A proposal for:

Accelerated Pathway to the School of Medicine from High School via a Two Year Undergraduate Program in the Faculty of Arts and Science
Preamble

The standard model for admission to Medical Schools in Canada (and throughout the United States) requires a minimum of three years of post-secondary education at a university. With few exceptions, most of the students entering Medical Schools in Canada have completed further training at the post-secondary level, with four or more years of undergraduate and/or graduate education. This model for admission to Medical School in Canada has assumed a status equivalent to a gold standard. In addition to the long duration of pre-medical training, some Medical Schools require that students complete a rigidly defined set of prerequisite courses before consideration for admission to Medical School is granted. Indeed the American Medical Association has developed a set of expectations for students entering medical school that lists eight core competencies in the basic biomedical sciences (http://www.hhmi.org/grants/sffp.html) and there is a growing concern that medical students need more training in the behavioural and social sciences (https://www.aamc.org/download/271020/data/behavioralandsocialsciencefoundationsforfuturephysicians.pdf). The length of the list of expectations reinforces the wisdom of the current admission model.

However, this model is not without its detractors. It is self-evident that this model demands many years to complete the education of future physicians. Is this long training period essential? A review of the education of physicians in many other countries, including most of Europe and many parts of Asia would suggest that the answer is - no. Many of these programs are based on a so-called ‘direct entry’ process where students are admitted to Medical School directly from high school. The following proposal is a ‘made at Queen’s University’ model of this process.

The direct entry training model for the education of physicians at Queen’s University is designed to accelerate the medical education of 10 very special high school students. These students will be admitted to a medical education program that is unique in Canada and the United States. It will be based on an integrated ‘2 +4’ year training program where the first 2 years is devoted to laying the foundation for the education of uniquely qualified and trained physicians. At the end of this period, these students will join 90 other students who will be admitted to the School of Medicine via the current admission process that requires a minimum of 3 years of post-secondary education at the university level. Unlike the students admitted by the traditional process, the 2 years of undergraduate learning experienced by the direct entry students will be closely aligned with core competencies of physicians that are the hallmark of an advocate, communicator, collaborator and professional.
Alignment with the Queen’s University Academic Plan

The Queen’s University Academic Plan was accepted by Senate in the Fall of 2011. In that document, an education vision was mapped for Queen’s – for the faculty, staff, and students alike. The Plan is built on four pillars, which together form a foundation for “Learning and Discovery” by our students. The Mission of this Plan is to establish Queen’s as a “research-intensive university with a transformative student learning experience”. This will be achieved by both the recognition and implementation of the four foundation pillars of the Plan. These are:

1) to offer our students a learning experience, which at its heart places significant weight on the implementation and expansion of an inquiry-based curriculum;
2) to foster learning experiences for our students that encompass both disciplinary and interdisciplinary exploration;
3) to offer our students opportunities in extending their experiences beyond Queen’s to include ideas of globalism, diversity, and inclusion; and
4) to promote a healthy, well community of students, in which core values regarding professionalism and civic duty can be cultivated.

The Accelerated Training Program described in this document is a unique partnership between the School of Medicine and the Faculty of Arts and Sciences that provides a new educational strategy to support the principles and goals of the pillars of the Queen’s Academic Plan.

First, the primary goal is to offer a carefully selected group of 10 students an exciting and innovative 2-year curriculum that will culminate in admission to the first year of medical school at Queen’s. This represents a unique opportunity to develop a curriculum that draws on the foundational information provided by core courses in the Faculty of Arts and Science with new strategies for inquiry-based learning developed by the School of Medicine.

Second, all students will be expected to take a selection of core science and arts courses in their first year at Queen’s, which will provide a foundation for latter studies of the basic biomedical sciences. The program recognizes that it is essential to offer the students new opportunities to build on key concepts through interdisciplinary pursuits. This goal will be realized through a series of enrichment and experiential learning modules that tie together concepts in the social sciences, health economics, and core competencies related to professionalism.

Third, students will be encouraged to broaden their interactions within their municipal and provincial communities and develop new connections with other communities in Canada and abroad. In doing so, they will gain important life experiences and foster a life-long commitment to the principles of diversity and inclusivity.

