



Bergenia crassifolia leaves after rain. Andreea Bosorogan

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Message from the President

Robin Cameron
McMaster University



I hope all of you are managing work and life in the midst of this long pandemic. I became President at our 2021 Virtual Annual General Meeting (AGM) in June making this my first message as President. I thoroughly enjoyed attending the talks, posters and networking/social sessions. I heard that many of you also enjoyed the meeting. It was inspiring to hear about the personal/scientific journey of Mark Belmonte. As President I will be looking into what is needed to make Mark's rainbow Cspb-Scbv logo, an official logo of Cspb-Scbv. I want to thank the lead co-organizers, Raju Soolanayakanahally and Ken Wilson for organizing a fantastic virtual meeting.

Daphne Goring, our past President thanked the outgoing members of the executive for their invaluable service to Cspb-Scbv in the Spring Bulletin and I also wish to thank them for generously volunteering their time to Cspb-Scbv.

Outgoing Members of the Executive: Jean-Benoit Charron (Senior Director), Robert Mullen (Eastern Regional Director), Owen Rowland (Science Policy Director).

I am also excited to welcome our new members to the executive: Marcus Samuel (Vice-President), Mehran Dastmalchi (Senior Director), Sophia Stone (Eastern Regional Director), Gopal Subramaniam (Science Policy Director).

CSPB-SCBV 2021 Virtual Annual General Meeting (AGM) Student Presentation Awards

One of my last duties as VP was to organize the student poster and oral presentation judging and awards for the 2021 AGM. Perhaps due to the virtual nature of the conference, a large number of students presented their work, 35 as posters and 50 as talks. The quality of the presentations was again exceptional and made the job of the judges very difficult. 25 Cspb-Scbv members volunteered to judge the posters and talks using Cspb-Scbv judging rubrics enhanced by our new Cspb-

Scbv EDI committee. A big thank you to all the judges for generously giving of their time. We gave out additional awards this year and this made it easier for us to identify the winners.

JUDGES for Oral Talks: Lacey Samuels, Annette Nassuth, Marina Cvetkovska, Adam Mott, Jonathan Griffiths, Harleen Kaur, Devang Mehta, Mukund Shukla, Solmaz Irani, Danve Castroverde, Andre Laroche, Robert McGee, Wendy Lysenga, Isabel Désgagne-Pénix.

JUDGES for Posters: Greg Moorhead, Thomas DeFalco, Carol Wenzl, Bahram Samanfar, Lauren Erland, Kiranpreet Padda, Shelley Hepworth, Neha Vaid, Anna Kisiala, Harole Weger, Gaolathe Rantong.

CSPB-SCBV 2021 VIRTUAL MEETING STUDENT PRESENTATION AWARDS

CSPB PRESIDENTS' AWARD

ORAL

Chak Chung Kuo, UBC, Identification of MOR1 homologs in plants and bioinformatic analysis of putative microtubule-binding motifs.

Nathan Doner, UoGuelph, Identifying new lipid droplet proteins in *Arabidopsis thaliana*: ERD7 localizes to lipid droplets via its senescence domain.

POSTER

Ivette Menedez-Perodomo, UCalgary, Biochemical characterization of O-Methyltransferases involved in benzylisoquinoline alkaloids biosynthesis in sacred lotus.

Dristy Zaman, Western, L-Asparagine metabolism in *Phaseolus vulgaris* and *Glycine max*.

CSPB DIRECTORS' AWARDS

ORAL

Jordan VanderBurgt, Western, Production of self-assembling virus-like particles displaying PRRSV epitopes in *Nicotiana benthamiana*.

Bridget Murphy, UToronto, Variation in the timing of autumn cold acclimation in field-grown white spruce under elevated temperatures and reduced water availability.

Hai Nguyen, Trent U, Phytohormone-enhanced heavy metal responses in *Euglena gracilis*: Ni, Pb and Cd uptake and associated hormone and metabolomic dynamics.

POSTER

Varusha Veerapen, USherbrooke, Resistance to viroids can be transferred between plant species using natural variation in the AGO2 gene.

Udaya Subedi, UAlberta, Transcriptional down-regulation of various genes in alfalfa leads to superior tolerance to abiotic stresses and distinct morphology.

Paula Berronilla, UToronto, Investigating the role of PUBs in the self-incompatibility pathway of transgenic SI *A. thaliana* of the C24 accession.

AGRISERA AWARD

Kethmi Jayawardhane, UAlberta, Over-expression of AINTEGUMENTA-LIKE7 (AIL7) in Arabidopsis alters morphological characteristic and heat stress response.

HONOURABLE MENTIONS

ORAL

J. Duncan Giebelahus, UAlberta, Gibberellin regulation of protein accumulation in developing pea (*Pisum sativum* L.) seeds).

Somajeh Zafari, UTS Memorial, Alternative oxidase modulates serine metabolism and GABA shunt in tobacco under hypoxia.

Dilrukshi Komba Liyanage, UAlberta, Genotypic response of Canadian short-season soybean cultivars to drought stress.

Gamalat Allam, Western, miR156/SPL network negatively regulates aluminum stress tolerance in *Medicago sativa*.

Chris White-Gloria, UCalgary, Novel protein phosphatase SLP1 has a vast reach on chloroplast metabolism regulation.

