



# UBC Department of Botany Newsletter

Number 9 January – December 2013

*Edited by Iain Taylor*



## EDITOR'S MESSAGE

Welcome, with my apologies for delays, to the 2013 Botany Department Newsletter. We have come to expect new and exciting developments, but 2013 was a year with a somewhat different level of excitement. Faculty members have received some well-deserved awards and the graduating students seem to be in demand for their obvious talents as well as for their research experiences in the Department.

Reporting new plant genomes has become almost common place when so much of our resources in genomics are attracting excellent students. There are signs of a possible rebirth of field botany, and Botany is very active in the university-wide developments in teaching.

These and other developments have encouraged me in my work to prepare a history of the Botany Department as well as to work on a similar project for the Faculty of Science. Both the Histories are likely to be WWW documents when they emerge sometime between September 2015 and May 2016. UBC will be celebrating its centenary starting in September 2015.

Please send me stories of your time in UBC Botany (e-mail: [iain.taylor@botany.ubc.ca](mailto:iain.taylor@botany.ubc.ca)). My goal is to make sure that we celebrate the people whose research, teaching and public involvement have given our department such a respected role, both locally as well as nationally. That requires YOU to pass along your first hand answers to the questions that I have been asking of everyone whom I have interviewed so far in Botany and other Science departments:

- Where did you come from when you arrived here?

- Who were those who influenced you in your time here - Faculty, staff, fellow students, folks from other departments?
- Looking back whom do you think you influenced for the good?
- Where did you go from here and how did experiences here influence your later life and career?

In 2013 there were several awards for research, teaching and service at UBC, but few if any of those rewards were gained alone. Someone once said that nothing happens at a university without the students. Maybe you (faculty, student, staff) were the catalyst that started a colleague (student, faculty or staff) down a path to great recognition.

Some of the details of the last year are in the following paragraphs. There has been much research resulting from success in grant getting and teaching initiatives have been supported as never before in the 45 years since I came to UBC. It seems that our public outreach has been very active. The Biodiversity Research Centre and the Beaty Museum are now well established and thriving. The Botanical Garden has completed its return to its original home in the Faculty of Science. There has been a rebirth of field experiences, such as the Campus Fungal walk that I remember taking in the days after I arrived in 1968, and several Botany courses and projects have rediscovered the Endowment Lands (Pacific Spirit Park), Camosun Bog, campus trees and even week-end visits to beaches!

*Iain Taylor*

## HEAD'S MESSAGE

The Botany Department had an exciting 2013, with continued strong research performance, new developments and challenges in undergraduate education, and some exciting additions to our faculty.

In terms of research highlights, Botany faculty have been successful in renewal of our NSERC Discovery Grants. Botany faculty had mean NSERC Discovery Grants of \$48,000, compared to the national average of \$36,000. For established researchers renewing their grants, success rate was 100%, compared to the national average of 76%. Loren Rieseberg led a successful Canadian Foundation for Innovation grant proposal to fund new research greenhouses, to be sited at Botanical Gardens nursery on south campus. With the assistance of the TULA foundation-funded Centre for Microbial Diversity and Evolution, directed by Patrick Keeling, we were awarded a Canada Research Chair2 (CRC2) in Microbial Ecology. Dr. Laura Wegener-Parfrey was recruited for this CRC2, and her research studies communities of microbial eukaryotes with the goal of understanding their diversity and distribution across environments. Using a combination of environmental surveys at field sites in coastal BC and lab experiments, this work explores the structure of microbial communities across transitions, such as salinity gradients. Thanks to the success of Canada Research Chair1, Dr. Geoffrey Wasteneys, in building the UBC Bioimaging Facility into a world-class centre, we were also awarded a CRC2 in Cellular Dynamics. We welcome the new chair, Dr. Abel Rosado, who studies plasma membrane repair following abiotic stress. Dr. Rosado combines cell biology, including advanced microscopy, with plant physiology.

