



2023

The Canadian Society of Plant Biologists La Société Canadienne de Biologie Végétale

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Message from the President

Marcus Samuel University of Calgary

It is my great pleasure to connect with you all again through this message. After being the Vice President for two years, I have taken up the role of President of CSPB-SCBV. I look forward to this challenge in this post-COVID society and will work toward improving our organization to become a welcoming, inclusive, and resourceful one. As you all know, CSPB-SCBV is the largest plant science organization in Canada with over 600 active members. We are close partners with the American Society of Plant Biologists, and host joint meetings every four years; we are also a lead organization within Plant Canada, which facilitates networking amongst all Canadian crop and plant science societies.

Our exceptional research strength is unparalleled in its expertise in all aspects of plant biology, ranging from Plant Genomics to Plant Ecology and Evolutionary Biology. Our expertise will give rise to discoveries and technologies that could allow solutions for sustainable food security under challenging political and environmental conditions. With the global population surging toward 9 billion, there is an exigent need for novel technologies to create the next green revolution, with climate resilient crop plants to provide much-required sustenance. It is also imperative to create policies and practices that reduce greenhouse gas emissions from the Ag Sector to protect our planet from the unprecedented rates of climate change. Therefore, I strongly believe that it is just not sufficient to be strong in the present, but it is critical to create a robust force of plant biologists who can tackle these challenges in the future.

Out of the over 600 members of our society, 335 are student members and 63 are PDFs or Research Associates; it is our responsibility as a society to mentor the next generation of exceptional plant biologists to generate interdisciplinary ideas and technologies that address larger challenges. For example, gene editing did not exist ten years ago. In the next 10 years, we may be on to the next technology that could be even more efficient than gene editing. It is essential to find discomfort in complacency, and continue to adapt and evolve. Together, as we stand on the shoulders of the generations that built CSPB-SCBV, we must use our collective wisdom to help the future generation of plant biologists through modeling innovation in our own practice; providing them opportunities to showcase their talents; and uplifting them when they inevitably face difficult challenges.

We have made several foundational, grass roots chang-



es in the society to accomplish these goals. We needed to acknowledge the intersectionality in the organization to make the society more welcoming and inclusive to its diverse group of members. We started this change through creating a more diverse executive committee; compared to the composition of our executive committee in 2021 (42% women and 0% members of a visible minority), our current Executive (50% women) is quite diverse and is made up of a mix of BIPOC (33%) and Caucasian (67%) members. We have changed from 0% representation of visible minorities to 33%. Representation of BIPOC in the 12 committees of CSPB-SCBV has also increased from 17% to 28%, exceeding our proposed 22% target by 2030. We have also created new inclusive guidelines for judging posters and oral presentations at both national and regional conferences to reduce any potential bias while judging. These guidelines were implemented in the 2021-23 ERM, WRM meetings, 2022 joint ASPB/CSPB-SCBV PB22 meeting, and the 2023 CSPB-SCBV AGM at Laval University. We have reformed the nomination process for several society awards so that candidates are also able to self-nominate without requiring a nomination from another society member.

These changes have not only increased the society membership, but we have seen a sharp rise in student interest in participating and presenting at conferences. Our 2023 AGM at Laval is a prime example where we had over 150 scientific communications by graduate students and PDF/RA. Over 90 posters and oral presentations were considered for the awards competition, where 16 students were recognized for their excellent presentations. The number of students presenting at conferences, participating in the poster competition, and the number of prizes awarded have considerably increased in recent years. We truly believe that this will draw out the best from our young cohort of researchers and encourage new students to join the society. We must continue to provide a conduit through CSPB-SCBV for students to find success in their graduate

program, while helping them explore opportunities for potential career paths.

In addition to improving participation in annual events, we are also in the process of curating plans to be a year-round resourceful organization through our CSPB-SCBV webpage and social media platforms. We also want to provide improved accessibility to students and ECRs who are interested in engaging with the organization and using our resources.

We would like to thank the years of service to CSPB-SCBV by several of our outgoing executive committee members. Our sincere thanks and gratitude to our Past President Daphne Goring (2019 – 2021), who has served in several capacities over the past decade and leading major changes in the society during her tenure. We would like to thank Steven Chatfield for serving as the Education Director from 2017 – 2023; we thank Susanne Kohalmi for dedicating significant time as the Communication Director and Chair of the Communication committee as well as taking the responsibility of publishing the bi-annual bulletin from 2019 - 2023. We thank our outgoing treasurer, Sheila Macfie for her exceptional services, for being a major pillar in the organization managing the financials for almost 10 years (2015-23), and for her continued support as we transition to having a new treasurer.

We also welcome several new faces to the executive committee; we welcome our new Vice-President, Hugo Zheng (McGill), our new Education Director, Miranda Meents (SFU), our new Communication Director, Lauren Erland (UFV) who has been involved in this capacity for a few years now with the society, our new Treasurer, Rongmin Zhao (UTSC) for accepting this challenging task and Sean Ritter (UBC) as the student representative in the newly established executive committee student position.

As the President of CSPB-SCBV, I would like to acknowledge the leadership of our Past President, Robin Cameron for her diplomacy, decisiveness and for motivating everyone in her role as the President (2021-2023). We also thank her for inspiring the EDI changes and passing on the wisdom to the members of the executive.

Our Annual General Meeting (AGM) was held at Laval University, Quebec City, from June 18th to 21st, organized by Dominique Michaud, Edel Pérez Lopez and Marie-Claire Goulet. In my previous role as the Vice-President, I had the pleasure of organizing the the Student Presentation Competition (90 student presentations). Several awards were given for oral and poster presentations. The student oral presentation winners were CSPB-SCBV Presidents' Awards: Emmanuelle D'Amours, Fanfan Li; CRIV awards: Jordan VanderBurgt, Sean Robertson, William Bouard, Jenan Nouredine, Laura Michell Carmona Rojas, Michael Fish, Charles Roussin-Léveillé. The student poster presentation awards were Presidents' awards: Faranak Soleimani, Millie Smith; CRIV awards: Rajitha Gayan Lakmini Rathnayaka

Pathiranage, Alicia Halhed, Mianmian Zhu, Daniil Batanau, Daphne Chen, Souleïmen Jmii. Congratulations to all the awardees!

