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# ASPB *News*



THE NEWSLETTER OF THE AMERICAN SOCIETY OF PLANT BIOLOGISTS

## President's Letter

### Your ASPB: The Things You Most Value

BY HARRY KLEE  
University of Florida

The results are in from our membership survey. First, I want to acknowledge the work of Shea Keene, a University of Florida graduate student, and her mentor Dr. Thomas Colquhoun, who collected and analyzed all of the data. I also sincerely thank those of you who participated and am taking this opportunity to explain the logic behind this survey.



*Harry Klee*

The survey used a somewhat unorthodox, though scientifically rigorous, method involving rating a complete set of scenarios describing a "product." In this case, the product is ASPB membership. Each scenario consisted of (1) a resource provided to members, (2) a benefit of membership, (3) how that membership is paid for, and (4) how we communicate with our members. You were presented with every possible combi-

nation of the elements in a random order.

Although taking the survey might have seemed tedious, the end product permits objective evaluation of the value that a member places on each and every element without specifically querying about that element directly.

If something is very important to you, it causes you to rate the scenario in which it is presented proportionately higher. The beauty of this method is that it provides an unbiased assessment of value for all elements without directly asking participants to rate each element. We also collected demographic information, revealing some significant differences within the population.

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## ASPB Announces 2018 Award Winners

Each year, ASPB honors excellence in research, education, outreach, and service through its numerous awards to individuals who promote the mission of our Society. We are proud to announce this year's recipients.

### Charles Albert Shull Award



**Nathan Springer**

*University of Minnesota*

Nathan Springer, McKnight Presidential Endowed Professor in the Department of Plant and Microbial Biology at the

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## ASPB Council

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Council members highlighted in blue also serve on the Board of Directors.

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The *ASPB News* is distributed to all ASPB members and is also available online. It is published six times annually in odd-numbered months. Its purposes are to keep membership informed of ASPB activities and to reinforce the value of membership. The *ASPB News* is edited and produced by ASPB staff from material provided by members and other interested parties.

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**PRESIDENT'S LETTER**  
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We undertook this survey of membership, at least in part, to help us focus resources on those things that are most important in attracting members and keeping them engaged with the Society. We must keep in mind that this does *not* mean that we're focused only on the present. But knowing what our community finds most valuable does allow resource prioritization. Most importantly, it gives us guidance on what resources and benefits we can grow to make ASPB even more valuable to the plant science community.

The rank order of each element, listed as an interest value, is shown in the accompanying table. Although the cutoffs are somewhat arbitrary, elements are color coded as positive (green), neutral (pink), or negative (red) interest.

It should come as no surprise that the most valued ASPB resource is our portfolio of journals. Members feel an affinity for the ASPB journals. This is our "brand." The strong support for journals cuts across all demographics. This is a strong endorsement of the job done by publications staff, editorial boards, reviewers, and the Publications Committee. Every penny earned by these journals is returned to the Society to support everything we do. The high regard in which our journals are held not only means that we consider submitting our best work to these journals; it also means that we are more inclined to say yes when asked to review for ASPB journals or serve on an editorial board. This support is vital to maintaining the quality of the products

and distinguishes our journals from those published by for-profit entities.

Ranked Number 2 overall and closely linked is discounts for publication in ASPB-affiliated journals. Publication in any journal is expensive, and a discount is very highly valued by membership. The strongest support for this element came from midcareer scientists—the ones who have to pay the bills.

After journals, the annual Plant Biology meeting is the next most highly valued Society resource. This high ranking is a tribute to ASPB staff, the professional meeting organizers, and the Program Committee (headed by our elected secretary), all working in concert to deliver a very high quality product. Their efforts are widely recognized by members. The high survey ratings of networking opportunities, travel grants, and professional development are intimately tied to the annual meeting, as is discounted registration for ASPB members, students, and members of affiliated societies.

Access to teaching resources is another highly rated resource. Not surprisingly, the strongest support was shown in the age groups most active in teaching (35–54). More surprising was a significant difference between male and female respondents. Women ranked this resource Number 2 of all items in the survey, whereas men were neutral on its value. I have no idea what's going on here, but these resources are extremely valuable to half of our membership. I think we have to seriously look to the Education Committee for ways that we can strengthen teaching and outreach resources.

Science advocacy is ranked by members in an overall positive light. Two topics were included in the survey: advocacy with the U.S. government and support for global issues relevant to plant science. Somewhat surprising to me is that global issues received more support than government advocacy. Perhaps this is a consequence of fully one-third of membership being outside the United States. Despite being the "American" Society of Plant Biologists, we have always emphasized opportunities and needs of the plant science community beyond our borders.

If we look at advocacy support by age group, there is substantially stronger support in the 55–64 age group. I suspect that this is likely an experience gap. The older generation knows about the role of the Science Policy Committee and recognizes the value of our outreach efforts in the nation's capital. This survey indicates that we must be more aggressive in building broader support for these efforts among our younger members. We need to create opportunities to draw them in. A recent example is highlighting our behind-the-scenes advocacy for maintaining favorable tax treatment of student stipends. When I spoke at the Midwest regional meeting in March, most students were unaware of efforts on their behalf. Similarly, many young members may be unaware of our hard work lobbying for increased plant science funding, an effort that was quite successful in the 2018 final budget.

The value of regional meetings was judged as decidedly neutral. Although one demographic, 35- to 44-year-olds, viewed these meetings strongly

positively, other groups were neutral. I found it surprising that the 18–34 group viewed these meetings as neutral. Regional meetings are the first opportunity for many of them to present their work in front of a large, receptive audience and to develop relationships with colleagues at other institutions. Apparently, their mentors see more value in these opportunities than they do. This is our first point of engagement for many of our "clients," and we must find more effective ways to engage them.

The results evaluating the various modes of communications between the Society and members also surprised me. The extreme negative response to social media interaction was particularly enlightening. Everyone knows Facebook has peaked. When grandparents have pages, the kids have already moved on to other platforms. But the strong negative responses to all the social media platforms were consistent across all age groups. The best responses to any mode of communications were neutral. The ASPB website, bimonthly newsletter, and periodic e-mails were most favored, but all were viewed neutrally at best.

I think the message here is, "Don't call me. I'll call you. I get too much chatter, and I don't want more until I'm ready for it." Obviously we need to communicate with members. There are times when we need your support on legislative issues. We have a very low rate of voting in elections and nominating members for awards. How and when we communicate with you is something that will require greater emphasis.

It is disappointing to see a strong separation between

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men and women on the value of mentoring for women and minorities. We need to refine our strong message of inclusion into the fabric of everything we do, promoting the broader goals of our plant biology community. We can and must do better to provide every opportunity for career advancement to all our members.

To me, the take-home message is that we must do everything in our power to strengthen our core business, the journals and the annual meeting. We cannot control the trend to open access, and none of us knows how or when that will impact revenues. We will make every effort to keep our journals' reputations as high as possible for authors and readers alike. The positive attitudes toward activities associated with the annual meeting (networking, professional workshops, and discounts associated with membership) are essential to build community and lifelong membership. We must work to enhance and refresh the annual meeting to build a stronger sense of community. Timely workshops. Job training tools that are relevant to a changing landscape. Career enhancement and teaching tools. This is our opportunity to give young members all that they need to succeed in the workplace and get them to stick with us. Please keep in mind that just because we have completed the survey, we are never done soliciting input on membership. Let us know what we can do to improve our product. Please go to the ASPB blog and post your suggestions in the comments section at the end of the online article (<https://tinyurl.com/yckh6vuf>). ■

**Average Interest Values (InV) for Each Survey Element for the Entire Study Population, Ranked from Highest to Lowest (N = 242)**

Element		InV
	Constant	42
A1	Access to the journals <i>Plant Physiology</i> , <i>The Plant Cell</i> , and <i>Plant Direct</i>	17
B4	Discounts for publishing in ASPB journals	11
A7	Annual ASPB meeting	10
A6	Material for teaching and educational outreach	8
B9	Support for global initiatives relevant to the plant biology community	7
B7	Access to grant opportunities including travel, education, early careers, women, and undergraduates and the Conviron Scholars Program	6
B1	Discounted registration fee for annual conference	6
B3	Networking opportunities at meetings and online	6
A9	ASPB website (as a resource)	5
A2	Professional workshops providing career guidance for students and early career scientists	5
B6	Advocacy with the U.S. government and federal agencies for plant biology concerns, including bimonthly updates on relevant issues	4
C7	Discounted conference registration fee for students	4
C5	Discounted conference registration fee for affiliated societies	4
B2	Access to information on grant opportunities	4
D9	ASPB website (for communication)	3
B8	Mentoring and outreach programs for women and minorities	3
D2	Periodic e-mails	3
D1	Bimonthly newsletter	3
B5	Opportunities to serve the broader plant biology community on committees	2
A8	ASPB section meetings	1
C2	College- or university-paid membership	1
C1	Employer-paid membership	1
C6	Membership fees waived for qualified emeritus members	-1
C8	Grant-funded membership	-1
D7	Plantae website	-2
C3	Mentor-funded membership	-2
A3	Plantae Job Board (features available jobs in the plant science community and discounts for members to post jobs)	-2
A4	Plantae.org, a digital ecosystem for the plant science community	-3
C9	Membership discounts for retirees	-4
A5	Plantae Seminar Series, TapRoot podcast, and other podcasts and webinars	-4
C4	Self-funded membership	-5
D8	Text message alerts	-15
D3	Facebook	-15
D6	Twitter	-15
D5	LinkedIn	-16
D4	Instagram	-20

**ASPB AWARD WINNERS**  
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University of Minnesota, is the 2018 recipient of the Charles Albert Shull Award. Nathan's research has been at the forefront of advancing our understanding of genomic variation and epigenetic inheritance in plants and the contributions of each to natural variation. In particular, he has made seminal research contributions on three fronts: the genetic basis of heterosis, the role of epigenetic phenomena in altering gene expression in maize, and the causes and consequences of genomic structural variation in maize. In addition to being a highly regarded and respected leader in the field of plant genetics and genomics, Nathan has also made outstanding contributions in the areas of teaching and service.



**Charles Reid Barnes**  
**Life Membership Award**

**Deborah Delmer**  
*University of California, Davis*

Deborah (Debby) Delmer has made substantial and significant contributions to plant biology through her research and service to the field. In research, Debby fulfilled a lifelong commitment to understand how plants synthesize cellulose by identifying the cellulose

synthase enzyme and the molecule that primes cellulose synthesis. She was recognized for this and her other discoveries by election to the National Academy of Sciences. Debby also made outstanding contributions in service to plant biology by serving as president of ASPB and as associate director for food security for the Rockefeller Foundation, where she promoted translational science to support crop improvement.



**Jane Shen-Miller**  
*University of California, Los Angeles*

Jane Shen-Miller is one of the Society's longest serving members, having been a continuous member of ASPP/ASPB for 57 years. Jane was born in China to a family of scientists. At a time when very few women were active in plant biology, she contributed to a number of plant-related and biological organizations, but especially to ASPB, which she has always considered her home

society. Jane has pursued a variety of research projects but is perhaps best known for her research into seed dormancy of the sacred lotus (*Nelumbo nucifera*), which has stimulated considerable interest from the general public.



**Charles F. Kettering Award**

**Manajit Hayer-Hartl**  
*Max Planck Institute of Biochemistry*

Manajit Hayer-Hartl is recognized for her insights into chloroplast protein chaperone biology and work to advance many aspects of the photosynthesis field, including solving many of the long-standing and modern challenges associated with Rubisco research. Manajit's work has dramatically

advanced and reinvigorated interest in studying Rubisco through her pioneering achievements in understanding the biogenesis and maintenance of Rubisco activity. These accomplishments have led to the successful assembly of plant Rubisco in *E. coli*, an achievement that had eluded prominent scientists for nearly 50 years.

**Corresponding Membership Award**

Corresponding Member status is conferred by election on the annual ballot. This honor, initially given in 1932, provides life membership and Society publications to distinguished plant biologists outside the United States.