POSTER

Holly Wilts, UPEI, Cultivating *Salix viminalis* in agricultural-riparian transition areas to produce biomass and mitigate N₂O emissions from potato cropping systems on Prince Edward Island.

CSPB-SCBV 2021 SOCIETY AWARDS: Our CSPB-SCBV Society Awards were presented at the 2021 Virtual Meeting in June. A big congratulations to all of our awardees!

2021 Society Gold Medal: Dr. Vincenzo De Luca, Brock University

In recognition of outstanding career research and leadership contributions, primarily in Canada.

2021 C.D. Nelson Award: Dr. Isabel Desgagné-Penix, Université du Québec à Trois-Rivières

In recognition of outstanding research contributions to plant biology in Canada by an early-career researcher in an independent, full-time research position.

2021 Carl Douglas Prize: Dr. Yang Xu, Michigan State University

In recognition of outstanding contributions to plant biology by a postdoctoral fellow, based on initiative and originality of the research, productivity of the individual, and leadership during their postdoctoral fellowship.



**Society Gold Medal Winner
Dr. Vincenzo De Luca**



**C.D. Nelson Prize Winner
Dr. Isabel Desgagné-Penix**



**Carl Douglas Prize Winner
Dr. Yang Xu**



**Ragai Ibrahim Award
Dr. Hyun Hyung Lee**



**Ragai Ibrahim Award
Honourable Mention
Dr. Carina Carianopol**

2021 Ragai Ibrahim Award for Best Student Paper

Excellence in publication by graduate students

Winner: **Dr. Hyun Kyung Lee** (Daphne Goring lab, U of T) for the paper entitled “Two subgroups of receptor-like kinases promote early compatible pollen responses in the *Arabidopsis thaliana* pistil.”

Honorable mention: **Dr. Carina Carianopol** (Sonia Gazzarrini Lab, UTSc) for the paper entitled “An abscisic acid-responsive protein interaction network for sucrose non-fermenting related kinase1 in abiotic stress response.”

Check out our award web pages for past winners.

EDI committee update: The newly formed EDI committee made up of Mehran Dastmalchi, Tagnon Missihoun, Jacquelin Monaghan, Susan Murch, Devang Mehta (post-doc member) and Adrian Monthony (grad student member) and myself as VP and chair, met in May and again June to come up with ideas to enhance EDI in the society based on the thoughtful comments in the EDI Survey. Our new Vice President, Marcus Samuel has taken over as chair of the EDI committee and discusses the committee’s goals in the Vice President’s message.

Ideas already implemented

- Enhanced rubric for judging posters and oral talks, pre-meeting with judges to get everyone on the same page
- Include more French in the bulletin, web site and in emails
- Updated the Conference Hosting Instructions to enhance inclusion at conferences
- Increased diversity of the 12-member executive
- Engagement of graduate students and post-doctoral fellows by inviting them to submit stories to the new Bulletin feature, Budding Ideas (Adrian Monthony’s fantastic idea).

Ideas that require By-law changes (will be voted on by CSPB-SCBV members)

- Enhance early career researcher (ECR) engagement, add another ECR position to the executive giving 1 grad student and 1 post-doctoral fellow member
- Change AGM, ERM, WRM student poster and oral talk award by-laws to officially increase the number of awards
- Allow self-nominations for the Ragai Ibrahim Student paper award to enhance the number of nominations.

ASPB/CSPB-SCBV Joint Conference in Portland Oregon, July 9 to 13th 2022

As President I’m a member of the Program Committee organizing the 2022 ASPB/CSPB-SCBV Joint Conference. The conference will be in-person and will have an online option with access to recorded sessions for those that cannot attend in person. For the first time, ideas for up to 12 concurrent sessions will be solicited from the community (applications due November 5, 2021). Hopefully you have already seen the email from me about this and are preparing your applications. As in past years, ideas for workshops will also be solicited from the community (stay tuned for more details).

Robin Cameron
CSPB/SCVB President

Message from the Vice President



Marcus Samuel
University of Calgary

from the EDI committee, along with identifying various ways in which CSPB-SCBV can be a resource portal for new trainees and early career researchers.

A few of the recommendations from our EDI committee from last year are: 1. Enhance bilingual nature of society; 2. Enhance diversity of student presentation award winners; 3. Increase inclusiveness & diversity at conferences and in CSPB-SCBV; 4. Increase number and diversity of volunteers in all roles; 5. Increase nominees for Executive and Committees; 6. Enhance Communication to reach a wider CSPB-SCBV audience; 7. Enhance fundraising and resources for conference childcare, affordable housing, and increased student awards/scholarships; 8. Explore the intersection of Settler and Indigenous science; 9. Enhance the diversity of major award winners; 10. Track the progress of the EDI committee. These excellent goals are based on our initial EDI survey, and I see myself actively and collaboratively working with the EDI committee to arrive at suitable recommendations to implement each of these ideas.

A recent accomplishment for the EDI committee was changing the background of our webpage to orange, along with a statement for the National Truth and Reconciliation Day, with unanimous approval from executive committee. We request our members to think about ways CSPB-SCBV can contribute to reconciliation and please reach out to the committee if you can recommend ways in which we can continue to reconcile in our everyday lives. The EDI committee is also currently in the process of creating a land acknowledgement for CSPB-SCBV.

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 (cspb-vp@cspb-scbv.ca) or our Senior Director, Mehran Dastmalchi (seniordirector@cspb-scbv.ca).

