



p. 12  
**Joanne Chory  
Wins the 2020  
Pearl Meister  
Greengard Prize**

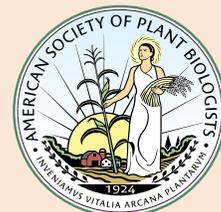


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**Plant Pathologist  
Pam Ronald  
Named GCHERA  
World Agriculture  
Prize Laureate**



pp. 22–23  
**Tributes  
Arren Bar-Even  
Hillel Fromm**

# ASPB *News*



THE NEWSLETTER OF THE AMERICAN SOCIETY OF PLANT BIOLOGISTS

## President's Letter

### Here's Hoping

BY MAUREEN McCANN  
ASPB President, Purdue University

This year has lasted a decade. As we pivoted from crammed lecture halls to online teaching, and from bustling, energized labs to working shifts and eating lunch on our own, we adapted to a new normal that still feels anything but normal. I'm nostalgic for holding lab meetings and grant review panels in person, talking science in the corridor, and waiting in line at the coffee shop. I miss the lower halves of all my colleagues' faces. Yes, all of them. So it's time for a thought experiment. Let's leap forward to a future when concerns about SARS-CoV-2 no longer dictate our daily routines.

In this future, public confidence in science is strong and scientists' voices are respected. The unprecedented scientific response to defeat the virus became the starting point for a new conversation between scientists and the public on climate



change, untangled from political motivations. Mainstream public opinion is that governments must act. Protection of plant biodiversity and global food security are issues at the forefront of the political agenda.

In this future, international collaborations are incentivized by funding agencies. Science is recognized and used as a tool of soft diplomacy.

We've learned how to make online collaboration effective and engaging while minimizing our carbon footprint. An era of team science has begun, in which global problems are tackled by experts in international laboratories that are no longer bounded by their physical locations.

In this future, the community of plant scientists is diverse across the dimensions of race and gender. Because of the pandemic,

*continued on page 3*

## Let's Nominate!

The Call for Nominations for ASPB Council positions is fast approaching. Please keep an eye out for an email message that will be sent to ASPB members on January 4, 2021, and be sure to submit your nominations by Friday, February 12, 2021.

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 elected member. 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, please view the information we have gathered about the roles and responsibilities of presidents (<http://bit.ly/aspbpresidents>; ASPB member log-in required) and elected members (<https://bit.ly/electedmbr>; ASPB member log-in required). Please also consider the list of prior presidents who have served ASPB (<http://bit.ly/aspbpastpresidents>); these individuals are ineligible to serve again in that capacity.

The Call for Nominations will open soon, so please join your colleagues and nominate!

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## ASPB Council

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

<b>President</b>	Maureen McCann
<b>Immediate Past President; Chair</b>	Judy Callis
<b>President-elect</b>	Katayoon (Katie) Dehesh
<b>Secretary</b>	Wayne Parrott
<b>Treasurer; Chair, Board of Trustees</b>	Kent Chapman
<b>Elected Members</b>	Christine Foyer Clint Chapple Gustavo MacIntosh
<b>Chair, Membership Committee</b>	Laurie G. Smith
<b>Chair, Equity, Diversity, and Inclusion Committee</b>	Miguel Vega-Sanchez
<b>Chair, Publications Committee</b>	Steve Theg
<b>Chair, Women in Plant Biology Committee</b>	Eva Farre
<b>Chair, Education Committee</b>	Erin Friedman
<b>Chair, International Committee</b>	Anja Geitman
<b>Chair, Science Policy Committee</b>	Tessa Burch-Smith
<b>Sectional Representatives</b>	
<b>Mid-Atlantic Section</b>	Mike Axtell
<b>Midwestern Section</b>	Gustavo MacIntosh
<b>Northeastern Section</b>	Carolyn Lee-Parsons
<b>Southern Section</b>	Nihal Dharmasiri
<b>Western Section</b>	Judy Brusslan
<b>Mexico Section</b>	Rubén Rellán Álvarez
<b>Early Career Plant Scientists Section</b>	Rishi Masalia
<b>Environmental and Ecological Plant Physiology Section</b>	Emily Heaton
<b>Primarily Undergraduate Institutions Section</b>	Leeann Thornton
<b>Ambassador Alliance</b>	Katy McIntyre

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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**  
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our attention was focused on the news, and we witnessed the horror of the murders of George Floyd and others on our TV screens. We reexamined implicit bias in our institutions and in the research enterprise, and we took to heart a commitment to inclusion in our own discipline.

In this future, a biomass-based bioeconomy is a growing sector of the global economy. The significant dip in carbon dioxide emissions as global travel was curtailed underscored how we could address greenhouse gas emissions. Beyond changing human behaviors, we have increasingly replaced fuels, chemicals, and materials once derived from fossil fuels with products synthesized by living organisms. Plant biotechnologists work with material scientists and engineers to redesign physical inputs for a circular economy: future materials will be deconstructed at the end of their useful lives and the subunits recycled. Plant and microbial synthetic biologists collaborate to create entrepreneurial opportunities and economic value.

In this future, early career plant biologists are optimistic about their future. The incredible speed with which therapies and vaccines were developed compared with historical precedents showcased the revolution in the life sciences that had happened over the previous decade. This revolution was enabled by technologies in reading and writing DNA, in facile gene and genome editing, in powerful genome-wide association studies, in new capabilities of mass spectrometry, and in computational modeling. The tipping point of a global health emergency revealed the importance of the careful and creative work of science.

In this future, as attention shifts to the urgent need to mitigate the impacts of climate change on crops and biodiversity, plant biologists are afforded the respect of first responders in the protection of our agricultural and natural landscapes. As technology continues to accelerate the pace of discovery, the costs of doing experiments are driven down. The ability to test decades-old and freshly minted hypotheses

has become democratized and is no longer the purview of a small number of labs with large resources. Tools of artificial intelligence and machine learning enable more efficient experimental design, and more analyses are automated, freeing up time for creative thought and innovation. Although the career paths of those still at an early stage may not be as linear as those of their mentors, those paths will be intellectually and professionally rich and rewarding.

What good is a thought experiment if you don't find yourself at the lab bench? In the time of COVID-19, ASPB has been true to its mission. The Science Policy Committee couldn't advocate in person this year in the rooms of members of Congress, but the committee still engaged with leadership in the funding agencies to inform, communicate, and positively influence policy related to plant biology. Our annual meeting, the first Plant Biology Worldwide Summit, was a hugely successful virtual event with workshops for professional development and learning opportunities. Society-wide, we contin-

ued the conversation on equity, diversity, and inclusion in plant biology. ASPB provided venues and platforms for communication through workshops, seminar series, and newsletters, both for our science and for the integrity of that science.

Working mostly from home over the past 9 months has revealed new skill sets. I had no idea that Nick—my favorite colleague, the best husband, and the gourmet chef in our house—could wield a pair of scissors like a hair-cutting diva (and I get to see his whole face). He has commented politely on my obsession with homemade croissant dough and my quest for the elusive perfection of *pains au chocolat*. I hope that we have learned to value the present at its true worth, that we are truly grateful for all that we have. But the fun of the thought experiment is in defining the desired future state. It's not meant to be a comprehensive definition, so please let me know what I've missed. Write me at [president@aspb.org](mailto:president@aspb.org). As a community, we can take the next steps forward. Here's hoping. ■



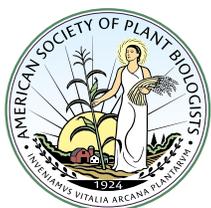
# ASPB/AAAS 2021 Mass Media Science & Engineering Fellows Program

Are you interested in science writing?

Do you want to help people understand  
complex scientific issues?

Apply for the ASPB/AAAS Mass Media Science & Engineering Fellows Program and learn how to increase public understanding of science and technology. Fellows in the 10-week 2021 summer program will work as reporters in mass media organizations nationwide. **Application window opened October 1, 2020, and closes January 1, 2021.**

Visit <https://www.aaas.org/programs/mass-media-fellowship> for more details, or email [mmfellowship@aaas.org](mailto:mmfellowship@aaas.org) for more information.