**Hiroo Fukuda**  
*University of Tokyo, Japan*

Hiroo Fukuda is professor in the Department of Biological Sciences, Graduate School of Science at the University of Tokyo, where he has mentored many PhD students and postdocs who are currently principal investigators in plant science throughout the world. He is a leader in plant cell development with a focus on vascular tissue formation. In the 1970s, he established

Zinnia tracheary element cell culture and, later, *Arabidopsis thaliana* as model systems for studying development, and he has used these systems to make groundbreaking contributions to understanding stem cell differentiation, including the roles of phytohormones, programmed cell death, and secondary cell wall formation, also at the molecular level. He has published 170 original research papers, among them 24 in ASPB journals, as well as 40 reviews and 16 book chapters. Many of his contributions are highly cited, and he has received a number of prestigious awards. Hiroo has contributed significantly to the plant science community by serving as editor-in-chief for *Plant and Cell Physiology* and as president of the Japanese Society of Plant Physiologists. He has served as dean and vice president of his university, as well as president of the Botanical Society in Japan, a member of the Science Council of Japan, and program director at the Research Center for Scientific Systems.

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**ASPB AWARD WINNERS**  
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**Thomas J. Higgins**  
*CSIRO Agriculture and Food*

Thomas J. Higgins is retired but still heads an active research group at the Division of Plant Industry of CSIRO in Canberra, Australia, where he has worked for 36 years, the last eight as deputy chief. He has made important contributions in plant biology research, being the first to show  $\alpha$ -amylase transcript induction by gibberellic acid, a report that was published in *Nature* in 1976. This finding guided Thomas's primary research interest, which is to understand the synthesis and regulation of storage proteins in legumes. He also discovered the effect of sulfur stress on protein synthesis in developing alfalfa seeds. Thomas made relevant technological contributions, including developing an efficient transformation method for cowpea (*Vigna unguiculata*), an important legume in Africa, and other legumes. He followed a biotechnological development from its very beginning in a research lab all the way to field trials and distribution to farmers, including dealing with difficulties with patent issues and biosafety authorities. This was the case for the generation of transgenic cowpea expressing Cry1Ab and/or Cry2A and Vip resistant to the cowpea pod borer. For these efforts he has been acknowledged with major honors. Thomas has also dedicated time to support science communication in public and political forums, in particular for decision makers.



**Barry Pogson**  
*Australian National University*

Barry Pogson is deputy director of the ARC Centre of Excellence in Plant Energy Biology of the Australian National University, Canberra, Australia. He has made relevant contributions to the field of chloroplast retrograde signals and their roles in the regulation of plant responses to adverse environments, such as drought, and in identifying the genes for carotenoid synthesis, pigments required for photosynthetic performance during oxidative stress and development. Barry is recognized as a highly cited scientist by the Institute for Scientific Information and by ASPB. He has been a senior editor for *The Plant Cell* for a decade, and he has been acknowledged as an ASPB Top Author. He has been engaged with the international plant community by being involved in the Global Plant Council, the Plant Science Research Network, and Plantae, as well as being a member of the Multinational Arabidopsis Steering Committee.

With these activities Barry has actively contributed to policy and funding issues of relevance to the global plant science community and ASPB in particular, including development of white papers on nutritional enhancement of foods, organization of forums on biofortification and new breeding technologies, and authorship of policy statements on genome editing. Members of his lab have received multiple national and international awards for research, mentoring, and teaching excellence, demonstrating Barry's contributions to support future generations of plant scientists.



**Dennis R. Hoagland Award**

**Jonathan Lynch**  
*Pennsylvania State University*

Jonathan Lynch is recognized for his outstanding work on crop adaptation to drought and nutrient deficiencies. His current work focuses on understanding root phenotypes that can be used to breed crops with better acquisition of water and nutrients. In collaboration with plant breeders, work from his lab has resulted in the generation of new genotypes of bean and soybean with substantially better yield in low-fertility soils of Africa, Asia, and Latin America.



**Early Career Award**

**Gaurav Moghe**  
*Cornell University*

Gaurav Moghe, assistant professor in the Section of Plant Biology at Cornell University, received his PhD in 2013 based on work investigating gene content evolution in plant genomes with Shin-Han Shiu at Michigan State University. Gaurav's postdoctoral work with Robert Last at Michigan State focused on the natural diversity and evolution of plant metabolites, with a particular emphasis on specialized metabolism in nonmodel species. His postdoctoral work resulted in first-author publications in *eLife*, *Plant Physiology*, and *The Plant Cell*. In 2017 he began his own research laboratory at Cornell focused on the predictive, computational, and physiological analysis of the evolution of plant chemical diversity.



### Excellence in Education Award

**Marian D. Quain**  
*CSIR Crops Research Institute*

Marian D. Quain is recognized for her outstanding contributions to plant biology education emphasizing biotechnology at the high school, college, and university levels. Marian has developed outreach activities that “train the trainers” in plant biotechnology,

molecular biology, and genomics. Heads of schools and departments train teachers, who, in turn, engage students. Her efforts have brought biotech concepts and hands-on activities to nearly 7,000 people in just over four years. Her goal is “to use every means possible to bridge the knowledge gap in biotechnology and related aspects of science in Ghana and sub-Saharan Africa.”



### Lawrence Bogorad Award for Excellence in Plant Biology Research

**Alice Barkan**  
*University of Oregon*

Alice Barkan is recognized as a leader for her fundamental contributions to the field of chloroplast biogenesis. Her Photosynthetic Mutant Library, a large collection of Mu transposon-tagged maize mutants, has had a major

impact, enabling identification of key genes involved in chloroplast biogenesis. Examples include transcription, translation, RNA splicing, RNA editing, and RNA stability, in addition to Rubisco assembly, assembly of photosynthetic enzyme complexes, chlorophyll biosynthesis, and protein targeting. The sequence-indexed Mu insertions in the library were characterized by the Mu-Illumina technology developed in the Barkan lab. Alice used combined genetic, proteomic, and RNA-protein co-immunoprecipitation approaches to characterize the proteins mediating chloroplast RNA splicing, and she pioneered ribosome profiling to define translational dynamics during maize leaf development. In collaboration with Ian Small, she worked out a “code” for sequence specificity of pentatricopeptide repeat RNA-binding proteins, which holds the promise of designer RNA-binding proteins to control gene expression.



### Robert Rabson Award

**Rebecca Smith**  
*University of Wisconsin–Madison*

Rebecca Smith is recognized for her important discoveries regarding the cell biology and biochemistry of lignin deposition during plant secondary cell wall formation. The novel insights arising from Rebecca’s research may lead to the capacity for modifying lignin in ways that will improve the digestibility

of biomass by animals or the processing of biomass in biorefineries. This award recognizes Bob Rabson’s steadfast advocacy for plant biology through the creation of funding programs in the Department of Energy for research in basic energy sciences.



### Stephen Hales Prize

**Mary Lou Guerinot**  
*Dartmouth College*

Mary Lou Guerinot, Ronald and Deborah Harris Professor in the Sciences at Dartmouth College, is a world leader in plant nutrition who has provided outstanding service to the plant biology community. Mary Lou has used physiological and genetic approaches to investigate the mobiliza-

tion, transport, and subcellular partitioning of metals by plants, particularly zinc and iron. These are essential nutrients for plants, and their uptake provides the entry point for human nutrition. In addition to her discoveries on metal transport and its relevance to agriculture and human health, Mary Lou has contributed extensively to the plant biology community through numerous editorial and leadership roles, including president of ASPB. She is a dedicated educator, providing undergraduate, postgraduate, and postdoctoral training. Mary Lou’s discoveries, made with her collaborative network, increase our understanding of plant biology, contribute to better farming practice, and offer the possibility of improved human nutrition.

### Fellow of ASPB

Established in 2007 and granted to no more than 0.2% of the current membership, the Fellow of ASPB Award is given in recognition of distinguished and long-term contributions to plant biology and service to the Society by current members in areas that include research, education, mentoring, outreach, and professional and public service. Current members of ASPB who have contributed to the Society for at least 10 years are eligible for nomination. The 2018 Fellow of ASPB class includes the following members:

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**ASPB AWARD WINNERS**  
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**Richard Dixon**  
*University of North Texas*

Rick Dixon is director of the BioDiscovery Institute and distinguished research professor in the Department of Biological Sciences at the University of North Texas. Before moving to Texas, Rick was director of the Plant Biology Division at the Samuel Roberts Noble Foundation from 1988 to 2013. During that time, he built the division into a world-

famous institute for plant research with an outstanding international reputation. The work produced in the division, often under his direct guidance, resulted in major scientific discoveries in plant biochemistry that are still highly influential on current work in the area. He has been on the Thompson Reuters Highly Cited Researchers list multiple times. Over the years, Rick has served ASPB in numerous capacities, culminating in his service as president in 2015–2016 during a period of great financial angst. Rick's leadership was instrumental in putting the Society on a new financial track. As part of his service to the National Academy of Sciences, of which he is a member, Rick has actively participated in the development of consensus documents designed to educate Congress and the public about agriculture and the role of genetic engineering. As a mentor, Rick has been involved in the careers of numerous plant scientists.



**Robert Fischer**  
*University of California, Berkeley*

Bob Fischer, who retired in 2017 from the University of California, Berkeley, made significant discoveries in the mechanism that underlies gene imprinting in plants. In particular, his lab had identified DEMETER, a DNA glycosylase that excises methylcytosine from DNA and plays an essential role in the development of endosperm. Bob has made significant contributions to

ASPB, serving on the founding editorial board of *The Plant Cell* and on the Publications Committee. Bob has mentored many students and postdoctoral researchers who have gone on to have successful careers in research. He also served as the chair of the Department of Plant and Microbial Biology at the University of California, Berkeley.



**Jean Greenberg**  
*University of Chicago*

Jean Greenberg is highly respected for her work on plant–pathogen interactions. Her lab's earlier work on ACCELERATED CELL DEATH6 (ACD6) is particularly well known, but she has also contributed substantially to our understanding of signaling via salicylic acid in plants, facilitated by the production of azelaic acid. She has served as editor of *Plant Physiology*

and *The Plant Cell* for a combined total of 18 years. In addition to serving ASPB, Jean also has an extensive and impressive record of service to many different institutions, groups, and organizations important to plant biology—for example, as an editor with many other top journals, a panelist on grant review panels, and a member of university committees. She has also served as a mentor to many young scientists, including students, postdocs, and visitors to her lab. Many of these students and postdocs have gone on to great success in diverse areas.



**Maureen McCann**  
*Purdue University*

Maureen McCann is a leading scientist in the area of the biochemistry of plant cell walls. She currently serves as director of the Center for Direct Catalytic Conversion of Biomass to Biofuel, which is funded by a large grant from the Department of Energy. Her work is highly cited, and she was coauthor of the chapter on plant cell walls in the definitive textbook

*Biochemistry & Molecular Biology of Plants*, copublished by ASPB and Wiley-Blackwell. Maureen has been involved in organizing several international meetings related to cell walls and energy. She has also made numerous and important contributions directly to ASPB. She served on ASPB's Science Policy Committee and currently is a member of the Board of Directors. She was a monitoring editor for *Plant Physiology* from 2008 to 2013 and coordinated the Focus Issue on Plant Cell Walls.





**Neil Olszewski**  
*University of Minnesota*

Neil Olszewski has made significant contributions to our understanding of the regulation of plant development. In a screen for genes that negatively regulate gibberellin responses, his research group discovered *SPINDLY*. *SPINDLY* encodes an enzyme that posttranslationally glycosylates nuclear and cytosolic proteins. His lab went on to publish a series of papers identifying

roles of *SPINDLY* in multiple developmental and physiological processes including cytokinin signaling and the circadian clock. In service to ASPB, Neil was a member and is now chair of the Publications Committee. As chair of this committee, he was instrumental in the recent launch of *Plant Direct*, a sound science journal copublished by ASPB, the Society for Experimental Biology, and Wiley.



**Neelima Sinha**  
*University of California, Davis*

Neelima Sinha is an eminent plant biologist who has made a substantial contribution to our understanding of the evolution of the development of leaf shape. With her many highly cited publications, her work is at the forefront of the plant evo-devo area in general. Her contributions to ASPB include current service as a monitoring editor of *Plant Physiology* and member

of the ASPB Minority Affairs Committee. In the past, Neelima was a member of several ASPB award committees. She has been an exceptionally talented mentor and has trained many outstanding plant biologists who became independent principal investigators. She also served as an editor for the journals *Plant Molecular Biology*, *Molecular Biology and Evolution*, and *Current Opinion in Plant Biology* and is currently specialty chief editor for *Frontiers in Plant Development and Evolution*.

