

BULLETIN

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October 2006

Octobre 2006

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The 2006 **Eastern Regional Meeting** of the Canadian Society of Plant Physiologists will be held jointly with the **40th Plant Development Workshop**, at McMaster University, Hamilton, Ontario on December 2nd

REGISTER NOW!!

MESSAGE FROM THE PRESIDENT



I was pleased to see many of our members at the annual meeting in early August, this year as part of Plant Biology 2006. The weather in Boston was ideal for venturing out to enjoy the many restaurants, fine local pubs and quaint shops throughout the Back Bay. There were about 1500

people in attendance at the meeting and perhaps one 10th hailed from Canada, but of course not all were members of the CSPP/SCPV. All went smoothly, though I did get a bit tense when we came perilously close to not making quorum at the AGM! Hmm....perhaps a motion that attendance by students (and supervisors) should be mandatory to hold a travel bursary?

After a few words of welcome from Michael Thomashow, the president of the ASPB, and even fewer words from me, Plant Biology 2006 opened with a joint awards ceremony. The first award presented, and the only CSPP award this year, was to Greg Moorhead. Greg received the C.D. Nelson Award in recognition of outstanding achievements by a young scientist to plant physiology in Canada (see below). The awards ceremony was followed by the ASPB Awards Symposium and then a symposium on *Plants Mitigating Global Change*. It was this second symposium that seemed to set the tone for the congress, reflecting the rapid and relatively recent shift in the southern wind towards issues of carbon sequestration and plant-based biofuels with talks by Stephen Long, Chris Somerville, Gerald Tuskan and Richard Dixon. Many of the key elements of the recently published poplar genome sequence were revealed in Gerald Tuskan's presentation and in another symposium the following morning by Daniel Rokhsar. All of this very nicely and quite fortuitously set the stage for the CSPP Symposium on *Tree Physiology & Genomics* which took place the morning of day 3. Our symposium was well attended and very well received and I thank the speakers – Jörg Bohlman (University of British Columbia), Stew Rood (University of Lethbridge), Steve Strauss (Oregon State University) and Björn Sundberg (Umea Plant Science Center) – for doing such a great job. In addition a more than fair proportion of our members made presentations as mini-symposium speakers and/or acted as chairs of these sessions. And then

there were all the terrific posters and, for the students, the terrific poster judges! The Society is grateful for your help and participation.



CSPP/SCPV Tree Physiology & Genomics Symposium speakers. From left to right; Steve Strauss, Björn Sundberg, Stew Rood and Jörg Bohlman.



The CSPP/SCPV Executive 'line-up' in attendance at Plant Biology 2006. From left to right; Harold Weger, Peter Pauls, Rob Guy, Barb Moffatt, Gordon Gray and Line Lapointe.

I would also like to again thank the ASPB for doing everything in their power to make this joint meeting a reality. Although the visibility of our society could have been better (there were few signs that included our name) there was no hesitation on their part to respond to our requests to find room for our activities or make critical adjustments – like a last minute substitution of our logo in place of theirs for projection during the *Tree Physiology & Genomics* symposium. I am very grateful to Michael Thomashow (ASPB President), Crispin Taylor (Executive Director), Wendy Sahli (Manager, Marketing and Web Services), Donna Gordon

(Manager, Executive and Governance Affairs), Nick Carpita (Program Committee Chair), Edgar Spalding (Program Committee, past-Chair) and especially Jean Rosenberg (Assoc. Director of Meetings, Marketing & Membership), for their efficient assistance and most cordial hospitality.

Rob Guy
President



Rob Guy and Harold Weger engage in CSPP/SCPV business during the final party (complete with a disco theme) at Plant Biology 2006.

CSPP/SCPV C.D. NELSON AWARD

In 1992 Greg earned his Ph.D. in the field of plant biochemistry from Queen's University in Kingston, Ontario. As a Ph.D. student Greg rapidly demonstrated the remarkable technical ability, productivity and creativity that characterize his science. His thesis research on enzyme:enzyme interactions in plant glycolysis and gluconeogenesis resulted in eight publications in refereed biochemistry or plant science journals. As a result, Greg was awarded a prestigious NSERC Post-doctoral Fellowship to carry out post-doctoral research with Prof. Sir Philip Cohen at the MRC Protein Phosphorylation Unit of the University of Dundee in Scotland. While working with Prof. Cohen, Greg published several influential papers on mammalian protein phosphatases. Greg then spent several additional post-doctoral years in the same MRC Unit, while switching back to plant