## Former host sites

*The Austin American-Statesman*

*The Dallas Morning News*

*Discover magazine*

*Ensia*

*The Idaho Statesman*

*The Indianapolis Star*

*KING 5 News*

*KQED Science*

*The Los Angeles Times*

*The Milwaukee Journal-Sentinel*

*National Geographic*

*National Public Radio (NPR)*

*NOVA*

*PBS NewsHour*

*The Philadelphia Inquirer*

*The Raleigh News & Observer*

*The San Luis Obispo Tribune*

*Scientific American*

*Smithsonian Magazine*

*STAT News*

*The St. Louis Post-Dispatch*

*The Times-Picayune*

*Voice of America*

*The Washington Post*

*WIRED*

# ASPB Officers and Committee Members Assume Posts for 2020–2021

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

Katayoon (Katie) Dehesh (2022), *chair, president-elect*  
Maureen McCann (2021), *president*  
Wayne Parrott (2021), *secretary*  
Kent Chapman (2023), *treasurer*  
Christine Foyer (2021), *elected member* [elected by ASPB membership]  
Clint Chapple (2023), *elected member* [elected by ASPB membership]  
Gustavo MacIntosh (2021), *elected member* [elected by ASPB Council]  
Crispin Taylor, *CEO (nonvoting)*

## Board of Trustees

Kent Chapman (2023), *treasurer, chair*  
Julia Bailey-Serres (2021)  
Kathy Osteryoung (2021)  
Ed Cahoon (2024)

## Constitution and Bylaws

Ken Keegstra (2021), *chair*  
Bonnie Bartel (2021)  
Elizabeth Vierling (2023)

## Council

Judy Callis (2021), *immediate past president, chair*  
Maureen McCann (2022), *president*  
Katayoon (Katie) Dehesh (2023), *president-elect*  
Wayne Parrott (2021), *secretary*  
Kent Chapman (2023), *treasurer*  
Christine Foyer (2021), *elected member* [elected by ASPB membership]  
Clint Chapple (2023), *elected member* [elected by ASPB membership]  
Gustavo MacIntosh (2021), *elected member* [elected by ASPB Council]

TBD, *chair, Membership Committee*

Miguel Vega-Sanchez (2022), *chair, Equity, Diversity, and Inclusion Committee*

Steve Theg (2021), *chair, Publications Committee*

Erin Friedman (2022), *chair, Education Committee*

Anja Geitmann (2021), *chair, International Committee*

Tessa Burch-Smith (2024), *chair, Science Policy Committee*

Eva Farre (2023), *chair, Women in Plant Biology Committee*

Carolyn Lee-Parsons (2021), *Northeastern Section representative*

Judy Brusslan (2023), *Western Section representative*

Mike Axtell (2022), *Mid-Atlantic Section representative*

Gustavo MacIntosh (2021), *Midwestern Section representative*

Nihal Dharmasiri (2023), *Southern Section representative*

Emily Heaton (2022), *Environmental and Ecological Plant Physiology Section representative*

Leeann Thornton (2021), *Primarily Undergraduate Institutions Section representative*

Rubén Rellán Álvarez (2021), *Mexico Section representative*

Katy McIntyre (2021), *Ambassador Alliance representative*

Rishi Masalia (2021), *Early Career Plant Scientists Section representative*

Josh Trujillo (2022), *early career representative*

Crispin Taylor, *CEO (nonvoting)*

## Education Committee

Erin Friedman (2022), *chair*  
Ashley Cannon (2021), *early career representative*  
Katelyn Butler (2022), *early career representative*  
Susan Bush (2021)  
Estelle Hrabak (2021)  
MariaElena Zavala (2021)  
Joseph Jez (2022)  
Tara Phelps-Durr (2022)  
Jonathan Gilkerson (2023)  
Valerie Haywood (2023)

## Equity, Diversity, and Inclusion Committee

Miguel Vega-Sanchez (2022), *chair*  
Asia Hightower (2021), *early career representative*  
Brianna Griffin (2022), *early career representative*  
Cris Argueso (2021)  
Sona Pandey (2021)  
Danielle Ignace (2023)  
Anjali Iyer-Pascuzzi (2023)  
Adam Steinbrenner (2023)

## International Committee

Anja Geitmann (2021), *chair*  
Pablo Bolaños-Villegas (2021), *early career representative*  
Zakayo Kazibwe (2022), *early career representative*  
Zuhua He (2021)  
Rubén Rellán Álvarez (2021)  
Shanjin Huang (2023)  
Matthew Tucker (2023)  
Dominique Van der Straeten (2023)

## Membership Committee

TBD (2023), *chair*  
Katy McIntyre (2021), *graduate student member*  
Ashlyn Wedde (2022), *postdoc member*

Clayton LaRue (2023)  
Erin Sparks (2024)  
Carolyn Lee-Parsons (2021), *ex officio*  
Gustavo MacIntosh (2021), *ex officio*  
Rishi Masalia (2021), *ex officio*  
Rubén Rellán Álvarez (2021), *ex officio*  
Leeann Thornton (2021), *ex officio*  
Mike Axtell (2022), *ex officio*  
Judy Brusslan (2023), *ex officio*  
Nihal Dharmasiri (2023), *ex officio*  
Emily Heaton (2023), *ex officio*

## Nominating Committee

Katayoon (Katie) Dehesh (2023), *chair, president-elect*  
Maureen McCann (2022), *president*  
Judy Callis (2021), *immediate past president*

## Program Committee

Wayne Parrott (2021), *secretary, chair*  
Katayoon (Katie) Dehesh (2021), *president-elect*  
Stacey Harmer (2021), *secretary elect*  
Laura Klasek (2021), *early career representative*  
Jithesh Vijayan (2022), *early career representative*  
Phil Taylor (2021)  
Shinhan Shiu (2022)  
Enamul Huq (2024)  
Jennifer Lewis (2024)

## Publications Committee

Steve Theg, *chair* (2021)  
Craig Schenck (2021), *early career representative*  
Amina Yaqoob (2022), *early career representative*

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**OFFICERS AND COMMITTEES**  
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Hong Ma (2022)  
Pamela J. Hines (2023)  
Lisa Ainsworth (2024)  
Nicola Patron (2025)

**Science Policy Committee**

Tessa Burch-Smith (2024), *chair*  
Judy Callis (2021), *immediate past president*  
Erin Doody (2022), *early career representative*  
Shandrea Stallworth (2021), *early career representative*  
Jeffrey Chen (2021)  
Scott Jackson (2022)  
Carolyn Lawrence-Dill (2022)  
Rebecca Bart (2023)  
Gustavo MacIntosh (2024)

**Women in Plant Biology Committee**

Eva Farre (2023), *chair*  
Katherine Murphy (2021), *early career representative*  
Sabrina Chin (2022), *early career representative*  
Li Tian (2021)  
Aruna Kilaru (2022)  
Sibongile Mafu (2023)  
Jenny Mortimer (2023)  
Dianne Pater (2023)

## 2020–2021 Awards Committees

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

**ASPB Innovation Prize for Agricultural Technology**

TBD, *chair*  
David Mackill (2021), *past winner*  
David Fischhoff (2022)  
Rodrigo Sarria (2022)  
Cathie Martin (2026)

**Charles Albert Shull Award**

Kris Niyogi (2021), *chair*  
Zachary Lippman (2021), *past winner*  
Libo Shan (2022)  
Marisa Otegui (2023)

**Charles Reid Barnes Life Membership Award**

Tuan-hua David Ho (2022), *chair*  
Brian Larkins (2021), *past winner*  
Don Ort (2021), *past winner*  
Deborah Delmer (2021)  
Alan Jones (2023)

**Dennis R. Hoagland Award**

Mary Lou Guerinot (2021), *chair*  
Jonathan Lynch (2021), *past winner*  
Katayoon (Katie) Dehesh (2021)  
Eduardo Blumwald (2024)

Gloria K. Muday (2024)

**Early Career Award**

Hiroshi Maeda (2023), *chair*  
Christine Scoffoni (2021), *past winner*  
Charlie Anderson (2023)  
Paula McSteen (2023)

**Enid MacRobbie Corresponding Membership Award**

Mondher Bouzayen (2021), *chair*  
Jaswinder Singh (2023)  
Marilyn Anderson (2024)  
George Coupland (2024)  
Keiko Sugimoto (2024)

**Eric E. Conn Young Investigator Award**

Danny Schnell (2021), *chair*  
Craig Schenck (2021), *past winner*  
Caren Chang (2021)  
Laurie Smith (2021)

**Excellence in Education Award**

Yan Lu (2023), *chair*  
Tammy Long (2021), *past winner*  
Karen Hicks (2022)

Marta Laskowski (2023)

**Fellow of ASPB Award**

Neelima Sinha (2023), *chair*  
Bonnie Bartel (2022)  
Julia Frugoli (2023)  
Joe Kieber (2023)

**Martin Gibbs Medal**

Richard Dixon (2021), *chair*  
Rob Martienssen (2021), *past winner*  
Maureen McCann (2021)  
Sue Rhee (2021)

**Stephen Hales Prize**

Becky Boston (2023), *chair*  
Julian Schroeder (2021), *past winner*  
Alice Cheung (2022)  
Steve Briggs (2023)

**PB21** PLANT BIOLOGY  
JULY 17-21 | PITTSBURGH  
POWERED BY ASPB

**ASPB Recognition Travel Awards**

Travel award applications for eligible candidates are being accepted now.

The submission deadline is February 3, 2021.

All applications must be submitted electronically at <https://rta.aspb.org>.  
Recipients will be notified by late March.

# Nominations Opening Soon for 2021 ASPB Awards!

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

**T**he 2021 Call for Award Nominations will be sent to ASPB members on January 4, 2021, and nominations will be due by Friday, February 19. ASPB encourages you to participate in the 2021 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 determine 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 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 4, 2021. The names of the 2021 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 2021.

### Awards to Be Given in 2021

#### ASPB Innovation Prize for Agricultural Technology

This prize was inaugurated in 2015 to recognize the outstanding work

of industry scientists in companies of all sizes who translate discovery research into real-world outcomes that benefit agriculture. The award additionally acts as a vehicle to increase the awareness of the highest-quality science performed by industry scientists, whether or not they are members of the Society upon nomination, and showcases the opportunities and rewards of this career path. The Innovation Prize, which is made biennially, is a monetary award that also provides a one-year membership in the Society.