Our teaching highlights included Senior Instructor Celeste Leander being

awarded the Killam Teaching prize at May graduation. The biggest news in teaching was the Biology undergraduate program being selected as a pilot program for a new UBC initiative called Flexible Learning. The Dean of Science suggested our First-Year Biology lecture courses for Flexible learning, which seeks to improve courses with enhanced technology to deliver course content, allowing lecture time to be increasingly used for promoting development of critical thinking skills, problem-solving, and case studies. Working in collaboration with the Wieman Science Undergraduate Education Initiative, course instructors are evaluating whether the 'flipped classroom' and increased activities in lecture did lead to learning gains. Preliminary data shows student performance from the flipped classrooms show greater understanding of concepts and ability to apply them. This project has many challenges, however, such as organizing the technology tools, effective design of classroom activities, and balancing both students' and instructors' work-loads.

Finally, we have re-organized the Botany office staff, and welcomed Isabel Ferens as 'the new Judy'. Isabel provides a friendly face to visitors to the office, where she works with our wonderful graduate secretary Veronica Oxtoby, and super-efficient HR manager Jessica Sui. Always reliable finance clerk Rhonda Goodman, and calm, cool Administrative Manager Sarah Ruddick keep the Department running smoothly.

**Lacey Samuels, Professor and Head**

## AWARDS

**Beverley Green** who was awarded the Canadian Society of Plant Biologists Gold Medal for her work on algal chloroplasts and genomics. The award was announced at the CSPB AGM banquet in Quebec City. The Gold Medal is the society's highest honor in recognition of "outstanding published contributions/distinguished service to plant biology, primarily in Canada". Beverley will present her Gold Medal lecture at the 2014 Annual Meeting.

Professor **Shona Ellis** received the 'The Charles Edwin Bessey Teaching Award-

2013' from the Botanical Society of America.

**SCIE 113 teaching team** for the 2013 Alan Blizzard Award for distinguished collaboration in Canadian university teaching and learning from the Society for Teaching and Learning in Higher Education.  
<http://science.ubc.ca/news/703>

**Sunita Chowrira** for receiving the Faculty of Science Achievement Award 2012/2013 in the category for Faculty.

**Jaclyn Dee (Berbee lab)** who received the Faculty of Science Achievement Award 2012/2013 in the Student category.

**Adriana Suarez-Gonzales** was the winner for the 'Carl Heimbürger Award', the best student presentation from the Canadian Forest Genetics Association. The award was presented to Adriana at the Forest Genetics conference in Whistler, BC.

**Joerg Bohlmann**, Professor in Botany and in the Michael Smith Laboratories, who has been appointed to the Editorial Board of Plant Physiology.

**Karen Reid and Alfonso L. Quesada** (Bohlmann lab) received the Green Research Award from the UBC Risk Management, Campus Sustainability and Supply Management group, for work to test environmental, economic and plant growth benefits, by replacing traditional fluorescent growth lights in the Michael Smith Laboratories' plant cell and tissue culture room, with actively cooled LED lights.

## ALUMNI/ae Awards and Successes

**Gary Lewis** (MSc 2005, Bradfield lab) owner of Phoenix Perennials nursery in Richmond, has successfully lobbied for the 2014 International Plant Perennial Association Symposium to be held in Vancouver. A great chance for alumni to see the best of perennial horticulture from all over the world.

A paper in *Nature* by **Andrew MacDougall** (PhD 2004, Turkington lab), now at University of Guelph, and collaborators reported their assessment of the effects of fire on Vancouver Island

Garry oak and possibly on grassland biodiversity...more support for the importance of biodiversity as a hedge against fire.

On June 14<sup>th</sup> 2013, **Andy MacKinnon** (MSc 1982, Bandoni lab) received an Honorary Degree, Doctor of Science, *honoris causa*, from Simon Fraser University, recognizing his work as a BC Forest Service ecologist and author of six best-selling field guides to plants of western North America.

**Rick Nordin** (PhD 1974, Stein lab) was featured by Global News for his role in keeping the BC Capital Region New Years' swimmers safe from a freshwater algal bloom.