biochemistry under the supervision of Prof. Carol Mackintosh. During this period he produced several important publications, two of which stand out in the field of plant 14-3-3 proteins and protein phosphorylation. During his stay at the MRC Protein Phosphorylation Unit, Greg was exposed to a wide diversity of approaches and tools for modern protein phosphorylation research. These studies helped to establish the foundation for the original research program that Greg initiated upon his recruitment in 1998 as a Metabolic Biochemistry Faculty member in the Dept. of Biological Sciences at the University of Calgary. In the 8 years that Greg has been at Calgary, he has developed into an independent and innovative scientist and teacher while emerging as an international leader in his field of research. Greg's laboratory is effectively integrating protein biochemistry/enzymology, proteomics, and molecular biology with the power of bioinformatics. All the molecular biology and bioinformatics performed in his laboratory is backed up with solid biochemistry. This fusion of methods-biochemistry, molecular biology, proteomics and bioinformatics places the Moorhead laboratory at the cutting edge of plant protein phosphorylation research in the 21st century. The CSPP/SCPV is delighted to honor Greg Moorhead as a very deserving recipient for the C.D. Nelson Award.

Bill Plaxton
Queen's University



CSPP/SCPV President Rob Guy presents the C.D. Nelson Award to Greg Moorhead at Plant Biology 2006. Photo courtesy of Nicole Burkhart ©.

CSPP/SCPV PRESIDENTS' AWARDS

Two CSPP/SCPV President's Awards for excellence in research were awarded to student

posters presented at the joint meeting of the American Society for Plant Biologists and the Canadian Society for Plant Physiologists. The posters were presented by Donna Yee from the University of Toronto and Chantal Beauchemin from INRS-Institut Armand-Frappier in Laval. The award includes a cheque for \$500 and a framed certificate. Robert Hill, who announced the awards at the business meeting of the CSPP/SCPV reflected on the high quality of the CSPP/SCPV student posters at the meeting and the difficulty that the judges had in selecting only two to honour with prizes. Fifty student posters were evaluated by a group of judges including: David Law, Anja Geitmann, Barry Shelp, Line Lapointe, Barry Micaleff, Chris Todd and Peter Pauls.



CSPP/SCPV Vice-President Peter Pauls presents a cheque to Donna Yee, CSPP/SCPV Presidents' Award winner at Plant Biology 2006.

Donna Yee's poster, entitled "Two Arabidopsis plant U-box (AtPUB) E3 ubiquitin ligases may function as potential regulators of plant signalling pathways during abiotic stress", was coauthored by Shin-Han Shiu, Nicholas Provart and Daphne Goring. The poster described the use of a public Arabidopsis gene expression data base to identify candidate genes of the ubiquitin-mediated proteolysis system that had homology to Brassica ARC1 protein, an E3 ubiquitin ligase that targets substrates presumed to be needed for compatible pollinations for degradation. In a 17-member family with strong homology to ARC1, two members (AtPUB18 and AtPUB19) showed strong upregulation by biotic stresses. The poster showed that insertion mutants did not have any distinct phenotypes, which the authors attributed to redundancy in the family of genes. The poster was cited for excellence because of the multidisciplinary nature of the work, including: genomic data analysis, phenotypic mutant analysis and biochemical characterization of gene function.

The work was very clearly presented and the conclusions were well supported by the data.

Chantal Beauchemin's poster entitled "Interaction of potyvirus VPg with the translation eukaryotic initiation factor (iso)4E: differential cellular interaction site depending on the precursor form of VPg" was coauthored by Nathalie Boutet and Jean-Francois Laliberte. The poster presented evidence for the interaction between the *Turnip mosaic virus* (TuMV) viral protein VPg with the translational machinery of the host cell. In the poster the authors showed that VPg-Pro fused to the C-terminal portion of the green fluorescent protein (GFP) and eIF(iso)4E (eukaryotic translation initiation factor) fused to the complementing N-terminal portion of GFP interact to form functional GFP. The authors suggested that the interaction may be taking place in viral replication complexes and may affect normal gene expression of the host. The poster was cited for the award because it developed a clear testable hypothesis, it described the work to produce the tools for testing protein interactions in a clear manner and presented the results in an understandable and visually appealing manner.