#### 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 on January 1 of the year of presentation or is fewer than 10 years from the granting of the doctoral degree. Breaks in careers 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 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 hon-

ors 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.

#### Dennis R. Hoagland Award

This monetary award, established by the Society in 1985 with funds provided by the Monsanto Agricultural Products Company, honors Dr. Dennis R. Hoagland, recipient of the first Stephen Hales Prize, for his outstanding contributions and leadership in plant mineral nutrition. The award, to be made not more frequently than triennially to an individual, whether or not a member of the Society, is for outstanding plant research in support of agriculture.

#### Early Career Award

The Society instituted the Early Career Award in 2005 to recognize outstanding research by scientists at the beginning of their careers. 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 careers 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.

#### Eric E. Conn Young Investigator Award

The Eric E. Conn Young Investigator Award, first given by the Society in 2011, honors Eric E. Conn's contributions in plant biology by recognizing young scientists who will be inspired to follow in his footsteps. The award recognizes demonstrated excel-

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#### **NOMINATIONS OPENING** *continued from page 7*

ence in outreach, public service, mentoring, or teaching by plant scientists at the beginning of their careers. This award is a monetary award made biennially for demonstrated commitment by a member of the Society who is not more than five years post-PhD on January 1 of the year of the presentation. It also provides a one-year membership to the Society.

#### **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 an-

nually in recognition of excellence in teaching, leadership in curricular 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.

#### **Martin Gibbs Medal**

This monetary award, initiated in 1993, honors Martin Gibbs for his outstanding service to the Society as editor-in-chief of *Plant Physiology* from 1963 to 1992. This award is to be given biennially to an individual, whether or not a member of the Society, who

has pioneered advances that have served to establish new directions of investigation in the plant sciences. The recipient is invited to organize a symposium at the annual meeting the following year.

#### **Stephen Hales Prize**

This award honors the Reverend Stephen Hales for his pioneering work in plant biology published in his 1727 book *Vegetable Statics*. 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. ■



**Call for Papers**

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Edited by Ronald Pierik, Christian Fankhauser, Lucia Strader, and Neelima Sinha

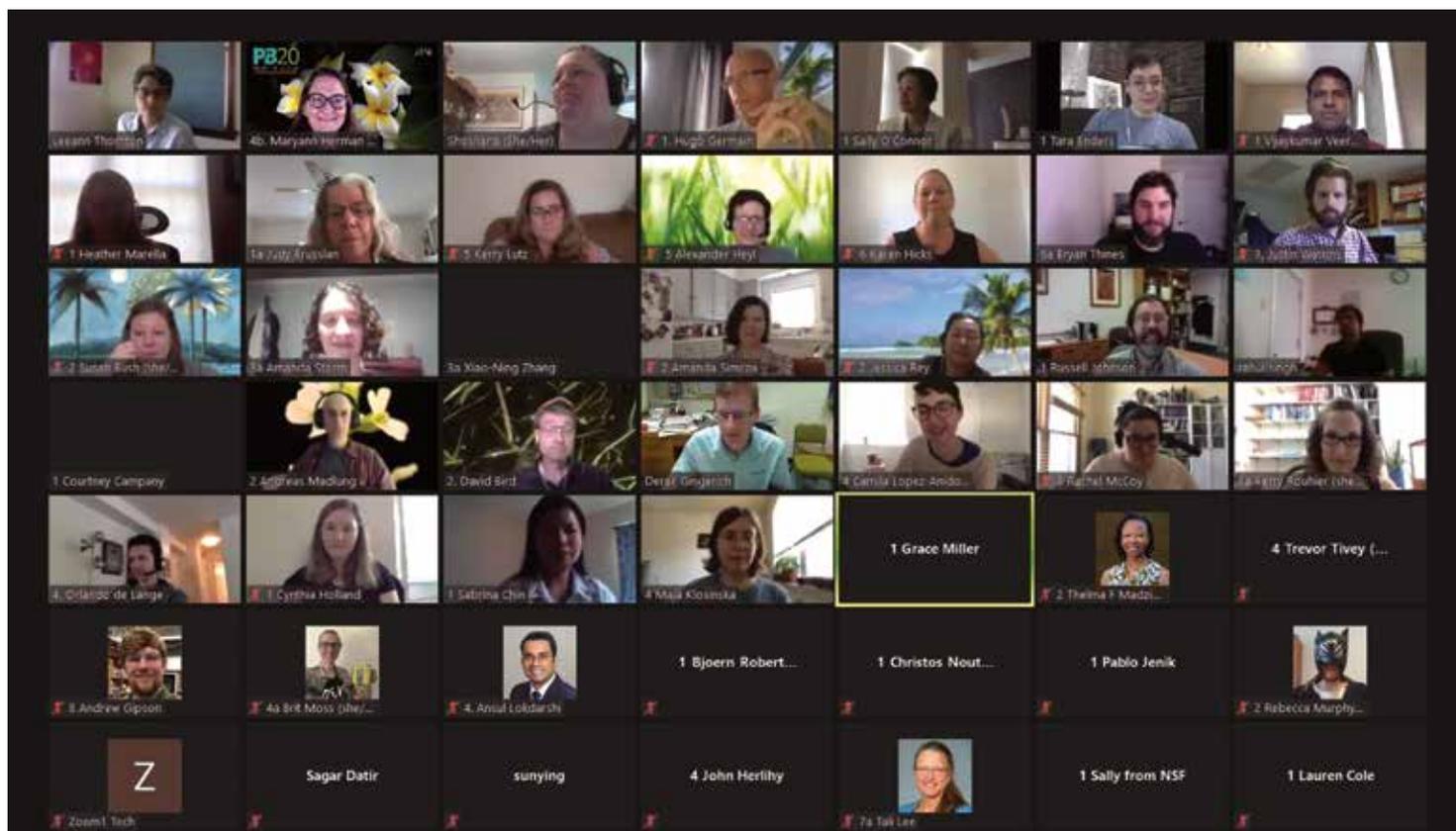
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# ASPB's Primarily Undergraduate Institution Section: Nearing the End of Our Probationary Period

BY MARYANN AB HERMAN  
St. John Fisher College



In 2008, I began the job I'd always aspired to and that mirrored my own experiences in college—a faculty position at a small primarily undergraduate institution (PUI). Finally, I could develop close mentoring relationships with my undergraduate students, explore innovative teaching strategies, and develop my own research program. Despite having done my homework on this type of position, I found that facilitating undergraduate research projects with limited equipment,

supplies, and funding with a 12/12 contact hour teaching load was a bit daunting. I found collaborators in my department and across the college, but I still felt isolated from colleagues in plant biology. I searched for a professional society with a broader reach beyond my subfield of plant pathology, one that would provide a strong network of individuals focused on research and teaching and allow me to advance my scholarly pursuits—and found ASPB.

I attended my first Plant Biology meeting in 2011—apprehensive, curious, and a bit overwhelmed by the sheer size of it! The PUI breakfast, teaching symposium, and an entire poster section devoted to pedagogy motivated me to attend; little did I know the integral role ASPB would play in my professional career. I met future collaborators and strong female role models at my first PUI networking breakfast (which has developed into a half-day

workshop before Plant Biology meetings). To my surprise, my undergraduate research adviser was there as well! Over the six Plant Biology meetings I've had funding to attend, I've developed my own professional mycorrhizal network of colleagues and friends. I leave each meeting energized and brimming with new ideas to begin the next academic year. With each ASPB meeting I attend, I learn more about the network of PUI folks who have  
*continued on page 10*

**PUI SECTION**  
*continued from page 9*

been gathering for the past 25+ years to discuss and tackle unique challenges faced by PUI faculty. As a newcomer, I was welcomed and encouraged to take an active role in the group. The momentum from years of dedicated PUI-associated ASPB members paved the way for a group of us to propose the formation of a dedicated PUI section in 2017.

Fast forward to 2020: the PUI section is nearing the end of its probationary period. Highlights of the section during this time include securing an NSF grant to fund travel to Plant Biology 2019, hosting the annual PUI Faculty Development Workshop and many informal networking events, organizing the first PUI career panel at Plant Biology 2019, drafting and approving

the section's constitution and bylaws, and initiating (with ASPB President Judy Callis) the recruitment of more PUI-associated individuals to ASPB.

The section's membership stands at 107 dues-paying members, about 3.8% of total ASPB members. This past summer, the PUI Section Steering Committee reached new levels of creativity in light of the challenges associated with Plant Biology 2020 moving to a fully online format. Our workshop on building research collaborations was condensed, and the four panelists, Tali Lee, Kerry Lutz, Kerry Rouhier, and Bryan Thines, prerecorded introductions to their research programs and collaborations. Seventy people participated in a discussion with the panelists, learned about NSF funding opportunities specific to

PUIs from Sally O'Connor and Mandy Simcox, and experienced small group discussions in breakout rooms, the latter mirrored in many of our classrooms this fall. Following the conclusion of Plant Biology 2020, we hosted our annual business meeting, discussing short- and long-term goals and initiatives to build synergy between PUI plant biologists and the broader ASPB community.

