

# Plant Science Says



September, 2006

## APS in Quebec City, Canada By Wendy Lewis



Bonjour! Bonjour is the welcoming word of Quebec City, Canada, site of the annual joint meetings for APS, CPS, and MSA. This trip could have only been difficult for those who don't enjoy a tasty crepe or wanderlust in

landscapes rich in history and local French flavor. Within walking distance of the conference center, these itchy feet explored Bohemian-style neighborhoods, local markets, and the St. Lawrence riverfront, which is North America's only true 'walled city' complete with stone archways, iron gateways, and castles. In this view, seriously similar to my hotel window, is Quebec's Citadel castle on the waterfront.



Apart from touristy avenues, my meeting adventure began with Tour de Turfgrass, beginning at the Centre de Recherche in Horticulture at Laval University. It was a humbling experience combing

their 2,000 sq. ft. research putting green for pathogens before learning diseases are a rarity in their mild summer. That's a good thing too, due to Quebec City's newly implemented law against using any pesticides in residential zones (a major concern for golf courses!). From there, the tour stopped at one of Quebec's premier private courses, Club de Golf Levis and one public 36 hole course, Club de Golf le Grand Portneuf. Both courses were eye popping beautiful and at only 42 US\$ for 36 holes, I threw in the tour towel to rent some clubs...okay..not really. I actually was told ahead of time I'd go the way of the dodo if I did.

The next two days and turf to the wayside, I heard talks (to highlight a few) on FHB, stripe rust, WSMV, and a slew of biocontrol presentations all of which were notable. However, the real dressing was in exposing myself to fresh material like cocoa diseases and soybean and coffee rusts. I know now which diseases threaten the 12 billion dollar per year chocolate market in America, such as the 450 million tons of cocoa beans lost annually to Black Pod and the 50 million tons lost annually to Swollen Shoot. Brazil's production alone has decreased from pathogens and rodents by 75% with similar fears for high production in W. Africa!

Overall, the talks I attended and the new faces I met gave me a renewed perspective on the world of plant pathology. I was reminded that plant disease happens everywhere and affects everybody which is easily forgotten when you're mugging up (cramming) for a test or angry at your project for not having done what it was supposed to do, again. This graduate student is grateful to have been included at APS this year.

## Genetics of Speciation Symposium

By Amanda Henry



About the AGA (also visit the website [www.theaga.org](http://www.theaga.org)): The American Genetics Association (AGA) is dedicated to publishing primary genetics research in such fields as genomic diversity, comparative genetics,

species conservation, polygenic and multi-factorial gene hunts, genetic epidemiology, bioinformatics, molecular evolution, plant and animal domestication, phylogenetics and phylogeography. With a history of commitment to science, diverse pool of readers and contributors, and rapid publication time, the American Genetics Association continues to disseminate the achievements of the Genetic community through the *Journal of Heredity*.

I attended and presented a poster with the map of *Clarkia* at the American Genetics Association Annual Symposium, cosponsored by *Molecular Ecology*. The symposium was held at the University of British Columbia in Vancouver, Canada from July 21-24. The theme of the conference was “Genetics of Speciation.” The collaborative nature of this conference included those working on similar problems as my own mapping project within both plant and animal species. Several presentations were given that focused on broad topics such as what genetics tells us about speciation and the mechanisms of reproductive isolation. A few of the presentations were: Jerry Coyne-Genetics and speciation, John Willis- Genetics of hybrid incompatibilities in *Mimulus*, Scott Hodges-The genetics of reproductive isolation in *Aquilegia*, and Sara Via-The genetic and geographic mosaics of speciation in action. These presentations focused on the ability to answer several questions about the identities and characteristics of ‘speciation genes’. Some of the questions addressed in the conference were concerned with species diversity, importance of traits, the number of genes, the type of genes, the number of mutations in genes, and the type of the mutations in genes involved in species isolation. Evolutionary analysis of these genes suggests that speciation results from positive Darwinian selection

within species. Molecular evolutionary study of the genes causing reproductive isolation may represent an important new phase in the study of speciation. These talks brought the theme of the conference home to me and addressed the concerns for where the study of speciation is headed in the future.

