Program Progress Report

Institutional Quality Assurance Program (IQAP) Review

COLLABORATIVE GRADUATE PROGRAM IN ASTROBIOLOGY

Date of Site Visit: February 4, 2020 and February 5, 2020

Date of Progress Response Submission: June 1, 2022

Progress Report Prepared by: Dr. Jon Stone, Director, Origins Institute

Please outline below how recommendations from the initial program review have been addressed. [Please fill in one table for each recommendation from the original Final Assessment Report]

1. Recommendation: Consider a formal, but optional, requirement for a cross-laboratory and/or collective research project and a mechanism for forming collaborations and identifying student opportunities.
Responsibility for Implementation: Director
Anticipated Timeline for Completion: May 2020
Additional Notes/Commentary: The previous Director (P. Higgs, whose term ended June 30, 2020) started to address the related **Specific Recommendation**, to "[c]onsider allowing students to fulfil the additional course in a discipline outside their core area of expertise requirement with a collaboration in a lab outside their discipline."
Progress ☐ Completed X In Progress ☐ Other (please explain)
Institute's Comments: A meeting including faculty members involved in the Collaborative Graduate Program in Astrobiology in May 2020 revealed unanimous consensus that both recommendations cited above should be addressed at the course level. Awarding credit for a new formal requirement as an optional replacement for an already existing requirement (*e.g.*, course), rather than an additional component, in the program curriculum will provide a more efficient way to establish collaborations. A plan to allow students to fulfil the requirement for 'additional course in a discipline outside their core area of expertise' with a collaboration in a laboratory outside their discipline was devised, and changes to Graduate Calendar were drafted but never implemented. The delay was caused partially by timing (revisions to curricula were due before the change in Directorship occurred in 2020) and the COVID-19 pandemic (2020 to 2022). The current Director will review and revise the text; consult with faculty involved in the Collaborative Graduate Program in Astrobiology; and complete implementing the **Recommendation** (as well as the related **Specific Recommendation** and plan) before the next

opportunity for including appropriate descriptive text in the *Graduate Calendar* (*i.e*., 2023-2024 academic year).

The revised anticipated timeline for completion is September 2023.

Dean's Comments:
We support the proposed plan and will work with the program to monitor the timeline for completion.

QAC Comments (to be filled in by Quality Assurance Committee):

The 18-month progress report of the collaborative specialization program (M.Sc. and Ph.D.) in Astrobiology was found to be highly satisfactory and exemplary by the Quality Assurance Committee. The Committee appreciated the positive responses and all efforts taken by Dr. Maureen J. MacDonald, Dean of Science, and Dr. Jon Stone, Director, Origins Institute, to improve the gaps and follow the recommendations with the engagement of the faculty and students.

2. Recommendation: Consider ways in which organizational administrative tasks remain outside the responsibilities of graduate students.

Responsibility for Implementation: Director

Anticipated Timeline for Completion: Completed September 2020

Additional Notes/Commentary: The **Recommendation** has its origin in the observation: "[g]raduate students are doing some of the administrative tasks related to organization and running of the journal club (officially a course)" – External Reviewers Report. External Reviewers suggested possible solutions in the **Specific Recommendation**: "[a]dministrative help from existing support staff might lighten the load for graduate students engaged in tasks beyond their degree requirements. Alternatively, offering those students engaged in sufficiently heavy tasks could be offered a TAship for that work."

Progress

X Completed
☐ In Progress
☐ Other (please explain)

Institute's Comments: The course ORIGINS 705 Astrobiology Research Seminar & Journal Club plays a dual role in the Collaborative Graduate Program in Astrobiology. Students register and earn credit for participating in the course, usually in their first year in the program; students then attend the research seminar & journal club, along with postdoctoral researchers and faculty members,

throughout their remaining time in the program, to foster community and interaction as well as opportunities for mentorship and collaboration.