The PUI Section is already looking forward to Plant Biology 2021 in Pittsburgh, Pennsylvania, planning a workshop focused on inclusive research practices and applying for travel grants to support conference attendance. As I step into my role of past PUI Section chair, I can envision various ways the PUI Section can continue to provide the roots linking PUI-associated people to ASPB. The first of our monthly

Zoom PUI networking events was held Wednesday, October 21, hosted by one of our newest PUI Section Steering Committee members, Amanda Storm. Further details will be provided at <https://community.plantae.org/organization/pui-section/dashboard> and in an email to section members. Please reach out to our section chair, Karen Hicks ([hicksk@kenyon.edu](mailto:hicksk@kenyon.edu)), if you are interested in greater involvement with ASPB's PUI Section. We are grateful to all who have supported and contributed to our mission to expand support for PUI plant scientists through ASPB. ■

**Editor's note:** ASPB's Board of Directors voted in early December 2020 to approve both permanent status for the PUI Section and the section's Constitution and Bylaws.

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# Farewell—and Profound Thanks—to Nancy Winchester

It is with mixed feelings that ASPB announces that Nancy Winchester, ASPB's director of publications, will be retiring in the New Year: happy for Nancy, sad for ASPB.

Nancy joined ASPB on December 1, 1997, and her 23 years as the Society's publications director have overlapped with extraordinary upheaval in the scholarly publishing industry. We will sorely miss her many vital contributions to ASPB and its publications program.

In the late 1990s, early in Nancy's tenure, she oversaw the initial transition of *Plant Physiology* and *The Plant Cell* to online publishing, and she has guided the Society and our journals through the (still) choppy waters of Open Access ever since. This journey includes the launch of our first Open Access journal, *Plant Direct*, and establishment of the three-way partnership with the Society for Experimental Biology and Wiley, who co-own it.

All three of ASPB's journals have seen continuous innovation and change under Nancy's leadership, and her business acumen (and hard work!) has ensured that

they are accessible to the global plant science readership. Importantly for a mission-driven organization like ASPB, Nancy's efforts have raised well over \$100 million in revenue for the Society, allowing us to provide support for the ASPB community in myriad ways over the years.

Nancy staffed 10 (10!) editor-in-chief searches for *Plant Physiology*, *The Plant Cell*, and *Plant Direct* and worked closely with all of these editors throughout their terms. She has also served continuously as senior publications staff liaison to the ASPB Publications Committee, board of trustees, and board of directors.

With Wiley, Nancy established our joint book publishing imprint, through which we have brought to the world a second edition of *Biochemistry & Molecular Biology of Plants* (initially self-published by ASPB



20 years ago) and, in 2012, *The Molecular Life of Plants*, as well as several other titles.

During her final couple of years with the Society, Nancy has shepherded ASPB into its nascent partnership with Oxford University Press to produce and distribute *Plant Physiology* and *The Plant Cell*, a change in business model and approach that adds strength and resilience to our journals program and that is destined to facilitate the journals' eventual transition to an Open Access future.

As Nancy put it, "The program I have directed extends far beyond the Society membership to include authors, reviewers, and

editors from all over the world and from all fields of plant biology. I have great affection for the Society, which has been my professional home for 23 years. I am impressed by the organization as it stands today—dynamic, forward thinking, and progressive—and proud of whatever role I have played in its successes."

Always a champion for the teams she has led and participated in, Nancy added, "I have been blessed with the brightest and most competent staff I have known. I am thankful to have worked with such talented people elsewhere at ASPB, too, and I am most grateful for the opportunity to have served a brilliant community of scientists doing work that I truly believe will be this planet's salvation."

Over her years with ASPB, Nancy has earned the deepest trust, respect, and gratitude of the Society's leadership and staff. We all wish her peace and good fortune in her retirement. ■

This article first appeared on the Rockefeller University website on October 1, 2020 (<http://bit.ly/JoanneChory>), and is adapted here with permission.

## Joanne Chory Wins the 2020 Pearl Meister Greengard Prize

Joanne Chory, who pioneered the application of molecular genetics to plant biology and transformed our understanding of photosynthesis, will receive the 2020 Pearl Meister Greengard Prize, Rockefeller University's preeminent award recognizing outstanding women scientists. Joanne is the Howard H. and Maryam R. Newman Chair in Plant Biology and director of the Plant Molecular and Cellular Biology Laboratory at the Salk Institute. She is also a Howard Hughes Medical Institute investigator. Frances Beinecke, former president of the Natural Resources Defense Council, presented the prize in a virtual ceremony hosted by Rockefeller on October 22.

Joanne's three decades of work with *Arabidopsis thaliana* renders her one of the most influential plant biologists of her generation. Early in her career, Joanne discovered that the DET1 gene was responsible for determining how plants respond to light, a finding that eventually led to her uncovering the entire plant steroid hormone signaling system and the unique roles of brassi-



nosteroid and auxin hormones. More recently, she has spearheaded an ambitious effort to combat climate change by optimizing plants' natural ability to capture and store carbon. As director of the Harnessing Plants Initiative at Salk, she heads a research team working to alter key genetic pathways to produce crop variants with deeper roots that can pull more carbon out of the atmosphere and store it underground. In 2019, Salk received a \$35 million award from the TED Audacious Project in support of the initiative.

"From her earliest work, which fundamentally changed researchers' understanding of plant growth and development, to her groundbreaking efforts to combat climate change, Dr. Chory's remarkable contributions stand to benefit all life on Earth," noted Michael W. Young, Richard and Jeanne Fisher Professor and Vice President of Academic Affairs at Rockefeller, Nobel laureate, and chair of the Pearl Meister Greengard Prize selection committee.

The Pearl Meister Greengard Prize was founded by the late

Paul Greengard, the Vincent Astor Professor of Molecular and Cellular Neuroscience at Rockefeller, and his wife, Ursula von Rydingsvard, an internationally renowned sculptor with works in the permanent collections of the Metropolitan Museum of Art, the Museum of Modern Art, and other venues. A lifelong advocate for gender equality, Greengard donated his monetary share of the 2000 Nobel Prize in Physiology or Medicine to Rockefeller and, in partnership with generous supporters, established an annual award to recognize outstanding women scientists. The prize, which includes a \$100,000 honorarium, is named for Greengard's mother, who died during his birth.

Joanne is also the recipient of the 2018 Breakthrough Prize and the 2018 Gruber Genetics Prize. She is a member of nine scientific academies, including the National Academy of Sciences, the American Philosophical Society, and the Royal Society. She has been an ASPB member since 1992. ■

This article first appeared on the UC Davis news website on October 19, 2020 (<http://bit.ly/PamelaRonald>), and is adapted here with permission.

# Plant Pathologist Pam Ronald Named GCHERA World Agriculture Prize Laureate

## Award Recognizes Exceptional Lifetime Achievement in Agriculture

BY AMY QUINTON  
University of California, Davis

**P**amela Ronald, distinguished professor in the Department of Plant Pathology at the University of California, Davis, and with the UC Davis Genome Center, has been named a 2020 World Agriculture Prize laureate by the Global Confederation of Higher Education Associations for Agricultural and Life Sciences, or GCHERA. She is the first woman whose work is recognized by the award.

“This award is a really special honor and I’m very grateful,” Pam said. “I’m happy to be part of a global community of agricultural scientists that has been able to make a huge difference in the lives of farmers.”

The award ceremony was held virtually on November 30 from Nanjing Agricultural University, Jiangsu Province, China. GCHERA also jointly named Professor Zhang Fusuo of China Agricultural University a laureate this year.

Pam is recognized for her history of major discoveries in plant molecular genetics. In 1995, she isolated a key immune receptor that revealed a new mechanism with which plants and animals detect and respond to

infection. Her discovery in 2006, with UC Davis plant scientist David Mackill, of a rice submergence tolerance gene facilitated the development of high-yielding, flood-tolerant rice varieties that have benefited millions of farmers in South and Southeast Asia.

Pam also directs the Institute for Food and Agricultural Literacy at UC Davis, which she established to provide the next generation of scientists with the training, support, and tools they need to become effective communicators and infuse scientifically sound information into the public discourse.

“Professor Ronald is extremely deserving of this high honor,” said Dean Helene Dillard of the College of Agricultural and Environmental Sciences. “Pam’s molecular discoveries and educational efforts have revolutionized our understanding of the role biotechnology can play in feeding the world while protecting the environment.”

“Pamela was elected a member of the U.S. National Academy of Sciences and is becoming one of the leaders and thinkers in modern agriculture,” said UC Berkeley professor David



Pam Ronald, the first woman whose work is recognized with the GCHERA World Agriculture Prize. PHOTO BY UC DAVIS

Zilberman in his nomination letter. “She has made major breakthroughs in developing solutions to major agricultural challenges and her work on public attitudes towards agricultural technology expanded our knowledge and influenced the real world.”

Pam is also a key scientist at the DOE Joint Bioenergy Institute, an affiliated scholar with the Center on Food Security and the Environment at Stanford University, and a member of the Innovative Genomics Institute at UC Berkeley.

