McGILL UNIVERSITY - MEDICAL PHYSICS UNIT
ANNUAL REPORT 2016

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Professor & Director
Margery Knewstubb, Administrative Coordinator

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I. Activity Summary

I.1. Background

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, biophysics and computer science.

Medical physics is also a rapidly expanding profession and job opportunities for graduates of medical physics programs, although affected by a saturating job market in the clinical profession, remain promising locally, nationally and internationally. McGill's Medical Physics program has been in existence for 38 years and the program is playing a world-leading role in academic training of professionals as well as scientists in medical physics.

The accreditation of graduate and residency programs in medical physics is generally provided by the *Commission on Accreditation of Medical Physics Educational Programs* (CAMPEP) sponsored by five organizations: the *American Association of Physicists in Medicine* (AAPM); the *American College of Radiology* (ACR); the *American Society for Radiation Oncology* (ASTRO); the *Canadian Organization of Medical Physicists* (COMP); and the *Radiological Society of North America* (RSNA).

The MPU graduate programs in medical physics were first accredited in 1993 for a period of 5 years and reaccredited in 1998, in 2003, 2008 and 2013 for an additional 5-year period. 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, 2010 and finally 2015 for an additional 5-year period to December 31, 2020. McGill is one of 11 institutions in Canada and one of 92 in North America with this type of accreditation. Information about the MPU, its clinical, research and academic mission can be found under www.mcgill.ca/medphys.

In 2013, the MPU program initiated the Medical Physics Research Training Network (MPRTN) together with the CAMPEP accredited medical physics program at Laval University. This structure provides resources for medical physics research training to a network consisting of McGill MPU, U Laval and collaborators from the National Research Council Canada, the Canadian Nuclear Safety Commission, the Massachusetts General Hospital Proton Centre, and others together with industry. The networked training approach allows the MPU to provide trainees with an enriched training environment so that they are better prepared for employment roles in industry, government and academia, in addition to the well-established role in clinical professions. The MPRTN has improved access of trainees to expertise and opportunities available internationally. The MPRTN is currently funded by the Natural Sciences and Engineering Research Council through the CREATE program with contributions from McGill University, RI-MUHC as well as industry. More information about the MPRTN program can be found on http://mprtn.com.

I.2. Highlights

I.2.1. Research and publications

The calendar year 2016 was a successful year in terms of output: 58 peer reviewed publications by MPU members; 55 published abstracts; 28 invited presentations; and 97 conference presentations. For complete listings and for a history of MPU's Research and Publications, please consult:

http://www.mcgill.ca/medphys/academic/publications

Similarly, the overall grant and project support revenue for year 2016 was substantial. For a listing of grants, projects and contracts, please consult *Appendix XIII*.

I.2.2. Teaching and learning

Ten M.Sc. students in medical physics graduated during 2016. Eight became Ph.D. students (5 at McGill, 1 at U de Montreal, 1 at Carleton University, 1 at INRS-EMT), 1 became a Resident at Montefiore Medical Center, New York, and 1 became a Research Assistant at the McGill University Health Centre. Please consult *Appendix II* for the full list of graduated students. Demographic data is given in *Appendix III*.

During the 2016 calendas year, 5 PhD students graduated in Medical Physics - 3 became resident or postdoc-resident (one at SMBD-Jewish General Hospital, Montreal, one at Memorial Sloan Kettering, New York and one at University of Toronto,); one became Physicist (at CHUM Notre-Dame, Montreal); and one became a Postdoctoral Fellow (McGill U).

During the 2016 calendar year, 11 residents completed the two-year Residency Training Program in Radiation Oncology Physics (G. Aldosary, K. Zerouali). Since the initial McGill University residency program accreditation by CAMPEP in 2000, the number of Residency graduates amounts to 41 – the number of informal "on the job" *ab initio* training in radiation oncology physics at McGill prior to inception of the CAMPEP-accredited residency program is 16. The number of residents enrolled in the McGill program during of Fall 2016 stood at 14. This significant number of trainees is thanks to a Quebec-wide approach to the residency training. A listing of the residency graduates and various relevant data are provided in *Appendix IV*.

The graduate teaching distribution during the 2016 calendar year is shown in the list of instructors for didactic courses in *Appendix V*. During the 2016 calendar year, 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 VI*.

All individual instructors were evaluated separately and also 2 laboratory 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) and averaged over all registered students, the evaluations for the Winter 2016 semester ranged from 2.84 to 4.9 and for the Fall 2016 semester they ranged from 3.68 to 4.81.

Students who began either their first or second year of M.Sc. medical physics studies in Fall 2016 are listed in *Appendix VII*. The Ph.D. program, in collaboration with the Department of Physics and the Department of Biomedical Engineering (BME), grew dramatically over the past few years. The 20 students at various stages of their Ph.D. thesis work during Fall 2016 are listed in *Appendix VIII*. Most have either passed the preliminary examination at the Physics Department of McGill or their comprehensive project committee at the BME Department.

The employment situation of M.Sc. medical physicists has become more restricted as a result of the 2014/2016 ABR/CCPM deadline (ABR: American Board of Radiology; CCPM: Canadian College of Physicists in Medicine). Every clinical medical physicist wishing to sit for the certification exams of the ABR or CCPM must come from a CAMPEP (CAMPEP: Commission for Accreditation of Medical Physics Education Programs) accredited residency program. Despite the increase in CAMPEP-accredited residency programs, access to these programs is severely restricted for M.Sc. graduates, since they often compete with Ph.D. candidates applying for the same positions. The recruitment philosophy of the MPU M.Sc. program, hence, is tending towards recruitment for candidates who are more likely interested in the Ph.D. program. In Winter 2016 the recruitment cohort of M.Sc. candidates consisted of 53 candidates, out of which the incoming cohort for September 2016 comprised 4 new students. The incoming cohort for September 2017 is expected to consist of larger statistics, potentially 11 students.

I.2.3. Accreditation review and cyclical review

During the year 2013, the MPU was reviewed by the Commission for Accreditation of Medical Physics Education Programs (CAMPEP; http://www.campep.org). The accreditation review document was largely complementary although pointed to the fragility of the MPU structure. The report offered some suggestions but unconditional reaccreditation for 5-years (2013-2018) was received. Following CAMPEP suggestions, in terms of course offerings, the MPU is currently revising its M.Sc. curriculum with respect to the introduction of new courses in (1) Anatomy and Physiology, (2) Radiation Biology, and (3) Instrumentation. The unit also underwent Cyclical Review with site visit in November 2013. The report was again largely complimentary, but pointed to two key points and six other issues that must be addressed. The two key points in the report were:

1. *"The structure of the unit makes it vulnerable to any of the core academic members leaving. As an example, the devastation by the recent departure of Dr. Bruce Pike was cited. Retention of the current director is seen by the review committee as a priority. Further, the review committee recommends (1) Five positions to be secured at the university to be staffed with a mix of junior and mid-career scientists. (2) Elevation from Unit status to Departmental status."*
2. *"The imminent retirement of the core experimental Radiation Biologist (Dr. Lehnert) leaves a hole in the wet-lab capability of radiation biology expertise within (or accessible to) the unit."*

The faculty of medicine committed to increasing the staff to four TT positions. One of these positions (the 3rd) was posted during 2015 and a candidate selected and appointed (Dr. J Kildea, January 2017). The remaining (4th) TT position will be staffed in 2017. A potential transition to Departmental status remains a medium-term goal. With regards to point 2, the curriculum update committee has appointed Dr. Norma Ybarra to assume the role of course teacher for Radiation Biology (in lieu of Dr. Lehnert) and she has done this for the past 2 years. Dr. Ybarra is a research associate in Seuntjens' lab supported by CIHR funds. She is separately paid for her teaching contributions to the unit. During 2016 steps were taken to transfer Dr. Ybarra to the budget freed by the retirement of Dr. Lehnert and she assumed that position in early 2017.

One of the six other points raised by the review committee, was **dry-lab space**. The need for dry lab space on the Glen has been pointed out to both Faculty and MUHC on different occasions and in subsequent annual reports. Currently, the MPU is housed in the Cancer Centre at the Glen. The dry lab space for this is inadequate and consists of borrowed clinical space.

I.2.4. Involvement in the community

Members of the MPU are actively involved in clinical duties and also take up significant roles in professional and scientific committees and boards. *Appendix XVI* and *Appendix XVII* summarize the committee memberships within McGill and outside McGill, respectively. Of particular note are activities in committees of prestigious organizations such as the International Atomic Energy Agency (IAEA) and the International Commission for Radiation Units and measurements (ICRU).

I.2.5. Partnerships

Members of the MPU have a broad network of collaborators worldwide.

In 2013, the MUHC cancelled the single and only physics residency position. Since then local residents have been supported by temporary replacements of clinical physicists in maternity leave, left-over budgets from research grants, etc. A very important partnership has improved the capacity of the medical physics residency program whereby the MPU is responsible for residency training of junior staff physicists in affiliate institutions. The MPU-MUHC has partnership agreements with (1) St. Peters (Albany); (2) U. Laval (CHUQ); (3) U. Montreal (CHUM); (4) Trois-Rivieres; (5) JGH and (6) Oman. During the year 2016, this model has developed further and the current number of clinical medical physics residents is 14 (see *Appendix IV*).

I.2.6. Personnel and location changes during 2016

Currently all clinical medical physicists at the MUHC and the JGH either have CAS-professional, CAS-research appointments in the department of Oncology or are affiliate member status in the MPU.

Recent MPU members that have left McGill generally continue to hold adjunct faculty status and generally continue to participate in the co-supervision of graduate students.

The academic year 2015-2016 was the first year in which the majority of the didactic teaching was at the Glen Cedars Cancer Centre. The new facilities provide superior meeting and teaching spaces which is a positive factor for the functioning of the Unit.

I.2.7. Honors, awards and prizes

The year 2016 was an extremely successful year with regards to scholarship awards to students. They can be summarized as follows:

Table: External scholarships or awards granted to MPU students during the year 2016. Funding of the CREATE/MPRTN program is additional & not part of this listing.

Student Name	Scholarship type/agency	Supervisor
Ahmed, Zaki	• George G. Harris Fellowship • Physics Travel Award	Levesque
Albers, Julia	• MSSS Bursary	Parker, Kildea
Alonso-Ortiz, Eva	• Physics Travel Award	Levesque, Pike
Carrier-Vallieres, Martin	• George G. Harris Fellowship	Seuntjens
Chatterjee, Avishek (Postdoctoral Fellow)	STARS21 Scholar, UHN (TFRI)	Seuntjens
Cho, Sungjoon (Daniel)	• Graduate Excellence Award	-
Diamant-Boustead, André	• Young Investigator Symposium, COMP, 2^{nd}	Seuntjens
Famulari, Gabriel	• Graduate Excellence Award	Enger
Fortier, Véronique	• FQRNT MSc Scholarship • FQRNT PhD Scholarship • NSERC PhD Scholarship (Jan17-Dec19)	Levesque
Hickling, Susannah	• NSERC PhD Scholarship	El Naqa, Seuntjens
Joseph, Ackeem	• Henry R. Shibata Cedars Cancer Institute Fellowship Award	Kildea
Mirzakhanian, Lalageh	• Physics Travel Award	Seuntjens
Modchalingam, Mithunan	• Gerald Clavet Fellowship	Levesque
Montgomery, Logan	• Alexander Graham Bell Canada Grad Scholarship-Doctoral (CGSD)	Kildea
Novosad, Philip	• FQRS scholarship	Collins
Osunkwor, Emmanuel	• CIBC Fellowship, Fac Medicine, McGill U • Graduate Excellence Award	Davis
Pater, Piotr	• Research Institute-MUHC scholarship	Seuntjens
Patrick, Haley	• Graduate Excellence Award	Kildea
Perez, Jessica	• WMIC Travel Award	Seuntjens
Renaud, James	• McGill Dobson Award (Health Sciences) • EIRR21 (UHN) award	Seuntjens
Renaud, Marc-André	• FQRNT Doctoral Scholarship	Seuntjens

Simard, Mikael	• FQRNT MSc Scholarship • NSERC PhD Scholarship (applied through McGill, tenure at U de Montreal) Awarded / Declined: • RI-MUHC Studentship • McGill Med. Studentship • FRQNT PhD Scholarship	Levesque
Toltz, Allison	• EIRR21 (UHN) award	Seuntjens
Turgeon, Vincent	• FQRNT MSc Scholarship	Enger
Watson, Peter	• Physics Travel Award	Seuntjens
Xing, Stella	• FQRS Bourse Doctorat Awarded / Declined: • FRQNT PhD Scholarship • Grad Exc. Travel Award • ISMRM, Educ. Stipend	Levesque
Zlateva, Yana	• FRQNT PhD Scholarship	El Naqa, Seuntjens

Further awards or honors obtained/maintained during 2016 are:

Faculty awarded	Type of award
Devic, Slobodan	• FRSQ Salary Award
El Naqa, Issam (Adjunct)	• Best in Physics, ASTRO • ICCR top-rated abstract • Three students received YIS prizes, COMP
Enger, Shirin	• CFI John R. Evans Leaders Fund grant • CRP PI Award: Simone & Morris Fast
Kildea, John	• Prix de Cancérologie en Organization des Services, Cancérologie du Québec (Health Informatics Group)
Levesque, Ives	• MGH Foundation / Phil Gold Fellowship / RI-MUHC
Parker, William	• McGill U, Award for outstanding contributions to teaching in the Residency Program
Pike, G. Bruce	• Senior Fellow, ISMRM • Campus Alberta Innovates Program (CAIP) Chair in Healthy Brain Aging, U Calgary
Podgorsak, Ervin B. (Emeritus Professor)	• Order of Canada
Popovic, Marija	• AAPM Summer School Scholarship • COMP Summer School Scholarship
Seuntjens, Jan	• Howard W. Pillow Memorial Award

I.2.8. Fundraising and social media presence

The **"Ervin B. Podgorsak Fellowship for Graduate Studies in Medical Physics"** fund, established in September 2013, continued to increase during 2016 with individual donations from alumni and colleagues. The ongoing campaign to encourage donations to the Fellowship was highlighted during the first annual International Day of Medical Physics held November 07, 2016. The goal of the scholarship fund is to support outstanding Medical Physics students at the M.Sc. level in their studies. By creating this scholarship, the MPU is making a commitment to sustain Dr. Podgorsak's dedication to academic excellence through increased student funding. Through the support of our faculty, alumni, and friends, the MPU fundraising committee created a scholarship fund by raising minimum $10,000 per year over four years – in fact the total support so far is close to $50,000, from which the first Ervin B. Podgorsak Fellowship in amount $10,000 will be accorded to an incoming MSc student in Fall 2017. More information can be found on http://www.mcgill.ca/medphys/scholarship.

The MPU also drastically enhanced its social media platforms through Facebook, LinkedIn and Twitter. The McGill Medical Physics webpage is also kept up to date by the newly formed Medical Physics Student Council (MPSC), see http://mcgill.ca/medphys. Follow McGill Medical Physics on Facebook at: `@McGillMedicalPhysics`.

II Unit Status Update

II.1. 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 & research in medical physics.

3) To join in one academic unit (Medical Physics Unit) the various members of McGill departments, McGill University Health Centre and Jewish General Hospital who, through their academic training in physics, engineering 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 and Biomedical Engineering departments, 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. & 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 & international organizations and the general public, as required.

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

15) To work with industry, government agencies, other CAMPEP accredited programs as well as international academic institutions to update and modernize the graduate programs so that graduate students have access to expertise and equipment most suitable for their project and education.

II.2. Specific objectives for 2016-2017

The goals for the upcoming academic year will continue to address the 2013 cyclical review report, the curriculum revisions and the deployment of the MPRTN CREATE 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 and appoint more CAS-research (with salary source MUHC and JGH) faculty in the Department of Oncology.

2) To continue graduate program curriculum revisions commensurate recent developments in Medical Physics and its interaction with associated basic and clinical sciences. To continue establishing the CREATE courses and activities as outlined in the CREATE proposal. To seek new funding to keep the CREATE MPRTN program active: the funding sunset for MPRTN is 2019.

3) In response to the cyclical review report (January 2014), to develop a business plan for the future of the MPU, including consideration for Departmental status.

4) In response to the cyclical review report (January 2014), to address the course teaching of Radiation Biology and finalize the recruitment of faculty in Radiation Biology.

5) To maintain the MPU's operating budget to cover adequately the teaching responsibilities of non-McGill clinical physics staff.

6) To maintain & increase productivity with regards to standard academic indicators (# of publications, presentations, graduating students, etc.).

II.3. Overview of McGill Medical Physics Program, Staff and Committee Structure

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

Established:	September 1979 by the Faculty of Medicine of McGill University 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:*** Jan Seuntjens, Ph.D., FCCPM, FAAPM, FCOMP
- ***Degrees offered:*** M.Sc., Ph.D. and Certificate program in medical physics
- ***Accreditation:*** CAMPEP* accredited the M.Sc. & Ph.D. programs since 1993
- ***Re-accreditation:*** CAMPEP* re-accredited both programs (1998, 2003, 2008, 2013):
- ***M.Sc. degrees conferred to date:*** **236**
- ***Ph.D. degrees conferred to date:*** **38**
- ***Current M.Sc. student enrollment:*** **7**
- ***Current Ph.D. student enrollment:*** **20**
- ***Number of mandatory courses:*** **12 (M.Sc), 2 (Ph.D), 2 (CREATE)**
- ***Number of academic faculty:*** **7**
- ***Number of clinical faculty:*** **19**
- ***Number of adjunct members:*** **3**

RESIDENCY PROGRAM IN RADIATION ONCOLOGY PHYSICS:

- ***Residency Program Director (RPD):*** William Parker, M.Sc., FCCPM
- ***Accreditation:*** CAMPEP* accredited the Residency program in 2000
- ***Re-accreditation:*** CAMPEP* re-accredited (2005, 2010, 2015) for 5 y
- ***Number of graduates to date:*** **41** (31 accredited & 16 non-accredited)
- ***Current enrollment:*** **12**
- ***Program duration:*** **2 years**
- ***Number of mandatory rotations:*** **4**
- ***Number of mandatory courses:*** **4***

(*) If candidate does not come from CAMPEP accredited graduate program.

The **staff** (see *Appendix I*) of the MPU consists of 35 staff members 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.

Since 1991, the MPU is led by a Director who is appointed by the Dean of Medicine. Most members of the MPU hold primary appointments in the clinical departments of the JGH or the MUHC or in other major departments of McGill's Faculty of Medicine (Biomedical Engineering, Neurology and Neurosurgery). For more information see *Appendix I*.

The main responsibilities of clinical physicists are related to clinical aspects of radiation therapy and diagnostic radiology; however, the clinical physicists are involved with teaching of didactic medical physics courses and laboratories, as well as with co-supervision of graduate students.

Four committees help with the running of the MPU: the *Graduate Committee*, *Seminar Committee*, the *Curriculum Update Committee* and the *Alumni Committee*.

The **Graduate Committee** (2016 membership: Dr. J. Seuntjens, chair; Dr. S. Enger; M. Knewstubb; Dr. J. Kildea; Dr. I. Levesque; Dr. P. Francois (Dept. Physics)) 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. For the 2016-2017 academic year, 53 complete applications were received by the MPU, and the graduate committee recommended to McGill 19 candidates for admission of which four registered to begin MSc Medical Physics studies in September 2016. For more information, please see *Appendix VII*.

The **Seminar Committee** (2016 membership: Dr. E. Soisson & Dr. J. Kildea for MUHC; Dr. S. Devic for JGH) 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 medical physics seminars organized during the Winter, Summer and Fall semesters of 2016 are listed in *Appendix XV*.

The **Curriculum Update Committee** (2016 membership: Chair Dr. J. Seuntjens; Dr. S. Enger; Dr. J. Kildea; Mr. W. Parker; Dr. M. Popovic; Dr. E. Soisson; Dr. N. Ybarra) reviews the curricula for the M.Sc. and Ph.D. programs. During 2016, as part of the M.Sc. program update, this committee sought expert opinion from guest members Levesque, Hegyi, Devic.