Congratulations to all the 2018 awardees, and many thanks to their nominators and the committees who evaluated nominees for each award. ■

## ASPB Members Elected Fellows of the Royal Society

Congratulations to Rick, Sophien, and Cathie, and to all of the 2018 Fellows of the Royal Society



**Rick Dixon**  
*Distinguished Research Professor, Department of Biological Sciences, University of North Texas*



**Sophien Kamoun**  
*Senior Scientist, The Sainsbury Laboratory*



**Cathie Martin**  
*Project Leader, Department of Metabolic Biology, John Innes Centre*

## 2018 ASPB Election Results

Many thanks to those members who took the time to vote this spring, and hearty congratulations to our new officers! They will begin their service to ASPB on October 1, 2018. Look for more information about our new leaders in the next issue of the *ASPB News*.

### Incoming President-elect

**Judy Callis**  
*University of California, Davis*

### Incoming Secretary-elect

**Wayne Parrott**  
*University of Georgia*

Congratulations, too, to the newly elected ASPB Corresponding Members, Hiroo Fukuda, Thomas J. Higgins, and Barry Pogson!



Sharon Gray

# ASPB's 2018 Sharon Gray Women's Young Investigator Travel Award Winners Announced

Each year, ASPB, through its Women in Plant Biology Committee, awards travel grants to attend the Plant Biology annual meeting to early career women investigators. Through a donation from the Sharon Gray Foundation (<https://sharongrayfoundation.org>), the 2018–2020 Women's Young Investigator Travel Award (WYITA) will be named for Sharon, who had a passion for and commitment to mentoring women in science. By naming the award for Sharon, we honor her contributions and seek to continue her legacy.

The goal of the competitive process that underpins the WYITA program is to increase attendance of young women investigators at the annual meeting by providing travel funds. Applications are open to scientists who are within the first five years of their appointment in academic faculty-level positions, government research positions, or industry research scientist positions, as well as experienced post-docs. Selection is based on (1) the science and quality of the abstract submitted relative to the amount of time as an early career investigator, (2) a statement describing why travel should be supported, and (3) financial need.

Seven women were selected this year, and each will receive a \$1,000 award to support their attendance at Plant Biology 2018 in Montreal. Moreover, several of this year's awardees have been selected by the ASPB Program Committee to present their research in talks during concurrent symposia. ■

## Congratulations to all of the 2018 WYITA winners!



**Li-Qing Chen**  
*University of Illinois,  
Urbana-Champaign*

SWEET Sucrose Transporters for Phloem Translocation



**Nicky Creux**  
*University of California,  
Davis*

The Circadian Clock and Environmental Cues Coordinate Flower Maturation and Pollinator Visits in Sunflower



**Thu Thuy T. Dang**  
*John Innes Centre,  
Norwich, U.K.*

Exploring and Harnessing Alkaloid Biosynthesis in the Omics Era: From Opium Poppy to Indian Snakeroot and Beyond



**Laura de Lorenzo**  
*University of Kentucky,  
Lexington*

Alternative Polyadenylation in Plants: New Insights from Global Analyses



**Laura Dixon**  
*John Innes Centre,  
Norwich, U.K.*

Increasing the Robustness of Wheat Spike Development to Unpredictable Temperature Patterns



**Malia Gehan**  
*Donald Danforth Plant  
Science Center, St. Louis,  
Missouri*

PlantCV Tools for Hyperspectral Imaging of Abiotic Stress



**Magdalena Julkowska**  
*King Abdullah University of Science  
and Technology, Thuwal, Saudi Arabia*

MVApp—Multivariate Analysis Pipeline for Streamlining the Identification of New Plant Traits with Significant Contribution to Stress Tolerance

# Plant Biology 2018

July 14–18, 2018, Montreal, Canada

<https://plantbiology.aspb.org>

## Plant Biology 2018 Is Almost Here!

It's not too late to register (<https://tinyurl.com/y9u37xeo>) and submit an abstract to be included in the app, and it's definitely time to get excited about the premier plant biology meeting in beautiful, historic Montreal.

### Last-Minute Details

**Not too late:** July 6, 2018, is the deadline for abstract submissions to be in the Plant Biology 2018 app. You can register and submit your abstract at <https://tinyurl.com/y9u37xeo>.

### Get connected on Plantae:

The Plant Biology 2018 meeting network on Plantae (<https://tinyurl.com/ydfou83q>) has articles about Montreal (<https://tinyurl.com/y7n3rl2g>), the major symposia (<https://tinyurl.com/ybqbsu3m>), and more.

**Book child care:** Did you see the mention of ASPB in the recent PNAS opinion piece "How to Tackle the Childcare-Conference Conundrum"

(<https://tinyurl.com/ybpnoc8s>)?

Affordable child care is essential for any parent to better meet their personal and professional responsibilities when attending meetings. At Plant Biology 2018, attendees who are traveling with their families will be able to make the most of conference networking opportunities and to enjoy Montreal to the fullest. You can sign up with your registration.

**Watch your e-mails:** Upcoming e-mails will include instructions for downloading the conference app, a call for volunteers, and additional conference details.

### Location, Location

**Cool city:** Starting to think about packing? Sorry, Austin—July is a great time to head northward. You'll find more temperate weather in Montreal during the meeting than you would in most U.S. cities, with an average high of 79°F (26°C) and an average low of 63°F (17°C).

### Put on your walking shoes:

Montreal is a highly walkable city with an extensive public transportation network ([aspb.alamontreal.com/travel-information/](http://aspb.alamontreal.com/travel-information/)) as well as North America's oldest bicycle-sharing service, Bixi (<https://montreal.bixi.com/en/how-it-works>). Taxi stands are also abundant near downtown hotels.

**Well-sited site:** The Palais des Congrès is centrally located between the commercial downtown and Old Montreal, near Place-d'Armes station on the Metro Orange Line and half a mile from Place-des-Arts on the Green Line. Just keep in mind one geographic quirk: "north" on some Montreal maps is actually close to geographic west, so follow your map rather than the sun.

For more on the food, sites to see, and culture, check out our blog post on Plantae (<https://tinyurl.com/y7n3rl2g>), and don't forget to download your coupon book for Montreal attractions—click on the "exclusive offers" link at the Montreal information page ([aspb.alamontreal.com/](http://aspb.alamontreal.com/)) on the Plant Biology 2018 website. ■



For updates on Plant Biology 2018, join the Plantae Network for ASPB conferences (<https://tinyurl.com/ydfou83q>), follow #plantbio18 on Twitter, and keep an eye on the program at <https://plantbiology.aspb.org>.

Don't forget to register now at <https://tinyurl.com/y9u37xeo>!

# Judy Callis Is UC Davis's Top Teacher

This article is adapted from one published by Andy Fell on April 3, 2018, in UC Davis's University News (<https://tinyurl.com/yb4b984k>). It appears here with permission from UC Davis.

For ASPB member Judy Callis, professor and vice chair of the University of California, Davis, Department of Molecular and Cellular Biology in the College of Biological Sciences, teaching is about helping students make connections among the biochemistry they learn in her lectures, what they have learned in other classes, and their own life experiences. “I get excited about teaching because I like to excite people about the subject matter—I love it when principles and concepts click with students and all of the sudden they understand something they’ve struggled with,” Judy said.

Those connections led to Judy being awarded the UC Davis Prize for Undergraduate Teaching and Scholarly Achievement. The \$45,000 prize is funded by gifts managed by the UC Davis Foundation.

“Professor Callis has that rare ability to bring out the very best in her students and to inspire them to go beyond what they previously thought were their limits. As an instructor, she is uncommonly connected with her students, guiding their thought processes and inspiring confidence in their academic abilities,” said Mark Winey, dean of the College of Biological Sciences.

Judy has been teaching biochemistry at UC Davis, including various incarnations of BIS 103, a major lower-division course in biochemistry, since joining the faculty in 1989.



Judy Callis in her lab, where she studies the ubiquitin protein degradation system in plants.

She cited colleagues in the Department of Molecular and Cellular Biology, especially the late Eric E. Conn, who died in September 2017, and J. Clark Lagarias, as influencing her teaching style. “I learned from them respect for students and for the learning process,” she said. “Students are partners in the learning process, and it’s our responsibility to guide them in that path. It’s very much the culture of our department.”

## Grasping Principles and Concepts

BIS 103 is part of a series of classes taken by all undergraduates in the College of Biological Sciences and many other students as well. With up to 350 students

at a time, it’s stuffed with complex biochemical pathways that students can find daunting. To overcome this, Judy encourages students to look at the functions of pathways, how they connect to other pathways, and how these relate to their everyday experiences.

“Like eating sugar, what’s the big deal about fructose? Thinking about things that they eat or about how they exercise at a biochemical level, I think that’s really fun,” she said. “I want them to focus on common principles and concepts so that they can make predictions based on what they know.”

Students praise her approach in their evaluations. “Her reader for the class is not only packed with information but greatly appreciated by the students. It

is a way for students to focus on explanations rather than chemical structures,” wrote one student.

It’s like trying to read *Don Quixote* in Spanish, Judy said. Learning a bit of Spanish will help you read the novel; reading the novel helps you learn more Spanish. “It’s the same with biochemistry; there’s a certain vocabulary, and once you learn it you can have fun with it,” she said. In fact, Judy started as a languages major—although in Russian, not Spanish, at Macalester College in St. Paul, Minnesota. But an introductory course in biology drew her into science instead. “It was unusual in that we spent a lot of time thinking about how to do science, how do we ask questions, how do we solve problems, rather than memorizing information,” she said. “I liked it a lot, and it made me very interested in doing science.”

Judy transferred to Washington University in St. Louis, where she worked in a plant biology laboratory and graduated with a bachelor’s degree in biology. She then worked as a lab technician at the University of Wisconsin–Madison before earning a master’s in botany from the University of Illinois at Urbana–Champaign. By that time, her undergraduate mentor, Virginia Walbot, had moved to Stanford University and invited Judy to come west to study for her PhD. “I think she was very important as a mentor, because she had confidence that I would be successful and figure it out. She let

## Self-Reflection: A Leadership and Management Series by and for Early-Career Plant Scientists

A career in science is full of rewards and challenges. Students and postdocs are expected to perform stellar research and publish in prestigious journals, and in parallel find time to learn to be effective communicators, writers, and managers, all without certainty about the next step in their career trajectory.

With the goal of crowdsourcing career development ideas and resources, *Plantae* Fellow Amey Redkar (an EMBO fellow at the Sainsbury Laboratory, Norwich, U.K.) has initiated the “Self-Reflection” blog series (<https://tinyurl.com/yas4rvs3>) on career development, written by and for early-career plant scientists. Topics

so far have included “Preparing an impressive CV” by Amey, “The transition from postdoc to PI” by Amanda Rasmussen, “Welcome to committee work” by Aaron Rashotte, “Science blogging” by Arif Ashraf, “Develop a database for lab rules and protocols” by Alyssa Preiser, and “Preparing and surviving academic interviews”

by Katie Rogers. Upcoming topics include advice about starting your job search, negotiation skills, mentoring, and balancing professional and personal life. You can connect with Amey and all of the series authors online through the *Plantae* community. ■

you have as much independence as you wanted,” Judy said. It was when Judy finished her doctorate and joined Rick Vierstra’s lab at UW Madison for postdoctoral research that she started working on ubiquitin, which has occupied her for the past 31 years.

### Cellular Garbage Disposal

Discovered by Gideon Goldstein in 1975, ubiquitin is so named because it is everywhere. The small protein is found in almost all tissues in animals, plants, and fungi. Initially, ubiquitin seemed to be a cellular “sale sticker,” Judy said. It’s attached to proteins that are due to be hauled away for disposal within the cell. But it turns out that ubiquitin does far more than tag items for destruction. It is selective, tagging some items but not others. It can attach in different ways and form chains that tag proteins for different pathways. Rather than a sale sticker, it is more like a programmable RFID tag attached to a parcel in a warehouse and di-

recting it where to go. “Originally people thought that ubiquitin was there to take out the garbage, and I thought that was interesting, the specificity of it,” Judy said. “But it turns out to be way more complex than we originally thought.”

