



Senate Committee on Academic Development
Report to Senate - Meeting of March 24, 2011

**Proposal to introduce a Combined MD/PhD and MD/MSc in the
Faculty of Health Sciences and the School of Graduate Studies**

Introduction

The proposal to introduce a Combined MD/PhD and MD/MSc in the Faculty of Health Sciences and the School of Graduate Studies was reviewed by the Senate Committee on Academic Development (SCAD) at its meeting of March 2, 2011. B. Bennett, Associate Dean, Graduate Studies and Postdoctoral Education, Faculty of Health Sciences and B. Brouwer, Vice-Provost and Dean, School of Graduate Studies, attended the SCAD meeting to speak to the proposal and to answer questions from members of SCAD. Members of SCAD were also provided with background documentation provided by the Faculty of Health Sciences. A copy of the documentation is attached to the report.

Analysis and Discussion

The following highlights are noted:

- The combined programs provide additional benefits to the scholarship and professional development of physician scientists because of their training in both the sciences and clinical medicine;
- Graduates from the combined programs will be better positioned to participate in translational research, i.e. using advances made in basis research to provide new clinical approaches for the epidemiology, prevention, diagnosis and treatment of disease;
- The admission policy/standards for the MD program remains the same and potential students cannot use the new combined programs as an alternative route into medical school. An unsuccessful application to medical school does not jeopardise a student's chances of being accepted into graduate school;
- If approved by Senate, the proposal for the new combined programs will be subject to existing OCGS guidelines and approval processes;
- By utilizing the summer months, it is anticipated that the requirements for the combined degrees can be completed in 5 years for the MD/MSc program and 7 – 7.5 years for the MD/PhD program;
- Assuming enrolment of three students per year into the program, a steady state of 21 students should be reached by 2018.

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Conclusions/Recommendation

Recommendation:

that Senate approve the proposal to introduce a Combined MD/PhD and MD/MSc in the Faculty of Health Sciences and the School of Graduate Studies with an implementation date of September 1, 2012.

Respectfully submitted,



Susan P. C. Cole
Chair, Senate Committee on Academic Development

Committee Members:

Members

- A. Brown, School of Nursing
- S. Cole, Deputy Provost (Chair)
- J. Emrich, Faculty of Law
- P. Fachinger, Department of German
- N. Fulford, B.A. (Hons) '12
- K. Gossen, J.D. '12
- P. Oosthuizen, Academic Colleague
- T. Shearer, School of Business
- R. Ware, Department of Economics
- P. Watkin (Secretary)

Senate Committee on Academic Development

Program Approval Submission

This form is to be used when seeking approval for all new or substantially revised programs of study leading to a degree, diploma or certificate

FACULTY/SCHOOL: SCHOOLS OF GRADUATE STUDIES AND OF MEDICINE

PROPOSED NEW PROGRAM: COMBINED MD/PHD AND MD/MSC

PROPOSED IMPLEMENTATION DATE: SEPTEMBER 2012

DATE OF FACULTY BOARD APPROVAL: FEBRUARY 1, 2011

SUBMISSION CONTACT

NAME: Brian Bennett

TELEPHONE: 533-6473

EMAIL: bennett@queensu.ca

SIGNATURE OF THE DEAN:



DATE:

2011.02.16
Feb 22, 2011

Please note that program proposals must receive the approval of Faculty Board prior to being submitted to the Senate Office for referral to the Senate Committee on Academic Development (SCAD), which will then make its recommendation to Senate.

The criteria requested in PART A should be regarded as the minimum criteria for the assessment of academic programs. Any unit planning a new program should show how not only the criteria listed below but also, where appropriate, those required by the Undergraduate Program Review Audit Committee and those of the Ministry of Training, Colleges & Universities have been taken into account. For further information, please refer to the Senate Policy "Policies and Procedures for Establishing New Undergraduate Programs" (<http://www.queensu.ca/secretariat/senate/policies/newprog/index.html>)

PART A

1. **OBJECTIVES:**

Please summarize the rationale for introducing this program. The program should be consistent with the Queen's mission, the academic plans of the unit including its teaching and research strengths, the relation of the unit with other academic units and the standards, educational goals and learning objectives of the degree. Explain how this program will achieve the expected academic quality. Please identify the Faculty, School or Department, which will be administratively responsible for the academic aspects of this program such as supervision of graduate students, curriculum development and the Internal Academic Review Process.

Approval is sought for the establishment of combined MD/PhD and MD/MSc degree programs. Under the proposed combined programs, students will earn a Doctor of Medicine degree and a Doctor of Philosophy or Master of Science degree in one of the participating Graduate programs (Anatomy and Cell Biology, Biochemistry, Cancer Research (Collaborative Program), Epidemiology, Microbiology and Immunology, Neuroscience, Pathology and Molecular Medicine, Pharmacology and Toxicology, Physiology, and Rehabilitation Science).

Although each of the component degree programs has their own well-established standards, educational goals and learning objectives, the combined programs will provide additional benefits to both scholarship and to the professional development of physician scientists by allowing better integration of clinical and research training experiences. Because of their training in both basic science and medicine, graduates of combined programs are also well positioned to participate in translational research i.e. using new knowledge, mechanisms, and techniques generated by advances in basic science research to provide new approaches for the prevention, diagnosis, and treatment of disease. Students in the proposed combined MD/MSc or MD/PhD programs will be able to complete the requirements for both an MD and an MSc within 5 years (versus 6 years for the normal track), and for both an MD and PhD within 7-7.5 years (versus 8-9 years for the normal track). Thus, under the proposed combined programs, a more intensive program will allow for the accelerated completion of the two component degrees.

One of the stated Strategic directions of the Canadian Institutes of Health Research Strategic Plan - *Health Research Roadmap: Creating innovative research for better health and health care 2009-2014*, is to sustain a healthy research foundation by training, attracting and retaining the best talent in health research and by providing increased focus on trans-sectorial and multidisciplinary training. This strategic direction aligns with the Government of Canada's 2007 Science and Technology Strategy, which emphasizes building research excellence, translating knowledge into practical applications and deepening the pool of highly skilled individuals. The establishment of combined MD/PhD and MD/MSc programs at Queen's University is in keeping with these strategic directions, and will increase Ontario's capacity for training physician scientists by adding a fifth centre at which this type of combined program is offered (MD/PhD programs are currently offered at the University of Toronto, the University of Western Ontario, McMaster University, and the University of Ottawa).

