



To: James Antony, Associate Vice Provost and Associate Dean, the Graduate School

From: Victoria Meadows, Associate Professor and Director, Astrobiology Program

Re: Astrobiology Program response to 5 year Review Committee report

Date: 10/14/12

A handwritten signature in black ink, appearing to read "Victoria Meadows". The signature is fluid and cursive, with a large initial "V" and "M".

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We have received and reviewed the 3 May 2011 Report of the Program Review Committee for the Astrobiology Graduate Certificate Program Review Committee. We would very much like to thank the Committee Members for their time and thoughtful recommendations, which show a clear desire to improve the future of our program, which they acknowledge to be an international leader in astrobiology graduate education and research. Since receiving this committee report, we have had two faculty meetings at which we discussed our plan for implementation of these recommendations. We have also transitioned program leadership, and we have had over a year of ongoing discussions and implementation. As a program, we have effected or made significant progress on the majority of these recommendations, although longer term projects, such as the hiring of new faculty, and the development of program by-laws are still ongoing. In this reply we respond to the Committee's individual recommendations and describe progress to date on their implementation. We also request that the former response to the review committee report, from 13 September 2011, be retracted and replaced with this current response. Our response here better reflects the progress, and future goals and directions of the Astrobiology Program under its current faculty.

**Recommendation 1: Initiate the change from a certificate program to a dual-title PhD program.**

*The Astrobiology program is currently a graduate certificate program. The AB self-assessment indicated the intent to introduce a dual-title Ph. D. in Astrobiology in coordination with several existing departmental Ph. D. programs. The AB portion of this program will have the same basic requirements as the current certificate program, with the additional requirement that the student's Ph.D. dissertation have an Astrobiology-related theme. The desire to create a dual-title degree in Astrobiology appears to be driven primarily by students in the program who want to more clearly recognize the importance of Astrobiology as a central focus of their Ph.D. study. Based on our interviews, the faculty involved with the degree appears to be fully supportive of this change because they recognize and appreciate the enthusiasm of their students. There was some discussion of continuing the certificate program while also moving to a dual-degree program. The Committee felt that this was probably not necessary given the small size of the program and strong similarity between the current certificate program and proposed dual-title AB program. The Committee concludes that the move to a dual-title program would benefit the AB program in terms of visibility and recruitment and, therefore, recommends that the change occur as soon as possible.*

**Astrobiology Program Response to Recommendation 1**

Since this recommendation, the Dual-Title PhD option was proposed, accepted by the Graduate School, and implemented as a set of coordinated graduate program tracks in six participating departments: Astronomy, Earth and Space Sciences, Oceanography, Microbiology, Biology and Astronautics &

Aeronautics. The University of Washington now offers a Dual-Title PhD in a participating home department discipline and Astrobiology. Of the 25 students enrolled in the program, 19 have now been enrolled, or have requested and been approved for enrollment, in the Dual-Title PhD track. In Summer 2012, Ty Robinson graduated with our first Dual-Title PhD in Astronomy and Astrobiology, and three other students are on track to graduate with Dual-Title PhD degrees in Biology and Astrobiology, and Oceanography and Astrobiology, in the coming year. We are also working to add two additional participating departments this year: Atmospheric Sciences, and Environmental and Forest Sciences.

However, despite creating the new Dual-Title PhD, after discussion with the Graduate School we retained the Graduate Certificate in Astrobiology, with some modifications. This decision was made to open Astrobiology graduate education to a potentially larger student cohort, and to allow students who complete all the required coursework, workshops and the research rotation to still be given adequate credit for their work if they choose to graduate with a Masters degree. The Graduate Certificate also provides adequate credit for those students enrolled in a PhD program who again meet the coursework and other requirements, but who cannot, or who choose not, to meet the more rigorous astrobiology research requirements for the Dual-Title PhD. The modified Graduate Certificate is now no longer tied to a PhD research program, and so can also be obtained by those enrolled in Masters programs, and is also available to students enrolled in departments other than those who have agreed to participate in the Dual-Title PhD program. In Spring 2012, Jesse Colangelo-Lillis became our first student to graduate with a Masters in Oceanography and the new Graduate Certificate in Astrobiology.