Fourth and finally, the students will play a direct role in promoting a healthy community of students by serving as mentors for new students entering this program.
Objectives

- To recruit 10 exceptionally gifted high school students to Queen’s University
- To complete all of the requirements for degree of Doctor of Medicine within 6 years of admission to Queen’s University
- To capitalize on the breadth and depth of academic programs offered by the Faculty of Arts and Science to prepare students for entry into the School of Medicine at Queen’s University at the end of year 2.
- To enhance the learning experiences provided by the Faculty of Arts and Science with a parallel set of enrichment/experiential learning modules and internships designed specifically for the direct entry students and delivered by members of the School of Medicine.
- To differentiate the School of Medicine at Queen’s University from other Canadian medical schools
- To develop new and innovative educational models for the training of physicians
Admissions process

Guiding principles
We seek students with the following skills and characteristics:

- Commitment to service
- Proven academic ability
- Critical and creative thinking
- Ability to relate to people
- Exceptional leadership qualities
- Curious by nature
- Diverse academic interests
- Maturity and Integrity
- Humility, altruism, and humanism

The admission process will:

- Limit the applicant pool to 200-300 students
- Include an interview process limited to approximately 50 students
- Identify 10 students for offers of admission

Selection process
All applicants must:

- Complete high school
- Be Canadian citizens or Canadian permanent residents (landed immigrants).
- Submit an application that contains an autobiographical sketch and 2 letters of reference.

For students coming from Ontario, English (ENG4U) and Advanced Functions (MHF4U) are required. Calculus and Vectors (MCV4U) is recommended. All students must have completed a minimum of six 4U or 4M courses, with at least three at the 4U level. We also welcome applicants from other provinces (please see http://www.queensu.ca/admission/apply/firstyear/requirements/general.html for more information).

Application process
1. Apply for admission to the Faculty of Arts and Science (Arts (QA) and/or Science (QS))
2. Submit an application for a Chancellor’s Scholarship (Queen’s University) and/or Loran Scholarship (The Canadian Merit Scholarship Foundation).
3. The top 150 to 300 ranked candidates for the Chancellor’s Scholarship and the top 72 nationally ranked candidates for the Loran Scholarship will be invited to submit an application to the accelerated admissions program to the School of Medicine. This application will include a copy of the Scholarship application, an autobiographical sketch and two letters of reference.
4. Based on a review of all components of the application, select highly ranked students for a panel interview. (Note: ranking in the Scholarship competitions will not be used as a factor in the selection process)
5. Based on the results of the selection process, make offers to fill 10 positions.
Curriculum for years 1 and 2

Guiding principles
The organization and the content of the curriculum will:

• Be designed to attract truly ‘special’ students with a wide variety of academic interests.
• At the end of year 2, enable students to enter the School of Medicine or complete a degree in the Faculty of Arts and Science with 2 more years of study.
• Distinguish these students as members of a unique undergraduate experience.
• Provide the first stage of a highly integrated program for the training of uniquely qualified physicians.

Content and structure
The curriculum will consist of two programs that run in parallel; one will be devoted to meeting the requirements of the first 2 years of an honours degree in the Faculty of Arts and Science; the other is a unique and integrated set of enrichment/experiential learning modules and internships that will be developed and delivered by members of the School of Medicine (SoM) to prepare students for entry into the School of Medicine at the end of year 2.

Faculty of Arts and Science

• All students will complete 30 units/year (equivalent to 5 courses per semester).
• All students must take BIOL 102/103, Calculus 121 (if Calculus has not been taken in high school, STAT 263, or an equivalent course, can be used as an alternative¹) and English 100. The selection of these courses is a compromise between a longer, more comprehensive list, and no ‘core’ courses. These courses are chosen to provide all students with a fundamental knowledge of biological processes, quantitative reasoning skills, and communication skills.
• All students will be encouraged to pursue the degree plan of their choice in the Faculty of Arts and Science.
• At the end of year one, students will participate in the plan selection process and chose an honours plan for which they have the required pre-requisites.

Mentorship

• Upon admission, each student will be assigned a faculty member and a first or second year medical student as mentors.

School of Medicine

• In the fall and winter semesters of year 1 and 2, each student will complete a series of seminar-based enrichment modules (SoM 101A-101B, SoM 210A-201B). These seminars will require 3 hours/week. The goals of these modules are:

¹ STAT 263 should be taken in year 2.
o To provide the foundation for a smooth transition to the School of Medicine in year 3.

o Using inquiry-based methods, to examine what it means to be a professional, a collaborator and an advocate.

o To acquire a fundamental and critical understanding of specific topics (e.g. health policy, health economics, ethics, etc) that impact on the role of the physician in the delivery of health care in Canada.

o To use the content described above as a vehicle for independent learning and the acquisition of verbal reasoning skills, critical thinking skills, team-based learning skills and communication skills.

o To provide a common academic home to all students in the program.