The 2023 Western Regional Meetings was held at Victoria during May 1st and 2nd; the Eastern Regional Meeting was successfully held on Dec 1 and 2nd at Concordia University. Our Annual General Meeting in 2024 will be a joint meeting with all the societies under Plant Canada in Winnipeg, between Jul 6th and Jul 10th. We look forward to a strong participation from all our members. There will be several events being organized for students and ECRs.

We have made changes to the eligibility requirements in the by-law 22 for Ann Oaks Scholarship and Fund (section g). We have increased the limit of source of income from other prestigious scholarships from 40% to 60% of Ann Oaks scholarship, to reflect the rise in the cost of living since the inception of the award. We have also added a sentence to this section indicating that "Sources of income other than scholarships (e.g. teaching assistantships or other forms of employment) are not included in the 60% calculation." This will help to make sure students that have other sources of income would still be eligible for the Ann Oaks Scholarship.

We kindly ask that you exercise patience when attempting to contact any member of either the executive committee or other committees. All members involved in the organization are volunteers who are dedicating their time to this great mission.

We are always looking for new members to get involved with the society and for volunteers to engage in the various CSPB/SCBV committees. If you are interested, please feel free to contact either myself (president@cspb-scbv.ca) or our Senior Director, Mehran Dastmalchi (seniordirector@cspb-scbv.ca).

Marcus Samuel
CSPB/SCBV Vice-President



Plenary Session at CSPB 2023 Photo Credit: Edel Pérez Lopez

Message from the Past President



Robin Cameron McMaster University

all of us. Our 2023 Carl Douglas Post-doctoral award winner, Dr. Devang Mehta gave a wonderful talk about his research and his EDI work to examine and reimagine our current research culture from his early career researcher perspective. The banquet at the Musée National des Beaux-Arts du Québec was amazing due to the wonderful setting, delicious food and engaging CSPB-SCBV people.

The Student Poster Competition was organized by Marcus Samuel as one of his last duties as Vice-President, there were 90 students in the competition, see his message for more details.

As one of my last duties as President, I presided over the CSPB-SCBV Annual Business meeting during the AGM, to present society activities, financial statements, and elect new Executive and Committee members. For the first time, our ABM was a hybrid meeting with a live virtual component and an in-person component for those CSPB-SCBV members who attended on the last day of the conference. The ABM was well-attended with ~100 people in-person and ~20 who attended virtually. Hopefully future ABMs can also be presented as Hybrid meetings to allow greater CSPB-SCBV member participation. Various Executive members gave updates including Sheila Macfie (Treasurer), Marcus Samuel (Vice President), David Bird (Secretary), Susanne Kohalmi (Communications Director), Sophia Stone (Eastern Regional Director), Barbara Hawkins (Western Regional Director), Mark Minow (Post-doctoral representative) and Mehran Dastmalchi (Senior Director) who ran the elections of new Executive and committee members. For more information, see messages from the Executive in this Bulletin.

During the AGM, as President, I had the honour to award our 2023 CSPB-SCBV awards. Dr. Guanqun Gavin Chen was awarded the C.D.Nelson award for outstanding research contributions to plant biology. Dr. Peter Moffet was awarded the Mary Spencer award for outstanding research in plant biology and active public service to the plant biology community by a mid-career researcher. The Carl Douglas post-doctoral award for outstanding contributions to plant

It's hard to believe my term as President ended this past June at the annual general meeting at Laval University. It seems like it was just yesterday and at the same time, a long time ago, that I became Vice President at Plant Canada at the University of Guelph in the summer of 2019. Our President, Daphne Goring did an amazing job of leading us through the pandemic in 2020 and 2021 and then it was my turn starting in the summer of 2021.

I would like to thank Daphne and all the Executive members from March 2020 to July 2023 for managing to do their executive duties despite all the extra pandemic-related work and stress.

- Sheila Macfie, David Bird, Susanne Kohalmi, Lauren Erland, Marcus Samuel, Douglas Muench, Owen Roland, Robert Mullen, Jean-Benoit Charron, Geoff Wasteneys, Steve Chatfield, Sophia Stone, Mehran Dastmalchi, Barbara Hawkins, Gopal Subramaniam, Mark Minow, Jennifer Hoogenboom.

I look forward to working with the Executive members in my new role as Past President.

CSPB-SCBV 2023 in Quebec City

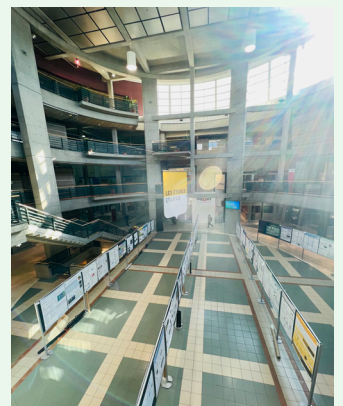
Our Annual General Meeting (AGM) was held at Laval University, June 18th to 21st, organized by Dominique Michaud, Edel Pérez Lopez and Marie-Claire Goulet. It was a wonderful site for the conference, was well attended and ran smoothly, thanks to the awesome hosts, Dominique, Marie-Claire and Edel and many wonderful student volunteers. The organizing committee chose a diverse and excellent group of plenary speakers who inspired

biology based on originality of research, productivity and leadership was awarded to Dr. Devang Mehta. The Ragai Ibrahim Award for excellence in publication by a graduate student was awarded to Mendel Perkins for his paper - Monoclonal export by diffusion down a polymerization-induced concentration gradient, in Plant Cell, February of 2022. Honorable mention went to Charles Roussin-Léveillé for his paper - Evolutionarily conserved bacterial effectors hijack abscisic acid signaling to induce an aqueous environment in the apoplast, Cell Host & Microbe in April 2022.

Thank you to all members of the award committees for adjudicating all these awards, as there would be no awards without your thoughtful deliberations.

Please start thinking about nominating a colleague or student for a 2024 CSPB-SCBV award.

Robin Cameron
CSPB/SCBV Past President



Sights from the CSPB AGM 2023 hosted at ULaval. Photo Credit: Edel Pérez-Lopez

CONGRATULATIONS

#CSPB2023 Student Presentation Winners!