She was named a National Geographic Innovator and one of the world’s 100 most influential people in biotechnology by *Scientific American*. With

her collaborators, she received the 2012 Tech Award for the innovative use of technology to benefit humanity. Pam coauthored *Tomorrow’s Table* with her husband, Raoul Adamchak, an organic farmer and former manager at the UC Davis Student Farm. In it, they speak of the need to nourish a growing population without further destroying the environment. Her 2015 TED talk has been viewed by more than 1.8 million people. In 2019, she received the ASPB Leadership Award and an honorary doctorate from the Swedish Agricultural University and was elected to NAS. ■

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 José Dinneny at [dinneny@stanford.edu](mailto:dinneny@stanford.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.

## Vi Shukla

### Bill & Melinda Gates Foundation

BY JITHESH VIJAYAN

ASPB Ambassador and Postdoctoral Fellow, Department of Biochemistry, University of Nebraska–Lincoln

**V**ipula “Vi” Shukla is senior program officer for agricultural research and development (R&D) at the Bill & Melinda Gates Foundation. In this capacity she wears many hats. One of her primary roles is identifying research areas and novel technologies in which the foundation can invest its resources to improve productivity for smallholder farmers in developing nations.

Before joining the Bill & Melinda Gates Foundation, Vi worked at Dow AgroSciences, first as a scientific leader in discovery (R&D), then in technology licensing and commercialization. As the scientific leader in discovery, her team developed zinc-finger nucleases for precision genome editing in maize.

Vi trained as a postdoctoral fellow in the lab of Detlef Weigel at the Salk Institute for Biological Studies and in the lab of Maarten Chrispeels at the University of California San Diego. For her PhD, she worked on the photosynthetic machinery in the cyanobacterium *Synechocystis* sp. PCC 6803 in the lab of Himadri Pakrasi at Washington University in St. Louis.

Vi is a captivating speaker and active participant at science conferences. Her career trajectory from basic biology research at universities to research in an industrial setting to licensing and commercialization to goal-oriented philanthropy provides her with a unique perspective on plant biology and its translational power. In a wide-ranging interview for this column, she answered my questions about her career path, described her work and interests, and offered insight and advice.

#### **What life experiences led you to choose a career path in industry and later in management?**

I started out as a lab technician working in maize genetics and going into the field to do crosses, so the link to agriculture was clear. Also, I think business is in my DNA. Agriculture is a business in which plant science turns into goods and services that people need and want. I liked the idea of my research leading to something tangible and impactful and decided that the ag industry was worth a try.

Management is about enabling others to do great work (as



opposed to doing it yourself). In industry R & D, I had the experience of participating in programs that spanned disciplines, teams, geographies, and crops. I realized that I enjoyed the big-picture, strategic aspects of ag science and technology more than the operational work. I later took a role within my company on the biotech business side, where I learned by doing licensing, external R&D and technology deal making, and portfolio management. This was great preparation for my work as an investor. I like working in a big, complex system and enabling great people and ideas in the service of important and strategic goals.

#### **What transferable skills did you gain as a researcher that still help you as a program officer?**

Strategic and rigorous scientific and technical thinking is just the beginning for anyone in a

research-facing role. In addition, clear and compelling communication (written and oral), careful listening, and asking good questions are all essential skills. Strong project management is useful, no matter what your role. Knowing how to build and maintain a professional network based on credibility and integrity is a must-have. And finally, data-driven decision making is the core of it all. This includes decisions about what to do and how to do it, but also decisions about what *not* to do.

#### **What are some of the important traits and lessons you have learned through the various positions you have held, including your tenure at the Bill & Melinda Gates Foundation?**

The most important trait is to recognize how much you don't know and be open to learning!

Nothing can be done in isolation; we rely on others to enable us

to do our best work. Establishing and maintaining respectful professional relationships while holding yourself and others to high standards is critical.

The ability to tell a compelling story, present your perspective, and communicate why your idea or plan matters is absolutely essential in a team environment. If you don't develop an effective voice, grounded in both facts and inspiration, you're not part of the conversation.

When it comes to working environment dynamics, I've been in some that I felt were great and others that I found very challenging. I've learned that what's missing or broken from my perspective may be absolutely great for someone else. When I find myself in a tough environment, it's helpful to step back and try to understand, in a dispassionate way, why it's tough; only then can I adjust as needed.

#### **Who were some of your mentors, and how did they influence you?**

My first science job after undergrad was working as a lab tech for Tim Nelson and Ian Sussex at Yale. They helped me see how cool plant biology is and inspired me to go to grad school. My PhD adviser, Himadri Pakrasi, helped me understand how important it is to do things carefully, with attention to detail. In grad school I also met Joe Varner, who shared his ideas about science as "organized wonder" and "brain candy." I still view my daily work through that lens! In my postdoc and industry work, I met several well-established and generous women in plant biology and ag biotech who helped me navigate in what is, let's be honest, still a very conservative and gender-biased

sector. My former colleague at the Gates Foundation, Rob Horsch, taught me a lot about international development. Being mentored is a gift and, if you're fortunate, a lifelong experience.

#### **How do you typically spend your work hours? What are the most time-consuming aspects of being a program officer of a philanthropic organization, and what do you find most rewarding?**

My time is divided between internal- and external-facing work. On the internal side, I work with my foundation team and leadership on our strategy and how to articulate it (discussions, writing, slides). I also carry out our processes for investments (e.g., summaries, rationales, progress reports, budget reviews). This takes up about 20% of my time and is the operational nuts and bolts of philanthropic funding.

The external-facing work is focused on keeping up with the science and identifying, developing, and managing investments in research programs with a network of best-in-class partners. I scan the literature, talk to other investors and funders, go to scientific conferences, and host expert discussions on specific research topics. Once I identify a research area that might be a good fit for our investment thesis and strategy, I work with groups of researchers and inventors to learn more from the experts. If we decide to move forward, I then collaborate with the selected research team to find alignment between their work and our objectives and goals and develop a plan for a proposal. This is an intensive and iterative process—it typically takes a year with the partners and

my team (including legal, finance, and so forth) providing feedback, suggestions, and edits along the way. Once a program is funded, the researchers and I have an ongoing dialogue about progress, challenges, breakthroughs, and pivots to keep us in sync.

The most time-consuming aspect of my job is also the most fun and challenging—working with experts in a given field to design and provide oversight to a research program that is rigorous, well aligned with our strategic objectives, and appropriately structured, while at the same time pushing the boundaries of innovation, challenging scientific paradigms, and driving us toward real-life, practical impacts for our intended beneficiaries.

#### **What does "work-life balance" mean to you?**

For me, work-life balance means carefully managing my time so that when I'm working, I'm working effectively. And when I'm not working, I'm *really* not working.

At work, I don't try to multitask—I've learned that I can only truly, deeply think about one or two things at a time. I use my calendar and scheduling to compartmentalize my working time, being sure to schedule chunks of time for meetings and conversations, desk work, and thinking. If I'm traveling for a meeting or conference, I make sure to preserve one to two hours a day for keeping up with email and calls as needed.

I'm very strict about off-work time. I make sure that I protect that time for my friends, family, and hobbies (e.g., fitness, riding my horse) by literally going offline. If I'm traveling for work, I try to keep my daily routine

(workouts, meals, off-line time, and so forth) consistent. Off-line time is for "life" and all the things that keep me balanced and sane.

#### **How do you keep up with developments in basic research and your responsibilities as a program officer?**

Actually, keeping up with developments in plant science research, as well as the ag business sector, global ag policy, ag tech innovation, ag funding and finance trends, and international development efforts, is a big part of my responsibility as a program officer. I read, attend conferences, study public data, check in with my network, and consult my peers.

#### **What are some of the projects currently under consideration or in the works at the Gates Foundation that are exciting to you?**

There are several foundation-funded programs that, when they were initiated, were considered "crazy ideas" or "moonshots" (e.g., direct nitrogen fixation in cereals, C4 rice). Over time, some of these ideas have advanced and seem less crazy and more real, with plant lines and data.

Programs that represent real conceptual breakthroughs in how we think about not just plant biology but also translation into crop breeding and cultivation are exciting. One is the Hy-Gain program, which is developing apomictic sorghum and cowpea. Not only will farmers be able to save seed from self-reproducing hybrids that have higher yield and vigor, but in addition this technology has the potential to change, for the better, how crop breeding and varietal development are carried out.

*continued on page 16*

**LUMINARIES***continued from page 15***What areas of research in the plant and life sciences are most exciting to you?**

I'm personally interested in the different mechanisms that plants use to perceive their environment and then quickly adapt to changes in that environment. I've always been fascinated by the plasticity of plant responses to environmental cues. As climate change leads to increased weather volatility and shifts in growing zones, plants will need to tap into that plasticity on a timescale much shorter than evolution typically accounts for in order to maintain resilience.

**Our understanding of plant biology has increased exponentially over the past few decades, yet the translation of this knowledge to agriculture has been very slow. In your opinion, what are the major limiting factors?**

Academia in the plant sciences doesn't always incorporate education about agriculture, or even provide exposure to the sector. Budding scientists aren't exposed to the fundamental concept of farming as a business. This limits the ability of future research lead-

ers to contextualize their scientific work. This limitation is changing, and I hear young scientists asking good, deep questions about agriculture at conferences and courses.

