President’s Letter

The Power of Engagement

BY KATIE DEHESH
ASPB President, University of California, Riverside

The past year and a half has been an unprecedented time for all of us, and it has brought unforeseeable changes to our lives. I recognize that you have many competing priorities in your life as you struggle with the consequences of the pandemic. Research, classes, family and social commitments, and sound mental health are only some of the priorities to which you must attend; it is easy to see how your time and energy can be eaten up quickly. Nonetheless, you have chosen to be a part of ASPB (thank you!), and your engagement is vital to the organization’s success.

Fundamentally, ASPB exists to serve its members. That means that ASPB is here to make your life easier by providing quick and easy access to opportunities and resources crucial for your career development. The little engagement that we request from you in return goes a long way toward helping us make sure that ASPB serves you in the best ways possible. Indeed, we want to hear from you about how we are doing and what ideas you have about how we can serve you better.

Among the main benefits ASPB provides for its members are the following:

- networking and career opportunities, including our mentoring center on Plantae (https://jobs.plantae.org/mentor/) and the Summer Undergraduate Research Fellowship program (https://aspb.org/awards-funding/aspb-awards/surf/)
- advocacy on behalf of plant scientists and

Nominations Opening Soon for 2022 ASPB Awards!

The Time to Recognize and Honor Excellence Among Our Fellow Plant Scientists Is Approaching

The 2022 Call for Award Nominations will be sent to ASPB members on January 3, 2022, and nominations will be due by Friday, February 25. ASPB encourages you to participate in the 2022 awards program by nominating highly deserving individuals. Please watch for the Call for Nominations in your email inbox, on our website, and via social media early in the New Year. In the meantime, please visit ASPB’s awards pages (http://www.aspb.org/awards-funding/aspb-awards/) so that you can see who among your colleagues has received these awards in the past and consider who might be most deserving in the future.

All that is required to make a nomination for ASPB’s awards is a one- to two-page letter of nomination and a detailed CV of the

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Chair, Publications Committee
Steve Theg

Chair, Science Policy Committee
Tessa Burch-Smith

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Judy Brusslan

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Early Career Plant Scientists Section
Al Meyers

Environmental and Ecological Plant Physiology Section
Emily Heaton

Primarily Undergraduate Institutions Section
Karen Hicks

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Asia Hightower

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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. Copy deadline is the 5th day of the preceding even-numbered month (for example, April 5 for May/June publication).

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President's Letter

PRESIDENT’S LETTER continued from page 1

Plant science research
* access to conferences, organized and attended by scientists from around the world who are working at the cutting edge of plant biology research, and travel awards to enable early career scientists to attend those conferences
* direct access to groundbreaking scientific research published in our three journals
* early access to webinars on Plantae, ASPB's online home for the global plant science community
* reduced fees for publications and conference attendance.

In short, ASPB is a hub for communication and information relevant to members.

If we are to optimize your experiences as an ASPB member—to expand the opportunities listed above, to highlight research topics that suit your interests, or something else entirely—we need to know what you think. We invite you to participate in and share your feedback on the following activities:

* Read the ASPB News: The newsletter, available at https://bit.ly/ASPBNews, contains the latest Society news, including members' achievements in research and community outreach, conference information, and fellowship opportunities. The newsletter, which will be published only once a quarter starting in 2022, contains essential information on how you can get involved in the Society in a way that could influence the trajectory of your career. (By the way, if you're currently receiving the print edition of the ASPB News, please make it available to others in your lab and workplace so they can learn more about ASPB and what it does.)
* Subscribe to our weekly email newsletter The Signal: For more frequent updates and information about goings on at ASPB and elsewhere, including job listings and plant science conferences, be sure that you are receiving this weekly email. If you are not, sign up to receive it at https://multibriefs.com/optin.php?aspb.
* Be sure that ASPB's email addresses are whitelisted in your own email system: To confirm you are receiving regular email communications from ASPB, please visit your member profile and make sure you have not unsubscribed from this service.
* Read Plant Science Today, ASPB's blog: Another way to stay up to date is via the ASPB and Plantae blogs, available at https://blog.aspb.org/ and https://plantae.org/plantae-blog/.
* Vote in elections: As an ASPB member, you are eligible to vote each year for ASPB's president and other members of the Board of Directors. They are the leaders who determine the direction of the organization, and your vote matters. In the new year, members will select a new president-elect and secretary-elect (see “Let’s Nominatethem” on p. 5 of this issue).
* The president is the face and voice of ASPB, providing strategic leadership, and has the authority to form ad hoc committees. Your choice of president determines who best represents your interests within the Society.
* The president-elect, assisted by the Nominations Committee, has the authority to identify individuals to serve on governance committees. The committees address important topics within our community and organization. For example, the Education Committee promotes public awareness of plant biology as a constantly evolving science; the Equity, Diversity, and Inclusion Committee enhances inclusion in ASPB activities across the board and promotes the careers and professional development of marginalized plant biologists in society as well as the profession; and the Women in Plant Biology Committee addresses women-specific challenges in the workplace. The president-elect also has the authority to choose the topic and speakers for the President’s Symposium at the annual Plant Biology conference.
* The Secretary’s roles include serving on the ASPB Board of Directors and on the Program Committee, which determines the location and scientific content of the annual Plant Biology meetings.
* The Board of Directors is the Society's decision-making body with authority to act on all matters of the Society as a whole, including devising strategic plans to advance the organization’s missions.

* Respond to surveys: Our surveys request important information, including input on conference content, format, and location; how and when to communicate with you; and how helpful the resources we provide are. Surveys are among your best options for giving feedback to current leaders on how they can serve you more effectively.

The ASPB Forward team can help you engage with the community and communicate your comments and ideas for how ASPB can best serve you (https://plantae.org/we-want-to-hear-from-you-aspb-forward/). Please contact the ASPB Forward team by email (aspb-forward@aspb.org), via Twitter (https://twitter.com/ASPBForward), or using the Google Docs form (https://bit.ly/ASPBForward).

Your engagement directly influences the objectives of ASPB and their execution, and in return, ASPB can provide concrete benefits for the development of your scientific career. My long professional experience has convinced me of the power of my engagement in carving the path forward and achieving my goals. If you’re not convinced, please take some time to read the biographies of our Pioneer Members (https://aspb.org/membership/aspb-pioneer-members/). These biographies highlight how engagement with ASPB influenced the career trajectories of many of the most successful plant biologists in the world.

We appreciate your time and request that you raise the power of your input. We need to hear from you! Please amplify your voice by any media you prefer continued on page 5
ASPB Officers and Committee Members Assume Posts for 2021–2022

Listed below are governance committee members for the current year. The year in which each committee member’s term ends is indicated in parentheses.

**Board of Directors**
Gustavo MacIntosh (2024), president-elect, chair
Katie Dehesh (2023), president
Stacey Harmer (2023), secretary
Kent Chapman (2023), treasurer
Clint Chapple (2023), elected member [elected by membership]
Elena Monte (2025), elected member [elected by membership]

**Board of Trustees**
Kent Chapman (2023), treasurer, chair
Chris McEntee (2022), ad hoc member
Erich Grotewold (2025)
Ed Cahoon (2024)
Jen Sheen (2025)
Clara Woodall, CFO, staff liaison

**Constitution and Bylaws**
Elizabeth Vierling (2023), chair
Andrew Groover (2024)
Eran Pichersky (2024)
Crispin Taylor, CEO, staff liaison

**Council**
Maureen McCann (2022), immediate past president, chair
Katie Dehesh (2023), president
Gustavo MacIntosh (2024), president-elect
Stacey Harmer (2023), secretary
Kent Chapman (2023), treasurer
Tessa Burch-Smith (2022), elected member [elected by Council]
Clint Chapple (2023), elected member [elected by membership]
Elena Monte (2025), elected member [elected by membership]
Ruth Welti (2025), chair, Membership Committee
Miguel Vega-Sanchez (2022), chair, Equity, Diversity, and Inclusion Committee
Steve Theg (2025), chair, Publications Committee
Eva Farre (2023), chair, Women in Plant Biology Committee
Erin Friedman (2022), chair, Education Committee
Patricia León (2024), chair, International Committee
Tessa Burch-Smith (2024), chair, Science Policy Committee
Mike Axtell (2022), Mid-Atlantic Section representative
Kathrin Schrick (2024), Midwest Section representative
Josh Gendron (2024), Northeastern Section representative
Nihal Dharmasiri (2023), Southern Section representative
Judy Brusslan (2023), Western Section representative
Stefan de Folter (2024), Mexico Section representative
Al Meyers (2023), Early Career Plant Scientists Section representative
Emily Heaton (2022), Environmental and Ecological Plant Physiology Section representative
Karen Hicks (2024), Primarily Undergraduate Institutions Section representative
Asia Hightower (2022), Ambassador Alliance representative
Josh Trujillo (2022), early career representative
Crispin Taylor, CEO (nonvoting)

**Education Committee**
Erin Friedman (2022), chair
Katelyn Butler (2022), early career representative
Kathryn Parsley (2023), early career representative
Valerie Haywood (2023)
Susan Bush (2025)
Joseph Jez (2022)
Tara Phelps-Durr (2022)
Jonathan Gilkerson (2023)
Dior Kelley (2025)
Ross Sozzani (2025)
Winnie Nham, staff liaison