The establishment of these combined programs also relates to the University's institutional mission and research strengths. They will provide the Faculty of Health Sciences at Queen's University with new opportunities to expand its clinical and translational research capacity, resulting in increased recognition of the quality of our students and the value of their research and scholarly endeavours. Students in this program will contribute to the The Enhancement of Human Health research cluster as described in the Queen's University Strategic Research Plan. The establishment of combined MD/PhD and MD/MSc programs was articulated in the Faculty of Health Sciences submission to the University Academic Planning process.

The MD/PhD and MD/MSc programs will be administered by the School of Medicine in the Faculty of Health Sciences and the School of Graduate Studies. Cyclical Program Reviews under the Queen's University Quality Assurance Processes will occur as part of the review of the component degree programs.

2. ADMISSION REQUIREMENTS:

The admission requirements (preparation and achievement) should be appropriate for the learning objectives of the program and the institution to ensure the appropriate quality of student applicants. In no case should admission requirements be lower than the published minimum standards for the University. Indicators of student demand including applications, registrations, projected enrolment levels, and of the quality of students must be considered. Where admission is competitive, actual admission requirements may be higher than the published minimum standards. Information about anticipated enrolments should also be included.

Students applying to the combined programs will have met the admissions requirements and will have applied to and been accepted into both the MD program and the chosen graduate program. The minimum requirement for the MD/PhD or MD/MSc Programs at Queen's is an Honours baccalaureate degree. Students with an MSc degree, graduate students in the second year of an MSc program, or students currently registered in the MD program at Queen's University are also eligible to apply. Students registered in an MSc program at the time of application must complete the requirements for the MSc degree prior to entry into the combined MD/PhD program. Applicants must have an obvious and demonstrated research potential. Initial intake will be 3-4 students, with a steady state enrolment of 21-28 students who are at various stages of program completion.

3. CURRICULUM:

Provide a detailed overview of the proposed program, along with the proposed *Calendar* description. Details such as course requirements (core, supporting, recommended, optional courses), prerequisites, problems students may encounter and new courses being proposed for the program should be included. The structure and curriculum of the program should be appropriate for its learning objectives.

The program combines the four year (9 term) Undergraduate Medical Program with an 11 term (PhD) or 5 term (MSc) period of full-time enrolment in one of the participating graduate programs. The scheduling of the combined programs follows the model used in the majority of combined programs in North America, viz. the first two years of the MD program (pre-clerkship), followed by graduate research, and then re-entry into years three and four of the MD program (clerkship)(See Figure 2, page 8: Model 1, 2-3-2).

In order to allow for greater flexibility and to better accommodate certain research projects, an additional model for the MD/PhD program has students complete two years of graduate research, followed by the two preclerkship years, a final year of graduate studies, and then re-entry into years three and four of the MD Program (See Figure 3, page 9: Model 2, 2-2-1-2).

Fields of study are consistent with the OCGS approved fields of the participating graduate programs.

Students will complete all course requirements of the Undergraduate MD Program with one exception: the PhD or MSc thesis research will be used as credit towards the Critical Enquiry project component of the MD program that occurs over the course of the first two medical years. Consequent to this, the time that would otherwise be devoted to the Critical Enquiry project can be spent on aspects of the student's graduate research. This approach also provides continuity with the graduate research conducted during the summer between the first and second years of the MD Program. With respect to the graduate degree, students will complete the course and thesis requirements of the particular graduate program in which they are enrolled, the PhD comprehensive exam, if applicable, and any other requirements of the particular graduate program. The course requirements for the MSc and PhD degrees of the participating graduate programs are listed in Table 1. During the period of full-time graduate studies, students will be required to maintain core clinical skills in a manner recommended by the Undergraduate MD Program Executive Committee.

For the MD/MSc program, students complete the first two years of the MD program followed by one year of full-time enrolment in the chosen graduate program, in which they fulfil course requirements, conduct research and write and defend the thesis (see Figure 1, page 8). Students are also enrolled

full time in the graduate program over the summer months of the first two medical years. Following completion of the MSc degree, students enter the clinical clerkship in years three and four of the MD program.

For MD/PhD students, there are two models for the combined degree program. This allows for a greater degree of flexibility and for tailoring of the program to individual student needs. Model 1 has the same basic structure as the MD/MSc program, except that the first two medical years are followed by three years of full time enrolment in the PhD program, in which students fulfil course requirements (if any), complete the PhD comprehensive exam, conduct research, and write and defend the thesis (see Figure 2, page 8). In Model 2, students spend the first two years in the PhD program, in which they complete course requirements (if any), complete the PhD comprehensive exam, and conduct research. Students then complete the first two years of the MD program and continue research over the summer months. Following year two of the MD program, students re-enter the PhD program for a final year, in which they complete the thesis research, and write and defend the thesis (See Figure 3, page 9). In both models, following completion of the PhD degree, students enter the clinical clerkship in years three and four of the MD program.

If a student decides to withdraw from either the graduate program or the MD program, they will still be permitted to complete the other degree program, provided the degree requirements are met. Students withdrawing from the graduate program must discuss and plan with the Associate Dean, Undergraduate Medical Education, for reentry into the MD Program. If the MSc or PhD research has been completed but thesis defense has not taken place prior to the scheduled reentry into the third year of the MD program, it may occur during the first term upon reentry. Although it is expected that most students will complete the graduate degree within the time frame outlined above, it is recognized that some students in the MD/PhD program may require an additional year of graduate studies to complete the PhD portion of the combined degree program.

4. TEACHING:

Briefly explain how the intended mode of delivery (including, where applicable, distance or on-line delivery) and standards of instruction for this program are appropriate to meet the program's learning objectives.

All courses in the combined programs are offered by the existing MD Program and the participating Graduate programs. No distance or on-line courses are required.

5. EVALUATION OF STUDENT PROGRESS:

Briefly explain the intended method of evaluation of student progress and how it is appropriate for this program.

Students will be evaluated based on their course work in the MD program and their chosen Graduate program, and on their research progress. Students in the combined programs will have two committees to provide them with guidance and support during their program; a Mentorship Committee and a Thesis Advisory Committee.

The Mentorship Committee includes the student's supervisor, a faculty member from their graduate program, a physician scientist from the School of Medicine, a more senior student in the MD/PhD or MD/MSc program, and whoever else the student/supervisor thinks would be helpful. The purpose of this committee is to help students be successful in reaching milestones throughout a long and demanding program, in being both a sounding board and support for the student and to advocate on the student's behalf when necessary.

