *Effects of target replacement on helical MVCT images for use in adaptive radiotherapy*,52nd annual meeting of the American Association of Physicists in Medicine (AAPM), Philadelphia, Pennsylvania, July 18-22, Phys. **37**, 3191 (2010) [SU-GG-T-34].
8. S. Aldelaijan†, H. Mohammed†, N. Tomic, J. Seuntjens, F. DeBlois, L. Liang, S. Devic, I*mpact of post-irradiation time on the accuracy of dose measurements for EBT-2 model GAFCHROMIC™ film,* Med. Phys. **37**, 3265 (2010) [SU-GG-T-346].
9. E. Chung†, J. Seuntjens, *Comparison of characteristics of two liquid-filled ionization chambers*, Med. Phys. **37**, 3265 (2010) [SU-GG-T-344].
10. M. Serban, J. Seuntjens, E. Roussin, J. Tremblay, M. Chevrier, N. Khaouam, W. Wierzbicki, *Computer aided design and Monte Carlo validation of a patient-specific Co-60 TBI treatment unit,* Med. Phys. **37**, 3353 (2010) [MO-E-BRA-02] http://online.medphys.org/mphya6/v37/i6/p3353_s1.
11. T. Connell†, J. Seuntjens, M.D.C. Evans, *Experimental feasibility study on the use of scattering foil free beams for energy modulated electron therapy,* Med. Phys. **37**, 3436 (2010) [WE-E-BRA-03] doi:10.1118/1.3469425.
12. H. Bouchard, I. Kawrakow, J-F. Carrier, F. Lacroix, E. Chung†, J. Seuntjens, *Improving reference dosimetry of nonstandard beams*, Med. Phys. **37**, 3454 (2010) [TH-C-BRB-08].
13. E. Chung†, E.T. Soisson, H. Bouchard, J. Seuntens, *Advanced dosimetry techniques for accurate dose measurement of small and nonstandard fields improving reference dosimetry of nonstandard beams*, Med. Phys. **37**, 3454 (2010) [TH-C-BRB-06] doi:10.1118/1.3469490.
14. A. Alexander†, E.T. Soisson, F. DeBlois, J. Seuntjens, *Dynamic aperture optimization in MERT using direct aperture optimization,* Med. Phys. **37**, 3886 (2010).

15. J. Kildea†, F. DeBlois, W. Parker, E.B. Podgorsak, M.D.C. Evans, *Determination of realistic workload and use factors using the Varian ARIA database*, Med. Phys. **37**, 3894 (2010).
16. H.J. Patrocinio, M.D.C. Evans, R. Ruo, E.T. Soisson, Al Dahlawi I, Seuntjens J. *Use of a micro liquid ionization chamber for commissioning of radiosurgery beams,* Med. Phys. **37**, 3898 (2010).
17. E. Chung†, E.T. Soisson, H Bouchard, J. Seuntjens, *Application of advanced dosimetry techniques to nonstandard field deliveries*, Med. Phys. **37**, 3904 (2010) [COMP: Sci-Fri PM].
18. J.O. Holmes†, F. DeBlois, *Three−dimensional dose reconstruction using non−transmission portal dosimetry and Monte Carlo calculations*, Med. Phys. **37**, 3905 (2010).
19. E.T. Soisson, E. Chung†, W. Parker, J. Seuntjens, *Dosimetric accuracy of tomotherapy based stereotactic radiotherapy,* Int. J. Radiat. Oncol., Biol., Phys. **78,** S792 (2010).
20. M. Heravi, T. Muanza, A. Maeda, F. Lee, N. Tomic, S. Devic, F. DeBlois, L. Liang T. Vuong, D. Radzioch, *Combination of sorafenib with ionizing radiation induces G2/M cell cycle arrest in breast cancer cells*, Int. J. Radiat. Oncol. Biol. Phys. **78**, (3), S659, (2010).
21. A. Alexander†, E.T. Soisson, F. DeBlois, J. Seuntjens, *Dynamic aperture optimization in MERT using direct aperture optimization* Med. Phys. **37**, 3886 (2010).
22. S. Lee†, G. Stroian, I. El-Naqa, J. Seuntjens, *Image-based scoring of radiation injury in lung for dose-effect correlations: Analysis of sources of uncertainties*, 52nd annual meeting of the American Association of Physicists in Medicine (AAPM), Philadelphia, Pennsylvania, July 18- 22, 2010; Med. Phys. **37**, 3423 (2010) [WE-C-204B-04].

Special scientific recognition at John S. Laughlin Science Research Symposium

23. C. La Fougère, S. Grant, E. Schirrmacher, R. Schirrmacher, A.J. Reader, A. Evans, A. Thiel, *Assessing the relationship between gray matter and neuronal density with surface-based cortical thickness mapping and high-resolution [18F]flumazenil-PET*, J. Nucl. Med. **51**, 52 (2010).
24. F. Kotasidis, J. Matthews, G. Angelis, A. Saleem, P. Price, W. Lionheart, A.J. Reader, *Space-variant image-based resolution modelling kernels for enhanced whole-body oncology imaging with the HiRez PET/CT scanner*, J. Nucl. Med. **51**, 579 (2010).
25. G. Angelis, A.J. Reader, F. Kotasidis, W. Lionheart, J. Matthews, *Performance of fast monotonic and new non-monotonic reconstruction algorithms for high resolution neuroreceptor PET imaging*, J. Nucl. Med. **51**, 581 (2010).
26. N. Grotus, S. Stute, P. Giraud, A.J. Reader, I. Buvat, *Comparison of reconstruction methods with temporal regularization for respiratory-gated PET*, J. Nucl. Med. Meeting Abstracts **50**, 346 (2010).
27. C.I. Mark, M. Slessarey, S. Ito, J. Han, J.A. Fisher, G.B. Pike, *Hyperoxic (HO) versus hypercapnic (HC) BOLD calibration under precise control of end-tidal carbon dioxide and oxygen*, Joint Annual Meeting ISMRM-ESMRM, Stockholm, Sweden, May 1-7, 2010.
28. C.I. Mark, G.B. Pike, *Per-subject and per-brain-region Hyperoxic (HO) and Hypercapnic (HC) BOLD calibration to investigate neurovascular metabolism coupling linearity*, Joint Annual Meeting ISMRM-ESMRM, Stockholm, Sweden, May 1-7, 2010.
29. I. Levesque†, J.G. Sled, G.B. Pike, *A simple iterative reduction method for optimization of quantitative magnetization transfer imaging*, Joint Annual Meeting ISMRM-ESMRM, Stockholm, Sweden, May 1-7, 2010.
30. J. Campbell, I.R. Leppert, S. Frey, M. Petrides, G.B. Pike, *Diffusion MRI and anatomical tracer tractography of association pathways in the same brain*, Joint Annual Meeting ISMRM-ESMRM, Stockholm, Sweden, May 1-7, 2010.
31. C.L. Tardif, J.B. Richardson, C. Lepage, D.L. Collins, A.C. Evans, G.B. Pike, *Profile-based cortical parcellation for detection of cortical multiple sclerosis lesions*, Joint Annual Meeting ISMRM-ESMRM, Stockholm, Sweden, May 1-7, 2010.
32. I. Jelescu†, I.R. Leppert,S. Narayanan, D.L. Arnold, G.B. Pike, *Effects of temporal resolution on blood-brain barrier permeability measurement with dynamic contrast enhanced MRI in multiple sclerosis enhancing lesions*, Joint Annual Meeting ISMRM-ESMRM, Stockholm, Sweden, May 1-7, 2010.
33. C.I. Mark, J. Fisher, G.B. Pike, *Hyperoxic versus Hypercapnic calibration (m)-values under precise control of end-tidal CO_2 and O_2*, 16th Annual Meeting of OHBM (Organization for Human Brain Mapping), Barcelona, Spain, June 6-10, 2010.