CRIV Awards

Jordan VanderBurg
UWO/AAFC

Sean Robertson
UManitoba

William Bouard
UQAM

Jenan Noureddine
UofT Scarborough

Laura Michell Carmona Rojas
Université of Antioquia

Michael Fish
WLU

Charles Roussin-Léveillé
USherbrooke

CSPB Awards

Rajitha Gayan Lakmini
Rathnayaka Pathirana
UManitoba

Alicia Halhed
Carleton

Mianmian Zhu
UAlberta

Daphne Chen
UofT Scarborough

Souleïmen Jmii
UQAM

Presidents' Award Winners

Emmanuelle D'amours
McGill/AAFC

Fanfan Li
McGill

Faranak Soleimani
Queens

Millie Smith
Queens

Honourable Mentions

Constance Le Gloanec
UMontreal

Taufik El Alj
USherbrooke

Myles Matundan
UofT Scarborough

Madeline Lehmann
ULethbridge

Bridget Murphy
UofT Mississauga

Helena Hitomi Chubatsu Nunes
UBC Okanagan

Treasurer's News

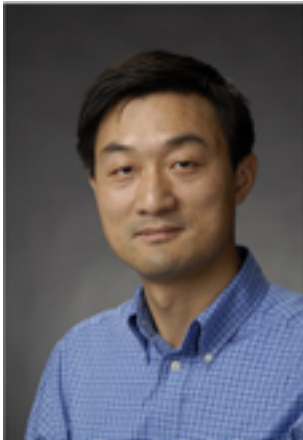
Message from the Outgoing Treasurer



Our membership numbers are holding strong, especially within the student and postdoc categories. The automatic renewal notifications from our new website (<https://cspb-scbv.wildapricot.org/>) seem to be working to keep current members up to date. As always, we welcome new members. If you have a colleague whose research falls within the scope of Plant Biology, please bring the CSPB-SCBV to their attention. In addition to receiving a member's discount for CSPB-SCBV conference registration, we offer a number of prestigious awards as well as a travel bursary for student and postdoc members to attend our annual national (summer) meeting. Speaking of these benefits, as always, I encourage you to consider donating to one of our many worthy merit Awards that are named in honour of past members of our Society (including Mary Spencer, David Gifford and Carl Douglas), the Duff Travel Bursary or the Ann Oaks Scholarship Fund: <https://cspb-scbv.wildapricot.org/Award-Donations1>. Donations above \$10 CAN will receive a receipt that can be used for tax purposes.

Sheila Macfie
CSPB/SCBV Outgoing Treasurer

Message from the Incoming Treasurer



As the new Treasurer starting this summer, I would like to first acknowledge and thank our past Treasurer Sheila Macfie, a professor at Western University, for her tremendous contribution to our Society in the past 8 years. Sheila helped develop many standard procedures, move some routine activities online and provide insightful advice to various committees and individuals. Sheila played a unique role in maintaining the integrity and continuation of the Society's documents and policies. I have had the privilege of working closely with her in the past few months to learn how to maintain the full and accurate accounts of receipts and disbursements in books belonging to the Society. Thank you, Sheila!

Rongmin Zhao
CSPB/SCBV Treasurer

Thank you Rongmin for stepping into this role!

Message from the Western Regional Direc-

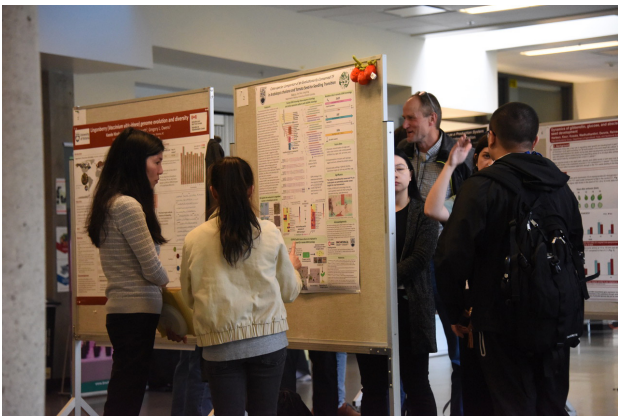
Barbara Hawkins
University of Victoria



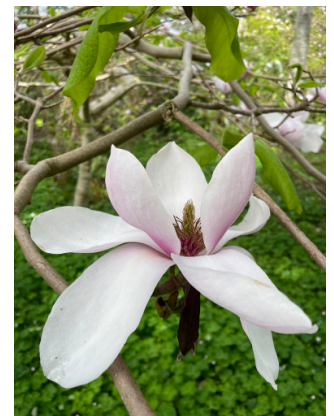
The Western Regional Meeting was held at the University of Victoria on May 1 & 2, 2023 in conjunction with the UVic Centre for Forest Biology Research Symposium. Over 100 people attended from BC and Alberta universities, provincial ministries, and federal forestry and agriculture research institutions. With 31 talks and a score of posters, many interesting findings were presented and discussed. The President's prize for oral presentations was awarded to Cecily Costain from UBC. First prize for poster presentations went to Bailan Lu, also from UBC. The weather was lovely and the cherries were in bloom. Thanks to the organizing committee, the judges and everyone who helped to make this meeting a success!

We are considering an online meeting for the next Western Regional Meeting. Please check your email for the survey!

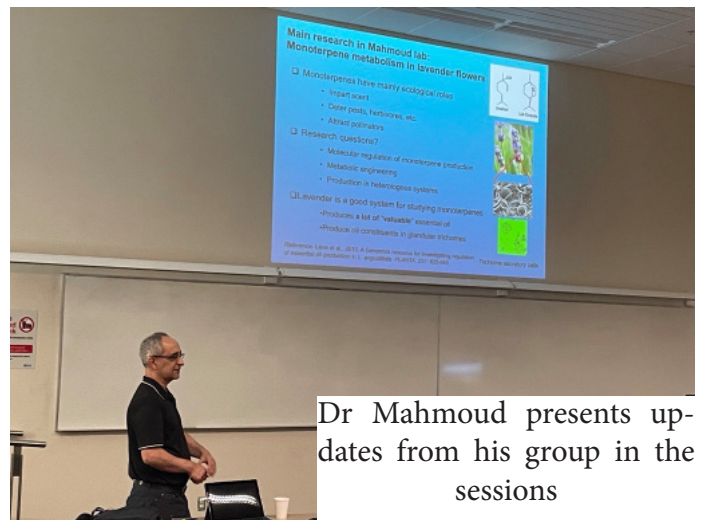
Barbara Hawkins
CSPB/SCBV Western Regional Director



WRM Poster Session



Checking out the gardens over lunch



Join the CSPB Team!