The **Alumni Committee** (2016 membership: chair Dr. E. Soisson, Dr. J Seuntjens, Dr. J Kildea, M. Knewstubb, T. Nisic) aims to organize and improve the relations between the MPU and its alumni. One of the main activities of this committee is to seek funding support for initiatives such as the Ervin Podgorsak Fellowship.

III. Grants, Publications, and Service outside of McGill

III.1. Publications

The calendar year 2016 in relation to teaching, research, and service was a normal year for the MPU, with all performance indicators fairly stable in comparison to previous academic years. As demonstrated by the lists of **publications** (*Appendix IX*), **published abstracts** (*Appendix X*), **invited presentations** (*Appendix XI*), and **presentations at national and international conferences** (*Appendix XII*), all for calendar year 2016, the MPU staff are productive, representing with distinction McGill's involvement in medical physics research.

Historical academic productivity of MPU staff from 2003 to December 31, 2016 can be found at the following URL:

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

III.2. Grants

The listing of research and teaching grants held by the MPU staff (*Appendix XIII*) also attests to the respectable professional standing of the MPU staff members. It should be noted that the grants are generally attained under the auspices of the grantee's primary department. Current research interests of the MPU academic staff members are shown in *Appendix XIV*.

III.3. Committees and Boards

As shown in *Appendices XVI* and *XVII*, the MPU staff members are active on committees and boards within and outside of McGill. Currently, the MPU members serve on Boards of Directors of the two Canadian medical physics organizations: the *Canadian College of Physicists in Medicine* (CCPM) and the *Canadian Organization of Medical Physicists* (COMP). MPU staff members currently also serve on Boards of American Medical Physics organizations: the *Commission on Accreditation of Medical Physics Education Programs* (CAMPEP); the *American Association of Physicists in Medicine* (AAPM); and the AAPM Summer School, International Atomic Energy Agency (IAEA), International Commission of Radiation Measurements and Units (ICRU) Task groups, Work Groups, committees and subcommittees.

III.4. Other Academic Activities of the MPU

The MPU holds several staff meetings per year to which all MPU members and student representation are invited. Three **meetings of the MPU academic staff** were held during the 2016 calendar year. In January 2016, completion of the first and start of the second semester of the 2015-2016 academic year; in May 2016, completion of the second semester and start of M.Sc. thesis research work of the 2015-2016 academic year; and in September 2016, start of the 2016-2017 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.

During the Winter semester of the 2015-2016 academic year and the Fall semester of the 2016-2017 academic year, the MPU organized regular **medical physics seminars** on Fridays at noon given by staff, graduating students or visiting scientists. The frequency of the seminars averaged three to four per month in the Fall semester and one per week in the Winter semester. The location for the seminars was the RBC Conference Room at the McGill University Centre-Glen Site. The presentations are video linked to the SMBD-Jewish General Hospital and also to Centre de la Santé et des Services Sociaux-Laval (CSSSL) to allow MPU members there to attend without significantly disturbing their clinical activities. The attendance of seminars is mandatory for graduate students. A seminar committee headed by Dr. E. Soisson and Dr. J. Kildea organizes the seminars and a listing of the MPU medical physics seminars during the 2016 calendar year is given in *Appendix XV*.

All McGill graduate students in medical physics are required to attend **weekly formal research presentation meetings** ("Friday Morning Talks (FMT)": Fridays at 9:15 a.m.). The presentations are given either by staff or students. At least once every three – six months each student presents his or her research work and results, and thus gains practical experience on organizing and presenting scientific results. 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 **journal club** (Thursday 11:30 am) where students review recent journal papers. Depending on the PI, multiple other interactions occur between student groups and PI.

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

Students are strongly encouraged to submit their work for presentation at national and international scientific meetings, either as regular presentations or as presentations during young investigator symposia. The awards won during 2016 are listed on Pages 5-7 of this Annual Report.

IV. Discussion of Performance

As evident from the *Highlights* (Section I.2) above and the *Appendices* to this report, the MPU staff and students have during the 2016 calendar 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 II* through *IV*, graduates of McGill medical physics programs and the residency program are distributed in institutions throughout Québec, 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 and faculty into the programs.

Following the MPU's move from the Montreal General Hospital to the Glen Site in June 2015, one may state that 2016 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 expect from McGill.

A persistent problem of the Unit has been fragility with its very few core tenure track faculty members. During 2015 the MPU was able to post the position for replacement of Dr. El Naqa, (Dr. J Kildea was appointed in January 2017). An additional TT position was committed by the Faculty of Medicine and a candidate has been selected. This will bring the TT faculty count to 4 **for the first time since the mid-nineties**. Additionally, during 2016 together with the Chair of Oncology, it was decided that the budget line that was earmarked for Radiation Biology teaching was going to be used to attract another faculty member to hold that responsibility. Dr. Ybarra was selected for that position. This will bring the academic group to 5.

The close collaboration between clinical (JGH, MUHC) programs and academic faculty remains, however, essential to maintain the MPU's stability. In the past, this stability was engraved by ensuring that the academic director also holds the clinical chief position at the MUHC. Currently, the separation of the clinical departments from the academic group has the potential of creating silos leading to alienation between the members of the MPU. The reporting structure of MUHC and JGH clinical faculty through their managers to the respective mission or hospital administrations independent and aside from the academic leadership does not help in improving the stability of the MPU. The most recent cyclical review (2013) points out that the stability of the Unit in future years may require consideration of elevating the MPU to Departmental status.

Another problem that remains is the **lack of dry-lab space** (pointed out in subsequent annual reports). MPU faculty are guests in the Cedars Cancer Centre and their students partially occupy clinical space. With the MPU growing, the pressure is mounting. The most difficult months are summer months when, aside from graduate students and postdocs, also a large contingent of summer students occupy space in the Cancer Centre. In the medium term, other solutions will have to be found.

APPENDICES

APPENDIX I.

LIST OF FACULTY MEMBERS

MCGILL UNIVERSITY: MEDICAL PHYSICS UNIT

FACULTY MEMBER		DIVISION
1	**JAN SEUNTJENS**, PhD, FAAPM, FCCPM *Director, Medical Physics Unit* *Professor, Department of Oncology*	Clinical
2	**KRUM ASIEV**, MSc, MCCPM *Affiliate Member, Medical Physics Unit*	Clinical
3	**D. LOUIS COLLINS**, PhD *Associate Member, Medical Physics Unit* *Associate Professor, Department of Neurology & Neurosurgery*	Imaging
4	**TANNER CONNELL**, PhD *Affiliate Member, Medical Physics Unit*	Clinical
5	**STEPHEN D. DAVIS**, PhD, MCCPM, DABR *Affiliate Member, Medical Physics Unit*	Clinical
6	**FRANÇOIS DEBLOIS**, PhD, FCCPM *Associate Member, Medical Physics Unit* *Assistant Professor, Department of Oncology* *Clinical Chief, Medical Physics, JGH Dept Radiation Oncology*	Clinical
7	**SLOBODAN DEVIC**, PhD, FCCPM *Affiliate Member, Medical Physics Unit* *Assistant Professor, Department of Oncology*	Clinical
8	**ISSAM EL NAQA**, PhD *Adjunct Professor, Medical Physics Unit* *Adjunct Professor, Department of Oncology*	Clinical
9	**SHIRIN ENGER**, PhD *Associate Member, Medical Physics Unit* *Assistant Professor, Department of Oncology*	Clinical
10	**MICHAEL D.C. EVANS**, MSc, FCCPM, FCOMP *Associate Member, Medical Physics Unit* *Assistant Professor, Department of Oncology*	Clinical
11	**CHRISTOPHE FURSTOSS**, PhD, MCCPM *Affiliate Member, Medical Physics Unit*	Clinical

MPU Faculty members (continued)

FACULTY MEMBER		**DIVISION**
12	**ALAIN GAUVIN**, MSc, MCCPM, DABMP, DABR *Affiliate Member*, *Medical Physics Unit*	Imaging
13	**GYORGY HEGYI**, PhD *Affiliate Member, Medical Physics Unit*	Imaging
14	**MARITZA HOBSON**, PhD *Affiliate Member, Medical Physics Unit*	Clinical
15	**JOHN KILDEA**, PhD, MCCPM *Associate Member, Medical Physics Unit* *Assistant Professor, Department of Oncology*	Clinical
16	**SHIRLEY M. LEHNERT**, PhD *Affiliate Member, Medical Physics Unit* *Emeritus Professor, Department of Oncology*	Clinical
17	**IVES LEVESQUE**, PhD *Associate Member, Medical Physics Unit* *Assistant Professor, Department of Oncology*	Clinical
18	**LI HENG LIANG**, MSc, MCCPM *Affiliate Member, Medical Physics Unit*	Clinical
19	**BELAL MOFTAH**, PhD, FCCPM *Affiliate Member, Medical Physics Unit*	Clinical
20	**WILLIAM A. PARKER**, M.Sc., FCCPM *Associate Member, Medical Physics Unit* *Assistant Professor, Department of Oncology* *Clinical Chief, Department of Medical Physics, MUHC* *Director, Residency Training Program*	Clinical
21	**HORACIO J. PATROCINIO**, M.Sc., FCCPM, DABR *Associate Member, Medical Physics Unit* *Assistant Professor, Department of Oncology*	Clinical
22	**G. BRUCE PIKE**, Ph.D. *Affiliate Member, Medical Physics Unit* *Adjunct Professor, Department of Oncology* *Adjunct Professor, Department of Neurology & Neurosurgery*	Imaging
23	**ERVIN B. PODGORSAK**, PhD, FCCPM, FCOMP, FAAPM, DABR *Emeritus Professor, Medical Physics Unit &* *Department of Oncology*	Clinical
24	**EMILY POON,** PhD, MCCPM *Affiliate Member, Medical Physics Unit*	Clinical

MPU Faculty members (continued)

FACULTY MEMBER	**DIVISION**
25 MARIJA POPOVIC, PhD, MCCPM *Associate Member, Medical Physics Unit* *Assistant Professor, Department of Oncology*	Clinical
26 ANDREW READER, PhD *Affiliate Member, Medical Physics Unit* *Professor, University College London*	Imaging
27 RICHARD B. RICHARDSON, PhD *Affiliate Member, Medical Physics Unit* *Research Scientist, Internal Dosimetry Service*	Clinical
28 RUSSELL RUO, MSc, FCCPM, DABR *Affiliate Member, Medical Physics Unit*	Clinical
29 ARMAN SARFEHNIA, PhD, MCCPM *Medical Physicist*, Odette Cancer Center, Sunnybrook, Toronto *Affiliate Member, Medical Physics Unit* *Adjunct Professor, Department of Oncology*	Clinical
30 MONICA SERBAN, MSc, MCCPM *Affiliate Member, Medical Physics Unit*	Clinical
31 EMILIE SOISSON, PhD, MCCPM, DABR, CMD *Associate Member, Medical Physics Unit* *Assistant Professor, Department of Oncology*	Clinical
32 GABRIELA STROIAN, PhD, MCCPM *Associate Member, Medical Physics Unit* *Assistant Professor, Department of Oncology*	Clinical
33 ALASDAIR SYME, PhD, FCCPM *Medical Physicist, Nova Scotia Cancer Centre* *Affiliate Member, Medical Physics Unit* *Adjunct Professor, Department of Oncology*	Clinical
34 NADA TOMIC, MSc, FCCPM *Affiliate Member, Medical Physics Unit*	Clinical
35 NORMA YBARRA, PhD *Associate Member, Medical Physics Unit* *Assistant Professor, Department of Oncology*	Clinical

LIST OF STAFF MEMBERS

McGILL UNIVERSITY HEALTH CENTRE : DEPARTMENT OF MEDICAL PHYSICS

Director, Department of Medical Physics, MUHC	Jan Seuntjens, *PhD, FCCPM, FAAPM, FCOMP*
Clinical Chief, Department of Medical Physics, MUHC	William Parker, *M.Sc., FCCPM*
Administrative officer/Research Coordinator	Tatjana Nisic, *MA*
Administrative Coordinator	Margery Knewstubb
Medical Physicists	Tanner Connell, *PhD* Stephen Davis, *PhD, MCCPM, DABR* Shirin Enger, *PhD* Michael Evans, *MSc, FCCPM, Rad.Safety Officer, Class II, MUHC* Gyorgy Hegyi, *PhD* Maritza Hobson, *PhD, MCCPM, DABR* John Kildea, *PhD, MCCPM* Ives Levesque, *PhD* Horacio Patrocinio, *MSc, FCCPM, DABR* Ervin B. Podgorsak, *PhD, FCCPM, DABMP, FAAPM, FACMP (Professor Emeritus)* Emily Poon, *PhD, MCCPM* Marija Popovic, *PhD, FCCPM* Russell Ruo, *MSc, FCCPM* Monica Serban, *MSc, MCCPM* Khushdeep Singh, *MSc* Emilie Soisson, *PhD, CMD, MCCPM, DABR* Norma Ybarra, *PhD*
Dosimetrists	Irene Marie Bélanger, *RTT* Jennifer Brown, *RTT* Line Comeau, *RTT), CMD* Lioudmila Dychkant, *RTT* Chris Kaufmann, *RTT, CMD – Chief Dosimetrist* Francesco Paolino, *RTT, BS* Maria Papageorgiou, *RTT* Cenzetta Procaccini, *RTT*
Electronic technicians	Joe Larkin Bhavan Siva, *BEng*
Radiation Safety Officer	Camille Pacher,
Information systems technician	Suzana Darvasi, *BSc*
Research assistants	Seema Ambareen

LIST OF RESIDENTS

MCGILL UNIVERSITY: MEDICAL PHYSICS UNIT

(Fall 2016)

Residents in alphabetical order, per site:

McGill University Health Centre (Glen Campus)

ALAMRI, Ghada
CONNELL, Tanner

McGill University Health Centre (SMBD-Jewish General Hospital)

GUILLET, Dominique
PAPACONSTADOPOULOS, Pavlos

Joint program: MUHC & St-Peter's Hospital, Albany, NY

HERRINGTON, Joseph
ZAHARAKIS, Alex

Centre Hospitalier de l'Université de Montréal

AHANJ, Mohsen
CÔTÉ, Nicolas
COUSINEAU-DAOUST, Vincent
POULIN, Eric
QUINTERO MATEUS, Chrystian

Centre Hospitalier de l'Université du Québec

BESNIER, Magali
BOIVIN, Jonathan
CANTIN, Audrey

APPENDIX II.

M.Sc. DEGREES IN MEDICAL PHYSICS : January-December 2016

1. **DIAMANT-BOUSTEAD, André (Ybarra)**
   Modelling lung SBRT treatment outcomes using Bayesian network averaging
   Currently: PhD student, Medical Physics, McGill University, Montreal, Québec

2. **DOBRI, Simon (Ybarra)**
   An exploration of the radiation-induced electro-optic effect and its suitability as the basis for a novel medical radiation dosimeter
   Currently: PhD student, Medical Physics, Carleton University, Montreal, Québec

3. **FAMULARI, Gabriel (Enger)**
   Production and evaluation of novel brachytherapy sources
   Currently: PhD student, Medical Physics, McGill University, Montreal, Québec

4. **FORTIER, Véronique (Levesque)**
   Implementation and validation of a quantitative susceptibility mapping approach
   Currently: PhD student, Medical Physics, McGill University, Montreal, Québec

5. **JOSEPH, Ackeem (Kildea)**
   Predicting waiting times in radiation oncology using machine learning
   Currently: Research Assistant, Medical Physics, McGill University Health Centre, Montreal, Québec

6. **MONTGOMERY, Logan (Kildea)**
   Validation of the national system for incident report - Radiation therapy
   Currently: PhD student, Medical Physics, McGill University, Montreal, Québec

7. **O'GRADY, Kyle (Davis)**
   Monte Carlo modeling of the Varian TrueBeam, with chamber effects included in determination of the source parameters
   Currently: Resident, Montefiore Medical Center, Bronx, New York

8. **SCHNEIDER, James (Devic)**
   Decomposition of FDG-PET based differential uptake volume histograms in rectal cancer patients
   Currently: PhD student, Medical Physics, McGill University, Montreal, Québec

9. **SIMARD, Mikaël (Levesque)**
   Quantitative magnetization transfer evaluation of the knee joint in magnetic resonance imaging
   Currently: PhD student, Medical Physics, Université de Montréal, Montréal, Québec

10. **VALLIÈRES, Simon (Seuntjens)**
    Nanoparticle-enhanced radiation therapy using gold-doxorubicin
    Currently: PhD student, Institut national de la recherche scientifique - Centre d'énergie, matériaux et télécommunication (INRS-EMT), Varennes, Québec

Ph.D. DEGREES IN MEDICAL PHYSICS : January-December 2016

1. **LEE, Sangkyu (I. El Naqa, J. Seuntjens)**
   System radiobiology modeling of radiation induced lung disease
   Currently employed: Resident, Memorial Sloan Kettering, New York, New York

2. **MARKEL, Daniel (2016: Physics – J. Seuntjens)**
   Simultaneous registration and segmentation coupling using the Jensen Rényi divergence for adaptive radiotherapy
   Currently employed: Physicist, Sunnybrook Health Sciences Centre, Toronto, Ontario

3. **PAPACONSTADOPOULOS, Pavlos (J. Seuntjens)**
   On the detector response and the reconstruction of the source intensity distribution in small photon fields
   Currently employed: Resident, SMBD-Jewish General Hospital, Montréal, Québec

4. **PATER, Piotr (2016: Physics – I. El Naqa, J. Seuntjens)**
   Numerical models for radiation-induced DNA damage
   Currently employed: Physicist, Radio-oncologie, CHUM Notre-Dame, Montréal, Québec

5. **RENAUD, James (2016: Physics – J. Seuntjens, A. Sarfehnia)**
   On the development of absorbed dose calorimeter systems for absolute clinical dosimetry
   Currently employed: Postdoctoral Fellow, Medical Physics, McGill University, Montréal, Québec

APPENDIX III.

BASIC DEMOGRAPHIC DATA

for the 236 M.Sc. and 38 Ph.D. GRADUATES

of the MEDICAL PHYSICS PROGRAMS

at McGILL UNIVERSITY

(1980 – February 2017)

M.Sc. GRADUATES IN MEDICAL PHYSICS : 236

1980 – February 2017

MEDICAL PHYSICS UNIT : McGILL UNIVERSITY

Total number of M.Sc. graduates in medical physics:		**236**
Graduates' origin:	Quebec	83/236
	another Canadian province	67/236
	USA	13/236
	another country	73/236
Working in medical physics:		**198/236**
	in Quebec	80/198
	in another Canadian province	56/198
	in the USA	44/198
	in another country	18/198
Currently Ph.D. student:		28/236
	(24 in Quebec, 3 in other Canadian province, 1 in Europe)	
Origin of M.Sc. graduates currently working in Quebec:		**80/236**
	Quebec	42/80
	another Canadian province	13/80
	USA	0/80
	another country	25/80
M.Sc. graduates of Quebec origin:		**83/236**
	working in medical physics	64/83
	in Quebec	41/83
	in another Canadian province	7/83
	in the USA	13/83
	in another country	3/83
Currently Ph.D. student:		12/83

Ph.D. GRADUATES IN MEDICAL PHYSICS : 38

1983 – February 2017

MEDICAL PHYSICS UNIT : McGILL UNIVERSITY

Total number of Ph.D. graduates in medical physics:		**38**
Graduates' origin:	Quebec	11/38
	another Canadian province	14/38
	USA	0/38
	another country	13/38
Working in medical physics:		**37/38**
	in Quebec	14/37
	in another Canadian province	11/37
	in the USA	8/37
	in another country	4/37
Origin of Ph.D. graduates currently working in Quebec:		**14/38**
	Quebec	6/14
	another Canadian province	4/14
	USA	0/14
	another country	4/14
Ph.D. graduates of Quebec origin:		**11/38**
	working in medical physics	11/38
	in Quebec	6/11
	in another Canadian province	2/11
	in the USA	3/11
	in another country	0/11

APPENDIX IV.