Membership of Thesis Advisory Committee will be in accordance with the regulations of the graduate program in which the student is enrolled. The Thesis Advisory Committee meetings will occur on a regular basis during the time the student is enrolled full time in the graduate degree program, normally

at least two times per year. The role of Thesis Advisory Committees is to assist supervisors in monitoring student progress and also to provide guidance and advice on the students' research, complementing the expertise of supervisors. The Thesis Advisory Committee may also be called upon to take a more active role in cases of disputes between supervisors and students.

6. EQUITY:

This program's planning, development and implementation should be consistent with the equity goals of the University and must avoid direct, indirect and systemic discrimination.

The program has been developed according to the general regulations of the Schools of Graduate Studies and of Medicine. Any direct or indirect discrimination has been avoided.

7. HUMAN RESOURCES:

Please demonstrate that the number, quality and academic expertise of the faculty in the area of the proposed program are sufficient to meet the demands of the program. Where appropriate, the availability of support staff, teaching and laboratory assistants should be indicated. (Additional details should be provided on the Resource Implications Checklist in **PART B** of this form).

Since students in the combined programs will be a part of, rather than in addition to, the current allocation of 100 students in the Medical class, there will be no additional demands on faculty resources for program delivery during the MD component of the combined programs.

For the graduate degree component, the combined programs will draw on the pool of over 150 Graduate faculty members of the participating graduate programs for supervision of thesis projects. Administrative functions such as registration, meeting with students, general inquiries, financial matters and scheduling MD/PhD and MD/MSc Program Committee meetings will be performed by an Administrative Assistant, located in the Office of the Dean, Faculty of Health Sciences.

8. PHYSICAL AND INFORMATION RESOURCES:

Please provide a summary of available or required program-specific resources, such as: classroom requirements, laboratories, information technology services and facilities, and library facilities and information resources (including unique and special collections). (Additional details should be provided on the Resource Implications Checklist in **PART B** of this form).

The proposed combined programs will draw on existing courses in the MD and graduate programs, and on the existing research facilities of faculty members in the participating graduate programs. The existing laboratory space, information technology services and facilities, and library facilities and information resources will meet the needs of the proposed combined programs.

9. FINANCIAL RESOURCES:

There should be evidence of sufficient resources to introduce and maintain the program for a reasonable period of time. This should include consideration of any additional funds from internal sources and from government or other external sources as well as possible financial impact of the programs on other programs, within and outside the unit. (Additional details should be provided on the Resource Implications Checklist in **PART B** of this form).

During the period of funding eligible full-time graduate study (maximum of 6 terms for MSc, 12 terms for PhD), MSc and PhD students will receive at least the minimum guaranteed stipend for the graduate program in which they are enrolled. Primary sources for funding packages include Teaching Assistantships, Research Assistantships and Queen's Graduate Award funding. Secondary sources include internal and external competitive awards. Endowed funds and funding by CIHR MD/PhD Program Grants are other expected sources of funding for the programs, and in addition to re-

allocation of funds from the School of Medicine budget, will be used to provide stipendiary support for MD/PhD students during the time registered in the MD program.

There are additional funding implications related to the loss to the MD program of BIU and tuition income during the time students are enrolled in the graduate portion of the combined program, and also to potential loss of BIU income on the graduate side if current PhD enrolment projections are met. (see Part B for further details).

10. SOCIETAL CONTEXT (STUDENT DEMAND, SOCIETAL NEED, DUPLICATION):

Please provide a summary of how this program is expected to meet student demand and societal need. Evidence of student demand could include: projected enrollment levels, application statistics, origin of student demand (domestic and international), and duration of projected demand. Evidence of review and comment by appropriate student organizations should be provided. Please explain how the program will fulfill a societal need in specifically identified fields (academic, public and /or private sector) and consider the probable availability of positions on graduation, the likelihood of attracting out of province or international students and the equity implications of the program, In the case of a professional program, discuss its congruence with the regulatory requirements of the profession. Please cite similar programs offered by other institutions and provide evidence of additional societal need and/or student demand as well as indicate innovative and distinguished aspects of the program.

With the rapidly expanding pool of knowledge in the fields of clinical medicine and basic science, there is a growing demand in Canada for well-prepared leaders in the health care profession who can integrate the skills of rigorous investigation with an understanding of patient issues. Graduates of combined programs are uniquely positioned, by virtue of learning two traditional disciplines, to see complex problems from different perspectives - to recognize clinical problems that can be approached scientifically, and to design experiments/approaches to solve clinical problems. Students in combined MD/graduate programs bring a perspective into their laboratories that is different than the strictly basic science point of view; the clinical/translational component of research is strengthened, as is the interaction with clinical researchers. Conversely, these students also bring a basic science perspective to share with their fellow medical students. This is especially relevant in the context of the greater emphasis now being placed on team-based learning approaches as an important component of medical curriculum delivery.

As outlined in Section 1, above, the establishment of combined MD/PhD and MD/MSc programs is in keeping with the strategic directions of both the Canadian Institutes of Health Research Strategic Plan and Government of Canada's Science and Technology Strategy. These strategies emphasize the need for providing increased trans-sectorial and multidisciplinary training, building research excellence, translating knowledge into practical applications and deepening the pool of highly skilled individuals. In addition, with the ramping up of CIHR's patient-oriented research initiative, the Faculty of Health Sciences will have new opportunities to expand its clinical and translational research capacity. A component of this will be the participation of students in the combined MD/PhD and MD/MSc programs.

Applications to the MD/PhD programs at other Medical Schools in Ontario indicate that there is an increasing student demand for such programs; The University of Toronto typically receives 40-50 applications per year for five positions, and is currently in the planning stages to double the intake into their program. The University of Western Ontario receives 15-20 applications per year for three dedicated positions, and McMaster University receives 25-30 applications for three positions. The MD/PhD program at the University of Ottawa is in its first year of intake, and received almost 100 applications for the four available positions. Clearly, there is a sufficiently large applicant pool to accommodate an anticipated enrolment of 3-4 students per year into the combined MD/PhD and MD/MSc programs at Queen's. A distinguishing aspect of the present proposal is the opportunity for some students to complete an MSc degree. This may be attractive to a subset of medical students who wish to have exposure to basic science research without necessarily completing doctoral studies.

Although producing physicians is a provincially mandated task, producing physician scientists who can provide patient care while advancing the state of health through medical research, and while making unique contributions to medical education, is an equally desirable goal. With the creation of MD/PhD and MD/MSc Programs at Queen's we seek to actively participate in the education of future leaders of Canada's health care and academic medicine communities.

11. LEARNING AND PROGRAM OUTCOMES:

While the aim of a university education is to produce educated individuals who possess good judgment and the capacity for critical thought, it is also important to consider specific indicators of learning and program outcomes, such as a graduation rate, length of studies, job placement, external scholarships, awards of graduating students, results of professional certification or licensing examinations, etc. Please discuss the anticipated outcomes of this program.