Marcus Samuel
CSPB/SCBV Vice President

I am thrilled to have the opportunity to serve as your new Vice-President of CSPB-SCBV. We have already had many engaging conversations with our executive committee, and I sincerely look forward to working with them on several new ideas, participating in organizing the annual meetings, and creating initiatives to promote the visibility of CSPB-SCBV. I would like to sincerely thank Daphne, Robin, our inspirational group of executive members, and volunteers for keeping the society active throughout the pandemic; our CSPB/SCBV annual virtual meeting was a phenomenal success! I would like to thank Raju Soolanayakanahally (AAFC) and Ken Wilson (University of Saskatchewan) for co-chairing and organizing an exceptional CSPB-SCBV 2021 Annual General meeting between June 7 and 10, 2021. We had over 300 registrants and conducted several insightful workshops, including one on gene editing and another on the difficulties and expectations for Early Career Researchers as they transition from bench to classrooms. Our heartfelt thanks go to all the volunteers who were instrumental in making this meeting a successful virtual event. Our next annual meeting will be a joint ASPB/CSPB-SCBV meeting scheduled in Portland, Oregon, Jul 9-13 2022.

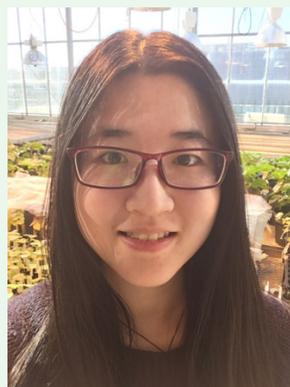
The new CSPB-SCBV EDI committee was struck in 2020-2021, led by Robin Cameron (VP & Chair), with the following members: Mehran Dastmalchi, Tagnon Missihoun, Jacqueline Monaghan, Susan Murch, along with Devang Mehta (post-doc member) and Adrian Monthony (graduate student member). The sole purpose of the committee is to identify and eliminate barriers for participation in the society and to enhance EDI in our professional communities. As the Vice-President, I have now taken up the role of the chair. We will aim to implement the many insightful proposals

Treasurer's News

Congratulations to Yihan Wu, who became our fifth Ann Oaks Doctoral Scholarship holder on September 1, 2021. Yihan is supervised by Dr. Keith Adams at the University of British Columbia. She is studying copy number variation in the genomes of cottonwood (*Populus trichocarpa* Torr. & A. Gray). You can look forward to updates on her research progress at future CSPB meetings.



The Ann Oaks Doctoral Scholarship was established in honour of the late Dr. B. Ann Oaks who made many contributions to the CSPB, including financial contributions to help provide long-term support for this award. The scholarship can be held by one awardee at a time for a maximum of three years. When it is time to select a new scholarship holder, candidates are identified with help from NSERC. All applicants to that year's NSERC PGS-D Award competition who study plant biology are automatically considered for an Oaks Scholarship and the winners are selected by the Ann Oaks Scholarship Committee.



Sheila Macfie
CSPB/SCBV Treasurer

**Ann Oaks Scholarship
Recipient
Yihan Wu**

CSPB 2021 Annual General Meeting

On June 8th, CSPB-SCBV members gathered for the annual business meeting, with fifty-six members in attendance, from over 34 institutions across Canada and around the world. Highlights of the President's report including a summary of the online annual meeting held in November



2020, where 64 oral presentations were presented in concurrent sessions. Robin Cameron, as vice-president and chair of the Equity, Diversity, and Inclusion committee, reported on the first EDI member survey that had been conducted in 2021. Over 180 members responded to the survey, and both barriers to participation and ideas to enhance EDI were provided from the survey. Sheila Macfie, treasurer, reported on the society's financial situation, which for 2021 was a net profit, primarily due to the large conference revenues, combined with the lack of George Duff travel bursaries, which led to an unusually profitable year with net profit in excess of \$56,000 for the year ending April 2021. A compilation engagement for the financials of the society was also approved. New nominees to the Board of Directors were accepted and acclaimed: Marcus Samuel (UCalgary) for Vice-President, Sophia Stone (Dalhousie U) for Eastern Regional Director, Gopal Subramaniam for Science Policy Director, and Mehran Dastmalchi (McGill U) for Senior Director. The official CSPB-SCBC Award Announcements were presented in the President's report and the official "passing of the gavel" ceremony from outgoing president Daphne Goring to Robin Cameron, our incoming President for 2021-2022 was virtually conducted.

David Bird
CSPB/SCBV Secretary

Letter from the Policy Director

Gopal Subramaniam
Agriculture & Agri-Food Canada



As I take on the position of Science Policy Director, we are confronted with large-scale global challenges - climate change, the pandemic, to name only a few. The time has come for science-based policy to be front and center in providing direction and constructive solutions to policymakers.

At the onset of the Covid pandemic, questions were raised about our preparedness. Similar questions will soon arise when the impact of climate change is felt on Canadian farms and food production. We at the Canadian Society for Plant Biologists (CSPB) are uniquely placed with the expertise to offer science-based solutions to many of the challenges that we face.

Although the CSPB is rich with experts, we would greatly benefit by partnering with groups that share our views and possess communication tools to rally both public support and influence policymakers. As the Policy Director, I seek to engage advocacy groups such as Evidence for Democracy (E4D) <https://evidencefordemocracy.ca/en/about/who> and continue our engagement with the Partnership Group for Science and Engineering (PAGSE). These two groups have distinct attributes.