GRADUATES OF THE ACCREDITED TWO-YEAR RESIDENCY TRAINING PROGRAM IN RADIATION ONCOLOGY PHYSICS AT MCGILL

#	Name	Date grad	Background at entry	Current position	Current address
1	Lara Dyke, Ph.D.	May '00	M.Sc. (medical physics) U. Alberta	Clinical medical physicist	Varian Medical Systems, Miami, Florida, USA
2	Tony Falco, Ph.D.	Dec '00	Ph.D. (medical physics) McGill U	Clinical medical physicist	TFMG, Incorporated Montreal, Quebec
3	Slobodan Devic, Ph.D.	Mar '02	Post-graduate training Washington U	Clinical medical physicist	Dept Radiation Oncology, Jewish General Hospital, Montreal, Quebec
4	Kavita Murthy, M.Sc.	May '02	M.Sc. (medical physics) McGill U	Clinical medical physicist	Canadian Nuclear Safety Commission Ottawa, Ontario
5	Jennifer Barker, M.Sc.	Dec '02	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept Radiation Oncology, Jewish General Hospital, Montreal, Quebec
6	François DeBlois, Ph.D.	Jul '03	Ph.D. (medical physics) McGill U.	Clinical medical physicist	Dept Radiation Oncology, Jewish General Hospital, Montreal, Quebec
7	Siobhan Ozard, Ph.D.	Nov '03	Ph.D. (medical physics) U. British Columbia	Clinical medical physicist	Dept Medical Physics, Windsor Regional Cancer Centre, Windsor, Ontario
8	Wamied Abdel-Rahman, Ph.D.	Dec '05	Ph.D. (medical physics) McGill U.	Clinical medical physicist	Dept Radiation Oncology, King Faisal Specialist Hospital, Damman, Saudi Arabia
9	Yizhen Wang, M.Sc.	May '06	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept Radiation Oncology, Credit Valley Hospital, Mississauga, Ontario
10	Li Heng Liang, M.Sc.	Aug '06	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept Radiation Oncology, Jewish General Hospital, Montreal, Quebec
11	Nada Tomic, M.Sc.	Aug '06	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept of Radiation Oncology, Jewish General Hospital, Montreal, Quebec
12	Gabriela Stroian, Ph.D.	Aug '07	Ph.D. (theoretical physics) U Paul Sabatier, France	Clinical medical physicist	Dept Radiation Oncology, Jewish General Hospital, Montreal, Quebec
13	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
14	Kristin Marchant, Ph.D.	Mar '09	Ph.D. (medical physics) McGill U	Clinical medical physicist	Dept Radiation Oncology, Allan Blair Cancer Centre, Regina, Saskatchewan
15	Krum Asiev, M.Sc.	Jun '09	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept Radiation Oncology, Jewish General Hospital, Montreal, Quebec
16	Ismail Aldahlawi, M.Sc.	Jun '10	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept Radiation Oncology/Physics, University of Buffalo, Buffalo, New York
17	Emily Poon, Ph.D.	May '11	Ph.D. (medical physics) McGill U	Clinical medical physicist	Dept Medical Physics, McGill University Health Centre, Montreal, Quebec
18	Jonathan Thébaut, M.Sc.	May '11	M.Sc. (medical physics) McGill U	Clinical medical physicist	Intermountain Health Care, Salt Lake City, Utah
19	Arman Sarfehnia, Ph.D.	Feb '12	Ph.D. (medical physics) McGill U	Clinical medical physicist	Dept Medical Physics, Odette Cancer Ctr, Sunnybrook Health Sciences Ctr, Toronto, Ontario

20	John Kildea, Ph.D.	Jun ‘12	Postdoc (astrophysics) Harvard U	Clinical medical physicist	Dept Medical Physics, McGill University Health Centre, Montreal, Quebec
21	Stephen Davis, Ph.D.	Aug ‘12	Ph.D. (medical physics) U Wisconsin	Clinical medical physicist	Dept Medical Physics, McGill University Health Centre, Montreal, Quebec
22	Joseph Holmes, M.Sc.	Aug ‘12	M.Sc. (medical physics) McGill U	Clinical medical physicist	Kootenai Medical Centre, Coeur d’Alene, Idaho
23	Ellis Mitrou, M.Sc.	Aug ‘13	M.Sc. (medical physics) McGill U	Clinical medical physicist	Radio-oncologie, Centre Hospitalier de l’Université Montréal, Montréal, Quebec
24	Marc Morcos, M.Sc.	Aug ‘13	M.Sc. (medical physics) McGill U	Clinical medical physicist	Radiation Oncology & Moleular Radiation Sci., Johns Hopkins Medicine, Baltimore, Maryland
25	Greg Twork, M.Sc.	Aug ‘13	M.Sc. (medical physics) McGill U	Clinical medical physicist	Medical Physics, Vanderbilt University, Nashville, Tennessee
26	Amanda Dyess, M.Sc.	Aug ‘14	M.Sc. (medical physics) McGill U	Clinical medical physicist	St Peter’s Hospital, Albany, New York
27	Hamed Bekerat, M.Sc.	Aug ‘14	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept Radiation Oncology, Jewish General Hospital, Montreal, Quebec
28	Naomi Shin, M.Sc.	Aug ‘14	M.Sc. (medical physics) McGill U	Clinical medical physicist	Centre d’Oncologie Dr Léon-Richard, Moncton, New Brunswick
29	Ghada Aldosary, M.Sc.	Nov ‘15	M.Sc. (medical physics) McGill U	Clinical medical physicist	Medical Physics, Carleton University, Ottawa, Ontario
30	Karim Zerouali, M.Sc.	Nov’15	M.Sc. (medical physics) Univ de Montréal	Clinical medical physicist	Centre Hospitalier Université de Montréal, Montréal, Québec
31	Khushdeep Singh, M.Sc.	Jan ‘16	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept Medical Physics, McGill University Health Centre, Montreal, Quebec
32	Michael Fan, M.Sc.	Jan ‘16	M.Sc. (medical physics) McGill U	Clinical medical physicist	Jacksonville, Florida
33	Yuji Kamio, M.Sc.	Jan ‘16	M.Sc. (medical physics) Univ de Montréal	Clinical medical physicist	Radio-oncologie, Centre Hospitalier de l’Université Montréal, Montréal, Quebec
34	Mathieu Goulet, Ph.D.	Jan ‘16	Ph.D. (medical physics) Univ de Laval	Clinical medical physicist	Centre Hospitalier du Québec, Québec, Québec
35	Sharlie Vincent, M.Sc.	Jan ‘16	M.Sc. (medical physics) Univ de Laval	Clinical medical physicist	Centre Hospitalier Régionale de Trois-Rivières, Trois-Rivières, Québec
36	Varun Thakur, M.Sc.	Mar ‘16	M.Sc. (medical physics) McGill U	Clinical medical physicist	Allan Blair Cancer Centre, Saskatoon, Saskatchewan
37	Tanner Connell, Ph.D.	Mar ‘16	Ph.D. (medical physics) McGill U	Clinical medical physicist	Dept Medical Physics, McGill University Health Centre, Montreal, Quebec
38	Alex Zaharakis, M.Sc.	Jul ‘16	M.Sc. (medical physics) New York U	Clinical medical physicist	St Peters Hospital, Albany, New York
39	Iqbal Alamri, M.Sc.	Sep ‘16	M.Sc. (medical physics) Univ of Surrey	Clinical medical physicist	Dept Medical Physics, Royal Hospital, Muscat, Oman
40	Dominique Guillet, M.Sc	Sep ‘16	M.Sc. (medical physics) McGill U	Clinical medical physicist	Dept Radiation Oncology, Jewish General Hospital, Montreal, Quebec
41	Audrey Cantin, M.Sc.	Oct ‘16	M.Sc. (medical physics) Univ de Québec	Clinical medical physicist	Centre Hospitalier du Québec, Québec, Québec

Prior to 1999, there were x16 graduates of the non-CAMPEP-accredited Residency Training Program.

APPENDIX V.

COURSE INSTRUCTORS : CALENDAR YEAR 2016

MEDICAL PHYSICS UNIT : McGILL UNIVERSITY

Course #	Course Title	Instructor(s)
Winter semester 2016		
MDPH 602	*Applied Dosimetry*	**S. Davis, J. Seuntjens**
MDPH 603	*Laboratory in Radiation Physics*	**S. Davis, M. Popovic (coord)**
MDPH 607	*Physics of Medical Imaging* *	**I. Levesque**
MDPH 609	*Radiation Biology*	**N. Ybarra, S. Lehnert**
MDPH 612	*Computers in Medical Imaging*	**H.J. Patrocinio, F. DeBlois**
MDPH 616D (Part II)	*Selected Topics in Medical Physics*	**E. Soisson, W. Parker**
563-625 D	*Thesis Research*	**(*individual supervisors*)**
Summer semester 2016		
MDPH 608	*Lab in Diag. Radiol. & Nucl. Med.*	**G. Hegyi, G. Stroian**
Fall semester 2016		
MDPH 601	*Radiation Physics* *	**J. Seuntjens**
MDPH 611	*Medical Electronics*	**P. Léger**
MDPH 613	*Health Physics*	**J. Kildea, W. Parker**
MDPH 614	*Physics of Diagnostic Radiology* *	**S. Enger**
MDPH 615	*Physics of Nuclear Medicine* *	**S. Devic**
MDPH 616D (Part I)	*Selected Topics in Medical Physics*	**W. Parker**

* designates core courses

APPENDIX VI.

McGill University - Medical Physics Unit

Teaching Evaluation Summary - Winter 2016

Question													TOTAL	AVG
A. Course material and presentation														
1. Individual classes are well organized.	4.5	4.4	4.4	4.2	5.0	4.0	3.0	4.7	4.5	4.8	4.9	4.8	**53.21**	**4.4**
2. The instructor develops subject matter in a logical manner.	4.5	4.5	4.4	4.4	5.0	4.1	3.3	4.7	4.5	4.9	4.9	4.9	**54.04**	**4.5**
3. The instructor makes the material clear and interesting.	4.4	4.3	4.4	4.3	5.0	3.2	1.8	4.6	4.1	4.9	4.7	5	**50.63**	**4.2**
4. The instructor encourages and stimulates student thinking.	4.5	4.8	4.7	4.6	5.0	3.5	2.4	4.6	4.7	4.8	4.4	4.8	**52.70**	**4.4**
5. The instructor incorporates up-to-date information in the course.	3.7	4.7	4.4	4.4	5.0	4.3	3.0	4.6	4.6	4.9	4.3	4.8	**52.64**	**4.4**
6. The pace of the course is satisfactory.	4.2	4.7	4.2	4.1	5.0	2.9	3.1	4.7	4.3	4.8	4.7	4.9	**51.61**	**4.3**
7. The instructor speaks clearly.	4.5	4.6	4.5	4.5	5.0	3.9	3.6	4.8	4.1	4.8	5.0	5	**54.28**	**4.5**
8. The instructor makes good use of the blackboard or audiovisual aids.	4.7	4.7	4.3	4.2	5.0	3.8	3.1	4.7	4.6	4.9	4.8	4.9	**53.62**	**4.5**
B. Interaction with instructor														
9. The instructor welcomes questions in class.	5.0	5.0	4.9	4.9	5.0	4.2	3.6	4.8	4.9	5.0	4.9	4.9	**57.09**	**4.8**
10. The instructor is available for consultation outside classes.	5.0	4.4	4.6	4.6	5.0	4.5	2.5	4.9	4.8	4.8	5.0	4.6	**54.53**	**4.5**
11. Consultation with the instructor is helpful.	5.0	4.9	4.5	4.5	5.0	4.7	3.0	5.0	4.8	4.9	5.0	4.9	**56.10**	**4.7**
C. Assignments and examinations														
12. The mid-term exam questions are fair.	3.5	4.5	4.0	4.0	4.8	5.0	3.5	5.0	4.0		5.0	5.0	**48.30**	**4.4**
13. The mid-term exam marking and grading are fair.	2.0	4.5	4.0	4.0	4.8	5.0	4.0	5.0	4.0		5.0	5.0	**47.30**	**4.3**
14. Assignments contribute substantially to students' understanding of course material.	4.0	4.5	4.5	4.6	4.9	5.0	2.9	4.4	2.5	4.8	4.9	5	**51.96**	**4.3**
15. Assignments returned sufficiently promptly for students to benefit from corrections.	3.7	4.7	2.3	1.8	5.0	5.0	1.0	4.6	4.5	3.3	5.0	5	**45.83**	**3.8**
D. Overall assessment														
16. You would like to take another course from the same instructor.	4.3	4.4	4.4	4.2	5.0	3.6	2.1	4.6	4.4	4.8	5.0	4.9	**51.69**	**4.3**
17. The instructor's overall teaching ability is excellent.	4.4	4.3	4.5	4.3	5.0	3.6	2.4	4.7	4.4	4.7	5.0	4.9	**52.21**	**4.4**
Overall average course rating for instructor.	4.23	4.58	4.28	4.20	4.97	4.14	2.84	4.73	4.33	4.72	4.85	4.9		

Overall Average/5 4.39

McGill University - Medical Physics Unit
Teaching Evaluation Summary - Fall 2016

Question								
A. Course material and presentation								
1. Individual classes are well organized.	4.8	2.8	4.8	4.6	4.3	3.8	**24.85**	**4.1**
2. The instructor develops subject matter in a logical manner.	5.0	3.3	4.8	4.6	4.3	3.8	**25.60**	**4.3**
3. The instructor makes the material clear and interesting.	4.8	3.8	4.8	4.2	4.0	4.3	**25.70**	**4.3**
4. The instructor encourages and stimulates student thinking.	4.5	4.5	4.8	4.6	4.8	4.8	**27.85**	**4.6**
5. The instructor incorporates up-to-date information in the course.	4.8	4.3	5.0	4.8	4.5	4.8	**28.05**	**4.7**
6. The pace of the course is satisfactory.	4.5	3.3	4.5	4.2	4.0	4.3	**24.70**	**4.1**
7. The instructor speaks clearly.	5.0	4.3	4.8	4.2	4.5	4.8	**27.45**	**4.6**
8. The instructor makes good use of the blackboard or audiovisual aids.	4.5	3.3	4.5	4.6	4.3	4.3	**25.35**	**4.2**
B. Interaction with instructor								
9. The instructor welcomes questions in class.	4.8	4.5	5.0	4.8	4.8	5.0	**28.80**	**4.8**
10. The instructor is available for consultation outside classes.	4.7	4.5	5.0	4.6	4.5	4.3	**27.60**	**4.6**
11. Consultation with the instructor is helpful.	4.7	3.8	5.0	5.0	4.5	5.0	**27.92**	**4.7**
C. Assignments and examinations								
12. The mid-term exam questions are fair.	4.8	4.5	4.8	4.6	4.8	5.0	**28.35**	**4.7**
13. The mid-term exam marking and grading are fair.	4.8	4.8	4.8	4.8	4.5	5.0	**28.55**	**4.8**
14. Assignments contribute substantially to students' understanding of course material.	5.0	3.3	4.8	1.0	4.5		**18.50**	**3.7**
15. Assignments returned sufficiently promptly for students to benefit from corrections.	5.0	2.0	4.8		3.8		**15.50**	**3.9**
D. Overall assessment								
16. You would like to take another course from the same instructor.	5.0	3.0	5.0	4.4	4.5	4.8	**26.65**	**4.4**
17. The instructor's overall teaching ability is excellent.	4.5	3.0	5.0	4.2	4.5	4.8	**25.95**	**4.3**
Overall average course rating for instructor.	4.75	3.68	4.81	4.33	4.40	4.56		

Overall Average/5 4.40

APPENDIX VII.

STUDENTS BEGINNING THEIR FIRST YEAR OF M.Sc. STUDIES IN MEDICAL PHYSICS IN SEPTEMBER 2016

(*major department and supervisor are indicated in parentheses; number following the major department indicates year of M.Sc. study in Fall 2016*)

1. **ALBERS, Julia** (MPU-1, *W. Parker*)
   (title of thesis not yet available)
2. **CHO, Daniel** (MPU-1, *I. Levesque*)
   (title of thesis not yet available)
3. **PATRICK, Haley** (MPU-1, *J. Kildea*)
   (title of thesis not yet available)
4. **TURGEON, Vincent** (MPU-1, *S. Enger*)
   (title of thesis not yet available)

These students started their studies in September 2016, selected their supervisor(s) in Winter 2017, and are expected to begin their M.Sc. thesis research work in Summer 2017.

STUDENTS BEGINNING THEIR SECOND YEAR OF M.Sc. STUDIES IN MEDICAL PHYSICS IN SEPTEMBER 2016

(*major departments and supervisors are indicated in parentheses; number following the major department indicates year of M.Sc. study in Fall 2016*)

1. **ALMAKDESSI, Georges** (MPU-1, *J. Kildea*)
   Secondary neutrons around clinical electron and proton beams
2. **MODCHALINGAM, Mithunan** (MPU-1, *I. Levesque*)
   Distortion field quantification and multi-echo gradient echo optimization for radiation therapy planning images
3. **OSUNKWOR, Emmanuel** (MPU-1, *S. Davis*)
   Commissioning of an optically-stimulated luminescence dosimetry (OSLD) system for in-vivo dosimetry

These students began their M.Sc. studies in September 2015, completed the Fall and Winter didactic semesters of the 2015-2016 academic year, and are currently completing their M.Sc. thesis research. All are expected to submit their theses by Fall 2017.

APPENDIX VIII.

STUDENTS CURRENTLY WORKING ON Ph.D. PROJECTS IN MEDICAL PHYSICS IN SEPTEMBER 2016

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

1. **AHMED, Zaki** (Physics – *I. Levesque*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2015)

2. **ALDELAIJAN, Saad** (Physics – *S. Devic*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2016)

3. **CARRIER-VALLIÈRES, Martin** (Physics – *I. El Naqa, J. Seuntjens*)
   Radiomics: Enabling factors towards precision medicine
   Expected to submit thesis: June 2017 (began Ph.D. studies in September 2012)

4. **DIAMANT-BOUSTEAD, André** (Physics – *J. Seuntjens*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2016)

5. **FAMULARI, Gabriel** (Physics – *S. Enger*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2016)

6. **FORTIER, Véronique** (Physics – *I. Levesque*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2016)

7. **HICKLING, Susannah** (Physics – *I. El Naqa, M. Hobson, J. Seuntjens)*
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2014)

8. **MIRZAKHANIAN, Lalageh** (Physics – *J. Seuntjens*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2015)

9. **MONTGOMERY, Logan** (Physics – *J. Kildea*)
   (title not yet available)
   Expected to submit thesis: date not yet available (began Ph.D. studies in September 2016)

10. **MULLINS, Joel** (Physics – *J. Seuntjens, F. DeBlois)*
    (title not yet available)
    Expected to submit thesis: date not yet available (began Ph.D. studies in January 2014)

11. **NOVOSAD, Philip** (Biomedical Engineering – *L. Collins)*
(title not yet available)
Expected to submit thesis: date not yet available (began Ph.D. studies in September 2014)

12. **PEREZ, Jessica** (Biomedical Engineering – *I. El Naqa, J. Nadeau*)
(title not yet available)
Expected to submit thesis: date not yet available (began Ph.D. studies in January 2012)

13. **RENAUD, Marc-André** (Physics – *J. Seuntjens, F. DeBlois*)
(title not yet available)
Expected to submit thesis: date not yet available (began Ph.D. studies in September 2012)

14. **SCHNEIDER, James** (Physics – *S. Devic*)
(title not yet available)
Expected to submit thesis: date not yet available (began Ph.D. studies in September 2016)

15. **TOLTZ, Allison** (Physics – *J. Seuntjens*)
(title not yet available)
Expected to submit thesis: date not yet available (began Ph.D. studies in September 2012)

16. **TRUONG, Peter** (Physics – *S. Enger*)
(title not yet available)
Expected to submit thesis: date not yet available (began Ph.D. studies in September 2016)

17. **WANG, Judy** (Physics – *J. Seuntjens*)
(title not yet available)
Expected to submit thesis: date not yet available (began Ph.D. studies in January 2014)

18. **WATSON, Peter** (Physics – *J. Seuntjens*)
(title not yet available)
Expected to submit thesis: date not yet available (began Ph.D. studies in January 2013)

19. **XING, Stella** (Physics – *I. Levesque*)
(title not yet available)
Expected to submit thesis: date not yet available (began Ph.D. studies in September 2015)

20. **ZLATEVA, Yana** (Biomedical Engineering – *I. El Naqa*)
(title not yet available)
Expected to submit thesis: date not yet available (began Ph.D. studies in September 2013)

Graduated in 2016:

PAPACONSTADOPOULOS, Pavlos (Physics – *J. Seuntjens*)
On the detector response and the reconstruction of the source intensity distribution in small photon fields
Graduated in June 2016

PhD oral defense in Fall 2016 – graduated in Winter 2017:

PATER, Piotr (Physics – *I. El Naqa, J. Seuntjens*)
Numerical models for radiation-induced DNA damage
PhD degree requirements completed October 2016 – graduated in February 2017

MARKEL, Daniel (Physics – *I. El Naqa*)
Simultaneous registration and segmentation coupling using the Jensen Rényi divergence for adaptive radiotherapy
PhD degree requirements completed December 2016 – graduated in February 2017

RENAUD, James (Physics –*J. Seuntjens*)
On the development of absorbed dose calorimeter systems for absolute clinical dosimetry
PhD degree requirements completed December 2016 – graduation in February 2017

PhD project work completed Fall 2016 / oral defence Winter 2017:

ALONSO ORTIZ, Eva (Physics – *I. Levesque, G.B. Pike*)

Expected to submit thesis: December 2016 (began Ph.D. studies in September 2011)

APPENDIX IX.