**Equity, Diversity, and Inclusion Committee**
Miguel Vega-Sanchez (2022), chair
Broiana Griffin (2022), early career representative
Kevin Cope (2023), early career representative
Danielle Ignace (2023)
Anjali Iyer-Pascuzzi (2023)
Adam Steinbrenner (2023)
Imara Perera (2024)
Ramin Yadegari (2024)
Crispin Taylor, staff liaison

**International Committee**
Patricia León (2024), chair
Zakayo Kazibwe (2022), early career representative
Kamal Kumar Malukani (2023), early career representative
Shanjin Huang (2023)
Matthew Tucker (2023)
Dominique Van Der Straeten (2023)
Asa Strand (2024)
Gabriela Toledo-Ortiz (2024)
Crispin Taylor, staff liaison

**Membership Committee**
Ruth Welti (2025), chair
Ashlyn Wedde (2022), postdoc member
Sabrina Gilmour (2023), graduate student member
Youngwoo Lee (2023), early career representative
Clayton LaRue (2023)
Erin Sparks (2024)
Josh Gendron (2024), ex officio
Judy Brusslan (2023), ex officio
Mike Axtell (2022), ex officio
Emily Heaton (2022), ex officio
Kathrin Schrick (2024), ex officio
Nihal Dharmasiri (2023), ex officio
Karen Hicks (2024), ex officio
Stefan de Folter (2024), ex officio
Al Meyers (2023), ex officio
Andrew Foudree (2022), ex officio
Shoshana Kronfeld, staff liaison

**Nominating Committee**
Gustavo MacIntosh (2024), president-elect, chair
Katie Dehesh (2023), president
Miguel Vega-Sanchez (interim), Equity, Diversity, and Inclusion Committee representative [elected by EDI Committee]
Katelyn Butler (2023), early career representative [elected by Early Career Section]
Eva Farre (2022), council representative [elected by Council]

**Program Committee**
Stacey Harmer (2023), secretary, chair
Gustavo MacIntosh (2022), president-elect
Wayne Parrott (2022), past secretary
Let’s Nominate!

The Call for Nominations for elected positions on the ASPB Council is fast approaching. Please keep an eye out for an email message that will be sent to ASPB members on January 3, 2022, and be sure to submit your nominations by Friday, February 18, 2022.

ASPB relies on dedicated individuals who commit their time and energy to leading the Society. This year, members will be nominating and then voting for president-elect and secretary-elect. We need nominees to consider for these positions, so please participate in the process and let your voice be heard by submitting a nomination when the time comes. In the meantime, log in to your member profile and view the information we have gathered about the roles and responsibilities of the president (https://aspb.org/aspb-members/presidents/) and secretary (https://aspb.org/membership/aspb-members/aspb-secretary/). Note that per a vote of the ASPB membership earlier this year, the 2021–2022 Nominations Committee will be expanded to include elected representatives from the Council; the Equity, Diversity, and Inclusion Committee; and the Early Career Plant Scientists Section. Also review the list of prior ASPB presidents at http://asbp.org/about/past-presidents/; these individuals are ineligible to serve again in that capacity.

The Call for Nominations will open soon, so please join your colleagues and nominate! If you are interested in the possibility of serving on an ASPB governance committee, please log in to your member profile and complete the form at https://bit.ly/CommitteeApply.

I am certain your engagement will morph the Society into a more powerful ASPB.

Stay safe, and tune in for more in upcoming issues of the ASPB News!
NOMINATIONS OPENING
continued from page 1

nominee. However, nomination committees may opt to go back to the nominator to ask for additional information if they deem it necessary. Nominations should be submitted electronically as a single PDF via https://awards.aspb.org beginning on January 3, 2022. The names of the 2022 award recipients will be announced in mid-April via social media and email broadcast to ASPB members, and the awards themselves will be presented during Plant Biology 2022 (https://plantbiology.aspb.org/).

Awards to Be Given in 2022

Adolph E. Gude Jr. Award
This monetary award honors the Gude family, who made possible the establishment of the Gude Plant Science Center, ASPB’s headquarters. The award, established by the Society and first given in 1983, is to be made triennially to a scientist or layperson in recognition of outstanding service to the science of plant biology. Membership in the Society is not a requirement for the award.

Charles Albert Shull Award
This award was initiated in 1971 by the Society to honor Dr. Charles A. Shull, whose personal interest and support were largely responsible for the founding and early growth of the Society. It is a monetary award made annually for outstanding investigations in the field of plant biology by a member who is generally under 45 years of age as of January 1 of the year of presentation or is fewer than 10 years from the granting of the doctoral degree. Breaks in career will be considered when addressing the age limit of this award. The recipient is invited to address the Society at the annual meeting the following year.

Charles F. Kettering Award
This award was established by an endowment from the Kettering Foundation in 1962 to recognize excellence in the field of photosynthesis. It is a monetary award to be given to an individual, whether or not a member of the Society, in even-numbered years.

Charles Reid Barnes Life Membership Award
This award was established in 1925 at the first annual meeting of the Society through the generosity of Dr. Charles A. Shull. It honors Dr. Charles Reid Barnes, the first professor of plant physiology at the University of Chicago. It is an annual award for meritorious work in plant biology; it provides a life membership in the Society to an individual who is at least 60 years old. Membership is a requirement for the award, and, if appropriate, every fifth award should be made to an outstanding plant biologist from outside the United States. Because the last non-U.S. recipient was recognized in 2017, nominations of plant scientists from other countries are particularly welcomed this year.

Early Career Award
The Society instituted the Early Career Award in 2005 to recognize outstanding research by scientists at the beginning of their career. This award is a monetary award made annually for exceptionally creative, independent contributions by an individual, whether or not a member of the Society, who is generally not more than seven years post-PhD on January 1 of the year of the presentation. Breaks in career will be considered when addressing the time limit of this award.

Enid MacRobbie Corresponding Membership Award
This honor, initially given in 1932 and renamed in 2018 to recognize Enid MacRobbie’s many contributions to plant science research, provides life membership and Society publications to distinguished plant biologists from outside the United States in recognition of their contributions to ASPB and to plant biology. The honor is conferred by election on the annual ballot. The committee selects no more than three candidates, and these are placed on the ballot for approval of corresponding membership by majority vote. The president notifies successful candidates of their election. Election of a corresponding member is to be considered each year and held if warranted, provided the election would not increase the number of corresponding members beyond 2% of the dues-paying membership. ASPB membership is a requirement for this award.

Excellence in Education Award
This award, initiated in 1988, recognizes outstanding teaching, mentoring, and/or educational outreach in plant biology by an individual, whether or not a member of the Society. It is a monetary award to be made annually in recognition of excellence in teaching, leadership in curriculum development, or authorship of effective teaching materials in the science of plant biology.

Fellow of ASPB Award
Established in 2007, the Fellow of ASPB Award may be granted to current members in recognition of direct service to the Society and distinguished and long-term contributions to plant biology. Areas of contribution may include education, mentoring, outreach, research, and professional and public service. Examples of relevant Society service include, but are not restricted to, service on or on behalf of ASPB committees, service on editorial boards of ASPB journals, and active involvement in ASPB meetings. Current members of ASPB who have contributed to and been members of the Society for at least 10 years cumulative prior to their nomination are eligible for nomination. Recipients of the Fellow of ASPB honor, which may
be granted to no more than 0.2% of the current membership each year, receive a certificate of distinction and a lapel pin.

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

The Lawrence Bogorad Award for Excellence in Plant Biology Research was instituted by the Society in 2006 to honor Dr. Bogorad’s many contributions to plant biology, including his influential efforts to bring the techniques of molecular biology to bear on problems in plant biology; his groundbreaking research on chloroplast genetics, biogenesis, structure, and function; and his inspired teaching and mentoring. This is a monetary award made biennially to a plant scientist, whether or not a member of the Society, whose work both illuminates the present and suggests paths to enlighten the future.

**Robert Rabson Award**

The Robert Rabson Award, first given by the Society in 2012, recognizes Dr. Rabson’s steadfast advocacy of plant biology through creation of funding programs in the Department of Energy for research in basic energy sciences. The award recognizes postdoctoral scholars and faculty-level early career scientists, whether or not members of the Society, in academic, government, and corporate research institutions who have made excellent contributions in the area of bioenergy research. The award is made biennially to a researcher who is no more than 10 years post-PhD on January 1 of the year of presentation; breaks in career will be considered when addressing the time limit of this award. The recipient is given a monetary award and a one-year membership in the Society.

**Stephen Hales Prize**

This award honors the Reverend Stephen Hales for his pioneering work in plant biology published in his 1727 book *Vegetable Staticks*. It is a monetary award established in 1927 for an ASPB member who has served the science of plant biology in some noteworthy manner. The award is made annually. The recipient of the award is invited to address the Society on a subject in plant biology at the next annual meeting.

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**Applications for Travel Awards to Plant Biology 2022**

**ASPB Recognition Travel Award**

Travel award applications for eligible candidates opened October 11, 2021.

The submission deadline is February 4, 2022.

All applications must be submitted electronically at https://rta.aspb.org.

Recipients will be notified by late March.

**ASPB Travel Award**

Travel award applications for eligible candidates opened October 11, 2021.

The submission deadline is December 10, 2021.

All applications must be submitted electronically at https://travelgrants.aspb.org.

Recipients will be notified by late January.

**ASPB Women’s Young Investigator Travel Award**

Travel award applications for eligible women opened October 11, 2021.