Then there's the "so what?" question. Basic research focuses on knowledge generation, which is essential for any enlightened civil society. However, the question of what that knowledge can contribute to society doesn't get asked enough in research labs. Hypothesis-driven research poses the question "How does this work?" For ag and any other technology-driven enterprise, one of the follow-up questions should be "How do we put this discovery to work to benefit all of us?"

Finally, it's a fact that research funding determines what people work on. Funding agencies have historically rewarded relatively low-risk programs in plant science that use well-established, genetically simple and tractable model systems. Although these tools have enabled huge advances in our understanding of fundamental biology, the leap from "lab rats" to crops grown in fields is huge. Fortunately, funding trends are starting to recognize

this gap and give interested researchers the incentives they need to make their programs more crop facing.

**You've had a closer look at the difficulties farmers face in underdeveloped and developing nations. What advice would you give to the current crop and next generation of scientists?**

Scientists can be great problem solvers!

If you want to be part of the solution for farming and agriculture, you need to understand the problems. Unless you're a farmer yourself, there's only one way to gain that understanding: listen and learn from those who live it every day. Take every opportunity you can to interface with breeders, growers, agronomists, processors, and distributors. Spend time walking in fields with the people who manage them. Be open to having your preconceived notions trashed.

**What suggestions would you provide to younger researchers who are interested in a career path similar to yours?**

My career path was *not* according to some grand plan. I made decisions based on what I was chal-

lenged or excited by at the time and seized opportunities when they presented themselves. Don't be overly prescriptive about what you think your career "should" look like.

The training we receive in the lab is certainly important, but it's the baseline. Communication skills are essential. So are transactional skills like negotiation, finance, information processing, and business acumen. That doesn't mean you have to go to journalism, business, and law school, but it is important to get exposed to these areas however you can.

Finally, most things worth doing today are done in a team environment. Earn your reputation for integrity, generosity, and openness to learning. Be someone who others really want to work with.

**What social media platforms can our members find you on?**

The Gates Foundation has a presence on Facebook and Twitter, and Bill Gates has a blog, GatesNotes.com, and often appears on Reddit. I am on LinkedIn for professional networking (<https://www.linkedin.com/in/vipula-shukla-5093892>). ■

## Policy Update

BY VICTORIA HABER  
Lewis-Burke Associates, LLC

The information in this article was accurate at the time of writing.

### Congress Passes and the President Signs Stopgap Funding Measure, Averting Government Shutdown

Congress has passed and President Trump has signed a continuing resolution (CR) to fund the government at fiscal year (FY) 2020 funding levels through December 11. This was made possible only after congressional leaders and the White House reached a bipartisan agreement to add additional funding for farm payments sought by Republicans and the White House and new money for nutrition assistance to children and low-income families favored by Democrats. In addition to maintaining funding, the CR also includes a general prohibition on starting new programs or projects, with some exceptions for defense programs. The CR does not include any new funding for COVID-19 response or recovery.

The CR's enactment provides Congress additional time to finish FY2021 appropriations. On November 10, the Senate released the details of all of its bills to help launch negotiations with the House and try to pass an "omnibus" spending package that includes all 12 bills before the current CR expires on December 11.

#### Sources and Additional Information

- The full text of the CR can be found at <https://tinyurl.com/y3tjtz4g>.
- The House FY2021 appropriations bills can be found at <https://tinyurl.com/y2hsg9dr>.

- The Senate FY2021 appropriations bills can be found here: <https://tinyurl.com/y5fsz46c>.

### House Passes Updated Heroes Act

On October 1, the House passed the \$2.2 trillion Heroes Act coronavirus aid package along party lines. The legislation totals \$1.2 trillion less than the stalled aid package passed by Democrats in May and was a final attempt to find bipartisan compromise before Congress left Washington ahead of the November 3 elections.

House Democrats were hoping their actions would increase public pressure to negotiate another package before the elections, though that faces dimming prospects amid ongoing disagreements with the White House and Senate Republicans. Democrats' new proposal is closer in size to a \$1.5 trillion package proposed by President Trump and significantly more than the \$980 million package favored by Senate Republicans. However, the Heroes Act does not include liability protections for businesses and universities, a top priority for Senate Majority Leader Mitch McConnell (R-KY).

Key provisions in the updated Heroes Act of interest to ASPB include the following:

- *National Science Foundation*—\$2.9 billion, including \$2.6 billion for Research and Related Activities and \$300 million for Education and Human Resources, to prevent, prepare

for, and respond to the coronavirus. This funding would support extensions of existing research grants, cooperative agreements, scholarships, fellowships, and apprenticeships. This is the first time a major COVID-19 relief package proposal has included NSF research relief funding, and it is much more funding than was included in the original Heroes Act.

- *National Institutes of Health*—\$4.7 billion to expand COVID-19-related research at NIH and academic institutions. This amount includes at least \$3 billion in research relief to offset costs associated with pandemic-related productivity losses.
- *Department of Energy*—\$143 million for the Office of Science to complete construction projects for scientific user facilities affected by COVID-19.

#### Source and Additional Information

- The updated Heroes Act can be found at <https://tinyurl.com/y4vsb9ps>.

### President Trump Releases Executive Order on Race and Sex Stereotyping

On September 22, President Trump released an executive order (EO) entitled "Executive Order on Combating Race and Sex Stereotyping." The EO has implications for federal agencies, grantees, and contractors and is a follow-up to September 4 executive memorandum M-20-34,

which directed executive branch agencies to end trainings on topics such as "critical race theory" and "white privilege." The purpose of the September 22 EO is to "combat offensive and anti-American race and sex stereotyping and scapegoating" and "divisive concepts."

The EO directs that workplace diversity trainings and efforts to address bias and privilege are not to be supported with federal funding. The immediate implications for recipients of federal funding are unclear. The EO directs federal agencies to review all grant programs under their jurisdiction. Federal contracting agencies will be required to insert a clause addressing race and sex stereotyping into contracts that will begin 60 days from September 22, 2020. Contractors, if noncompliant, would risk having contracts canceled, terminated, or suspended and may become ineligible for future federal contracts.

Currently, the EO contains no provisions for agencies to promulgate regulations to enforce it. There are numerous concerning provisions in the EO, however; given that similar EOs and executive actions have faced successful legal challenges, this EO may face a similar fate. Absent federal regulations, grantee organizations should be alert for possible agency updates or additional developments.

*continued on page 18*

**POLICY UPDATE***continued from page 17**Sources and Additional Information*

- The executive order is available at <https://tinyurl.com/y2emrxng>.
- The executive memorandum can be found at <https://tinyurl.com/y6njbuw>.
- A comprehensive analysis of the executive order is available at <https://tinyurl.com/y6ozqbro>.

### International Discussions Arise Surrounding Digital Sequence Information of Genetic Resources

Parties to the United Nations Convention on Biological Diversity (CBD) and the Nagoya Protocol (NP) will consider whether the existing access and benefit sharing framework may be expanded to regulate digital sequence information, in addition to physical biological resources, at their next biodiversity conference in 2021. The parties still do not agree on the definition and scope of the term “digital sequence information,” but the most common understanding encompasses the sequences of nucleotide found in DNA and RNA, including those found in public databases. As proposed, the expansion of access and benefit sharing under the NP to include digital sequence information could dramatically impact scientific research by placing limitations on scientists’ ability to share, publish, and use genetic sequence data derived from genetic resources with origins outside their home country.

Although several scientific societies have opposed expanding the coverage of the NP to digital sequence information and several

developed countries do not support such an idea, the discussion on this topic has become highly politicized. Many developing countries have started to link the update of the post-2020 biodiversity framework to an outcome on digital sequence information and access and benefit sharing. Although the United States has expressed concerns about the potential expansion of the NP to include digital sequence information under its access and benefit sharing provisions, it does not participate in the negotiations because it is not party to either the CBD or the NP. For this reason, the European Union and the United Kingdom will play a significant role in determining the outcome of the negotiations and in advocating for an outcome that will not limit international scientific collaboration and sharing of digital sequence information.

For those interested in this issue, two events addressed the European perspective and potential approaches to an agreement:

1. *Webinar and virtual report launch: A new report, Finding Compromise on Access and Benefit Sharing and Digital Sequence Information in the CBD: Requirements & Policy Ideas from a Scientific Perspective*, was launched by the WiLDSI project on October 17. This interdisciplinary research project is funded by the German Federal Ministry of Education and Research and led by the Leibniz Institutes DSMZ and the Leibniz Institute of Plant Genetics and Crop Plant Research to research viable open-access benefit-sharing policy options for digital sequence information and

proactively involve scientific stakeholders.

2. *Online seminar: The seminar “Introduction to the Nagoya Protocol on Access and Benefit Sharing in the UK”* was hosted October 14 by the University of Aberdeen.

*Source and Additional Information*

- Information on the webinar and report launch can be found at <https://www.dsmz.de/collection/nagoya-protocol/digital-sequence-information/dsi-policy-options-webinar-2020>.