PUBLICATIONS

by members of the Medical Physics Unit : 2016 calendar year (x 58)
(*names of MPU staff members are underlined, students are indicated by* †)

1. E. Ford, E. Soisson, *Impacting the safety and quality of cancer care in the global setting: AAPM and the Association of Medical Physicists in Russia,* AAPM Newsletter **41**(1), 42-44 (2016).
2. O.M. Maria, A.M. Maria, N. Ybarra, K. Jeyaseelan, S. Lee†, J. Perez†, M.Y. Shalaby, S. Lehnert, S. Faria, M. Serban, J. Seuntjens, I. El Naqa, *Mesenchymal stem cells adopt lung cell phenotype in normal and radiation-induced lung injury conditions*, Appl. Immunohist. Mol. Morph. **24**(4), 283-95 (2016). doi: 10.1097/PAI.0000000000000180.
3. J. Mullins†, F. DeBlois, A. Syme, *Experimental characterization of the dosimetric leaf gap*, Biomed. Phys. Engin. Expr. **2**(6), (2016).
4. R.A. Nout, S. Devic, T. Niazi, J. Wyse, M. Boutros, V. Pelsser, T. Vuong, *CT-based adaptive high-dose-rate endorectal brachytherapy in the preoperative treatment of locally advanced rectal cancer: Technical and practical aspects*, Brachyth. **15**(4), 477-484 (2016).
5. M.M. Pangelinan†, G. Leonard, M. Perron, G.B. Pike, L. Richer, S. Veillette, Z. Pausova, T. Paus, *Puberty and testosterone shape the corticospinal tract during male adolescence*, Brain Struc. Func. **221**(2), 1083-94 (2016).
6. S. Devic, H. Mohammed, N. Tomic, S. Aldelaijan†, F. DeBlois, J. Seuntjens, S. Lehnert, S. Faria, *FDG-PET-based differential uptake volume histograms: A possible approach towards definition of biological target volumes*, Br. J. Radiol. **89**, 20150388 (2016).
7. E. Soisson, *Celebrating the International Day of Medical Physics with community outreach,* Interactions 2016, Cdn Med. Phys. Newsletter **62**(1), 16-17 (2016).
8. S. Devic, *Warburg effect: A consequence or the cause of carcinogenesis?*, J. Canc. **7**(7), 817-822 (2016). doi: 10.7150/jca.14274.
9. E.L. Mazerolle†, Y. Ma, D. Sinclair, G.B. Pike, *Impact of abnormal cerebrovascular reactivity on BOLD fMRI: A preliminary investigation of moyamoya disease*, Clin. Physiol. Funct. Imag, ePub ahead of Print, 1-8 (2016).
10. Y. Xiao, C.X. Yan, S. Drouin, D. De Nigris, A. Kochanowska, D.L. Collins, *User-friendly freehand ultrasound calibration using Lego bricks and automatic registration*, Int. J. Comput. Assist. Radiol. Surg. **11**, 1703-11 (2016).
11. S. Drouin, A. Kochanowska, M. Kersten-Oertel, I.J. Gerard†, R. Zelmann, D. De Nigris, D.L. Collins, *IBIS: An OR ready open-source platform for image-guided neurosurgery*, Int. J. Comput. Assist. Radiol. Surg. **12**(3), 363-378 (2016). doi: 10.1007/s11548-016-1478-0.
12. J-F. Cabana, Y. Gu, M. Boudreau, I.R. Levesque, J. Sled, S. Narayanan, G.B. Pike, J. Cohen-Adad, N. Stikov, *Quantitative magnetization transfer imaging made easy with qMTLab: Software for data simulation, analysis and visualisation*, Concepts in Magn. Res. Part A, 1-15 (2016).
13. Z. Pausova, T. Paus, M. Abrahamowicz, M. Bernard, D. Gaudet, G. Leonard, M. Peron, G.B. Pike, L. Richer, J.R. Séguin, S. Veillette, *Cohort profile: The Saguenay youth study (SYS)*, Int. J. Epidemiol. Epubl ahead of print. DOI:10.1093/ije/dyw023.
14. R.D. Vincent, P. Neelin, N. Khalili-Mahani, A.L. Janke, V.S. Fonov, S.M. Robbins, D.L. Collins et al., *MINC 2.0: A flexible format for multi-modal images*, Front. Neuroinform. **10**, 35 (2016).
15. S. Xing†, W. Matthew, P.H. Grutter, S.J. Dixon, S.V. Komarova, *Modeling interactions amongst individual P2 receptors to explain complex response patterns over a wide range of ATP concentrations*, Front. Physiol. **7**, article 294, 14 pages, July 13, 2016. doi.org/10.3389/fphys.2016.00294
16. D. Markova, L. Richer, M. Pangelina, D.H. Schwartz, G. Leonard, M. Perron, G.B. Pike, S. Veillette, M.M. Chakravarty, Z. Pausova, T. Paus, *Age- and sex-related variations in vocal-tract morphology and voice acoustics during adolescence*, Horm. Behav. **81**, 84-96 (2016).

17. A.J. Berman†, Y. Ma, R.D. Hoge, G.B. Pike, *The effect of dissolved oxygen on the susceptibility of blood*, Magn Reson Med. **75**(1), 363-71 (2016).
18. E. Alonso-Ortiz†, I.R. Levesque, R. Paquin, G.B. Pike, *Field inhomogeneity correction for gradient echo myelin water fraction imaging,* Magn. Res. Med, publ. online July 15, 2016 [Epub ahead of print]. DOI: 10.1002/mrm.26334.
19. Z. Ahmed†, I.R. Levesque, *Increased robustness in reference region model analysis of DCE MRI using two-step constrained approaches,* Magn. Res. Med., (2016). doi: 10.1002/mrm.26530.
20. J.A. Rioux, I.R. Levesque, B.K. Rutt, *Biexponential longitudinal relaxation in white matter: Characterization and impact on T1 mapping with IR-FSE and MP2RAGE*, Magn. Reson. Med. **75**(6), 2265-77 (2016).
21. E. Alonso-Ortiz†, I.R. Levesque, G.B. Pike, *Optimized field inhomogeneity correction for myelin water fraction imaging based on multi-slice multi-gradient echo acquisitions*, Magn. Res. Med., *under review* (2016).
22. I.J. Gerard†, M. Kersten-Oertel, K. Petrecca, D. Sirhan, J.A. Hall, D.L. Collins, *Brain shift in neuronavigation of brain tumors: A review*, Med. Image. Anal. **35**, 403-420 (2016).
23. F. Di Lillo, G. Mettivier, A. Sarno, G. Tromba, N. Tomic, S. Devic, P. Russo, *Energy dependent calibration of XR-QA2 radiochromic film with monochromatic and polychromatic x-ray beams*, Med. Phys. **43**, 583 (2016). http://dx.doi.org/10.1118/1.4939063.
24. P. Papaconstadopoulos†, J. Seuntjens, S. Devic, *Response to "Comment on 'A protocol for EBT3 radiochromic film dosimetry using reflection scanning' " [Med. Phys. 41(12), 122101 (6pp.) (2014)]*, Med. Phys. **43**(3), 1580 (2016). http://dx.doi.org/10.1118/1.4941006.
25. P.G. Watson†, J. Seuntjens, *Technical note: Effect of explicit M and N-shell atomic transitions on a low-energy x-ray source*, Med Phys. **43**(4), 1760 (2016). doi: 10.1118/1.4943954.
26. P. Pater†, G. Backstrom†, F. Villegas, A. Ahnesjo, S. Enger, J. Seuntjens, I. El Naqa, *Proton and light ion RBE for the induction of initial DNA double strand breaks*, Med Phys. **43**(5), 2131 (2016). doi: 10.1118/1.4944870.
27. K. Weier, C. Till, V.S. Fonov, E.A. Yeh, D.L. Arnold, B. Banwell, D.L. Collins, *Contribution of the cerebellum to cognitive performance in children and adolescents with multiple sclerosis*, Mult. Scler. **22**, 599-607 (2016).
28. N. Akbar, C. Till, J.G. Sled, M.A. Binns, S.M. Doesburg, B. Aubert-Broche, D.L. Collins, *Altered resting-state functional connectivity in cognitively preserved pediatric-onset MS patients and relationship to structural damage and cognitive performance*, Mult. Scler. **22**, 792-800 (2016).
29. K. Weier, V. Fonov, B. Aubert-Broche, D.L. Arnold, B. Banwell, D.L. Collins, *Impaired growth of the cerebellum in pediatric-onset acquired CNS demyelinating disease*, Mult. Scler. **22**, 1266-78 (2016).
30. R. Giraud, V.T. Ta, N. Papadakis, J.V. Manjon, D.L. Collins, P. Coupe et al., *An optimized PatchMatch for multi-scale and multi-feature label fusion*, Neuroimage **124**, 770-82 (2016).
31. S.H. Kim, I. Lyu, V.S. Fonov, C. Vachet, H.C. Hazlett, R.G. Smith, J. Piven, S.R. Dager, R.C. Mckinstry, J.R. Pruett Jr, A.C. Evans, D.L. Collins, K.N. Botteron, R.T. Schultz, G. Gerig, M.A. Styner, IBIS Network: *Development of cortical shape in the human brain from 6 to 24months of age via a novel measure of shape complexity*, Neuroimage **135**, 163-76 (2016).
32. J. Andoh, M. Ferreira, I.R. Lepper, R. Matsushita, G.B. Pike, R.J. Zatorre, *How restful is it with all that noise? Comparison of interleaved silent steady state (ISSS) and conventional imaging in resting-state fMRI*, Neuroimage, 2016 Nov 27 [Epub ahead of print].
33. C. Till, A. Noguera, L.H. Verhey, J. O'Mahony, E.A. Yeh, J.K. Mah, K.J. Sinopoli, B.L. Brooks, B. Aubert-Broche, D.L. Collins, S. Narayanan, D.L. Arnold, B.L. Banwell, *Cognitive and behavioral functioning in childhood acquired demyelinating syndromes*, J. Int. Neuropsychol. Soc. **22**(10), 1050-1060 (2016).
34. P. Wong, I.R. Leppert, D. Roberge, K. Boudam, P.D. Brown, T. Muanza, G.B. Pike, J. Chankowsky, C. Mihalcioi, *A pilot study using dynamic contrast enhanced-MRI as a response biomarker of the radioprotective effect of memantine in patients receiving whole brain radiotherapy*, Onctotarget - [Epub ahead of print].
35. R.B. Richardson, M.E. Harper, *Mitochondrial stress controls the radiosensitivity of the oxygen effect: Implications for radiotherap*y, Oncotarget **7**(16), 21469-21483 (2016).
36. D. Bekah†, D. Cooper†, K. Kudinov, C. Hill, J. Seuntjens, S. Bradforth, J. Nadeau, *Synthesis and characterization of biologically stable, doped LaF3 nanoparticles co-conjugated to PEG and Photosensitizers*, J. Photochem. Photobiol. A: Chemistry **329**, 26–34 (2016).
37. S. Aldelaijan†, F. Alzorkany, B. Moftah, I. Buzurovic, J. Seuntjens, N. Tomic, S. Devic, *Use of a control film piece in radiochromic film dosimetry*, Phys. Med. **32**(1), 202-207 (2016). doi: 10.1016/j.ejmp.2015.12.004.

38. M. Serban, J. Seuntjens, E. Roussin, A. Alexander, J.R. Tremblay, W. Wierzbicki, *Patient-specific compensation for Co-60 TBI treatments based on Monte Carlo design: A feasibility study,* Phys. Med. **32**(1), 67-75 (2016).
39. C. Fiorino, J. Seuntjens, *The role of medical physics in prostate cancer radiation therapy*, Physica Medica **32**(3), 435-437 (2016).
40. U. Quasta, T.W. Kaulich, J.T. Álvarez-Romero, Å. Carlsson Tedgren, S.A. Enger, D.C. Medich, F. Mourtada, J. Perez-Calatayud, M.J. Rivard, G. Abu Zakaria, *A brachytherapy photon radiation quality index QBT for probe-type dosimetry*, Physica Medica, publ. online May 26, 2016.
41. P. Papaconstadopoulos†, I.R. Levesque, R. Maglieri†, J. Seuntjens, *Direct reconstruction of the source intensity distribution of a clinical linear accelerator using a maximum likelihood expectation maximization algorithm*, Phys. Med. Biol. **61**(3), 1078-1094 (2016).
42. J. Renaud†, S. Rossomme, A. Sarfehnia, S. Vynckier, H. Palmans, A. Kacperek, J. Seuntjens, *Development and application of a water calorimeter for the absolute dosimetry of short-range particle beams*, Phys. Med. Biol. **61**(18), 6602-6619 (2016).
43. D. Markel†, I.R. Levesque, J. Larkin, P. Léger, I. El Naqa, *A 4D biomechanical lung phantom for joint segmentation/registration evaluation,* Phys. Med. Biol. **61**(19), 7012-7030 (2016).
44. C-A. Collins-Fekete†, S. Brousmiche, S.K.N. Portillo, L. Beaulieu, J. Seco, *A maximum likelihood method for high resolution proton radiography/proton CT*, Phys. Med. Biol. **61**(23), (2016).
45. P. Novosad†, A.J. Reader, *MR-guided dynamic PET reconstruction with the kernel method and spectral temporal basis functions*, Phys. Med. Biol. **61**, 4624-4645 (2016).
46. J. Coates, I. El Naqa, *Outcome modeling techniques for prostate cancer radiotherapy: Data, models, and validation*, Phys Med. **32**(3), 512-20 (2016). PM27053448, doi: 10.1016/j.ejmp.2016.02.014.
47. M.E. MacDonald, N.D. Forkert, G.B. Pike, R. Frayne, *Phase error correction in time-averaged 3D phase contrast magnetic resonance imaging of the cerebral vasculature*, PloS one. **11**(2), (2016). e0149930.
48. T.V. Nguyen, P. Gower, M.D. Albaugh, K.N. Botteron, J.J. Hudziak, V.S. Fonov, D.L. Collins et al., *The developmental relationship between DHEA and visual attention is mediated by structural plasticity of cortico-amygdalar networks*, Psychoneuroendocrin. **70**, 122-33 (2016).
49. T.V. Nguyen, J. Lew, M.D. Albaugh, K.N. Botteron, J.J. Hudziak, V.S. Fonov, D.L. Collins, S. Ducharme, J.T. McCracken, *Sex-specific associations of testosterone with prefrontal-hippocampal development and executive function*, Psychoneuroendocrin. **76**, 206-217 (2016).
50. S. Devic, N. Tomic, D. Lewis, *Reference radiochromic film dosimetry: Review of technical aspects*, Pub. Med. **32**(4), 541-556 (2016). doi: 10.1016/j.ejmp.2016.02.008.
51. C.L.J. Chow, J. Runqing, A. Kiciak, D. Markel†, *Dosimetric comparison between the prostate intensity-modulated radiotherapy (IMRT) and volumetric- modulated arc therapy (VMAT) plans using the planning target volume (PTV) dose–volume factor,* J. Radiother. Prac. **15**(02), 6 pages, publ. online April 21, 2016.
52. S. Boucetta, A. Salimi, M. Dadar, B.E. Jones, D.L. Collins, T.T. Dang-Vu, *Structural brain alterations associated with rapid eye movement sleep behavior disorder in Parkinson's disease*, Sci. Rep. **6**, 26782 (2016).
53. D.J. Shaw, R. Marěcek, M.H. Grosbras, G. Leonard, G.B. Pike, T. Paus, *Co-ordinated structural and functional covariance in the adolescent brain underlies face processing performance*, Social Cogn. Affective Neurosci. **11**(4), 556-68 (2016).
54. S. Hickling†, P. Léger, I. El Naqa, *On the detectability of acoustic waves induced following irradiation by a radiotherapy linear accelerator*, IEEE Trans Ultrason. Ferroelectr. Freq. Control. **63**(5), 683-691 (2016).
55. S.L. Faria, O.B. Neto, F. Cury, G. Shenouda, R. Ruo, L. Souhami, *Moderate hypofractionated external beam radiotherapy alone for intermediate risk prostate cancer: Long term outcomes*, Cdn. J. Urology **23**(2), 8209-14 (2016).
56. J. Renaud†, A. Sarfehnia, J. Seuntjens, *Experimental benchmarking of a probe-format calorimeter for use as an absolute clinical dosimeter*, Proceedings of ESTRO 35, April 29-May 3, 2016, Turin, Italy. (One of the five abstracts that was selected out of the numerous submitted under physics track – publication of the conference report.)
57. I. El Naqa, *Image processing and analysis in hybrid PET imaging*, in “Basic Sciences of PET Imaging”, Magdy M. Khalil eds., publ. Springer, 2016, pp. 285-301.
58. I. El Naqa, *Computerized prediction of treatment outcomes*, in “Image-based Computer-Assisted Radiation Therapy”, Hidetaka & Arimura eds., publ. Springer, 2016, pp. 357-375.

APPENDIX X.