For any information concerning the speakers, posters or the AGA/*Molecular Ecology* conference visit [www.theaga.org/news.html](http://www.theaga.org/news.html).

## Hort Meeting

By Lance Stott



From July 27<sup>th</sup> through July 31<sup>st</sup>, Tracy Dougher, Lance Stott, Leah Grunzke, Bob Gough and Cheryl Moore-Gough traveled afar to the city of New Orleans to attend the American Society for Horticultural Science

convention held at the Sheraton New Orleans Hotel. It all started for Tracy, Leah and I very early Thursday morning (which may be why it seemed like a fairy tale). Since I had set my alarm for 12 hours off it was a rather rude awakening to my cell phone ringing with Frank and Tracy’s wake-up call at 5:02 AM. (Thought I was going to have a heart attack!) It’s a good thing Bozeman is a small airport.

At any rate, Bob and Cheryl had traversed the countryside the night previous with Leah’s poster in tote. (Her poster session started at around the same time that the only flight to New Orleans was scheduled to arrive.) Thus, we hopped in a Toyota minivan taxi and arrived at the ball just in time for Cheryl to usher us up the escalators to Leah’s poster. She made it barely in time for the judging. Thank you Cheryl!

That night we attended the opening gala and had our first tastes of real southern dishes including red beans and rice with andouille (however you spell it) sausage and jambalaya. Unfortunately, spicy foods and I do not really tolerate one another. It was a good social gathering and old acquaintances were renewed while new friendships were kindled. However, at this point, the night was still young, so we braved the “decadence” (as Cheryl called it) of

Bourbon street in order to hear some real jazz music. The others in the group all tried the Hand Grenade—a special drink made with who knows what—that came in this funky hand-grenade-shaped glass. A few beads were tossed while we moseyed down Bourbon street...none to me.

The next day we all attended seminars about our particular venues of interest. I attended a few about orchid production, which were fascinating. Tracy's and my poster session was Friday and we talked to some people about the projects that we are doing with native grasses. By this time, the Cajun cooking had started, a fiery inferno in my tummy and I had to make an emergency run to the hotel "mini-mart" for some Tums. Friday night Leah and Tracy attended the Industry Awards Banquet where Leah was presented with the Industry Travel Award. They fraternized with the hosts and ate a really good dinner without me.

Saturday morning while Tracy was working with the controlled environments workgroup, Leah and I boarded the trolley en route to the New Orleans Botanical Garden for the student tour. It was interesting to still see the flood water lines 4 feet up the houses along the streets as we went in some places. The heat and humidity were oppressive that morning, but we enjoyed seeing the giant Southern Live Oak trees lined with Resurrection fern and Spanish moss. The gardens had been re-planted and looked good, but were likely not in all their glory. The most fascinating thing to me was the water lily



garden and the train garden. After almost catching heat stroke, we returned to the Sheraton and met Tracy to go out for some Bengiets (don't ask me to

spell that either! They are some kind of French doughnuts.), which were really, really good. The only thing was fighting off the pigeons in the outdoor dining area. We toured the French quarter



a little bit before returning to the afternoon sessions where Leah and I learned about how the plant materials were recovering since the hurricanes. We also learned about sustainable building practices for homes and about natural building materials. That night a whole group of us went out to dinner and then hung out on Bourbon street some more.

This article is getting really long, but... On Sunday morning we attended meetings on mechanized grape vineyard pruning and on fertilizer spreader calibration and met Dr. Richard Parish who gave us the plans for our sod strength tester. Then it was time to check out of our motel, so we stored our luggage and attended the last poster session and ate lunch before returning to the airport. Our flight leaving New Orleans was really late and we were all a little disappointed that we might have to stay in Minneapolis for the night rather than getting home to Bozeman. However, when the pilot announced final descent into Minneapolis and Tracy and I checked the time we still had time to run (literally) through the airport (Thank goodness for moving walkways or in this case "run"-ways!), our hearts

quickened. We made our flight to Bozeman and arrived late, but unscathed and even with all our luggage! I can't say that we all lived happily ever after, but we are all still alive and had a great time in New Orleans. Next year the convention is at the Westin Kierland Spa Resort in Scottsdale Arizona. See you there!

