



## University of Toronto Proposal for the Closure of an Existing Program (Undergraduate)

<b>Closure Proposed:</b>	Developmental Biology Specialist Program
<b>Please specify precisely what is being closed:</b>	Closure of the entire undergraduate program
<b>Department / Unit (if applicable):</b>	Cell & Systems Biology
<b>Faculty / Academic Division:</b>	Arts & Science
<b>Faculty / Academic Division contact:</b>	Mary Pugh, Acting Vice-Dean, Undergraduate & International
<b>Department / Unit contact:</b>	Tony Harris, Associate Chair Undergraduate
<b>Effective date program will be closed to new admissions:</b>	March 30, 2017
<b>Effective date of full closure of program:</b> (date by which students currently in the program will be expected to graduate)	June 30, 2022
<b>Version Date:</b>	November 6, 2017

## 1 Brief Summary

The Department of Cell & Systems Biology proposes to close the Developmental Biology (DB) specialist program that it offers. The main reason for the proposed closure is a dramatic drop in enrolment over the last ten years. To increase student engagement with this important topic, the department has introduced a “Stem cells and developmental biology” focus, together with two separate focuses, within our Cell and Molecular Biology (CMB) major and specialist programs. Our current developmental biology course offerings will be maintained. Developmental biology also continues to be a major research area of our faculty. Thus, the closure will not remove the topic of developmental biology from the curriculum. The 6 students currently in the DB specialist program will be able to complete the program as it was described in the calendar when they enrolled. Any concerns regarding completion will be addressed on a case-by-case basis by our undergraduate administrator and undergraduate associate chair.

## 2 Rationale

Over the last ten years, total enrolment in our current DB specialist program has dropped from ~100 students to 10 students (now 6 students following the administrative suspension of admissions as of March 30, 2017.). At the same time, enrolment in our CMB major and specialist programs has grown from zero to ~600 and ~40, respectively. Approved as a minor modification on February 3, 2017, and started September, 2017, our “Stem cells and developmental biology” focus within the CMB major and specialist programs has accepted its maximum enrollment of ~30 students. This change has tripled our number of students studying developmental and stem cell biology as well as the implications of these fields (e.g. regenerative medicine).

Because of dwindling enrolment in the DB specialist program, a meeting of faculty members connected to the current program was held in the spring of 2015. As described in our self-study document for an external departmental review in the fall of 2015, the faculty members “discussed the possibility of closing the program...due primarily to the overlap with the CMB Specialist program”, but “if in the future the CMB Major and/or Specialist programs were modified to include streams or concentrations, developmental biology should be included in such a configuration, as developmental biology remains a core discipline in the molecular life sciences”. Also, the self-study suggested “modify[ing] the program to reflect the current direction of developmental biology research, in particular with an emphasis on stem cells”. To address a concern in our self-study that we did not “have enough [courses] in this more specialized discipline”, we created a new course (CSB329H1, Stem Cell Biology: Developmental Models and Cell-based Therapeutics) that was offered for the first time last year (Winter 2017). The proposed closure of the DB program and the separate creation of the “Stem cells and developmental biology” focus aligns with these plans.

The 2016 external review report of Cell & Systems Biology confirmed the self-study discussion by noting that “the [DB specialist program] has acknowledged that enrollment has been declining in recent years. The department is considering closing this program due to its overlap with CMB; this flexibility denotes a strong desire of members of CSB to make changes as the situation evolves and members of [DB specialist program] should be commended for their willingness to make these adjustments”.

Relevant academic content in the area will be offered through the structure of a focus within the existing CMB undergraduate programs. A focus is a small cluster of courses students take within the program requirements of a major or specialist that complement the major or specialist. The creation of the “Stem cells and developmental biology” focus is also part of a larger plan to enhance our CMB programs with the addition of three focuses (these focuses were approved as minor modifications on February 3, 2017, and started September 2017). The focuses are creating small groups of high-achieving students interested in the same topic. The students take similar courses, form faculty-led learning communities,

and receive guidance on acquiring independent research courses in the laboratories of Cell & Systems Biology faculty members. The students are drawn from our specialist and major programs and then combined to form one focus group for each of the three topics of interest (“Molecular networks of the cell”; “Stem cells and developmental biology”; or “Plant genomics and biotechnology”). Each focus group also contains students across three years of study (similar numbers in 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> years). We plan for a steady-state size of ~30 students per focus (across all years), and to accept ~10 students per year (3-4 from the Specialist program and 6-7 from the Major program) into each focus.

With the closure of the DB specialist program, the programs administered by Cell & Systems Biology will be, (1) the CMB major and specialist with the three associated focuses, (2) the Animal Physiology major, and (3) the Genome Biology major (a program involving courses from several departments).

### 3 Impact on other programs/units of the proposed closure

Because only 6 students are currently enrolled in the DB specialist program, its closure will have minimal effects on course enrolment in other units. This proposal was discussed at the Life Sciences Planning Committee meeting, Fall, 2016, and alongside the proposal for focuses in subsequent curriculum meetings.