34. C.I. Mark, G.B. Pike, *Improved hyperoxic and hypercapnic calibration for fMRI study of ceurovascular-metabolism coupling*, 16th Annual Meeting of OHBM (Organization for Human Brain Mapping), Barcelona, Spain, June 6-10, 2010.
35. C. Madjar, C.J. Gauthier, G.B. Pike, O. Monchi, J. Doyon, R.D. Hoge, *Effect of scanner upgrade on an arterial spin labeling (ASL) longitudinal study*, 16th Annual Meeting of OHBM (Organization for Human Brain Mapping), Barcelona, Spain, June 6-10, 2010.
36. D.M. Giles†, G. Jarry, S. Devic, J. Seuntjens, P. Mondalek, F. DeBlois, N. Tomic, *Comparison of dose deposition from KV x-rays during CBCT scans between two commercially available on-line imaging systems*, 52nd Annual Meeting of the American Association of Physicists in Medicine (AAPM), July 18-22, 2010, pp. 3092.
37. N. Tomic, T. Vuong, T. Niazi, B. Bahoric, L. Liang, F. DeBlois, J. Seuntjens, S. Devic, *Evaluation of treatment shifts for prostate and rectum patients undergoing CBCT guided IGRT using KV CBCT*, 52nd Annual Meeting of the American Association of Physicists in Medicine (AAPM), July 18-22, 2010, pp. 3159.
38. S. Aldelaijan†, H. Mohammed†, N. Tomic, J. Seuntjens, F. DeBlois, L. Liang, S. Devic, I*mpact of post-irradiation time on the accuracy of dose measurements for EBT-2 model GAFCHROMIC™ film,* 52nd Annual Meeting of the American Association of Physicists in Medicine (AAPM), Philadelphia, Pennsylvania, July 18-22, 2010, pp. 3265.
39. R. Al-Lozi, X. Li, J. White, A. Apte, A. Tai, J. Michalski, W. Bosch, I. El Naqa, *Validation study of a software tool for consensus analysis of experts*, "Contours for Generating Atlases of Radiotherapy Target and Normal Structures," AAPM, Philadelphia, Pennsylvania, July 18-22, 2010.
40. J. Oh, Y.Yang, I. El Naqa, *A novel relevance feedback approach for efficient mammogram image retrieval*, AAPM, Philadelphia, Pennsylvania, July 18-22, 2010.
41. A. Apte, R. Al-Lozi, G. Pereira, J. Matthew, D. Mansur, J.O. Deasy, I. El Naqa, *A graphical tool for assessing margin definition from daily deformations*, AAPM, Philadelphia, Pennsylvania, July 18-22, 2010.
42. M. Vaidya, R. Al-Lozi, D. Yang, D. Low, I. El Naqa, *Respiratory phase effect on tumor shrinkage analysis*, AAPM, Philadelphia, Pennsylvania,July 18-22, 2010.
43. I. Dasanayake, J. Li, I. El Naqa, A dynamical system approach for real-time IMRT optimization, AAPM, Philadelphia, Pennsylvania, July 18-22, 2010.
44. H. Zaidi, C. Fuentes, I. El Naqa, *Comparative methods for PET image segmentation in pharyngolaryngeal squamous cell carcinoma*, AAPM, Philadelphia, Pennsylvania, July 18-22, 2010.
45. S. Lee, G. Stroian, I. El Naqa, J. Seuntjens, *Image-based scoring of radiation injury in lung for dose-effect correlations: Analysis of sources of uncertainties*, AAPM, Philadelphia, Pennsylvania, July 18-22, 2010 (Laughlin Science Symposium)
46. B. White, S. Wuenschel, T. Zhao, J. Lamb, I. El Naqa, D. Low, *Distribution of lung tissue motion during free breathing, submitted to AAPM*, Philadelphia, Pennsylvania, July 18-22, 2010.
47. E. Huang, J.D. Bradley, I. El Naqa, L. Pesce, J. Deasy, *Normal tissue Complication probability (NTCP) modeling using self-organizing map (SOM)*, AAPM, Philadelphia, Pennsylvania, July 18-22, 2010.
48. N. Tomic, T. Vuong, T. Niazi, B. Bahoric, L. Liang, F. DeBlois, J. Seuntjens, S. Devic, *Impact of CBCT guided IGRT on dose volume histograms for rectal and prostate cancer patients*, ESTRO, Barcelona, Spain, September 2010.
49. N. Tomic, T. Vuong, T. Niazi, B. Bahoric, L. Liang, F. DeBlois, J. Seuntjens, S. Devic, *Evaluation of treatment shifts for prostate and rectum patients undergoing CBCT guided IGRT using KV CBCT*, 52nd Annual Meeting of the American Society for Radiation Oncology (ASTRO), San Diego, California, October 31-November 04, 2010, S756.
50. E. Chung†, E.T. Soisson, H. Bouchard, J. Seuntjens, *Advanced dosimetry techniques for accurate verification of nonstandard beams*, Proceedings of IAEA International Symposium on Standards, Applications and Quality Assurance in Medical Radiation Dosimetry, Vienna, Austria, November 8-12, 2010.
51. A. Sarfehnia†, K. Stewart, C. Ross, M. McEwen, J. Seuntjens, *Primary water calorimetry for clinical electron beams, scanned proton beams and 192Ir brachytherapy*, Proceedings of IAEA International Symposium on Standards, Applications and Quality Assurance in Medical Radiation Dosimetry, Vienna, Austria, November 8-12, 2010.
52. P. Voss, G.B. Pike, R. Zatorre, *Grey matter concentration and myelin content in the occipital cortex of blind individuals predict performance in auditory and tactile tasks*, Society for Neuroscience Annual Meeting, San Diego, California, November 13-17, 2010.

53. I. El Naqa, M. Vaidya, K. Creach, J. Seuntjens, J.D. Bradley, *Integrating PET/CT image features for prediction of radiotherapy local failure in lung cancer*, Imaging for Treatment assessment in Radiotherapy (ITART), National Harbor, Maryland, 2010.
54. E.A. Kidd, F. Dehdashti, I. El Naqa, B.A. Siegel, P.W. Grigsby, *Changes in FDG uptake in cervical cancer during treatment*, ASTRO, San Diego, California, 2010.
55. J. Oh, J. Craft, R. Al-Lozi, M. Vaidya, Y. Meng, J.O. Deasy, J.D. Bradley, I. El Naqa, *A Bayesian network approach for predicting local failure in lung cancer using physical and biological variables*, ASTRO, San Diego, California, 2010.
56. C.R. Spencer, H. Gay, J.O. Deasy**,** I. El Naqa, B.H. Haughey, D. Adkins, W. L. Thorstad, *Patterns of failure after IMRT in squamous cell carcinoma of the head and neck*, ASTRO, San Diego, California, 2010.
57. M.E. Johnson, G.C. Pereira, I. El Naqa, S.M. Goddu, R. Al-Lozi, A. Apte, D.B. Mansur, *Assessment of PTV for whole stomach irradiation using daily image guidance*, submitted to ASTRO, San Diego, California, 2010.
58. K. Lim, I. El Naqa et al., Variability in clinical target volume delineation for intensity modulated radiotherapy in three challenging cervix cancer scenarios," ASTRO, San Diego, California, 2010.
59. H.A. Gay, C.R. Spencer, J.S. Lewis, Jr., E. Liu, I. El Naqa, D. Adkins, J.O. Deasy, B. Nussenbaum, B.H. Haughey, W.L. Thorstad, *Outcomes of p16 positive oropharyngeal squamous cell carcinoma treated with postoperative adjuvant IMRT +/- chemotherapy: A retrospective analysis*, ASTRO, San Diego, California, 2010.
60. J.R. Olsen, C.G. Robinson, I. El Naqa, K.M. Creach, R.E. Drzymala, C. Bloch, P.J. Parikh, J.D. Bradley, *Comparison of three treatment schemes for lung SBRT*, submitted to ASTRO, San Diego, California, 2010.
61. L. Santanam, P.J. Parikh, I. El Naqa, J.D. Bradley, C. Noel, J. Ge, *CBCT alone is not sufficient for SBRT alignment of abdominal tumors: Increased risk of marginal miss when using ConeBeam CT imaging alone for delivery of Stereotactic Body Radiation Therapy to abdominal targets,* ASTRO, San Diego, California, 2010.
62. K.M. Creach, R. Al-Lozi, I. El Naqa, J.D. Bradley, J.R. Olsen, P.J. Parikh, R.E. Dryzmala, C. Bloch, C.G. Robinson, *Dosimetric prediction of chest wall toxicity after lung SBRT*, submitted to ASTRO, San Diego, California, 2010.
63. J. Craft, J. Oh, M. Ju, J.O. Deasy, J.D. Bradley, I. El Naqa, *Quantitative mass spectroscopy and the identification of alpha2macroglobulin as a potential biomarker for radiation pneumonitis*, ASTRO, San Diego, California, 2010.
64. J.D. Ma, J. Esthappan, I. El Naqa, J.O. Deasy, C. Raptis, P. Grigsby, *Apparent diffusion coefficient values in diffusion weighted imaging is correlated with disease progression in cervical cancer patients*, submitted to ASTRO, San Diego, California, 2010.
65. D. Wang, W. Bosch, D. Kirsch, R. Lozi, I. El Naqa, D. Roberge, S. Finkelstein, I. Petersen, N. Saito, T. DeLaney, *Variations in the gross target volume and clinical target volume evaluated by RTOG Sarcoma Radiation Oncologists For Preoperative Radiotherapy Of Primary Extremity Sarcoma*, ASTRO, San Diego, California, 2010.
66. E.T. Soisson, E. Chung†, W. Parker, J. Seuntjens, *Dosimetric accuracy of tomotherapy based stereotactic radiotherapy*, ASTRO, San Diego, California, 2010.
67. P. Gravel, J. Verhaeghe, A.J. Reader, *Task-oriented and study-dependent optimization of 3D and fully 4D reconstruction parameters for [18F]FDG imaging*, 2010 Nuclear Science Symposium Medical Imaging Conference (Oral Presentation, Knoxville, USA).
68. J. Verhaeghe, A.J. Reader, *Lower variance FBP image reconstruction via new filter families*, 2010 Nuclear Science Symposium Medical Imaging Conference (Poster Presentation, Knoxville, USA).
69. J.C. Matthews, G.I. Angelis, F.A. Kotasidis, P.J. Markiewicz, A.J. Reader, *Direct reconstruction of parametric images using any spatiotemporal 4D image based model and maximum likelihood expectation maximization*, 2010 Nuclear Science Symposium Medical Imaging Conference (Oral Presentation, Knoxville, USA).
70. J. Verhaeghe, A.J. Reader, *AB-OSEM reconstruction for improved kinetic parameter estimation*, 2010 Nuclear Science Symposium Medical Imaging Conference (Poster Presentation, Knoxville, USA).
71. J. Verhaeghe, P. Gravel, A.J. Reader, *Quantification task-optimized estimates from OSEM and FBP reconstructions in single-and multi-subject studies*, 2010 Nuclear Science Symposium Medical Imaging Conference (Poster Presentation, Knoxville, USA).

72. F.A. Kotasidis, A.J. Reader, G.I. Angelis, P.J. Markiewicz, M.D. Walker, P.M. Price, W.R. Lionheart, J.C. Matthews, Direct parametric estimation of blood flow in abdominal PET/CT within an EM reconstruction framework, 2010 Nuclear Science Symposium Medical Imaging Conference (Poster Presentation, Knoxville, USA).
73. J. Verhaeghe, A.J. Reader, Iterative FBP using new families of empirical filters, 2010 Nuclear Science Symposium Medical Imaging Conference (Poster Presentation, Knoxville, USA).
74. F.A. Kotasidis, J.C. Matthews, G.I. Angelis, P.J. Noonan, P.J. Markiewicz, W.R. Lionheart, A.J. Reader, *Fast single scan derivation of the PSF resolution model on the truepoint PET/CT using a printed point source array*, 2010 Nuclear Science Symposium Medical Imaging Conference (Poster Presentation, Knoxville, USA).
75. P. Gravel, J. Verhaeghe, A.J. Reader, *Spatial resolution and count-dependent assessment of kinetic parameter estimates when using 3D and 4D reconstruction of single PET data sets*, 2010 Nuclear Science Symposium Medical Imaging Conference (Poster Presentation, Knoxville, USA).
76. H. Bouchard, I. Kawrakow, J-F. Carrier, J. Seuntjens, *Conceptual improvements and limitations in nonstandard beam reference dosimetry*, Proceedings of IAEA International Symposium on Standards, Applications and Quality Assurance in Medical Radiation Dosimetry (2010).
77. E.T. Soisson, S. Rajakesari, H.J. Patrocinio, C.R. Freeman, *A treatment technique for pediatric retinoblastoma using tomotherapy based stereotactic radiotherapy*, Submitted to ISRS 2011.

APPENDIX XIV.