The submission deadline is December 17, 2021.

All applications must be submitted electronically at https://wyita.aspb.org.

Recipients will be notified by late January.
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SPB has played a major role in my career, and I am enthusiastic about supporting its activities that further the development of future generations of plant scientists. I attended my first ASPP meeting in the summer of 1972, when I was a second-year graduate student with Eric Davies in the Botany Department at the University of Nebraska. That department was better known for training teachers than training researchers, and I doubt anyone from there had attended an ASPP meeting in decades.

We had exciting data on plant polysome isolation to present, and Eric thought it would be good for me and his other graduate student, Joe Waldrum, to experience the meeting. Needless to say, we knew no one there, and we were intimidated about giving oral presentations on our research. But the response we received was very positive. That year was a joint meeting with the Canadian Society of Plant Physiology, and we had the opportunity to meet many plant physiology luminaries from around the world. The experience made a lasting impression on me, and I rarely missed another annual meeting.

Several years later, I was an assistant professor at Purdue University and began receiving manuscripts to review for *Plant Physiology*. Four years after that, I was invited to become a member of the *Plant Physiology* editorial board, and 10 years after that, I became an associate editor of the journal. In 1988, I became the associate editor of *The Plant Cell* when it launched, and then its editor-in-chief in 1992. During this 20-year period, I had the opportunity to serve on several advisory and award committees and, through that service, to contribute to the ways in which the Society functioned and evolved.

I benefited immensely from these experiences. Originally, membership was an inexpensive way to publish my research and receive a subscription to the journals. But even more important were the opportunities I had for networking with plant scientists, gaining insight about novel techniques, and keeping up with the latest developments in many aspects of plant physiology and biochemistry. The visibility the Society gave my research helped me secure research grant support and recruit graduate students and postdocs. And I developed friendships that have lasted for decades.

ASPB provides many activities that support the career development of its members, including awards, fellowships, travel grants, and more. Several years ago, I helped launch the ASPB Legacy Society with the goal of increasing financial support for these good works. I contacted many friends and colleagues in the Society and asked them to consider joining the Legacy Society as Founding Members by donating $5,000. The result was spectacular, and we ended up with 135 Founding Members. Building on the generosity of ASPB members, Ralph Quatrano, Debby Delmer (see her interview on p. 10 of this issue), and I proposed a special fundraising event in conjunction with the ASPB Centennial in 2024. Thus was conceived the ASPB Centennial Challenge (https://bit.ly/CentennialChallenge), which is now led by the Centennial Challenge Committee (https://bit.ly/CC-Committee).

Over the years, ASPB has evolved into an important hub for promoting plant science research and education, both nationally and internationally. For me, it became more than just a professional society with which I was affiliated: it is an academic family consisting of hundreds of friends and colleagues, including many of my former graduate students and postdocs. For those of you who take advantage of membership, ASPB provides a variety of opportunities to advance your research, teaching, and professional development. If you have benefited from membership in the Society throughout your career, I urge you to join me in supporting ASPB’s Centennial Challenge. You can do this by donating to one of several funding activities that are part of this effort (https://aspb.org/donation-funds/). Help us reach our goal of raising $3 million in gifts from the community by 2024 and so ensure the education and training of future generations of plant biologists.
Sprinting to Endow ASPB’s Excellence in Diversity and Inclusion Award

BY BRIAN LARKINS, Chair, Centennial Challenge Committee; KENT CHAPMAN, Treasurer; KATIE DEHESH, President; and CRISPIN TAYLOR, CEO

By now, you have likely heard about ASPB’s major fundraising drive, the Centennial Challenge (https://bit.ly/CentennialChallenge), leading up to ASPB’s 100th anniversary in 2024. Although components of the Centennial Challenge—for example, the Pioneer of ASPB program (https://bit.ly/ASPBPioneer)—are perennial, the Centennial Challenge Committee (https://bit.ly/CC-Committee) decided at a recent meeting to also embark on a series of “sprints,” each with a more specific fundraising target in mind, and all, collectively, part of the overall Centennial Challenge.

The first of these sprints will be to fully endow the ASPB Excellence in Diversity and Inclusion Award (see box). The intent is to raise at least $60,000 before the end of this calendar year.

There are several reasons we have chosen to make this award endowment the target of our first sprint. This choice is entirely consistent with the principles behind our recently revised Position Statement on Diversity (https://bit.ly/ASPB-DiversityStatement), while demonstrating a deeper commitment to the principles articulated in that statement. It represents a significant signal in support of the larger efforts we are just beginning to undertake with sibling organizations in the ROOT & SHOOT (Rooting Out Oppression Together and SHaring Our Outcomes Transparently) Research Coordination Network (https://bit.ly/RootandShoot), and it is simply the right thing to do at this time.

Another important reason is that ASPB has recently received and accepted an anonymous, temporarily restricted donation that would fund the first award cycle. This gift requires the Society to name an inaugural award recipient next year and have that individual deliver a plenary talk at Plant Biology 2023 in Savannah, Georgia. If we achieve the goal of this sprint and have the endowment in place by the end of 2021, we expect to be able to continue the two-year cycle of this award uninterrupted. If we do not succeed, the award would go on hiatus until the endowment—and earnings on it—are sufficient to offer the award for a second time.

Donating in support of this award—or any of the other funds that collectively constitute the Centennial Challenge—is easy. Go to https://aspb.org/donation-funds/ and click on the green “Donate to ASPB Now” button to the right. This will open a new browser window in which you can select a predefined amount or your own preferred gift. Then click on the “Select Funds” radio button adjacent to “Available Funds” and from the drop-down menu that appears, click on “3—Excellence in Diversity and Inclusion Award Fund” (or, if you’d prefer, a different option.) Scroll to the bottom of the page and hit the “Donate” button, and you will be directed to either log in to your ASPB account or check out as a guest.

Thank you for your support; we will depend on your generosity to reach our goals.

Proposed* Description of the ASPB Excellence in Diversity and Inclusion Award

First awarded in 2022, the biennial ASPB Excellence in Diversity and Inclusion Award honors an ASPB member with a strong record of increasing diversity and inclusiveness in plant biology. This individual has made a significant impact in mentoring, supporting, or advocating for underrepresented individuals in their career in the plant sciences at any level. This individual may also have served as a role model and made a significant impact in outreach and service to underrepresented communities. The awardee will be invited to give a plenary lecture at the next annual Plant Biology meeting highlighting their outstanding science in addition to their activities in increasing inclusion and diversity.

The award committee shall consist of the most recent recipient of the award and three additional members serving for staggered terms of three award cycles. ASPB’s incoming president-elect will appoint a new member to the committee, who will serve until the end of the appointer’s term as president.

The recipient will receive a cash award and the opportunity to accept the award from the ASPB president during the annual Plant Biology meeting awards ceremony. A travel allowance will also be provided from the endowment return on investment for travel and meeting registration in the year of the awardee’s plenary lecture.

*ASPB’s Board of Directors has yet to formally approve a bylaw that describes this award.

Our Outcomes Transparently) Research Coordination Network (https://bit.ly/RootandShoot), and it is simply the right thing to do at this time.

Another important reason is that ASPB has recently received and accepted an anonymous, temporarily restricted donation that would fund the first award cycle. This gift requires the Society to name an inaugural award recipient next year and have that individual deliver a plenary talk at Plant Biology 2023 in Savannah, Georgia. If we achieve the goal of this sprint and have the endowment in place by the end of 2021, we expect to be able to continue the two-year cycle of this award uninterrupted. If we do not succeed, the award would go on hiatus until the endowment—and earnings on it—are sufficient to offer the award for a second time.

Donating in support of this award—or any of the other funds that collectively constitute the Centennial Challenge—is easy. Go to https://aspb.org/donation-funds/ and click on the green “Donate to ASPB Now” button to the right. This will open a new browser window in which you can select a predefined amount or your own preferred gift. Then click on the “Select Funds” radio button adjacent to “Available Funds” and from the drop-down menu that appears, click on “3—Excellence in Diversity and Inclusion Award Fund” (or, if you’d prefer, a different option.) Scroll to the bottom of the page and hit the “Donate” button, and you will be directed to either log in to your ASPB account or check out as a guest.

Thank you for your support; we will depend on your generosity to reach our goals.

Proposed* Description of the ASPB Excellence in Diversity and Inclusion Award

First awarded in 2022, the biennial ASPB Excellence in Diversity and Inclusion Award honors an ASPB member with a strong record of increasing diversity and inclusiveness in plant biology. This individual has made a significant impact in mentoring, supporting, or advocating for underrepresented individuals in their career in the plant sciences at any level. This individual may also have served as a role model and made a significant impact in outreach and service to underrepresented communities. The awardee will be invited to give a plenary lecture at the next annual Plant Biology meeting highlighting their outstanding science in addition to their activities in increasing inclusion and diversity.

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The recipient will receive a cash award and the opportunity to accept the award from the ASPB president during the annual Plant Biology meeting awards ceremony. A travel allowance will also be provided from the endowment return on investment for travel and meeting registration in the year of the awardee’s plenary lecture.

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Interview with ASPB Pioneer Member Deborah Delmer

How did you spend your career?