Students in the proposed combined MD/MSc or MD/PhD programs will be able to complete the requirements for both an MD and an MSc within 5 years (versus 6 years for the normal track), and for both an MD and PhD within 7-7.5 years (versus 8-9 years for the normal track). Thus, under the proposed combined programs, a more intensive program will allow for the accelerated completion of the two component degrees. Although each of the component degree programs have their own well established standards, educational goals and learning objectives, the combined programs will provide additional benefits to both scholarship and to the professional development of physician scientists by allowing better integration of clinical and research training experiences, and will also provide better opportunities for fostering translational research. In addition, with the understanding and capacity for critical judgment gained by the reciprocal insight into both the basic sciences and clinical medicine, physician scientists in academic medicine will be important contributors to the education of future members of the medical profession.

12. OTHER ISSUES:

Please describe any additional special considerations with respect to this program.

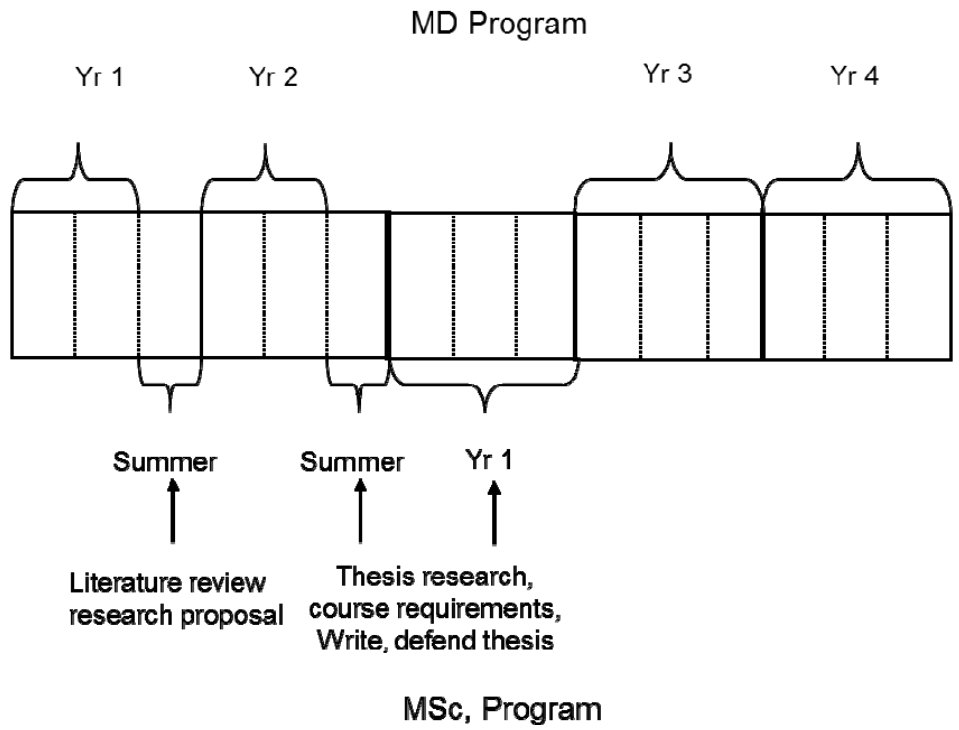


Figure 1. MD/MSc Program schedule.

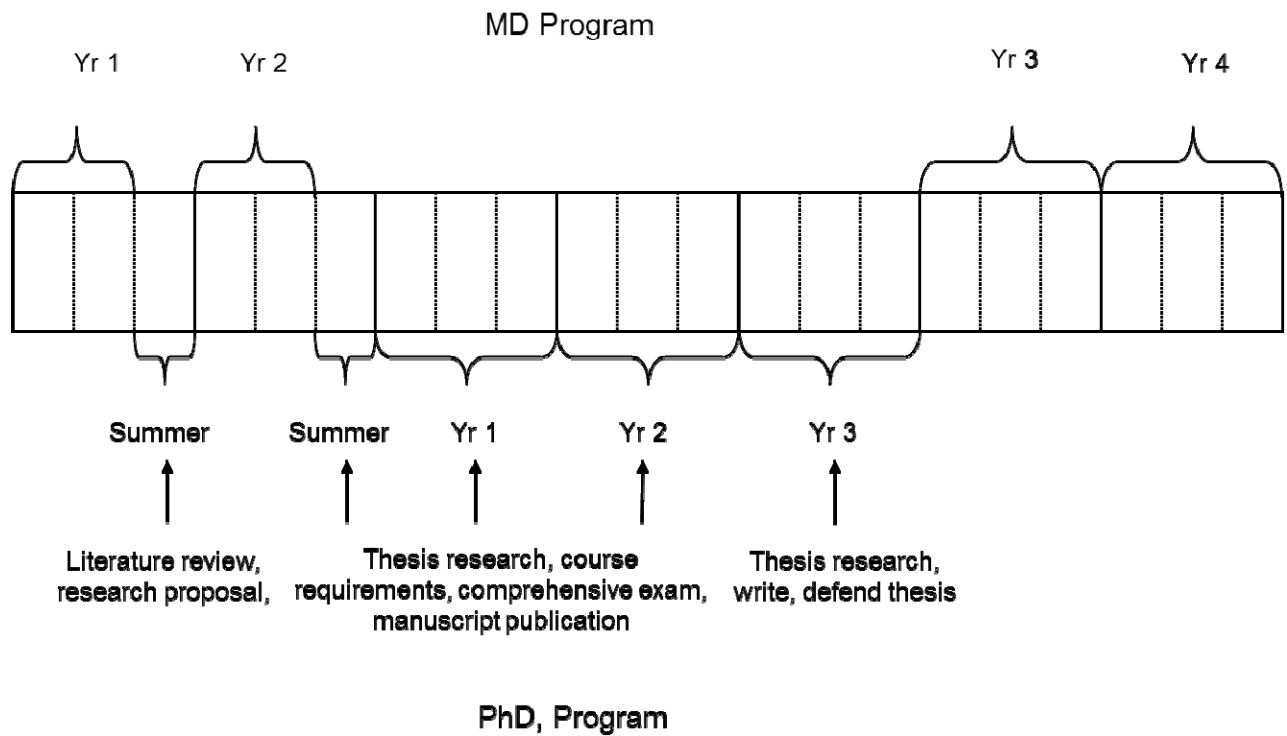


Figure 2. MD/PhD Schedule Model 1 (2-3-2)