MEMBERSHIP DRIVE & FUNDRAISING COMMITTEE: The executive directors have noted that membership in CSPB-SCBV tends to increase at major meetings (annual, joint), and then subsequently decline in years between high profile meetings. As well, while the CSPB has a number of scholarships and awards only one of the four major awards, the Ann Oaks Scholarship, is endowed. The rest are funded through occasional donations directed at a specific award and the operating budget of the society. Therefore, a new committee was struck to develop both a membership drive and fund development strategy.

We are looking for motivated and enthusiastic CSPB members who are interested to serve on the Membership Drive and Fund Raising committee. This provides a great opportunity to ensure that our society stays healthy and vibrant! Please contact David Bird (Secretary) dbird@mtroyal.ca.

CSPB Annual Meetings

2024

Plant Canada, hosted by the Canadian Phytopathological Society, Winnipeg, MB July 6-10

2025

Halifax, NS

2026

Plant Biology 2026 Joint with ASPB, Ottawa, ON TBC

Upcoming Eastern Regional Meetings

Sophia Stone as the Eastern Regional Director is co-ordinating the scheduling of these events.

Upcoming Western Regional Meetings

Barbara Hawkins as the Western Regional Director is co-ordinating the scheduling of these events. Details to be announced for the 2023 Meeting.

Call for CSPB/SCBV Award Nominations

The CSPB welcomes nominations for Society awards. Please take this opportunity to acknowledge an outstanding member of the plant biology community. The recipients will be awarded in the respective categories during the CSPB-SCBV Annual General Meeting in the coming year. Full details on awards can be found on the award pages on our website www.cspb-scbv.ca/awards, with all information which is required for nomination included in the CSPB Bylaws at www.cspb-scbv.ca/about. Online nomination forms will be available starting January 1, 2024 at www.cspb-scbv.ca/awards.

The annual deadline for all nomination/application files is FEBRUARY 1, 2024. Please see the CSPB-SCBV By-Laws (About CSPB) for full details and instructions www.cspb-scbv.ca/about

Early Career-Specific Awards

The RAGAI IBRAHIM AWARD: The purpose of the award is to recognize excellence in publication by graduate students. A peer reviewed paper either in print or on-line may be self nominated or nominated by the supervisor, and will be evaluated on the impact or potential impact that the work will have on plant biology.

The CARL DOUGLAS PRIZE: The Prize shall be awarded for outstanding contributions to plant biology by a post-doctoral fellow, based on initiative and originality of the research, productivity of the individual, and leadership during their postdoctoral fellowship. A postdoctoral fellow is an individual who has completed their PhD and is engaged in full-time research under the supervision of a mentor. Applicants shall have obtained their PhD no more than 4 years (i.e., 48 months) prior to the date of the submission of the application, although career breaks will be taken into account when applicants are nearing the end of this eligibility period (e.g. maternity or parental leave, caregiver's responsibilities, illness, etc.). Applicants need not be Canadian citizens or engaged in a research program in Canada at the time of the nomination or during their postdoctoral fellowship. Preference will be given to applicants who are current members of the Society and have previously participated as a member of the Society.

Other Awards

The C.D. NELSON AWARD IN PLANT BIOLOGY: This award shall be given for outstanding research contributions to plant biology. Special consideration will be given to originality and independence of thought. Nominees shall have been in an independent, full-time research position for no more than 10 years, although career breaks will be taken into account when applicants are nearing the end of this eligibility period (e.g. maternity or parental leave, caregiver's responsibilities, illness, etc.). Nominees need not be Canadian citizens or members of the Society but must be engaged in a research program in Canada at the time of the nomination.

THE GLEB KROTKOV AWARD: The Award shall be given for outstanding career service to the Society. The Award shall be awarded by decision of the Board of Directors on the recommendation of the Gleb Krotkov Award Committee. A nomination for the Award must be supported by one Full Member and shall be documented with a full curriculum vitae and a citation outlining the nominee's outstanding career service to the Society.

CSPB-SCBV SOCIETY MEDAL: The Medal shall be awarded for outstanding career research and leadership contributions, primarily in Canada. A nomination for the Medal must be supported by one Full Member and shall be documented with a full curriculum vitae and a citation outlining the nominee's outstanding career research and leadership contributions to plant biology.

DAVID J. GIFFORD AWARD IN TREE BIOLOGY: Given in recognition of outstanding contributions in tree biology, primarily in Canada. Nominees must be engaged in a research program in Canada at the time of nomination and shall have been in an independent, full time research position for >15 years. Nominations must be made by a Full Member in good standing and include a full CV, and a citation outlining the nominee's outstanding and original research contributions.

NOT AVAILABLE THIS YEAR:

The MARY E. SPENCER AWARD: awarded in 2023, next award date 2025.

Message from the Postdoc Rep

Mark Minow University of Georgia

As they say down here in Georgia – it's fall y'all! Fall is a time of transitions, for both plants and students alike and we hope all our early career CSPB members has gotten into the swing of things for the fall semester.

First off, I would like to welcome Sean Ritter to the CSPB executive. Sean was recently elected to serve a two-year term as the CSPB Student representative. This was the result of a decision to split the post-doc/student executive into two positions to increase the representation of early career members on the CSPB executive board. Additionally, the two-year terms for these early career positions are offset to allow the incoming representative, student or post-doc, to be onboarded by the existing member.

This is the first bulletin since the Annual CSPB meeting which was held by Laval University in Québec. The meeting was well attended by students from across the country and it was great opportunity to see Canadian plant science on display. Sean and I would like to personally thank the students from Laval University both for planning and hosting a student event at a local bar as well as for their help in running the conference as a whole.