After getting a BA in bacteriology at Indiana University, I obtained a PhD in biology at the University of California (UC) San Diego, a campus so new that there were only six grad students in my cohort. We were pampered students, taught in informal classes by an eclectic faculty who encouraged us to argue and think for ourselves. Carlos Miller (of cytokinin fame) was doing a sabbatical there, and he taught me to grow plant tissue cultures that I used for my thesis work on tryptophan synthesis, even though I knew absolutely nothing about plants. After Carlos went back to Indiana, I was the only person working on plants, something that helped me become a very independent scientist early in my career.

A postdoc followed with Peter Albersheim in the Chemistry Department at the University of Colorado. Those were the days when they were developing the first generation of cell wall models based on good chemistry. I learned a lot of cell wall chemistry but concentrated on sucrose synthase, characterizing its kinetic properties and later being the first to purify the enzyme. Peter was a character, and we got on great because he admired those who enjoyed arguing with him—more valuable lessons learned on independence.

Soon after, I got my first real job—a dream job, really—at the Michigan State University (MSU) Plant Research Laboratory. Here I began my decades-long journey to uncover the mechanisms by which plants synthesize cellulose, using cotton fibers as a model system. In those days this topic was incredibly difficult, and I knew it was a high-risk endeavor. So I learned not to put all my eggs in one basket, and we also studied cell wall structure and fiber development and were the first to demonstrate a role for lipid intermediates in protein glycosylation.

Just as I received tenure at MSU, my life took a surprising turn (I fell in love), and I ended up spending the next 10 years of my life in Israel. During a sabbatical with Moshe Benizman at The Hebrew University, I found that the process of bacterial cellulose synthesis in vivo could proceed if driven by a pH gradient across the plasma membrane, but not if the membrane electric potential was depleted. I’m still not sure why. Later, I became a professor at The Hebrew University, learned to lecture in Hebrew, and continued working on cellulose and cell walls.

Then it was back to the United States—to UC Davis. Another dream job—great lab, substantial grants—and we could now approach cellulose synthesis with genomic studies coupled with biochemistry. Being chair of plant biology was a job that, surprisingly, I found I enjoyed very much. But after five years, I was restless. Sadly, my husband, Yoash Vaadia, had passed away, and our daughter Sarah and I agreed that she should be allowed to return to Israel, where almost all her friends lived.

So I took a giant leap to become a program director in food security at The Rockefeller Foundation in New York City. This was the third dream job of my career. I had to switch from blue jeans to lovely suits, ride the subway, and work in a beautiful building on Fifth Avenue. I attended meetings on the top floor that looked out over the city and involved people with knowledge and experience very different from my own. There were many lively meetings in which we argued with passion about something I had never even thought about before: how do you spend large amounts of money wisely to improve the lives of the poor?

I traveled the world, especially to many countries in Africa. I was hired to make grants to young scientists in Africa based on training and research in plant biochemistry. I often paired them with scientists in the developed world, with the ultimate goal of building capacity to make real changes in African agriculture. It was a whole new world that required much learning and adjustment. One day I got a call from colleagues saying, “Congratulations! You’ve just been elected to the U.S. National Academy of Sciences!” Many of my new colleagues, trained in fields far different from mine, asked me, “What is that?”

So now I am remarried and retired and live in the mountains of North Carolina. I continue to do consulting and serve on boards, but I also enjoy walking our goldendoodle, Eli, on our lovely trails, playing tennis, and writing memoirs and short stories.

What do you consider to be your most important contributions to plant science?

I think most people would point to our work as the first to identify plant genes encoding cellulose synthases. PhD student Meme Amor made a high-quality cDNA library from developing cotton fibers actively engaged in secondary wall cellulose synthesis. Using this, Dave Stalker at Calgene started randomly sequencing cDNA clones and quickly found two with a short sequence having homology to part of the active site of bacterial cellulose synthase.

I was sitting in Cleveland waiting for a heart transplant for my husband, and I asked Dave to send me full-length clones and went to work analyzing them. Because of large plant-specific regions, aligning with the bacterial gene was not easy using the very primitive sequence alignment programs available. So our apartment floor became littered with printouts of short sequences that I tried to piece together by hand. I don’t think I would have...
had the time or patience to do this if I had all the professorial commitments at The Hebrew University.

But that work in Cleveland bore fruit, and we found there were genes in plants with strong homology to the critical active site and transmembrane regions of the bacterial cellulose synthase, but they also had large intervening sequences that were plant specific. When we published the results in PNAS, the Arabidopsis folks took notice, and thus began the era of molecular approaches to cellulose synthesis.

Other research of which I’m proud includes the following: a role for sucrose synthase in channeling UDP-glucuronic acid to cellulose synthases, characterization of annexins, Rac gene function, callose synthesis, modeling of carbon flow, cell wall structure, and many other aspects of cotton fiber development. Postdoc Nick Carpita was one of the first to measure the pore size of plant cell walls. Another real favorite of mine is the work of Estie Shedletsky, who showed that when adapted to growth on an inhibitor of cellulose synthesis, cultured plant cells can adjust in amazing ways to survive and divide with essentially no cellulose in their walls—work that also shed light on how wall polymers interact and highlighted the ability of plants to adapt to adverse conditions.

From work at The Rockefeller Foundation, I am most proud of my discovery of very talented young Africans, many of whom have gone on to be productive scientists in their home countries. Finally, I have been told I have been a role model for many young women scientists, and if so, I am very proud of that. And I’m so proud of all who mentored me and were mentored by me.

**When did you become a member of ASPB?**

So long ago I can’t remember! I started going to meetings when I was a postdoc with Peter Albersheim, and I have attended them regularly since then.

**How did the Society impact your career, and what was your motivation for becoming a Founding Member of the Legacy Society?**

The early annual ASPB meetings were held at universities, and one of my first memories was of being dragged off to a noisy dorm room packed with faculty, postdocs, and students. Harry Beavers was leading the crowd in his British voice, bellowing “Lloyd George knows my father, father knows Lloyd George!” to the tune of “Onward Christian Soldiers.” There were so many of the “famous” folks of the day there acting like crazy kids—E. C. Steward, Folke Skoog, Joe Varner, Russ Jones, Maarten Chrispeels. Meeting them informally opened the door for talking to them in more serious venues.

Equally important were the following: my first short scientific talk, the first session I chaired, my first committee membership, my first major symposium talk, serving as president of the Society, and later receiving the ASPB Leadership in Science Public Service Award and the Charles Reid Barnes Life Membership Award. All were key moments for me during the course of my career.

I give to a lot of charities and had never considered donating to ASPB. But I came to realize that ASPB is like a scientific home for me—many of my best friends have been members, the ASPB journals are my favorite place to publish, and annual meetings have afforded me opportunities to attend valuable symposia outside my own area of research and were a fabulous way to keep up to date for courses I taught.

**What important advice would you give to individuals at the start of their career in plant science?**

Use meetings to enhance your visibility through posters, talks, committee work, and above all, networking. Do your degrees and postdocs at different institutions and not all on the same topic. Work hard to be a good speaker who displays confidence and doesn’t make the audience bored or nervous. Develop collaborations! Become a well-rounded person, and enjoy life beyond just science.

**Most Recent ASPB Pioneer Members**

(as of November 18, 2021)

- **Anthony Bleecker**
- **Winslow Briggs**
- **Joseph Ecker**
- **Mary Helen Goldsmith**
- **Richard Jorgensen**
- **Sabeeka Merchant**
- **Virginia Walbot**

https://aspb.org/membership/aspb-pioneer-members/
An Active and Exciting Year for the PUI Section

BY CARINA COLLINS, Marian University, and KAREN HICKS, Kenyon University

Although there are many benefits to being a faculty member at a primarily undergraduate institution (PUI), one common challenge is being isolated from the broader community of plant scientists. Like many of our colleagues, we value the annual Plant Biology meeting as a forum for presenting our research and learning about new developments in the field, and it is especially important for cultivating connections with other plant scientists.

We have long sought a mechanism to maintain the momentum and networking opportunities of the annual meeting during the academic year, but planning additional workshops isn’t feasible. Plant Biology 2020 could not provide the in-person networking opportunities many of us would have preferred, but our section hosted a successful virtual professional development workshop that gave us an idea. Starting in Fall 2020, we decided to hold monthly remote networking events on Zoom. Section members rotated hosting duties, such as scheduling the Zoom call and occasionally planning topics in advance to promote discussion. Official discussion topics were often practical (e.g., strategies for remote teaching, virtual research mentorship), but many events also included general catching up and support. We got the word out about these monthly events via emails to PUI Section members, posts on Plantae, and tweets from our new Twitter account @ASPB_PUI (please follow us!).

Our casual Zoom networking sessions have been incredibly successful. We have seen a wide variety of PUI Section members and faculty at all career stages, and we have welcomed graduate students and postdocs who are thinking about a PUI faculty career. Attendance has ranged from 10 to 15; depending on the interests and size of the group, we sometimes hang out together in a single Zoom room, and other times we move to breakout rooms to discuss specific topics.

These virtual networking sessions have helped both of us maintain our connections with fellow PUI plant biologists and meet new folks. We’ve learned how to more effectively use virtual project management tools like Slack, gotten to know our section colleagues better, and brainstormed teaching ideas and ways to maintain an undergraduate research program during COVID-19. A few of these discussions even led to the publication of a Letter to the Editor on inclusive teaching practices in *The Plant Cell* earlier this year (https://doi.org/10.1093/plcell/koab167).