PUBLISHED ABSTRACTS

by members of the Medical Physics Unit : 2016 calendar year (x 55)
(names of MPU staff members are underlined, students are indicated by †)

1. M. Carrier-Vallières†, C.R. Freeman, Z. Ahmed†, R. Turcotte, M. Hickeson, S. Skamene, K. Jeyaseelan, L. Hathout, M. Serban, S.Xing*†, T.I Powell, K. Goulding, J. Seuntjens, I.R. Levesque, I. El Naqa, *Early assessment of lung metastasis risk in soft-tissue sarcomas: Prediction of prospective cohort and potential improvement using hypoxia and perfusion biomarkers*, J. Bone Joint **98-B**(Suppl.20), 39 (2016).
2. M-A. Renaud†, G. Famulari†, J. Seuntjens, S.A. Enger, *Column generation-based Monte Carlo treatment planning for rotating shield brachytherapy*, J. Eur. Soc. Radiother. Onc. **119**(1), S118 (2016); abstract OC-0256.
3. J. Renaud†, A. Sarfehnia, J. Seuntjens, *Experimental benchmarking of a probe-format calorimeter for use as an absolute clinical dosimeter,* J. Eur. Soc. Radiother. Onc. **119**(1), S133 (2016); abstract OC-0285.
4. G. Famulari†, A. Armstrong, T. Urlich, S. Enger, *Production of Gd-153 as a source isotope for use in rotating shield high dose rate brachytherapy*, J. Eur. Soc. Radiother. Onc. **119**(1), S472 (2016); abstract PO-0971, poster.
5. S. Devic, S. Aldelaijan†, F. Alzorkany, N. Tomic, J. Seuntjens, F. DeBlois, B. Moftah, *Improving accuracy of radiochromic film dosimetry system using control film piece,* J. Eur. Soc. Radiother. Onc. **119**(1), S682 (2016); abstract EP-1482.
6. O. Piron†, N. Varfalvy, L. Archambault, *Using ROIs projected on EPID as a predictor of plan deterioration due to anatomical changes,* J. Eur. Soc. Radiother. Onc. **119**(1), S852 (2016); abstract EP-1818.
7. N. Tomic, H. Bekerat, F. DeBlois, J. Seuntjens, R. Forghani, S. Devic, *Dual energy computed tomography based tissue characterization for radiotherapy treatment planning,* J. Eur. Soc. Radiother. Onc. **119**(1), S857 (2016); abstract EP-1827.
8. M. Letourneau, J. Kildea, W. Parker, A. Joseph†, C.R. Freeman, *Using a DVH registry standardizes IMRT-CSI planning and reduces V20 in non-target tissues*, J. Eur. Soc. Radiother. Onc. **119**(1), S658 (2016); 35th annual meeting of the European Society for Radiotherapy & Oncology (ESTRO), Turin, Italy, April 29-May 03, 2016 - abstract EP-1414, poster.
9. S. Faria, I. Alamri†, J. Gluszko, H. Patrocinio, *Do we really need customized immobilization devices for modern SBRT in lung cancer?*, J. Eur. Soc. Radiother. Onc. **120**(1), S56-57 (2016).
10. Z. Ahmed†, I.R. Levesque, *An extended linear reference region model that accounts for plasma volume in dynamic contrast enhanced MRI*, 24th Annual Scientific Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), Singapore, May 07-13, 2016.
11. J-F. Cabana, Y. Gu, M. Boudreau, I.R. Levesque, Y. Atchia, J. Sled, S. Narayanan, D.L. Arnold, G.B. Pike, J. Cohen-Adad, T. Duval, T.M. Vuong, N. Stikov, *Quantitative magnetization transfer imaging made easy with qMTLab: Software for data smulation, analysis and visualiz*ation, 24th Annual Scientific Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), Singapore, May 07-13, 2016.
12. M. Simard†, E.J. McWalter, G.E. Gold, I.R. Levesque, *Quantitative magnetization transfer MRI of in-situ and ex-situ meniscus*, 24th Annual Scientific Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), Singapore, May 07-13, 2016.
13. S. Xing†, C.R. Freeman, S. Jung, I.R. Levesque, *Automated segmentation of soft tissue sarcoma into distinct pathological regions using diffusion and T2 relaxation*, 24th Annual Scientific Meeting of the International Society for Magnetic Resonance in Medicine (ISMRM), Singapore, May 07-13, 2016.
14. M. Delage†, E. Cloutier, M. Lecavalier, D. Lariviere, C. Allen, L. Beaulieu, *Core/shell and multishell colloidal quantum dots nanodosimeters behaviour under repeated MV and KV irradiations*, Med. Phys. **43**(6), 3315 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - presentation SU-C-201-01.

15. M. Rilling†, M. Goulet, L. Beaulieu, S. Thibault, L. Archambault, *Noise and temporal resolution in a near real-time 3D dosimeter*, Med. Phys. **43**(6), 3316 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - presentation SU-C-201-04.
16. Y. Zlateva†*, J. Seuntjens, I. El Naqa, *Towards clinical Cherenkov emission dosimetry: Stopping power- to-Cherenkov power ratios and beam quality specification of clinical electron beams*, Med. Phys. **43** (6), 3317 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - accepted presentation, oral snap SU-C-201-07.
17. C. Collins-Fekete†, R. Schulte, L. Beaulieu, J. Seco, *A novel maximum likelihood method for high-resolution proton radiography/proton CT*, Med. Phys. **43**(6), 3324 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - accepted presentation SU-C-207A-01.
18. L. Archambault, O. Piron†, N Varfalvy, *Time series analysis of EPID images to identify patients in need of treatment adaptation*, Med. Phys. **43**(6), 3340 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - accepted presentation SU-D-BRA-05.
19. D. Matenine†*, G. Côté, J. Mascolo-Fortin, Y. Goussard, P. Despres, *Evaluation of partial storage of the system matrix for cone beam computed tomography using a GPU platform*, Med. Phys. **43** (6), 3345 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - oral presentation SU-D-206-02.
20. A. Joseph†, D. Herrera, T. Hijal, L. Hendren, A. Leung, J. Wainberg†, M. Sawaf, M. Gorshkov, R. Maglieri†, M. Keshavarz†, J. Kildea, *Predicting waiting times in radiation oncology using machine learning*, Med. Phys. **43**(6), 3362 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - poster SU-F-P-20.
21. S. Laberge, J. Beauregard, L. Archambault, *Correction of FCh-PET bladder uptake using virtual sinograms and investigation of its impact on the quantification of prostate textural characteristics*, Med. Phys. **43**(6), 3379 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - poster SU-F-P-20.
22. S. Lee†, D. Markel†, G. Hegyi, I. El Naqa, *Robustness test of computed tomography textures of lung tissues to varying scanning conditions using a realistic phantom environment*, Med. Phys. **43**(6), 3382 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - poster SU-F-R-40.
23. A. Diamant†, I. El Naqa, N. Ybarra, J. Seuntjens, *Modeling lung SBRT tumor response using Bayesian network averaging*, Med. Phys. **43**(6), 3383 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - poster SU-F-R-44.
24. U. Mwidu, S. Devic, M. Shehadeh, M. AlKafi, R. Mahmood, B. Moftah, *Dosimetry comparison of advanced external beam radiation treatment modalities to brachytherapy treatments in patients with cervical cancer*, Med. Phys. **43**(6), 3559 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - poster SU-F-T-420.
25. S. Devic, N. Tomic, D. Lewis, S. Aldelaijan, F. DeBlois, J. Seuntjens, *Uncertainty of radiochromic film based relative dose measurements*, Med. Phys. **43**(6), 3634 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - presentation SU-G-BRB-14.
26. K. O'Grady†, S. Davis, J. Seuntjens, *Creation of a Monte Carlo TrueBeam model by reproducing Varian phase space data*, Med. Phys. **43**(6), 3730 (2016); AAPM 58th annual meeting & exhibition, Washington, DC, July 31 - August 4, oral presentation, TU-AB-BRC-05.
27. G. Kim, B. Muir, W. Culberson, S. Davis, Y. Huang, S. Lee†, J. Lowenstein, A. Sarfehnia, N. Tolani, J. Siebers, *Results of a survey on the implementation of the TG-51 protocol and associated addendum on reference dosimetry of external beams*, Med. Phys. **43**(6), 3730 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - oral presentation TU-D-201-03.
28. P.G. Watson†, M. Renaud†, J. Seuntjens, *Efficiency of an IAEA phase-space source for a low energy x-ray tube using Egs++*, Med. Phys. 43(6), 3731 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - oral presentation TU-AB-BRC-07.

29. C. Collins-Fekete†, R. Schulte, L. Beaulieu, J. Seco, *A new optimization method for pre-treatment patient-specific stopping-power by combining proton radiography and X-Ray CT*, Med. Phys. **43**(6), 3756 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - accepted presentation TU-FG-BRB-04.
30. W. Parker, *CAMPEP residencies in a Canadian context: Comprehensive cancer centers and integrated learning environments*, Med. Phys. **43**(6), 3808 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - poster WE-D-204-03.
31. J. Schneider†, T. Vuong, N. Tomic, M. Hickeson, R. Lisbona, F. DeBlois, J. Seuntjens, S. Devic, *Decomposition of FDG-PET based differential uptake volume histograms in rectal cancer patients*, Med. Phys. **43**(6), 3827 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - poster WE-FG-202-04.
32. L. Mirzakhanian†, H. Benmakhlouf, J. Seuntjens, *New formalism correction factors for ionization chambers in the calibration of Leksell gamma knife perfexion model based on Monte Carlo simulation*, Med. Phys. **43**(6), 3851 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - oral presentation TH-AB-201-09.
33. L. Archambault, P. Papaconstadopoulos†, J. Seuntjens, H. Bouchard, *A study of Cherenkov light generated and collected in plastic scintillation detector*, Med. Phys. **43**(6), 3870 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - presentation TH-CD-201-04.
34. S. Hickling†*, I. El Naqa, *Experimental characterization of acoustic signals generated in water following clinical photon and electron beam irradiation*, Med. Phys. **43** (6), 3870 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - presentation TH-CD-201-06.
35. J. Renaud†*, A. Sarfehnia, S. Woodings, J. Kok, B. van Asselen, J. Wolthaus, B. Raaymakers, J. Seuntjens, *Towards reference dosimetry of MR-linacs using a clinical probe-format calorimeter*, Med. Phys. **43**(6), 3875 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - presentation TH-CD-BRA-10.
36. N. Entezari, J. Renaud†, G. Peterson, A. Sarfehnia, *Towards absolute dose measurement in MRI-linac and gamma-knife: Design and construction of an MR-compatible water calorimeter*, Med. Phys. **43** (6), 3875 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - oral presentation TH-CD-BRA-09.
37. J. Seuntjens, *Small field radiation therapy: Physics and recent recommendations from IAEA and ICRU*, Med. Phys. **43**(6), 3893 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - presentation TH-EF-204-02.
38. S. Hickling†, H. Lei, M. Hobson, P. Léger, X. Wang, I. El Naqa, *Imaging dose distributions through the detection of radiation-induced acoustic waves*, Med. Phys. **43**(8), 4928 (2016); 62nd annual scientific meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, NL, July 20-23, 2016.
39. Y. Zlateva†, J. Seuntjens, I. El Naqa, *Stopping power-to-Cherenkov power ratios and beam quality specification for clinical Cherenkov emission dosimetry of electrons: beam-specific effects and experimental validation*, Med. Phys. **43**(8), 4929 (2016); 62nd annual scientific meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, NL, July 20-23, 2016 – oral presentation for the J.R. Cunningham Young Investigator Symposium.
40. A. Diamant-Boustead†, J. Seuntjens, I. El Naqa, N. Ybarra, *Modelling metastasis after lung SBRT using Bayesian network averaging*, Med. Phys. **43**(8), 4930 (2016); http://dx.doi.org/10.1118/1.4961760; 62nd annual scientific meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, NL, July 20-23, 2016 - Second Prize at the J.R. Cunningham Young Investigators Symposium.
41. A. Toltz†, M. Hoesl, J. Schuemann, J. Seuntjens, H-M. Lu, H. Paganetti, *Time-resolved diode dosimetry for in vivo proton therapy range verification: Calibration through numerical modeling*, Med. Phys. **43**(8), 4939 (2016); 62nd annual scientific meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, NL, July 20-23, 2016 - poster.
42. J. Kildea, S. Enger, R. Maglieri†, L. Mirzakhanian†, C. Vallhagen Dahlgren, J. Dubeau, S. Witharana†, *Neutron spectral measurements around a scanning proton Beam*, Med. Phys. **43**(8), 4941 (2016); 62nd annual scientific meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, NL, July 20-23, 2016.

43. J. Kildea, T. Hijal, *Electronic waiting room management for a busy cancer centre*, Med. Phys. **43**(8), 4942 (2016); 62nd annual scientific meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, NL, July 20-23, 2016.
44. M.D.C. Evans, R. Ruo, H.J. Patrocinio, E. Poon, C.R. Freeman, T. Hijal, W. Parker, *TB - ARC: A total body photon ARC technique using a commercially available linac*, Med. Phys. **43**(8), 4946 (2016); 62nd annual scientific meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, NL, July 20-23, 2016 - poster.
45. I. Alamri†, S. Faria, J. Gluszko, H.J. Patrocinio, *Intra-fraction tumor position assessment for lung SBRT in patients treated without customized immobilization devices*, Med. Phys. **43**(8), 4947 (2016); 62nd annual scientific meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, NL, July 20-23, 2016 - poster.
46. A. Joseph†, D. Herrera, T. Hijal, L. Hendren, A. Leung, J. Wainberg, M. Sawaf, G. Maxim, R. Maglieri†, M. Keshavarz†, J. Kildea, *Predicting waiting times in radiation oncology using machine learning*, Med. Phys. **43**(8), 4953 (2016); 62nd annual scientific meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, NL, July 20-23, 2016.
47. J. Renaud†, J. Seuntjens, A. Sarfehnia, *Energy dependence of a clinical probe-format calorimeter and its pertinence to absolute photon and electron beam dosimetry*, Med. Phys. **43**(8), 4959 (2016); 62nd annual scientific meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, NL, July 20-23, 2016.
48. L. Montgomery†, J. Kildea, *An evaluation of incident reporting and learning using the Canadian National System for incident reporting: Radiation treatment*, Med. Phys. **43**(8), 4959 (2016); 62nd annual scientific meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, NL, July 20-23, 2016.
49. P.G. Watson†, J. Seuntjens, *Investigation of an absorbed dose to water formalism for a miniature low- energy x-ray source*, Med. Phys. **43**(8), 4960 (2016); 62nd annual scientific meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, NL, July 20-23, 2016 - oral presentation.
50. N. Tomic, H. Bekerat, J. Seuntjens, R. Forghani, F. DeBlois, S. Devic, *Improving radiotherapy treatment planning using dual energy computed tomography based tissue characterization*, Med. Phys. 43 (6), 3554 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - poster SU-F-T- 398.
51. Y. Ma†*, M. Laprise-Pelletier, J. Lagueux, M. Côté, M. Fordin, L. Beaulieu, *Dose enhancement of gold nanoparticle in proton therapy: A Monte Carlo study based on the transmission electron microscopy imaging*, Med. Phys. **43**(6), 3674 (2016); 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - presentation SU-G-TeP3-031.
52. A. Diamant-Boustead†, J. Seuntjens, I. El Naqa, H. Al-Halabi, K. Adil, *Prediction of distant metastasis using dose-volume metrics in non-small cell lung cancer stereotactic body radiation therapy,* Int. J. Radiat. Onc. Biol. Phys. **96**(2S), E603 (2016) - doi: 10.1016/j.ijrobp.2016.06.2140; 58th annual meeting of the American Society for Radiation Oncology (ASTRO), Boston, Massachussetts, September 25-28, 2016.
53. K. Adil, A. Diamant-Boustead†, I. El Naqa, J. Seuntjens, M. Duclos, N. Kopek, S. Faria, B.S. Abdulkarim, H. Al-Halabi, *Stereotactic body radiation therapy with 48 Gy in 3 fractions is an effective treatment for early-stage non-small cell lung cancer patients,* Int. J. Radiat. Oncol. Biol. Phys. **96**(2S), E481-2 (2016); 58th annual meeting of the American Society for Radiation Oncology (ASTRO), Boston, Massachussetts, September 25-28, 2016.
54. N. Ybarra, M. Vallieres†, K. Jeyaseelan, C.R. Freeman, S. Jung, R. Turcotte, J. Seuntjens, I. El Naqa, *Correlation of molecular imaging and biomarkers expression in the prediction of metastatic capacity of soft tissue sarcomas,* Int. J. Radiat. Oncol. Biol. Phys. **96**(2S), E705-6 (2016); 58th annual meeting of the American Society for Radiation Oncology (ASTRO), Boston, Massachussetts, September 25-28, 2016.
55. V. Fortier†, I.R. Levesque, *Comparison of phase processing techniques for quantitative susceptibility mapping*, 4th International Workshop on MRI Phase Contrast & Quantitative Susceptibility Mapping, Graz, Austria, p.113, September 26-28, 2016.

APPENDIX XII.

CONFERENCE & SEMINAR PRESENTATIONS

by members of the Medical Physics Unit : 2016 calendar year (x 97)
*(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. M. Simard†*, E.J. McWalter, G.E. Gold, I.R. Levesque, *Quantitative magnetization transfer MRI of in situ and ex situ meniscus*, Journée Scientifique du Réseau de Bio-Imagerie du Québéc / 8th scientific day of the Québec Bio-imaging network (QBIN), Montréal, Québec, January 29, 2016.
2. Z. Ahmed†*, I.R. Levesque, *DCE-MRI shape analysis using model-based classification shapes with NNLS*, Journée Scientifique du Réseau de Bio-Imagerie du Québéc / 8th scientific day of the Québec Bio-imaging network (QBIN), January 29, 2016, Montréal, Québec - poster.
3. S. Xing†*, C.R. Freeman, S. Jung, I.R. Levesque, *Automated segmentation of soft tissue sarcoma into distinct pathological regions using diffusion and T2 relaxation*, Journée Scientifique du Réseau de Bio-Imagerie du Québéc / 8th scientific day of the Québec Bio-imaging network (QBIN), Montréal, Québec, January 29, 2016 - poster.
4. J. Perez†*, N. Ybarra, F. Chagnon, O. Lesur, I. El Naqa, *Quantitative image analysis of fluorescence endomicroscopy video sequences for mesenchymal stem cell tracking in regenerative lung treatment*, Journée Scientifique du Réseau de Bio-Imagerie du Québéc / 8th scientific day of the Québec Bio-imaging network (QBIN), Montréal, Québec, January 29, 2016.
5. L. Montgomery†*, C. Maietta, J. Kildea, *Validation of the national system for incident reporting: Radiation treatment*, Canadian Organization of Medical Physicists (COMP) 7th annual Winter School on Quality and Radiation Safety in Radiation Oncology, Montebello, Québec, February 07-11, 2016.
6. M. Evans*, M. Broeders*, W. Parker, L.J. Schreiner, *COMP-QARSAC-CNSC Liaison: Progress Report*, Canadian Organization of Medical Physicists (COMP) 7th annual Winter School on Quality and Radiation Safety in Radiation Oncology, Montebello, Québec, February 07-11, 2016.
7. I.R. Levesque, M.A. Hobson, M. Serban, H.J. Patrocinio, W. Parker, *MRI for treatment simulation: Experience in the deployment of a dedicated MRI system and program expansion*, Canadian Organization of Medical Physicists (COMP) 7th annual Winter School on Quality and Radiation Safety in Radiation Oncology, Montebello, Québec, February 07-11, 2016.
8. Y. Luo, I. El Naqa, D.L. McShan, I. Lohse, M.M. Matuszak, M. Schipper, S. Jolly, F.M. Kong, R. Ten Haken, *Response-based Bayesian network approaches for adaptive radiotherapy of non-small cell lung cancer (NSCLC)*, International Conference on Translational Research and Pre-Clinical Strategies in Radiation Oncology (ICTR), Geneva, Switzerland, February 15-19, 2016.
9. J. Kildea, L. Hendren, A. Joseph†, D. Herrera, M. Gorshkov, M. Keshavarz, A. Leung, M. Sawaf, J. Wainberg†, T. Hijal, *Realistic knowledge-based waiting times for radiotherapy patients: Addressing the pain of waiting*, Accreditation Canada's 5th Annual Quality Conference, Montréal, Québec, April 25-26, 2016.
10. M-A. Renaud†*, G. Famulari†, J. Seuntjens, S. Enger, *Column generation-based Monte Carlo treatment planning for rotating shield brachytherapy*, 35th annual meeting of European Society for Radiotherapy & Oncology (ESTRO 35), April 29-May 03, 2016, Turin, Italy - abstract OC-0256; J. Eur. Soc. Radioth. Onc. **119** (Suppl.1), S118 (2016).
11. J. Renaud†*, A. Sarfehnia, J. Seuntjens, *Experimental benchmarking of a probe-format calorimeter for use as an absolute clinical dosimeter*, 35th annual meeting of European Society for Radiotherapy & Oncology (ESTRO 35), April 29-May 03, 2016, Turin, Italy - abstract OC-0285, one of the five that was selected out of the numerous submitted under physics track - proffered paper; J. Eur. Soc. Radioth. Onc. **119** (Suppl.1), S133 (2016).