Peter Pauls
Vice-President

TREASURER'S NOTES



Dr. Ann Oaks Scholarship Fund

The financial picture of the Oaks Scholarship Fund was greatly changed upon the unfortunate passing, in January of this year, of Dr. Ann Oaks. Several years ago Ann had initiated a scholarship fund (which the Society named the Ann Oaks Scholarship Fund, somewhat to Ann's discomfort) with the goal of endowing a PhD scholarship in plant biology at a Canadian university (see bylaw 16 of the Society constitution, on the CSPP/SCPV website, for further details). The value of the scholarship was to be comparable to, or exceed, that of the PGS-D award from NSERC. At the end of 2005, the Fund was worth approximately \$45,000; it is now worth approximately \$430,000 largely due to Ann's generosity but also due to donations by Society members.

The money is managed by BMO Nesbitt Burns, and there is a Board of Trustees that oversees the Fund. The Board has set as its goal that the value of the scholarship should be \$23,000 per year (NSERC's PGS-D is currently valued at \$21,000) without eroding the principal. Our financial advisor at BMO NB suggests that \$430,000 is perhaps not quite sufficient to achieve that goal with certainty, but it's close. Thus, we're hoping one more year of donations from Society members will put the Fund in a position to meet the goal of a \$23,000 annual scholarship.

At present, our financial advisor at BMO NB is working out the details of a long-term investment strategy for the Fund, with the Board is currently working on ideas for the mechanism for awarding the Oaks Scholarship. The next step will be to present the proposal to the Society Executive for approval, followed by presentation to the AGM for approval. The goal is to be in a position to award the first scholarship in just over one year.

Membership Renewals

Membership renewal forms will soon be mailed out. Membership renewal forms are also available in both French and English on the Society website. For those people who wish to become members, or renew their memberships, in order to attend the Eastern Regional Meeting (at McMaster University in December), membership renewals received in the remainder of 2006 will also count for 2007. And don't forget about the Western Regional Meeting, to be held at UBC-Okanagan in February 2007.

Harold Weger
Treasurer, Chair of the Oaks Board of Trustees



Okanagan

2007 Western Regional Meeting
February 21-22
Manteo Resort
Kelowna, British Columbia

Mark it on your calendars!!

MESSAGE FROM THE COMMUNICATIONS DIRECTOR/BULLETIN EDITOR



Website

A new CSPP/SCPV website was unveiled a few years ago and has proved to be an improvement over its predecessor. However, it is time for an overhaul and much needed update. Look for these changes in 2007.

The communications committee is also exploring the option of on-line registration. Would you be more inclined to maintain your membership if you could renew on-line? Please let us know your thoughts at communication@cspp-scpv.ca.

Plant Canada 2007

I have also been serving as the CSPP/SCPV representative on the local organizing committee for Plant Canada 2007, to be held in Saskatoon, Saskatchewan on June 10-14, 2007. I can assure you that the CSPP/SCPV will be well represented at this meeting. The Society is organizing two mini-symposia. The first deals with Plant Natural Products and the other addresses Long-Distance Signalling in the Phloem. We have some great speakers lined up and these promise to be exciting events at the meeting. In addition, the committee is organizing a pilot project to hold a Saskatchewan Youth Science Journalism Competition. We are looking for scientists working in the field of plant science to be interviewed by high school students who will put together a journalistic piece that will be submitted for judging. The University of Regina, Journalism School is providing the journal mentors for the students. The student's work will be judged and displayed at the Plant Canada meeting. Scientists who are willing to be interviewed by the students on some aspect of their research can go to the following link (<http://www.science-west.ca/Journalism/>). Click on the side notation for "Scientists: Call for Science" where you can enter your name and a brief description of your research.

Be sure to watch for more Plant Canada 2007 news in the next issue of the Bulletin.

Gordon Gray
Communications Director/Bulletin Editor

REGIONAL MEETING UPDATES

Eastern Regional Meeting

The 2006 Eastern Regional Meeting of the Canadian Society of Plant Physiologists will be held jointly with the 40th Plant Development Workshop, at McMaster University, Hamilton, ON, on December 2nd, 2006. The Keynote Speakers for this meeting are: Dr Sarah Assmann (Pennsylvania State University), Dr. Daniel F. Klessig (Boyce Thompson Institute for Plant Research) and Dr. Jaideep Mathur (University of Guelph). In part, these meetings are meant to promote the active participation of graduate students in the dissemination of their research findings. The meeting will include awards to graduate students for best oral and best poster presentations (Regional Director Awards). The meeting is being co-organised by Elizabeth Weretilnyk (weretil@mcmaster.ca), Robin Cameron (rcamero@mcmaster.ca) and Carol Peterson (cpeterso@uwaterloo.ca).