At the Annual CSPB meeting, I gave a workshop outlining tips for clear and concise scientific writing. I want to thank everyone who attended, and, although I received a little feedback from students in person, I would love to hear any other constructive criticism from those who attended. The workshops that take place at the annual and regional meetings are intended to provide career development to our early career members. It can be challenging to find an impactful topic that caters to the diverse scientific backgrounds of the CSPB membership. For this reason, Sean and I are asking you to please tell us what student



workshops you interested in for either the regional meetings or the 2024 annual meeting. At the annual meeting, there was talk about running a workshop on how to apply to the federal government. Are you interested in this workshop idea? Got an idea of your own for a workshop? Have thoughts about a past meeting? Let us know! Email either (studentrep@cspb-scbv.ca) or (postdocrep@cspb-scbv.ca) and we will communicate your ideas to the proper CSPB meeting organizing committee.

Finally, Sean and I would like to solicit general comments from the students, post-docs, and research associates in the CSPB. Both the student and postdoctoral executive positions are intended to provide an avenue for younger CSPB members to communicate their needs with the rest of the executive board. However, we cannot do this without feedback from you! What are the problems you are facing as a student or post-doc? Is there anything the CSPB can do to help you in your scientific or career goals? Please email us with your concerns and we will see if the CSPB can do something to alleviate any issues you are having.

Mark Minow
CSPB/SCBV Postdoc Rep

Message from the new Student Rep

Sean Ritter
University of British Columbia



The Student Representative position has been newly created by the CSPB to allow for more direct input of early career members to the executive board. I am honored to have been elected to this position and am excited to get to work representing graduate students across Canada. My objective in this role is to foster community between students across institutions and to advocate for/facilitate development of further resources for early career researchers. My role will also include providing information about already available resources such as travel bursaries and student scholarships. Additionally, the student representative will also sit on the selection committee for the Ragai Ibrahim Award, allowing for increased student input on this prestigious scholarship. Finally, in this role I will coordinate with members of the Education Committee and Local Organizing Committee of CSPB conferences to develop professional development workshops at Annual Society Meetings and advance the EDI mandate of the CSPB in conjunction with the EDI committee.

During both completion of my M.Sc. in the lab of Dr. George Owttrim at University of Alberta and at my current position as a PhD Student in Dr. Geoffrey Wasteneys lab at the University of British Columbia, I have been inspired by both the ambition and creativity of plant biologists across

Canada through attending CSPB-organized conferences. During my time as Student Representative, I hope to contribute to the continued success of CSPB conferences, as well as increase student engagement with the society year-round. For instance, did you know that students are able to serve on CSPB committees? This is a great way to meet colleagues outside of your institution and provide a student's perspective on to the future of plant biology research in Canada.

As mentioned in the Student and Post-Doctoral Update, Dr. Mark Minnow (Post-doctoral Representative) and I would like to encourage students to reach out with ideas and concerns. To properly represent the diversity of students in Plant Biology across Canada, I need to hear your unique perspectives! Please feel free to contact me via email (studentrep@cspb-scbv.ca) regarding any issue you wish to be communicated to the CSPB executive, or just to say hello.

Sean Ritter
CSPB/SCBV Student Rep

Budding Ideas

Biofortification: What does it mean? Why is it important?

Shakshi Anjali Dutt

MSc Student, University of Calgary

Growing up in Fiji, a developing country, I was part of a farming family, which helped me develop a unique perspective on the need for research to improve crop yield and nutrition. For example, when I was growing up the Fijian government partnered with research labs to generate locally adapted “hybrid” crops. Farmers bought these seeds at a subsidized cost, which improved market sales to sustain their livelihoods, while also feeding their families directly. My family were beneficiaries of this initiative; on my family’s farmland we planted hybrid mango trees that produced mangoes twice the typical size of previous varieties.

Farmers have been breeding hybrid crops to strengthen crop yields. More recently, there has been a push to improve crop nutrition while maintaining high yield. Biofortification, a process which merges breeding and biotechnology, improves crops’ nutritional value and productivity. Many of these biotechnological approaches involve transgenic technologies, like indel mutations via CRISPR-Cas9, random mutagenesis by EMS (Ethyl methane sulfonate) and insertional mutagenesis using T-DNA (transfer DNA) through *Agrobacterium tumefaciens*. However, this results in the improved crops being classified as Genetically Modified Organisms (GMO).

This GMO label has a negative connotation, with many citizens of developed countries avoiding GMO products out of fear. Consumers are not taught about GMOs during their education, which leaves them to self-educate about the topic. This makes consumers more likely to learn from non-expert resources rather than from scientists, causing misinformation to become public opinion.

Many believe unfounded claims that GMO crops have a detrimental impact on the environment and their health, but how is eating spinach with fish DNA any worse than eating spinach and fish? Many consumers also dislike the notion that GMO’s tamper with ‘mother nature.’ Although GMOs do result from plant modification, I do want to justify why I think that should not scare us. All organisms evolve and undergo slight genetic modifications every generation. Indeed, it was through this process that people domesticated crops from their wild ancestors, which crops often no longer even resemble. However, because these dramatic changes in plant forms and functions emerged without transgenic technologies, our domesticated crops are not labelled GMO. Through transgenic biotechnology, scientists can make targeted genetic modifications within a few years which is much faster



Author Bio: Shakshi Anjali Dutt (she/her) is a master’s student in the Samuel’s molecular and developmental biology lab at University of Calgary. Her work mainly focuses on developing salt tolerant canola lines for Canadian Farmers and her side project focuses on increasing protein content in canola. Outside of lab, she is an avid reader and a budding linguist, keen to learn new languages.

than what could be accomplished through breeding natural variants alone .

We must feed 8 billion people

Out of the world’s 195 countries, 152 of them are still developing - 85% of the world’s population. In 2022, the United Nations reported that up to 828 million people worldwide were impacted by hunger, and approximately 703 million of the malnourished were from developing countries. The human population has grown exponentially, and food security has steadily trended upward. However, this progress in food security has not been enough to feed all 8 billion of us. As such, biotechnology remains one of our most viable solutions to combat global hunger because of the speed with which we can enhance crops. People lucky enough to live in a food secure country have the privilege to protest against GMO crops. However, this GMO intolerant attitude fails to consider the food insecure parts of the world that would be grateful for the additional corn a transgenic field would produce. It is the malnourished that suffer when the first world consumer decides they are against GMO crops.