### NIFA Releases Upcoming RFA Calendar

USDA’s National Institute of Food and Agriculture (NIFA) launched the Project CAFÉ (Collaboratively Achieving Functional Excellence) Initiative to better fulfill NIFA’s scientific mission by improving the effectiveness and efficiency of service delivery, as well as to reinforce and improve clarity, trust, consistency, and transparency between NIFA and institutional stakeholders and employees. As part of this project, NIFA held a comment period from January to April 2020 soliciting feedback on NIFA’s performance.

In response to the feedback received from stakeholders in Project CAFÉ, NIFA has released a calendar detailing target release dates for requests for applications (RFAs) for the rest of 2020 and the beginning of 2021 to create a more streamlined process. The current list applies to continuations, directed, and second-year RFAs of a multiyear solicitation.

*Source and Additional Information*

- The RFA calendar is available at <https://tinyurl.com/yy8cycq>.

### NSF BIO Transitions No-Deadline Solicitations to Research.gov

In a Dear Colleague Letter (DCL) released on September 29, the Directorate for Biological Sciences (BIO) at NSF announced that many of its no-deadline submissions are migrating from the current FastLane system to the new Research.gov site. As described in NSF’s September 22 “Important Notice No. 147,” the agency has been developing Research.gov for some time as part of a broader research management modernization effort to improve the user experience and reduce administrative burden for researchers, administrators, and organizations. Currently, activities such as preparation and submission of annual and final project and outcomes reports, most notifications and requests, and award payments operate through Research.gov. With the September 29 DCL, NSF is now taking proactive steps to shift all proposal preparation and submission to this new modernized system, with the aim of having the move to Research.gov complete by 2022.

BIO is leading the pilot efforts for this migration by requiring that proposal submission for its core no-deadline solicitations in certain divisions occur through Research.gov. This is the first phase of an eventual transition in which all proposals will be submitted through the new system; this phased approach is designed to give researchers time to adjust to the new system. NSF has stated that it does “not anticipate that the change to Research.gov will have significant impacts on the submission process, and this migration will not affect the merit review process in any way.”

Of particular note to ASPB members, solicitations for funding through Plant Biotic Interactions and the Plant Genome Research Program within the Division of Integrative Organismal Systems will be affected by this shift to Research.gov. A full list of programs included in the initial migration can be found in the DCL. For impacted programs, revised solicitations will be issued in the coming weeks. To support the community through this migration, technical support and FAQs and videos on proposal submission through Research.gov are available.

#### Sources and Additional Information

- NSF's Dear Colleague Letter announcing BIO's policy changes is available at <https://tinyurl.com/y4haru2e>.
- Important Notice No. 147 is available at <https://tinyurl.com/yyzexskn>.
- Informational materials on proposal submission through Research.gov are available at <https://tinyurl.com/y5t9gt79>.

### DOE Office of Science Continues to Provide Maximum Flexibility on Grants During COVID-19

On September 24, the director of the Office of Science, Chris Fall, released a memo to Office of Science applicants and awardees to provide an update on the administration of grants and other awards during the COVID-19 pandemic. The Office of Science continues to be “committed to maximum flexibility in administering awards, recognizing potential delays in research caused by impacts of the COVID-19 pandemic.” Principal investigators will not be penalized for missed milestones, and program manag-

ers are available to discuss impacts. The Office of Science is also committed to continue making new awards, and merit reviews will move forward.

Regarding COVID-19 flexibilities, investigators, staff, and students may continue to charge salaries and benefits to Office of Science awards if the recipient institution permits salaries to continue to be paid in the event of emergencies or disasters. In addition, the Office of Science is continuing to take the following actions based on existing authorities:

- extend deadlines for proposals, preproposals, letters of intent, and progress reports
- award no-cost extensions as quickly as possible
- consider supplemental requests, subject to availability of funds.

#### Sources and Additional Information

- The full memo can be accessed at <https://tinyurl.com/y5jqoo24>.
- More detailed information on Office of Science efforts to mitigate COVID-19 impacts can be found at <https://tinyurl.com/yxcdeplj>.

### NSF Releases Sustainable Regional Systems Research Networks Solicitation

NSF released a new cross-agency solicitation for Sustainable Regional Systems (SRS) Research Networks to advance convergent science, engineering, and education research to create more sustainable regional systems. The Research Networks will seek understanding of the connections between rural and urban communities, integrating data collection, outcomes, theories of change, generalizable theories, modeling, stakeholder

participation, and equity analyses to advance sustainable connections between the natural and built environments as well as the social systems that work through them. Information generated by SRS Research Networks will help inform decision making for sustainable improvements of regional systems, including environmental and social equity issues. Research Networks may study a single urban or metropolitan system and its connected rural regions, multiple urban–rural systems, or an aggregation of connected urban–rural systems.

The solicitation has two tracks:

1. *SRS Research Networks Full Scale Awards (Track 1)* will fund up to \$15 million over five years for fundamental convergent research, education, and outreach. Possible elements may include engineering and a variety of environmental topics including, but not limited to, biology, chemistry, atmospheric science, hydrology, recyclable plastics, and geology. Applicants should also embrace partnerships with universities, local governments, nonprofits, and industry. Successful applications for Track 1 must cover the scope and scale of the project, how the project is an example of convergent research, partnerships and stakeholder engagement plans, a diversity and inclusion strategy, and an education and education evaluation plan.
2. *SRS Research Networks Planning Grants (Track 2)* will fund up to \$150,000 for one year for the preparation of a future Research Networks

Track 1 project. Successful applications for Track 2 must cover how the project is an example of convergent research, partnership and stakeholder engagement plans, and a diversity and inclusion strategy.

This solicitation follows the January 2018 release of the NSF Advisory Committee for Environmental Research and Education (AC-ERE) report *Sustainable Urban Systems: Articulating a Long-Term Convergence Research Agenda*, which called for additional research into sustainable urban systems. Following a series of conference and workshop awards, NSF found that there is a need to study the wide-scale systems connecting urban and regional communities, spurring the creation of the SRS Research Networks program. Although NSF has funded several research networks of comparable sizes, SRS Research Networks are expected to “enable broader, more extensive, and more comprehensive SRS research and education than is currently possible elsewhere in NSF’s portfolio.”

- *Due date:* Full proposals are due by 5:00 p.m. submitter’s local time on January 11, 2021.
- *Eligibility:* Institutions of higher education, nonprofits, and for-profit organizations are eligible to apply. There are no limits on the number of proposals that may be submitted per institution. Partnered institutions should have demonstrable collaboration benefits, and early career faculty and students should be encouraged to participate.

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**POLICY UPDATE***continued from page 19*

- *Total funding and award size:* NSF anticipates a total of \$31 million in funding for this round of the program, supporting three Full Scale Awards (Track 1) and 12 to 20 Planning Grants (Track 2).

*Sources and Additional Information*

- The solicitation is available at <https://tinyurl.com/y4cmz4qz>.
- More information on SRS Research Networks is available at <https://tinyurl.com/y5jfo5z>.
- The AC-ERE report can be found at <https://tinyurl.com/y9qjgrg6>.
- Information on the sustainable urban systems conference and workshop awards can be found at <https://tinyurl.com/y6bl8klh>.

**USAID Increases Its Attention to Food and Announces New Awards and Upcoming Funding Opportunities**

United States Agency for International Development (USAID) Deputy Administrator Bonnie Glick announced several new awards and one upcoming funding opportunity under its Feed the Future Innovation Labs in a congressional event on September 17. In addition, on September 29, USAID requested comments on a draft Feed the Future Innovation Lab on Horticulture. The Feed the Future Innovation Labs are a dedi-

cated mechanism led by USAID's Bureau for Resilience and Food Security for U.S.-based universities to develop innovative approaches to agriculture and food security challenges in a development context.

Upcoming opportunities include the following:

- *Forecasted opportunity—Feed the Future Innovation Lab for Current and Emerging Threats to Crops:* This lab will focus on some of the latest innovations and discoveries with respect to pest management. The new funding opportunity is expected to be published in November. The American Phytopathological Society hosted a webinar to discuss this opportunity in partnership with the Entomological Society of America.
- *Request for comment—Draft Feed the Future Innovation Lab on Horticulture:* This lab is proposed to identify and strengthen opportunities for smallholder farmers to develop and sustainably manage horticulture-based enterprises in production systems central to the Feed the Future Initiative. Commentary and feedback on the draft concept were requested by October 20.

Each of these awards will address vulnerabilities in the food supply chain and should assist communities in becoming more resilient to the impact of

the COVID-19 pandemic. The Board for International Food and Agricultural Development (BIFAD), an academic advisory panel that advises USAID on agriculture and higher education issues pertinent to food insecurity in developing countries, presented data during its 181st and 182nd meetings (June 4 and September 14, respectively) to show that COVID-19 and related economic impacts risk erasing seven or more years of progress in addressing nutrition and food assistance. Accordingly, BIFAD members advocated for the strengthening of national food policy systems as a high priority in the COVID-19 policy response and rebuilding plans to avoid irrevocable impacts on mortality and lost potential. The 183rd BIFAD meeting took place October 13 and focused on the implications of data collected from successful agricultural and economic transformations for USAID's agricultural and food security development and social safety net priorities and programming.

*Sources and Additional Information*

- The new awards and funding announcement can be found at <https://tinyurl.com/yyqmogr>.
- The American Phytopathological Society webinar can be found at <https://tinyurl.com/y4pq77u5>.
- The draft concept is available at <https://tinyurl.com/y5247b38>.