Malcolm Campbell
Eastern Regional Director

Western Regional Meeting

The next CSPP Western Regional Meeting will be held at the Manteo Resort in beautiful Kelowna, British Columbia, on February 22-23, 2007. Preliminary program includes a mixer, four oral presentation sessions, poster presentations and dinner. Plenary speakers will be Dr. Peter Facchini, University of Calgary and Dr. Joerg Bohlmann, University of British Columbia. Recreational activities include wine tasting at the award winning Mission Hill Winery a trip to the scenic Big White Ski Resort, and a tour of the rapidly growing UBC Okanagan. Registration will commence on the evening of February 22nd, and closing remarks will be presented after dinner on the 23rd. The meeting is being organised by Soheil Mahmoud (smahmoud@exchange.ubc.ca). An official web site will be launched soon. Until then, please follow the CSPP 2007 link at <http://www.confmanager.com/main.cfm?cid=751> for more information. Hope to see you all in February.

Elizabeth Schultz
Western Regional Director

NEW CSPP/SCPV STUDENT AWARD

As a result of a kind donation from Ragai Ibrahim, the following annual student paper prize has been set up to recognize contributions to plant science. Please spread the word and especially let all students know about this!

Greg Moorhead
Education Director

The Ragai Ibrahim Prize for Best Student Paper

Criteria: 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 work will have on plant science. The nominated student will be the first or primary author of the work, and the paper must be based on work that the nominee performed as a student (graduate student or undergraduate). The nominee must be a member of the CSPP.

The award is based on the calendar year (January 1 to December 31). Nominations are due by January 31 of the following year. The nominee must be a student, or alternatively, have completed their graduate/undergraduate program no more than 12 months prior to the date of publication of the paper. Each year there will be one winner and an honorable mention.

Nomination: Send a PDF copy of the paper to the CSPP Secretary (secretary@cspp-scpv.ca) by January 31. Please include a brief summary of why the paper merits consideration for the award (100 words maximum), and indicate whether the nominee is still a student or whether they have completed their program (please indicate date of completion). The winner of the prize will be decided by March 1, and the winner will be notified. The award will be presented at the CSPP Annual Meeting.

Value of Prize: The winner will receive a framed certificate and a cheque for 350 dollars.

STUDENT POSITIONS AVAILABLE

University of Guelph, Graduate Research Assistantships

Three Graduate Research Assistantships are available immediately at either the MSc or PhD level. The team is studying the role of C and N metabolism and movement in regulating source-sink interactions and plant development. One area of research that is of particular interest is the involvement of circadian rhythms in the control of sink-source communication. The research also addresses the short-term and long-term impacts of environmental parameters such as light, temperature and varying partial pressures of CO₂ and O₂. The successful candidates will have an opportunity to conduct research at a number of levels from molecular genetics and biochemistry to whole plant anatomy and physiology. There are also many opportunities to work closely with industry such as those in greenhouse production.

The successful candidates should have strong interest in biochemistry, molecular biology or a related field such as plant physiology. They must be eligible for acceptance to Graduate Studies at the University of Guelph.

Please forward your application/resume to either of the following:

Drs. Barry Micallef or Bernard Grodzinski
 Department of Plant Agriculture
 University of Guelph,
 Guelph, Ontario, Canada, N1G2W1
 Email: bmicalle@uoguelph.ca or
bgrodzin@uoguelph.ca

University of Saskatchewan, Graduate Student Position

A fully funded graduate student position (MSc or PhD) is available in the Department of Plant Sciences at the University of Saskatchewan to commence ideally by January 1, 2007. Funding is provided through the [Advanced Food & Materials Network Centre of Excellence \(www.afmnet.ca\)](http://www.afmnet.ca). The goal of this project is to examine the role of protein and polysaccharide-based compounds which have been suggested to form hydrogels in the cellular matrix as a response to freezing. Using a combination of analytical biochemistry and molecular biology the student will identify and characterize these hydrogels with the long-term objective of improving the quality of food products subjected to dehydrating conditions. This is an

interdisciplinary project which would involve work at the University of Saskatchewan in the Departments of Plant Science and the Department of Applied Microbiology and Food Science, as well as the Department of Biology at the University of Waterloo. AFMnet provides numerous opportunities for professional development and training as part of its mandate to train multidisciplinary scientists. Please see the AFMnet web site for details on this exciting program.

Applicants should have a background and interest in plant physiology and molecular biology. Experience in the area of biochemistry/analytical chemistry would also be an asset.