E4D has the mandate to promote science-based policy directives through advocacy and conducting research. A collaboration would benefit some of our members searching for hands-on experience in science advocacy. PAGSE, representing ~60,000 individual scientists and engineers from academia, industry, and public service,

has a mandate that is in sync with ours, i.e. to “educate and inform federal Parliamentarians, decision-makers and other leaders of the importance and significance of Canadian research and innovation to economic development, and society as a whole”.

Lastly, through our association with Plant Canada, CSPB will continue our partnership with The Global Plant Council (GPC) (<https://globalplantcouncil.org/>) whose mission includes facilitating the development of plant science for global challenges, fostering international collaborations, and enabling the effective use of knowledge and resources, providing an independent and inclusive forum to bring together all those involved in plant and crop research, education and training. GPC has developed an impressive website for the advocacy and promotion of plant science.

I am looking forward to this challenge, but more importantly, I would like our members to offer their ideas on the directions that the CSPB should take in the coming years.

Gopal Subramaniam
CSPB/SCBV Policy Director

Andreea Bosorogan



Cannabis sativa, Josephine Payment

CSPB Annual Meetings

2022

Plant Biology 2022 (Joint ASPB-CSPB/SCBV), Portland Oregon.

2023

CSPB/SCBV Annual General Meeting, Dalhousie University, Halifax

2024

Plant Canada, TBD: lead society and location

Upcoming Eastern Regional Meetings

2021 Saturday November 27

Carleton University, Virtual - O. Rowland, S. Hepworth
Register by November 19th at:

events.fourwaves.com/cspb-erm2021

2022 University of Toronto Scarborough - S. Gazzarrini (Chair), E. Gonzales-Vigil, A. Mott

2023 Concordia University - J.S. Lee (Chair), P. Gulick, D. Dayanandan, W. Zerges

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

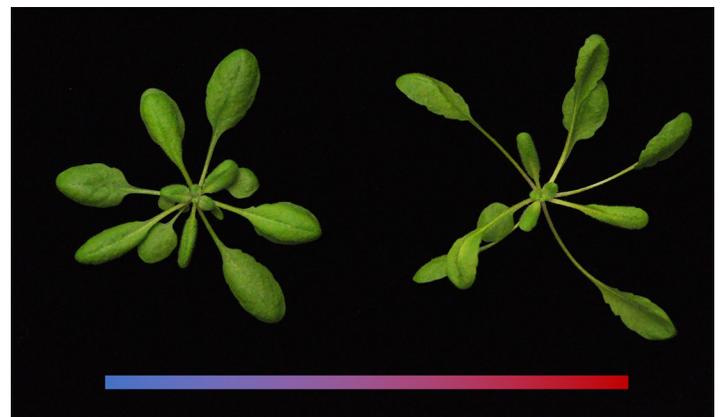
Upcoming Western Regional Meetings

2021 Saturday December 3

University of Alberta, Virtual - G. Uhrig, G. Chen
Register by November 19th at:

events.fourwaves.com/cspb-wrm2021

Douglas Muench as the Western Regional Director is co-ordinating the scheduling of these events.



Arabidopsis response to increasing temperatures.
Dr. Christian Danve M. Castroverde

CSPB Call for Award Nominations

As every year, we are asking for your nominations for CSPB-SCBV awards. The recipients will be awarded in the respective categories during the CSPB-SCBV Annual General Meeting in the coming year. To read more about each award and previous recipients, please go to www.cspb-scbv.ca/awards and read the CSPB-SCBV By-Laws (www.cspb-scbv.ca/about). For award specific questions and nominations please contact the award committee Chairs by email, which may be found at www.cspb-scbv.ca/committees

The annual deadline for all nomination/application files is **FEBRUARY 1, 2022**. Please see the CSPB-SCBV By-Laws (About CSPB) for full details and instructions.

Each year take this opportunity to recognize a colleague, mentor, peer, or student for their achievements and contributions to plant sciences in the following categories:

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 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 will be nominated by the supervisor of the student, 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 postdoctoral 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.

GOLD MEDAL AWARD: The Medal shall be awarded for outstanding career research and leadership contributions to plant biology, primarily in Canada.

THE DAVID J. GIFFORD AWARD IN TREE

BIOLOGY: The Award shall be given for outstanding research contributions in tree biology, primarily in Canada. Special consideration will be given to originality and independence of thought. 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, and shall have been in an independent, full-time research position for more than 15 years.

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. These documents must be submitted to the Chair of the Gleb Krotkov Award Committee.

THE MARY E. SPENCER AWARD: The Mary E. Spencer Award was established to recognize outstanding research in the field of plant biology and active public service engagement in the plant biology community by a mid-career researcher. This award honours the exceptional career of Professor Mary Spencer (Professor Emeritus, University of Alberta). 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, and shall

have been in an independent, full-time research position for more than 15 years.

Please don't hesitate to contact the Communications Director with any questions you may have at communications@cspb-scbv.ca.