How can plant scientists try and cut through the rampant misinformation about GMOs? Scientists can utilize modern ways of communication to explain what GMOs are and how they benefit society. Scientists are already using social media platforms such as Twitter and TikTok to showcase what they do in their labs, while engaging other scientists and the public. These social media platforms allow people to go through a ‘learn-ask-learn-more’ cycle quickly, which improves public comprehension of complex topics. In this way, social media can educate the public about GMOs and science directly from the experts. By educating the public through accessible platforms, we can help reduce distrust between consumers and scientists, and work together to solve one of the world’s biggest challenges: hunger.

Suggested Readings:

Garg, M. et al. (2018) Biofortified crops generated by breeding, agronomy, and transgenic approaches are improving lives of millions of people around the world. *Frontiers in Nutrition*. 5. <https://doi.org/10.3389/fnut.2018.00012>.

Kresge, N. (2015) How can scientists help ease society’s fear of Gmos? *Howard Hughes Medical*

The Advantages of Being a Lab Pioneer: Tips for Success

Vanessa Shivnauth

MSc Student, McMaster University



Author Bio: Vanessa Shivnauth (she/her) is a master's student in the Batstone lab in McMaster University's department of biology. She current research focuses on the intersections of nitrogen fixation, biofilm production, and plant health using microbiological and molecular biological techniques.

Throughout my research career, I have been one of the first students in a new lab. Although this was not always intentional, I have come to appreciate this unique experience and believe it has been critical to my development as a scientist. Becoming a “lab pioneer” is not without its challenges, especially if a student lacks familiarity with the school. It can feel daunting to learn about the program, order products, and tailor protocols to a new lab, all while dealing with the stress of starting grad school. Additionally, not having older lab members to ask about the lab culture can feel like you are going in blind. However, I feel this uncertainty can be mitigated by preparing effectively: Specifically, before starting, researching project ideas, brushing up on literature, and studying potential methodology enables the new grad students to hit the ground running.

I found my experiences in new labs challenging, but extremely rewarding for many reasons. One of the first challenges, is making the choice to join a new lab in the first place. Students seem to forget that initial interviews with potential PIs are a two-way street; they are interviewing the PI just as much as they are being interviewed. Asking the right questions, and observing their behaviour, including their online presence, can provide a lot of context about their leadership style. . Once that choice has been made, you get to reap the rewards. One of the biggest advantages of joining a new lab is the unique relationship with the supervisor. Being one of their first graduate students allows both parties to share a similar circumstance - starting a new career stage. This shared experience allows the student to develop a deep and meaningful relationship with their mentor and sets them up for success by gaining guidance and a valuable reference for the future.

I have also observed new PIs are relatively flexible with their research direction. Whereas established labs will want to build upon their previous work, as an incoming student to a new lab, I have had the privilege of pitching ideas and designing my projects in collaboration with my PIs. Furthermore, established labs at your institution are sympathetic to your “fledgling lab” status and are typically eager and willing to help by collaborating and consulting on projects. Exploring project ideas with new collaborators promotes scientific curiosity and instills a sense of attachment and pride in perfecting your work. As with all experiments, limitations such as funding and time must be considered, but working on projects throughout every stage, from their conception to their completion, is extremely rewarding.

New labs create an invigorating work environment. There is a specific novelty associated with accomplishing lab-first milestones such as obtaining grants/awards, successfully troubleshooting methods, and presenting your findings. Acknowledging and celebrating the accomplishments generates an increased passion for science and motivation to build upon that success. There is also a sense of pride in setting up the lab for success for future members. Every academic journey is unique to the individual. Each student has different needs with regard to their degree, but I believe that being a “lab pioneer” promotes ideal conditions to develop and thrive as a researcher.

The Budding Ideas column was initiated by Adrian Monthony during his time on the CSPB EDI Committee. We are grateful for his efforts in helping to highlight diverse early career voices at the CSPB. As part of the new separate student and postdoctoral representative roles recently established Budding Ideas will be edited by our early career executive members. To submit your budding idea for consideration for inclusion in the next bulletin please email: studentrep@cspb-scbv.ca and postdocrep@cspb-scbv.ca.

In Memorium

Mary Eileen Stapleton Spencer 1923-2022



Well known University of Alberta plant biochemist and former CSPP (CSPB) President Dr. Mary Spencer passed away peacefully on December 18, 2022, at the Edmonton General Continuing Care Centre. She is survived by her daughter, Susan, and four generations of extended family members.

Mary was an outstanding academic, researcher, and teacher. She received her B.A. with High Honours (Chemistry) from the University of Saskatchewan in 1945, her M.Sc. (Chemistry) from Bryn Mawr College (Pennsylvania) in 1946, and her Ph.D. (Agricultural Chemistry) from the University of California (Berkeley) in 1951. She came to the University of Alberta in Edmonton in 1953 and remained at the University for over 35 years, progressing through various academic ranks culminating in the rare and prestigious rank of University Professor. Mary's laboratory was among international leaders in investigating the role of ethylene in plant growth, development

and metabolism. In addition to her teaching and research commitments, she also served as the Head of Plant Science Department and the Board of Governors of the University of Alberta. She also served on numerous external councils, committees, and boards. These included the International Council of Scientific Unions, the Organization for Economic Co-operation and Development (OECD), and the National Science and Engineering Research Council (NSERC) of Canada, to name but a few. She was the Vice-President and President of the Canadian Society of Plant Physiologists (former name of CSPB) in 1970 and 1971, respectively, and the Society established an award in her name in 2018. She was elected a Fellow of the Royal Society of Canada in 1976, received the Queen Elizabeth II Silver (1977), Golden (2002) and Diamond (2012) Jubilee Medals, and was invested as a Member of the Order of Canada in 2002.

Her academic achievements aside, Mary was truly a trailblazer in terms of gender-equality decades before the term became a part of the Western lexicon. Above all, she was a genuine human being with a strong sense of ethics, fairness, compassion, and empathy. Mary's primary joy was in interacting with her graduate students from various parts of the world, gently nudging them towards the right path without ever being overbearing. Most of her students and postdocs have gone on to rewarding careers of their own in a variety of sectors. Their success meant the world to her. She was also an avid swimmer, enthusiastic member of the University of Alberta's Early Birds fitness group, gracious hostess of multitudes of dinner parties and discussion groups, dedicated animal lover, and a gentle and humble soul.