### **Recommendation 2: Hire a fourth Astrobiology tenure-track professor and begin strategic planning for the replacement of essential faculty.**

*The current AB faculty members represent most of the topics central to this field. In particular, the program has noted strength in astronomy, planetary atmospheres, and early Earth geosciences. As these areas have been strengthened, there appears to be less emphasis on several biological topics important to Astrobiology. These presently include biochemistry, molecular evolution, and origin of life chemistry. In order to maintain and strengthen its current position as a national leader, we recommend that the AB director and steering committee work with the Divisional Dean to obtain support for an AB faculty hire in one of these topical areas. This current need is likely to become a critical need. Internationally recognized expertise in the microbiology of extreme environments currently resides in a prominent oceanography faculty member. The loss of this expertise is likely in the near future. We strongly recommend that the AB director and steering committee engage in strategic planning around his departure to ensure that the program continues to have recognized strength in the microbiology area.*

### **Astrobiology Program Response to Recommendation 2**

Our response to this recommendation is ongoing. We had already identified a need to acquire astrobiology faculty with expertise in biology, and in particular microbiology and origin of life science. We are therefore very pleased with the Committee's recommendation, but also understand that a new faculty hire can be challenging in these financial times. We will, however, continue to work with our Deans over the coming year to make progress on this goal. In the interim, our strategy to address program science breadth and to balance retirements has been to actively recruit new Astrobiology faculty from among existing UW faculty members. In particular, we are encouraging a recent new hire in Oceanography to join the program. This new hire, starting next Summer, works in both chemistry and biology, and expressed a strong interest in the program during his interviews. We are also strengthening faculty presence outside of the "core" areas of Astronomy, Earth and Space Sciences and Oceanography, with a priority on early career faculty. So far we

have strengthened our faculty membership and expertise in atmospheric sciences, forestry and aeronautics and astronautics. We have also initiated a dialog with interested faculty in the Biology department.

### **Recommendation 3: Continue support for administrative and academic needs.**

*The AB program currently receives 1/2 time support from the Graduate School for an administrative person. The other 1/2 time support comes from the IGERT, which will be ending soon. The Committee strongly recommends that the AB program continue to receive 1/2 time support for an administrative person. We realize that money is very tight and there is pressure on all administrative budgets. We think, however, that it is unrealistic to operate a program as diverse as AB without some minimal level of administrative support.*

*The requirement for all AB graduate students to spend a one quarter rotation in a research laboratory or group other than their own is a unique aspect of the program and one that enjoys broad support across the program. However, the end of the IGERT presents a problem regarding funding of students during rotations. The Committee recommends that the AB program director and university administration work together to find a solution to this issue that will provide some modest university funding that can be used to support students on rotations when no other funding is available.*

### **Astrobiology Program Response to Recommendation 3**

We agree with the recommendation that the UW should consider 0.5 FTE of administrative support as crucial for the cross-departmental management and community connectivity required of this heavily interdisciplinary program. We also agree that the required Research Rotations often pose a funding challenge for individual research grants, and that is therefore best met by funds, such as University funds, that are not tied to a specific research goal.

For the next five years, these resources have been largely obtained via the University's commitment of matching funds in support of the recently successful proposal to renew our NASA Astrobiology Institute team (the Virtual Planetary Laboratory – VPL) at UW. This matching package includes funds for a 0.5 FTE Administrator for the Astrobiology Graduate Program, and two full-time student Research Assistantships for five years. At a recent Astrobiology Faculty meeting we discussed and agreed to make one of these University matching RAships, which are not tied to the science of the parent VPL proposal, available for funding research rotations, as needed. This would allow us to fund up to 4 research rotations per year, which is largely adequate to support our current enrollment rate.

### **Recommendation 4: Initiate a change in AB program leadership and organization.**

*The AB program has benefitted immensely over the past decade from the leadership of Dr. Woody Sullivan. That leadership has resulted in a program that is arguable the best of its kind in the United States. There are, however, three younger faculty members who have been specifically hired as part of the AB program, one in Astronomy and two in Earth and Space Sciences. The Committee recommends that the AB program leadership should be transitioned to these younger faculty members as expeditiously as possible. They have had sufficient time to acclimate to the University of Washington and should now be entrusted with the program leadership. We also recommend that the AB program management become more vertical with the appointment of an AB Program Director who is charged with managing the program with the assistance of a Steering Committee. As part of this transition, we recommend that a set of program by-laws be developed in conjunction with the Graduate School, the College of Arts and Sciences, and the College of the Environment*