The separate creation of the “Stem cells and developmental biology” focus will have a positive effect on the overall U of T developmental biology community. By emphasizing the natural connection between developmental biology and stem cells, it makes the field of developmental biology more relevant to students. Indeed, the new focus has already attracted more undergraduates to the topic (with 30 students accepted this year and several on a wait list). Since stems cells and developmental biology are highly active areas of scientific research, many of these undergraduates will continue their training as graduate students in laboratories associated with core faculty of the Collaborative Specialization in Developmental Biology, a multi-department graduate offering.

On paper the separately proposed “Stem cells and developmental biology” focus will have a reduced breadth of courses available through other departments compared to the DB specialist program, although consultation with our current DB specialist students revealed that they often cannot take these higher year courses from other departments because they lack the prerequisites. Any reduction of course breadth will be counter-balanced by the learning community associated with the focus. The learning community provides community-building and enriched academics for focus students. These connections should foster networking and mentoring among current students as well as contacts with focus alumni. The learning community has a faculty member lead, Prof Ashley Bruce (also the coordinator of the DB specialist program). The students and faculty member meet twice each term (October, November, January, and February) to discuss specific topics (a combination of advice sessions and scientific discussion sessions), and students will be informed of other sources of information, including research talks related to developmental biology.

### 4 Student Accommodation

**Table 1: Undergraduate**

	Year one	Year two	Year three	Year four
<b>Current enrolment Fall, 2017</b>	0	0	3	3

For the 6 current registered students, the closure will have minimal impact since we are continuing to offer all of the same courses in the subject area. Students will be allowed to complete the current program, and any delays in their progression through the program should not be an issue because all of the courses for the program will remain in place. Advising for current students will be provided in the usual way. Any student concerns regarding completion will be addressed on a case-by-case basis by our undergraduate administrator and undergraduate associate chair.

Additionally, there are 15 students listed as 'active' in the program but who are not registered currently. Their starting years were: pre-2000 (2 students); 2000-2004 (6 students); 2005-2009 (5 students); 2010-2014 (1 student); post-2015 (1 student). Any inactive students would be able to resume the DB specialist program as it was described when they enrolled. Any concerns regarding completion will be addressed on a case-by-case basis by our undergraduate administrator and undergraduate associate chair. Specifically, for any courses listed previously but no longer available, appropriate alternatives would be identified from current courses from our department and other units.

In order to inform students currently in the program of the proposal to close the program and how current students would be supported to complete their program, Professor Tony Harris, Associate Chair for Undergraduate Studies informed registered students of the proposal and invited them to a meeting to discuss this further. Professor Harris and CSB Undergraduate Administrator, Janet Mannone, met with 5 students on September 26, 2016.

The closure and proposal to create a focus were explained to the 5 students in attendance, and the following discussions took place.

Student feedback regarding the DB Specialist closure (and response in italics):

- There were no objections to closing the Developmental Biology Specialist as long as those currently enrolled could continue it at whatever pace they chose. *This will be the case.*

Student feedback regarding the introduction of the focus (and responses in italics):

- There was a consensus that students don't learn much about developmental biology until 3<sup>rd</sup> year, and that this may hold the program back because early-year students don't know what it's about. *The inclusion of 2<sup>nd</sup> year students in the focus learning community should help address this issue.*
- There was a consensus that the reduced course offerings of the focus versus the DB specialist could be a good thing because (i) many of the courses from other departments can't be taken because of a lack of pre-requisites, and thus (ii) their removal would simplify program requirements. Students mentioned that in the current program it could be confusing to know which courses to select or how to prioritize from the large list offerings. *The smaller number of more accessible courses in the focus would address this issue.*
- There was a discussion of whether higher entrance requirements of the focus (a statement of interest and a higher grade requirement from 70% to 80% in BIO130 or BIO230) would hold back students or increase the interest of high-achievers. One student noted that it would add prestige.
- There was a discussion about whether animal-only developmental biology or a balance of animal and plant developmental biology is better. *The options in the focus give students the choice.*
- A student recommended more seminar courses in developmental biology. *The focus learning community should help address this point.*

## 5 Faculty / Staff Accommodation

The closure itself will have minimal impact on faculty or staff because we are continuing to offer all of the same courses in the area, taught by the same Professors, and we have begun the “Stem cells and developmental biology” focus in our CMB programs.

## 6 Governance Process

	Levels of Approval Required
<b>Decanal / Provostial Sign-Off</b>	To be filled in
	Faculty/Divisional Council (approval of closure of minors, where there is a continuing (specialist or major)
<b>Submission to Provost’s Office</b>	
	AP&P: January 11, 2018
	Academic Board (approval of degree, graduate program, diploma closures) Not applicable
	Executive Committee of Governing Council (executive confirms degree, grad program, closures). Not application
<b>Inclusion in Annual report to Quality Council</b>	
<b>Inclusion in Annual report to MTCU (in case of closure of degree)</b>	