The PUI Section ended the year with two workshops at Plant Biology 2021—our annual professional development workshop, directed toward current PUI faculty, and a career panel workshop for graduate students and postdocs considering PUI careers. These were great opportunities for PUI plant scientists to share ideas, make new connections, reconnect with colleagues, and build the PUI network.

The theme of this year’s professional development workshop was inclusivity in research and mentoring. We were joined by four panelists (Katya Chapman, University of Minnesota Crookston; Leslie Holland, University of Wisconsin–Madison; Rachel Jabaily, Colorado College; and Sarah Miller, Tiny Earth Project at the University of Wisconsin–Madison) who shared their experiences and thoughts on best practices in a prerecorded video format followed by a synchronous moderated panel discussion. Workshop participants then shared ideas in small group discussions on inclusive summer research programs, inclusive course-based undergraduate research experiences in plant biology classes, best practices in recruiting and retaining research students from marginalized populations, and mentoring practices that are inclusive and beneficial for all research students. Small groups recorded their ideas and links to resources in a common document titled “PUIWorkshop2021ReportOut” available on the PUI Section Plantae page in a folder labelled PUI Faculty Development Workshop Material (https://bit.ly/PUI-Plantae).

Participants left the faculty development workshop energized and better prepared to improve inclusivity in their mentoring and research, and many continued the conversations during a casual networking session later the same day.

Midway through Plant Biology 2021, we hosted a workshop for future PUI scientists titled “Why Be a Professor at a PUI?” Panelists represented diverse identities, PUI types, and faculty career stages and introduced themselves in prerecorded videos. A panel discussion introduced participants to the unique features of working for and applying to PUIs. Two rounds of small group conversation provided the opportunity to discuss building a job portfolio, applying and interviewing, research and funding, and job responsibilities, all with a focus on PUIs. Many attendees gathered afterward for further conversation, and some successful mentor–mentee connections were established. Materials from the workshop are available in the folder titled “PUI Career Panel Workshop Material” at the URL above. We encourage graduate students and postdocs interested in PUI careers to check out these materials and to reach out to PUI faculty via the Plantae mentoring center; use the key words “primarily undergraduate institution” or “PUI” to find us!

We look forward to gathering the PUI community in person in Portland next summer! The PUI Section is planning a faculty development workshop focused on plant awareness: how can PUI faculty best communicate the importance of plant science research at a PUI to prospective and current research students and collaborators, non-STEM faculty colleagues, and the public? We received an NSF conference grant last year and will once again be soliciting continued on page 15
Rank Prize for Nutrition Awarded to Cathie Martin

Cathie Martin has been awarded the prestigious 2022 Rank Prize for Nutrition for her globally significant research in making fruit and vegetables more nutritious. Cathie is a group leader at the John Innes Centre and professor of plant science at the University of East Anglia. The award recognizes those who have made a significant contribution to human and animal nutrition and whose ideas have been carried through to practical applications of benefit to humankind.

Dale Sanders, director of the John Innes Centre, said, “The award of this prestigious prize to Cathie Martin gives wonderful recognition to the enormous impact that Cathie’s work has had in the field of metabolic engineering. From fundamental discovery to innovative ways of improving human diet, Cathie’s research contributions have been inspirational.”

Cathie’s research into plant genetics and metabolism uses plant science tools to improve human diet and health, with special emphasis on biofortification and plant metabolic engineering to enhance foods nutritionally. Reflecting on the announcement of the award, she recalled, “I was sitting in my office at home, locked down, but snug with a log fire even though it was April 1, when I received an amazing email telling me I had been nominated for the Rank Prize. Bursting with excitement, I emailed my husband, who replied, ‘Do you know what day it is?’ Fortunately, his cynicism proved unfounded, and receiving the Rank Prize is wonderful recognition that our research might have achieved something worthwhile.”

The prize will be formally awarded at an event in London on January 17, 2022. This will mark the 50th anniversary of the Rank Prize, which has been celebrating outstanding scientific breakthroughs since 1972. Founded by Lord J. Arthur Rank, a British industrialist and philanthropist, the Rank Prize is awarded biannually in the fields of nutrition and optoelectronics, two areas Lord Rank built businesses upon.

The chair of the Rank Prize’s nutrition committee, John C. Mathers, remarked, “Professor Martin’s outstanding research combines fundamental research into the genetics of metabolic processes in plants and how we can use them to enhance the nutritional composition of human foods. She is a powerful advocate, and practitioner, of plant science for human health. As we tackle the twin challenges of increasing human health and protecting the health of the planet, her research is globally significant.”

The executive chair of the United Kingdom’s Biotechnology and Biological Sciences Research Council, Melanie Welham, noted, “For nearly 40 years, Cathie Martin’s work at the John Innes Centre—which BBSRC is proud to fund—has focused on how plant science can improve human diet and health. Her work on biofortification of fruit and vegetables to help guard against chronic diseases in humans has had a vast impact. We often hear about ‘super foods’ and ‘super drinks,’ yet it is Professor Martin’s work on phenolic compounds that has underpinned these concepts with real science. Cathie is a hugely deserving winner of the Rank Prize for Nutrition, and I, along with everyone else at BBSRC, congratulate her on this fantastic recognition of all her achievements.”
Robin Buell Awarded the 2022 McClintock Prize

BY MARIA M. LAMEIRAS
CAES News

Plant geneticist Robin Buell has been selected as the recipient of the 2022 McClintock Prize by the Maize Genetics Cooperation Advocacy Committee for her groundbreaking work in plant genome structure, function, and evolution. Robin recently joined the University of Georgia (UGA) College of Agricultural and Environmental Sciences (CAES) as the Georgia Research Alliance (GRA) Eminent Scholar Chair in Crop Genomics. Previously, she was a university distinguished faculty and MSU Foundation professor of plant biology at Michigan State University from 2007 until 2021. She has also been an associate investigator at The Institute for Genomic Research and an assistant professor at Louisiana State University.

Robin's research program at UGA focuses on the genome biology of plants, including comparative genomics, bioinformatics, and computational biology. As GRA President Susan Shows noted, Robin “is a true pioneer in the field of plant genomics, an area of study that is of vital interest to Georgia’s farmers and food producers. In addition, the research grants she will bring to our state and the lab experience she provides students reflect the added benefit GRA Eminent Scholars create for Georgia.”

The Maize Genetics Cooperation is a nonprofit organization dedicated to advancing research in maize genetics, genomics, and breeding. The Barbara McClintock Prize for Plant Genetics and Genome Studies was created to honor the contributions of plant geneticist Barbara McClintock, who won the 1983 Nobel Prize in Physiology or Medicine for her discovery and characterization of transposable genetic elements—“jumping genes”—that she determined could move within the genome. She was the first woman to receive an unshared Nobel Prize in the sciences.

The date of the announcement, October 10, was the anniversary of the day McClintock learned she would receive the Nobel Prize. The McClintock Prize will be presented to Robin at the March 2022 Maize Genetics Meeting. “This prize is awarded in memory of one of the most famous plant geneticists in history, and we are delighted to present it to Professor Robin Buell in light of her innovative discoveries in plant genomics and service to the scientific community,” said Dave Jackson, former chair of the Maize Genetics Cooperation Advocacy Committee.

Robin was involved in sequencing the first plant genome, of Arabidopsis, and the first crop genome, of rice. These early genomic milestones set the stage for sequencing more complex plant and crop genomes, enabling researchers to improve crop genetics and study processes important to human health. Robin has also worked on the genomes of potato, maize, switchgrass, sweet potato, mints, and medicinal plants.

Using her expertise in bioinformatics, Robin has also created databases and web-based data-mining tools for the greater scientific community. She maintains the Rice Genome Annotation Project, which receives more than 2 million webpage visits a year. According to Allen Moore, associate dean of research at CAES, “Her research is world-leading, utilizing the power of modern genomics to understand plant biology. Her work is the definition of integrative, using genomics and computational approaches to understand plant biology from fundamentals to applications.”

In a newly funded project, Robin is working with collaborators to reengineer tomatoes’ natural terpenes, or aromatic compounds, to produce valuable products for medical and other applications. “Some famous terpenes are the compounds that make lavender and citronella smell nice. There are a lot of terpenes that are produced in tomato fruit, but we’d like to produce some high-value novel compounds that normally you continued on page 18
Niba Audrey Nirmal was awarded the 2021 ASPB/AAAS Mass Media Fellowship at SciShow within Complexly, LLC. SciShow produces science videos and explores the exciting realities of our universe for more than 23 million combined followers. She will continue to host SciShow TikToks, exploring everything from flowers that mimic the smell of insects to how bees build their beehives. Throughout the fellowship, Niba worked with mentors that she has always looked up to, such as Hank Green. She also hosted a SciShow video on the immune systems of canaries.

Niba’s passions lie in plant science, the climate crisis, and science storytelling through video. She created Notes by Niba (www.notesbyniba.org), through which she explores plant science in cosmetics, fashion, and skin care. Her new show, “Impact of Everything,” recently launched on Seeker, a science video production company with more than 6.5 million combined followers. She currently works as a media producer and digital communication strategist in Lawrence Berkeley National Labs’ Earth and Environmental Science department. She has previously produced videos with the University of North Carolina at Charlotte and at Stanford Linear Accelerator Laboratory.