**USDA Deputy Secretary Stephen Censky to Depart**

On September 18, Secretary of Agriculture Sonny Perdue announced that USDA Deputy Secretary Stephen Censky will depart November 8 after roughly two years at the agency. Censky has returned to his role as CEO of the American Soybean Association, a position he had previously held for 21 years.

Censky began his career working as a legislative assistant for Sen. Jim Abdnor (R-SD). Later he served in both the Reagan and George H. W. Bush administrations at USDA, eventually serving as administrator of the Foreign Agricultural Service, where he was involved in running the nation's export programs. He grew up on a soybean, corn, and diversified livestock farm near Jackson, Minnesota.

*Source and Additional Information*

- The press release can be found at <https://tinyurl.com/y2whsmjg>. ■

# TRANSFORMING EDUCATION IN PLANT BIOLOGY (TEPB)

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# Arren Bar-Even

1980–2020

BY ANDREW HANSON, MARK STITT, and ANDREAS WEBER

*“You must accept the truth from whatever source it comes.”—Maimonides*

Very few scientists deserve to be called a genius, but Arren Bar-Even was one of them. Beginning with his PhD thesis work on design principles in cellular metabolism at the Weizmann Institute of Science, Arren started to change how we think about metabolic systems and their engineering. In his subsequent stellar career from 2015 onward as head of the systems and synthetic metabolism lab at the Max Planck Institute of Molecular Plant Physiology, Arren’s “daring metabolic designs” (his words) began exploring the vast metabolic space that is chemically and thermodynamically possible but that nature has not explored.

Again in his own words, Arren’s research “focused on the design and implementation of novel metabolic pathways with the potential to directly tackle humanity’s grand challenges of establishing a circular carbon economy and achieving agricultural sustainability.” He made revolutionary advances in the engineering of C1 metabolism toward the establishment of a formate economy, the design and implementation of radically novel bypasses to replace photorespiration, and the design and construction of novel CO<sub>2</sub> fixation pathways.

This work in synthetic biology was inspirational as well as transformational. Arren looked at metabolism as a living system in which radically new pathways

could be developed. He did not limit himself to just remixing existing enzymes. He also used basic design principles to identify totally novel reactions that should be possible—based on their chemistry and thermodynamics—and then looked for enzymes that could be co-opted and adapted to perform these novel reactions. Moving from reactions to establishing pathways, he was adept at creating mutants and engineered bacterial reporters for flux through a given metabolic pathway. These allowed selection for the combined operation of sets of newly mixed enzymes, starting with low selection pressure in which only a low flux was needed through the synthetic pathway, and then increasing the selection pressure to optimize the design for higher flux. This ingenious integration of ab initio engineering and synthetic biology accelerated in vivo evolution in engineered bacterial reporters and propelled “daring designs” to reality.

Looking back at Arren’s achievements, it seems hard to believe that one person could accomplish so much—and in so many areas of metabolism—in so little time. As noted above, these areas ranged from formate metabolism through alternative reductive pathways for CO<sub>2</sub> fixation to carbon-neutral and carbon-positive photorespiratory pathways—and beyond. The secret behind Arren’s phenomenal productivity was teamwork and an extraordinary



Arren and his group at the Max Planck Institute.



talent for motivating others to unite behind a common goal. Arren turned visionary ideas into reality by building and managing large team efforts that leveraged the complementary expertise of multiple disciplines, from computational modeling to genome engineering.

A genius is someone who has such exceptional insights and creativity that they are qualitatively unlike other people, who are consequently often slow to grasp the significance of what a genius says and does. Geniuses therefore have to walk a difficult path in life because their gifts can isolate them from others and turn them inward on themselves. Such a turning inward was not Arren’s way. Instead, he looked beyond himself, reached out gener-

ously with kindness and humor to other, slower witted people, and made his colleagues into friends and his students and postdocs into family. He got undergraduate students engaged in high-level original research—very demanding, but also extremely rewarding for the students.

Arren was legendary for his capacity for and love of argument in the pursuit of truth. He thus lived the famous axiom of Maimonides (Rambam) that heads this tribute. Arren was and is held in such respect and affection by so many people for these human qualities just as much as for the raw power of his intellect.

Arren will have an enduring legacy not only for helping biologists transition from describing metabolism to redesigning and repurposing it, but also for his exceptional capacity as a researcher and teacher to go straight to the physicochemical heart of a biological problem and to quickly devise creative experimental strategies and tactics to address and solve that problem. Arren was thus a rare blend of deep biological thinker and practical research engineer—a perfect exemplar for future generations of synthetic biologists. ■

# Hillel Fromm

1954–2020

BY EDUARDO BLUMWALD, SHAUL YALOVSKY, WAYNE SNEDDEN, and COLLEAGUES

With great sadness, we report that Hillel Fromm passed away on October 12 at the age of 66, following a long battle with cancer. Hillel was a major force in the field of plant signal transduction and made important contributions to understanding the roles of  $\text{Ca}^{2+}$  during plant responses to biotic and abiotic stimuli.

Hillel obtained his BSc (1981) in agriculture from the Hebrew University of Jerusalem and his MSc (1984) and PhD (1988) at the Weizmann Institute of Science in the Department of Plant Genetics under the supervision of Marvin Edelman and Esra Galun. Following his postdoctoral work with Nam-Hai Chua at Rockefeller University, he returned to Israel, first at the Weizmann Institute and later at Tel Aviv University.

Hillel led a research program aimed at understanding  $\text{Ca}^{2+}$  as the main secondary messenger used by plants during information processing. Many labs at the time specialized in microscopy-based imaging, thereby providing a critical window into the intricacies of  $\text{Ca}^{2+}$ -flux dynamics. Hillel's expertise on the downstream responses to  $\text{Ca}^{2+}$  signals complemented the early imaging studies, and he published a series of important papers on key proteins and networks activated by  $\text{Ca}^{2+}$ . In particular, research from Hillel's lab identifying novel proteins regulated by the main  $\text{Ca}^{2+}$ -sensor, calmodulin, was

critical in helping bridge the realms of calcium signals to downstream physiological responses.

Although it had been known for some time that all eukaryotes use calmodulin as a  $\text{Ca}^{2+}$ -sensor, very few protein targets of calmodulin had been identified in plants. In 1993, Hillel's lab demonstrated that plant glutamate decarboxylase (GAD) was regulated by calmodulin. His group showed that the regulation of GAD by  $\text{Ca}^{2+}$ /calmodulin was crucial for the regulation of amino acid metabolism, gamma-aminobutyric acid (GABA) levels, and normal plant development. This seminal work on GABA as a signaling molecule and stress metabolite helped establish the relevance of this compound in plants.

GABA, a four-carbon, nonprotein amino acid, and a neurotransmitter in animals, had a series of hypothesized roles in plants since its discovery 70 years ago, from an insect deterrent and signaling molecule to a role as an osmolyte. However, it was only in the early 2000s, with results stemming from Hillel's lab and others, that the mechanisms underlying GABA synthesis and metabolism became evident. At the intersection between glutamate metabolism and the tricarboxylic acid cycle, GABA links nitrogen and



carbon metabolism, a “bridge” rather than a “shunt” between two parallel metabolic pathways. Hillel's scientific pragmatism led him to suggest that, unlike in animals, GABA metabolic and signaling functions in plants may be

simply inseparable.

In addition to the pioneering work on GABA, Hillel and his team brought novel insight into other areas of  $\text{Ca}^{2+}$  signaling, including breakthroughs on the function of cyclic nucleotide-gated channels and calmodulin-activated transcription factors. More recently, Hillel investigated the links between  $\text{Ca}^{2+}$  and hydrotropism in roots, a fascinating but poorly understood phenomenon, and reported a key role for the MIZ1 protein in  $\text{Ca}^{2+}$ -mediated hydrotropism. Hillel was actively researching hydrotropism up until he took ill.

Regardless of whether he was exploring roles for calcium in metabolism, transport, gene expression, or hydrotropism, a hallmark of Hillel's research was that he brought the collective tools of molecular genetics, biochemistry, and physiology to bear. He wielded these tools with equal and impressive expertise.

Hillel trained many students and postdoctoral researchers who went on to have indepen-

dent careers. He was a beloved and admired mentor. Hillel's former students fondly recall his supportive attitude that continued long after they left the lab. To his colleagues, Hillel will be remembered for his modesty, vision, and leadership. He served as the head of the Department of Plant Sciences at Tel Aviv University and led the department's transition to become the School of Plant Sciences and Food Security. As the head of the school, Hillel developed an interdisciplinary program in plant sciences gathering plant molecular biologists, physiologists, ecologists, chemists, bioinformaticians, mathematicians, and physicists.

Despite his health challenges, Hillel never gave up. He worked diligently for as long as possible for the benefit of his colleagues and beloved family. Hillel is survived by his wife Orit, their daughter Yuval, his children Yonathan and Yael, and his mother and siblings. His passing is a tragic loss for the school, the Faculty of Life Sciences, the entire Israel plant science community, and his many colleagues in the field of calcium signaling. ■



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## Focus Issue on Transport and Signaling

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