12. G. Famulari†*, A. Armstrong, T. Urlich, S. Enger, *Production of Gd-153 as a source isotope for use in rotating shield high dose rate brachytherapy*, 35th annual meeting of European Society for Radiotherapy & Oncology (ESTRO 35), April 29-May 03, 2016, Turin, Italy - abstract PO-0971, poster; J. Eur. Soc. Radioth. Onc. **119** (Suppl.1), S472 (2016).
13. M. Letourneau, J. Kildea, W. Parker, A. Joseph†, C.R. Freeman, *Using a DVH registry standardizes IMRT-CSI planning and reduces V20 in non-target tissues*, 35th annual meeting of European Society for Radiotherapy & Oncology (ESTRO 35), April 29-May 03, 2016, Turin, Italy - abstract EP-1414, poster; J. Eur. Soc. Radioth. Onc. **119** (Suppl.1), S658 (2016).
14. S. Devic, S. Aldelaijan†, F. Alzorkany, N. Tomic, J. Seuntjens, F. DeBlois, B. Moftah, *Improving accuracy of radiochromic film dosimetry system using control film piece*, 35th annual meeting of European Society for Radiotherapy & Oncology (ESTRO 35), April 29-May 03, 2016, Turin, Italy - abstract EP-1482; J. Eur. Soc. Radioth. Onc. **119** (Suppl.1), S682 (2016).
15. O. Piron†*, N. Varfalvy, L. Archambault, *Using ROIs projected on EPID as a predictor of plan deterioration due to anatomical changes*, 35th annual meeting of European Society for Radiotherapy & Oncology (ESTRO 35), April 29-May 03, 2016, Turin, Italy - abstract EP-1818, electronic poster; J. Eur. Soc. Radioth. Onc. **119** (Suppl.1), S852, (2016).
16. N. Tomic, H. Bekerat, F. DeBlois, J. Seuntjens, R. Forghani, S. Devic, *Dual energy computed tomography based tissue characterisation for radiotherapy,* 35th annual meeting of European Society for Radiotherapy & Oncology (ESTRO 35), April 29-May 03, 2016, Turin, Italy - abstract EP-1482; J. Eur. Soc. Radioth. Onc. **119** (Suppl.1), S857 (2016).
17. A.J.L. Berman†, G.B. Pike, *A general solution for transverse signal decay under the weak field approximation: Theory and validation with spherical perturbers*, annual meeting of the International Society of Magnetic Resonance in Medicine (ISMRM), Singapore City, Singapore, May 07-13, 2016.
18. A.J.L. Berman†, G.B. Pike, *Breaking β: Understanding the β-value in calibrated functional MRI*, annual meeting of the International Society of Magnetic Resonance in Medicine (ISMRM), Singapore City, Singapore, May 07-13, 2016.
19. H. Sun, M.E. MacDonald, G.B. Pike, *Phase correction of a bipolar gradient-echo acquisition for quantitative susceptibility mapping*, annual meeting of the International Society of Magnetic Resonance in Medicine (ISMRM), Singapore City, Singapore, May 07-13, 2016.
20. J.S.W. Campbell, I.R. Leppert, M. Boudreau, S. Narayanan, J. Cohen-Adad, G.B. Pike, N. Stikov, *Mapping the myelin g-ratio: Promises and pitfalls*, annual meeting of the International Society of Magnetic Resonance in Medicine (ISMRM), Singapore City, Singapore, May 07-13, 2016.
21. S. Xing†*, C.R. Freeman, S. Jung, I.R. Levesque, *Automated segmentation of soft-tissue sarcoma into habitats using diffusion and T2 relaxation*, International Sarcoma Symposium, Toronto, Ontario, June 10 2016.
22. C.R. Freeman, M. Carrier-Vallières†, M. Serban, I.R. Levesque, F. Cury, M. Hickeson, R. Turcotte, J. Seuntjens, I. El Naqa, *FDG-PET, FMISO-PET, DW-MRI and DCE-MRI in the management of soft tissue sarcomas of the extremities*, International Sarcoma Symposium, Toronto, Ontario, June 10, 2016 - best poster award.
23. R.A. Nout*, H. Bekerat, S. Devic, T. Vuong, *Is daily CT-based adaptive endorectal brachytherapy of benefit compared to using a single treatment plan for preoperative treatment of locally advanced rectal cancer?*, World Congress of Brachytherapy, San Francisco, California, June 27-29, 2016.
24. D. Herrera, A. Joseph†, T. Hijal, L. Hendren, A. Leung, M. Sawaf, M. Gorshkov, M. Keshavarz†, J. Kildea, *Opal: The oncology patient application*, 18th International Conference on the use of Computers in Radiation Therapy (ICCR), London, England, June 27-30, 2016.
25. J. Kildea, L. Hendren, A. Joseph†, D. Herrera, T. Hijal, *The oncology portal and application*, 18th International Conference on the use of Computers in Radiotherapy (ICCR), London, England, June 27-30, 2016.
26. J. Kildea, J. Wainberg†, W. Parker, T Hijal, *Electronic waiting room management for a busy cancer centre*, 18th International Conference on the use of Computers in Radiation Therapy (ICCR), London, England, June 27-30, 2016.
27. Y. Luo, I. El Naqa, D. McShan, M. Schipper, M. Matuszak, M Stenmark, I. Lohse, D. Ray, D. Owen, S. Jolly, T. Lawrence, F.M. Kong, R. Ten Haken, *A Bayesian network approach for local progression prediction in lung cancer with large-scale retrospective data*, 18th International Conference on the use of Computers in Radiation Therapy (ICCR), London, England, June 27-30, 2016.

28. L. Montgomery†, J. Kildea, *Incident reporting and learning software using the Canadian national system for incident reporting: Radiation treatment*, 18th International Conference on the use of Computers in Radiotherapy (ICCR), London, England, June 27-30, 2016 - poster.
29. J. Kildea, A. Joseph†, C.R. Freeman, *Automated EHR auditing in radiation oncology and a DVH registry*, 18th International Conference on the use of Computers in Radiotherapy (ICCR), London, England, June 27-30, 2016 - poster.
30. A. Joseph†, J. Kildea, *DepDocs: A web-based platform for knowledge-sharing and collaboration in radiation oncology*, 18th International Conference on the use of Computers in Radiotherapy, London, England, June 27-30, 2016 - poster.
31. J. Kildea, A. Joseph†, T. Hijal, *Document and appointment transfer from a radiation oncology EMR to a hospital-wide EMR*, 18th International Conference on the use of Computers in Radiotherapy, London, England, June 27-30, 2016 - poster.
32. S. Hickling†*, H. Lei, M. Hobson, P. Leger, X. Wang, I. El Naqa, *Imaging dose distributions through the detection of radiation-induced acoustic waves*, 62nd annual meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, Newfoundland, July 20-23, 2016; Med. Phys. **43**(8), 4928 (2016).
33. Y. Zlateva†, J. Seuntjens, I. El Naqa, *Stopping power-to-Cherenkov power ratios and beam quality specification for clinical Cherenkov emission dosimetry of electrons: Beam-specific effects and experimental validation*, 62nd annual meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, Newfoundland, July 20-23, 2016 - oral presentation at Young Investigator Symposium; Med. Phys. **43**(8), 4929 (2016).
34. A. Diamant†, J. Seuntjens, I. El Naqa, N. Ybarra, *Modelling metastasis after lung SBRT using Bayesian network averaging*, 62nd annual meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, Newfoundland, July 20-23, 2016; Med. Phys. **43**(8), 4930 (2016). http://dx.doi.org/10.1118/1.4961760.
35. J. Kildea, S. Enger, R. Maglieri†, L. Mirzakhanian†, C. Vallhagen Dahlgren, J. Dubeau, S. Witharana†, *Neutron spectral measurements around a scanning proton beam*, 62nd annual meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, Newfoundland, July 20-23, 2016; Med. Phys. **43**(8), 4941 (2016).
36. A. Joseph†, D. Herrera, T. Hijal, L. Hendren, A. Leung, J. Wainberg†, M. Sawaf, G. Maxim, R. Maglieri†, M. Keshavarz†, J. Kildea, *Predicting waiting times in radiation oncology using machine learning*, 62nd annual meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, Newfoundland, July 20-23, 2016 - oral presentation; Med. Phys. **43**(8), 4953 (2016).
37. J. Renaud†**,** J. Seuntjens, A. Sarfehnia, Sci-Sat AM: Radiation Dosimetry and Practical Therapy Solutions - 03: *Energy dependence of a clinical probe-format calorimeter and its pertinence to absolute photon and electron beam dosimetry*, 62nd annual meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, Newfoundland, July 20-23, 2016; Med. Phys. **43**(8), 4959 (2016).
38. L. Montgomery†, J. Kildea, *An evaluation of incident reporting and learning using the Canadian National System for incident reporting: Radiation treatment*, 62nd annual meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, Newfoundland, July 20-23, 2016; Med. Phys. **43**(8), 4959 (2016).
39. P.G.F. Watson†**,** J. Seuntjens, *Investigation of an absorbed dose to water formalism for a miniature low-energy x-ray source*, 62nd annual meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, Newfoundland, July 20-23, 2016; Med. Phys. **43**(8), 4960 (2016).
40. T. Bjarnson, J. Kildea, M. Broeders, *Session C1: Quality, safety and regulatory issues in imaging and therapy*, 62nd annual meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, Newfoundland, July 20-23, 2016.
41. J. Kildea, A. Joseph†, T. Hijal, *Waiting room management for a busy cancer centre*, 62nd annual meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, Newfoundland, July 20-23, 2016 - poster.
42. M. Evans, R. Ruo, H. Patrocinio, E. Poon, C.R. Freeman, T. Hijal, W. Parker, *TB-ARC: A total body photon ARC technique using a commercially available linac*, Annual scientific meeting of the Canadian Radiation Protection Association (CRPA-ARCP), St John's, Newfoundland, July 20-23, 2016.
43. I. Alamri†, S. Faria, J. Gluszko, H. Patrocinio, *Intra-fraction tumor position assessment for lung SBRT in patients treated without customized immobilization devices*, 62nd annual meeting of the Canadian Organization of Medical Physicists (COMP/OCMP), St. John's, Newfoundland, July 20-23, 2016 - poster.

44. U. Mwidu, S. Devic, M. Shehadeh, M. AlKafi, R. Mahmood, B. Moftah, *Dosimetry comparison of advanced external beam radiation treatment modalities to brachytherapy treatments in patients with cervical cancer*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016; Med. Phys. **43**(6), 3559 (2016). SU-F-T-420.
45. Y. Ma*, M. Laprise-Pelletier, J. Lagueux, M. Cote, M. Fordin, L. Beaulieu, *Dose enhancement of gold nanoparticle in proton therapy: A Monte Carlo study based on the transmission electron microscopy imaging*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016; Med. Phys. **43**(6), 3674 (2016). SU-G-TeP3-031.
46. K. O'Grady†, S. Davis, J. Seuntjens, *Creation of a Monte Carlo TrueBeam model by reproducing Varian phase space data*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016; Med. Phys. **43**(6), 3730 (2016). TU-AB-BRC-05.
47. G. Kim, B. Muir, W. Culberson, S. Davis, Y. Huang, S. Lee†, J. Lowenstein, A. Sarfehnia, N. Tolani, J. Siebers, *Results of a survey on the implementation of the TG-51 protocol and associated addendum on reference dosimetry of external beams*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016; Med. Phys. **43**(6), 3730 (2016) TU-D-201-03.
48. S. Hickling†, I. El Naqa, *Experimental characterization of acoustic signals generated in water following clinical photon and electron beam irradiation*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - TH-CD-201-06; Med. Phys. **43**(6), 3870 (2016).
49. N. Entezari**,** J. Renaud†, G. Peterson, A. Sarfehnia, *Towards absolute dose measurement in MRI-linac and gamma-knife: Design and construction of an MR-compatible water calorimeter*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - TH-CD-BRA-09; Med. Phys. **43** (6), 3875 (2016).
50. Y. Zlateva†, J, Seuntjens, I. El Naqa, *Towards clinical Cherenkov emission dosimetry: Stopping power-to-Cherenkov power ratios and beam quality specification of clinical electron beams*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - oral snap SU-C-201- 07.
51. L. Mirzakhanian†, H. Benmakhlouf, J. Seuntjens, *New formalism correction factors for ionization chambers in the calibration of Leksell gamma knife Perfexion model based on Monte Carlo simulation*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - TH-AB-201-09.
52. J. Schneider†, T. Vuong, N. Tomic, M. Hickeson, R. Lisbona, F. DeBlois, J. Seuntjens, S. Devic, *Decomposition of FDG-PET based differential uptake volume histograms in rectal cancer patients*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016.
53. J. Renaud†*, A. Sarfehnia, S. Woodings, J. Kok, B. van Asselen, J. Wolthaus, B. Raaymakers, J. Seuntjens, *Towards reference dosimetry of MR-linacs using a clinical probe-format calorimeter*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - TH-CD-BRA-10.
54. P. Watson†, M-A. Renaud†, J. Seuntjens, *Efficiency of an IAEA phase-space source for a low energy x-ray tube using Egs++*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - TU-AB-BRC-07.
55. D. Matenine†*, G. Côté, J. Mascolo-Fortin, Y. Goussard, P. Desprès, *Evaluation of partial storage of the system matrix for cone beam computed tomography using a GPU platform,* 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - SU-D-206-02.
56. M. Delage†*, E. Cloutier, M. Lecavalier, D. Lariviere, C. Allen, L. Beaulieu. *Core/shell and multishell colloidal quantum dots nanodosimeters behaviour under repeated MV and KV irradiations*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - SU-C-201-01.
57. M. Rilling†*, M. Goulet, L.Beaulieu, S. Thibault. L. Archambault, *Noise and temporal resolution in a near real-time 3D dosimeter*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - SU-C-201-04.

58. S. Devic*, N. Tomic, D. Lewis, S. Aldelaijan†, F. DeBlois, J. Seuntjens, *Uncertainty of radiochromic film based relative dose measurements,* 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016 - SU-G-BRB-14.
59. Y. Luo, I. El Naqa, D. McShan, M. Matuszak, S. Hobson, S. Jolly, R. Ten Haken, *A Bayesian network approach for joint prediction of tumor control and radiation pneumonitis in non-small-cell lung cancer (NSCLC)*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016.
60. D. Owen*, C. Anderson, C. Mayo, I. El Naqa, R. Ten Haken, Y. Cao, J. Balter, M. Matuszak, *Development of a plug-in based image analysis tool for integration into treatment planning*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016.
61. A. Diamant†, I. El Naqa, N. Ybarra, J. Seuntjens, *Modeling lung SBRT tumor response using Bayesian network averaging*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016.
62. I. El Naqa, R. Ten Haken, *Quantum learning for knowledge-based response-adaptive radiotherapy*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016.
63. S. Lee†, D. Markel†, G. Hegyi, I. El Naqa, *Robustness test of computed tomography textures of lung tissues to varying scanning protocols using a realistic phantom environment*, 58th annual meeting & exhibition of the American Association of Physicists in Medicine (AAPM), Washington, DC, July 31-August 04, 2016.
64. J. Bancheri†*, P. Papaconstadopoulos†, J. Renaud†, J. Seuntjens, *Energy dependence of a graphite probe calorimeter for use in absolute clinical radiation dosimetry*, Cancer Research Program, Summer Student Research Day, August 26, 2016.
65. T. Rosin†*, Z. Ahmed†, M. Carrier-Vallières†, I. Levesque, *Automated identification of growth in liver metastases using dynamic contrast-enhanced MRI and shape analysis*, Cancer Research Program, Summer Student Research Day, August 26, oral presentation.
66. J. DeCunha†*, S. Enger, *Was dosimetry to blame? A retrospective analysis of beta emitting sources in intravascular brachytherapy*, Cancer Research Program, Summer Student Research Day, August 26, 2016.
67. S. Faria, I. El Naqa, L-M. Wang, *Lack of dose-volume parameter to predict the development of chest wall pain after SBRT for lung cancer*, 30th annual scientific meeting of the Canadian Association of Radiation Oncologists (CARO), "Quality and Safety in Radiation Oncology", Banff, Alberta, September 14-17, 2016.
68. S. Faria, I. Alamri†, J. Gluszko, H. Patrocinio, *Do we really need customized immobilization devices for modern SBRT in lung cancer?*, 30th annual scientific meeting of the Canadian Association of Radiation Oncologists (CARO), "Quality and Safety in Radiation Oncology", Banff, Alberta, September 14-17, 2016 - poster.
69. W-Q. Liu, S. Zhornitsky, J. Greenfield, R. Pasha, G. Gerchiaro Farah, Y. Zhang, G.B. Pike, V.W. Yong, L. Metz, *Randomized controlled pilot trial of domperidone in relapsing remitting multiple sclerosis*, 32nd Congress of the European Committee for Treatment and Research in Multiple Sclerosis, London, England, September 14-17, 2016.
70. A. Diamant†, J. Seuntjens, I. El Naqa, H. Al-Halabi, K. Adil, *Prediction of distant metastasis using dose-volume metrics in non-small cell lung cancer stereotactic body radiation therapy*, 58th annual meeting of the American Society for Radiation Oncology (ASTRO), Boston, Massachusetts, September 25-28, 2016; Int. J. Rad. Onc. Biol. Phys. **96**(2S), E603 (2016). DOI: 10.1016/j.ijrobp.2016.06.2140.
71. K. Adil, A. Diamant†, I. El Naqa, J. Seuntjens, M. Duclos, N. Kopek, S. Faria, B.S. Abdulkarim, H. Al-Halabi, *Stereotactic body radiation therapy with 48 Gy in 3 fractions is an effective treatment for early-stage non-small cell lung cancer patients*, 58th annual meeting of the American Society for Radiation Oncology (ASTRO), Boston, Massachusetts, September 25-28, 2016; Int. J. Rad. Onc. Biol. Phys. **96**(2S), E481-E482 (2016).
72. N. Ybarra, M. Carrier-Vallières†, K. Jeyaseelan, C.R. Freeman, S. Jung, R. Turcotte, J. Seuntjens, I. El Naqa, *Correlation of molecular imaging and biomarkers expression in the prediction of metastatic capacity of soft tissue sarcomas*, 58th annual meeting of the American Society for Radiation Oncology (ASTRO), Boston, Massachusetts, September 25-28, 2016; Int. J. Rad. Onc. Biol. Phys. **96**(2S), E705-E706 (2016).
73. K. Suresh, L. Bazzi, M. Matuszak, K. Brock, R. Ten Haken, I. El Naqa, M.J. Schipper, T.S. Lawrence, M. Feng, *Using indocyanine green to predict liver toxicity after stereotactic body radiotherapy*, 58th annual meeting of the American Society for Radiation Oncology (ASTRO), Boston, Massachusetts, September 25-28, 2016.

74. M. Feng, K. Suresh, L. Bazzi, M. Matuszak, K. Brock, R. Ten Haken, I. El Naqa, M.J. Schipper, T.S. Lawrence, *A model to predict liver toxicity after stereotactic body radiotherapy*, 58th annual meeting of the American Society for Radiation Oncology (ASTRO), Boston, Massachusetts, September 25-28, 2016.
75. C. Mayo, M. Kessler, I. El Naqa, D. McShan, R. Ten Haken, *M-ROAR: Making "big data" a practical reality in the clinic*, 58th annual meeting of the American Society for Radiation Oncology (ASTRO), Boston, Massachusetts, September 25-28, 2016.
76. I. El Naqa, M. Feng, L. Bazzi, J. Dow, K. Cuneo, M. Matuszak, K. Brock, K. Suresh, M.J. Schipper, T.S. Lawrence, R. Ten Haken, *Reinforcement learning strategies for decision making in knowledge-based adaptive radiotherapy: Application in liver cancer*, 58th annual meeting of the American Society for Radiation Oncology (ASTRO), Boston, Massachusetts, September 25-28, 2016.
77. V. Fortier†, I.R. Levesque, *Comparison of phase processing techniques for quantitative susceptibility mapping,* 4th International Workshop on MRI Phase Contrast & Quantitative Susceptibility Mapping – International Society for Magnetic Resonance in Medicine (ISMRM), Graz, Austria, September 26-28, 2016 - poster.
78. A. Licea, Y. Picard, J. Dubeau, S.S. Hakmana Witharana†, J. Kildea, M. Evans, R. Maglieri†, *The measurement of neutron energy spectra in different licensed facilities by the Canadian Nuclear Safety Commission using the nested neutron spectrometer*, 13th annual meeting of the Task Force on Shielding Aspects of Accelerators, Targets and Irradiation Facilities (SATIF-13), Dresden, Germany, October 10-12, 2016.
79. M. Carrier-Vallières†*, E. Kay-Rivest, L-J. Perrin, X. Liem, C. Furstoss, H.J.W.L. Aerts, N. Khaouam, F. Nguyen, C.S. Wang, K. Sultanem, I. El Naqa, *Evaluation du risque de recidives et de metastases dans le cancer de l'ORL: Développement de modèles prédictifs via la construction de forêts d'arbres decisionnels*, Journée étudiante - Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 02, 2016.
80. M-A. Saucier†*, D. Matenine†, P. Déspres, *Correction par simulation Monte Carlo de la diffusion pour des images de tomodensitometrie*, Journée étudiante - Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 02, 2016.
81. J. Ahearn†, J. Kildea, *Actual dose delivered to the rectum during prostate radiotherapy*, Journée étudiante - Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 02, 2016.
82. V. Fortier†*, *Implémentation d'un technique de cartographie quantitative de la susceptibilité magnétique basée sur l'imagerie par résonance magnétique pour la segmentation automatique de tissus*, Journée étudiante - Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 02, 2016.
83. P. Pater†*, G. Famulari†, J. Seuntjens, I. El Naqa, *Les simulations de cassures double-brin de l'ADN pour des faisceaux de photons cliniques*, Journée étudiante - Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 02, 2016.
84. M-A. Renaud†*, M. Serban, C. Lambert, J. Seuntjens, *Mixed-modality radiation therapy optimization using the column generation approach*, Journée étudiante - Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 02, 2016.
85. M-E. Delage†*, M-E. Lecavalier, D. Lariviere, C. Allen, L. Beaulieu, *Evaluation de la résistance à la radiation de points quantiques colloidaux utilisés comme scintillateurs,* Journée étudiante - Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 02, 2016.
86. P. Edimo†*, L. Archambault, L. Beaulieu, *Developppement d'un modele de frontiere stochastique pour le contrôle de qualité en curiethérapie haut debit de dose,* Journée étudiante - Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 02, 2016.
87. D. Gourdeau†*, L. Archambault, *Développpement d'un nouveau test de contr^ole de qualite pour la caracterisation des deformations mecaniques des accelerateurs lineaires,* Journée étudiante - Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 02, 2016.
88. A. Joseph†*, R. Maglieri†, D. Herrera, T. Hijal, L. Hendren, J. Kildea, *Opal: The Oncology Portal and Application,* Journée étudiante - Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 02, 2016.
89. A. Kroshko†*, M-C. Gagné, N. Varfalvy, L. Archambault, *Contrôle de qualité basé sur la geometrie pour la planification en radiothérapie externe par l'analyse de frontieres stochastiques,* Journée étudiante - Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 02, 2016.