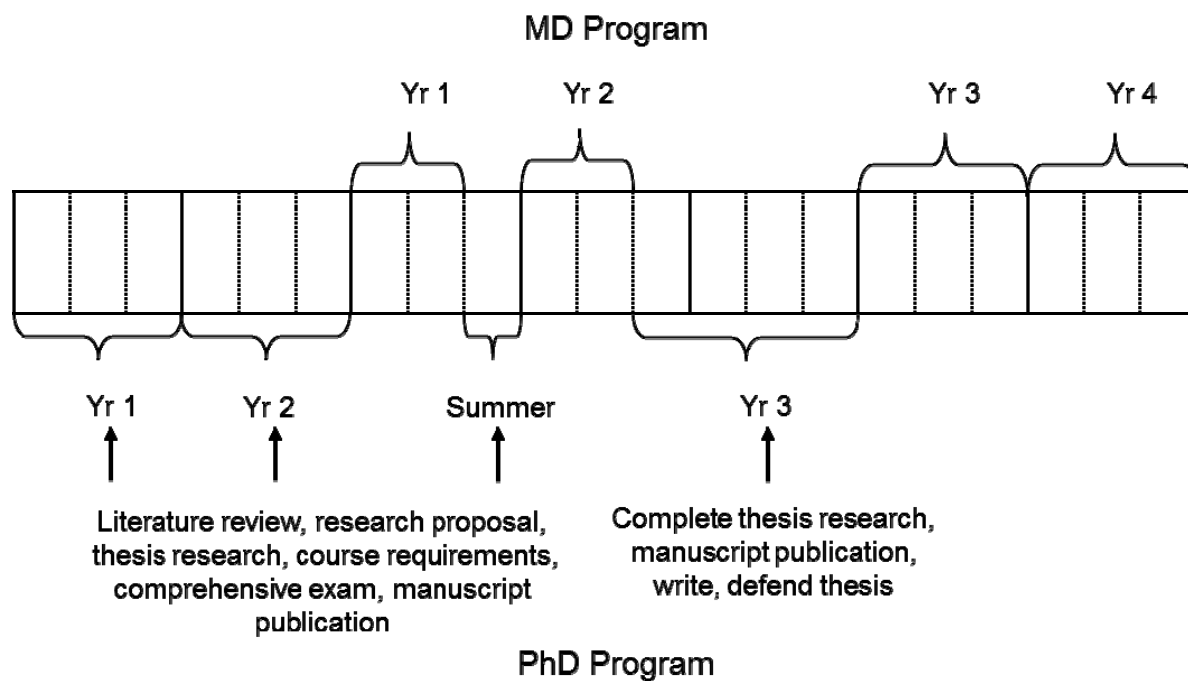


Figure 3. MD/PhD Schedule Model 2 (2-2-1-2).

Table 1. Course Requirements of Participating Graduate Programs

Courses				
Graduate Program	Total (half course equivalents)	Required in Program		Elective/ External
		Number	Specific Courses	
Anatomy & Cell Biology*	4	0	One ½ course recommended in each of gross anatomy, histology & embryology, and neuroanatomy	4
Biochemistry (MSc)	4	3	BCHM 830; Two other 800 level courses	1
Biochemistry (PhD)**	1	1	BCHM 930 (Seminar Program)	0
Collaborative Program in Cancer Research			As per requirements of home Graduate program, including Collaborative Program Elective Courses	
Epidemiology (MSc)	7	4	EPID 801, 804, 821, 822	3
Epidemiology (PhD)**	3	3	EPID 901 (full), EPID 823	0
Microbiology & Immunology*	4	2	MICR 910; MICR 970	2
Neuroscience* 4		1	NSCI 800	3
Pathology and Molecular Medicine (MSc)	4	2	PATH 827; PATH 830	2
Pathology and Molecular Medicine (PhD) **	1	1	PATH 930 (Seminar Program)	0
Pharmacology & Toxicology (MSc)	4	3	PHAR 812 (full); PHAR 821	1
Pharmacology & Toxicology (PhD)**	1 1		PHAR 811	0
Physiology* 4		2	PHGY810; PHGY897	2
Rehabilitation Science (MSc)	4	2	RHBS 833; RHBS 801 or 802	2
Rehabilitation Science (PhD)**	2	2	RHBS 903, one other 900 level course	0

* No additional course requirements for PhD with a suitable MSc background.

** Additional course requirements for PhD with a suitable MSc background.

NB. Course requirements may vary for students entering the PhD program with an MSc degree from a different discipline.

PART B - RESOURCE IMPLICATIONS

1. SUMMARY OF RESOURCES REQUIRED

If you are unsure of the resource implications for any of the following, please consult with someone in the affected department or unit.

Please summarize the **additional** resources needed to implement the program:

- a) **FACULTY** none
 (number of half courses)
- b) **STAFF** 0.75 FTE
 (number or fraction of FTEs)
- c) **TEACHING ASSISTANTS** none
 (number of student-courses)

d) **PHYSICAL FACILITIES:**

Please describe the space resource implications of the proposal in terms of the following (include both size (in terms of # of students) and frequency (number of hours per week required))

- 1. *Classrooms* No new requirements.
- 2. *Laboratories* No new requirements.
- 3. *Offices* Office space for graduate students will be provided by graduate programs within existing space allocations

For number d) 3 above, please reallocation or reconfiguration of space is required. If so, appropriate approval must be appended.

e) **INFORMATION FACILITIES**

Please indicate the ITS resource implications for the proposal in terms of requirement for

- 1. *Hardware* No new requirements
- 2. *Software / Internet* No new requirements
- 3. *Audio-Visual* No new requirements
- 4. *Telecommunications* No new requirements

f) LIBRARY SERVICES

Please indicate which of following new library resources will be needed:

- *journals*
- *print monographs*
- *audio visual material*
- *historical documents*
- *electronic databases*
- *statistical / geospatial data*

No new library resources required

Indicate the likelihood of the program having an impact on Library staffing.