**Nancy Turner** (PhD 1973, R.L. Taylor lab) and **Richard Hebda** (PhD 1977, Rouse lab) published the book *Saanich Ethnobotany* in November 2012, which received rave reviews.

**Nancy Turner** presented the UBC Botanical Garden **Peter Wharton Memorial Lecture** under the title: "Nature and Culture: Reflections on the Journey from Biodiversity and Culture to Biocultural Diversity".

## Graduate Award winners in 2012-2013 were:

**Rebecca Smith** awarded the **Edith ASHTON Memorial Scholarship** (for an outstanding graduate student whose topic of research is in the field of marine or freshwater botany).

**Sandra Keerthisinghe** awarded the **George Bror BOVING Memorial Prize** for an outstanding student in Botany.

**Miranda Meents and Charles Copeland** awarded the **Frances CHAVE Memorial Scholarship in Botany** for two students entering first year of an M.Sc. or Ph.D. program in **Botany**.

**James Fenneman, (Botany)** awarded the **Samantha HICKS Memorial Prize**.

**Jan Janouskovec** awarded the **Kit Malkin Scholarship** for a student with an outstanding record in the **biological sciences**.

**Yan Huang**, awarded the **Craig Adams SANDERCOCK Memorial Prize**.

Megan Bontrager awarded the Vladimir J. KRAJINA Scholarship in Plant Ecology.



## RESEARCH

**SEMINARS** - Another year of Botany and Biodiversity seminars kept us all busy on different lunch times. Featured visitors came from France, USA, Germany, Switzerland, Spain, Netherlands, the UBC Faculty of Forestry as well as our own faculty, post-docs, graduate students and candidates for jobs, and even a Canadian or two. Topics included genetics and evolution of structure and function, pathogenesis and hormone signaling, immortal organisms, diatoms, flowering, genomics, even cell walls.

The **'three-minute thesis'** (a campus wide competition that challenges graduate students to reduce their thesis to a 3 minute talk with one slide) came to Botany. Jenny McCune (Vellend/Bradfield labs) made it to the semi-finals in 2013.

Three Botany post-docs **Justin Whitehill** (Bohlmann lab), **Ying Chang** (Berbee lab), and **Katy Hind** (Martone lab) contributed short talks to the **Faculty of Graduate and Post-Doctoral Studies celebration of National Postdoc Appreciation Week**, held between Sept 16<sup>th</sup> and 20<sup>th</sup>.

The **BGSA Symposium** that was held on Friday, April 19<sup>th</sup> was a huge success and this was due to all who participated and volunteered their time. The keynote speaker was Mary Berbee whose topic was "The Fungi: signs and symptoms of a hidden kingdom".

The **Plant Ecology Discussion Group (aka FLORUM)** met weekly to give plant ecologists a forum for feedback on their ideas, but is generally taxon blind. This is a new group with topics that are of interest to anyone who is keen on ecology.

**WORKSHOPS** - The **Michael Smith Laboratories** ran two molecular biology

workshops aimed at researchers who are new to the area, familiar but require a quick updating, or would like more practical bench training.

Two Summer **Phylogenetics Workshops** were run by Mary Berbee and Sean Graham.

## UNDERGRADUATE RESEARCH

The **Biology Undergraduate Research Directory** showed the much increased effort by undergraduates to pursue research opportunities both in Honours programs and as volunteers. The **Multidisciplinary Undergraduate Research Conference (MURC)**, was held again this year giving a great opportunity to undergrads who have worked in research groups throughout the year.

## MAJOR PROJECTS

**Genomics etc.** Faculty continue to find research funds that support the work as well as graduate students and post-docs. One of the major national collaborations led by **Joerg Bohlmann's** lab to publish the genome of white spruce genome in *Bioinformatics*. This and the genomes of mountain pine beetle (*Genome Biology*, 2013) and the pine beetle associated blue stain fungus (*PNAS*, 2011) were the results of collaboration between the Bohlmann lab, BC Cancer Agency Genome Sciences Centre (GSC), scientists at University of Laval within the *SMarTForests Project* (funded by Genome Canada, Genome BC, and Genome Quebec). Other partnerships in this project included tree breeding programs in British Columbia, Quebec and the Canadian Wood Fibre Centre. Collaboration with Swedish researchers on the Norway spruce genome was published in *Nature*.