90. L. Montgomery†*, J. Kildea, *An evaluation of incident learning using the taxonomy of the Canadian National System for incident reporting: Radiation treatment*, Journée étudiante - Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 02, 2016.
91. J. Seuntjens*, *AAPM-IAEA recommendations for small field calibration and relative dosimetry,* Annual meeting of the Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 03, 2016.
92. W. Parker*, *Commissioning of an arc based photon TBI technique,* Annual meeting of the Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 03, 2016.
93. W. Parker*, *Evolution of CSI treatment planning at McGill University,* Annual meeting of the Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 03, 2016.
94. J. Kildea*, *Accumulated dose DVHs calculated from CBCT for prostate patients,* Annual meeting of the Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 03, 2016.
95. M. Popovic*, *Managing and assessing the need to re-plan head and neck patients,* Annual meeting of the Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 03, 2016.
96. M. Evans, W. Parker, R. Ruo, L. Telisma, J. Gluszko, C. Hudon, M. Azoulay, C.R. Freeman, *Total body photon arc irradiation: Development and commissioning*, Annual meeting of the Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC), Sherbrooke, Québec, December 03, 2016.
97. A. Chatterjee†*, M. Serban, B. Abdulkarim, V. Panet-Raymond, L. Souhami, G. Shenouda, S. Sabri, B. Jean-Claude, J. Seuntjens, *First knowledge-based treatment planning model for glioblastoma treated with a hypofractionated simultaneous integrated boost technique*, Terry Fox Research Institute - Research Symposium, Toronto, Ontario, December 05, 2016 - poster.

APPENDIX XIII.

GRANTS : NEW (accorded in 2016) & ONGOING

held by MPU FACULTY MEMBERS in 2016

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).

[**Amounts listed are annual unless otherwise stated**]

COLLINS, D.L.

K. Siddiqi, **D.L. Collins** et al.
Medical image analysis
Natural Sciences & Engineering Research Council (NSERC), CREATE grant
(2012-2017).. $330,000

J. Seuntjens, **D.L. Collins** et al.
Medical physics research training network (MRPTN)
Natural Sciences & Engineering Research Council (NSERC), CREATE grant
(2013-2019).. $275,000

Alain Dagher, **D.L.Collins**
MRI biomarkers for prediction of cognitive decline in AD and PD
Alzheimer's Association / Michael J. Fox Foundation / W. Garfield Weston Foundation
(2014-2016).. $75,000

D.L. Collins et al
Analysis of atrophy in pediatric-onset MS
MS Society of Canada, MSSC Grant
(2014-2017).. $120,093

F. Beg, P. Bellec, **D.L. Collins**, A.C. Evans, et al
CBRAIN: Canadian brain research and informatics platform
Brain Canada, Support Grant (total grant $3,000,000)
(2014-2017).. $40,000

H. Chertkow, **D.L. Collins**, et al (~200)
Canadian Consortium for Neurodegeneration and Aging
Canadian Institute for Health Research (CIHR) – CCNA (total grant $31.55 million)
(2014-2019)..$0

N. Yoganathan, **D.L.Collins**, D. Stanimirovic, B. Chakravarthy,
J. Soucy, P. Rosa-Neto, M. Waterson, J. Gillard
Drug delivery across the human blood-brain barrier (total grant $1,496,800)
Brain Canada: CQDM
(2015-2018)..$50,000

D.L. Collins
Image registration for image guided surgery
Natural Sciences & Engineering Research Council (NSERC):
Discovery grant
(2015-2020)...$94,000

PI: J. Cohen-Adad; collaborators: Arnold, B. De Leener, S. Nadeau, N. Stikov,
D.L. Collins, T. Duval, B. Perraud, R. Topfer, D. Côté, N. Lopez-Rios, S. Rossignol
Shifting the paradigm of spinal cord quantitative MRI
(2015-2020)...$128,889

J. Breitner, J. Poirier, S. Gautier, P. Rosa, A.C. Evans, P.E. Etienne, **D.L. Collins**,
P. Bellec, G. Multhaup, R. Hoge
Proof of concept: Trial of Probucol, an inducer of apoE, for prevention of Alzheimer's dementia
Weston Hospital Institute: Early Phase Clinical Trials Program 2014
(2015-2020)...$300,000

D. Arnold, J. Simon, C. Guttmann, J. Wolinsky, N. De Stefano, F. Barkhof,
M.P. Sormani, G. Cutter, **D.L. Collins**, L. Kappos, O. Ciccarelli, D. Chard, S. Narayanan
Progessive MS Alliance: Collaborative Network Award. (as co-applicant)
(total grant 4M Euros, ~ $5.6M)
(2016-2019)...$145,000

DEBLOIS, F.

F. DeBlois (co-applicant) et al.
3D patient surface scanner development
SMBD-Jewish General Hospital Foundation, grant
(total grant $25,000)
(2015-2017)... $12,500

F. DeBlois (co-applicant) et al.
Rectal applicator development
Xoft Research Development grant
(total grant $20,000)
(2015-2017)... $10,000

DEVIC, S.

S. Devic
Dosimetrie à film radiochromique
Fonds de la Recherche en Santé du Québec (FRSQ)
Bourse de chercheur-boursier Senior
(total grant $265,367)
(2013-2017)... $66,341

J. Seuntjens, **S. Devic**, et al
Medical Physics Research Training Network (MPRTN)
Natural Sciences & Engineering Research Council – Collaborative Research
& Training Experience (NSERC-CREATE), CREATE grant
(total $1,650,000)
(2013-2019)... $275,000

S. Devic (PI)
Radiochromic film dosimetry
Natural Sciences & Engineering Research Council (NSERC), discovery grant
(total grant $140,000)
(2015-2020)... $28,000

EL NAQA, Issam

J. Seuntjens, **I. El Naqa**, et al
Medical Physics Research Training Network (MPRTN)
Natural Sciences & Engineering Research Council – Collaborative Research
& Training Experience (NSERC-CREATE), CREATE grant
(total $1,650,000)
(2013-2019)... $275,000

J. Nadeau, **I. El Naqa**, et al
Nanoparticle-aided radiation therapy with scintillating high Z materials
Canadian Institute of Health Research (CIHR)
(total 475,800)
(2014-2017)...$158,600

I. El Naqa, transferred to J. Seuntjens
Hybrid imaging for radiotherapy
Canadian Institutes of Health Research (CIHR)
(total $394,720)
(2014-2018)...$98,680

I. El Naqa
Start-up fund, University of Michigan
(total $600,000)
(2015-2018)...$200,000

ENGER, Shirin

S. Enger
Start-up grant
Simone & Morris Fast Award for Oncology, start-up
(total $150,000)
(2014-2019) $30,000

S. Enger
Monte Carlo track structure applications in microdosimetry and radiation response
Natural Sciences & Engineering Research Council
(total $95,000)
(2014-2019) $19,000

S. Enger
Radiation source and detector development for use in Medical Radiation Physics
Canadian Foundation for Innovation (CFI) – John L. Evans Leaders Fund,
McGill University & Research Institute-McGill University Health Centre
inter-institutional grant
(total $195,262)
(2016-2021)...$39,052

KILDEA, J.

J. Kildea, L. Hendren, T. Hijal
Provision of just-in-time patient education material via the oncology portal and application
MUHC, Patient Education Committee grant
(2016) $800

J. Kildea, L. Souhami, S. Faria, F. Cury
Rectal toxicity prediction using accumulated-DVHs…
Rossy Cancer Network, research grant
(2016-2017).. $41,700

J. Kildea
Addressing the risk from secondary neturons in radiotherapy
Canadian Nuclear Safety Commission, student support grant
(2016-2017)..$15,000

J. Kildea
Neutron-induced carcinogenic effects (NICE): An examination of the
biophysics underlying neutron carcinogenesis
Natural Sciences & Engineering Research Council (NSERC)
(total $125,000)
(2016-2021)..$25,000

LEHNERT, S.M.

I. El Naqa, **S.M. Lehnert**, et al
Modeling of radiotherapy induced damage in locally advanced lung cancer by a
novel system radiobiology approach
Canadian Institutes of Health Research (CIHR)
(2011-2016) $135,790

LEVESQUE, I.R.

I.R. Levesque (PI)
Start-up grant: Methods in magnetic resonance imaging
Montreal General Hospital Foundation, Research Institute-McGill University Health Centre
(MGH, RI-MUHC)
(2013-2016).. $75,000

J. Seuntjens, **I.R. Levesque**, et al
Medical Physics Research Training Network (MPRTN)
Natural Sciences & Engineering Research Council – Collaborative Research
& Training Experience (NSERC-CREATE), CREATE grant
(total $1,650,000)
(2013-2019)... $275,000

A. Ptito, **I.R. Levesque**, et al
Sensing and repairing the injured brain: Tools and methods for the
characterization of brain injury and repair
Canadian Foundation for Innovation (CFI), innovation fund
(total $2,995,246)
(awarded 2015-2016: grant period = ………………?)..$###,###

I.R. Levesque
Integrated magnetic resonance imaging for radiation therapy applications
Natural Sciences & Engineering Research Council, discovery grant
(total $110,000)
(2015-2020)..$22,000

I.R. Levesque
(nominated PI: R. Farivar-Mohseni)
Unmasking brain injury: Ultra high-resolution, distortion-free, unobstructed Imaging of grey matter in mild and moderate traumatic brain injury using multi-echo techniques
Canadian Institutes for Health Research (CIHR), project grant
(total $477,815)
(2016-2021)..$95,563

PIKE, G.B.

K. Hyde, **G.B. Pike**, E. Fombonne
Auditory processing in typical development and in autism spectrum disorder: Insight from the brain and behavior
Canadian Institutes of Health Research (CIHR), operating grant
(total $570,545)
(2011-2016).. $114,109

V. Gracco, **G.B. Pike** et al.
Regroupement pour la recherche sur le cerveau, le langage et la musique
FQRNT and FQRSC, team grant
(total $2,250,000)
(2011-2017).. $375,000

G.B. Pike, A. Thiel et al.
Functional MRI of brain physiology
Canadian Institutes of Health Research (CIHR), operating grant
(total $1,031,795)
(2012-2017).. $206,359

G.B. Pike et al.
MRI acquisition and analysis methods for image guided neurosurgery
Natural Sciences & Engineering Research Council (NSERC), discovery grant
(total $260,000)
(2012-2017).. $52,000

K. Siddiqi, G.B. Pike, L. Collins, et al
NSERC-CREATE program in medical image analysis
Natural Sciences & Engineering Research Council, collaborative research & training experience
(total $1,650,000)
(2012-2018)..$275,000

J. Gotman, F. Dubeau, **G.B. Pike**
Electrical and metabolic analysis of human epileptogenic lesions
Canadian Institutes of Health Research (CIHR), operating grant
(total $805,000)
(2013-2018).. $161,000

J. Seuntjens, **G.B. Pike** et al.
Medical Physics Research Training Network (MPRTN)
Natural Sciences & Engineering Research Council – Collaborative Research & Training Experience (NSERC-CREATE), CREATE grant
(2013-2019).. $333,333

G.B. Pike
Healthy brain imaging
Campus Alberta Innovates Program
(total $4.55M)
(2013-2021)..$568,750

J-C. Adad, **G.B Pike**, S. Rossignol
Characterization of axonal microstructure via multi-parameter MRI
FRQNT team grant
(total $218,200)
(2014-2017)..$72,733

A.C. Evans, **G.B. Pike** et al
Brain Canada: Platform support
CBRAIN: Canadian Brain Research & Informatics Platform
(total $2,999,961)
(2014-2017)..$999,987

G. Turecki, **G.B. Pke** et al
An essential platform for brain research in Canada
Douglas-Bell Canada Brain Bank, Brain Canada platform support grant
(total $2,028,000)
(2014-2017)..$676,000

V.W. Yong, **G.B. Pike** et al
Medicines for remyelination in multiple sclerosis: The next frontier
Alberta Innovates Health Solutions, collaborative research & innovation opportunities (CRIO)
(total $5M)
(2014-2019)..$1,000,000

C. Lebel, D. Dewy, **G.B. Pike**
Language ability and structural brain development in preschool children: Predictors of reading readiness
Canadian Institutes of Health Research (CIHR), operating grant
(total $1.06M)
(2014-2019)..$212,000

S. Bray, **G.B. Pike**, D. Dewey
Neuroimaging of visual-spatial attention development in early childhood
Canadian Institutes of Health Research (CIHR), bridge funding
(2015-2016)..$100,000

A. Sadikot, **G.B. Pike**, D.L. Collins
Development of novel methods for analyzing the structure and connectivity of the human basal ganglia, thalamus and brainstem
Canadian Institutes of Health Research (CIHR), operating grant
(total $645,000)
(2015-2020)..$129,000

M. Poulin, E. Smith, **G.B. Pike**
Aerobic exercise for older adults at increased risk of ADRD: Harnessing translational psychology
Canadian Institutes of Health Research (CIHR), operating grant
(total $890,551)
(2015-2020)..$178,110

G.B. Pike
Quantitative MRI of brain structure and function
Canadian Institutes of Health Research (CIHR), foundation grant
(total $2,430,713)
(2015-2022)..$347,244

A.C. Evans, **G.B. Pike**
CBRAIN: A national high-performance computing platform for brain research
Canadian Foundation for Innovation (CFI), cyber-infrastructure grant
(total $2,953,353)
(2016-2019)..$984,451

E. Smith, **G.B. Pike**, et al
Novel blood and neuroimaging markers of Alzheimer's disease and cerebral amyloid angiopathy
Brain Canada
(total $750,000)
(2016-2019)..$250,000

G.B. Pike
MR guided focused ultrasound platform
Cummings Medical Research Fund
(total $4.76M)
(2016-2021)..$952,000

<u>READER, A.</u> (total grant amount)

A.J. Reader
Canada Research Chair in Positron Emission Tomography
Canada Research Chairs Program (renewal)
(2013-2018).. $100,000

J. Seuntjens, **A.J. Reader** et al.
Medical Physics Research Training Network (MPRTN)
Natural Sciences & Engineering Research Council – Collaborative Research & Training Experience (NSERC-CREATE), CREATE grant
(2013-2019).. $333,333

<u>SERBAN, M.</u>

M. Serban
Training module for deep inspiration breath-hold radiation therapy treatments
Patient Education Committee, McGill University
(+ $5,400 for DIBH patient education materials)
(2016-2017)..$40,000

M. Serban
Magnetic resonance image guided brachytherapy in locally advanced cervical cancer
PhD Fellowship
(total $150,000)
(2016-2020)..$37,500

SEUNTJENS, J.

J. Seuntjens
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
(2014-2019).. $52,000

J. **Seuntjens** et al.
Medical Physics Research Training Network (MPRTN)
Natural Sciences & Engineering Research Council (NSERC) – Collaborative Research
& Training Experience (NSERC-CREATE), CREATE grant
(2013-2019).. $333,333

J. Seuntjens et al.
Monte Carlo techniques in the optimization of radiation therapy delivery and outcomes (Foundation scheme)
Canadian Institutes for Health Research (CIHR)
(2015-2023)..$85,242

J. Seuntjens et al.
Nanoparticles for enhancement of radiotherapy with fewer side effects
Canadian Institutes for Health Research (CIHR)
(operating grant; PI adopted from J. Nadeau)
(2014-2017) $98,680

J. Seuntjens et al.
Hybrid image analysis for Radiotherapy
Canadian Institutes for Health Research (CIHR)
(operating grant, PI adopted from I. El Naqa)
(2014-2018) $98,680

J. Seuntjens et al.
Graphite Calorimeter Probe for Clinical Radiation Dosimetry (Idea to Innovation (I2IPJ), PI)
Natural Sciences and Engineering Research Council of Canada (NSERC)
(2016-2017) $112,000

APPENDIX XIV.