### **Biotech Frontiers Class**

There were 8 students enrolled in Biotech Frontiers ([www.Biotech-Frontiers](http://www.Biotech-Frontiers)), the Dave Sands' NSF EPSCoR and MSU sponsored month long workshop for gifted high school students. The students were under the tutelage of Dave Sands, Tami Goetz (Salt Lake Community College) and Cheryl Powers (Cate School in Carpinteria, California). One of the goals of the program is to expose students to many different areas of biotechnology, primarily through discussions with numerous MSU researchers, library research, and significant hands-on individual laboratory research projects.

In the past, this workshop has generated a number of outstanding projects. The students gave the presentations on their projects on Friday, August 4. Following are the titles of the presentations: Tim Su – Omegology: Can you taste the difference; Phoom Chirathivat - Redesigning proteins for world nutrition; Molly Downey - Wake up and smell the biodiesel; Anne Runkel - Protecting human cells from pollutants; Yi Yang - When biofilms are the enemy: A novel way to treat them; Emily Altomare - Tracking a pathogen: Rapid assay for E coli.

### **New Employees**

#### **Dr. Mary Burrows, Extension Plant Pathologist**



Greetings! I was hired to take over from Jack Riesselman as an extension plant pathologist for the state. I originally hail from Moorhead, MN (yes, that's right next to Fargo, ND). My husband and I have been living in the

semi-tropical environment of Ithaca, NY (zone 5: tomatoes ripen very well) for the last 3 years while I worked for the USDA-ARS at Cornell. We received our PhDs from the University of Wisconsin-

Madison. Sean owns a statistical software and consulting company, Ascend Analytics. We had a good time driving across the country in a rented RV with 4 of his 6 servers, our 3 cats, and my wine collection. My other non-research interests include cycling, gardening, knitting and reading. My kitties help me with all of those activities except the first one. I'm looking forward both to the challenges of the position and learning how to garden again in zone 3. Be sure to stop by 207 and say hi, or I'll see you at coffee time.

#### **Dr. Bill Hoch – Assistant Professor of Horticulture**



I arrived in mid-August with a truck-full of research plants and my car in-tow, so I am just settling in, but I am happy to be here and have found everyone to be very nice and helpful! I came from the University of

Wisconsin-Madison, where I received my Ph.D. in plant physiology with a minor in plant breeding and genetics, and was most recently working as a post-doctoral researcher. I am originally from the Midwest and developed my interest in woody plants while working at a large production nursery before graduate school. My research centers on woody plant physiology and genetic improvement. During my Ph.D., I studied the function of the red pigments (anthocyanins) in autumn leaves, as well as worked on the genetic improvement of birch and viburnum for resistance to insect and disease problems. At MSU, I will continue to work with the breeding lines I have developed within eight woody plant genera, including viburnum, birch and spirea. The overall goals are the development of varieties with improved stress tolerance and ornamental characters, but each project has additional, specific objectives. One area that is becoming increasingly important is the development of sterile varieties of exotic species that have the potential to become invasive weeds in natural areas. Several of my projects are working toward this objective. I will also be teaching horticulture classes, starting with Nursery Management this fall. I am looking forward to interacting with everyone in PSPP.

## New Graduate Students

Rachel Leisso – Mary Burrows



Thank you all for the warm welcome to the PSPP department! I very much appreciate all the introductions and assistance I've had. I am working towards

a Master's degree with Dr. Mary Burrows. Originally, I'm from Wisconsin, where I obtained my BS in Plant Pathology from UW-Madison. This year, before coming to Montana, I worked briefly for the Forest Health Protection Service in Utah, the Wisconsin Seed Potato Certification Program Production Lab, and a sustainable agriculture educational farm in New Hampshire. My parents are organic dairy farmers and are pleased that I will be studying ways to improve organic farming -- specifically, biocontrol strategies for damping off and pre-emergence diseases of chickpeas.

