

## **Proposal to Form a Primarily Undergraduate Institution Section of the American Society of Plant Biologists**

### **Background:**

The American Society of Plant Biologists (ASPB) is a leader in supporting career development opportunities for a wide variety of members at all different career stages and who are at different types of institutions. Primarily Undergraduate Institutions (PUIs) define one prominent type of academic institution within ASPB. PUIs vary in many ways, including the type (e.g. liberal arts) and size of the school, financial resources, and student population demographics. However, the common element that links all PUIs is an emphasis on undergraduate student education and no/few graduate programs. Using a National Science Foundation definition of a PUI<sup>a</sup>, a 2013 analysis for the Council of Undergraduate Research identified 2,104 such institutions in the U.S.<sup>1</sup>. While classroom education is of course a prominent feature of a PUI faculty member's job, individuals working at PUIs make significant, though often overlooked, contributions to scientific research and training future researchers<sup>2,3,4</sup>.

ASPB members with connections to/interest in PUI's include current faculty at PUIs, graduate students or post-docs considering careers at PUIs, current undergraduate students at PUIs, individuals who were educated at PUIs, and those who are currently collaborating or are looking to collaborate with persons at PUIs. While the exact number of current ASPB members that would fall into one of the above groups is unknown, a clue to the prevalence of PUI-affiliated individuals in ASPB is given by the fact that 21% of research abstracts submitted for both the 2016 Austin and 2017 Honolulu national meetings involved work that was wholly or partially conducted at a PUI institution. While this number certainly shows an interested and research-active segment of ASPB, this number may also reflect growing expectations at PUI institutions that faculty be productive researchers, publish regularly, and apply for research grants.

Many professional challenges faced by members of PUI institutions are unique to these types of schools compared to, for example, R1 schools. For that reason there has been effort by individuals in the ASPB membership to organize specific programming geared towards PUI faculty and PUI-interested members for many years. Most prominent among these has been a PUI networking session/workshop organized, now for more than twenty years, during the ASPB annual national meeting. Collectively, over those years, several hundred PUI faculty members, PUI-interested post-doctoral associates and graduate students, and other persons have attended these workshops/sessions (see Appendix). Organization of these activities has been undertaken by a largely ad-hoc leadership group, with changing participants over the years. At the most recent annual meeting in Honolulu, the PUI workshop was organized around the theme of enhancing research with undergraduates. This event included a keynote speaker/discussion facilitator, presentations by several PUI faculty, and a research poster session. The workshop was supported by a \$25,000 grant from the US Department of Agriculture National Institute of Food and Agriculture. There were sixty-seven participants in the workshop and a later PUI leadership/organizational meeting drew sixteen. The success of these events, the continued interest in resources and support for those pursuing a PUI career, and a recent inflow of younger PUI faculty expressing interest in helping lead the ASPB PUI group (several of whom helped prepare this proposal)

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<sup>a</sup> The NSF defines a primarily undergraduate institution as one that grants baccalaureate degrees in NSF-supported fields or provides programs of instruction for students pursuing such degrees after transfer to four-year institutions, has greater undergraduate enrollment than graduate enrollment, and awards fewer than 10 doctoral or doctor of science degrees per year in all NSF-supportable disciplines.

all point to a vibrant community within the Society. For all these reasons, we believe that now is the right time to form an official PUI Section of the American Society of Plant Biologists.

### **Benefits of a PUI Section to the ASPB Membership:**

We believe that forming an official PUI Section will provide numerous benefits, both to PUI-affiliated individuals in the ASPB membership and to the larger Society.