INVITED PRESENTATIONS

by members of the Medical Physics Unit : 2009 calendar year
(in multiple author entries, the author who presented the paper is shown with an asterisk)

1. W. Parker, *CT simulation and IMRT for pediatric whole CNS irradiation*, Symposium on Modern Techniques in Pediatric Radiotherapy, Cairo, Egypt, February 05, 2009.
2. W. Parker, *Implementation of IMRT, IGRT, and SBRT*, Symposium on Modern Techniques in Pediatric Radiotherapy, Cairo, Egypt, February 05, 2009.
3. W. Parker, *Risk management and assessment in radiation oncology*, Symposium on Modern Techniques in Pediatric Radiotherapy, Cairo, Egypt, February 05, 2009.
4. J. Seuntjens, *Small and Non-Standard filed reference dosimetry: new formalism and challenges* Belgian Association of Hospital Physicists, Kortrijk, Belgium, February 07, 2009.
5. G.B. Pike, *BOLD hangovers: Physiological origins of the post-stimulus fMRI response*, University of Michigan Invited Speaker Series, Ann Arbor, Michigan, February 10, 2009.
6. J. Seuntjens, *Monte Carlo dose calculator techniques in radiation ttherapy planning, delivery and evaluation,* University of Toronto, Sunnybrook Odette Cancer Centre, February 24, 2009.
7. M.D.C. Evans*, *History and introduction to brachytherapy*, Conference on "Innovative Approaches in Radiotherapy: Beyond Tomorrow", King Faisal Specialist Hospital & Research Centre, Riyadh, Kingdom of Saudi Arabia, March 09-12, 2009.
8. M.D.C. Evans*, *Special RT techniques: HDRB, TBI & TSI*, Conference on "Innovative Approaches in Radiotherapy: Beyond Tomorrow", King Faisal Specialist Hospital & Research Centre, Riyadh, Kingdom of Saudi Arabia, March 09-12, 2009.
9. M.D.C. Evans*, *Linac QA and chamber calibrations*, Conference on "Innovative Approaches in Radiotherapy: Beyond Tomorrow", King Faisal Specialist Hospital & Research Centre, Riyadh, Kingdom of Saudi Arabia, March 09-12, 2009.
10. M.D.C. Evans*, *20 years of HDR brachytherapy for carcinoma of the cervix at McGill*, Conference on "Innovative Approaches in Radiotherapy: Beyond Tomorrow", King Faisal Specialist Hospital & Research Centre, Riyadh, Kingdom of Saudi Arabia, March 09-12, 2009.
11. M.D.C. Evans*, *Radiation safety and regulations: Patient and staff protection in radiotherapy*, Conference on "Innovative Approaches in Radiotherapy: Beyond Tomorrow", King Faisal Specialist Hospital & Research Centre, Riyadh, Kingdom of Saudi Arabia, March 09-12, 2009.
12. M.D.C. Evans*, *Afterloading brachytherapy: Quality assurance and safety*, Conference on "Innovative Approaches in Radiotherapy: Beyond Tomorrow", King Faisal Specialist Hospital & Research Centre, Riyadh, Kingdom of Saudi Arabia, March 09-12, 2009.
13. M.D.C. Evans*, *High dose rate brachytherapy*, Workshop Co-ordinator, Conference on "Innovative Approaches in Radiotherapy: Beyond Tomorrow", King Faisal Specialist Hospital & Research Centre, Riyadh, Kingdom of Saudi Arabia, March 09-12, 2009.
14. M.D.C. Evans*, *IMRT/IGRT tomotherapy*, Workshop Co-ordinator, Conference on "Innovative Approaches in Radiotherapy: Beyond Tomorrow", King Faisal Specialist Hospital & Research Centre, Riyadh, Kingdom of Saudi Arabia, March 09-12, 2009.
15. F. DeBlois, *Development de logiciels de physique médicale à McGill*, Présentation aux conférences de physique médicale du CHUM, Montréal, Québec, March 11, 2009.
16. M. Brodeur, *Things to know when you enter the real world*, Friday Morning Seminar, Medical Physics Unit, McGill University, Montréal, Quebec, March 20, 2009.
17. E.B. Podgorsak, *Teaching of medical physics in Canada and Quebec*, Annual Meeting of the Association québécoise des physiciens médicaux cliniques (AQPMC), Québec, Québec, April 17-18, 2009.

18. M.D.C. Evans*, *The role of medical physics in HDR brachytherapy*, National Research Council: Standards lab in-service, Ottawa, April 2009.
19. E.B. Podgorsak, *Education, training and certification of medical physicists in Canada*, 26th Annual Meeting of the American College of Medical Physics (ACMP), Virginia Beach, Virginia, May 02-05, 2009.
20. M. Brodeur*, M.C. Prégent, *Journée d'initiation à la tomothérapie*, Group of teachers from the Radiation Therapy Technologists program, Collège Ahuntsic, Quebec, May 09, 2009.
21. G.B. Pike, *Highways of the brain*, CIM-REPARTI Annual Workshop (Centre for Intelligent Machines and FQRNT Centre Regroupmement Stratégique), May 29, 2009.
22. G.B. Pike, *Panelist – Health Care Section*, CIM-REPARTI Annual Workshop (Centre for Intelligent Machines and FQRNT Centre Regroupmement Stratégique), May 29, 2009.
23. E.B. Podgorsak, *Equal rights for all includes equal right to health care*, Annual Meeting of the New England Chapter of the American Association of Physicists in Medicine (NE-AAPM), Plymouth, New Hampshire, June 05, 2009.
24. E.T. Soisson, *Quality assurance of an image-guided intracranial stereotactic positioning system for tomotherapy*, International Stereotactic Radiosurgery Society (ISRS) 9th Biennial Congress and Exhibition. Seoul, South Korea. June 10, 2009.
25. S. Devic, *Image guidance for endorectal brachytherapy*, Scientific Workshop Focused on Advancements in High Dose Rate Brachytherapy: "Nucletron Essentials in Brachytherapy", Boca Raton, Florida, June 13, 2009.
26. A. Reader, conference "Approximation and optimization in image restoration and reconstruction" in Porquerolles, France (June 2009)
27. E.T. Soisson, *Development of a tomotherapy-based stereotactic radiosurgery program"*, DHO-UWCCC and RTO-SKH Joint Symposium on Cancer Therapy, Shin Kong Wu Ho-Su Memorial Hospital, Taipei, Taiwan, July 17, 2009.
28. S. Devic, *Image guidance for endorectal brachytherapy*, Scientific Workshop Focused on Advancements in High Dose Rate Brachytherapy: "Nucletron Essentials in Brachytherapy", Philadelphia, Pennsylvania, July 18, 2009.
29. S. Devic, *EBT-2 new waves in radiochromic film dosimetry*, ISP Workshop, 51st Annual Meeting of the AAPM, Anaheim, California, July 26-30, 2009.
30. J. Seuntjens, I. Das, J. Gibbons, *New dosimetry measurements: New developments*, Continuing Education Lecture, Annual Meeting of the American Association of Physicists in Medicine, Anaheim, California, July 29, 2009.
31. I. El Naqa, A System-based Approach for Learning Radiotherapy Outcomes, Montreal, Canada, 07/2009.
32. S. Lehnert, Keynote speaker, Cancer biology, 2nd World Congress of Cancer, China Beijing, July 2009.
33. A. Reader, Universidad Autónoma del Estado de Morelos for workshop in "Image Processing, Reconstruction and Robotics" (Cuernavaca, Mexico, July 2009) gave lectures in "PET Image Reconstruction"
34. G.B. Pike, *Quantitative myelin imaging: A unified view of magnetization transfer and T2*, Advanced Bioimaging Technologies Conference, Banff, Alberta, September 14-18, 2009.
35. N. Tomic, *Cone beam computed tomography in radiation therapy*, Monday Morning Rounds, Department of Radiation Oncology, McGill University Health Centre, Montréal, Québec, September 21, 2009.
36. E.T. Soisson, *Is IMRT QA really necessary?,* University of Wisconsin ADCL, Madison, Wisconsin, September 21, 2009.
37. E.T. Soisson, *Development of a tomotherapy based stereotactic radiosurgery program,* Medical Physics Seminar Series. University of Wisconsin, Madison, Wisconsin, September 21, 2009.
38. S. Devic, *Image-guidance for endo-rectal brachytherapy*, Harvard Medical School, Department of Continuing Education, 5th Annual Brachytherapy Review, Boston, Massachussetts, October 02-03, 2009.
39. E.B. Podgorsak, *Effects of target and flattening filter on the quality of linac beams*, Visiting Professor Lecture, University of Pennsylvania, School of Medicine, Philadelphia, Pennsylvania, October 15, 2009.
40. E.B. Podgorsak, *Crisis in American and Canadian Health Care: Is nationalized health care and answer?* Visiting Professor Lecture, University of Pennsylvania, School of Medicine, Philadelphia, Pennsylvania, October 15, 2009.
41. E.B. Podgorsak, *Education, accreditation, certification, and licensure in medical physics in North America*, Visiting Professor Lecture, University of Pennsylvania, School of Medicine, Philadelphia, Pennsylvania, October 15, 2009.

42. E.B. Podgorsak, *Crisis in health care financing in North America: A medical physicist's perspective*, Meeting of the Australasian College of Physical Scientists in Medicine (ACPSEM), Canberra, Australia, November 08-12, 2009.
43. E.B. Podgorsak, *Evolving trends in academic and clinical education of medical physicists*, Keynote Presentation, Meeting of the Australasian College of Physical Scientists in Medicine (ACPSEM), Canberra, Australia, November 08-12, 2009.
44. E.B. Podgorsak, *Medical physics teaching, accreditation, and certification in North America*, Meeting of the Australasian College of Physical Scientists in Medicine (ACPSEM), Workshop on Teaching and Education, Canberra, Australia, November 08-12, 2009.
45. E.B. Podgorsak, *Effect of target and flattening filter on high-energy x-ray beams in radiotherapy*, Medical Physics Tutorial Lecture, Peter MacCallum Cancer Institute, Melbourne, Australia, November 16, 2009.
46. E.B. Podgorsak, *Medical physics, teaching accreditation, and certification in North America*, Visiting Professor Lecture, University of Melbourne and Peter MacCallum Cancer Institute, Melbourne, Australia, November 16, 2009.
47. E.B. Podgorsak, *Organization and performance of health care systems in Canada, the USA, and Australia*, Peter MacCallum Cancer Institute, Melbourne, Australia, November 16, 2009.
48. H.J. Patrocinio, Technical Aspects of Extra-Cranial Stereotactic Radiosurgery, IAEA Workshop: State of the Art – Stereotactic Radiosurgery and IMRT, São Paulo, Brazil. 2009.
49. H.J. Patrocinio, Physical Principles of Stereotactic Radiosurgery, IAEA Workshop: State of the Art – Stereotactic Radiosurgery and IMRT, São Paulo, Brazil. 2009.
50. H.J. Patrocinio, Le rôle de l'asservissement respiratoire dans le traitement par radiothérapie extra-crânienne, Congrès annuel de l'Ordre des Technologues Radiologiques du Québec, Laval, Québec. 2009.