To apply please contact:

Dr. Gordon R. Gray
 Department of Plant Sciences
 University of Saskatchewan
 Saskatoon SK S7N 5A8
 Canada

e-mail: gr.gray@usask.ca

For additional or more recent postings, please see the CSPP/SCPV website at <http://cspp-scpv.ca/jobs-e.shtml>

OBITUARY

Professor Daphne J. Osborne (1925-2006)

Many members of the CSPP/SCPV will be much saddened by the death of Daphne Osborne. Well-known for her work on plant hormones and DNA repair, Daphne died on June 16th 2006 aged 81 after a short illness. Something of a workaholic, she continued active laboratory research until shortly before her death, leaving a legacy of over 200 research papers (20 of them in *Nature*) and lasting impression on her students, professional associates and the many people she met and encouraged at countless scientific meetings world-wide. Amongst some notable scientific achievements was a strong contribution in the late 1960s and early 1970s to positioning ethylene in its rightful place as a natural plant hormone with key regulatory functions, especially in controlling senescence and abscission of leaves, fruit and shoots. No less important has been her development of the 'target cell' concept as aid to understanding how a relatively small number of hormones can have so many different and spatially separated effects in plants. She was also a world-renown authority on seed ageing and DNA repair and at the time of her death was involved in a

project examining DNA repair in plants affected by radioactive fall-out from the Chernobyl nuclear power station in the Ukraine. Her scientific work attracted several honours and awards including an Honorary Professorship at the University of Kiev (Ukraine) and Honorary Doctorates from the Open University (UK) and University of Natal (South Africa) and Honorary Research Fellowship from Somerville College, Oxford (UK). Daphne Osborne was an innovative scientist who loved the intellectual challenge of discovery and turning hard-won results into highly readable science that graced the pages of a great many journals and books since her first publication (with R.L. Wain, in the journal *Science*) in 1951.

Mike Jackson
Bristol July 2006

FROM OUR MEMBERS

THE ANNUAL SHOW BEGINS!

We haven't had a frost yet and the leaves are already changing colour! The *Euonymus* in my front garden is a brilliant red, the maple in my back yard has leaves no longer completely green. What is going on? Despite the economic importance to our tourist industry of the autumnal display of colour of the trees in our cities and forests relatively little scientific study has been made of this annual phenomenon. As a result, every autumn we are subjected to an imaginative description of the process only distantly based on facts. Of a half dozen of the many websites turned up by a Google search of "autumn color", not one explanation conformed entirely to the present limited state of knowledge. However, with ground breaking work in the north-east USA and in northern Sweden a deeper understanding of the coordinated processes ongoing in the leaves as deciduous trees prepare for winter is being developed.

The reason for the autumn change is variously attributed to lower light, cool temperatures, or various other environmental factors, although many descriptors have now grasped the fact that daylength is significant. In point of fact it is not the daylength itself that is important. The trees and shrubs recognize the increasing length of time between sunset and sunrise, i.e. the dark period, as the summer progresses and thus begin to make preparations for winter survival. They are able to do this because of an invisible blue-green pigment called phytochrome in their cells. This pigment serves as a timepiece, enabling the plant to ignore the suggestion of warm autumn days that summer

may never end and to realize that ambient temperature is not a reliable marker of the seasons. Thus the process called leaf senescence is begun.

The colour change of the leaves is only one of many processes going on as the leaf senesces but it is the most obvious to us. The green leaf of the maple and other trees contains several pigments in addition to phytochrome. Most visible are the green chlorophylls present in tiny intracellular structures called plastids. These pigments are the key to our survival on earth because of their ability to trap the energy of sunlight for food production. Also present in the plastids but masked by the chlorophylls are several kinds of orange and yellow pigments called carotenoids, a name derived from the Latin name of the orange carrot root. Over the course of a few days or weeks, the green of chlorophyll disappears. The carotenoids also are destroyed but not so rapidly as the chlorophylls, thus the leaf becomes a yellow colour due to the mixture of remaining carotenoids. At the same time, the leaves of some species begin to produce red-coloured pigments called anthocyanins. (These are the same pigments that are in the healthful blueberry and cranberry fruits we are now encouraged to eat.) If nearly every cell of the leaf contains these pigments, the leaf will be a brilliant red colour like those of the red maple and the *Euonymus*, the carotenoids again masked from view. If only some cells contain the pigments, the leaf will appear orange like those of the sugar maple because we see the red of the anthocyanins mixed with the yellow of the carotenoids. Thus the orange colour seen in sugar maple leaves is not due to orange carotenoids as frequently stated, even in some botanical textbooks. Newly formed carotenoids do result in a red colouration in some species that retain their leaves in winter, however, red cedar being an example.