**Roy Turkington recognized for doctoral paper.** A research paper authored by Roy Turkington and J.L. Harper has been recognized by the British Ecological Society as one of the top 100 most influential papers, out of about 17,000, ever published by the organization. The society, founded in 1913, published the list as part of its 100th anniversary celebration. One hundred ecologists worldwide were asked to nominate a paper that they felt either influenced them or the science of

ecology. **TURKINGTON, R. & J.L. HARPER.** 1979. The growth, distribution and neighbour relationships of '*Trifolium repens* in a permanent pasture.' IV. Fine-scale biotic differentiation. *Journal of Ecology* 67: 245-254.

The citation is as follows:

*In 1975 Roy Turkington moved from Northern Ireland to Bangor to join John Harper's research group. His painstaking investigation resulted in four papers on the distribution and neighbour relationships of a single species (Trifolium repens) in a single permanent pasture. As a whole, the papers helped to initiate a more intimate approach to plant ecology which involved recording the plant's eye view of its neighbourhood. In adopting a plotless sampling approach [Yarranton (1966) Journal of Ecology, 54, 229-237], Roy showed that Clover samples it's neighbours non-randomly, being much more likely to contact certain species than their proportions in the community would suggest. The key message was that the human perspective (% cover) provides an inadequate estimate of the impact that one species may have on another in the plant community. The series culminated in my chosen paper which showed that Clover ramets appeared to be adapted to their local biotic neighbourhood, growing better with neighbour species than with non-neighbours, suggesting a very fine scale of biotic differentiation, previously unexpected. This work inspired many others to follow the same approach.*

## MEETINGS

The **Annual Meeting of the Society of Plant Signalling and Behaviour** was held at UBC in July 2013. The Society of Plant Signalling and Behaviour, initially Plant Neurobiology, serves the community of scientists interested in sensory plant biology, signalling, information processing and communicative ecology in plants. It fosters trans disciplinary interactions among plant molecular biologists, cell biologists, plant physiologists and plant ecologists.

**(How many alumni remember those Biology 101 Electives that researched the effect of music on bean growth?)**

Several students and faculty attended the **Canadian Botanical Association (CBA/ABC) Annual Meeting and Conference** in Thompson Rivers University (TRU) in Kamloops, B.C. Apart from the usual talks and posters, delegates toured the exciting campus built on the hillside above the city and had a chance to visit the small but exciting Botanical Garden built and still curated by Dave Williams (MSc 1966, Schofield lab).

**The 2013 Canadian Society for Ecology and Evolution Conference** was held at UBC Okanagan.

## FIELD RESEARCH

Field work and identifying plants were celebrated in the 4th Annual **Wilf Schofield Bryophyte & Lichen Foray**, which extended the Botany Department century long tradition of field work and research. Some 30 people took the chance to find stuff between 26-29 Sept. 2013 in and around Clearwater, BC, and to celebrate Wells Gray World Heritage Year. Perhaps this is a good time to remember that one of UBC's founding faculty members, J.K. Henry, (who was a professor of English) was the author of one of the first flora of BC.

**Mary Berbee** and her PhD students Jaclyn Dee and Ludovic Le Renard led a **fungus foray** on campus in the Fall. <http://www.flickr.com/photos/ubcsience/sets/72157637313246796/> provides the photographic evidence. The re-invented **UBC Mushroom Walk** also involved the Beaty Biodiversity Museum and was open to all. Paul Kroger is still involved in the Herbarium and Bob Bandoni and Gilbert Hughes watching from on high must have been very happy!!

## TEACHING

Since his appointment, Science Dean Simon Peacock, has managed to ensure that every first year student was in at least one class with 25 or fewer students. As I noted last year UBC has become really serious about the recently established rank of **Professor of Teaching** (as opposed to Education). The first of these was our own **Shona Ellis** and almost every science department has one or more such

colleagues. 2013 must seem to old guys like me to be a revolutionary year for teaching.