The Director traditionally has functioned officially in the capacity as instructor for the course ORIGINS 705; administrative tasks related to running the Astrobiology Research Seminar & Journal Club since 2013, however, gradually had been transferred to graduate students. Given student concerns about this additional uncredited responsibility and the associated time and effort (as voiced through the External Reviewers Report), starting in 2020, the Director reclaimed completely administrative duties for the course. This was facilitated partially by enhancing alignment between the course and other institutional activities already organised by the Director, such as the Origins Institute Visitor Program and Colloquium Series, linked together as virtual activities during the COVID-19 pandemic as the 'e-Visitor-Colloquium Series.' Speakers in the e-Visitor-Colloquium Series participated virtually in the Astrobiology Research Seminar & Journal Club immediately following their talks.
The Director took the initiative because administrative assistance from Support Staff and Teaching Assistantships financially and logistically were deemed untenable. The Department of Physics and Astronomy already generously has provided some administrative support (*e.g.*, processing reimbursements to students for costs incurred by attending meetings); the need for such assistance fortunately has been diminished during the COVID-19 pandemic (*e.g.*, visitor talks were delivered virtually, so no need arose to process travel, accommodation, and meals repayments). Teaching Assistantship positions currently are at a premium and would be utilised most effectively from academic unit as well as student perspectives in educational rather than organisational activities. The Director additionally notes that organising the course in its dual role (*i.e.*, as a course in the curriculum and as a community building activity) provides greater integration among institute activities as well as closer contact and enhanced communication with students.

Dean's Comments:
As summarized in the comments above, this recommendation has been addressed and we recognize that the IQAP review process provided an important venue to re-examine the administrative and operational structure for this course/seminar.

QAC Comments (to be filled in by Quality Assurance Committee):

3. Recommendation: Work to enable international student collaboration and exchange, as the international astrobiology community has extensive opportunities for McMaster students available.

Responsibility for Implementation: Director

Anticipated Timeline for Completion: Summer/Fall 2020

Additional Notes/Commentary: A related **Specific Recommendation** was suggested by the External Reviewers: "[t]ry to provide more opportunities for student contacts with researchers by balancing time spent by visiting speakers with numbers of speakers brought in by OI." The aforementioned e-Visitor-Colloquium Series was initiated by the Director starting in the 2020-2021 academic year. The

intent was to achieve that balance in speaker numbers and time spent visiting (*i.e.*, when in-person events have returned completely) by combining the Origins Institute Colloquium Series and Visitor Program. The Origins Institute Colloquium Series at its peak hosted 24 speakers per year (for two-day visits) while the Visitor Program at its peak was planned to host 6 visitors (for one week). Both activities are constrained by resources. The Director, through a combined 'Visitor-Colloquium Series,' planned to hold 12 colloquia per year, including 6 from Visitors (who could stay for several days in the last week in September, October, November, January, February, and March) and 6 institute members, who would serve as hosts for the Visitors and deliver primer talks to the Origins Institute audience before the corresponding Visitor talks (in the second week in September, October, November, January, February, and March). This would foster community inside the institute while enabling all the benefits from interactions with external collaborators. Students in the Collaborative Graduate Program in Astrobiology particularly would benefit, by receiving more opportunities to interact and network with our guests. Limitations on in-person activities and travel imposed by the COVID-19 pandemic delayed completing these recommendations; but the limitations (*e.g.*, to virtual activities) also initiated changes to activities (*e.g.*, online talks), which may be retained partially when in-person activities resume completely.

Progress

☐ Completed
X In Progress
☐ Other (please explain)

Institute's Comments: The Origins Institute has established a Memorandum of Understanding with the Max-Planck-Institut für Astronomie, Heidelberg. To fortify this relationship, the Director for the Origins Institute invited the Director for the Max-Planck-Institut für Astronomie to deliver an Origins Institute e-Visitor-Colloquium during the COVID-19 pandemic. The online talk contributed to outreach for the Origins Institute, and, more importantly from the Collaborative Graduate Program in Astrobiology perspective, ultimately provided an opportunity to facilitate international student collaboration and exchange. As an e-Visitor-Colloquium speaker, the Director for the Max-Planck-Institut für Astronomie participated virtually in the Astrobiology Research Seminar & Journal Club immediately following the talk, interacting with students in the Collaborative Graduate Program in Astrobiology. This provided new students with inspirational access to an influential astrobiology researcher (and co-author for the paper under discussion) and more-seasoned students with the chance to network with an international leader in the astrobiology community. So impressed was the Director for the Max-Planck-Institut für Astronomie with the students and session that an informal dialogue has been initiated for future activities. The Director for the Origins Institute has maintained contact with the Director for the Max-Planck-Institut für Astronomie to enable international student collaboration and exchange.

Related to that initiative, the Director for the Origins Institute has declared securing major 'person' funding as the prime grant-application objective for the institute; toward that end, the Director has identified as the target a NSERC CREATE GRANT. The Director is working on leads to partner with collaborators in Fall 2022 and Spring 2023.