INVITED PRESENTATIONS

by members of the Medical Physics Unit : 2010 calendar year
(in multiple author entries, the author who presented the paper is shown with an asterisk)

1. A. Reader, Quebec Bioimaging network "Advances in PET Image Reconstruction" (Montreal, Canada, January 2010).
2. G.B. Pike, *Magnetization transfer imaging of the healthy and diseased brain*, McConnell Brain Imaging Seminar Series, March 01, 2010.
3. S. Devic, *Uptake volume histograms: A novel venue towards biological target volumes*, International Conference on Radiation Medicine: Clinical Applications & Innovative Approaches, KFSH&RC, Riyadh, Saudi Arabia, March 01-04, 2010.
4. S. Devic, *Output calibration of radiobiological experiments using EBT films*, International Conference on Radiation Medicine: Clinical Applications & Innovative Approaches, KFSH&RC, Riyadh, Saudi Arabia, March 01-04, 2010.
5. S. Devic, *Image guided brachytherapy*, Continuing Education Courses, International Conference on Radiation Medicine: Clinical Applications & Innovative Approaches, KFSH&RC, Riyadh, Saudi Arabia, March 01-04, 2010.
6. S. Devic, *Gafchromic film dosimetry in diagnostic radiology*, IAEA Course TRS 457: Joint KFSHRC/IAEA Advanced School on Dosimetry in Diagnostic Radiology & its Clinical Implementation, KFSH&RC, Riyadh, Saudi Arabia, February 28-March 04, 2010.
7. G.B. Pike, *Global cerebral oxidative metabolism during hypercapnia and hypocapnia in humans: Implications for BOLD fMRI*, Quantitative Neuroscience with Magnetic Resonance (CNMR) Symposium, Yale University, March 15, 2010.
8. S. Devic, *Designing the optimal brachytherapy suite*, Physics Panel, American Brachytherapy Society 2010 Annual Meeting, Atlanta, Georgia, April 29-May 01, 2010.
9. A. Reader, Universite de Sherbrooke "Advances in PET Image Reconstruction" (May 2010).

10. I. El Naqa, *Variational methods for image-guided adaptive radiotherapy*, IEEE Southwest Symposium on Image Analysis & Interpretation, Austin, Texax, June 2010.
11. I. El Naqa, *Machine learning as new tool for predicting radiotherapy response*, Symposium on Applications of Machine Learning in Radiotherapy, American Association of Physicists in Medicine, Philadelphia, Pennsylvania, July 2010.
12. F. DeBlois, *RapidArc: Clinical applications*, Varian Luncheon Symposium, CARO 2010 Annual Meeting, Vancouver, British Columbia, September 23, 2010.
13. G.B. Pike, *The basics of magnetic resonance imaging,* McConnell Brain Imaging Series, October 4, 2010.
14. I. El Naqa, *Topics in nuclear medicine*, King Hussein Cancer Centre (ISEP/AAPM sponsorship), Amman, Jordan, October 07-11, 2010.
15. G.B. Pike, *Magnetization transfer in MS*, Montreal Neurological Institute, 3rd Denis Melançon Neuroradiology Lecture, October 28, 2010.
16. J. Seuntjens, *Dosimetry challenges associated with new technology*, Round Table speaker, International Atomic Energy Agency (IAEA), Vienna, Austria, November 10, 2010.
17. S. Lehnert, ICRB-NISRRO workshop. Indira Gandhi Center for Atomic research, Kalpakkam, India. "Treatment of orthotopic rat glioma model with implant of halogenated pyrimidines plus biomodulator drugs", November 2010.
18. S. Lehnert, Keynote speaker: Indian Congress of Radiation Biology. "Sensitization to Radiation from an Implanted 125I source by sustained intra-tumoral release of Chemotherapeutic Drugs: Increased sensitization associated with low dose rate." November 2010.
19. G.B. Pike, *Water, water, everywhere: A tale of MRI and myelin*, University of Calgary, December 17, 2010.
20. H.J. Patrocinio, Problems, Complications and Cautions in IMRT 3a Jornada de Radioterapia, Barretos, Brazil. 2010.
21. H.J. Patrocinio, McGill IMRT Practice for Head and Neck Cancer 3a Jornada de Radioterapia, Barretos, Brazil. 2010.
22. H.J. Patrocinio, McGill Radiosurgery Practice for Brain Malignancies 3a Jornada de Radioterapia, Barretos, Brazil. 2010.

APPENDIX XV.

CONFERENCE & SEMINAR PRESENTATIONS

by members of the Medical Physics Unit : 2009 calendar year
*(presenter is indicated by an asterisk *)*
(the names of staff members of the MPU are underlined, students are indicated by †)

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1. G. Stroian, *Local correlation between radiation dose and post radiotherapy complications in lung cancer patients*, Radiation oncology retreat, Jewish General Hospital, Montréal, Québec, February 2009.
2. G. Stroian, *Respiratory gating*, Jewish General Hospital, Montréal, Québec, February 2009.
3. N. Tomic,* J. F. Wan, U. Saragovi, S. Devic, Output Calibration of Radiobiological Experiments Using radiochromic Film, 4th International Conference on Translational Research and Pre-Clinical Strategies in Radiation Oncology, Geneva, Switzerland, March 11-13, 2009 (abstract #: 222).
4. E.B. Podgorsak, *Teaching of medical physics in Canada and Quebec*, Annual meeting of the Association québécoise des physiciens médicaux cliniques (AQPMC), Québec, Québec, April 17-18, 2009.
5. E.B. Podgorsak, *Education, training and certification of medical physicists in Canada*, 26th annual meeting of the American College of Medical Physics (ACMP), Virginia Beach, Virginia, May 02-05, 2009.
6. C. Janicki " Post-Modern Physics and the New Consciousness: How Quantum Mechanics is used to explain Mind-Body Healing, Homeopathy and other Miracles" Health Fusion 2009, The Canadian Association of Naturopathic Doctors, Montreal, Quebec, Canada, June 5-7, 2009.
7. K. Asiev†, *Monte Carlo treatment planning*. Jewish General Hospital Radiation Oncology Department presentation, June 2009.
8. N. Tomic, J. Seuntjens, F DeBlois, S. Devic, *2D CBCT dosimetry using XR-QA model GAFCHROMIC film*, 55th Annual Meeting of the CCPM [Poster-Wed Eve-21], Victoria, BC, July 21-24, 2009,
9. A. Sarfehnia†, J. Seuntjens, *Realizing absorbed dose directly for HDR 192Ir brachytherapy: Water Calorimetry and comparison to ion chamber, Gafchromic film, and TG-43*, Proceedings of the 55th Annual Scientific Meeting of the Canadian Organization of Medical Physicists (COMP), Victoria, British Columbia; July 22-24, 2009; pp. 73.
10. S. Devic, N. Tomic, F. DeBlois, E.P. Reynard†, *Commissioning of brachytherapy TPS using EBT model GafChromic Film*, Proceedings of the 55th Annual Scientific Meeting of the Canadian Organization of Medical Physicists (COMP) Annual Scientific Meeting, July 22-24, 2009.
11. S. Devic, N. Tomic, F. DeBlois, *Brachytherapy TPS QA Using EBT Model GafChromic Film,* 51st Annual Meeting of the AAPM, Anaheim, California, July 26-30, 2009.
12. N. Tomic, J. Seuntjens, F DeBlois, S Devic, *Reference dosimetry during CBCT acquisition using radiochromic film*, 51st Annual Meeting of the AAPM, Anaheim, California, July 26-30, 2009.
13. W. Abdel-Rahman, L. Liang, I AlDahlawi†, J. Seuntjens, *Practical aspects of commissioning and calibration of clinical orthovoltage units,* 51st Annual Meeting of the AAPM, Anaheim, California, July 26-30, 2009.
14. J. Thebaut*,F. DeBlois, J. Seuntjens, *Measurement driven, electron beam modeling and commissioning for Monte Carlo treatment planning system with improved accuracy*, General Poster Presentation, AAPM 51st annual meeting, Anaheim, California, July 27, 2009.
15. N. Tomic "Cone beam computed tomography in radiation therapy", Montreal General Hospital, Radiation Oncology Monday Morning Rounds, Sept.21, 2009, Montreal, Quebec, Canada.
16. Appenzeller S, **Pike GB**, Leonard G, Veilleux M, Clarke AE. *Prevalence and types of cognitive impairment in young women with systemic lupus erythematosus (SLE).* American College of Rheumatology, Philadelphia, October 17-21, 2009
17. Appenzeller S, **Pike GB**, Leonard G, Veilleux M, Clarke AE. *Thalamic volumes predict cognitive impairment evaluated by speed processing tasks in systemic lupus erythematosus*. American College of Rheumatology, Philadelphia, October 17-21, 2009.