The 2004 Nobel Prize in chemistry was awarded to Avram Hershko, Aaron Ciechanover, and Irwin Rose for discovering the ubiquitin protein degradation system. Judy studies ubiquitin pathways using the model plant *Arabidopsis*. More than 10 percent of the genes in this small plant are related to ubiquitin, adding to or removing it from proteins and creating or reading what is now called the “ubiquitin code,” she said. Ubiquitin is particularly important in shaping plant growth. It regulates the “master regulators” that control how cells respond to hormones such as auxin that shape how stems, roots, leaves, and flowers grow.

“Professor Callis is the leader in understanding how these

hormones regulate protein degradation,” wrote Jodi Nunnari and Joanne Engebrecht, chair and vice chair, respectively, of the Department of Molecular and Cellular Biology, in nominating Judy for the award. “Her work has been instrumental in elucidating the players in ubiquitin pathways, leading to many unexpected discoveries and opening up new fields of study.” As Judy noted, “It turns out that what we thought was a very narrow process is involved in everything.”

### Encouraging Classroom Engagement

Reviews of Judy’s teaching describe her as an exemplary, dedicated, and hardworking instructor who creates a respectful classroom climate that encourages engagement. In addition to BIS 103, Judy also teaches smaller classes, including a seminar in biochemistry. With a group of fewer than 20 students, she explores a topic from beginning to end. This winter quarter, the class learned

about the “tumor suppressor” gene P53 from its discovery in 1979 to clinical applications. P53 is, naturally, regulated by ubiquitin and is the focus of human clinical trials for a range of cancers.

Among her professional service activities, Judy served on the editorial boards of *Plant Physiology* and *The Plant Cell* and on a number of ASPB committees, including service as Society secretary from 2009 to 2011. She has served on numerous review panels and boards for NSF, other agencies, and professional societies. She is a fellow of AAAS and ASPB and served on the AAAS Council from 2013 to 2016.

After almost 30 years, Judy said she still enjoys teaching a large lecture class. “I feel like it’s important that students get a good experience at that level, because I can influence what major they decide to go to at that point,” she said. “I think about the impact that introductory bio class had on me.” ■

# IIGB Plant Biologists Dominate at the Western Section Conference

BY AURELIA R. ESPINOZA  
University of California, Riverside

The University of California, Riverside, Department of Botany & Plant Sciences swept multiple graduate and undergraduate award categories at the most recent ASPB Western Section Conference on Saturday, February 3, 2018.

Pablo Martinez (Carolyn Rasmussen lab) was awarded Best Graduate Student Talk for his work using a single-molecule approach to determine how the microtubule-binding protein TANGLED influences the dynamics of cell division. Danielle Garceau (Linda Walling lab) received an Honorary Mention for her research using RNA sequencing to elucidate cassava's defense signaling to identify its whitefly resistance genes.



Left to right: Irma Ortiz, Claudia Sepulveda, Pablo Martinez, Jocelyne Aranda, and Danielle Garceau.

Irma Ortiz (Walling lab) brought home the Best Graduate Student Poster Award for her use of proteomics-based technologies to characterize the function of LAP-A to control wound signal-

ing in tomato. In a tie for Best Undergraduate Poster Award, Jocelyne Aranda (Rasmussen lab) was recognized for her use of mathematical cell-shape modeling to determine whether a mutant

with defects in division plane orientation initiates divisions in predicted locations, and Claudia Sepulveda (David Nelson lab) was honored for her research using gene editing technology to characterize the function of KUF1, a gene upregulated by the smoke-derived germination stimulants karrikins.

Drs. Rasmussen, Walling, and Nelson are all members of UC Riverside's Center for Plant Cell Biology in the Institute for Integrative Genome Biology (IIGB), which addresses significant questions in plant biology on a molecular level to meet global challenges such as improved nutrition, increased crop yield, resistance to pests, and sustainable biofuels. ■



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We are pleased to announce that ASPB has made Teaching Tools in Plant Biology available without a subscription. You can find the articles (including PowerPoint slides, Lecture Notes, and Teaching Guides) in the Teaching Tools in Plant Biology network on the Plantae website (<https://tinyurl.com/yabxx5>).

Interested in contributing to this series? Contact [mwilliams@aspb.org](mailto:mwilliams@aspb.org) to discuss your idea!

# ASPB: Evolving in a Digital Age

BY THE ASPB DIGITAL TEAM

Some of you may remember when academic correspondence took place by post. Authors sent manuscripts by mail to journals, which passed them on to reviewers, whose comments were ultimately returned to the authors, who then started the process again with a revised manuscript. ASPB published annually a printed membership directory that was worth its weight in gold in the pre-Internet age for anyone trying to find a reviewer, speaker, or potential collaborator or the address and phone number of a colleague.

Fast forward to today, when the Internet connects us and all of our activities, facilitates our search for information, and supports real-time conversations, networking, and collaborations. Our new digital world also makes possible new ways of curating, packaging, and creating resources, information, and experiences. This transition has crept up on us, and one of the biggest challenges for professional societies like ASPB is to transform our approach to meet the needs of a changing world, including those of a whole new generation of digital natives, and to take full advantage of the opportunities presented by new digital capabilities.

The digital age is not just about taking what we have always done and putting it online. It is a paradigm shift for how we operate as an organization, necessitating a change in the behaviors that affect how the community we serve accesses information and interacts with others. These are the goals and challenges being addressed by ASPB's digital strategy team.

## Bringing Scientists Together to Learn and Collaborate

From its founding, ASPB has served as a catalyst to bring plant scientists together. Today, meetings and conferences happen both in person and online, sometimes combining the two.

As an example, during the recent Phenome meeting, discussions and interactions happened online during and after the actual event, and supplemental information was made available online through *Plantae*. A variety of digital channels, including social networks, e-mail, online meeting tools, community platforms, and websites, are used in combination to enrich and extend the conference experience.

Many thousands of individuals in the plant science community use open social networks like Facebook, LinkedIn, and Twitter to disseminate, discuss, and get feedback on their work, stay up-to-date with research and people, find new opportunities, participate in grassroots activities, and learn new things. Open social networks are also integral to ASPB's efforts to reach a broader group of people for outreach, to make new connections, and to increase the visibility

of plant science research, education, and policy.

Online platforms with a focused community, like *Plantae* or AAAS's *Trellis*, are also needed at a time when open social networks can be overwhelming or hostile and when data privacy is a big concern. Creating a positive and collaborative experience that fosters a sense of community and belonging, both online and offline, is extremely important for ASPB and the broader plant science community, so the need for a focused, transparent, and secure platform is becoming more and more critical.

## Publishing and Disseminating Research

One of ASPB's core activities is as a scientific publisher. Digital publication tools have provided enormous benefits to the scientific community. In the past few years, the ASPB journals have migrated to a new manuscript submission and review platform called *eJournalPress*. This platform allows authors to speedily upload their manuscripts, editors to communicate with reviewers, and the journals to track these activities in real time, greatly accelerating the publishing process. Similarly, advances in online journal hosting have led to ASPB adopting an online-only format for our journals, saving authors costs and accelerat-

ing the dissemination of research. Through all of this, the digital age gives us the ability to create more depth and context by connecting published research with direct access to authors, associated data, images, preprints, and related articles. ASPB works tirelessly to ensure that we transmit the benefits of these technological innovations to our authors and readers.

## Challenges

### Generational Differences

These new technologies not only present opportunities but raise challenges as well. There are significant generational differences that affect how ASPB interacts with and supports the needs of the entire plant science community. There is no one-size-fits-all approach, and it is important that we keep that in mind as we evolve to ensure that we are supporting all of our members in the most meaningful way.

### Data Privacy and Security

Another significant challenge faced by all organizations is how to protect the data and privacy of our members and communities. How do we foster online collaboration yet ensure a safe and secure environment? As a professional society, our mission is to support the plant science community, which includes being a steward for your information and the data you provide. Preserving data privacy and security is a huge responsibility, particularly in an age in which misuse of data seems

*continued on page 17*

# Plantae Wins 2018 Excellence in New Communications Award

ASPB is pleased to announce that Plantae (<https://plantae.org/>), the online home for the global plant science community, has been awarded an Excellence in New Communications Award from the Society for New Communications Research (SNCR) of the Conference Board (<https://www.conference-board.org/SNCR/>) in the Communications, Communities, and Collaboration category—nonprofit division. This prestigious award honors organizations for their exemplary use of digital, mobile, and social media. Read the full press release at <https://tinyurl.com/y79h3uv2>.

## Bringing Plant Scientists Together to Address Vital Societal Challenges

Urgent global challenges, such as food security and climate change, require scientists to work effectively with colleagues from diverse disciplinary, workplace, geographic, and cultural backgrounds and establish strong connections between broader communities and scientific discoveries. Given these drivers and their potential impact on vital societal challenges, ASPB launched the Plantae online community in 2017 as part of an innovative online strategy to better support the evolving global plant science community.

## What Is the Plantae Community, and Who Is a Member?

The Plantae community is open to anyone who is working in or interested in the plant sciences, regard-

less of whether they are an ASPB member, and with no restrictions related to discipline, background, career phase, or geographic location. The Plantae initiative is intended to unite the plant science community by fostering collaborations, providing access to a rapidly growing global network of more than 8,000 plant science professionals, and offering tools for groups and individuals to use in ways that help them best achieve their goals.

## Why Not Just Use Facebook or Twitter?

Many thousands of individuals in the plant science community use open social networks like Facebook, LinkedIn, and Twitter. Open social networks are meant to reach a broader audience and can be useful to increase the visibility of plant science in general. However, focused online communities, like Plantae, are also needed at a time when open social networks can be overwhelming or hostile, and when data privacy is a big concern.



# Plantae

## The Online Home For The Global Plant Science Community

### Question: What Makes Plantae Special?

Answer: The people. The plant science community is made up of extremely passionate and dedicated individuals who work very hard to make a difference and to address critical societal challenges across the globe. We have made it our mission to support the community in every way we can. Our approach is to

- **listen** to understand what our members need and make sure they feel valued
- **provide** opportunities to develop skills and gain experience
- **help** individuals create a sense of identity and increase their visibility within the community
- **give** the tools, technology, and assistance for people and groups to facilitate their own work
- **foster** connections and relationships by providing exposure and access to a broad network of people.

### How Did We Get Here?

Most of our momentum and success with Plantae is due not only to the hardworking ASPB team, but to our dedicated volunteers. Within the past 18 months, we have launched or evolved several programs that have contributed to the Plantae effort. The Plantae Fellows are a group of more than 30 early- to mid-career scientists who contribute to the effort by curating and writing content for What We're Reading This Week, contributing blog posts, creating series around important topics, and helping other community members find their footing.

The ASPB Convivon Scholars (<https://tinyurl.com/y9t4agal>) are a group of 20 students who participated in a six-month online learning experience in the Plantae community. Not only did they attain skills necessary for a successful career, but they also forged lasting relationships with each other and their mentors and contributed infographics, videos, and written content to the community. Many of them continue to be very active in Plantae.

Through community volunteers, Plantae launched an extremely successful podcast—The TapRoot (<https://plantae.org/podcasts/the-taproot/>)—that focuses on not only the science, but important challenges facing scientists today.

If you would like to learn more about these initiatives, have ideas or suggestions, or want to learn more about Plantae in general, please contact Susan Cato at [scato@aspb.org](mailto:scato@aspb.org). ■





# Facing Challenges: The TapRoot Podcasts Dig Even Deeper in Season 2

In Season 1 of The TapRoot, cohosts Liz Haswell and Ivan Baxter dug beneath the surface of a manuscript to understand how scientific publications in plant biology are made. But manuscripts don't include methods for managing people, maintaining work-life balance, or staying motivated—yet these things are just as important to success in science.

In Season 2, Liz and Ivan have conversations with six guests who have succeeded despite facing huge challenges—challenges like resisting the pressure to relocate, taking time off to raise a family, facing gender discrimination, recovering from big mistakes, and being targeted by antiscience activists. These guests are Guillaume Lobet, Elizabeth “Toby” Kellogg, Kevin Folta, Gina Baucom, Ross Sozzani, and Jeff Long.