RESEARCH INTERESTS OF THE ACADEMIC MEMBERS OF THE MPU

ASIEV, Krum	*Quality control of Varian linear accelerator, Theratron T780 cobalt unit, Gulmay orthovoltage machine, Nucletron MicroSelectron HDR brachytherapy afterloader.*
COLLINS, Louis	*Image processing, registration, segmentation, MRI, image guided neurosurgery, multiple sclerosis, Alzheimer's disease, Parkinson's disease, epilepsy.*
CONNELL, Tanner	*Modulated electron therapy; MV imaging with low-Z targets.*
DAVIS, Stephen	*Accurate radiation dosimetry applied to calibration of radiation measurement devices. Commissioning of a Monte Carlo treatment planning system.*
DEBLOIS, François	*Photon and electron beam dosimetry, stereotactic radiosurgery, Monte Carlo treatment planning and medical physics software.*
DEVIC, Slobodan	*Radiochromic film dosimetry; biological target volumes for radiotherapy treatment planning.*
EL NAQA, Issam	*Oncology bioinformatics, computational and systems biology, multimodality imaging, adaptive radiotherapy.*
ENGER, Shirin	*Monte Carlo-based dose planning systems, radiation dosimetry, brachytherapy, detector development, radiation protection.*
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.*
FURSTOSS, Christophe	*Clinical and research projects, Canadian Partnership for quality radiotherapy, new treatment techniques (IGRT, SRT, SBRT).*
GAUVIN, Alain	*Interest in imaging informatics revolves mostly around two topics: regional imaging integration, and multi-system integration of medical imaging within the hospital IT ecosystem.*
HEGYI, Gyorgy	*Dose optimization in CT procedures.*
HOBSON, Maritza	*Development of "in vivo" transit dosimetry procedures for EPIDs; characterization of portal imagers; development of routine QA procedures for quality on OBIs; CT Sim using ACR CT phantom.*
KILDEA, John	*Electronic QA; database tools, neutron spectra.*
LEHNERT, Shirley M.	*Radiobiology, tumor biology, drug delivery, functional imaging.*

LEVESQUE, Ives	*Magnetic resonance imaging (MRI) physics, acquisition, and image reconstruction; magnetization transfer and relaxation mapping; applications in oncology, neuroimaging, and musculoskeletal imaging; MR imaging methods for radiation oncology treatment planning.*
LIANG, Li Heng	*Ortho-voltage treatment machine, film dosimetry.*
MOFTAH, Belal	*Developing of 3D polymer gel dosimeter for advanced radiotherapy treatment planning and verification systems.*
PARKER, William	*Pediatric radiotherapy, quality assurance and dosimetric measurements of IMRT beams.*
PATROCINIO, Horacio J.	*Stereotactic radiosurgery, image-guided stereotactic body radiation therapy, motion and margin assessment in radiotherapy, image-guided brachytherapy.*
PIKE, G. Bruce	*Magnetic Resonance (MR) imaging; MRI acquisition physics, magnetization transfer theory and applications, functional MR imaging, neuronal activation physiology, diffusion tensor imaging, image guided neurosurgery.*
PODGORSAK, Ervin B.	*Photon and electron beam dosimetry, stereotactic radiosurgery, general applications of physics to radiotherapy.*
POON, Emily	*Monte Carlo dose calculations; adaptive radiotherapy; treatment planning software development; brachytherapy dosimetry; deformable image registration.*
POPOVIC, Marija	*Adaptive radiation therapy; image guided radiation therapy; advancing treatment planning techniques for head and neck cancer; the tools for decision making processes in the content of radiotherapy; biases with the treatment planning process; intraoperative radiotherapy.*
READER, Andrew	*Positron Emission Tomography (PET), image reconstruction.*
RICHARDSON, Richard B.	*Radiation, p53, stem cells, cancer, aging.*
RUO, Russell	*SRS, SBRT / SABR, IMRT, IGRT.*
SARFEHNIA, Arman	*Water calorimetry, particle therapy dosimetry, detector design and optimization, beam quality, absolute dosimetry.*
SERBAN, Monica	*Commissioning and validation of Eclipse electron Monte Carlo treatment planning system.*
SEUNTJENS, Jan	*Radiation dosimetry, Monte Carlo simulation, 4D radiation therapy, ionization chambers.*
SOISSON, Emilie	*Lung SBRT, Monte Carlo treatment planning, stereotactic radiosurgery, tomotherapy, IGRT.*
STROIAN, Gabriela	*Monte Carlo simulations for brachytherapy, lung cancer therapy – breathing motion management, outcome, complications, breast cancer therapy – brachytherapy, IORT.*

SYME, Alasdair	*Radiation detection, radiation dosimetry, therapeutic response monitoring, cancer screening.*
TOMIC, Nada	*Radiochromic film dosimetry, image guided radiation therapy.*
YBARRA, Norma	*Study of biomarker expression in solid tumors treated with radiotherapy to better predict tumor response; patient susceptibility to radiotherapy; alternative therapies to reduce toxicity of irradiation.*

APPENDIX XV.

MPU SEMINAR SERIES : 2016 CALENDAR YEAR

Winter 2016

January 15 : Marco Carlone (Princess Margaret Hospital, Toronto, ON)
SIMAC: A simulated environment for learning linac physics

January 22 : **Julien Jouganous** (Human Genetics, McGill U, Montreal, QC)
Tumor growth modeling and simulation: Applications to clinical cases and genetics

January 29 : **Diane Kelly** (Queen's U, Kingston, ON)
Medical physicists & software development

February 05 : **Pavlos Papaconstadopoulos** (Medical Physics Unit, McGill U, Montreal, QC)
On the detector response and the reconstruction of the source intensity distribution in small fields

February 12 : **Margaret Murphy** (Patients for Patient Safety, WHO, Cork, Ireland)
The patient experience as a catalyst for change

February 18 : **Marta Kersten** (McConnell Brain Imaging Centre, MNI, Montreal, QC)
Augmented reality in image-guided neurosurgery

February 19 : **Adam Shuhendler** (Chemistry/Biomolecular Sciences, U Ottawa, Ottawa, ON)
Enzyme-assembled PET and MRI molecular imaging agents for mapping the early response of tumors to radiation of chemotherapy

February 26 : **Marat Seydaliev** (Canadian Nuclear Laboratories, Deep River, ON)
GEM-based TEPC for neutron dosimetry

March 18 : **Claudine Gauthier** (Physics, Concordia U, Montreal, QC)
MRI of oxidative metabolism in the brain

April 01 : **Cynthia Menard** (Radiation Oncology, CHUM Hôpital Notre-Dame, Montreal, QC)
MRI-guided radiotherapy for prostate cancer

April 22 : **Jack Sankey** (Physics, McGill U, Montreal, QC)
Towards ultrasensitive, optically-defined mechanical sensors

May 20 : **David Rogers** (National Research Council / Medical Physics, Carleton University, Ottawa, ON)
How to accurately represent and measure a radiotherapy beam's spectrum

May 27 : **Denise Miller** (Lightsource, Saskatoon, SK)
The biomedical imaging and therapy beamlines at the Canadian Light Source synchrotron

Fall 2016

September 02 : Charles-Antoine Collins-Fekete (CHUQ / Univ Laval / Harvard-MGH)
From Fermi diffusion equation to hadron imaging: Applications to proton therapy

September 09 : Kevin Alexander (Queen's University, Kingston, Ontario)
Clinical implementation of film & gel dosimetry

October 21 : Richard Richardson (Canadian Nuclear Laboratories, Deep River, ON)
Mitochondrial stress controls the radiosensitivity of the oxygen effect: Implications for radiotherapy

October 28 : Angelica Perez-Andujar (University of California-San Francisco, San Francisco, CA)
Advances in stereotactic treatments of multiple brain metastases

November 04 : Louis-Martin Rousseau & Mehdi Mahnam (École Polytechnique, Montréal, QC)
A column-and-row generation heuristic to Volumetric-modulated Arc Therapy (VMAT) treatment planning problem

November 25 : Juliette Selb (Biomedical Imaging, Massachusetts General Hospital, Boston, MA)
Diffuse optical imaging of the brain: Applications to functional imaging and clinical neuro-monitoring

December 16 : James Coates (Oncology, University of Oxford, Oxford, England)
The anti-malarial drug atovaquone alleviates tumor hypoxia and improves radiosensitivity "in vivo"

APPENDIX XVI.

COMMITTEE INVOLVEMENT of MPU FACULTY MEMBERS

within McGill from January-December 2016

COLLINS, L.:
Chair, *Graduate Program, Dept Biomedical Engineering*
Mentor, *Graduate Program, Dept NeuroScience*
Member, *IPN Graduate Student Committee*
McGill University
Member, *Search Committee – Chair, Dept Biomedical Engineering*
Member, *Search Committee – Director, Brain Imaging Center*
Member, *Internal grant review committee*
Montreal Neurological Institute

DAVIS, S.:
Chair, *Machine QA Committee*
Member, *Medical Physics Radiation Safety Committee*
Member, *Medical Physics Residency Training Committee*
McGill University Health Centre

DEBLOIS, F.:
Member, *Medical Physics Residency Committee*
McGill University

ENGER, S.:
Member, *Medical Physics Unit Curriculum Committee*
Member, *Medical Physics Unit Admissions Committee*
Member, *Tenure Track Recruitment Committee*
McGill University
Member, *Medical Physics Radiation Safety Committee*
Member, *MUHC Brachytherapy Group*
McGill University Health Centre

EVANS, M.D.C.:
Member, *Exam Committee – Medical Physics Residency Program*
Member, *Radiation Safety Committee*
Medical Physics Unit, McGill University
Member, *Radiation Safety Committee*
McGill University Health Centre

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

HOBSON, M:
Member, *Medical Physics QA Committee*
McGill University Health Centre (MUHC)

KILDEA, J.:
Member, *Medical Physics Radiation Safety Committee*
Chair, *Radiation Oncology Risk Management Committee*
McGill University Health Centre
Chair, *Seminar Committee* (2013-present)
Member, *Admissions Committee; Curriculum Committee;*
Visiting Speaker Committee; Alumni / Scholarship Committee
McGill University

LEHNERT, S.M.:
Member, *Radiation Safety Committee*
Member, *Radiation Oncology Residents Training Committee*
McGill University Health Centre

LEVESQUE, I.:
Member, *Radiation Oncology Research Committee*
McGill University
Member, *Imaging Quality Assurance 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
Clinical Advisor, *Glen Campus Cancer Centre*
Member, *Radiation Therapy Equipment Procurement Committee*
Member, *Access to Treatment Committee (Radiation Oncology)*
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
Member, *CARMS – Radiation Oncology Resident Selection Committee*
McGill University

PATROCINIO, H.J.:
Member, *Board*
Vice-president,
Canadian College of Physicists in Medicine (CCPM)
Clinical Coordinator, *Residency Training Program (Radiation Oncology Physics)*
Member, *Residency Training Committee (Radiation Oncology Physics)*
Member, *Radiation Safety Committee*
Medical Physics, McGill University

POPOVIC, M.:
Member, *Curriculum Committee*
Medical Physics Unit, McGill University

SEUNTJENS, J.:
Chair, *Graduate Admissions Committee* (2009-present)
Chair, *Curriculum Committee* (2011-present)
Chair, *Alumni Committee* (2013-present)
Medical Physics Unit, McGill University
Member, *Oncology Management Committee* (2009-present)
Member, Faculty Promotions Committee (Faculty of Medicine, 2014-2017)
Member, *Admissions Committee*, Medical Physics Unit (2004-present)
McGill University
Co-Director, *Residency Training Committee*
(Radiation Oncology Physics)

SOISSON, E.:

Member, *Grant Review Committee – Studentship & Fellowship Awards*
Research Institute, McGill University Health Centre
Member, *IGRT Committee,* Radiation Oncology Department
Member, *Dosimetry Committee*, Radiation Oncology Department
Member, *Machine Quality Assurance Committee*
McGill University Health Centre
Member, *Alumni Committee* (2013-present)
Medical Physics Unit, McGill University

APPENDIX XVII.

COMMITTEE INVOLVEMENT of MPU STAFF MEMBERS OUTSIDE McGILL from January-December 2016

COLLINS, D.L.:
Member, *Editorial Board*, Journals: Medical Image Analysis, NeuroImage, Medical Physics, Human Brain Mapping, IEEE Transactions on Medical Imaging
Member, *Review Board*, NSERC, FRSQ, MSSC, Burroughs Wellcome Foundation

DAVIS, S.:
Member, *AAPM Working Group on the review and extension of beam quality conversion factors for the TG-51 protocol (WGTG51)*
Member, *AAPM TG-292 – Task Group on electronic brachytherapy dosimetry*

DEBLOIS, F.:
Member, *National Quality Advisory Committee (NQAC): site representative*
Member, *Comité National de radio-oncologie (consultative) (Québec)*
Member, *Comité National de radio-oncologie (executive) (Québec)*

EL NAQA, I.:
Associate Editor, *Frontiers in Oncology*
Editorial Member, *Medical Physics*
Reviewer, (multiple scientific journals)
Member, *Biological Effects Committee; Middle East Affairs Subcommittee; Task Group No.211*
American Association of Physicists in Medicine (AAPM)

ENGER, S.:
Journal reviewer, *Physics & Medicine in Biology; Brachytherapy*
Abstract reviewer, COMP Winter School – "Quality & safety in radiation oncology"
Member, COMP Women's Committee

EVANS, M.D.C.:
Member, *Membership Oral Exam Committee; Recertification Committee*
Canadian College of Physicists in Medicine (CCPM)
Member, *Quality Assurance & Radioprotection Committee*
Association Québecoise des Physicien(ne)s Médicaux Cliniques (AQPMC)
Member, *Advanced Practice Oral Examiners Committee*
Canadian Association of Medical Radiation Technologists (CAMRT)

HOBSON, M.:
Member, *Vendor Relations & Product Usability Subcommittee*
American Association of Physicists in Medicine (AAPM)

KILDEA, J.:
Member, *Membership Oral Exam Committee; Science & Education Committee*
Chair, *Organizing Committee – Winter School*
Canadian College of Physicists in Medicine (CCPM)
Member, *Steering Committee*
Canadian Partnership for Quality Radiotherapy
Member, *Quality & Safety Committee*
European Society for Radiotherapy & Oncology
Chair, *Planning Committee – 2019 International Conference on the Use of Computers in Radiotherapy*

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, *Editorial Advisory Board*
Open Nuclear Medicine Journal
Member, *Editorial Board*
International Journal of Cancer Research & Remedies

PARKER, W.A.:
Chairman, *Summer School Sub-Committee*
Member, *Continuing Professional Development Committee*
Chairman, *RSNA Education Coordination Sub-Committee*
American Association of Physicists in Medicine (AAPM)
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)
Member, *Credential Review Committee*
Canadian College of Physicists in Medicine (CCPM)

PATROCINIO, H.J.:
Oral examiner, *Fellowship & Membership exams*
Canadian College of Physicists in Medicine (CCPM)
Member, *Professional Affairs Committee*
Canadian Organization of Medical Physicists (COMP)
ABR Item Writer, *Radiological Physics exam*
American Board of Radiology

PIKE, G.B.:
Chair, *Smarter Imaging Program*
Ontario Institute for Cancer Research
Chair, *Project Grant Program*
Canadian Institutes for Health Research
Chair, *External Review Committee*
BC Children's Hospital Research Institute Imaging Program
External Reviewer,
Medical Biophysics Department, University of Toronto
Chair, *International Review Committee*
University of Queensland – Advanced Imaging Center, Brisbane
Editor, *NeuroImage* (5yr Impact Factor = 6.8) – I handle approximately 150 papers per year.
Tenure Referee, Harvard University / University of Toronto / University of Michigan
Ad-hoc reviewer & Panel Member,
(Multiple Granting Agencies)

POPOVIC, M.:
Member, *Summer School Subcommittee*
American Association of Physicists in Medicine (AAPM)
Continuing Education Chair, *2017 Annual Scientific Committee*
Canadian Organization of Medical Physics (COMP)
Section Editor,
Journal of Applied Clinical Medical Physics
Member, *Examination Committee*
Canadian College of Physicists in Medicine (CCPM)
Member, *Subcommittee on Visibility for Physicists*
Association Québecoise des Physiciens Médicaux Cliniques (AQPMC)

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 Development 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)* (2006-2013)
American Association of Physicists in Medicine (AAPM)
Member, *International Advisory Committee on IAEA Phase Space*
International Atomic Energy Agency (IAEA) (2006-present)

SOISSON, E.:

Board Member,
Medical Dosimetrists Certification Board (MDCB) (2014)
Canadian Organization of Medical Physics (COMP) (2014)

APPENDIX XVIII.

TEACHING (non-Medical Physics Unit) & PARTNERSHIPS / CONSULTING

by members of the Medical Physics Unit : 2016 calendar year

COLLINS, D. Louis

Teaching:
Biomedical Engineering, McGIll – x2 3-cr courses (lecturer)
Guided teaching tours of the Image Guided Neurosurgery Research Labs (8-10 per year)
Tours for donors to the MNI of the Brain Imaging facilities (25-30 per year)

Partnerships:
Joint research & teaching initiatives with other units at McGill or outside
Mentor for Graduate Program in NeuroScience

Consulting:
NeuroRx (Private sector consulting) – 1 day/month

CONNELL, Tanner

Teaching:
MUHC Diagnostic Radiology Residents 2015 series – one lecture

DAVIS, Stephen

Teaching:
MUHC Diagnostic Radiology Residents 2015 series – one lecture "Digital Radiography"

DEBLOIS, François

Teaching:
Dawson College Physics students: Properties of Radiation / Dosimetry I

Reports of invention:
2016 – McGill Office of Sponsored Research; Reference No: 17023
Lateral Rectal Applicator for radiation oncology treatment
Lead Inventor: F. DeBlois, Co-Inventors: Te Vuong, S. Devic, N. Tomic, L. Liheng, F.Piccolo

Patents:
1. 2016 – J. Seuntjens, M.A. Renaud, F. DeBlois, *Treatment Planning Based on Multiple Modalities*, U.S. Provisional Patent No. 62/398,785
2. 2015 – F. DeBlois, F. Piccolo, S. Devic, *Patient Transfer And Manipulation Methods and System*, U.S. Provisional Patent No. 62/158,147

DEVIC, Slobodan

Teaching:

MUHC Diagnostic Radiology Residents 2015 series – 3 lectures (1.5h):
Diagnostic Radiology Physics

Collaborations:

Department of Biomedical Physics, King Faisal Specialist Hospital & Research Centre, Riyadh, Saudi Arabia (Dr Belal Moftah, Chairman)
Division of Medical Physics and Biophysics, Department of Radiation Oncology, Dana-Farber/ Brigham Women's Cancer Center, Harvard Medical School, Boston, MA (Dr Ivan Buzurovic, Medical Physicist)
Universita' di Napoli Federico II, Dipartimento di Fisica, Naples, Italy (Paolo Russo, Professor)
Medical Physics, Sunnybrook Research Institute, Toronto (Dr. William Y. Song)

EL NAQA, Issam

Teaching:

Residents' Physics course, lecture - TCP/NCTP (U Michigan)

ENGER, Shirin

Patent:

Provincial patent (handed in December 2016)
Delivery system for rotating shield high dose rate brachytherapy

Collaborations:

Member, *Geant4DNA Monte Carlo code development team (CERN international research collaboration)*

EVANS, Michael

Teaching:

Physics, Dawson CEGEP students, 2 lectures *Health Physics*

FURSTOSS, Christophe

Teaching:

"*IGRT*", MSc Medical Physics students, Université de Montréal

GAUVIN, Alain

Teaching:

Physics program – Residents (mammography), École Polytechnique de Montréal

Consulting:

Institut National de la Santé Publique du Québec; Imasoft Inc; Clinique de Radiologie Varad; Clinique Léger

HOBSON, Maritza

Teaching:

Medical Physics Diagnostic Radiology course – ultrasound lectures,
McGill University Health Centre

KILDEA, John

Teaching:

Radiation physics, Radiology Medical residents, MUHC, Montreal – one 3hr class per year

LEVESQUE, Ives

Teaching:

Department of Radiology, Diagnostic Radiology Physics (for Radiology residents)
Department of Radiation Oncology, Physics for Radiology Residents (guest lecture)
Biomedical Engineering, Selected Topics in Biomedical Engineering (guest lecture), (course coordinator: Robert Funnell)
Department of Radiology, MRI Physics series (for Radiology residents, fellows, and staff), (series co-coordinator with Dr. Caroline Reinhold)

Consulting:

.*Ad hoc* consulting in clinical MRI to technologists in Department of Radiology, Montreal General Hospital, MUHC
Radiation Oncology Research Committee, Department of Radiation Oncology, McGill U

PARKER, William:

Teaching:

Instructor - Radiotherapy Apparatus and Clinical Dosimetry II
CEGEP Dawson College - Radiation therapy technologists program, Montréal, Québec.
Instructor - Radiation Oncology residents teaching program
Department of Oncology - McGill University, Montréal, Québec

PATROCINIO, Horacio

Teaching:

Dawson College – Radiotherapy Apparatus

SERBAN, Monica

Teaching:

Lectures – Breast radiation therapy for radiation oncology residents
Practical laboratory sessions – Brachytherapy clinical practice

Partnership:

Aarhus University, Denmark: “MRI-guided brachytherapy and EMBRACE database”

SEUNTJENS, Jan

Patent

2016 – J. Seuntjens, M.A. Renaud, F. DeBlois, *Treatment Planning Based on Multiple Modalities*, U.S. Provisional Patent No. 62/398,785

2016 – J. Seuntjens, A. Sarfehnia, J. Renaud, *Method and System For Calorimetry And Clinical Dosimetry* USPT Application No. US 14/403,41*6*

Teaching:

International Atomic Energy Agency, Small Field Dosimetry, South Africa

Partnership:

Sun Nuclear Corporation
Reflexion Medical Inc
LifeLine Software Inc

SOISSON, Emilie

Teaching:

Dawson College – Dosimetry 1

STROIAN, Gabriela

Teaching:

Dawson College: "Properties of ionizing radiation"
Dawson College: "Radiation Oncology Program"

TOMIC, Nada

Teaching:

Mandatory continuing education seminar for radiation therapists: Use of X-ray Imaging in Radiation Oncology (3 hours)

Partnerships:

Universita' di Napoli Federico II, Dipartimento di Fisica, Naples, Italy (Paolo Russo, Professor): Implementation of radiochromic films in diagnostic radiology