Lauren Erland
CSPB/SCBV Acting Communications Director

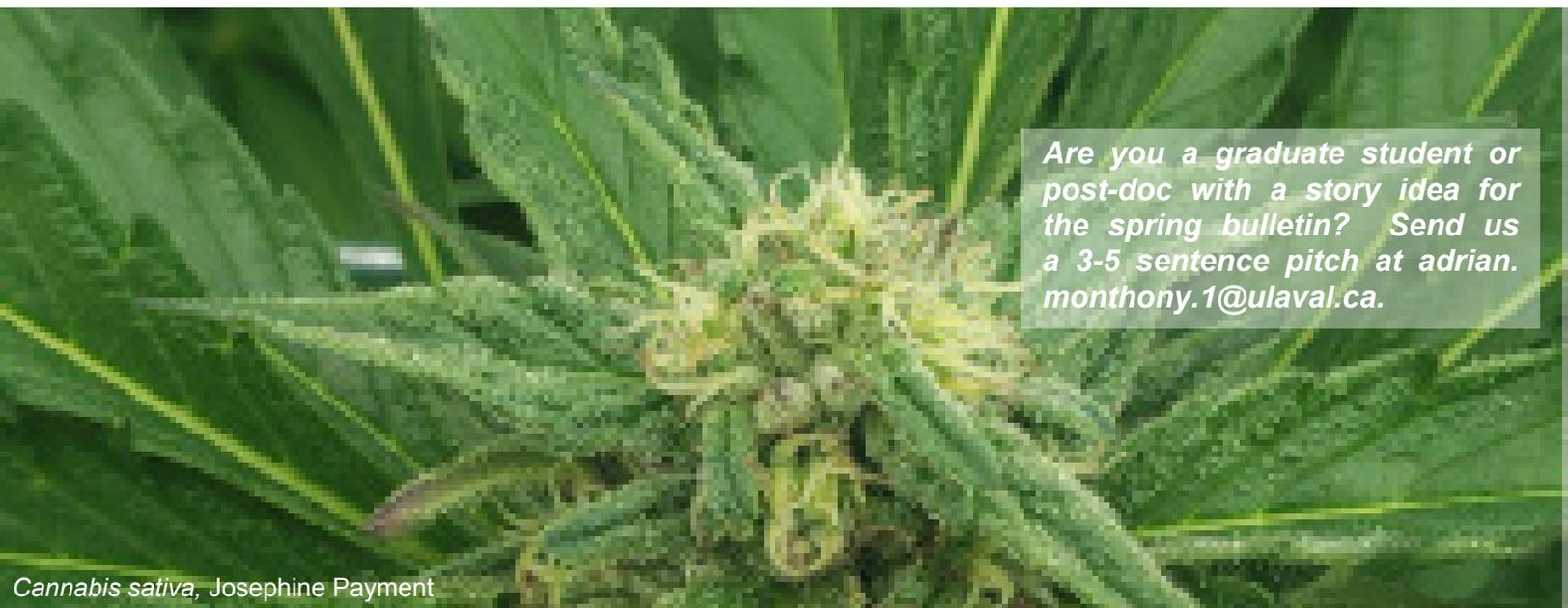
Budding Ideas

Welcome to the first edition of the Budding Ideas column. My name is Adrian Monthony (he/him) and I am the current graduate student representative on the CSPB-SCBV Equity Diversity and Inclusivity (EDI) Committee, and a PhD student in the Torkamaneh Lab at Université Laval. I'm thrilled to be the editor for this new initiative in the CSPB-SCBV bulletin! We decided to create this column after the EDI Committee's most recent survey brought to light that our Society could do more to engage with early career members at the graduate student and post-doctoral level. This column is one way to give graduate and post-doc members an opportunity to engage with the society, by sharing their interests, research and musings on topics touching STEM and plant biology, in short and sometimes unorthodox ways. This first column brings us an Ode to Auxin and a critical look at single-use lab products. Get comfy, grab your beverage of choice, and we hope that you enjoy our first edition of this column!



Adrian Monthony
On behalf of the CSPB/SCBV EDI Committee

Are you a graduate student or post-doc with a story idea for the spring bulletin? Send us a 3-5 sentence pitch at adrian.monthony.1@ulaval.ca.



Cannabis sativa, Josephine Payment

Budding Ideas

Dear Auxin: An ode to the master hormone

Sonhita Chakraborty

sonhita.chakraborty@mail.utoronto.ca

Author Bio: Dr. Sonhita Chakraborty (she/her) just finished her PhD under the supervision of Dr. Keiko Yoshioka at the Cell & Systems Biology department, University of Toronto. Her research focused on the calcium channel CNGC2 and its role in auxin signaling. Dr. Chakraborty is taking a short breather after completing her PhD and is actively looking for post-doctoral positions and fellowships; if you are interested in collaborating, please reach out!



I first encountered the family of auxins while learning about herbicides and their modes of action during a grad course at the University of Guelph. Agrochemical manufacturers exploit the remarkable ability of auxinic compounds to disrupt plant growth by marketing them as weed killers. Even American troops would spray the jungles of Vietnam and Malaysia with 2,4-D (better known as Agent Orange) to wipe out the foliage that camouflaged troops. Dual application of an auxinic herbicide (like dicamba) with an inhibitor of auxin transport (like diflufenzopyr) keeps the auxin within the cell, which is especially catastrophic for the plant (Grossmann 2002). This made auxin appear as a rather intimidating and noxious chemical that I came to associate with death and chemical warfare. As fate would have it, I soon found myself in the throes of auxin research through my doctoral work.