18. C. Janicki "La radioprotection en médecine vétérinaire au Québec" 68e congrès annuel, Ordre des médecins vétérinaires du Québec, Saint- Hyacinthe, 12 au 14 novembre 2009.
19. G. Stroian*, S. Devic, T. Niazi, K. Sultanem, B. Bahoric, F. Deblois, *L'effet dosimétrique de la quantité de matériel de rétrodiffusion pour la curiethérapie à haut débit pour les traitements superficiels*, AQPMC workshop, Montréal, Québec, December 2009.
20. A. Alexander†, F. DeBlois, J. Seuntjens, *Energy modulated electron therapy using few leaf collimator: Plan optimization*, Med. Phys. **36**, 2554 [SU-FF-T-149] (2009).
21. J Thebaut†, F DeBlois, A. Alexander†, J. Seuntjens, *Measurements driven, electron beam modeling and commissioning for Monte Carlo treatment planning with improved accuracy*, Med. Phys. **36**, 2621 [SU-FF-T-432] (2009).
22. E. Chung†, H. Bouchard, J Sutherland, J. Seuntjens, *Advanced techniques to determine plan-class specific reference field correction factors for accurate dosimetry of nonstandard beams*, Med. Phys. **36**, 2731 [TU-D-BRB-02] (2009).
23. J. Seuntjens, J Gibbons, I Das, *New dosimetry measurements: New developments*, Med. Phys. **36**, 2752 [WE-A-211A-01] (2009).
24. A. Sarfehnia, J. Seuntjens, *Towards an absorbed dose-based calibration for Ir-192 brachytherapy dosimetry-development of a primary standard water calorimeter*, Med. Phys. **36**, 2810 [TH-D-BRB-04] (2009).
25. Verhaeghe J, Gravel P, Mio R, Fukasawa R, Rosa-Neto P, Soucy J-P, Thompson CJ and **Reader AJ** "Motion- compensated fully 4D PET reconstruction using PET data supersets" (2009) IEEE Nuclear Science Symposium Conference Record, art. No. 5401590, pp. 3000-3004. *(Oral presentation, Orlando 2009)*
26. Verhaeghe J and **Reader AJ** "PET projection data supersets for reconstruction with acquisition motion" (2009) IEEE Nuclear Science Symposium Conference Record, art. No. 5401586, pp. 3005-3011. *(Oral presentation, Orlando 2009)*
27. Gravel P, Verhaeghe J and **Reader AJ** "Impact of Fully 4D Reconstruction on Kinetic Parameter Estimates" (2009) IEEE Nuclear Science Sypmosium Conference Record, art. No. 5401812, pp. 3546-3549 *(Poster presentation, Orlando 2009)*
28. †Levesque I, **Pike GB**. *Characterizing white matter pathology with quantitative magnetization transfer imaging: insight from a four-pool model*. Proceedings of the 17th Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Honolulu, Hawaii, p. 182, April 18-24, 2009.
29. Caramanos Z, Leppert I, Narayanan S, **Pike GB**, Arnold DL. *MRI evidence that gadolinium-enhancing lesions seen twelve weeks after commencing rituximab treatment are associated with lower blood-brain-barrier disruption than those seen prior to treatment in patients with relapsing-remitting multiple sclerosis*. 17th Scientific Meeting of the International Society for Magnetic Resonance in Medicine, multimedia E-Poster, Honolulu, Hawaii, April 18-24, 2009.
30. †Cohalan Claire, Chen JJ, **Pike GB.** *Neuronal activity-induced cerebral blood volume changes in humans: measurements with VASO and VERVE*. 17th Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Honolulu, Hawaii, April 18-24, 2009.
31. Chen JJ, **Pike GB**. *Does global cerebral oxygen metabolism change during hypocapnia and hypercapnia in awake humans?* 17th Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Honolulu, Hawaii, April 18-24, 2009.
32. Caramanos Z, Leppert I, Narayanan S, **Pike GB**, Arnold DL. *MRI evidence for decreased blood-brain-barrier disruption in the cerebral lesions of patients with multiple sclerosis following treatment with rituximab*. 4th Annual CIHR Neuroinflammation Symposium, May 22, 2009.
33. Chen JJ, **Pike GB.** *BOLD-specific flow-volume relationship during hypercapnia and hypocapnia in humans*. 17th Scientific Meeting of the International Society for Magnetic Resonance in Medicine, Honolulu, Hawaii, April 18-24, 2009.
34. Affleck W, Deslauriers C, Palmour N, Doyon J, **Pike GB**, Kimmelman J, Racine E. *Informed Consent for Functional Neuroimaging Research: Review of Canadian Practices.* Canadian Bioethics Annual Meeting, Hamilton, June 11-14, 2009.
35. †Chen JJ, **Pike GB**. *Evidence of CMRo2 invariability during end-tidal CO2 manipulations in humans*. 15th Annual Meeting of the Organization for Human Brain Mapping, San Francisco, June 18-23, 2009.
36. †Chen JJ, **Pike GB**. *Venous CBF-CBV relationship during end-tidal CO2 manipulatioins in humans and its significance for BOLD fMRI*. 15th Annual Meeting of the Organization for Human Brain Mapping, San Francisco, June 18-23, 2009.

37. Lotfipour S, Ferguson E, Leonard G, Perron M, **Pike GB**, Richer L, Séguin JR, Toro R, Veillette S, Pausova Z, Paus T. *Orbitofrontal Cortex and Drug Use during Adolescence: Role of Prenatal Exposure to Maternal Smoking and BDNF Genotype.* 15th Annual Meeting of the Organization for Human Brain Mapping, San Francisco, June 18-23, 2009.
38. Fonov VS, Leppert IR, **Pike GB**, Collins DL. *Voxel-wise T2 Relaxometry of Normal Pediatric Brain Development* . 15th Annual Meeting of the Organization for Human Brain Mapping, San Francisco, June 18-23, 2009.
39. Caramanos Z, Leppert I, Narayanan S, **Pike GB**, Arnold DL. *Semi-quantitative magnetic-resonance-imaging evidence that rituximab decreases blood-brain-barrier disruption in lesions that form on treatment in patients with relapsing-remitting MS.* 25th Congress of the European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS), Düsseldorf, Germany, September 9-12, 2009, Multiple Sclerosis, 15(suppl.9), S102.
40. Deslauriers C, Bell E, Palmour N, Doyon J, **Pike GB**, Racine E. *Perspectives of Researchers on Ethics Review of Neuroimaging Research in Canada.* Brain Matters: New Directions in Neuroethics International Conference, Halifax, NS, September 24-26, 2009.
41. Klepousniotou E, **Pike GB**, Pell MD. *A neuroimaging investigation of anger and fear in speech prosody.* 1st Neurolobiology of Language Conference, Chicago, Il, October 15-16, 2009.
42. Klepousniotou E, **Pike GB**, Pell MD. *Anger and fear in speech prosody: An fMRI investigation*. Neuroscience 2009, Chicago, Il, October 17-21, 2009.
43. Appenzeller S, **Pike GB**, Leonard G, Veilleux M, Clarke AE. *Prevalence and types of cognitive impairment in young women with systemic lupus erythematosus (SLE)*. American College of Rheumatology, Philadelphia, October 17-21, 2009
44. Appenzeller S, **Pike GB**, Leonard G, Veilleux M, Clarke AE. *Thalamic volumes predict cognitive impairment evaluated by speed processing tasks in systemic lupus erythematosus*. American College of Rheumatology, Philadelphia, October 17-21, 2009.

CONFERENCE & SEMINAR PRESENTATIONS

by members of the Medical Physics Unit : 2010 calendar year
*(presenter is indicated by an asterisk *)*
(the names of staff members of the MPU are underlined, students are indicated by †)

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1. H. Mohammed,* S. Aldelaijan, N. Tomic, J. Seuntjens, F. De Blois, S. Faria and S. Devic, "Definition of Uptake Volume Histograms for NSCLC Using FDG PET-CT Data," International Conference on Radiation Medicine: Clinical Applications and Innovative Approaches, KFSH&RC, Riyadh, Saudi Arabia, March 1-4, 2010.
2. N. Tomic,* T. Vuong, T. Niazi, L. Lihang, F. DeBlois and S. Devic, "Treatment Shifts and Doses Measurements During daily CBCT Based IGRT," International Conference on Radiation Medicine: Clinical Applications and Innovative Approaches, KFSH&RC, Riyadh, Saudi Arabia, March 1-4, 2010.
3. A. Sarfehnia, B. Clasie, E. Chung, HM Lu, J. Flanz, E. Cascio, M. Engelsman, H. Paganetti, J. Seuntjens (2010) *A Water Calorimetry-Based Dosimetry Standard for Direct Measurement of Absolute Absorbed Dose in Scanning Proton Beam Delivery*, 56th Annual Scientific Meeting of the Canadian Organization of Medical Physicists (COMP), Ottawa, Ontario, June 15 – 19 [Poster–Thur Eve–64].
4. H. Patrocinio, M. Evans, R. Roo, E. Soisson, I. AlDahlawi, J. Seuntjens (2010) *Use of a Micro Liquid Ionization Chamber for Commissioning of Radiosurgery Beams*, 56th Annual Scientific Meeting of the Canadian Organization of Medical Physicists (COMP), Ottawa, Ontario, June 15 – 19 [Poster–Thur Eve–57].
5. S. Lee, G. Stroian, J. Seuntjens *Image-Based Scoring of Radiation Injury in Lung: Analysis of Sources of Uncertainties,* 56th Annual Scientific Meeting of the Canadian Organization of Medical Physicists (COMP), Ottawa, Ontario, June 15 – 19 [WE-C-204B-04] (2010).