How the annual disappearance of an amount estimated to be a billion tons of the green chlorophylls is brought about has been subjected to rigorous study only in the past two decades. Some popular reports state that chlorophyll is broken down and remade all summer long, that it is "used up" in the photosynthetic act. It is true that chlorophyll is easily broken as evidenced by the rapid bleaching of the leaves of an over-wintered houseplant put out into bright spring sunshine, but a leaf properly adjusted to bright light conditions does not bleach. One of the roles of the carotenoids is to protect the chlorophyll from such destruction. And of course, new chlorophyll must be made as new leaves are formed on the tree or to replace that damaged due to excess light exposure, but the deliberate breakdown of chlorophyll in a senescing

leaf is a one time event. It is now known to be a highly controlled, multi-step process associated with major changes in the structure of the plastids. An important result for the tree is the release of nitrogen, the most essential nutrient for plant growth, from the proteins to which the chlorophylls had been attached. The removal of this nitrogen from the leaf for storage in the trunk or other parts of the tree before the leaf falls off is a significant activity. Results available to date demonstrate that trees vary considerably in their ability to do this. Some are able to remove as much as 80%, whereas others remove relatively little before the leaf falls. Surprisingly, the nitrogen bound into the chlorophyll molecule itself is not made available for transport and so remains in the fallen leaf.

And what is the purpose, if any, of synthesizing new complex chemical structures like the anthocyanins? Scientific study directed to answering this question has begun only in the past decade and provides some evidence to indicate that the red pigmentation may protect the leaf from the damaging effects of light so that more of the valuable nitrogen and other nutrients can be transferred to the trunk. Another question frequently asked is "Won't the process of anthocyanin synthesis require energy that the leaf will no longer have freely available because of the loss of chlorophyll?" Of course energy will be required both to make the anthocyanins and also to transport the nutrients but this energy can be provided by "burning" the residual sugars in the cells of the leaf in the tiny "furnaces" called mitochondria. These bodies provide the energy necessary for the activities of every living cell, plant or animal.

And how are the red pigments made? Contrary to statements frequently made in the past, these red pigments are not present during the summer in the green leaf, except perhaps in the leaf stalk, but are made anew in the autumn in those species equipped with the necessary genes. That fact is now expressed in popular explanations. The answer usually provided to the "how" question, however, completely ignores the current state of knowledge of the process by stating that the sugars remaining in the leaf as a product of photosynthesis are converted into anthocyanins. This may sound reasonable especially since some sugars are incorporated into the final structure. However, innumerable studies over the past several decades have shown that building of the part of the anthocyanin molecule that is responsible for the red colour involves sugars only as a source of energy to drive the process. It occurs in the cytoplasm of the cell in a tightly coordinated multi-enzyme process,

the final step of which is to add one or more sugars. Only then is the molecule so formed called an anthocyanin. It does not leave the cell in which it is formed but is deposited into the vacuole, a large sac filled with a slightly acidic watery solution that occupies most of the cell volume, where it remains in solution. The amount of anthocyanin subsequently produced depends on many factors, including temperature, light exposure, and nutrient status. Scientific studies back up the observation that bright sunny days and chilly nights result in the best display of colour. A current "fashion" in popular explanations is to add that "chilly" cannot include sub-zero temperature but a touch of "jack frost" overnight does wonders to enhance the colouration of our hardy native species! It is true enough that freezing will kill the leaf cells but no one seems to have tested the frost hardiness of our maple leaves. If the weeds in our gardens can survive overnight temperatures of -1C or -2C with no ill effect, it seems logical that so can the leaves on a native tree. On the other hand, in warm weather, especially if the days are overcast, much of the chlorophyll remains and little of the red pigments is made. As any casual observer has noted, more red colour is present in parts of the tree fully exposed to sunlight. It is important to keep in mind that a typical leaf is comprised of millions of individual cells each responding more or less independently to its environment. Although the overall process of preparing for winter is synchronized and ultimately leads to leaf fall, some cells may retain normal functioning much longer than others. Thus the colour of the leaves is not the same in all parts of the tree or even in all parts of the same leaf.