The Faculty of Science is now openly supporting teaching innovation and the results have changed the whole university's attitude to rewarding and honoring teachers in all areas.

**The Science Education Supper Series.** This has provided inspiration and recognition to individuals such as **Rosie Redfield**, from Zoology, who have started and tested a MOOC (Massive Open Online Course), in Rosie's case, on **Useful Genetics**.

Other suppers included **A Closer Look at the Attitudinal Surveys at UBC**, that looked at the results of discipline specific attitudinal surveys in the Faculty of Science at UBC. These surveys measure shifts in students' perceptions of the discipline against a novice-expert-continuum.

**The Science 101** program continues its education outreach program for residents of Vancouver's Downtown Eastside and other inner-city communities who have historically had difficulty accessing post-secondary education. The program runs each year from May to mid-August and involves students, faculty and outsiders who can volunteer for a variety of responsibilities, both inside and outside the classroom.

**A Microscopy Course- 2013/2014 Winter Session Term 2- BIOL 448/548** provided a basic knowledge and practical skills of light/fluorescence microscopy and electron microscopy including sample preparation, image and acquisition and analysis. This 3 credit course is open for all students (3<sup>rd</sup>/4<sup>th</sup> year undergraduate and graduate students) but is ideal for those who have their own research projects including microscopy under supervision.

## PROFESSIONAL DEVELOPMENT AND PUBLIC OUTREACH

**Dr. Patrick Martone**, presented a lecture to the Marine Biology Section of Nature Vancouver, entitled "**Flap, flutter and flow: Evolution and**

## biomechanics of wave-swept seaweeds.

The **Biodiversity Research Centre** has started a **Way Cool Biodiversity Series of talks that occur on the first Sunday of every month at 1 p.m.**

Ken Marr gave one of the first talks, entitled: **Ethnobotany is way cool because...**, on November 1<sup>st</sup>

The **Faculty of Graduate and Post-doctoral Studies** now offers advice to graduate students and post-docs who are preparing for their possible entry into the 'real world' whatever that is!

Topics have included:

- Career Mentoring Workshops
- Preparing Graduate Students for the 21<sup>st</sup> Century Workforce
- Graduate programs/advising
- Getting Back on Track with your Thesis
- Interviews with Impact

## COMINGS AND GOINGS

We welcome Dr. Laura Parfrey, Assistant Professor in Microbial Ecology.

We welcome Dr. Abel Rosado, Assistant Professor in Cellular Dynamics.

Farewell to former Botany department Head Secretary and Administration Manager, **Aven Bendickson** who has a new job as an Assistant Manager, at Faculty Relations. Aven began with Botany in October of 2008.

## RECENT GRADUATES



**Congratulations to the 2013 Graduates. I have included the thesis titles and supervisors in the hope that alums can get some sense of research completed in the last year.**

### May, 2013 Congregation

#### PhD

Behzad Imanian, BSc, MSc, (Keeling Lab) "*A genomic survey of two dinotoms*"

Patricia Lam, BSc, St John's NL (Kunst Lab) "*Uncovering the Mechanisms Involved in Regulating Cuticular Wax Biosynthesis in Arabidopsis thaliana*"

Heather McFarlane, BSc, MSc, Kingston, ON (Samuels Lab) "*Plant*"

*Lipid Trafficking: the Cell Biology of Cuticular Lipid Export and Membrane Contact Sites of Arabidopsis thaliana*

#### MSc

Lisa DeSandoli, BSc, BScN (Turkington Lab) "*Control of invasive species on red-burned soils*"

Tess Grainger, BSc (Turkington Lab) "*Winners and Losers in a Changing Climate: Causes and Consequences of Shifting Vegetation Dynamics after Long-Term Nutrient Enrichment in a Boreal Forest Understory*"

Shuai Huang, BSc (Li Lab) "*Using Chemical Genetics to Discover Regulators in Plant Immunity*"

Yichun Qiu, BSc, Chengdu, China (Adams Lab) "*Evolution and Neofunctionalization of Imprinted Genes after Duplication in Brassicaceae*"