## 7<sup>th</sup> Annual MALI INTERN/EXTERN INFORMATIONAL MEETING



*Come to One or Both Sessions*

- Meet the Malian mentors--who are Malian university professors / Malian national agricultural research organization scientists
- Meet former externs / MSU Mali mentor professors
- View extern video that won international competition

- Be part of Mali interns/externs undergrad research teams throughout the US

**Tuesday, 5 September 2006, 5:15pm pizza**

**Thursday, 7 September 2006, 5:15 pm more pizza**  
**Both sessions Plant BioScience Building, Room 108**

Questions????

Call Dr. Florence Dunkel 994-5065 451 9343; Dr. Ada Giusti 994-6441; \ Dr. Cliff Montagne 994-5079

Above photo by 2005 extern, Sam Magro, of 2005 extern, Ashley Williams, conducting participatory assessment research with women of Bougoula, Mali won first prize in international competition

## Grants

Mike Giroux, Modification of Maize Grain Texture, Fungal Resistance, and Starch Extractability, Dow AgroSciences, LLC

Mareike R. Johnston, Precise Phenotyping for Barley Stripe Rust Resistance Gene Introgression, U.S. Department Of Agriculture.

## Publications

Tom Blake, "Barley for Rural Development"  
US Cooperative State Research

Matthew Broughton and Florence V. Dunkel, "Interactions of wheat variety, production environments, and prior insect damage on postharvest resistance to the lesser grain borer"  
Journal of Economic Entomology.

Regarding the above publication, Florence says, "We would like to thank Luther Talbert, Phil Bruckner and Mike Giroux for their assistance when we were not yet part of this department."

## Matt Lavin Places Third in Bridger Run



Matt Lavin finished third overall in the annual Bridger Run Race and first in his category of 50-60. To prepare for the race, he ran every day for about 1-2 hours and ran/hiked up Baldy once a week. .

According to Matt, "I had one of those rare perfect days where everything comes together. Actually, Jay Rotella stepped aside and let me win." Scott Creel, the first place winner is a professor in Ecology. Congratulations Matt!

## Bus Route for Bozeman

Streamline Transit is set to hit the streets of Bozeman and Belgrade on Monday, August 21<sup>st</sup>!

**This bus service is free for all riders** and is sponsored in part by HRDC/Galavan, Associated Students of Montana State University, City of Bozeman, Belgrade and Gallatin County. Please go to this website for additional information and schedules:

<http://www.montana.edu/wwwasmsu/streamlinetransit.php/>

## Bob's Byte

By Bob Johnston (Irene Decker filling in)

### Save Ideas with Scraps

Sometimes the best ideas come when you least expect them.

Here's a quick way to make sure you get that brilliant thought written down before you have a chance to forget it.



Many Windows programs allow you to create what is known as a "document scrap" on the Desktop or in a folder. Scraps let you save your written ideas and have them at your fingertips when you want to develop them.

Try this with Word, for example: Type text into the Word document. Highlight and drag the text to the desktop. An icon will appear with the same name as the document with the word "Scrap" appended to it. To use that bit of data, click its icon and Windows will launch the application that created the scrap and present it to you for editing.

### **Changing Pdf Files to Word Files**

With the PDF document open in Acrobat 7 Standard or Professional, choose File > Save As. In the Save As dialog box, choose Microsoft Word Document from the Format (Mac) or Type (Windows) pop-up menu. Then simply click the Save button, and open the document in Word for editing.