We hope that listeners who are struggling with these or any other challenges will realize that they are



TapRoot cohosts Ivan Baxter and Liz Haswell



Guillaume Lobet

not alone. If things are hard, that doesn't mean you're not meant to be a scientist! In fact, few scientific careers have a smooth trajectory—we all experience turbulence at one time or another.

The first episode, “Phenotyping Roots Without Pulling Up Your Own,” with Guillaume Lobet, was released on March 27. In this episode, Ivan and Liz talk with Guillaume, assistant professor at the Forschungszentrum Jülich and the Université Catholique de

Louvain (UCL). He was a graduate student at UCL and took three postdoctoral positions in Germany and Belgium before returning and starting his faculty position in 2016. His work focuses on development of image analysis and phenotyping tools to help researchers improve their scientific workflow.

You can read more about this episode and listen directly on Plantae by visiting <https://plantae.org/podcasts> or subscribe via iTunes or Stitcher. ■

TapRoot is now a finalist for the Association Media & Publishing's 2018 EXCEL Award in the category of Digital Media-Podcast.

The EXCEL Awards (<https://www.siaa.net/annual/Excel-Awards>) recognize excellence and leadership in nonprofit association media, publishing, marketing, and communications.

## EVOLVING IN A DIGITAL AGE *continued from page 15*

to be a daily occurrence. Through Plantae, our focused online community, we provide a safe, fertile space for sharing, collaboration, networking, and discussions.

### Let's Talk About These Things!

These are just a few of the things that the ASPB Digital Team is

working on. As part of our commitment to inclusivity, transparency, and responsiveness to the community's needs, we will be digging deeper into several topics that affect you, including the following:

- keeping you and your data secure
- keeping that conversation going: social networks and online communities
- publishing in a digital world: opportunities for greater understanding, knowledge, and reach
- communicating in a digital world: no one size fits all
- promoting online learning, collaborations, and working groups
- navigating your career in a digital age.

An important part of our digital strategy is to listen to what you, the community we serve, value and need. All lines are open, and we value your input and suggestions and invite you be part of the journey as we continue to develop our digital strategy. Feel free to send an e-mail to Susan Cato at [scato@aspb.org](mailto:scato@aspb.org). ■

# ASPB Conviron Scholars Program Highlights

## Preparing Students for a Successful Career in Plant Science

BY JUNIPER KISS  
ASPB Conviron Scholar

The ASPB Conviron Scholars program serves as a foundation for a career in plant science. The program consists of activities in four major themes:

1. career planning
2. writing and communications
3. leadership
4. effective presentations.

Within each theme, participants read collections of articles, attend webinars, participate in discussions and critiques, and complete assignments within a private Plantae network. The assignments require scholars to learn new skills in writing, designing, presenting, and communicating and to bring creative ideas into the motivational environment.

For the inaugural 2017 program, 21 students were chosen to participate from around the world, and 20 students graduated from the program. We asked six of them to talk about their experiences.

### Elizabeth Feldeverd

Elizabeth Feldeverd, an MS student at the University of Hawaii at Manoa Department of Molecular Biology and Bioengineering, researches the role of protein disulphide isomerase in *Arabidopsis thaliana*.

She was mentored by Jill Deikman of Monsanto, of whom she wrote, “Not only has she provided specific feedback on my CV, she has provided insight into industry and academic research.



Elizabeth Feldeverd

Jill and I are still in touch and have regular mentoring sessions scheduled.”

Of the program, Elizabeth commented, “I think the program being virtual, that is, hosted online, made it possible to connect and collaborate with people with whom I otherwise would not. It’s been a unique opportunity to network with peers and mentors across a spectrum of plant science roles. I’m inspired by the work others shared and will take away from the program new ideas and projects.”

### Lucas Vanhaelewyn

Lucas Vanhaelewyn, a PhD student at Ghent University in Belgium, was also mentored by Jill Deikman of Monsanto. He researches the morphological effects of ultraviolet B light on plants in controlled laboratory conditions.



Lucas Vanhaelewyn

As part of the program, he organized an outreach event at the Ghent Light Festival showing how a plant’s inflorescence stem bends to different wavelengths of the light spectra. About 60,000 people visited the university’s exhibitions, and Lucas’s event reached an estimated 7,000 to 10,000 people.

“The Scholars Program provides a large degree of freedom and pushes you to think out of the box. The program is largely designed to provide a set of information, but in addition, it gives you insights on how to address people, and it connects you with new and very interesting people you might actually never have met without this program. This program is enabling you to push your limits in the way you find most valuable.”

As part of his informational interview, Lucas spoke with Marc



Virginia Markham

Van Montagu, a pioneer in plant molecular biology who is well known for the discovery of the Ti plasmid (with Jeff Schell) and the inventor of the *Agrobacterium tumefaciens* transformation technology, which is now used globally as a method to produce genetically engineered plants.

### Virginia Markham

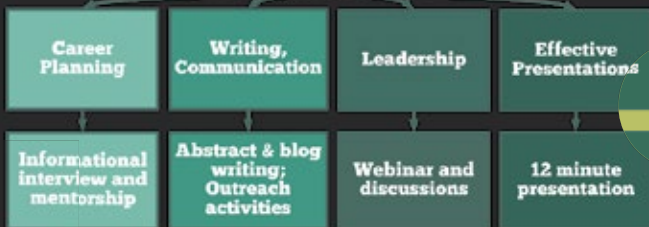
Virginia Markham is a PhD student at the University of California, Berkeley, and the Department of Energy Joint Genome Institute. Her research focuses on evolution and gene fate in a polyploid grass that is a model for biofuel and cereal crops. She is part of the CLEAR (Communication, Literacy, and Education in Agricultural Research) program, which brings a booth to local farmers markets in Berkeley and Oakland to dis-

*continued on page 20*



# ASPB Scholars Program

sponsored by CONVIRON



## Plantae Network

A Plantae Network is set up for the Scholars with tasks, discussions, events, and a large collection of articles and resources.



The program is delivered through Plantae.



2017-2018  
21 scholars selected  
20 scholars graduated

"The Convicon scholars program is very inspirational and it extends my network with amazing people. I am grateful for the opportunity to be part of this program and I strongly recommend it for young scientists."

Lucas Vanhaelewyn  
Ghent University

## Webinars

**Career Planning:** Distinguished scientists discuss their career paths in academia, industry, and start-ups.

Additional webinars in:  
- writing skills,  
- presentations and  
- panel discussion of leadership



Q&A and networking

"My participation in the program has truly made me reconsider my options for my future career. I am very grateful to the organisers for all the work and effort put in to produce excellent resources to learn from outside my university classroom!"

Mie Monti  
University of Cambridge

## Writing Assignments



Writing is essential for scientists - scholars had to write:

- a blog article,
- an abstract, and
- conduct an informational interview.

Read examples on Plantae!

### Informational interviews examples

Interview with the father of modern plant biotechnology - Prof. Marc Van Montagu by Lucas Vanhaelewyn

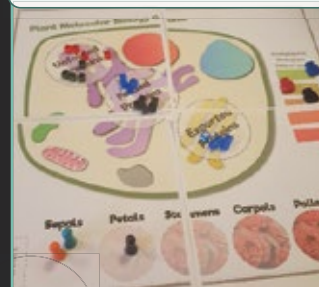
Interview with the CEO of FlanaGen, a molecular biology start-up by Sterling Field

## Creative, independent projects

### Independent projects

The goal is to motivate Scholars to share their knowledge to a larger audience & to support ASPB's efforts to build a plant science resource library.

**Inflorescence: a plant molecular biology board game** by Elizabeth Feldever



### Mentoring

Scholars are paired up with mentors according to their field of interest.

Scholars get the opportunity to make the most of their mentorship and reflect on their experience at the end of the program.



"My mentor is Professor Judy Callis at University of California-Davis. I learned from her that I need to focus on important questions and find something that really truly interests me. Besides the insightful suggestions on preparing for a post-doc position, she helped review my CV and offered constructive feedback."

Xinyu Fu  
Iowa State University



### Outreach

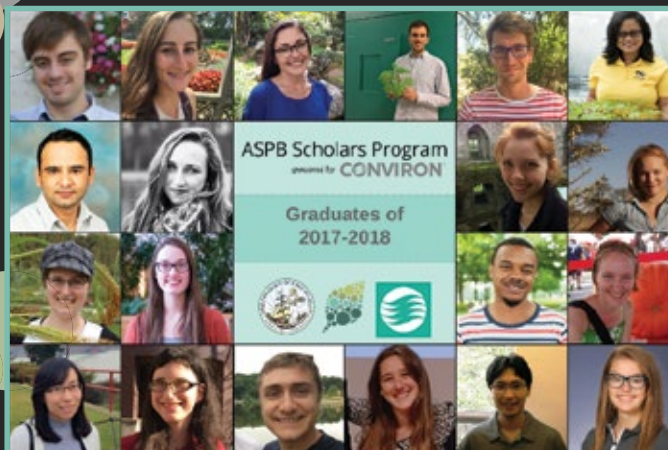
By organising or attending an outreach event, students get to communicate their passion and knowledge to non-scientists.

Students volunteered for example at ASBP Education & Outreach booths, put together problem-solving scenarios and many more fun events!



### Outreach events, volunteering

Plant Science Outreach at the Muse, Knoxville's hands on Science Museum by Sterling Field



INFOGRAPH CREATED BY JUNIPER KISS

## CONVIRON SCHOLARS *continued from page 18*

seminate science to the public by talking about various topics such as DNA, fungi, women in science, and food waste.

Her writing assignment and 12-minute presentation “First the Friction, Then the Honeymoon: Polyploid Gene Expression on Two Timescales” discussed her research.

Virginia also interviewed Rachel Mackelprang, a professor at California State University, Northridge, about teaching careers. For the independent project, she created an infographic showing which crop plants are available commercially as GM varieties to demystify GMOs for the public.

“The webinars were the glue in the program experience, joining together all the activities and outlining a seamless narrative for the program. The speakers were fantastic, the students asked great questions, and the technology worked perfectly every time.”

### Alex Rajewski

Alex Rajewski, a PhD student at the University of California, Riverside, works on gene function changes that have occurred along with the evolutionary transition from dry to fleshy fruits. As part of the program, he volunteered at the University of California, Riverside, Plant Discovery Day, teaching children how flowers develop into edible fruits by dissecting *Alstroemeria* flowers to find the male and female parts of the flower, describing pollination, and then explaining how foods are categorized into fruits versus vegetables.

“The personal attention that I got from later career scientists



Alex Rajewski

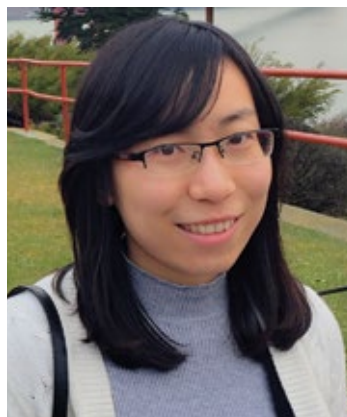
made it the most special. It’s easy to assemble a group of students, but to marshal a group of established professionals that are interested in bettering students is much more difficult.”

### Xinyu Fu

Xinyu Fu is a PhD candidate at Iowa State University focusing on the structure and dynamics of the acetyl-CoA metabolic network in plants. Her mentor was Judy Callis at the University of California, Davis, who encouraged Xinyu to find something that truly interested her while looking for postdoc positions.

She interviewed Bo Xie, a technology marketing associate at Iowa State University. For her educational event, she worked with Mark Gleason at Iowa State University for several months. Using a crop protection scenario with characters of a field manager, a project manager, an undergraduate student, and a professor, they created undergraduate teaching material based on problem-based learning.

As part of the program, Xinyu wrote an article, “Chemical Languages: The Way Plants Talk to Themselves and Others,” and for her project she created a beau-



Xinyu Fu

tifully designed 16-minute video about the health and nutritional effects of plant fats and oils.

“Initially I was planning to make a five-minute video, as editing is quite time-consuming for a beginner like me. As I started, I just had more and more ideas that I wanted to put in the video. . . . After assembling all the video clips and audio narration, I showed the draft to people in my lab and many nonscience friends, who gave me a lot of feedback to improve my video.”