Mariya Skvortsova, BA (Jetter Lab) "*Investigating the biosynthesis of cuticular alkanes in Arabidopsis thaliana: characterization of SCD2 and chemical analysis of double CER mutant waxes*"

Yii Van Tay, BSc, Kuching, Malaysia (Adams Lab) "*Fates of genes after duplication*"

Virginia Woloshen BSc, Delta, BC (Li Lab) "*Identification and characterization of two enhancers of snc1*"

#### BSc (Major Plant Biology)

Erin Green, Roberts Creek  
Emily Lomax, Kamloops  
Jingwen Pan, Foshan, China

#### November, 2013 Congregation

#### PhD

Jonathan Griffiths, BSc, MSc, Toronto (Haughn Lab) "*Genetic analysis of the role of cellulose in Arabidopsis seed coat development and mucilage adherence*"

William Iles, BSc, Peterborough (Graham lab) "*The Phylogeny and Evolution of Two Ancient Lineages of Aquatic Plants*"

Jan Janouskovec, MSc, Czech Republic (Keeling Lab) "*Evolution of free-living relatives of apicomplexan parasites*"

Zorica Kotur, BSc, MSc, Hannover, Germany (Glass/Samuels Lab) "*Characterization of High-Affinity Nitrate and Nitrite Transporters in Arabidopsis thaliana*"

#### MSc

Tanay Bose, BSc (Hons), MSc (Calcutta) (Berbee Lab) "*Taxonomy and Phylogeny of Mitosporic Capnodiales and description of a new sooty mold species, Fumiglobus pieridicola, from British Columbia, Canada*"

Alexander Hammel, BSc (Adams Lab) "*Evolutionary Conservation of Long Intergenic Non-coding RNA Genes in Arabidopsis*"

Meng Li, BSc (Sack Lab) "*Myrosin Phloem Cell Fate and Development are Regulated by the Arabidopsis bHLH FAMA and Polar Auxin Efflux*"

Jessica Lu, BSc (Turkington Lab) "*The effects of litter quantity and quality on soil nutrients and litter invertebrates in two contrasting forests of southwestern China*"

#### BSc with Honours

None in Fall 2013

#### MISCELLANEOUS

The Botanical Garden ran its Perennial Plant Sale, now known as **A Growing Affair** in May.

**Social life** flourishes and end of month do-nut days bring us together for a short time to see how many new people we do not know or maybe we have not missed someone who has left!!

The Biodiversity Research Centre held their Darwin Day "Bake a Cake for Darwin Contest," the Berbee lab won!

**Botany Curling Bonspiel** in January 2013 was won by a team from **Forestry**.

As usual there was the **Annual Botany Christmas Party!**

#### Sage is Open!

Old Faculty Club

After almost 1 year of building renovations and seismic upgrades, Sage

at the University Centre has re-opened, offering a comfortable and contemporary environment, personalized service and incredible menus that include bounty from the Pacific Ocean and local gardens, farms, fields and woodlands.

For more information about the menu and services, or to make a reservation, please visit <http://sage.ubc.ca/>

**Sadly, once again students, especially females are warned about sexual assault after, in this case,** a sexual assault that occurred on Saturday, October 19, 2013 in the 2500 block of West Mall. **The RCMP issued an urgent safety alert for the UBC Vancouver community. Please read this carefully.**

#### **BIG REQUEST!!**

As your Newsletter Editor I am always glad to keep up to date on botanical activities of all our alumni – so all of you who are busy using your experiences at UBC to keep active in some kind of science....just send the details to me at:

[iain.taylor@botany.ubc.ca](mailto:iain.taylor@botany.ubc.ca)

To receive an email version of future newsletters or to send us any news, personal or professional, as well as news of other alumna and friends of the department with whom you are in touch, especially those who graduated in the pre- and immediate post-WWII eras, please contact us at: [botany.alumni@ubc.ca](mailto:botany.alumni@ubc.ca)  
In particular, we need addresses and e-mail contacts so that we can remake connections that have been lost over the years.