A celebration of Mary's life will be held in conjunction with that of her husband of over 75 years, Hank, in May 2023. Donations in her memory may be made to the University of Alberta's Agriculture, Food & Nutritional Science Fund. (<https://www.ualberta.ca/giving/index.html>) or to the CSPB's Mary E Spencer Award (<https://cspb-scbv.ca/Spencer-Award>).

To plant a tree in memory of Mary Eileen Stapleton Spencer, please visit Tribute Store.

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In Memorium

Lawrence (Larry) Folke 1941 - 2022

Professor Emeritus Larry C. Fowke of the Biology Department, University of Saskatchewan (U of S), Saskatoon, passed away on December 13, 2022 after succumbing to Parkinson's disease. Larry was born in Toronto, Ontario, on June 6, 1941, grew up in Saskatoon where he went to high school, and did his B.Sc. Honours at the U of S in 1963. He received his Ph.D. from Carleton University in Ottawa in 1968, and then went to Australia on an NRC postdoctoral fellowship, after which he joined the U of S as Assistant Professor in 1970. He moved through the ranks quickly and was promoted to full Professor in 1979. He served the Biology Department as Assistant Head, from 1992-94, and as Head from 1994-2000. For his service to the Department Larry was honoured with the Rawson Professorship from 2002 to 2005.

Larry was a nationally and internationally renowned plant cell biologist; his research interests ranged from plant protoplasts, plant tissue culture of somatic and microspore embryogenesis especially of trees, and control of plant cell division. He was an author and co-author of over 120 research publications, several book chapters and conference proceedings, he co-edited a book on Plant Protoplast, and wrote a book titled, "Cells are life" which he completed during his illness and was published in 2021. He was invited to several national and international conferences and to various institutions around the world to present his research and remains one of the highly cited researcher in his field of work. For his research on somatic embryos of conifer trees, he and his co-workers hold five patents in USA, New Zealand and Canada. He was also an Associate Editor of Canadian Journal of Botany, Cell Biology International, Plant Cell Reports and Protoplasma. For his tremendous research contributions and accomplishments, Larry received several awards including, Distinguished Researcher award in 1998, an Earned D. Sc. in 2006, and Award of Innovation from the U of S in 2008. He was appointed as a fellow of the Royal Society of Canada in 2009 for his sustained and exemplary lifetime research contributions to the field of Plant Cell Biology.

Larry was also a passionate teacher and was highly respected by his students for his well organized lectures with high quality imaging, novel models, and were sprinkled with some humour. He treated students with respect and made himself available freely to help them with their problems. He was duly recognized for his superior teaching and was nominated



three times for Teaching Excellence award. Larry also supervised research of many graduate students and postdoctoral fellows who now hold various positions, in their own right, with academia, industry and research centers worldwide. Above all, Larry was a very fine human being, a kind, compassionate and gentle soul, a great friend and mentor to many, and had a wonderful sense of humour participating in departmental skits and telling jokes to friends and family. He was also a gifted photographer and many of his pictures appear in books and periodicals, and they adorn the walls of many friends' homes. He was also a great musician; he played saxophone for the Saskatoon Community band, and during his many visits to Australia learned to play the didgeridoo, which he loved playing at gatherings and sometimes to students in his class. He also loved exploring Northern Saskatchewan on canoe trips, and enjoyed surfing at beaches in Australia.

Larry is survived by his wife Lynne Fowke (Turner) of over 60 years, son Vernon (Sylvie), daughters Christine (Shawn) and Jocelyn (Jason), and grandchildren, Connor, Victoria, Nathan, Noah, Annika, Jacob and Jeremy. He will be sorely missed by his family and friends, and plant biologists and plant cell biologists in Canada and around the world.

Vipen Sawhney,
Biology Department, University of Saskatchewan

In Memorium

Derek J. Bewley 1943 - 2023



Dr. J. Derek Bewley, Emeritus Professor in the Department of Molecular and Cellular Biology (formerly Department of Botany) at the University of Guelph, Canada, passed away due to cancer on February 24, 2023. Derek was a towering figure in seed science over the past five decades, making critical research contributions to a wide diversity of topics. In addition, he co-wrote or co-edited the key textbooks and scientific resources associated with seed biology. He contributed to the founding of the International Society for Seed Science and served as its second President-elect and third President from 2002-2008. He was a professor, mentor or colleague to a generation of seed scientists and an inspiring, warm and generous person. While it is impossible to do justice here to all of Derek's contributions, we will outline the highlights of his career and impact upon current seed science as a memorial to his achievements.

Academic career and research contributions

Derek was born in Preston, England on December 11, 1943. He completed his undergraduate degree in Botany and Biochemistry at the University of London in 1965 and his PhD with Michael Black at the same institution in 1968. He began

his research career investigating the action of phytochrome in relation to gibberellin (GA) in stimulating germination of lettuce seeds, publishing his first paper in *Nature* (Bewley et al., 1967; Bewley et al., 1968). He then moved in 1968 to a postdoc with Abe Marcus at the Fox Chase Institute for Cancer Research in Philadelphia. The Marcus lab had developed the *in vitro* wheat germ system for studying the mechanisms of protein synthesis. Derek published several papers concerning the factors associated with initiation of protein synthesis, including one in *Science* (Marcus et al., 1970). He then accepted a faculty position at the University of Calgary, Canada, and continued his work on seeds. Between 1975 and 1979, he and postdoc Peter Halmer published a series of research papers on the composition of lettuce endosperm cell walls (mainly galactomannans) and the identification of a GA-responsive enzyme to break them down during germination (endo- β -mannanase) (described in Bewley and Halmer, 1981). This focus on the molecular and physiological mechanisms regulating the initiation and completion of germination continued throughout Derek's career.