Unlikely to have an impact on Library staffing

g)UNIVERSITY REGISTRAR

Please indicate the resource implications for the proposal in terms of requirement for

1. *Scholarships / Bursaries:* Full-time Graduate students will be eligible for QGA funding and internal scholarship awards.
2. *Registration / SIS Programming:* Minimal impact due to small size of program
3. *Timetable:* No new requirements
4. *Admission (Graduate / Undergraduate):* Minimal impact due to small size of program
5. *Convocation:* Minimal impact due to small size of program

h)OTHER UNIVERSITY SERVICES

Please indicate the resource implications for the proposal in terms of requirement for

1. *Financial Services* Minimal impact due to small size of program
2. *Human Resources* No additional resources needed
3. *Advancement* Potential impact if program targeted for fund raising
4. *Student Services* Minimal impact due to small size of program
5. *Residences* No additional resources needed
6. Other _____

2. NEW EXPENDITURES

What **new** funds will be needed for each of the following? One-time \$ are monies that will only be required once for startup. Base \$ are funds that will continue to be needed year after year. Please attach some backup to show how the numbers were calculated.

e.g. Staff - Base \$60,000 (1.5 FTE @ \$40,000))

	ONE TIME \$	BASE BUDGET \$
FACULTY		
STAFF		\$30,000 (0.75 FTE @ \$40,000)
TEACHING ASSISTANTS		
STUDENT ASSISTANCE (MD)		\$300,000 (12 @ \$25,000)
OTHER NON-SALARY	\$352,612	
TOTAL	\$682,612	

3. FUNDING SOURCES

Please show the source of the **additional and/or re-allocated funds** needed for the proposal. What amount will be re-allocated from within the department's budget, from within the faculty's budget, from within the University's budget and how much will come from tuition or other sources. One-time \$ are monies that will only be required once for startup. Base \$ are funds that will continue to be needed year after year. The total costs in section 2 (Cost Breakdown) must match the total costs in section 3 (funding sources)

	ONE TIME \$	BASE BUDGET \$
DEPARTMENT BUDGET	\$352,612	\$330,000
FACULTY BUDGET		
UNIVERSITY BUDGET		
TUITION REVENUE		
OTHER SOURCES		
TOTAL	\$682,612	

If other sources are used, please list the sources and indicate if the funds have been applied for and if they have been secured.

Base budget funding will be derived from unallocated Medical School BIU income. Endowed funds and funding by CIHR MD/PhD Program Grants are other expected sources of funding, but these have yet to be secured.

4. IMPACT ON ENROLMENT

- a) *How many students are expected in the program?* 21 at steady state (2018), assuming enrolment of 3 students per year into the program
- b) *How many new students will the program attract to Queen's University?* 0
(i.e. students in the program that are not transfers from existing programs currently being offered at Queen's)
- c) *How many students must be accommodated by other departments / units?* 21
(Please indicate which departments / units will be affected and how.)

Students will be accommodated in one of the ten participating graduate programs during the graduate portion of the combined degree.

5. NET IMPACT OF THE PROPOSAL

Please summarize any other resource or funding implications of the proposal.

There are additional funding implications related to lost BIU and tuition income to the MD program during the time students are enrolled in the PhD portion of the combined program and while the program ramps up to steady state. The cumulative loss will differ depending on the scheduling model.

The numbers reported assume that there will be no room for growth at the PhD level (i.e. at MTCU cap) and students in the PhD portion of study are not net new (i.e. no additional revenue). This is a 'worst case' scenario for the School of Medicine, but manageable. It is also noted that the modeling was done for MD/PhD only. The program is designed to accommodate MD/MSc students, but it is anticipated that most students opting for the combined program will select the MD/PhD.

- Model 1 (2-3-2)(Table 2), the first two years of the MD program (pre-clerkship), followed by 3 years of graduate research, and then re-entry into years three and four of the MD program (clerkship). Estimated cumulative loss to centre: \$352,612.
- Model 2 (2-2-1-2)(Table 3), two years of graduate research, followed by two preclerkship years in the MD Program, a final year of graduate studies, and then re-entry into years three and four of the MD Program. Under Model 2, because students enter the combined program as PhD students for the first two years, the BIU and tuition loss to the centre would be less than model 1. Estimated cumulative loss to centre: \$117,537.

Once steady state is reached in 2018, and with no change in assumptions stated above, the program will be supported through the School of Medicine's base budget.

6. SIGN-OFF *Combined MD/PLD and MD/MSE*

Following Faculty Board approval, signatures from the following individuals listed below must be obtained to verify that they have reviewed this proposal. Supplementary comments may be appended and so indicated by checking the box beside the appropriate signature.

Title	Comments Appended	Signature
Department Head	<input type="checkbox"/>	<i>[Signature]</i>
Dean or Associate Dean	<input type="checkbox"/>	<i>[Signature]</i>
Dean of Student Affairs	<input type="checkbox"/>	<i>[Signature]</i>
University Librarian	<input type="checkbox"/>	<i>[Signature]</i>
Director, Information Technology Services	<input type="checkbox"/>	<i>[Signature]</i>
University Registrar	<input type="checkbox"/>	<i>[Signature]</i>
Associate VP (Operations & Facilities)	<input type="checkbox"/>	<i>[Signature]</i>
Vice-Principal (Finance & Administration)	<input type="checkbox"/>	<i>[Signature]</i>
Provost and Vice-Principal (Academic)	<input type="checkbox"/>	<i>[Signature]</i>

*Several questions for clarification
to be discussed at SCAD.*

[Signature]



January 31, 2011

Dr. Brian M. Bennett
Associate Dean, Graduate and Postdoctoral Education
Faculty of Health Sciences
Queen's University
Kingston ON Canada K7L 3N6

MICHAEL ADAMS, PROFESSOR
AND INTERIM HEAD

DEPARTMENT OF BIOMEDICAL
AND MOLECULAR SCIENCES

Botterell Hall, Stuart Street
Queen's University
Kingston, Ontario
Canada K7L 3N6
www.queensu.ca

Dear Brian:

On behalf of the Department of Biomedical and Molecular Sciences, I am very pleased to be able to write a letter in support for the Program Approval Submission for Combined MD/PhD and MD/MSc Programs at Queen's University submitted to the Senate Committee on Academic Development.

The development and implementation of such programs is long overdue at Queen's University, and it is in line with the *Government of Canada's* 2007 Science and Technology Strategy, which emphasizes the need to build research excellence, translate knowledge into practical applications, and deepen the pool of highly skilled individuals. Within the nascent Department of Biomedical and Molecular Sciences, we have graduate programs available in the following six disciplines: Anatomy and Cell Biology; Biochemistry; Microbiology and Immunology; Neuroscience; Pharmacology and Toxicology; and Physiology. The graduate programs in these six fields of research are very eager to offer MSc and PhD positions to highly qualified medical students interested in pursuing a research career in academic medicine, and letters of support from the individual graduate programs have been sent under separate cover.