Her personal project, Notes by Niba (www.notesbyniba.org), explores plant science in cosmetics, fashion, and skin care. For her work, Niba received the 2021 World Congress Emerging Producers Scholarship, the 2020 STEM Advocacy Institute Fellowship, and a 2020 Jackson Wild filmmaking fellowship, in which she was mentored by filmmakers from National Geographic and BBC.

Niba also works closely with high schoolers looking to advance in science communication. As video coordinator for PBS NOVA Science Studio, Niba led high schoolers in producing scientific videos. She also serves as a mentor and social media for curiousSCIENCEwriters, an extracurricular program training high school science communicators.

Niba received her MS in December 2020 from Philip Benfey’s lab at Duke University, where she studied developmental genetics of plant roots. She completed her undergraduate degree at the University of California, Davis, investigating the effects of climate change on crops in Siobhan Brady’s lab.

Niba is extremely grateful to ASPB for providing the opportunity to have worked as a ASPB/AAAS Mass Media Fellow. She will continue to create engaging multimedia science content, hoping to further boost the public’s appreciation of plants.
What an incredible experience the Ralph W. F. Hardy Endowment, Inside Climate News, and ASPB provided me with the AAAS Mass Media Science & Engineering fellowship! Thank you for the support, time, and mentorship I’ve gained toward developing my science writing career.

My experiences last summer shaped how I craft narratives, tempered how I balance remaining neutral while weighing opposing arguments, and pushed me to consider my responsibility in interactions with sources. It taught me to filter through the many angles surrounding controversial issues and challenged me to tell stories that cross the intersection of science and justice.

Because of this summer, I’ve not only become a better science writer, but also built a strong foundation on which my reporting ethics can grow.

Going into this fellowship, I had two main goals. The first was to shine a light into the black box of a newsroom. I wanted to learn how research findings travel out of scientific studies and into news articles, how reporters find sources—be they scientists, community members, or documents—and what tools they use to organize those sources. Lacking significant training and experience in journalism, I was interested in what it takes to make science writing a career: what do editors value in a story and in a reporter?

My second goal for the fellowship was to expand beyond reporting on strictly science stories. With science fielding the background of so many of our globe's most pressing issues, from climate change to pandemics, land use to world food supply, it was important to me to incorporate non-science elements, including social justice issues, into the articles I wrote.

Despite the distance of working remotely from Anchorage, Alaska, the mentorship I received from both AAAS and my host site, Inside Climate News, exceeded my expectations in helping me illuminate the answers to many of these questions. I was fortunate to receive countless insights from editors and fellow reporters about the reporting process, the mechanics of making this a career, and the art of telling a nuanced story. Additionally, my editors and AAAS made clear that this fellowship was an opportunity to learn and grow in a new field, allowing me the time to process stories and the space to struggle without pressures of expected outputs.

Of course, because I was hosted by Inside Climate News, my stories centered on climate science. Some articles focused on local events, such as record-level sunny-day flooding in Juneau after a “perfect storm” of climate change and glacial melt. In other articles I found common threads among research projects such as tracking whether climate change is outpacing the ability of Arctic animals to adjust to warming temperatures.

One of the most challenging stories I worked on detailed the opposition of the Saami, an Indigenous group in northern Scandinavia and Russia, to solar geoengineering as a potential solution for a warming world. Their experience in responding to one research group’s activities demonstrated a broader theme about the role of social justice in climate science. Weaving through the multitudes of perspectives on the issue to present a cohesive narrative was a learning experience in reporting ethics. It challenged me not to sacrifice the integrity of a story in an attempt to maintain neutrality.

After the fellowship, I began a new position as communication and diversity, equity, and inclusion (DEI) manager with Toolik Field Station at University of Alaska Fairbanks in Arctic Alaska. I’m excited for the opportunity to continue honing the skills I learned this past summer while writing about the research and science support that take place at Toolik and working across the intersection of science communication and DEI.

My deepest gratitude to the Ralph W. F. Hardy Endowment, AAAS, ASPB, and Inside Climate News for supporting me through this immeasurable opportunity. I feel even more confident in my desire and ability to pursue science writing and thankful to join the thriving community of science communicators.
Welcome to the ASPB News “Luminaries” column. Student and postdoc members are invited to submit their ideas for a 500- to 750-word interview they might like to conduct with a prominent scientist. Contact Membership Committee Chair Ruth Welti at welti@ksu.edu, who will help you develop some questions to frame your story. If we publish your interview, you will receive a $50 Amazon gift card.

Diane Ebert-May
Distinguished Professor, Michigan State University

BY KATY MCINTYRE
ASPB Ambassador and USDA National Institute of Food and Agriculture Predoctoral Fellow

Diane Ebert-May is a unique scientist who is actively conducting research on both long-term plant ecology and biology education research, all while focusing on training a new generation of academics to transform undergraduate teaching and learning by implementing scientific teaching—that is, teaching science as it is practiced.

Diane began her academic career by earning a bachelor’s degree in botany from the University of Wisconsin and a master’s and PhD in ecology and evolutionary biology from the University of Colorado Boulder. During her graduate program, she began long-term ecological studies on alpine plant communities on Niwot Ridge in north-central Colorado. That research continues, and she has plans in place for the next generation of scientists to extend the work another 50 years.

In addition to her ecology research, Diane’s other passion is reforming the ways science is being taught in classrooms. Historically, unlike faculty in writing-based courses who demand small enrollments (i.e., often from the humanities), scientists agreed that they’re able to teach hundreds of students just as easily as they can teach 10 students. And that difference was the beginning of the end. Scientific teaching is all about being learner centered. Students learn how to use scientific practices (asking a question, analyzing data, modeling) to do something with the knowledge I want them to learn. Knowledge is based on the core concepts within the discipline.

Learning takes place when you rearrange neurons in your brain, making new connections. The way science is taught now is in bits and pieces, not by teaching students how to make connections among concepts. What we’re researching now is how to design objectives, tests, and assignments in a way that is multidimensional—that

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is, that includes core concepts, science practices, and cross-cutting concepts. For example, students might be asked to make a descriptive model for carbon cycling of a system they’ve never been in and then use that model to make predictions, generate hypotheses, and provide reasoning.

Out of 202 students in the last course I taught, no one failed. Scientific teaching promotes an inclusive environment that students can participate in regardless of their previous experiences and knowledge, demography, race, or ethnicity. All students have a choice they can get on board with and achieve in a supporting environment.

What does your support for postdoctoral researchers entail?

With funding from the NSF, I started the FIRST-IV project, which is the Faculty Institute for Reforming Science Teaching, in the 1990s. This institute really started first as an idea, generated together with Carol Brewer and Jan Hodder, on transforming teaching by bringing the field into the classroom because our experience suggested that students are active and engaged when they are outside the classroom and in the field. This first study began when I was working with faculty on teaching professional development at biological field stations across the United States. However, the results from our study suggested that there is a negative correlation between number of years teaching and likelihood of becoming a scientific teacher. For faculty who have fixed mindsets, change is difficult.

Therefore, I said, OK, I’m working with postdocs, who are early in their careers. I believe they are among the most ignored population in academia, yet they are responsible for keeping the research enterprise moving forward and have no (or limited) opportunities to gain experience and credentials in teaching.

Using the field stations as the sites for professional development on teaching and learning, I worked with 201 postdocs for four years with the ultimate goal of preparing them for an academic position that includes teaching. To achieve this, they must have the ability to teach learner-centered, inquiry-based courses and radiate as state-of-the-art instructors. And they accomplished this, and continue to do so.

What inspires you from the next generation of scientists?

I have two grandsons in elementary school. They love and engage with the natural world, and they are totally accepting of diversity among their friends. Parents are changing. Schools are changing. It’s happening on all levels. That’s what I’m optimistic about.

What advice would you give to early career scientists?

If you realize you don’t have the teaching credentials you need to get the position you want, search for a postdoc or a sabbatical position to learn about and develop those credentials, especially with teaching undergraduates. I encourage you to read the AAAS report Vision and Change in Undergraduate Biology Education (https://visionandchange.org/) to see where we are going as a nation. Choose departments with faculty who share the same beliefs, hopes, and dreams for science and education in this century that you have.

ROBIN BUELL continued from page 14

would get from sperm whales or sandalwood, a very expensive tropical tree,” Robin said. “We already know how to grow tomatoes year-round, and we know how to process tomatoes, so what we’d like to do is to take the tomato—which is a nice little chemical factory—and make it produce these novel, high-value chemicals sustainably,” she added. Robin and her collaborators will try to do this by modifying the tomato plant’s natural processes to create the novel terpenes in its fruit. The project will be a proof of concept, as the research team will attempt to engineer a tomato chassis that does not make terpenes in the fruit. Once successful, they will make tomatoes that produce two specific high-value terpenes—one an antibiotic used to treat tuberculosis, and the other an essential oil from sandalwood.

Buell has an active research group composed of postdocs, research assistants, and graduate and undergraduate students, and she collaborates with scientists across the United States and throughout the world. She has served as an editor for Plant Physiology, The Plant Genome, Crop Science, Frontiers in Genetics: Plant Genetics and Genomics, and The Plant Cell. She is a fellow of AAAS and ASPB.
Policy Update

BY VICTORIA HABER
Lewis-Burke Associates, LLC

Congressional Updates

Congress Releases $1.75 Trillion Build Back Better Bill

The Biden administration released a $1.75 trillion budget framework for the Build Back Better economic agenda focused on climate and clean energy, health care, education, childcare, and housing. This was a significant concession from the original $3.5 trillion agenda and spending package advanced by the House in September. The House subsequently released new legislation providing details on the distribution of funding for major federal agencies and programs. The proposed legislation includes $555 billion to combat climate change and promote clean energy production. NSF would receive $500 million for climate change-related research under the current reconciliation package, a $100 million increase from the $400 million proposed in the original reconciliation package. This bill would also provide $30 million for the Agriculture Advanced Research and Development Authority at USDA, which was authorized in the 2018 Farm Bill and would fund high-risk, high-reward research at USDA, likely with a strong climate focus, as well as $210 million for the Agricultural and Food Research Initiative.