While all these colour changes are ongoing, the leaves are prepared for the phenomenon familiar to us as leaf fall. Preparation for separation from the tree is done so as not to leave an open wound at the point of attachment. An impermeable corky layer, called an abscission layer, is gradually built across the base of the leaf stalk, or petiole. Such a layer is obviously incompatible with the already-mentioned desirability of removing as much as possible of the valuable nutrients in the leaf for storage in the trunk: how can nutrients be moved past an impermeable layer? The solution lies in the fact that the tissues through which the nutrients are moved, the vascular tissues which make up the veins of the leaf, are the last part of the leaf stalk to be cut off. The statement usually made in popular explanations is that the sugars (sucrose, the sugar we put in our coffee, is the form in which sugars are transported in the plant) are trapped in the leaf by this layer and are thus available for conversion to anthocyanins. But is it true that sugars are indeed

trapped? No one knows since the exact point at which transport to and from the leaf ceases still remains to be determined. How long into the autumn is water carried into the leaf? And how long does the part of the veins responsible for moving nutrients out of the leaf remain functional? All we know is that finally the leaf is held onto the tree only by the veins which ultimately break off to allow it to float away. Its point of departure is marked by a characteristic leaf scar that can be used to identify the tree in winter, its smooth corky surface marred by the broken remnants of the vascular tissues.

Our trees must maintain a delicate balance of retaining normal functioning of the leaves for as long as possible consistent with making adequate preparations for winter! Beginning the process of leaf senescence too soon will rob the tree of the ability to make food during the warm days of autumn but, on the other hand, starting too late may result in an abrupt cessation of all metabolic activity due to a killing frost before the tree has time to recover nutrients from its leaves.

Constance Nozzolillo
Retired Professor of Biology, University of Ottawa

SCOTOBIOLOGY: A NEW BRANCH OF BIOLOGICAL SCIENCE

R.G.S. (Tony) Bidwell, as a member of the Ecology of the Night Symposium held at Muskoka, Ontario, in 2003, recognized that many of the scientific presentations described biological reactions and behaviours that can only work properly in darkness, and are seriously affected or prevented by night-time light pollution. This research area of Biological Science was called Scotobiology - The Biology of the Dark. Many important biological systems are affected by light pollution: the hunting, feeding and breeding habits of many wild animals, amphibians and insects; the life-cycles of plants (e.g. time of flowering, onset of dormancy); the migration and flight patterns of birds, and the health of humans, whose immune systems can be disturbed by night-time light leading to increased incidence of diseases, including cancer and psychological disorders. Scotobiology, the study of the effects of night-time light pollution, is generating strong interest. The site, *scotobiology*, in Google lists a number of recent publications and discussions in this new field of biology. Scotobiology is clearly distinct and largely unrelated to Photobiology, the

study of reactions that require light, apart from the probability that some scotobiological reactions are inhibited by specific light responses.

R.G.S. (Tony) Bidwell
Professor Emeritus, Queen's University

INQUIRY

Former CSPP/SCPV Treasurer Nestor Rosa has been doing some housecleaning and discovered a seed collection containing Thatcher wheat, alfalfa, stinkweed, Marquis wheat, dandelion, ball mustard and Victory oats among others. He is interested if they would be of value to anyone. Please contact communications@cspp-scpv.ca if you are interested or require additional information.

NOMINATIONS FOR CSPP AWARDS

The Canadian Society of Plant Physiologists invites nominations for its major awards to be presented at the Society's annual meeting in 2007. The details concerning the nature of each award, eligibility and qualifications of the nominees as well as the procedure to be followed by the nominators are given in the appropriate by-laws in the society's Constitution, a pdf version of which can be downloaded from the web site of the society (www.cspp-scpv.ca). These details, as well as lists of past recipients, are also included in the CSPP Membership Directory. The nominations for each award must be received by the Chair of the respective award committee (see addresses below) by March 31, 2007.

The CSPP Medal (The Gold Medal)

The medal is awarded either for outstanding published contributions or for distinguished service to plant physiology, primarily in Canada. (See By-Law 11). The nominations should be sent to: Dr. Ed Yeung, Department of Biological Sciences, University of Calgary, Calgary, AB, T2N 1N4 email: yeung@ucalgary.ca

The C.D. Nelson Award in Plant Physiology

The Award is given for outstanding research contributions to plant physiology. 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. (See By-Law 12). The

nominations should be sent to: Dr. Daphne Goring,
Department of Botany, University of Toronto,
Toronto, ON, M5S 3B2
email: goring@botany.utoronto.ca

The David J. Gifford Tree Physiology Award

The Award is given for outstanding research contributions in tree physiology, primarily in Canada. Special consideration will be given to originality and independence of thought. (See By-Law 13). The nominations should be sent to: Dr. Jocelyn Ozga, Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, T6G 2P5
email: Jocelyn.ozga@ualberta.ca