6. A. Alexander, E. Soisson, D. DeBlois, J. Seuntjens (2010) *Dynamic Aperture Optimization in MERT Using Direct Aperture Optimization*, 56th Annual Scientific Meeting of the Canadian Organization of Medical Physicists (COMP), Ottawa, Ontario, June 15 – 19 [Poster–Thur Eve–01].
7. E Chung, E Soisson, H Bouchard, and J Seuntjens, Sci-Fri PM*: Delivery — 03: Application of Advanced Dosimetry Techniques to Nonstandard Field Deliveries,* 56th Annual Scientific Meeting of the Canadian Organization of Medical Physicists (COMP), Ottawa, Ontario, June 15 – 19 [Sci-Fri PM] (2010).
8. S. Aldelaijan,* H. Mohammed, N. Tomic, J. Seuntjens, F. DeBlois, L. Liang, and S. Devic, "Impact of water immersion on dose measurement accuracy for the EBT-2 model radiochromic film," ESTRO 29, September 12-16, 2010, Barcelona, Spain.
9. H Bouchard, I Kawrakow, J Carrier, F Lacroix, E Chung, and J Seuntjens *Improving Reference Dosimetry of Nonstandard Beams*, Med. Phys. **37**, 3454 [TH-C-BRB-08] (2010).
10. E. Chung, E. Soisson, H. Bouchard, J. Seuntjens *Advanced Dosimetry Techniques for Accurate Dose Measurement of Small and Nonstandard Fields Improving Reference Dosimetry of Nonstandard Beams*, Med. Phys. **37**, 3454 [TH-C-BRB-06] doi:10.1118/1.3469490 (2010).
11. T. Connell, J. Seuntjens, M Evans *Experimental Feasibility Study on the Use of Scattering Foil Free Beams for Energy Modulated Electron Therapy,* Med. Phys. **37**, 3436 [WE-E-BRA-03] doi:10.1118/1.3469425 (2010).
12. M. Serban, J. Seuntjens, E. Roussin, J. Tremblay, M. Chevrier, N. Khaouam, W. Wierzbicki, *Computer Aided Design and Monte Carlo Validation of a Patient-Specific Co-60 TBI Treatment Unit,* Med. Phys. **37**, 3353 [MO-E-BRA-02] http://online.medphys.org/mphya6/v37/i6/p3353_s1 (2010).
13. S. Aldelaijan, H. Muhammed, N. Tomic, J. Seuntjens, F. DeBlois, L. Liang, S. Devic *Impact of Post-Irradiation Time on the Accuracy of Dose Measurements for EBT-2 Model GAFCHROMIC™ Film,* Med. Phys. **37**, 3265 [SU-GG-T-346] (2010).
14. E. Chung, J. Seuntjens *Comparison of Characteristics of Two Liquid-Filled Ionization Chambers*, Med. Phys. **37**, 3265 [SU-GG-T-344] (2010).
15. N. Tomic, T. Vuong, T. Niazi, B. Bahoric, L. Liang, F. DeBlois, J. Seuntjens, S. Devic *Evaluation of Treatment Shifts for Prostate and Rectum Patients Undergoing CBCT Guided IGRT Using KV CBCT*, Med. Phys. **37**, 3159 [SU-GG-J-63] (2010).
16. A. Sarfehnia, B. Clasie, E. Chung, H. Lu, J. Flanz, E. Cascio, M. Engelsman, H. Paganetti, J. Seuntjens, *Direct Measurement of Absolute Absorbed Dose in scanning Proton Beams Based on Water Calorimetry*, Med. Phys. **37**, 3095 [SU-EE-A2-01] (2010).
17. D.M. Gilles, G. Jarry, S. Devic, J. Seuntjens, P. Mondalek, F. DeBlois, N. Tomic *Comparison of Dose Deposition from KV X-Rays during CBCT Scans between Two Commercially Available on-Line Imaging Systems*, Med. Phys. **37**, 3092 [SU-DD-A4-04] (2010).
18. S. Lee, G. Stroian, I. El Naqa, J. Seuntjens *Image-Based Scoring of Radiation Injury in Lung for Dose-Effect Correlations: Analysis of Sources of Uncertainties,* Med. Phys. **37**, 3423 [WE-C-204B-04] (2010).
19. L. Schubert, E. Soisson, D. Westerly, R. Tolakanahalli, W. Tome *Effects of Target replacement On Helical MVCT Images for Use in Adaptive Radiotherapy,* Med. Phys. **37**, 3191 [SU-GG-T-34] (2010).
20. Eunah Chung, Emilie Soisson, Hugo Bouchard, Jan Seuntjens *Advanced dosimetry techniques for accurate verification of nonstandard beams*, Proceedings of IAEA International Symposium on Standards, Applications and Quality Assurance in Medical Radiation Dosimetry (2010).
21. Sarfehnia A, Stewart K, Ross C, McEwen M, Seuntjens J, *Primary water calorimetry for clinical electron beams, scanned proton beams and 192Ir brachytherapy*, Proceedings of IAEA International Symposium on Standards, Applications and Quality Assurance in Medical Radiation Dosimetry (2010).
22. Mark CI, Slessarev M, Ito S, Han J, Fisher JA, **Pike GB**. *Hyperoxic (HO) versus hypercapnic (HC) BOLD calibration under precise control of end-tidal carbon dioxide and oxygen*. Joint Annual Meeting ISMRM-ESMRM, Stockholm, Sweden, May 1-7, 2010.
23. †Levesque IR, Sled JG, **Pike GB**. *A simple iterative reduction method for optimization of quantitative magnetization transfer imaging.* Joint Annual Meeting ISMRM-ESMRM, Stockholm, Sweden, May 1-7, 2010.
24. Campbell J, Leppert IR, Frey S, Petrides M, **Pike GB**. *Diffusion MRI and anatomical tracer tractography of association pathways in the same brain*. Joint Annual Meeting ISMRM-ESMRM, Stockholm, Sweden, May 1-7, 2010.

25. Tardif CL, Richardson JB, Lepage C, Collins DL, Evans AC, **Pike GB**. *Profile-based cortical parcellation for detection of cortical multiple sclerosis lesions*. Joint Annual Meeting ISMRM-ESMRM, Stockholm, Sweden, May 1-7, 2010.
26. †Jelescu I, Leppert IR, Narayanan S, Arnold DL, **Pike GB**. *Effects of temporal resolution on blood-brain barrier permeability measurement with Dynamic Contrast Enhanced MRI in multiple sclerosis enhancing lesions.* Joint Annual Meeting ISMRM-ESMRM, Stockholm, Sweden, May 1-7, 2010.
27. Mark CI, Fisher J, **Pike GB**. *Hyperoxic versus Hypercapnic calibration (m)-values under precise control of end-tidal CO_2 and O_2.* 16th Annual Meeting of OHBM (Organization for Human Brain Mapping), Barcelona, Spain, June 6-10, 2010.
28. Mark CI, **Pike GB**. *Improved Hyperoxic and Hypercapnic Calibration for fMRI Study of Neurovascular-Metabolism Coupling.* 16th Annual Meeting of OHBM (Organization for Human Brain Mapping), Barcelona, Spain, June 6-10, 2010.
29. Madjar C, Gauthier CJ, **Pike GB**, Monchi O, Doyon J, Hoge RD. *Effect of Scanner Upgrade on an Arterial Spin Labeling (ASL) Longitudinal Study*. 16th Annual Meeting of OHBM (Organization for Human Brain Mapping), Barcelona, Spain, June 6-10, 2010.
30. Voss P, **Pike GB**, Zatorre R. *Grey Matter concentration and myelin content in the occipital cortex of blind individuals predict performance in auditory and tactile tasks*. Society for Neuroscience Annual Meeting, San Diego, CA, November 13-17, 2010.

APPENDIX XVI.

NEW & ONGOING GRANTS

held by MPU FACULTY MEMBERS from June 2009-December 2010

Grants are generally attained under the auspices of the grantee's primary department, *i.e.,* either through McGill University (Oncology or Neurology & Neurosurgery) or the McGill University Health Center (Medical Physics).

DEVIC, S.

S. Devic
Radiochromic film dosimetry
Natural Sciences & Engineering Research Council (NSERC), operating grant
(total award: $180,000; $60,000/year)
(2010-2015).....$135,000

EL NAQA, I.

I. El Naqa
Start-up grant
McGill University Health Centre-Research Institute, start-up equipment grant (new Faculty)
(2010-2011).....$75,000

I. El Naqa
Start-up grant
Fast Foundation, lab start-up grant (new Faculty)
(2010-2013).....$150,000

LEHNERT, S.M.

S.M. Lehnert
Evaluation of radioprotective drug: Studies involving total body irradiation
L.A.B. Institut de Recherche en Pharmacie Industrielle Inc (Laval, QC), contract
(2005-2010).....$407,000

PIKE, G.B.

G.B. Pke
Quantitative magnetic resonance of multiple sclerosis
Canadian Institutes for Health Research (CIHR), operating grant
(incl. equipment request $16,128)
(2004-2009).....$563,143

S. Lupien, **G.B. Pike**, J.C. Pruessner
The functional significance of a cubic centimeter: Stress, memory & hippocampal volumes in young and aged humans
Canadian Institutes for Health Research (CIHR), operating grant
(2005-2010).....$433,390

R. Zatorre, **G.B. Pike**
Brain anatomy in musicians and the blind
Canadian Institutes for Health Research (CIHR), operating grant
(incl. $2,500 for equipment)
(2005-2010).....$595,970

A. Ptito, K.M. Johnson, M. Petrides, **G.B. Pike**
Functional magnetic resonance imaging, structural imaging and cognitive functions following mild traumatic brain injury
Canadian Institutes of Health Research (CIHR), operating grant
(2006-2011).....$559,000

G.B. Pike, D. Arnold
Functional magnetic resonance imaging of brain physiology
Canadian Institutes of Health Research (CIHR), operating grant
(2007-2012).....$606,615

G.B. Pike
Quantitative MRI
James McGill Award
(2007-2013).....$105,000

G.B. Pike
Diffusion imaging of white matter fibre tracts
Natural Sciences and Engineering Research Council (NSERC), discovery grant
(incl. Discovery Acceleratory Supplement of $120,000)
(2007-2012).....$330,000

K. Siddiqi, L. Collins, **G.B. Pike**
Analyse d'images du cerveau
Fonds de recherche sur la nature et les technologies (FRNT)
(plus $16,000 for equipment)
(2007-2010).....$195,000

E. Racine, **G.B. Pike** et al.
Identifying practices, challenges and solutions for REB review of advanced neuroimaging in Canada
Canadian Institutes of Health Research (CIHR), seed grant
(2007-2009).....$95,000

D. Gaudet, T. Paus, **G.B. Pike** et al
Long-term consequences of prenatal exposure to maternal cigarette smoking on brain structure, function and mental health in adolescence: Role of genes and environment in brain development
Canadian Institutes of Health Research (CIHR), operating grant
(2008-2013).....$1,360,475

J. Gotman, **G.B. Pike**, F. Dubeau
Electrical, metabolic and structural analysis of human epileptogenic lesions
Canadian Institutes of Health Research (CIHR), operating grant
(2008-2013).....$761,750

D. Arnold, **G.B. Pike**, S. Narayanan
Imaging demyelination and remyelination in NS
MSSC, operating grant
(2008-2011).....$264,350

G.B. Pike et al.
Imaging innovation and translation
Centre of Excellence Commericilization and Research Grant
(2008-2011).....$500,000

B. Bedell, A. Evans, **G.B. Pike**, P. Rosa-Neto, D. Stanimirovic
Multi-parametric imaging studies of novel therapeutic agents in rodent models of glioma
Canadian Institutes of Health Research (CIHR), operating grant
(2008-2012).....$632,896

B. Bedell, A. Evans, E. Hamel, **G.B. Pike**
Integrated in vivo and ex vivo characterization of cerebrovascular dysfunction and its consequences in transgenic models of Alzheimer's disease
Canadian Institutes of Health Research (CIHR), operating grant
(2008-2009).....$150,000

B. Bedell, A. Evans, E. Hamel, **G.B. Pike**
Integrated in vivo and ex vivo characterization of cerebrovascular dysfunction and its consequences in transgenic models of Alzheimer's disease
Canadian Institutes of Health Research (CIHR), operating grant
(2009-2012).....$507,978

D. Arnold, **G.B. Pike**, S. Narayanan
Imaging inflammation in MS
MSSS, research grant
(2009-2011).....$240,000

N. Bernasconi, **G.B. Pike**
High field imaging of focal epilepsy
Canadian Institutes of Health Research (CIHR), operating grant
(2009-2013).....$393,809

G.B. Pike et al.
Quantitative magnetic resonance imaging of multiple sclerosis
Canadian Institutes of Health Research (CIHR), operating grant
(2010-2015).....$805,242

READER, A.