A simple Google search shows that the word “auxin” derives from the Greek “auxein” which means, “to grow”. Auxin steals the spotlight as being both the first plant hormone discovered by Darwin and being immensely important for plant growth. Plant processes like flowering, fruit production and growing towards light, water, and gravity are elegantly orchestrated by molecules like auxin. Auxin is beautiful in its complexity. The phytohormone exerts opposite effects on root and shoot growth, with it inhibiting growth at the roots, yet stimulating growth at the shoot. Even within a single organ, like the primary root, high concentrations inhibit growth and lower concentrations stimulate growth. As a hormone, auxin is the antithesis of death and destruction; however, too much of a ‘good thing’ makes auxin toxic as an herbicide. As a compound with morphogenic properties, auxin does not impart a singular effect on a cell or process. Rather, auxin is simply a messenger, and the message depends on the tissue type, its concentration, and time (Leyser 2018). This makes auxin one of the most fascinating things I had encountered in plant biology.

My first hands-on research experiences (and naivete) studying auxin were in the context of calcium signaling during my PhD. I found that the calcium channel CNGC2 and auxin work together during plant development. In simple terms, auxin prompts CNGC2 to release calcium, while auxin itself is under the control of the calcium signals from CNGC2 it helped produce, as a part of a feedback loop (Chakraborty 2021). But the story is likely more complex. Technologies like the DR5 type transcriptional reporters and DII-VENUS type signaling sensors have informed scientists about auxin regulation and distribution. Although they have been immensely useful, they also limit our understanding of auxin as they are merely proxies of the actual hormone. It’s almost like looking at the shadow of auxin, but not auxin itself.

So dear auxin, I hope this letter finds you well, wherever you are (perhaps at the edges of meristems where you like to accumulate). The very mention of your name makes my ears perk up at any conference talk or poster session. I delight in talking about you and what you might be doing at any given moment. Things have not always been easy between us. You have at times been the bane of my graduate school existence and I might have even professed that I was never going to work with auxin ever again. But that’s not your fault, you were simply misunderstood. Thankfully, your future is bright (and I mean that quite literally). Emerging technologies like rapid and reversible hormone biosensors with high binding affinity and sensitivity can directly visualize you at the subcellular resolution (Balcerowicz 2021). With such systems at the forefront of hormone research, we can finally figure out what you do and maybe even topple some long-held misconceptions about you. I look forward to exchanging glances with you under the microscope some day. Until we meet again,

Your not-so-secret admirer
Sonhita

Minimizing lab waste through sustainable lab practices

Praveen Khatri

pkhatri4@uwo.ca



Reduce



Reuse



Recycle

Author Bio: Praveen Khatri (he/him, left) is a second year PhD student in Cell and Molecular Biology. He is in Western University's Department of Biology, where he studies isoflavonoids and their role in improving disease resistance in soybean in the Dhau-bhadel Lab at London Research and Development Centre, Agriculture and Agri-Food Canada, in London, Ontario.

Plastic waste has recently become a global issue. As responsible researchers, we must reduce plastic waste. I never enjoy throwing away plastic lab consumables such as used tips, micro centrifuge tubes, petri dishes, weighing boats, and falcon tubes. It is important to shed some light on this topic and come up with strategies for sustainable lab practices. According to a study, researchers from a life science lab reported that their laboratory-generated 267 tons of plastic waste in a year (Bistulfi, 2013). By ignoring the current situation, our earth may become a plastic football in the near future.

“Reduce, Reuse, Recycle” is the universal waste reduction law that can apply to our household waste as well as our daily lab life. By reducing plastic waste, one can reduce the financial & environmental costs associated with it. The reduction can be achieved through a combined social, institutional, industrial, & individual approach. Since researchers account for less than 0.1% of the global population, we have a very small number of people to educate. It is possible to minimize lab waste to some extent by raising awareness of the problems & its impact on the environment. Institutions can also contribute towards reducing plastic waste by placing bulk orders for many labs to reduce plastic used in packaging & shipping. Furthermore, the industries that make lab consumables can pay attention to resource-efficient packaging, production, & design in order to make consumables that use less plastic without compromising quality. Some companies, such as Starlab, produce pipette tips that use 40% less plastic without compromising quality. Lastly, researchers can minimize plastic waste in labs by being proactive and responsible while conducting experiments. Researchers could plan experiments in such a way to minimize the use of disposable plastic ware; an alternative might be to use glassware instead of disposable plastic in basic experiments. In the short run, glassware is more expensive than plastic, but over time proven to be more economical and sustainable. In addition to motivating researchers to reduce plastic waste, measuring how much waste each person in the lab produces can also be helpful. A researcher who keeps track of waste will likely develop an instinct to reduce it.

Reusing is a good way to minimize waste. Although some

lab experiments require accuracy and efficiency, some basic lab practices could reuse plasticware. Falcon tubes, micro-centrifuge tubes, weigh boats, plastic cuvettes & serological pipettes can be washed & reused. Some labs use glass pipettes that can be washed & autoclaved. Pipettes tips are rarely reused in the labs even though in some experiments same pipette tip can be used multiple times without contaminating other samples. For example, when PCR products are confirmed on agarose gel, the same tip can be used to load all samples instead of using different tips for each sample (Soltani et al. 2019). The greatest obstacle to reusing plastic ware is our reliance on single use consumables. We must make the best use of our consumables and reduce waste. For example, Grenova Solutions, offers a tip washing system that enables users to reuse tips 20 times on average. Such washing systems can reduce plastic waste.