At the same time, Derek became interested in how seeds can tolerate desiccation and resume biological activity upon rehydration. In looking for a model system in which to study this, he identified the desiccation-tolerant moss *Tortula ruralis* (now *Syntrichia ruralis*) (Bewley, 2015). His pioneering work with this plant and subsequently with seeds of a number of species established key concepts in desiccation tolerance that remain fundamental to the field and opened a portal into subsequent exploration of vegetative desiccation tolerance (Bewley, 1979; Bewley, 1995; Oliver et al., 2020). His interest in desiccation tolerance during seed development included the molecular changes associated with the termination of seed development and the acquisition of germinative capacity (Bewley et al., 1989). This included studies on storage protein synthesis and accumulation during seed development (Bewley et al., 1992) and the regulatory roles of abscisic acid and osmoticum in these processes (Xu and Bewley, 1991).

In 1985, Derek moved to the University of Guelph to become the Chair of the Botany Department. In addition to his administrative duties, Derek continued his studies of the biochemical basis of seed germination by cloning genes encoding endo- β -mannanase in tomato and lettuce (Bewley et al., 1997; Mo and Bewley, 2002) as well as other genes important in cell wall modification during germination (Nonogaki et

al., 2010) and during fruit ripening (Bourgault and Bewley, 2002). He also continued to probe the mechanisms associated with the regulation of seed development and germination by gibberellin and ABA (Bassel et al., 2006, 2008). Derek and colleagues also employed *in vivo* molecular markers to demonstrate that germination is initiated by expansion of cells in the lower hypocotyl region rather than in the radicle itself (Sliwinska et al., 2009). Derek completed his publishing career by contributing to an Annual Review of Plant Biology article on desiccation tolerance (Oliver et al., 2020), his 275th published paper or book chapter.

Books authored

While Derek's research alone would ensure his recognition as a foundational plant biologist, his authorship of books has added substantially to his reputation and his impact on the field. This began with his collaboration with Michael Black to publish two volumes of the *Physiology and Biochemistry of Seeds in Relation to Germination* in 1978 and 1982 (Bewley and Black, 1978; Bewley and Black, 1982). These books presented a comprehensive review of the seed physiology literature to date, but more importantly, they provided a critique of the strength of evidence for various concepts or hypotheses and identified where additional research was most needed. As such, these books introduced a generation of seed biologists to both the history of their field and its future directions. While these books received universal acclaim, the authors also realized that a less research-oriented textbook was also needed. They therefore produced *Seeds: Physiology of Development and Germination* in 1985 and updated it with a second edition in 1994 (Bewley and Black, 1985; Bewley and Black, 1994). Derek subsequently organized the writing of a third and somewhat expanded edition of this book with additional focus on seed dormancy and longevity (Bewley et al., 2013). Michael Black declined to join this effort, but graciously allowed some of his prior work to be included, while Kent Bradford, Henk Hilhorst and Hiro Nonogaki joined as co-authors. Collectively, these books have provided a basic introduction to these topics for a global audience for almost four decades.

Seed science also has a strong connection to agriculture and the breeding, production and technology of delivering crops to the field via high quality seeds. Michael Black and Derek Bewley also contributed to applied seed science through their organization and editing of *Seed Technology and Its Biological Basis* (Black and Bewley, 2000). With contributions from invited experts in the field, this book highlighted the biological basis of seed quality attributes and how they could be enhanced to improve seed performance in crop production. Derek and Michael then invited Peter Halmer to join them in a major editing and publishing effort, resulting in *The Encyclopedia of Seeds. Science, Technology and Uses* in 2006 (Bewley et al., 2006). This work was truly encyclopedic in its scope, including articles contributed by 112 authors and running more than 800 pages. There is hardly a topic in seed science and technology that is not clearly described

in this book, providing a lasting testament to Derek and his collaboration with Michael Black, Peter Halmer and a global community of seed scientists.

Contributions to education and professional societies

During his career, Derek supervised 46 students to a postgraduate degree, many of whom continued in academic or research professions, and mentored 54 postdoctoral fellows and visiting scientists. There is no doubt about the impact that Derek's mentorship and example have had upon the development of modern seed science and related fields of research. In addition, Derek contributed his time to manifold administrative responsibilities and service activities, both at his home institutions and internationally. At the University of Calgary, he served as the Graduate Administrative Officer in charge of graduate studies in his department, on the Research Committee of the Faculty of Science and on numerous other committees and roles. He came to the University of Guelph as the Chair of the Department of Botany and greatly expanded its research and teaching activity and international reputation. He also served on the Dean's Council and on multiple committees and councils supporting both research and educational goals. Nationally and internationally, Derek served as President of the Canadian Society of Plant Biologists and as a Corresponding Member of the American Society of Plant Biologists. He is recognized as a Pioneer Member of the latter organization and also received its Charles Reid Barnes Life Membership Award. Derek, along with his mentor and colleague Michael Black, played critical roles in the establishment of the International Society for Seed Science (ISSS) in 1999. Derek was President-elect from 2002-2005 and President from 2005-2008, and his leadership during this period is evident in the adoption of the ISSS Constitution, Statutes and Rules. His outstanding service to this society is recognized by the J. Derek Bewley Career Lecture, which is an invited lecture at the triennial ISSS Workshop named in recognition of his illustrious career and multiple contributions to seed science. This lecture invites a late career or newly retired seed scientist to provide a retrospective presentation on the field and her/his career with a view to lessons learned and implications for the future. He was also honored in 2011 with the initial Lifetime Membership Award of the ISSS.

In Memoriam

This short summary of Derek Bewley's achievements cannot do justice to the scope of his contributions as a researcher, educator, author and institutional leader in seed biology and related disciplines such as desiccation tolerance. Nonetheless, the magnitude and breadth of his contributions is evident, for which all of us who had the privilege of knowing Derek as both a human and a scientist can attest. For coming generations of seed biologists, take the time to read a number of his books and papers, both to understand the history of our field and to enjoy the breadth of knowledge and the craft of an outstanding scientific writer. As beneficia-

ries of our personal and professional relationships with him, the authors acknowledge their debt and appreciation to Derek Bewley on behalf of all plant scientists.

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CSPB Inside

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Lauren Erland

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CSPB-SCBV acknowledges the Indigenous peoples of Canada who lived here before us, live here now, and on whose traditional and ancestral lands we continue to live.

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