The Faculty of Health Sciences offers a breadth of research and training programs ranging from the basic to clinical sciences. These programs provide an optimal environment for translational endeavors, in part, because they are set within an outstanding multidisciplinary research environment. For example, specific to the Department of Biomedical and Molecular Sciences, students participating in the combined MD/PhD and MS/MSc programs will have access to facilities outfitted with state-of-the-art research equipment and laboratory space.

I enthusiastically support the efforts of the School of Graduate Studies and the School of Medicine in developing the combined MD/PhD and MD/MSc programs at Queen's. I firmly believe these programs will benefit scholarship, professional development of future physician scientists, and increase Canada's capacity in basic, clinical, translational, and patient-oriented research.

Sincerely,

Dr. Michael A. Adams
Professor and Interim Head
Department of Biomedical and Molecular Sciences



CHARLES H. GRAHAM, PhD

Professor and Head
Department of Anatomy and Cell Biology
Botterell Hall, Ninth Floor
Kingston, Ontario, Canada K7L 3N6
Tel 613 533-2600
Fax 613 533-2566
grahamc@queensu.ca

January 26, 2011

Dr. Brian M. Bennett
Associate Dean, Graduate and Postdoctoral Education
Faculty of Health Sciences
Queen's University
Kingston ON

Dear Brian,

I am delighted that the proposed MD/PhD and MD/MSc programmes have been approved by the Graduate Studies Executive Council of the Faculty of Health Sciences. I am writing to express my full support for the implementation of this programme.

Establishing MD/PhD and MD/MSc programmes in our Faculty will undoubtedly be of great benefit to Queen's University, the participating graduate programmes, and outstanding students who wish to pursue careers that combine clinical and experimental medicine. Moreover, this initiative will increase Ontario's capacity for training physician scientists by adding another institution at which this type of combined programme is offered.

The establishment of these programmes is clearly overdue. Over the years I have been at Queen's I have encountered several bright students who expressed interest in combining medicine with research. Some of them chose to attend medical school at other universities where MD/PhD or MD/MSc programmes are offered. By offering these programmes at Queen's we will increase the likelihood of attracting the brightest minds.

Thank you for taking the initiative to move this important endeavour forward.

Regards,


Charles Graham



DEPARTMENT OF BIOCHEMISTRY

Botterell Hall, Room 650, 18 Stuart Street
Queen's University
Kingston, Ontario, Canada K7L 3N6
Tel 613 533-2900
Fax 613 533-2497

February 11, 2011

Dr. Brian Bennett
Associate Dean, Graduate Studies
Faculty of Health Sciences
Queen's University
Kingston, ON K7L 3N6

Dear Dr Bennett,

Re: MD/Ph.D. Graduate Program

On behalf of the Department of Biochemistry and its graduate program, I strongly endorse the idea of adding an MD/Ph.D. program at Queen's University. The relationship between the Clinical and Basic Science Departments will surely be strengthened by this type of program since it will bring medical trainees into contact with Basic Scientists. Canada is in dire need of clinically-trained researchers and this type of program will fill the void and thus will strengthen the health care system in Canada in the long term.

I wish you luck in having this program approved through the regulatory processes.

Yours sincerely,

Glenville Jones, Ph.D.
Craine Professor and Head

GJ:amt



Wednesday, 26 January 2011

Dr. Brian M. Bennett
Associate Dean, Graduate and Postdoctoral Education
Professor, Dept. of Pharmacology & Toxicology
Faculty of Health Sciences
Queen's University
Kingston ON Canada K7L 3N6

CANCER RESEARCH INSTITUTE
DIVISION OF CANCER BIOLOGY
AND GENETICS

Botterell Hall, Rm A315
Queen's University
Kingston, Ontario, Canada K7L 3N6
Tel 613 533-6000 X77475
Fax 613 533-6830

Dear Brian

As the Coordinator of the Collaborative Graduate Program in Cancer Research, at Queen's University, I am very pleased to provide my enthusiastic support for your initiative to develop combined MD/PhD and MD/MSc programs within the Faculty of Health Science. This is a timely and well-supported initiative that is likely to act as a valuable recruitment and retention tool for the highest caliber and most motivated students entering Medicine. The Combined Programs will fill an obvious lacuna in our existing graduate programs, and will provide enhanced opportunities for students with interests in interdisciplinary or transdisciplinary studies. I believe we will all benefit from this initiative.

As the Director of the Terry Fox Foundation Training Program in Transdisciplinary Cancer Research, in partnership with CIHR, I would also point out that students enrolling in your new Programs may be eligible to apply for funding opportunities through our Training Program. Our Program offers stipend funding to exceptional students involved in transdisciplinary cancer research towards a graduate degree at Queen's University. While students in Medicine were previously not eligible to apply for this funding, students in the new combined programs will be able to apply for the periods in which they are pursuing their graduate work. The nature of the Combined Program and its goals aligns very well with those of our Training Program and should position these candidates very well in their fellowship applications.

Once again, congratulations on your comprehensive and timely brief. Good luck with implementing the Combined Programs.

Sincerely

Lois Mulligan, PhD
Coordinator Collaborative Graduate Program in Cancer Research
Director Terry Fox Foundation Training Program in Transdisciplinary Cancer Research



Dec 20, 2010


Dr. Brian M. Bennett
Associate Dean, Graduate and Postdoctoral Education
Professor, Dept. of Pharmacology & Toxicology
Faculty of Health Sciences, Queen's University

Dear Dr. Bennett,

Our department is pleased to support the proposal for combined MD/PhD and MD/MSc Programs within the Faculty of Health Sciences. Both the Epidemiology M.Sc. and Epidemiology Ph.D degree programs are appropriate fits with this proposal. These programs provide a methodological foundation from which to conduct research across diverse health-related areas. They represent an excellent training opportunity for medical students with a desire to become involved in research and would provide them with strong credentials when seeking careers in specific areas of advanced medical research.

Our department already provides M.Sc. epidemiology training to 1 or 2 clinicians or residents per year. We believe that this training serves them well in combining a research and clinical career. It is certainly logical to extend this to provide opportunities in M.Sc. and Ph.D epidemiology training for medical students. We believe that this is a very worthy endeavour and that Graduates from Faculty of Health Sciences MD/PhD and MD/MSc programs will contribute to increasing Canada's capacity in health research.

Sincerely,



Will King, Ph.D.
Graduate Program Coordinator
Department of Community Health and Epidemiology



R. KEITH POOLE, PROFESSOR AND HEAD
DEPARTMENT OF
MICROBIOLOGY AND IMMUNOLOGY

Botterell Hall, Rm. 813, Stuart St.
Queen's University
Kingston, Ontario, Canada K7L 3N6
Tel 613 533-2452
Fax 613 533-6796

Dec. 8, 2010

Dr. Brian M. Bennett
Associate Dean, Graduate and Postdoctoral Education
Professor, Dept. of Pharmacology & Toxicology
Faculty of Health Sciences
Queen's University

Dear Brian:

I am writing this to confirm the full and enthusiastic support of the Graduate Program in Microbiology & Immunology for the MD/PhD and MD/MSc initiative that you are spearheading. We look forward to participating in these combined programs.