Senate Appropriations Committee Releases Remaining FY2022 Funding Bills

The Senate Appropriations Committee released its nine remaining fiscal year (FY) 2022 appropriations bills, including bills that would fund federal agencies focused on environmental research, such as NSF. Across the board, the Senate bills would increase funding compared with FY2021 levels for most programs of interest to the research and higher education communities, but lower than the proposed increases in President Biden’s budget request and in the House appropriations bills. Rather than advancing these bills through the standard committee process, the Senate Appropriations Committee plans to use them as a starting point for negotiations with the House on final FY2022 spending levels.

Of relevance, in the Senate’s Commerce, Justice, Science, and Related Agencies (CJS) appropriations bill, NSF would receive a $1 billion increase compared with FY2021 levels, of which up to $865 million would be used to support the creation of the new Technology, Innovation, and Partnerships Directorate to advance emerging technologies and tackle cross-cutting priorities such as climate change and clean energy. The bill also included guidance to NSF to increase climate change investments, including a 46% boost to the U.S. Global Change Research Program.

Until the House and Senate conference their appropriations bills, the government is being funded through a continuing resolution (CR) that allows federal agencies to work under the prior year’s budget level but typically prevents them from starting new programs. The current CR is set to expire on December 3 and will likely be extended.

House Agriculture Committee Holds Hearing on Agricultural Biotechnology

The House Agriculture Committee held a joint hearing of the Subcommittee on Livestock and Foreign Agriculture and the Subcommittee on Biotechnology, Horticulture, and Research. At the hearing, titled “Agricultural Biotechnology: 21st Century Advancements and Applications,” committee members and witnesses discussed the importance of leveraging cutting-edge technologies to create more resilient food sources in response to worsening climate impacts, emphasizing that ingenuity is imperative to meet growing needs to feed the world population while being good stewards of the environment.

Potential areas for innovation discussed included gene editing and reproductive biology that can be used to help minimize water use, food waste, and carbon emissions by the agricultural sector. Witnesses also spoke to the importance of public–private partnerships to provide the research and regulations necessary to promote biotechnology innovation.

Source and Additional Information

• Full bill text can be found at https://tinyurl.com/42t43ndk.
• The White House Build Back Better framework is available at https://tinyurl.com/73ew2j8w.
• Lewis-Burke’s analysis of the Senate CJS appropriations bill can be found at https://tinyurl.com/dx7yc2w.

Federal Agency and Administration Updates

OSTP Announces New Climate and Environment Personnel

The White House Office of Science and Technology Policy (OSTP) announced five new staff members to its first-ever Climate and Environment Division to focus on climate change, biodiversity, disaster preparedness and response, and environmental justice. OSTP named Patrick Gonzalez, a forest ecologist and climate change scientist, to be assistant director for climate and biodiversity. Kate Dargan Marquis was named assistant director for disaster preparedness and response following her experience in fire service and response.

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POLICY UPDATE

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Heather Tallis, an expert in biodiversity and conservation, particularly as they intersect with human health and the economy, will be assistant director for biodiversity and conservation science.

Ann Marie Carlton was named the AAAS Revelle fellow; she will work to expand scientific understanding of air pollution from agriculture. Finally, Haley Case-Scott will be a junior policy adviser and will bring her experience in environmental justice, community resilience, and grassroots advocacy. Jane Lubchenko, OSTP deputy director for climate and environment, specifically noted that these five additions to the OSTP Climate and Environment Division “will help drive integrated solutions that reduce carbon pollution, conserve nature, and enhance the resilience of communities and economies.”

Source and Additional Information
- The press release announcing the new staff is available at https://tinyurl.com/3kwhuzbt.

Funding and Engagement Opportunities

NSF BIO Releases Solicitation for Biodiversity on a Changing Planet Program

NSF’s Directorate for Biological Sciences (BIO) released a solicitation for its Biodiversity on a Changing Planet (BoCP) program. This program supports interdisciplinary projects that address grand challenges in functional biodiversity science in the context of environmental change and that yield conservation outcomes. This program has the option of international collaboration. BoCP offers two proposal submission tracks, Design and Implementation. NSF expects to grant up to $500,000 for Design projects and up to $2.5 million for Implementation projects, for a total of $14 million to $17 million in funding. The full application is due March 25, 2022.

Source and additional information
- The program page can be found at https://tinyurl.com/2w8v9f7a.

NSF BIO Releases Solicitation for Organismal Response to Climate Change

NSF BIO released a solicitation for the Organismal Response to Climate Change (ORCC) program. ORCC focuses research on predicting the way that organisms respond to changing climates by integrating mechanistic and eco-evolutionary approaches and models. Projects should also consider the societal challenges that have emerged as a result of climate change, such as food security, agricultural systems management, disease and pest outbreaks, and conservation and maintenance of ecosystems. This solicitation accepts two types of proposals, besides standard research proposals: Research Coordination Network proposals and workshop and conference proposals. NSF estimates it will give out six to 10 continuing or standard grants for a total minimum award of $10 million for FY2022. The first application deadline is March 1, 2022.

Source and additional information
- The program page can be accessed at https://tinyurl.com/3bcbsr82.

NSF Announces Critical Aspects of Sustainability Initiative

NSF has announced its new Critical Aspects of Sustainability (CAS) initiative, which invites the scientific and engineering community to submit proposals for research ideas that will “aid in the Nation’s goal of reaching net-zero greenhouse gas emissions and developing approaches for adapting to the change that is already occurring.” Reflecting NSF’s interest in supporting climate-change–related work across the Nation, the recently released Dear Colleague Letter serves as a blanket invitation to extend the goals and objectives of core programs across many of NSF’s divisions and bring forward new research ideas to address the monumental challenge of climate change. NSF will especially be welcoming interdisciplinary approaches using cross-disciplinary teams.

In addition to grants provided under existing core research programs, NSF also intends to make CAS initiative funding available through mechanisms including conference grants, Early-Concept Grants for Exploratory Research, Research Advanced by Interdisciplinary Science and Engineering grants, and Grant Opportunities for Academic Liaison with Industry awards. Before applying, prospective investigators are encouraged to submit an email inquiry to a program director aligned with the area most relevant to the proposal topic at CAS@NSF.gov to determine whether the proposal is an ideal fit.

Source and Additional Information
- The full solicitation for this opportunity is available at https://bit.ly/3CcJdjb.

NSF BIO Releases Solicitation for Biology Integration Institutes

NSF BIO has released the solicitation for its Biology Integration Institutes. The program aims to promote collaboration across disparate fields in using innovative experimental, theoretical, and modeling approaches to uncover principles operating across various forms of life, from molecules to cells, organisms, species, ecosystems, biomes, and the Earth at large. Proposed institutes should identify a research theme based on a biological question that is “larger in scope than research projects typically submitted to core programs in the BIO Directorate.” A total of four to six awards are anticipated to be funded under this solicitation, with expected total program funding of $15 million over a five-year period. Full proposals must be submitted by January 12, 2022.

Sources and Additional Information
- The full solicitation for this opportunity is available at https://bit.ly/3nGNh68.

including a description of potential topics and participating divisions, is available at https://bit.ly/31cWDPF.
Masaki Furuya, a plant photobiologist, passed away on March 29, 2021, 10 days before his 95th birthday. He enjoyed his science even after he retired from the Hitachi Advanced Research Laboratory (HARL) at age 75. His funeral ceremony was attended only by family members because of COVID-19 restrictions. But going out of this world quietly was Masaki’s will, so the rest of us prayed in silence from afar.

Masaki was born April 9, 1926, and was raised in Tokyo until he moved to Nagoya to enter high school at age 17. In December 1941, World War II broke out in Japan, and Masaki’s education was disrupted. He received military training as a tank and truck driver, during which he learned the inner workings of internal combustion engines. As a result, he loved cars and machines and hoped to study engineering at the University of Tokyo. But in 1945, he was forced by government policy to enroll in the Department of Agriculture at Kyoto University, where, coincidentally, he learned plant physiology.

Masaki reenrolled at the University of Tokyo after the war and studied plant morphogenesis under Fumio Maekawa. Masaki dissected the winter buds of many dicotyledonous plants to clarify dicot phylogeny. This work was published in French as his first paper (Furuya, 1953). In 1949, Maekawa told Masaki how 2,4-D impacts leaf shape, inspiring Masaki to begin to study the effects of plant hormones.

To make a long story short, in 1958 Masaki decided to go to the United States as a Fulbright Scholar, working under Arthur Galston at Yale University. There he studied an IAA oxidase inhibitor, identifying the cofactor kaempferol-3-triglucoside (KG) and its p-coumaroyl ester (KGC) in etiolated pea buds, as well as quercetin-3-glycoside and its phenylpropanoid ester as the inhibitor in green tissues (Furuya et al., 1962). He found that KGC increased under red light but KG did not and that the red light effect could be reversed by far-red light irradiation, indicating phytochrome control of coumaric acid synthesis (Furuya and Thomas, 1964). This discovery was the starting point from which Masaki dedicated his whole life to “sincere curiosities about phytochrome.”