There is a large amount of plastic that is no longer recycled and is trashed for incineration due to improper sorting. The lab plastic waste problem can be solved by properly sorting and recycling it at the individual, group and institutional level. Recycling can occur at the individual level. For example, individuals can sort single-use plastic tips, tubes and plates from reusable ones. Institutions can collect these items and reuse them by washing and autoclaving them together, saving time and energy. Companies like Starlabs operate take-back programs to collect tip boxes from labs to reuse, and NEB takes back its shipping polystyrene boxes. Kimberly Clark, TerraCycle, and Medline are companies that run recycling programs to encourage laboratories to recycle their waste.

Automation of life science practices by robotics and new precision technology are playing a vital role in the future of life science in minimizing plastic waste. As an example, Acoustic Liquid Handlers from Beckman use sound waves to eject precisely-sized droplets from one source to the destination, changing the entire scenario of liquid handling in the lab. Currently, these machines are expensive, but they will become cheaper, more accurate, and more environmentally friendly over time. It is unlikely that laboratories will end their plastic waste problem overnight, but there are a number of actions they can take to divert waste from landfills.

Postdoc Feature

Prepared by Liz Brauer

Dr. Ainsley Lewis is a postdoctoral fellow in the laboratory of Professor RJ Neil Emery at Trent University where he studies the metabolomics of plant and bacteria using high-resolution mass spectrometry. The project is a collaboration between the Emery laboratory and NutriAg Inc. The project's goal is to produce a biofertilizer for augmenting plant growth. Dr. Lewis received his PhD from Trent University in June 2021, with the President's Medal for the PhD, where he studied under Professor Céline Guéguen (now at the Université de Sherbrooke). He used high resolution mass spectrometry to characterize the microalga/euglenoid *Euglena gracilis* and applied this microalga as a bioremediation tool to remove a critical rare earth element from water. Hailing from the country of Jamaica, Dr. Lewis is also an advocate for more representation of minority groups in STEM. Keep in touch with Dr. Lewis on Twitter @chemicalfugue.



Dr. Purva Karia is a postdoctoral scientist working with Dr. Sue Rhee and Dr. David Ehrhardt at Carnegie Institution in Stanford, California. She is working on the Sorghum Metabolic Atlas project to unravel the localization and functions of sorghum metabolic enzymes. She received her PhD under Dr. Keiko Yoshioka at the University of Toronto in 2021. Her PhD research focused on the importance of Triphosphate Tunnel Metalloenzyme 1 (TTM1) localization to the mitochondrial outer membrane for its function in regulating senescence. She discovered that multiple phosphorylation events of TTM1 regulate its function in senescence and protein turnover. Outside of the lab, she enjoys camping, hiking, baking, and visits to the dog park with her furbaby. Keep in touch with Dr. Karia on Twitter @prkaria.



Dr. Lauren Erland is a Postdoctoral Research & Teaching Fellow in Dr. Susan Murch's PlantSMART Lab at UBC Okanagan. Dr. Erland completed her PhD in 2019 in Dr. Praveen Saxena's lab at the University of Guelph, where she focused on understanding the roles of the mammalian neurotransmitters melatonin and serotonin in plants. Her research uses interdisciplinary approaches such as plant tissue culture, metabolomics, analytical chemistry, ecological niche modelling, and quantum dot microscopy to study the role of plant growth regulators in plant perception and response to changes in their environment. She is particularly interested in how plant signaling can be applied to understand and predict climate change resiliency of native Canadian plant species in the Okanagan Valley and Canada's Arctic (Inuit Nunangat). Dr. Erland is the Acting Communications Director and Website Administrator with the CSPB. When she is not in the lab she enjoys hanging out with her dog Piper and being outside usually moving very slowly as she finds new plants along the way! Keep in touch with Dr. Erland on Twitter and Instagram @plantdrlauren and at www.laurenerland.com.



Dr. Mohamed Samir Youssef is a research associate working with Prof. Claudio Stasolla at the University of Manitoba. In 2010, he received his Ph. D. from Tanta University in Egypt. His Ph.D. thesis focused on micropropagation and somatic hybridization of *Citrullus* L. In 2013, he joined the University of Kafrelsheikh, Egypt as an Assistant Professor where his research focused on studying the genetic diversity of economically important plants. Then he joined the lab of Prof. Stasolla as a postdoctoral fellow in 2015 to study the role of corn phytoalbumin genes in the mitigation of soil flooding. He then joined the Kafrelsheikh University as an Associate Professor in 2018. Mohamed joined the lab of Dr. Claudio Stasolla in 2019 as visiting professor to develop an experimental screen for evaluating drought and salinity stress in soybean using morpho-physiological parameters, transcriptional profiling and monitoring enzyme activity. His work improves our understanding of the molecular mechanisms through which plants respond to abiotic stresses. In 2022 Mohamed will join Dr. Robert Duncan's lab at the University of Manitoba as a research associate to work on a NSERC Collaborative Research and Development project on High Erucic Acid Rapeseed improvement. This work will involve genetic characterization and manipulation of canola plants to determine the genetic control of key traits.