1. Official Section status would provide greater stability to and more formal support for the PUI group. It would provide a formal PUI leadership structure, after years of ad-hoc organization, through which PUI activities would be initiated and coordinated (see below for a description of activities which could be undertaken by the Section).
2. A PUI section would provide a “home” for PUI faculty who are ASPB members, with greater opportunity for more regular interaction throughout the year and in between ASPB meetings attended. PUI faculty sometimes feel professionally isolated, particularly with respect to research activities, because they are often the only individual on a campus in their area of expertise. Interactions among many PUI faculty in the membership currently is limited to once-a-year (at best) interactions at the national meeting, and a priority of the Section would be to provide additional opportunities (such as a PUI member database) to promote sustained interaction among PUI faculty.
3. PUI section activities would likely increase regular PUI member attendance at annual ASPB meetings. There are many reasons as to why PUI faculty members are less likely than their R1 counterparts to regularly attend ASPB meetings, including financial resources. Another major factor, however, is because the pace of research is slower at PUIs and PUI faculty members sometimes have less to regularly contribute through talks and poster sessions. Having a PUI section would provide additional PUI-specific programming and activities at ASPB meetings and would therefore provide additional incentives for participation from PUI faculty.
4. The PUI Section would engage in recruiting PUI faculty and students to ASPB. This would increase the number of PUI-affiliated individuals participating in ASPB activities, which would benefit those individuals, and also benefit the larger society by increasing membership. PUI faculty and students who see that ASPB provides support to this Section will be more attracted to become an ASPB member, because they know that there will be programming that addresses their specific professional needs.
5. The Section would promote the educational mission of ASPB through significant synergy and anticipated collaboration with the ASPB Education Committee, given that the largest focus of a typical PUI faculty member’s job is education.
6. The Section would provide support and education for graduate students and post-docs considering PUI careers. This is also a benefit to R1 faculty members as we would be providing resources that would help prepare their graduate students and postdocs to get jobs.
7. The PUI section would also benefit faculty at R1 institutions by providing a conduit through which they could identify talented undergraduates who are looking for summer research opportunities or graduate education.

### **Activities of a PUI Section for the ASPB Membership:**

The PUI Section would provide the benefits enumerated above through activities, some of which the Section would engage in immediately (under probationary status), while other activities are envisioned for the future.

1. During the probationary period the Section will develop a constitution that will formalize the structure and function of the Section. Among other things, this constitution will define a process to select and maintain leadership for the Section.
2. Under probationary status, the Section would hold an annual workshop at the Plant Biology meeting, building on the success of workshops and networking events held by the informal PUI group over the past 20 years. Based on past experience, we anticipate that the annual workshop will be attended by PUI faculty, by graduate students and postdocs who envision a career at a PUI, and by other PUI affiliates. External funding to help support this workshop will be sought in years where such funding might promote significantly increased participation (e.g. provide grants to individuals to offset costs associated with expensive locations) or be needed to implement special activities associated with workshop.
3. Under probationary status, the PUI section would build a database of contact information for PUI members through the Plantae network. Uses for this database could include: identification of senior PUI faculty willing to serve as external reviewers for tenure and promotion, identification of PUIs with research programs for graduate student recruitment, and mentorship opportunities for graduate students and postdocs interested in PUI careers.
4. In addition, the Section envisions promoting interaction between PUI faculty through future activities that might include a newsletter for members, regional undergraduate research symposia, and development of an online platform for teaching tools in coordination with the Education Committee.
5. The Section would support individuals at all career levels by providing a conduit for information regarding all aspects of a PUI career (ie. developing teaching tools, effectively implementing an undergraduate research program, navigating tenure & promotion, service, etc.). We envision at least two mechanisms for information sharing: articles on Plantae and an online moderated discussion board. These resources would provide mentorship for graduate students and postdocs who seek a PUI career, which are often lacking in an R1 training environment. This would provide additional information for responsibilities that often fall on PUI faculty not previously experienced, such as greenhouse management. Discussion would also include topics such as running a productive research program with undergraduates. While other organizations do exist to broadly foster undergraduate research (e.g. Sigma Xi and CUR), the resources here would help address unique plant biology-specific challenges and would place a stronger emphasis on career development than other organizations in existence.
6. The Section would coordinate with other societies and organizations (such as CUR) to provide support and resources for PUI section members.
7. The Section will work with ASPB and the Membership committee to recruit new members to the Society. Information about Society membership will be included in our online resources and individuals participating in/accessing our resources will be encouraged to join.