### Beverly Agtuca

Beverly Agtuca is a PhD student at the Christopher S. Bond Life Sciences Center at the University of Missouri. Her research involves detecting the metabolic content of single plant cells associated with nitrogen fixation using laser ablation electrospray ionization mass spectrometry.

Her mentor was Aaron Wyman of Spring Arbor University. She interviewed Cintia Ribeiro, who is in Monsanto’s Emerging Leaders in Science program, about the different work roles in industry.

Beverly wrote an abstract and recorded a presentation on her fascinating research. For her



Beverly Agtuca

project, she developed an inquiry-based classroom activity called “Garden in a Glove.”

“I’ve seen happiness and excitement on children’s faces of all ages when I’ve done scientific demonstrations as a volunteer in the past. However, for this independent project, I wanted to emphasize a demonstration of plant growth and development for the children to understand and have fun with plant biology.”

Visit *Plantae.org* (<https://tinyurl.com/yby4jpng>) to read the full summary and take a look at the videos, infographics, and other materials developed by these inspiring scholars. You can also learn more about the program on *aspb.org* (<https://tinyurl.com/yd2rvxo2>). We expect to open applications for the next class this summer. ■

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A big thank you to Conviron for sponsoring this program.

Established in 1964, Conviron ([www.conviron.com](http://www.conviron.com)) is the world leader in the design, manufacture, and installation of controlled environment systems for plant science research.

# Interview with Benjamin Firester, Winner of the Regeneron Science Talent Search

BY AMANDA RASMUSSEN  
University of Nottingham

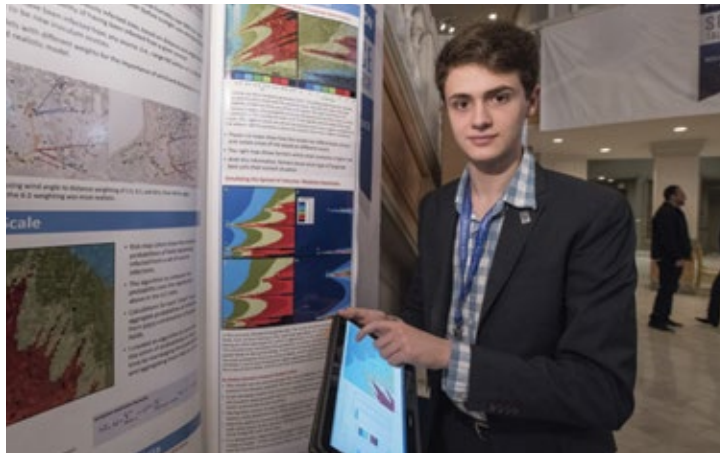
**B**enjamin Firester, a bright senior at Hunter College High School in New York, won the Regeneron Science Talent Search 2018 (<https://student.societyforscience.org/regeneron-sts>). Afterward, I caught up with him to find out more about his experience.

When I asked Benjy about how it felt to win, a smile lit up his face: “It was unreal, I was so in shock! It was amazing!”

His research journey began the summer after ninth grade under the guidance of Dr. Lior Blank of the Volcani Center, an Israeli agricultural research center. It was there that Benjy realized that his interest in computer science—in particular, graph theory (a type of modeling)—could be applied to predicting the spread of potato late blight, the cause of the Irish Potato Famine and still a significant problem globally.

“So what is graph theory?” I asked Benjy.

“Graph theory is, I guess, a part of mathematics but really tied to computer science. What I mean by *graph* is actually just a bunch of objects that are connected. The most common example is Facebook. Facebook stores all of everything as a graph. Every person is a node and every friendship is a connection, and this kind of data structure is incredibly important in computer science. The study of graph theory is how



*Benjy Firester, top winner at the 2018 Regeneron Science Talent Search.*

these connections work and how we can analyze this structure to be really helpful in applications to other things like this. In disease modeling, for example, the graph in this case is, actually, the nodes are infected fields and the connections are the infection. One node infects another.

“My model gives farmers this necessary information that tells them how and when they are going to be infected, and with that they can protect their own fields and on a larger scale prevent epidemics.”

Benjy’s hands became more animated, and the sparkle in his eye conveyed the passion he has for computer science and how useful it can be for modeling real-world applications. He described one of the challenges he faced in validating his model because of the limited data: “Even if you

of the model using currently infected fields and fields about to be infected as inputs and predicting the wind direction.

“The reason this is much better than other types of validation methods is because predicting the wind direction is really hard. If you consider all 360 degrees, the chance of you getting it right is 1 in 360, so if you get it right lots of times, that shows really high statistical significance, and it also gets around the fact that it’s only presence-only data. So it solved both these problems.”

Benjy joked that he was working in theoretical plant science because he wasn’t working in the field. He explained, “Specifically for late blight, I think modeling is a really good approach because late blight develops a disease set or a population that is really diverse and very large. It can reproduce very quickly and

*continued on page 22*

The Regeneron Science Talent Search, a program of Society for Science & the Public (the Society), is the nation’s most prestigious science research competition for high school seniors. Since 1942, first in partnership with Westinghouse, then with Intel 1998–2016, and now with Regeneron, the Society has provided a national stage for the country’s best and brightest young scientists to present original research to nationally recognized professional scientists.

## Anna Groves Awarded ASPB/AAAS Mass Media Fellowship

**A**nna Groves, a recent graduate from Michigan State University's Department of Plant Biology, has been awarded the ASPB/AAAS Mass Media Science & Engineering Fellowship for 2018. Anna will spend 10 weeks this summer training in and practicing science journalism with the *Milwaukee Journal Sentinel* in Milwaukee, Wisconsin.

Anna graduated from Illinois Wesleyan University with a BA in environmental studies in 2011, with concentrations in ecology and environmental policy. A love of plants and native ecosystems brought her to Michigan State for her graduate studies, during

which time she has won numerous awards, including an NSF Graduate Research Fellowship, the Fields Award for Outstanding Teaching, and the Ecological Society of America's Graduate Student Policy Award.

During her graduate program, Anna discovered the immense value in communicating science to diverse audiences. She started the blog *Plant//People* (<https://www.plantpeopleblog.com/>), gave pop science talks in her community, taught biology to nonmajors, and met with her representatives in Washington, DC. She now hopes to take her strong science background into a career that

strives to increase public support for and interest in the sciences.

She defended her dissertation last month, earning a dual degree with Michigan State's Program in Ecology, Evolutionary Biology, and Behavior for her work on tallgrass prairie restoration. She studied as a community ecologist in Lars Brudvig's lab, focusing her work on the use of community assembly theories to inform ecological restoration in practice.

Anna is thrilled for this opportunity to expand her science communication skills in the *Journal Sentinel* newsroom and thanks ASPB for its support. ■



Anna Groves

### BENJY FIRESTER *continued from page 21*

mutate very quickly, meaning that if you were to design better fungicides or resistant potatoes, it's not only possibly but probably likely that at some point the disease will mutate to get past that. Versus if you are very good at modeling disease, you can snuff it out from the beginning, so even if it mutates you can contain it and get rid of it—more like a vaccine approach to get rid of the disease, rather than just trying to cure every potato patch.”

His excitement for computer science and the many ways it can be applied to real-world problems was infectious and an excellent example for us all to learn from in terms of both interdisciplinary research and the value of encouraging secondary school students both for the research community and the students. Benjy said the most valuable thing from this process was “just realizing that research is very accessible. It always seems for middle school and high school students something that's so far in the future.

Like, you go to college, you go to grad school, and then you're finally getting to do research. But it's really something that people can approach even if they're not doing fully independent projects. They can always help and work out, share ideas and things.”

So what's next for this theoretical plant scientist?

“I'm really not sure. Still not sure where I'm going to college, even. But the only thing I know is that I want to continue doing a lot of studying in math and computer science and broaden my educa-

tion so that I can really find what I want to do in life.”

His exciting work has been published in *Plant Pathology* (<https://onlinelibrary.wiley.com/doi/10.1111/ppa.12860>). ■

*Amanda Rasmussen is assistant professor of plant physiology at the University of Nottingham, United Kingdom. Her lab investigates hormone and environmental regulators of stem root physiology.*

ASPB members share a common goal of promoting the growth, development, and outreach of plant biology as a pure and applied science. This column features some of the dedicated and innovative members of ASPB who believe that membership in our Society is crucial to the future of plant biology. If you are interested in contributing to this feature, please contact ASPB Membership at [info@aspb.org](mailto:info@aspb.org).

## Siobhan Brady

**Title:** Associate Professor

**Place of Work or School:** University of California, Davis

**Member Since:** 2006

**Research Area:** Root development, transcriptional networks, systems biology

### What would you tell colleagues to encourage them to join ASPB?

ASPB is a society that works for you as a plant scientist and that promotes plant biology in the United States and around the world. The more you take part, the more you will get from your membership.

### Was someone instrumental in getting you to join ASPB?

My postdoctoral mentor, Philip Benfey.

### Why has being a member of ASPB been important?

ASPB has helped me find jobs when I was looking for a faculty position, advance my career when I received the ASPB Early Career Award, and realize that together we have a voice that can reach even the American government.

### How has being a member of ASPB helped you in your career?

I believe that receiving the Early Career Award helped people notice who I was and perhaps made them more curious about my research. I think this helped jump-start my career as a new tenure-track faculty member.

### What person, living or deceased, do you most admire? Why?

Katherine Esau. She literally wrote the book on plant anatomy! This is one of my most revered books (I actually have three copies!). Her work has formed the foundation of my research interests: How do cell types form? How does their morphology influence their function? What are the diverse ways in which cells have found ways to cope with their environment?

### What are you reading these days?

I just finished *Killers of the Flower Moon* by David Grann, a shocking true story about the horrible way the Osage community was treated in 1920s Oklahoma. Now I'm on to *Red Sparrow*, by Jason Matthews, and am currently obsessed by Russian spies.

### What are your hobbies?

Running, wine, skiing, and reading.

### What do you think is the next big thing in plant biology?

Finding efficient ways to transform "nontraditional" plant species (i.e., not necessarily using tissue culture).



### What do you still have to learn?

Why can *Arabidopsis* be transformed via floral dip, but other species cannot? Is it something to do with development of the male or female gametophytes or their housing?

### Have you enhanced your career using ASPB job postings or through networking at an ASPB function?

Yes! When I was on the job market, I found available positions through ASPB job postings. I met some wonderful women through Women in Science events during ASPB annual meetings. I also learned a lot by being on the ASPB Business Advisory Board about strategic planning.

### What do you see as the most important role for scientific societies such as ASPB?

One of the most important roles is communication to the government of the importance of plants and of basic research. Another very important role is determining how best to meet the needs of members in advancing through their career, no matter which stage they are at. I have had incredible experiences with ASPB in having my opinion listened to and effecting change. That is extremely powerful, especially to young women. ■

## Policy Update

BY LAUREN BROCCOLI  
Lewis-Burke Associates, LLC

### Congress Passes Omnibus Appropriations Bill

On March 23, President Trump signed into law an omnibus appropriations bill to fund federal government agencies through September 30, 2018. The bill received broad bipartisan support, with a vote of 256 to 167 in the House of Representatives and 65 to 32 in the Senate. The final \$1.3 trillion spending package was made possible by a two-year budget agreement passed in February 2018 that increased spending caps by \$63 billion for nondefense discretionary spending.

With increased spending available, the final fiscal year (FY) 2018 omnibus appropriations bill provided increases for many of ASPB's priority federal agencies and rejected cuts proposed in the president's FY2018 budget request. The following are topline numbers for federal agencies of interest to ASPB:

- NSF is funded at \$7.767 billion, an increase of \$295 million, or 3.9%, above the FY2017 enacted level.
- USDA's National Institute of Food and Agriculture (NIFA) received \$1.41 billion, an increase of approximately 3.3% above the FY2017 level. Within NIFA, the Agriculture and Food Research Initiative was funded at \$400 million, an increase of \$25 million above the FY2017 enacted level.

- DOE's Office of Science will receive \$6.26 billion, an increase of \$868 million, or 16%, above the FY2017 enacted level and the largest yearly increase in its 40-year history.