Regards,

A handwritten signature in black ink that reads "Keith Poole".

R. Keith Poole, PhD.
Professor



CENTRE FOR NEUROSCIENCE
STUDIES

Room 237, Botterell Hall
Queen's University
Kingston, Ontario, Canada K7L 3N6
Tel 613 533-6360
Fax 613 533-6840
www.queensu.ca/neurosci/

Friday, February 04, 2011

Dr. Brian Bennett
Associate Dean
Graduate and Postdoctoral Education
Faculty of Health Sciences

Re: MD-PhD Program

Dear Brian,

I am writing to you to express our enthusiastic support for the new MD-PhD program at Queens University. As you are aware, the Neuroscience Graduate program is a strong multidisciplinary program with more than 60 active faculty members spanning with three university faculties. The Neuroscience graduate program is keen to play an active role in the development and implementation of this new program. This new program will be of great benefit for future graduate training at our institution.

Sincerely,

Douglas P. Munoz, PhD
Director, Centre for Neuroscience Studies
Professor, Physiology, Psychology & Medicine

PATHOLOGY AND MOLECULAR MEDICINE

Victor A. Tron, MD, FRCPC
Professor and Head
Department of Pathology and Molecular Medicine
Queen's University, Kingston General and Hotel Dieu Hospitals
88 Stuart Street, Richardson Laboratory, Rm 202
Kingston, ON K7L 3N6
Tel 613.533.2850 Fax 613.533.2907
tronv@queensu.ca
www.path.queensu.ca

14 December 2010

Dr. Brian Bennett
Associate Dean
Graduate and Postdoctoral Education
Faculty of Health Sciences
Queen's University

Dear Dr. Bennett:

The Department of Pathology and Molecular Medicine is very happy to hear that the combined MD/PhD program is moving ahead. This Department will be an active participant in this program. As you know, we have some outstanding clinician and basic scientists that have very good external funding and would be very happy to take students.

Should you require further support please feel free to contact me.

Yours sincerely,



Victor A. Tron, MD

G:\SEC\DEPARTMENT HEAD\Correspondence\2010\bennett dec14.doc

PREPARING LEADERS AND CITIZENS FOR A GLOBAL SOCIETY

December 9, 2010



Dr. Brian M. Bennett
Associate Dean, Graduate
and Postdoctoral Education
Faculty of Health Sciences
Queen's University

DEPARTMENT OF
PHARMACOLOGY AND TOXICOLOGY

Botterell Hall, Room 563, Stuart Street
Queen's University
Kingston, Ontario, Canada K7L 3N6
Tel 613 533-6106
Fax 613 533-6412

Dear Brian:

We are writing to confirm the enthusiastic support of the Department of Pharmacology & Toxicology for the proposed MD/PhD and MD/MSc degree programs at Queen's.

There has been a long history of successful collaborations between clinicians and members of our Department, including co-supervision of graduate students, and a number of clinicians have obtained graduate degrees from our programs during their training as medical residents.

The establishment of the new combined MD/PhD and MD/MSc degrees will go a long way towards strengthening the interactions between the basic and clinical sciences, and will foster valuable new alliances, particularly in the area of translational research. An immediate positive outcome will be the introduction of a well defined mechanism for training clinician-scholars, who are critical for the advancement of medical research in Canada. Another benefit will be improved access to new funding sources and opportunities for both basic and clinical scientists and their graduate students.

It is noteworthy that these initiatives map perfectly onto the Government of Canada's Science and Technology strategy and the Canadian Institutes of Health Research Strategic Plan, both of which highlight the need to train and retain the most highly skilled individuals.

We wish you success with these exciting initiatives, Brian, and look forward to having the Pharmacology & Toxicology MSc and PhD avenues become important components of the MD/PhD and MD/MSc programs.

Yours sincerely,

Thomas E. Massey, Ph.D.
Professor and Head

Louise M. Winn, Ph.D.
Associate Professor and
Graduate Coordinator



John T. Fisher, Ph.D.
Professor and Head
DEPARTMENT OF PHYSIOLOGY

Botterell Hall, Room 442
Queen's University
18 Stuart Street
Kingston, Ontario, Canada K7L 3N6
Tel: 613-533-2796
Fax: 613-533-6880

February 11, 2011

Brian Bennett, Ph.D.
Associate Dean Graduate and Post Graduate Education
Faculty of Health Sciences

Dear Brian,

Re: MD/Ph.D. Program

I am writing to indicate the full support of the Department of Physiology for the development of an MD/Ph.D. program at Queen's. We have significant experience with basic science and clinically-related graduate projects for graduate students with clinical qualifications. Our Department has several cross-appointed Faculty from the Department of Medicine, within the Divisions of Cardiology, Gastroenterology and Respiriology and they regularly supervise graduate and undergraduate students, as well as collaborating with core members in supervision and the pursuit of research. The development of the MD/Ph.D. program would further expand the interdisciplinary nature of our graduate program and we look forward to collaborating with you as the program is advanced further.

Sincerely,

Original signed by John T. Fisher

cc. Drs. S. Iscoe and N. Magoski, Graduate Coordinator



December 8, 2010

Dr. Brian M. Bennett
Associate Dean, Graduate and Postdoctoral Education,
Faculty of Health Sciences,
Queen's University
Kingston ON Canada K7L 3N6

Dear Dr. Bennett:

I was very pleased to hear that the Statement of Intent for the combined MD/PhD and MD/MSc programs was approved at the Graduate Studies Executive Council meeting on December 8, 2010. Dr. Linda Mclean, Chair of the Graduate Program in Rehabilitation Science has reviewed the proposal, as have the other two members from the School who sit on the Faculty of Health Sciences Graduate Council. A motion to approve the proposal was also passed at our Academic Council meeting in the fall. The School of Rehabilitation Therapy is in full support of the proposed MD/MSc and MD/PhD programs in the Faculty of Health Sciences. Faculty in the School would be willing to supervise students in these programs completing the thesis requirements for candidates with research interests consistent with faculty expertise.

Sincerely,

Elsie Culham

Elsie Culham, PhD
Professor and Director,
School of Rehabilitation Therapy,
Vice Dean, Faculty of Health Sciences