## **Section Leadership During Probationary Status**

During the probationary period, prior to approval of a Section constitution, the Section will be led by a steering committee composed of six members. These six individuals will likely be selected from the sixteen that attended the PUI leadership/organization meeting at the 2017 national meeting in Honolulu. A primary responsibility of this committee will be to guide the Section's development of a constitution and to develop the long-term leadership structure.

### Proposal Preparation Committee

Committee chairperson: Derek Gingerich, Associate Professor of Biology, University of Wisconsin-Eau Claire

Committee vice-chairperson: Maryann Herman, Associate Professor of Biology, St. John Fisher College

Committee member: Karen A. Hicks, Associate Professor of Biology, Kenyon College

Committee member: Bryan Thines, Assistant Professor of Biology, University of Puget Sound

Committee member: Jonathan Gilkerson, Assistant Professor of Biology, Shepherd University

### References

1. Slocum, R.D., Scholl, J.D. NSF Support of Research at Primarily Undergraduate Institutions (PUIs). (2013) CUR Quarterly Vol. 34, Number 1
2. Kovarik, M.L. Analytical Chemistry Research at Primarily Undergraduate Institutions: Training Tomorrow's Investigators. (2015) Anal. Methods Vol. 7, 6960-6966
3. Crowe, M., Brakke, D. Assessing the Impact of Undergraduate-Research Experiences on Students: An Overview of Current Literature. (2008) CUR Quarterly Vol. 28, Number 4, 43-50
4. Lopatto, D. Undergraduate Research as a High-Impact Student Experience. (2010) AAC&U PeerReview Vol. 12, Number 2.

### Appendix

The following is a non-exhaustive list of institutions that were represented at the PUI Networking Events at the ASPB national meetings in 2015, 2016, and 2017.

Alfred University

Allegheny College

Amherst College

Azusa Pacific University

Bridgewater State University

Randolph-Macon College

Roanoke College

Saint Martin's University

Saint Michael's College

St. John Fisher College

California State University, Long Beach  
Carnegie Institution for Science  
Castleton University  
Centenary College of Louisiana  
Colby College  
Cold Spring Harbor Laboratory  
CSIR-Indian Inst. of Integrative Medicine  
Dickinson State University  
Eastern Connecticut State University  
Eckerd College  
Elmhurst College  
Emory & Henry College  
Ferris State University  
Florida Southwestern State College  
Franklin College  
Goucher College  
Henan University  
Indiana University Southeast  
Indiana Wesleyan University  
Inst. of Genetics and Devel. Biology, CAS  
International Inst. Of Tropical Agriculture  
Iowa State University  
James Madison University  
Kenyon College  
King Abdullah Univ. of Science & Tech.  
Loyola Marymount University  
Lynchburg College  
Macalester College  
Marshall University  
Max Planck Institute  
Michigan State University  
Missouri Western State University  
New College of Florida  
Norfolk State University  
North Carolina State University  
Northern State University  
Ohio University  
Oklahoma State University  
Oregon State University  
Penn State-Erie

Siena College  
Slippery Rock University  
South Dakota State University  
Southern Univ. Ag. Res. and Ext. Center  
Spring Arbor University  
The College of New Jersey  
The Ohio State University  
The University of West Alabama  
Trinity College  
Trinity University  
University of California at Davis  
University of Central Arkansas  
University of Chicago  
University of Georgia  
University of Illinois Urbana Champaign  
University of Kentucky  
University of Mary Hardin-Baylor  
University of Mary Washington  
University of Minnesota Duluth  
University of Missouri  
University of Nebraska at Kearney  
University of New Hampshire  
University of North Carolina at Charlotte  
University of Northern Colorado  
University of Puget Sound  
University of Southern California  
University of Washington  
University of Wisconsin-Eau Claire  
Virginia State University  
Virginia Wesleyan College  
Wake Forest University  
Washington University  
Wellesley College  
Western Kentucky University  
Western Michigan University  
Western Washington University  
Whitehead Institute  
Whitman College  
Wilkes University