Tricyrtis hirta,
Andreea Bosorogan

EDI Committee Mandate Announced

Marcus Samuel
University of Calgary

The committee's mandate includes identifying barriers to participation in CSPB-SCBV and identifying and implementing solutions to increase participation and enhance diversity and inclusion. The goals of the committee include:

- Promoting inclusion and diversity in the CSPB-SCBV
- Promoting representation of diverse identities in the Executive and Committees
- Promoting bilingual representation in the CSPB-SCBV
- Promoting regional representation in the CSPB-SCBV
- Creating opportunities for increased inclusiveness in keynote and plenary speakers at CSPB-SCBV conferences
- Promoting equity, diversity and inclusivity in CSPB-SCBV Award Recipients
- Facilitating an inclusive environment and networking opportunities for members at the ERM, WRM and AGMs
- The committee is responsible for preparing EDI committee reports and forwarding recommendations to the CSPB-SCVB executive for discussion and approval

New Faculty Feature

Prepared by Liz Brauer

Dr. Catherine Cullingham is an Assistant Professor specializing in plant population genetics in the Department of Biology at Carleton University. Her research uses landscape genetics and population genomics to fill knowledge gaps and develop tools that can be applied to issues in forestry and wildlife management. She completed her PhD at Trent University under the supervision of Dr. Bradley White where she was the first to use landscape genetics to understand the spread of raccoon rabies. From there she completed her postdoctoral work at the University of Alberta working with Drs. Dave Coltman and Janice Cooke examining pine genetics to understand mountain pine beetle spread risk. During her tenure there she confirmed host-expansion of the beetle to jack pine, redefined the spatial complexity of the lodgepole x jack pine hybrid zone, and identified genetic markers potentially associated with mountain pine beetle resilience. Her research lab, the Genomics of Plants, Pests, and Pathogens (GP3) is continuing work on the mountain pine beetle system, and will also be branching out to explore other forest-pathogen systems. She is particularly interested in the relationship between environmental adaptations and pest resilience in forest trees. Dr. Cullingham is a member of the editorial board for the Canadian Journal of Forest Research, and sits on the Terrestrial Mammals Specialist Subcommittee for the Committee on the Status of Endangered Wildlife in Canada.



Dr. Mehran Dastmalchi joined McGill University as an Assistant Professor in the Department of Plant Science in the Fall of 2020. He is setting up a research program to study metabolism in legume species (Fabaceae), with interest in pathways producing defence compounds. Dr. Dastmalchi began his research career in the lab of Dr. Dhaubhadel at Western University/ Agriculture and Agri-Food Canada (2010-2015), with work culminating in the discovery of a metabolon (enzyme complex) in the isoflavonoid pathway. From there, he joined Dr. Facchini at the University of Calgary as a postdoctoral fellow and later as a research assistant (2015-2018), to investigate morphine biosynthesis in opium poppy. He was part of a team that found novel biosynthetic and transport genes involved with the pathway. The discoveries potentiated the modular assembly of natural and semi-synthetic opioid production in engineered microbes. Subsequently, he worked with Dr. De Luca at Brock (2019-2020), tackling specialized metabolism in the medicinal plant Madagascar periwinkle. This summer, the Dastmalchi lab welcomes its first cohort of students, including an NSERC-USRA recipient, and later in the Fall, two master's students. They will be exploring the utility of specific regulatory and auxiliary genes in the production of isoflavonoids in legume species. A genetic and biochemical understanding of plant pathways will hopefully facilitate metabolic engineering in the plant and heterologous systems.





 **Botany**
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CALL FOR PAPERS

Advances from Early
Career Researchers
in Plant Sciences

This special issue aims to highlight the work of researchers at the beginning of their academic career working in the fields of climate change relating to all segments of plant sciences. We encourage submissions that are interdisciplinary in nature and focus on aspects like physiological adaptation, ecological response, and development of plants.

Submission guidelines:

- This special issue accepts manuscripts in the form of an original research article or a review where the first author is a postdoctoral fellow or first year faculty member at the time of submission.
- Maximum article length = 10,000 words (excluding title page & references).
- The manuscript must report new (should not be considered for a publication elsewhere) and previously unpublished results.
- Manuscripts must be submitted by January 15, 2022 to be considered for the issue. Papers submitted after the deadline that cannot be included in the issue will be scheduled for publication in a subsequent issue of Botany.
- Authors are asked to send an email to the editors-in-chief (Dr. Christian Lacroix lacroix@upei.ca and Dr. Liette Vasseur lvasseur@brocku.ca) with the tentative title of the manuscript, and an extended abstract (approx. 1000 words) in order to confirm the suitability of the submission for this Special Issue.
- Accepted papers selected for this special issue will be published in the journal as open-access papers (100% open access fee waiver).
- Early Career Researchers will also get a chance to showcase their work and talk about their career paths and challenges in an interview that will be published on the Canadian Science Publishing Blog.
- Authors guidelines: Follow Botany Authors Guidelines at <https://cdnsciencepub.com/journal/cjb/authors#guidelines>
- For any other queries, please contact Sherestha Saini (Managing Editor, Botany) at sherestha.saini@cdn-sciencepub.com.

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CSPB Inside

CSPB / SCBV Executive Committee Membership 2021/2022



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Thorsen Knipfer (UBC) 2026

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Contributors

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Please submit your contributions, comments, photos, suggestions for featured papers, new faculty bios and announcements before the editorial deadline to:

admin@cspb-scbv.ca

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