- The DOE Office of Biological and Environmental Research received \$673 million, an increase of \$61 million, or 10%, compared with the FY2017 level.
- The DOE Office of Basic Energy Sciences received \$2.09 billion, which is \$219 million, or 12%, above the FY2017 level.
- DOE's Advanced Research Projects Agency-Energy, which was proposed for elimination in the FY2018 budget request, was restored at a level of \$353 million, an increase of \$47 million, or 15.5%, above the FY2017 enacted level.
- NIH received \$37.1 billion, a \$3 billion increase compared with the FY2017 enacted level.

The omnibus appropriations bill provides certainty for federal research agencies as Congress prepares for the 2018 midterm elections. With the focus shifting to the campaign trail, it's expected that the FY2019 appropriations will end in a series of continuing resolutions.

#### Source and Additional Information

- The full Lewis-Burke analysis of the omnibus bill is available at <https://tinyurl.com/yvcfzpp>.

### NSF Releases Dear Colleague Letter for Growing Convergence Research

On March 23, NSF released a Dear Colleague Letter (DCL) entitled "Growing Convergence Research" soliciting prospectuses for cross-disciplinary exploration of new research areas. The DCL aligns with one of NSF's 10 Big Ideas for Future Investment, growing convergence research at NSF, offering funding to exploratory projects that bring a convergence paradigm to a new research area outside of existing lines of NSF research and that go beyond the existing six Research Big Ideas. Convergence research is characterized as research that is driven by a specific and compelling problem and that deeply integrates multiple disciplines.

Projects may receive up to \$1 million over a period of up to three years. Funding is available for FY2018 and FY2019. Researchers may respond to the agencywide DCL by submitting a short prospectus. The most promising respondents will be invited to submit a full proposal for an exploratory project in the proposed novel research area.

The DCL indicates that invited proposals should follow guidelines laid out for Research Advanced by Interdisciplinary Science and Engineering (RAISE) proposals, which is NSF's mechanism for interdisciplinary projects that may be supported outside of

existing disciplinary and crosscutting programs. These proposals were previously supported under the Integrated NSF Support Promoting Interdisciplinary Research and Education (INSPIRE) initiative, which sunset in FY2017.

NSF has proposed \$16 million for growing convergence research in the FY2019 budget request, which would be \$4.5 million more than was spent in the last year of INSPIRE (FY2016). Although this DCL focuses on new research areas outside of the six Research Big Ideas, other DCLs have called for RAISE proposals within the six Research Big Ideas, including rules of life and quantum leap.

Prospectuses should focus on identifying an area ripe for a convergence approach and, in no more than 1,000 words and two pages, should

- detail "a potential future research area requiring a convergence approach"
- list "pertinent disciplines to be integrated"
- briefly propose an exploratory research project within the novel area
- outline "the methods and research strategies that will nurture convergence" in the project
- list the project's senior personnel.

Prospectuses are due by October 15, 2018, to be consid-

*continued on page 26*



# 2018 Spring Science Policy Committee Congressional Visit Day

BY TYRONE SPADY

ASPB Legislative and Public Affairs Director

**O**n March 12, 2018, the ASPB Science Policy Committee met in Washington, DC, for the ASPB Spring Science Policy Meeting and Congressional Visit Day. Committee members, ASPB staff, and Lewis-Burke lobbyists conducted meetings with 28 congressional offices and committees related to plant science, including meetings with Ted Yoho (R-FL) and House Agriculture Committee member and Research Subcommittee chair Rodney Davis (R-IL). The purpose of the annual Congressional Visit Day is to urge robust funding at federal research agencies to support and spur revolutionary breakthroughs in producing nutritious foods, sustainable energy, and new medicines and medical treatments; in protecting our environment; and in advancing our fundamental understanding of plant biology.

ASPB representatives thanked the offices for congressional support of plant science and encouraged investments in specific agencies and programs, which we argued are vital to ensuring America's ability to meet critical challenges such as increasing crop production and yield to feed the growing world population, promoting energy independence, training the next generation of scientists and engineers, and improving science education. These investments will contribute to the already substantial economic

impact of the agriculture industry, which accounts for nearly 6% of the U.S. gross domestic product, 21.4 million jobs, and \$992 billion in economic contributions (<https://tinyurl.com/hg3ugun>). The return on investment in agricultural research is \$20 for every \$1 spent.

The following agencies and programs were featured in the congressional meetings:

- **NSF:** ASPB supports funding of \$8.45 billion for NSF in fiscal year (FY) 2019 and encourages the greatest possible support for the Directorate of Biological Sciences, including the Plant Genome Research Program (PGRP), which not only furthers fundamental knowledge but also promotes our ability to enhance agricultural productivity, grow nutritious foods, and diminish the effects of devastating plant parasites. Sustained funding growth over multiple years for PGRP will be critical to address many challenges of the 21st century.
- **DOE Office of Science:** ASPB supports funding of \$5.85 billion for DOE's Office of Science in FY2019. ASPB supports funding for Basic Energy Sciences at \$1.98 billion and for the Office of Biological and Environmental Research at \$633 million. These offices support dynamic research at the interface of plant biology and other scientific disciplines. Sustained funding for



ASPB President Harry Klee (left) meeting with Florida Congressman Ted Yoho.

Advanced Research Projects Agency-Energy is also critically important.

- **USDA:** ASPB supports funding of \$520 million for the Agriculture and Food Research Initiative (AFRI). AFRI administers competitive funding for innovative research on issues such as food security, global health, and renewable energy, which are critical in maintaining global economic competitiveness. ASPB also supports funding of \$1.35 billion for ARS.
- **NIH:** ASPB supports sustained funding growth for NIH and

advocates for increased support for plant science research within NIH's Centers and Institutes to continue the development of life-saving cures. For example, the ZMapp antibody used to combat the Ebola virus was a medical breakthrough made possible by plant science research.

ASPB held meetings with offices representing Florida, Texas, Maryland, Oregon, Minnesota, Missouri, Mississippi, California, and Pennsylvania. These offices represent a small fraction of the

*continued on page 26*

**POLICY UPDATE**

*continued from page 24*

ered for FY2019 funding. Prospectuses are to be sent to convergenceprospectus@nsf.gov.

*Sources and Additional Information*

- The Dear Colleague Letter for growing convergence research is available at <https://tinyurl.com/y9xk2nyc>.
- NSF's 10 Big Ideas for Future Investment are available at [https://www.nsf.gov/news/special\\_reports/big\\_ideas/index.jsp](https://www.nsf.gov/news/special_reports/big_ideas/index.jsp). ■

**CONGRESSIONAL VISIT DAY**

*continued from page 25*

U.S. Congress, and we need your help to take the message to your states and districts. We are encouraging all plant scientists to engage with their congressional representatives to urge them to support the above-mentioned funding recommendations during this year's pre-election August recess. Please share your efforts and their outcomes with ASPB by e-mailing me at [tspady@aspb.org](mailto:tspady@aspb.org). ■

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**Editor-in-Chief:** Dr. Ivan Baxter  
USDA-ARS Plant Genetics Research Unit  
Donald Danforth Plant Science Center

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# ASPB Educational Outreach: A Rock Star Booth at NSTA 2018

BY MAUTUSI MITRA

University of West Georgia and Georgia State University

The ASPB Education Committee hosted an Education & Outreach booth at the National Science Teachers Association (NSTA) conference in Atlanta, Georgia, March 15–17, 2018. Located at the Georgia World Congress Center, the booth was organized by ASPB Education Committee member Scott Woody and ASPB Education Coordinator Winnie Nham. Local volunteers helping to host the booth were Mautusi Mitra and her students (University of West Georgia [UWG] and Georgia State University Perimeter College) and Zhonglin Mou (University of Florida).

Scott Woody, local ASPB member-volunteers, and undergraduate students with a passion for plant biology successfully shared their enthusiasm about plants and green microalgae with the booth visitors and made the event a huge success. The ASPB booth attracted hundreds of K–16 biology teachers and instructors from across the nation. Many of these educators expressed a strong interest in using ASPB resources in teaching plant biology and reached out to booth volunteers after the meeting to learn more about using plants and algae in biology education, reflecting once again the importance of these ASPB outreach activities.

This year ASPB had multiple stations featuring different facets



Phillip Grovenstein discussing the use of *Chlamydomonas* as a teaching tool with booth visitors.

of plant biology ranging from chlorophytes to angiosperms. Four stations in the ASPB booth featured FPsc genetic resources. FPsc is a self-compatible and extensively inbred analog of the familiar Wisconsin Fast Plants (WFP) variety of rapid-cycling *Brassica rapa*. Working with Rick Amasino and students at the University of Wisconsin–Madison, Scott created an integrated suite of genetic and molecular/genomic materials useful to help students make a clear connection between organismal phenotype and underlying DNA sequence-based genotype.

One of three lighted stations featured parallel populations of FPsc and WFP varieties that nicely illustrated their similarities in morphology and growth habit. Another station featured F2 populations in which either the recessive *albino* or the dominant

*abnormal leaf* FPsc mutant alleles were segregating; those populations served as complement to the Mating Game, a simple but very popular active-learning exercise in which students use plastic poker chips and a printable playing board to recapitulate fundamental Mendelian genetic mechanisms that give rise to the canonical 3:1 or 1:3 phenotypic ratios on display in living plant populations. Another station featured the FPsc *ga*-deficient dwarf (*gad*) mutant, whose diminutive phenotype can be rescued by foliar application of gibberellic acid.

Finally, Scott used a large computer monitor and a laptop to demonstrate the Gamete Maker genetic mapping simulation app that enables students to virtually map mutant loci in the *B. rapa* genome through manipulation of simulated F2 populations, poly-



Winnie Nham (left) and Mautusi Mitra sharing educational resources with a teacher.

merase chain reactions, and gels. Additional information about these and other teaching tools developed around the FPsc model system can be found at Scott's website (<https://fpsc.wisc.edu/>).

Another major attraction this year in the ASPB booth was the station called “*Chlamydomonas reinhardtii* (“Green Yeast”)—A Powerful Biology Teaching Tool” hosted by Mautusi, her undergraduate research students Kevin Nguyen and Ja’von Swint, and her former graduate student Phillip Grovenstein (currently an instructor at Georgia State University Perimeter College). At UWG, Mautusi integrates her molecular photosynthesis research in *Chlamydomonas* in teaching a cell and molecular biology course. The station included live cultures of wild-type, high-light-sensitive, and chlorophyll-deficient *Chlamydomonas* strains.

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## ASPB Welcomes Jennifer Regala as New Managing Editor



Jennifer Regala joined ASPB's staff on February 26, 2018, as our new managing editor. Jennifer will oversee the production and peer review operations of ASPB's two scholarly journals, *The Plant Cell* and *Plant Physiology*. Working closely with the editorial boards and composition, XML, and hosting vendors, Jennifer will devote her time to continuing the high quality standards and innovation of the journals.

Before she joined ASPB, Jennifer served as a publishing

services group leader at Sheridan Journal Services, where she supervised a large group of production editors and production assistants and managed the operations of multiple society accounts, including ASPB, the American Society of Hematology, the American Society of Pharmacology and Experimental Therapeutics, and the Federation of American Societies for Experimental Biology. From 2001 to 2009, Jennifer was a freelance scientific/technical/medical editor. Fun

fact: Jennifer first started working with ASPB back in 2000, when she worked at Cadmus Journal Services as a production editor on *Plant Physiology*.

Outside of ASPB, Jennifer is a licensed real estate agent in the state of Maryland and provides support to her husband, a full-time realtor. She enjoys spending time with her husband and four kids on the golf course and at the beach. ■

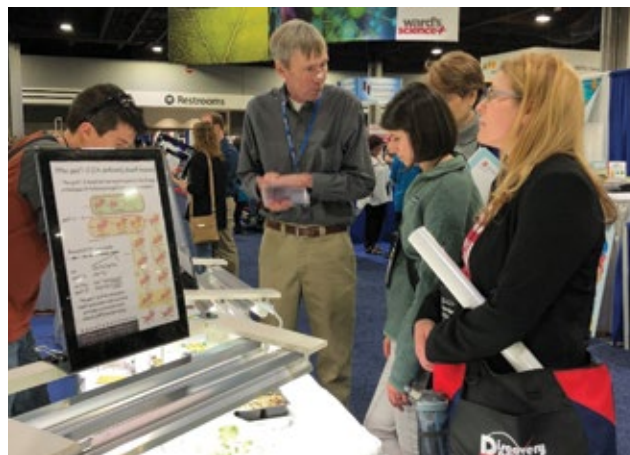
### ROCK STAR BOOTH *continued from page 27*

Mautusi shared with the science teachers how the green microalga *Chlamydomonas* can be used for designing hands-on activities for courses in general biology, plant biology, biochemistry, plant physiology, neuroscience, optogenetics, genetics, and renewable energy generation. She distributed handouts about *Chlamydomonas* media recipes and *Chlamydomonas*-based hands-on lab activities that align with the Next Generation Science Standards core concepts and the 12 Principles of Plant Biology. More information about *Chlamydomonas* research and education can be found on the *Chlamydomonas* Resource Center website (<https://www.chlamycollection.org/>) and on

Mautusi's website (<https://www.westga.edu/mitralab/>).