The Director additionally has established a collaboration between the Origins Institute and Consulat Général de France à Toronto. The collaboration resulted in a women in science symposium in 2021, half from France and half from the Origins Institute, titled 'Astrophysiciennes & Astrobiologistes.' Several students in the Collaborative Graduate Program delivered talks and interacted with French

counterparts, which included Françoise Combes, CNRS Gold medal, L'Oréal-UNESCO International Prize for Women in Science, as keynote speaker. The Director intends to strengthen this collaboration by hosting French researchers, pairing them one-for-one with Origins Institute members in joint talks. A session on origin of life is being organised for the upcoming Université Grenoble Alpes-McMaster University Workshop (2022 June 20-22), involving researchers from both groups. Interactions like this increase the potential to arrange exchange for students in the Collaborative Graduate Program in Astrobiology.

The revised anticipated timeline is September 2023.

Dean's Comments:
We are excited about ongoing collaborative efforts with the Max-Planck Institute and University of Grenoble Alpes. These are expected to provide valuable training experience for our graduate students.

QAC Comments (to be filled in by Quality Assurance Committee):

4. Recommendation: Encourage home departments to hire in Exoplanet Detection and Planetary Geosciences.

Responsibility for Implementation: Director and members in home departments

Anticipated Timeline for Completion: Summer/Fall 2020

Additional Notes/Commentary: None

Progress

☐ Completed
X In Progress
☐ Other (please explain)

Institute's Comments: The Department of Physics & Astronomy ran in late 2021 a search for a tenure-track Assistant Professor position in Observational Exoplanet Astronomy (the committee was chaired by former Origins Institute Director R. Pudritz). From the Collaborative Graduate Program in Astrobiology perspective, involving an exoplanetary researcher would fill a gap in education and training, literally expanding expertise beyond our solar system.

That hire will complete the first half in the hiring initiative actions recommended by the External Reviewers. The Director will engage with the School of Earth, Environment, and Society about possibilities for future searches that could produce a position in or including Planetary Geosciences. The Director also plans to engage with other academic units through members in the Origins Institute, by reintroducing an internal governing board, about possibilities for future searches that could enhance the Collaborative Graduate Program in Astrobiology.

The revised anticipated timeline is July 2022 and beyond.

Dean's Comments:
Dr. Ryan Cloutier has accepted our offer of a tenure track faculty position in observational exoplanet astronomy and will join the Department on Sept 1, 2022. The planned engagement with the internal governing board for the Institute and the School of Earth, Environment and Society are also important steps to take in future resourcing considerations.

QAC Comments (to be filled in by Quality Assurance Committee):

5. Recommendation: As part of the recruitment process (through the website and via initial emails), encourage prospective students to apply for NSERC fellowships.

Responsibility for Implementation: Director

Anticipated Timeline for Completion: Summer/Fall 2020

Additional Notes/Commentary: The External Reviewers suggested the related **Specific Recommendation**: "[r]egarding the difficulty with recruitment, some modest incentives might tip the balance for faculty taking on students with interest in Astrobiology as well as complementary areas of research." The Director currently is working with advancement with promising donors to secure annual gifts that would serve exactly this purpose (*e.g.*, scholarships that would be used as incentives to assist faculty in recruiting new students to the CGPA); the aforementioned NSERC CREATE grant application would provide 'more-than-incentive' level funds to assist faculty with recruitment.

Progress
- ☐ Completed
- X In Progress
- ☐ Other (please explain)

Institutes' Comments: The new Origins Institute website launched in Fall 2021. Content thereat can be adjusted to suit specific institute needs. This resource will help with recruiting students, especially through NSERC awards (*e.g.*, announcing USRA details and encouraging undergraduate students to apply through their academic units as potential recruits for the Collaborative Graduate Program in Astrobiology). The proposed reintroduced internal governing board for the Origins Institute (see Recommendation 4) will assist in communication between the institute and participating academic units, encouraging their respective students with high academic standing to apply. This governing system will facilitate encouraging prospective graduate students to apply for NSERC fellowships. Completing these recommendations was delayed by the COVID-19 pandemic, as recruitment was challenging; normal enrollment numbers, nevertheless, were achieved or bettered in 2020-2021 and 2021-2022 academic years.

The revised anticipated timeline is August 2022.
Dean's Comments: We support the steps taken by the Institute leadership and satisfied by the progress.
QAC Comments (to be filled in by Quality Assurance Committee):