• Each student will complete additional 4 to 6 week long experiential learning modules in the spring semester.

  o SoM 199 will be offered in year 1. Students will visit selected community settings (e.g. public schools located in First Nations communities, chronic care facilities such as St Mary’s Hospital, etc) to gain a first-hand knowledge of the unique demands of delivering health care in different community settings. Based on these visits, students will work in teams to identify obstacles to the delivery of health care and critically evaluate current and potential solutions to these obstacles.

  o SoM 299 will be offered in year 2 and will prepare students for the transition to Medical School (e.g. modules related to the content of subjects taught in year 1 of Medical School).

• Each student will be offered a choice of internships in clinical settings and biomedical research labs for the remaining months of the spring/summer semester. Proposals from students who wish to design their own internships will also be invited.

The table below summarizes the timing of the major components of the curriculum.

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<th>Year/semester</th>
<th>Courses in A&amp;S</th>
<th>Seminar-based enrichment modules</th>
<th>Experiential learning modules</th>
<th>internships</th>
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<td><strong>Year 1 fall</strong></td>
<td>BIOL 102</td>
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<td>SoM 101A</td>
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<td>MATH 121A</td>
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<td><strong>Year 1 winter</strong></td>
<td>BIOL 103</td>
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<td>MATH 121B</td>
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<td>Year 1 spring</td>
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<td>Year 1 summer</td>
<td>Laboratory/clinical internships</td>
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<th>Year 2 fall</th>
<th>STAT 263</th>
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<td>SoM 201A</td>
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<th>Year 2 spring</th>
<th>SoM 299</th>
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| Year 2 summer | Laboratory/clinical internships |

A Foundations Committee composed of members of the School of Medicine will be responsible for organizing the delivery and week-by-week content of these modules.
Progression from year 1 to year 2 and from year 2 to the School of Medicine

Guiding principles
  o Until students are admitted to the School of Medicine, students will be bound by regulations stipulated by the Faculty of Arts and Science. These regulations include those pertaining to progression from year 1 to year 2 (see the Faculty of Arts and Science Calendar, Academic Regulations and University Policies: regulations 2 and 13).
  o Policies governing progression from year 2 to the School of Medicine will be based on regulations stipulated by the School of Medicine.
  o With the goal of identifying potential problems before they compromise academic performance and acquisitions of competencies related to communicator, health advocate, scholar, collaborator, and standards of professional conduct, students will receive individual academic advice and support from mentors and the Associate Dean of Life Sciences and Biochemistry.
  o Students who fail to meet the criteria for progression to the School of Medicine will be offered the opportunity for remediation.

Criteria for progression to the School of Medicine
  a. Complete 60 units in an honours degree plan in the Faculty of Arts and Science.
  b. Obtain a minimum cumulative GPA of 3.5 and meet the criteria to be placed on the Dean’s Honours List in the Faculty of Arts and Science in year 2.
  c. Demonstrated acquisition of competencies as judged by the Progress and Promotions Committee related to communicator, health advocate, scholar, collaborator, and standards of professional conduct.

Consequences of failing to meet criteria for progression to the School of Medicine

The failure to meet the criteria for progression to the School of Medicine will result in a denial to progress to the School of Medicine. The student will remain in the honours degree plan previously selected contingent on satisfying regulations specified by the Faculty of Arts and Science. If a student believes that the failure to meet the criteria for progression may be the result of extenuating circumstances, they may appeal the decision.

Extenuating circumstances: definitions and principles (adapted from Section 1.1 of ‘Appeal of Academic Decisions’ in the Faculty of Arts and Science Calendar, 2011-12)

The School of Medicine recognizes that there are occasions in which extenuating circumstances – that is, personal circumstances beyond a student’s control – adversely affect a student’s performance. The appeal process is available to reconsider the decision to progress to the School of Medicine in light of information brought forward by the student concerning such extenuating circumstances. In general,
appeals are only granted where there are significantly extenuating circumstances, beyond the student’s control. Extenuating circumstances normally involve a significant physical or psychological event that is beyond a student’s control and debilitating to his or her academic performance. These kinds of extraordinary situations should be supported by official documentation from an appropriate professional.