An additional impromptu attraction at the ASPB booth was the *Scenedesmus* (green algae) bracelet contributed by Ward's Science. The bracelet contained balls of algae in growth media containing a bicarbonate pH indicator that changed color as algae balls were shifted from dark to light, a powerful demonstration of the switch from respiration to photosynthesis.

Booth visitors took home more than 200 copies of the highly popular *My Life as a Plant* coloring book and 12 Principles of Plant Biology bookmarks and labs. Other resources available at the booth included information on the various programs and resources available through ASPB, including PlantingScience, the ASPB Master Educator Program,



Scott Woody demonstrating the *Mating Game*, an active-learning activity that teaches Mendelian genetic mechanisms.

the Promoting Active Learning & Mentoring (PALM) Grant, and the Plant Biology Learning Objectives, Outreach Materials, & Education (BLOOME) Grant. We thank all our volunteers for helping make our booth a grand success. Special

thanks go to ASPB "booth guru" Scott, to Winnie for all the hard work involved in coordinating the booth setup and volunteer lineup, and to the UWG students for making *Chlamydomonas* a rock star at the ASPB booth. ■

## Eric E. Conn

1923–2017

BY NORMAN G. LEWIS AND LAURENCE B. DAVIN  
Institute of Biological Chemistry, Washington State University

A full appreciation of Eric Conn's life was published in the PSNA News (<http://www.pсна-online.org/newsletters/PSNANews561.pdf>). This edited version appears with permission of the Phytochemical Society of North America.

### An Appreciation

Eric Edward Conn, a highly respected, highly admired National Academy of Sciences member and a true plant science luminary, passed away September 2, 2017. Rarely in modern biochemistry research does one scientist make an enduring and lasting impact on metabolic pathways that stands the test of time and that guides follow-on research of scientists throughout the world. Eric was an exception. From pioneering work in plant biochemistry and metabolic pathways, his work is relevant today and has led to numerous exciting follow-on discoveries. Yes, he died in September 2017. However, his love of science and his positive attitude live on. We are all the better for it.

Eric displayed exemplary dedication and professionalism. He fulfilled tireless commitments to various societies, notably the Phytochemical Society of North America (PSNA) and ASPB. Eric was a long-standing and highly respected *Phytochemistry* editorial board member (1961–1999). He also served as associate editor of *Plant Physiology* (1968–1972), as executive editor of *Archives of Biochemistry and Biophysics* (1975–1991), as executive editor of *Recent Advances in Phytochemistry* (1984–1989), and as editor of *Biochemistry of Plants* (1981).



Eric Conn, professor emeritus of molecular and cellular biology.

PHOTO BY UC REGENTS

The classic textbook *Outlines of Biochemistry* was first published in 1963, when Eric and Paul K. Stumpf, together with Roy Doi and George Bruening, graciously provided it for the academic and scientific community.

Selected accolades include the PSNA Life Membership (1981), election to the National Academy of Sciences (1988), the ASPB/ASPP Charles Reid Barnes Life Membership Award (1991), the Pergamon Phytochemistry Prize (1994), the PSNA Phytochemical Pioneer Award (2007), and ASPB Fellow (2009). The ASPB Eric E. Conn Young Investigator Award, established in 2011, honors Eric's contributions to plant biology by recognizing young scientists.



Eric in the Acacia Grove at the UC Davis Arboretum. The grove displays more than 50 species of acacias from Australia, Africa, and the Americas.

PHOTO BY UC REGENTS

Some of Eric's research accomplishments include the following:

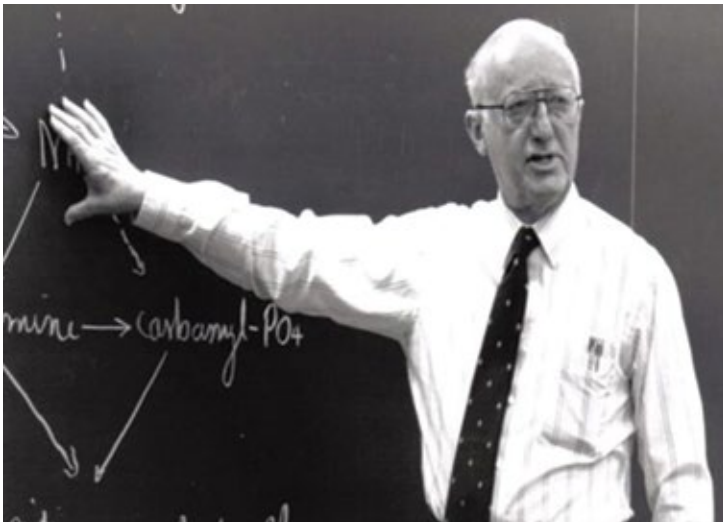
- Phenylalanine ammonia lyase discovery and coumarin biosynthesis
- Aroenate and Phe/Tyr biosynthesis
- Gallic acid biosynthesis
- Cinnamate 4-hydroxylase discovery and characterization
- Sorghum cyanogenic glucoside (dhurrin) biosynthesis and hydrogen cyanide (HCN) release
- Taxiphyllin biosynthesis in *Triglochin maritima*
- Flax cyanogenic glucosides (linamarin and lotaustralin) biosynthesis and HCN release
- Linamarin and lotaustralin biosynthesis in other cyanogenic species

- Prunasin biosynthesis and HCN release in peach, cherry laurel, and *Ximenia* species
- $\beta$ -cyanoalanine and  $\beta$ -cyanoalanine synthase in *Lotus tenuis*
- *Acacia* and *Eucalyptus* chemotaxonomy studies
- Laetrile and amygdalin: quackery exposed

### Service to ASPB/ASPP

Eric was deeply involved with ASPB, beginning with its forerunner, the American Society of Plant Physiologists. He served in numerous well-received capacities to help the Society achieve the tremendous standards and worldwide appeal it enjoys today.

*continued on page 30*



Eric instructs a lecture.

#### ERIC CONN continued from page 29

His service included stints as associate editor (1968–1972) and editorial board member of *Plant Physiology* (1980–1983) and as ASPB president-elect (1985–1986) and president (1986–1987).

#### Eric and Louise Conn's Philanthropy

Throughout his entire life, Eric had enormous appreciation for the progressive academic environment, as well as the positive culture and loyalty, that existed within the University of California, Davis, community. This was important to him, including in support of his own relentless quest for excellence. Eric's appreciation to UC Davis was reciprocated by both Eric and his wife, Louise.

One aspect in particular was the UC Davis Arboretum, a favorite walking, cycling, and meeting place on the UC Davis campus for the community and visitors alike. Eric, Louise, and the Conn family made various commit-

ments to UC Davis through the Arboretum stemming from Eric's interest in *Acacia* species beginning in about 1960 (<https://tinyurl.com/y9ntxwkz>). Indeed, this lovely Arboretum has an *Acacia* grove of more than 50 species in honor of the Conns that includes *Acacia conniana*, named in honor of Eric's research on cyanogenesis. Eric and Louise supported the Arboretum as volunteers, researchers, advocates, and donors. In 2001, they began the Louise and Eric Conn Endowment Fund (see <https://give.ucdavis.edu/Donate/YourGift/122180>) to help financially support the Arboretum. In 2012, and following the passing of his beloved Louise, Eric provided additional matching funds to further support the progression of the Arboretum (<https://tinyurl.com/y7tblgc3>).

#### An Incredible Life

The story of Eric's life journey—so well spent—would not be complete without glimpses of his childhood and young adulthood. Eric, the fourth and last child of William and Mary Anna Conn, was born on January 6, 1923, in



Eric and Louise Conn

Berthoud, Colorado, where his father served as assistant manager of a Farmers Union grain elevator. His family moved in the early 1930s to Bellaire, Kansas, for his father's grain elevator business. This was the time of the Great Depression, and the family experienced firsthand the dreadful Dust Bowl years and the devastating effects on the Great Plains. The Conn family lost most of their assets, except for their home. During this time, Eric became proficient in playing piano and developed a lifelong love of trains.

The family next moved to Fort Morgan, Colorado, a small town of around 5,000. There his father ran a gasoline station and his mother took in boarders to help make ends meet. This was, in many ways, a time for the family to start again in life, as it was for many. While there, Eric learned to play the pipe organ in a local Methodist church. Scholastically, he got off to a great start, graduating as valedictorian from Fort Morgan High School in 1940. He won an all-tuition scholarship for four years to study at the University of Colorado, Boulder, and graduated with a bachelor's degree in chemistry (cum laude) in 1944.

Eric was hired immediately by the Manhattan Project at Oak Ridge, Tennessee. He traveled there by train and worked primarily as an inorganic chemist through the remainder of World War II, first as a civilian and then with the same work after being drafted into the Army in 1945 as a private.

Eric used the GI Bill to earn a PhD in the Biochemistry Department at the University of Chicago. He then accepted an offer from UC Berkeley, joining Dennis Hoagland's famous Department of Soils and Plant Nutrition in a tenure-track position in the College of Agriculture in 1953. However, an exchange in departments of his appointment was suggested by Paul Stumpf, who was then chair of the Agricultural Biochemistry Department in the same college. Eric joined this small but vibrant department in 1954. Although Eric had already met Paul while doing a postdoc in Dr. Vennesland's lab, this marked the beginning of a wonderful lifelong friendship, highlighted by their writing of *Outlines of Biochemistry* and editing of *Biochemistry of Plants*.

In 1958, Eric moved to join the Biochemistry Department that Paul Stumpf was setting up at UC Davis. The next decade saw considerable expansion of their introductory biochemistry course with classes of nearly 400 students. Eric's contributions as a professor at UC Davis were highly valued. For course teaching and research, he received the university's highest distinctions, including the Distinguished Teaching Award of the Academic Senate (1973), the Faculty Research Lecturer of the Academic Senate (1977), and the Prize for Teaching and Scholarly Achievement (1990).

As noted by his son Kevin, "Kindness and intellect were the twin hallmarks of Eric's life. Eric lived a long and full life, never losing interest in making the world a better place. His wife, Louise, passed away in 2002. He leaves behind his two sons, Michael and Kevin, and many nephews and nieces, including newborn Noah Eric. Those who were lucky enough to know him will miss him deeply." ■



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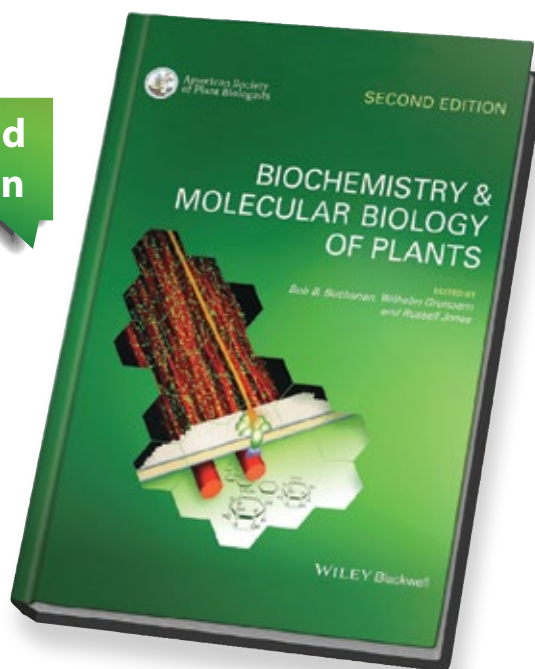
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