A.J. Reader
Scanner-adaptive image reconstruction platform for accelerated technology transfer in Positron Emission Tomography
Centre of Excellence in Commercialization & Research
(2010-2011).....$100,000

A.J. Reader
Task-oriented optimization of high- performance positron emission tomography
Natural Sciences & Engineering Research Council (NSERC)
(2010-2015).....$135,000

A.J. Reader
Canada Research Chair in Positron Emission Tomography
Canada Research Chairs Program
(2008-2013).....$500,000

A.J. Reader
Advanced PET image reconstruction, modelling and analysis in neuroscience
Montreal Neurological Institute
(2008-2011).....$100,000

A.J. Reader
Advanced reconstruction algorithms for PET imaging in oncology and neuroscience
EPSRC
(2008-2012).....£417,991 GBP

G.B. Pike, **A.J. Reader** et al.
Brain Imaging Centre Core
Centre of Excellence in Commercialization & Research
(2008-2010).....$1,000,000

SEUNTJENS, J.

J. Seuntjens
"Bourse" for students in medical physics
Ministère de la santé et des services sociaux du Québec
(2008-2010).....$34,000

J. Seuntjens
"Bourse" for students in medical physics
Ministère de la santé et des services sociaux du Québec
(2009-2011).....$34,000

J. Seuntjens
"Bourse" for students in medical physics
Ministère de la santé et des services sociaux du Québec
(2010-2012).....$34,000

J. Seuntjens et al.
Accurate reference dosimetry of non-standard beams using water calorimetry, ionization chambers and Monte Carlo dose calculations
Natural Sciences & Engineering Research Council (NSERC), discovery grant
(2009-2013).....$267,000

D. Roberge (PI), **J. Seuntjens**, et al.
Evaluation de l'impact potentiel d'un centre Québécois de protonthérapie chez les jeunes survivants de cancer
Fonds de la recherche en santé de Québec (FRSQ), research grants
(2010-2013).....$285,955

J. Seuntjens et al.
Monte Carlo-based mixed electron/photon beam inverse treatment planning, delivery and verification
Canadian Institutes for Health Research (CIHR), operating grant
(2010-2015).....$300,000

SOISSON, E.T.

D. Rogerge (PI), **E.T. Soisson** et al.
Evaluation de l'impact potentiel d'un centre Québécois de protonthérapie chez les jeunes survivants de cancer
Fonds de la recherche en santé de Québec (FRSQ), research grants
(2010-2013).....$285,955

APPENDIX XVII.

RESEARCH INTERESTS OF THE ACADEMIC MEMBERS OF THE MPU

DEBLOIS, François	*Photon and electron beam dosimetry, stereotactic radiosurgery, Monte Carlo treatment planning and medical physics software.*
DEVIC, Slobodan	*Radiochromic film dosimetry, GI brachytherapy, imaging modalities for radiotherapy treatment planning and verification, PET/CT.*
EL NAQA, Issam	*Oncology informatics; Image-guided and adaptive radiotherapy; Data analysis of different anatomical and functional imaging modalities; Pattern recognition and data mining in biomedical applications…*
EVANS, Michael D.C.	*Clinical aspects of radiotherapy, including low and high dose rate brachytherapy, dynamic external beam radiotherapy, linear accelerator calibration and quality assurance, computerized treatment planning, radiation safety.*
GAUVIN, Alain	*Wide area medical imaging distribution deals with standard based methods for delivering medical imaging results over multi-provider environments. Methods for addressing different challenges of such networks were presented, and are currently being implemented.*
HEGYI, Gyorgy	*Image analysis and manipulation, patient radiation dose determination in radiology with special dosimetry techniques, health physics. Different diagnostic imaging procedures can result in significant radiation dose to the patient. The radiation dose to pediatric patients during CT procedures is of special concern. Special dosimmetry tools are required for routine CT dose measurements like radiochromic films, MOSFETs others.*
JANICKI, Christian	*Intravascular brachytheray, internal dosimetry (nuclear medicine), x-ray dosimetry, physics of consciousness.*
KILDEA, John	1. Oncology informatics 2. Data mining in medicine and astronomy 3. Informatics and statistical process control for medical physics applications 4. Patient Safety in Radiation Therapy
LEGÉR, Pierre	*Distance and position sensing, dose detection, dose delivery, x-ray control, general application of electronic to geophysics and radiotherapy.*
LEHNERT, Shirley M.	*Characterization of the radioresistant phenotype; cross resistance between radiation and chemotherapeutic drugs; radiation-induced genes; delivery systems for radiosensitizing drugs.*
PARKER, William	*IMRT quality assurance, tomotherapy clinical applications, pediatric radiotherapy, image guided radiation therapy, stereotactic body radiotherapy, risk management and management in Radiation Oncology.*

PATROCINIO, Horacio J.	*Stereotactic radiosurgery, intensity modulated and image-guided radiation therapy*.
PIKE, G. Bruce	*Magnetic resonance (MR) imaging: MRI acquisition physics, magnetization transfer theory and applications, functional MR brain imaging, cerebral blood flow imaging, neuronal activation physiology, and diffusion tensor imaging*.
PODGORSAK, Ervin B.	*Photon and electron beam dosimetry, stereotactic radiosurgery, general applications of physics to radiotherapy.*
READER, Andrew	*Image reconstruction, kinetic parameter estimation & system modeling for high resolution 4D Positron Emission Tomography (PET)*.
RICHARDSON, Richard B.	*Code for assessing internal dose. Dosimetry of radon and cardio-vascular disease. Dosimetry of tritium and* ^{14}C *intakes. Radiation dose to bone marrow stem cells*.
RUO, Russell	*Intensity modulated radiotherapy (IMRT), image guided radiotherapy (IMGT), stereotactic radiosurgery (SRS).*
SEUNTJENS, Jan P.	*Clinical reference dosimetry for standard and non-equilibrium radiation fields, studying correlations between dosimetric errors and outcome for lung cancer patients, development and clinical implementation of energy modulated electron radiation therapy*.
SOISSON, Emilie	Tomotherapy based stereotactic radiosurgery Proton therapy Clinical implementation of Monte Carlo based treatment planning and Small field dosimetry
STROIAN, Gabriela	*Lung cancer radiotherapy, respiratory motion, 4D radiotherapy, deformable registration, treatment planning, heterogeneity corrections, Monte Carlo dose calculation, functional imaging, radiobiological modeling*.
TOMIC, Nada	CBCT in image guided radiation therapy; PET in radiation therapy; Radiochromic film dosimetry
WIERZBICKI, Wieslaw	*External beam radiotherapy with photons and electrons, mathematical modeling in radiation oncology and physics.*

APPENDIX XVIII.

MPU SEMINAR SERIES : ACADEMIC YEAR 2009-2010

Fall 2009-2010

September 11 : Rob Appleyard (Sheffield Hallam University, Sheffield, United Kingdom)
Virtual environment of a radiotherapy treatment room

September 25 : Richard B. Richardson (AECL, Chalk River, ON)
Ionizing radiation and aging: Rejuvenating an old idea

October 09 : Arman Sarfehnia (Medical Physics Unit, McGill University, Montréal, QC)
Water calorimetry-based radiation dosimetry in HDR ^{192}Ir brachytherapy and proton therapy

October 23 : John Kildea (Medical Physics Unit, McGill University, Montréal, QC)
The cosmic slice: An introduction to ionizing radiation from space

November 06 : Émilie Soisson (Department of Medical Physics, McGill University Health Centre, Montréal, QC)
The Wisconsin approach to dose and fractionation for lung cancer

November 10 : Stephan Bodis (Director, Institute of Radiation Oncology,
Kantonsspital Aarau, Wettingen, Switzerland)
Biological and clinical radiation oncology: Tailoring molecular radiosensitizers to locally advanced epithelial cancer

November 13 : Tony Falco (Founder, Resonant Medical Inc., Montréal, QC)
Future developments in breast lumpectomy hybrid planning and image guided adaptive radiation treatment

December 04 : Jean Pouliot (Vice-Chair & Interim Chief Physicist,
Helen Diller Family Comprehensive Cancer Ctr, San Francisco, CA)
If medicine were an ART, would you want to be treated by Dali or Rembrandt? From IPSA to stereotactic robotic brachytherapy

December 11 : Shirley Lehnert (Dept of Oncology / Medical Physics Unit, McGill University, Montréal, QC)
150 years since the publication "The single best idea ever": Darwin, natural selection and the theory of evolution

Winter 2009-2010

January 22 : Matthew Douglass (ScandiDos, Inc., Bethlehem, PA)
Advanced 3D QA for rotational therapy using Delta 4 phantom

February 19 : Malcolm McEwen (Ionizing Radiation Standards, National Research Council, Ottawa, ON)
Updating reference dosimetry a decade after TG-51

March 19 : Various staff (McGill University / Montreal Neurological Institute / McGill University Health Centre / Sir M.B. Davis Jewish General Hospital, Montreal, QC)
M.Sc. project presentations to students

March 26 : Jeffrey Williamson (Medical Physics / Radiation Oncology, Virginia Commomwealth University, Richmond, VA)
Beyond image-guided radiation therapy: Imaging science challenges for biologically targeted radiation therapy

March 30 : Marija Popovic (Medical Physics, Ottawa Hospital Cancer Centre, Ottawa, ON)
All for one and one for all: A wealth of radiation therapy resources in Canada with few overstretched facilities in Kenya

April 09 : Magdalena Bazalova (Radiation Oncology, Stanford University School of Medicine, Stanford, CA)
Small animal radiotherapy at Stanford

April 16 : Hugo Bouchard (Physics, University of Montreal, Montreal, QC)
Study of ionization chamber perturbation factors in nonstandard beams

April 23 : Rowan Thomson (Physics, Carleton University, Ottawa, ON)
Fast Monte Carlo dose calculations for brachytherapy with BrachyDose

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Fall 2010-2011

October 01 : Alasdair Syme (Medical Physics, Cross Cancer Institute, Edmonton, AB)
Evaluation of therapeutic response using high field MR

October 22 : Ervin B. Podgorsak (Medical Physics, MUHC, Montreal, QC)
Vignettes from Canadian medical physics: 1970-2010

November 19 : Richard B. Richardson (AECL, Chalk River, ON)
Factors, including diet & growth, that elevate the internal radionuclide dose & rish to infants and children compared to adults

December 03 : Patrick Boyle (Physics, McGill University, Montreal, QC)
Development of an imaging gamma camera at McGill University

APPENDIX XIX.