The Gleb Krotkov Award of the CSPP

The Award is given for outstanding service to the Society, both in administration and in scientific contributions to annual meetings. (See By-law 14). The nominations should be sent to: Dr. Larry Fowke, Department of Biology, University of Saskatchewan, Saskatoon, SK, S7N 5E2
email: larry.fowke@usask.ca

CANDIDATURES POUR LES PRIX DE LA SCPV

La Société canadienne de physiologie végétale vous invite à soumettre des candidatures pour les Prix de la Société qui seront remis lors du prochain congrès annuel en 2007. Les conditions d'éligibilité aux différents Prix (qualifications des candidats, procédures à suivre et caractéristiques des prix) sont décrits dans les Arrêtés de la Constitution de la SCPV. Une version pdf de la Constitution est disponible sur le site internet (www.cspp-scpv.ca) de la Société. Ces détails ainsi que la liste des précédents récipiendaires est également disponible dans la 'Liste des Membres' de la SCPV. La date limite de réception des candidatures auprès des différents présidents des comités responsables de l'évaluation des candidatures (voir les adresses ci-après) est fixée au 31 mars 2007.

La Médaille de la SCPV (La Médaille d'or)

La Médaille est décernée à un membre s'étant distingué soit par des publications exceptionnelles ou par ses services à la physiologie végétale, principalement au Canada (voir Arrêté no. 11). Les candidatures doivent être envoyées à : Ed Yeung, Department of Biological Sciences, University of Calgary, Calgary, AB, T2N 1N4
email: yeung@ucalgary.ca

Le Prix C.D. Nelson en physiologie végétale

Ce Prix est décerné pour des contributions exceptionnelles à la recherche en physiologie végétale. Une attention particulière sera accordée à l'originalité et à la créativité des travaux. Les candidats doivent détenir un poste de chercheur indépendant, à temps plein, depuis moins de 10 ans (voir Arrêté no. 12). Les candidatures doivent être envoyées à : Dr. Daphne Goring, Department of Botany, University of Toronto, Toronto, ON, M5S 3B2, email: goring@botany.utoronto.ca

Le Prix David J. Gifford en physiologie des arbres

Ce Prix est décerné pour des contributions exceptionnelles à la recherche en physiologie des arbres, principalement au Canada. Une attention particulière sera accordée à l'originalité et à la créativité des travaux (voir Arrêté no. 13). Les candidatures doivent être envoyées à : Dr. Jocelyn Ozga, Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB, T6G 2P5
email: Jocelyn.ozga@ualberta.ca

Le Prix Gleb Krotkov de la SCPV

Ce Prix est décerné pour service exceptionnel rendu à la Société, autant dans l'administration de la Société qu'en termes de contributions scientifiques lors des congrès annuels de la Société (voir Arrêté no. 14). Les candidatures doivent être envoyées à : Dr. Larry Fowke, Department of Biology, University of Saskatchewan, Saskatoon, SK, S7N 5E2, email: larry.fowke@usask.ca

CSPP EXECUTIVE AND COMMITTEE MEMBERS FOR 2006-2007

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Ed Yeung (Calgary) 2007 Chair
Deep Saini (Waterloo) 2009
Rob Ireland (Mt Allison) 2008

UPCOMING EVENTS

2006 Eastern Regional Meeting & the 40th Plant Development Workshop

December 2, 2006
McMaster University
Hamilton, Ontario

http://www.cspp-scpv.ca/2006_east.shtml



2007 Western Regional Meeting

February 22-23, 2007
Manteo Resort
Kelowna, British Columbia
<http://www.confmanager.com/main.cfm?cid=751>



Okanagan

**50 Years of the
Phytochemical
Society of Europe**

April 11-14, 2007
Churchill College
Cambridge, UK
www.pse50.com



Plant Canada 2007

June 10-14, 2007
Saskatoon, Saskatchewan



Plant Biology & Botany 2007

July 7-11, 2007
Hilton Chicago
Chicago, Illinois
<http://www.aspb.org/plantbiology/>



**The 8th International Plant Cold
Hardiness Seminar**

August 4-9, 2007
University of Saskatchewan
Saskatoon, Saskatchewan
<http://8ipchs.usask.ca/program.php>



For additional or more recent postings, please see the CSPP/SCPV website at <http://cspp-scpv.ca/meetings-e.shtml>

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Bill Plaxton	
Constance Nozzolillo	
Tony Bidwell	

We welcome your comments and suggestions for future publications of the CSPP/SCPV News Bulletin. Please forward all your written material to Gordon Gray (communication@cspp-scpv.ca)

**Next issue of the CSPP/SCPV Bulletin:
April 2007**