To check or change the settings that Acrobat uses to convert PDF content to Word format, open Preferences (choose Acrobat > Preferences on the Mac or Edit > Preferences in Windows) and choose Convert From PDF from the list of Categories on the left side of the dialog box. Then choose Microsoft Word Document from the Converting From PDF scrollable list. The window at right shows you how Acrobat will handle the conversion,

including whether it will include comments, preserve columns and downsample images. To change these settings, click the Edit Settings button. (Alternatively, you can change these settings when you convert any given document by clicking the Settings button in the Save As dialog box.)

The conversion may not be perfect, depending on factors such as the complexity of the layout, and whether you have the document's fonts on your system. For simple business documents, Acrobat's Save As command does a decent job of converting to Word.

## What is the best way to preserve plant material?

### By Bob Gough

You can keep the bright colors of summer flowers into the gray dead of winter by preserving those flowers at the peak of their beauty. Here's a couple of ways to do that.



**Air drying:** This is the oldest way and works well

on grasses, weeds, and flowers like strawflowers, baby's breath, cockscomb, and spirea. Cut the flowers, strip the foliage, tie the flowers in a loose bundle of 10 or so stems and hang them upside down in a warm, dark, dry, well-ventilated place until they dry.

**Embedded drying:** This works well on a wide variety of flowers, including bleeding heart, chrysanthemum, clematis, columbine, peony, rose, and tulip. Remove the foliage from cut flowers and lay the flowers into a drying mix. Many like to use the borax mixture. To make your own, mix 1 part borax with 2 parts fine washed sand. Heavy, course sand will break the petals. Pour about a half inch of the mix into the bottom of a container, place the flowers on the layer, and cover them gently with more drying mix. Spike-type flowers such as delphinium are laid lengthwise on the drying layer and the entire spike gently covered with the mix. Cup-shaped flowers like narcissus are dried by carefully filling the blooms with the mix to preserve their natural shape, then placing the flowers face up and covering them with the mix. With double-blossomed flowers like roses and peonies, pack cotton or sand between the petals to prevent the flower from collapsing, then cover the entire flower with the drying mix.

The drying time for flowers in the borax mix is from 1 to 3 weeks depending upon the flower and, though this method dries the flowers well, the sand and borax can pockmark the petals and sometimes leave a residue that is tough to remove.

**Silica Gel:** You can use this product, available from florist supply houses, as you would the borax mix, except that the container of mix/flowers must be sealed. The material is more expensive than the borax mix but can be rejuvenated and used over and over again.

**Glycerine:** This works great for foliage or small tree branches with leaves. Fill a jar with about 5 inches of a mixture of 1 part glycerine and 2 parts water. Crush the lower 2 inches of the branch and place it into the jar of solution. Leave it there until the leaves change color all the way to their edges, which may take from 3 days to 2 weeks. During the preservation process, wipe the leaves occasionally with the solution to reduce evaporation. Save the remaining solution for more specimens.

### **Recipe of the Month** Chicken Cashew Salad

- 2 cups seashell pasta
- 1/4 cup brown sugar
- 1 cup creamy salad dressing  
(e.g. Miracle Whip)
- 2 teaspoons lemon juice
- 1 tablespoon distilled white vinegar
- 1 pinch salt
- 2 cups chopped celery
- 1/2 cup chopped green bell pepper
- 1 small onion, chopped or green onions chopped
- 3 boneless chicken breast halves, cooked and cut into bite-sized pieces (grill with lemon pepper seasoning if possible)
- 1 cup cashew halves
- (May also add broccoli and halved red grapes)



Bring a large pot of lightly salted water to a boil. Add pasta and cook for 8 to 10 minutes or until al dente; drain and rinse with cold water.

In large bowl, combine brown sugar, salad dressing, lemon juice, vinegar and salt. Toss dressing mixture with cooked pasta, celery, green pepper, onion and chicken. Chill until ready to serve. Mix in

cashews just before serving. This tastes good the next day too.

### **September Birthdays**

Tracy Dougher	1
Debbie Willits	3
Irene Decker	5
Humphrey Wanjugi	5
Oliver Neher	13
Gary Strobel	23
Wendy Lewis	24
Bill Dyer	26
Mark Young	27
David Baumbauer	27
Lisa White	28