Official documentation does not need to outline the specifics of the particular condition or matter affecting the student, but should clearly indicate ways in which the extenuating circumstances directly affected the student’s performance, and should verify that these effects were substantial enough to cause the academic problem. Information on the start, duration and present state of the extenuating condition is critical to helping the members of the Student Appeal and Discipline Board to make an informed decision. Further, a clear statement on whether the condition or circumstances have either improved or are being managed so that they will not have a significant detrimental effect on future academic performance is also essential.

The appeals process does not compensate for extenuating circumstances that the student is unable to resolve, or for which the student is unwilling to actively seek accommodation. In addition, the appeals process does not compensate for extenuating circumstances that are actively being accommodated, for example where a student’s permanent disabilities are being accommodated through the university’s Disability Services Office. Multiple appeals citing the same extenuating circumstances will be reviewed very closely. This review may include, with the permission of the student, consultation with the appropriate professionals involved to obtain more detailed information. In order for such an appeal to succeed, there must be convincing evidence that the circumstances that affected the student’s academic performance will be resolved within a reasonable timeline, or will be appropriately managed on an ongoing basis.

**Appeal Process**

Based on the definitions and principles related to extenuating circumstances described above, students who fail to meet the criteria for progression to the School of Medicine may submit an appeal to the Student Appeal and Discipline Board. Appeals must be submitted within 21 days of the decision to deny progression to the School of Medicine.

If the appeal is granted, the student will be required to pursue a program of remediation. This program will be specified by the Student Appeal and Discipline Board and will be tailored to the needs of the student. This could include a requirement to continue studies in the Faculty of Arts and Science for a further year. At the end of the period of remediation, the student will be considered for progression to the School of Medicine based on the criteria set by the Student Appeal and Discipline Board. If these criteria are satisfied, the student will be admitted to the School of Medicine.
If a student, subsequent to a program of remediation, fails to meet the criteria for progression to the School of Medicine, the student will continue their studies in the honours degree plan previously selected contingent on satisfying regulations specified by the Faculty of Arts and Science. If a student believes that the failure to meet the criteria for progression may be the result of extenuating circumstances, they may appeal the decision. As described under *Extenuating circumstances: definitions and principles*: ‘Multiple appeals citing the same extenuating circumstances will be reviewed very closely.’ Appeals to the Student Appeal and Discipline Board must be submitted within 21 days of the decision to deny progression to the School of Medicine.

If the appeal is granted, the student will be required to pursue another program of remediation. This program will be specified by the Student Appeal and Discipline Board and will be tailored to the needs of the student. This could include a requirement to continue studies in the Faculty of Arts and Science for a further year. At the end of the period of remediation, the student will be considered for progression to the School of Medicine based on the criteria set by the Student Appeal and Discipline Board. If these criteria are satisfied, the student will be admitted to the School of Medicine. The failure to meet the criteria for progression to the School of Medicine will result in a denial to progress to the School of Medicine. The student will remain in the honours degree plan previously selected contingent on satisfying regulations specified by the Faculty of Arts and Science.

*The Senate Policy on Student Appeals, Rights and Discipline*

The Senate *Policy on Student Appeals, Rights and Discipline* (SARD) provides a procedural framework for proceedings in the School of Medicine. The SARD policy also offers the following guidance on decision making:

“It is recognized that a decision-making body has the discretion to select among a number of reasonable alternatives. A decision that is fairly made shall only be reversed if the [decision maker] is satisfied that it was not a reasonable decision. “Reasonable” in this context means a decision that is grounded in logic. In other words, a reasonable decision is one that is supported by logical inferences from accepted premises and facts. If there is more than one conclusion that may be reasonably drawn from the same premises and facts, the choice of one conclusion over another does not make the decision unreasonable. [Decision-making bodies] shall not reverse a decision solely on the basis that it would not have made the same decision itself if it were exercising discretion. There is a considerable body of Canadian jurisprudence that helps define what constitutes review on the ground that a decision is not ‘reasonable’.”

*Appeals to the University Student Appeal Board (USAB)*

If a student believes that there are reasons for an appeal on other than academic grounds, the student may set in motion the system for handling appeals as recorded in the Senate Policy on Student Appeals, Rights and Discipline, by appealing to the University Student Appeal Board.
Appeals to USAB must be received in writing within 2 weeks of having received a decision from the Student Appeal and Discipline Board. Students should contact the Coordinator of Dispute Resolution Mechanisms to be informed of the appeal process.
Resources

All of the resources needed for selection of the students for admission to the program, organization and delivery of the enrichment/experiential learning modules and internships, mentoring and academic advising will be provided by the School of Medicine.