COMMITTEE INVOLVEMENT of MPU FACULTY MEMBERS

within McGill from June 2009-December 2010

DEBLOIS, F.:
Member, *Medical Physics Residency Committee* (2008-present)
McGill University
Member, *Radiation Oncology Radiation Safety Committee* (2008-present)
Member, *Radiation Oncology Quality Assurance Committee* (2008-present)
Member, *Radiation Oncology Lean Health Care Reorganization Ctte* (2010-present)
Chair, *Annual Scientific Workshop of AQPMC* (November 14, 2010)
SMBD Jewish General Hospital

EL NAQA, I.:
Member, *Medical Physics Radiation Safety Committee*
Member, *Radiation Oncology / Medical Physics Research Committee*
McGill University Health Centre (MUHC)

EVANS, M.D.C.:
Member, *Residency Training Committee* (1999-present)
Member, *Radiation Safety Committee*
Medical Physics Unit, McGill University
Member, *Radiation Safety Committee* (2003-present)
Member, *Medical Physics Radiation Safety Committee* (2006-present)
Member, *Radiation Oncology QA Committee* (2002-present)
Member, *Medical Physics QA Committee* (2006-present)
McGill University Health Centre

HEGYI, G.:
Member, *Radiation Safety Committee*
McGill University Health Centre (MUHC)

JANICKI, C.:
Member, *MUHC Radiation Safety Committee*
Member, *MUHC Research Cenre Health & Safety Committee*
Member, *Unité conjointe d'évaluation des technologies de la santé / Joint Technology Assessment Unit (TAU)*
McGill University Health Centre

KILDEA, J.:
Member, *Radiation Oncology Electronic Chart Committee*
Member, *Radiation Oncology LEAN Healthcare Committee*
McGill University Health Centre

LEHNERT, S.M.:
Co-Chair, *Cancer Axis* (2004-2009)
Member, *Radiation Safety* Committee
McGill University Health Centre

PARKER, W.A.: Director, *Residency Training Committee*
(Radiation Oncology Physics)
Member, *Quality Assurance Committee*
Member, *Radiation Safety Committee*
Medical Physics, McGill University Health Centre
Member, *Event Reporting Committee*
Member, *Pre-treatment Image Verification Committee*
Member, *Review of Patient Waiting Times - Quality Assurance Committee*
(Radiation Oncology)
McGill University Health Centre

PATROCINIO, H.J.: Member, *Seminar Committee*
Member, *Residency Training Committee (Radiation Oncology Physics)*
Member, *Medical Physics Quality Assurance Committee*
Member, *Radiation Safety Committee*
Medical Physics, McGill University
Member, *Radiation Oncology Brachytherapy Committee*
Member, *Radiation Oncology ARIA Implementation Committee*
McGill University Health Centre

PIKE, G.B.: Co-Chair, *Ad-hoc Committee: Coordination of BME*
Activities at McGill (2009-present)
Member, *Departmental Tenure Committee* (2005-present)
Member, *Departmental Advisory Committee* (2010-present)
Biomedical Engineering Department, McGill University
Member, *Admissions Committee* (2008-present)
Member, *Search Committee – Academic Positions* (2009-present)
Medical Physics Unit, McGill University
Senate representative, *University Tenure Committee* (May 2009-April 2011)
Faculty of Education, McGill University

READER, A.: Member, *PET Working Committee* (2008-present)
Montreal Neurological Institute (MNI)

SEUNTJENS, J.: Founding Member, (2009-present)
Society of Directors of Academic Medical Physics Programs (SDAMPP)
Member, *Recruitment Committee* (2009-present)
(Director, Radiation Oncology)
Member, *Oncology Management Committee* (2009-present)
Member, *Admissions Committee*, Medical Physics Unit (2004-present)
McGill University
Member, *Steering Committee (Department of Medical Physics)* 2004-present)
McGill University Health Centre

APPENDIX XX.

COMMITTEE INVOLVEMENT of MPU STAFF MEMBERS OUTSIDE McGILL from June 2009-December 2010

DEVIC, S.:
Member, *Board of Editors*
Journal of Medical Physics

EL NAQA, I.:
Member, *Bioinformatics Committee*
Member, *Biological Effects Committee* (2005-present)
Faculty Member, *International Scientific Exchange Program* (ISEP/AAPM) (2010)
American Association of Physicists in Medicine (AAPM)
Organizing Chair, *Special session on Data Mining Method for Modeling Treatment Outcomes in Cancer*
International Conference on Machine Learning & Applications, Washington, DC (2009, 2010)
Technical interpretation, *Program Committee of the 9th IEEE Southwest Symposium on Image Analysis & Interpretation* (SSIAI 2010)
Member, *Editorial Board*
Journal Radiation Oncology Informatics (2009-present)
Member, *Organizing Committee*
International Workshop on Recent Advances in Monte Carlo Techniques for Radiation Therapy (RAMCTRT), June 08-10, 2011, Montreal, Québec

EVANS, M.D.C.:
Board Member & Chief Examiner, (2007-2010)
Representative, *Canadian Medical Association's Conjoint Committee on Accreditation* (1998-present)
Canadian College of Physicists in Medicine (CCPM)

DEBLOIS, F.:
Member, *Science & Education Committee* (2010-present)
Member, *Professional Affairs Committee* (2010-present)
Member, *Radiation Safety Committee* (2008-present)
Member, *Linear Accelerator Group Tender: Québec* (2009-2010)
Association Québecoise des Physiciens Médicaux Cliniques (AQPMC)

KILDEA, J.:
Member, *Editorial Board*
new Journal of Radiation Oncology Informatics

LEHNERT, S.M.:
Member, *Scientific Advisory Committee* (2001-present)
Biological Research Facility, AECL Laboratories, Chalk River
Member, *Scientific Advisory Board* (2005-present)
Resonant Medical Systems, Montreal, Quebec
Member, *Grant Review Panel* (2006-present)
NASA, Washington, DC
Member, *Proof of Principle Awards Committee* (December 2010)
Canadian Institutes of Health Research

PARKER, W.A.:
Chairman, *Sub-Committee – AAPM Summer School*
Member, *Continuing Professional Development Committee*
Chairman, *RSNA Education Coordination Sub-Committee*
American Association of Physicists in Medicine (AAPM) Annual Meeting
Oral Examiner, *Membership Exam*
Canadian College of Physicists in Medicine (CCPM)
Member, *Comité de devis techniques en radiothérapie*
Association Québecoise des Physiciens Médicaux Cliniques (AQPMC)

PATROCINIO, H.J.:
President,
Association Québecoise des Physiciens Médicaux Cliniques (AQPMC)
Oral examiner, *Membership and fellowship exams*
Member, *Comité d'Équité Salariale*
Programme Général Parapublic du Secteur Santé et Services Sociaux, Québec
Exam item writer, *Radiological Physics*
American Board of Radiology (ABR)
Expert, *Verification of program content*
IAEA Course: State of the art: Stereotactic Radiosurgery and IMRT Workshop, São Paulo, Brazil (November 2009)
Member, *Organizing Committee*
Annual Workshop 2009: Développements en Curiethérapie
Association Québecoise des Physiciens Médicaux Cliniques (AQPMC)

PIKE, G.B.:
Extramural Member, *Advisory Committee* – Quantitative Neuroscience with Magnetic Resonance (QNMR) (2005-present)
Yale University
Member, *Scientific Advisory Committee* (2006-present)
Quebec Bio-Imaging Network (QBIN)
Member, *Local Organizing Committee* – 17th International Conference on Organization of Human Brain Mapping, June 26-20, 2011, Québec City
Member, *NIMH Advisory Panel* (2008-present)
Centre for Neuroimaging Sciences, Institute of Psychiatry, KCL, London, UK
Member, *External Advisory Committee* (2009-present)
NIH Major Instrumentation Research Grant, Yale University
Elected Member, *White Matter Study Group* (2009-2012)
ISMRM
Chair, *Medical Physics & Imaging Grants Committee* (2008-2009)
Canadian Institutes for Health Research (CIHR)
Member, *Steering Committee* (2009-present)
Douglas Institute Brain Imaging Centre
Co-organizer & Co-chair, *Ultra-high Field MRI Workshop* (April 09, 2010)
Quebec Bio-imaging Network (QBIN), Montreal Neurological Institute
Member, *Governing Board* (2010-present)
Canada Magnetoencephalography Consortium
Member, *White Matter Workshop Organizing Committee* (May 2010)
ISMRM – ESMRMB, Stockholm, Sweden
Consultant, *Biomedical Engineering Program Accreditation* (August 2010)
Ontario Council on Graduate Studies (OCGS)
Member, *Advisory Board* (2010-present)
National Research Council (NRC), Institute for Biodiagnostics

READER, Andrew:

Session Chair, *MIC Conference* (2008)
Member, *MIC Program Committee* (international IEEE Medical Imaging Conference:
2008 – Dresden, Germany; 2009 – Florida)
Institute of Electrical & Electronics Engineers
Reviewer, *Grant applications*
Research Grants Council, Hong Kong
Wellcome Trust, England
Associate Editor,
International Journal of Tomography & Statistics
Member, *Grants Committee*
Canadian Institutes for Health Research (CIHR)

SEUNTJENS, J.:

Key Mentor (national), *Excellence in Radiation Research in the 21st Century Training Program* (EIRR21)
Canadian Institutes for Health Research (2006-present)
Chair, *Committee on Small-field Photon Dosimetry & Applications in Radiotherapy* (2010=-present)
International Commission on Radiation Units & Measurements (ICRU)
Member, *Medical Physics & Imaging grant panel* (2009-present)
Canadian Institutes for Health Research (CIHR)
Chair, *Workgroup on the Develoment of a Calibration Protocol for TG-51 Non-compliant Beams* (2007-present)
American Association of Physicists in Medicine (AAPM)
Member, *International Advisory Committee on Small-field Dosimetry*
International Atomic Energy Agency (IAEA) (2007-present)
Member, *Workgroup on Update of TG-51 (WGTG51)* (2006-present)
American Association of Physicists in Medicine (AAPM)
Member, *International Advisory Committee on IAEA Phase Space*
International Atomic Energy Agency (IAEA) (2006-present)
Organizer, *Small Field Dosimetry & Radiation Therapy*,
International Commission on Radiation Units & Measurements (ICRU) Committee Meeting, September 10-12, 2010,
Barcelona, Spain

WIERZBICKI, W.:

Member, *Provincial Government Radiation Oncology Committee*
Member, *Committée pour achats regroupés des accélérateurs*
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