*in order to more clearly delineate AB program management, the structure of the Steering Committee, and its connection to University administration.*

#### **Astrobiology Program Response to Recommendation 4**

The Astrobiology Program would also like to acknowledge the enormous contribution that Prof. Woody Sullivan's leadership has made in maintaining the excellence of our Program, and its national reputation as a leader in Astrobiology graduate education. In response to the recommendation, Astrobiology Program leadership has been transitioned, with Prof. Victoria Meadows being appointed as the first Director of the Astrobiology Program on September 15, 2011. She reports to Werner Stuetzle, the Divisional Dean for Natural Sciences, and has appointed an Astrobiology Steering Group to consultatively assist her in managing the program. As the incoming Director, Prof. Meadows' top priorities in her first year were to get the Dual-Title PhD for Astrobiology proposed, approved and implemented, and to work to get new funding into the program as quickly as possible, given the imminent end of the IGERT funds that had previously sustained the program. Having achieved those goals, her top priority for this academic year is By-Law development for the program, which will, as the committee suggests, clearly delineate Astrobiology program management, the structure of the Steering Committee, and its connection to University administration. While some progress towards the development of the By-Laws was made during the drafting of the Dual-Title PhD proposal and the subsequent negotiations with the participating units that were required for the proposal's approval, we hope to complete the By-Law development for the Astrobiology Program this academic year.

#### **Recommendation 5: Program Staffing**

*Due to the discussion of a personnel issue, this recommendation has been redacted from the Review Committee report.*

#### **Astrobiology Program Response to Recommendation 5**

The Astrobiology Program now has a new Astrobiology Program Administrator, housed in the Astronomy Department with the new Director. Her full-time salary is provided from the University matching funds associated with the successful VPL NAI proposal (50%), and from the VPL research funding itself (50%). She therefore serves as both the Program Administrator for Astrobiology, and the Project Administrator for the NASA Astrobiology Institute VPL research team, and is consequently fully committed to both academic and research support for the Astrobiology Program, as recommended by the committee.

#### **Recommendation 6: Integrate the postdoctoral research associates into the AB Program**

*Integrate the postdoctoral research associates into the AB program. The post-doctoral research associates connected with the AB program requested a meeting with the review committee. From the discussion at this meeting, they made it abundantly clear that many of them chose to come to the University of Washington because of the AB program (even though it is a graduate program) and that they want to play a larger role in the program. The post-docs are willing and eager to contribute in a variety of ways that includes mentoring graduate students, teaching AB courses, and supervising (and perhaps funding) laboratory rotations. The Committee strongly recommends that the AB program faculty actively work with the post-docs to integrate them into the program and find ways to use them to strengthen the AB academic program.*



## **Astrobiology Program Response to Recommendation 6**

We very much welcome our postdoctoral scholars' desire to play a larger role in the Program. These postdocs (Research Associates) bridge the worlds of the graduate students and faculty and can serve as invaluable mentors and instructors for our students, while obtaining experiences that enhance their professional and scientific development. We have made improvements in the integration of our postdoctoral scholars into the program in the past year, but we believe that this process should be ongoing, and will continue to work with our postdocs to enhance integration. The Astrobiology Steering Group now includes a "Research Associate/Research Scientist" representative, in addition to the traditional faculty and Student Representative roles. Our recent Autumn and Spring Astrobiology Colloquium series have specifically featured presentations by our Astrobiology postdocs, to showcase their research efforts to the community, and in some cases to advertise research rotation opportunities for our graduate students. We have also implemented coffee breaks before our colloquia to encourage more frequent interaction between students, postdocs and faculty in general, but in particular, to provide community interaction for postdocs and advanced graduate students, whose focus on research can tend to isolate them. We have also made a point of rotating the location of our social events between the ESS, Oceanography and Astronomy buildings to make it easier and more likely that a busy researcher will be able to attend some fraction of these. In addition we continue to welcome postdoc participation in teaching opportunities, whether that be leading a colloquium or seminar series, helping to organize or teach a workshop, guest or co-teaching an astrobiology core or cognate course, or mentoring students for research rotations, as was recently the case for Astrobiology postdoc Dr. Mark Claire (Astronomy) and graduate student Kyle Costa (Microbiology).