In 1962, after getting a PhD at Yale University, Masaki moved to Harvard University as a post-doctoral fellow under Kenneth Thimann, where he investigated anthocyanin synthesis in Spirodela. He also worked with John Torrey on lateral root formation in pea roots, a developmental process that is mediated by phytochrome in a red/far-red reversible manner.

In 1963, Bill Hillmann offered him a position as assistant plant physiologist at Brookhaven National Laboratory. Bill and Masaki measured phytochrome amounts using in vivo spectrophotometry, but they found no correlation between phytochrome levels and physiological phenomena. Later, Masaki, by then a Corresponding Member of ASPB, wrote about these problems in his biography in the Annual Review of Plant Biology (Furuya, 2004) and in his “Where Are They Now?” column in the September/October 2014 issue of the ASPB News (Furuya, 2014).

In 1965, he suddenly received a letter from Nagoya University offering him an associate professorship. Following Thimann’s suggestion, he returned to Japan after 7 years in the United States. He struggled to establish his own photobiology laboratory in Nagoya with preexisting graduate students working on fern gametophyte morphogenesis. However, he learned that fern gametophytes are a good experimental system for investigating photomorphogenesis (Wada, 2008). In 1968, he was offered a professorship in the Department of Botany at the
MASAKI FURUYA continued from page 21

University of Tokyo, where he had studied dicot phyllotaxis under Maekawa, effectively succeeding Maekawa on the faculty.

Masaki’s educational philosophy was to let his students find their own interests. One investigated photocontrol of perithecial formation in fungus, another phototaxis in algae, and a third photocontrol of cell division in fern gametophytes. Only a few people studied phytochrome either physiologically or biochemically.

Masaki’s university life at Tokyo was quite busy, not only with educational responsibilities but also with duties on and off campus, including as department chair; director of the university botanical gardens in Tokyo and Nikko, two hours to the north; editor-in-chief of Plant & Cell Physiology; the committee to inaugurate the National Institute of Basic Biology (NIBB); and others. You can almost feel the stress he was under during this period from his own writing in his biography in the Annual Review of Plant Biology. Fortunately, after NIBB was established at Okazaki, Masaki became a visiting professor and launched a phytochrome laboratory in which major advances in its study were realized, including purification of phytochrome, monoclonal antibodies made using purified phytochrome, discovery of type I and type II phytochromes using those monoclonal antibodies, and the partial amino acid sequencing of them. He also looked very happy when he was in Okazaki.

After Masaki’s complete retirement from science, he started writing, in Japanese, a very detailed biography, beginning with his roots. However, it omitted the period when he was at the University of Tokyo. Although the title of the chapter was there and I urged him to write it, his answer was, “Nothing interesting at that time.”

In 1987, after he retired from the University of Tokyo and NIBB, he moved to the RIKEN Frontiers laboratories. He established a laboratory that consisted mostly of early career scientists from abroad, and he advanced collaborations with top photobiologists in the world to incorporate molecular biology techniques, such as using phytochrome mutant lines. Discoveries related to the physiological functions of phyA and phyB were derived mainly from studies with these mutants, and they led to the investigation of phyA and phyB function worldwide.

In 1992, after five years at RIKEN Frontiers, Masaki moved to HARL, which was located in Hatoyama, near Tokyo. There he enjoyed science without administrative burdens. The physiological functions of phyA and phyB were more precisely elaborated, and the very low fluence response (VLFR) and a high-intensity response (HIR) were found be mediated by phyA (Shinomura et al., 1996, 2000) by using the Okazaki large spectrograph. Masaki enjoyed HARL immensely, referring to it as the “utopia of his life.” He ran his laboratory until 2001, when he suffered first a cardiac infarction (in January in his lab at Hatoyama) and later a cerebral infarction (in May during the 19th Annual Missouri Symposium at the University of Missouri in Columbia).

Masaki was always eager to build new “toys” for his experiments. As soon as he got back to Japan in 1965, he visited Hitachi and asked them to make a dual wavelength spectrophotometer to measure phytochrome in living tissues. But the engineers at Hitachi could not understand the meaning of the machine. When NIBB was inaugurated, Masaki built the world’s largest spectrograph as a key instrument for this institute, with monochromatic irradiation available from 250 nm to 1000 nm, 1 cm for 1 nm light, meaning that the rainbow was spread over 750 cm. He also developed computer-controlled threshold sample boxes that made it easier for researchers to generate fluence-response curves. Many people visited NIBB from all over the world to use this machine to obtain action spectra for their physiological phenomena.

Later, when Masaki was at RIKEN Frontiers, he built a custom-made Nomarski microscope for infrared light equipped with a microphotospectrometer, a microbeam irradiator, a photon counter, and a microimage processor. And in his laboratory at the University of Tokyo, we made a microbeam irradiator for partial cell irradiation to find an intracellular photoresponsive site (Wada, 2008). But when we used the instrument to explore various phenomena, he was unhappy and said to us, “Break the instrument! Do not rely on this technique!” He intended to warn us to step up to new concepts and approaches for our research.

He built many other custom-made machines. Of course, not all of them were successful; some of them did not work well in spite of the considerable time and expense invested in them. He was delighted, however, that the Okazaki large spectrograph was involved in the discovery of phyA function in both the VLFR and the HIR.

Masaki was also a challenger who aimed to reform university systems, academic societies, the systems of the Ministry of Education, and even Japanese society. He established a friendship society for the university botanical gardens to generate financial support. His approach to these challenges was likely learned during his seven years in the United States. He always said, “When I have to decide something difficult, I consider what Thimann would decide, if he were me.”

Masaki was a man of foresight and liked anything new. He could change his mind very quickly if he thought the new situation was better than the one before. He hated the “central dogma,” for example, and liked physiology and biochemistry better. But once the phytochrome genes were sequenced and mutant lines became available, he quickly switched his strategy to deploy these new molecular tools. He also bought new machines for his personal use when new products were announced. Even after he turned 90, he still enjoyed the Internet, including sites such as Facebook, to communicate with old friends.

Masaki was also a good leader. As its president, he organized the XV International Botanical Congress in the summer of 1993 at Yokohama. The Honorary President of the Congress was His Imperial Highness Crown Prince Naruhito, who is now Japan’s Emperor. The Congress was sponsored by 12 major Japanese societies of plant biology, agriculture, and pharmacology, and other societies cooperated in its development. The total number of individuals serving on the various committees required to run the conference exceeded
Robert Togasaki
1932–2019
BY SUSAN CARLSON,* U.S. Food and Drug Administration, and GOVINDJEE, University of Illinois at Urbana–Champaign

Long-time Chlamydomonas researcher and educator Robert (Bob) Togasaki passed away in Bloomington, Indiana, on November 19, 2019. Bob was a familiar presence at ASPB meetings over the years, where he had many friends and collaborators. Innately curious, he especially enjoyed chatting with students at their posters, and he freely offered advice. Over the course of his long career, Bob, along with his colleagues and students, published more than a dozen articles in Plant Physiology.

His research career began in the Cornell University lab of Martin Gibbs (who would later become editor of Plant Physiology). His remembrances of Dr. Gibbs were published in the September/October 2006 issue of the ASPB News. Bob received his PhD in 1964 in biochemistry, and the title of his dissertation was “Enhanced Dark C14O2 Fixation by Preilluminated Algae.” From there Bob moved on to postdoctoral studies with Paul Levine at Harvard University. In 1968, Bob received a faculty appointment in what was then the Botany Department of Indiana University (it was later merged into the Biology Department). He was promoted to full professor in 1983. He retired from academic life in 1997.

Bob’s research focused primarily on photosynthesis, taking advantage of Chlamydomonas as a genetic system to isolate mutants and elucidate photosynthesis-related biochemical pathways, including photosystem II, photophosphorylation, reductive pentose phosphate cycle, and later carbonic anhydrase. He trained several graduate students, including Arthur Grossman, William (Bill) Belknap, and Charlene Forest. He taught Cell Biology Laboratory to undergraduates for many years, with an emphasis on teaching the basics of photosynthesis. Following his retirement, Bob volunteered as an educator to young students in the Bloomington community.

Bob was a beloved colleague and mentor who will be remembered for his enthusiasm for Chlamydomonas research, his dedication to teaching, and his great compassion.

Reference

250. Masaki led all of them well, and he knew who was most effective in each position.

Even after completely shuttling down his own laboratory, Masaki still wanted to be involved in science. We were asked to send him the PDFs of our recent papers. And when his former students gathered to see him, he asked us to show him our recent scientific results, so we all had to prepare PowerPoints and tell him the stories. He also had a lifelong love for the Nikko area, including the botanical gardens. These gardens and surrounding mountains are used frequently for taxonomy and morphology lab classes, and Masaki had visited Nikko quite often since he was an undergraduate student. When he was a director of the botanical gardens in Tokyo and Nikko, he commuted to Nikko frequently. From 2011 through 2016, I brought him to Nikko quite often in the autumn or spring, and we stayed overnight. On those occasions, he talked and talked about science, even when soaking in a hot spring. Masaki’s legacy to science will long be remembered.

References


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