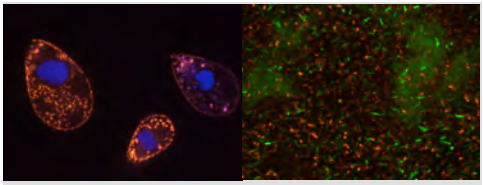
UNIVERSITY of GUELPH

MOLECULAR and Cellular Biology

http://www.uoguelph.ca/mcb/

Summer 2015

Departmental Newsletter



Inside…

MCB Faculty Big Winners in Gryphon's LAAIR: Leading to Accelerated Adoption of Innovative Research

Five of our faculty applied for LAAIR funding and 2 of them (in stream B) went in front of the LAAIR judges on April 22nd to pitch their ideas. All five were successful in obtaining funding to commercialize their products. Well-done MCB!

George van der Merwe: Creating a competitive advantage for Ontario craft beer through the use of novel regional yeast strains.

Lucy Muthuria: Developing a pathogen-specific multi-epitope peptide for diagnosis of subclinical Johne's disease.

Rod Merrill: Control of Paenibacillus larvae, the causative agent of American Foulbrood in honeybees.

Steffen Graether: Novel use of natural protein formulations for frost protection in sensitive high-value crops.

Emma Allen-Vercoe: Enhancing porcine health and production value using microbiome therapeutics.

Welcome new MCB faculty member, Dr. Malcolm Campbell
(VP Research)

Welcome Postdoc and Research Associates

Dr. Valeria Parreira Pinto (Research Associate, Allen-Vercoe)
Dr. Tanya Romantsov (Research Associate, Wood) lab)

Now You See Them...

Please welcome our new members!

MSc Students

- **Navjit Brar** (Vessey) W15
- **Wesley Ehrenfellner** (Ryan) S15
- **Wadood Malik** (Bendall) W15
- **Ziad Marroushi** (Mutharia) W15
- **Gaelen Melanson** (Uniacke) S15
- **Navneet Sidhu** (Dawson) S15

PhD Students

- **Evan Mann** (Whitfield) W15
- **Robert Law** (Khursigara) S15
- **Huasong Xu** (Rothstein) W15
- **Sandi Yen** (Allen-Vercoe) S15

Also watch for at least a dozen new grad students to arrive this Fall! (we will mention them in the Winter newsletter)

...Now You Don't

Farewell to those who have moved on from MCB.

- **Maria Anillo** (Dawson): working at a Nutraceutical company across the street
- **Matt Clarke** (Graether): successfully defended his MSc in January. He had been working at Maple Leaf Foods but will soon start at Sanofi-Pasteur.
- **Dr. Miguel De Avila** (Harauz): now with Apotex (Brantford)
- **Andrew Jenkins** (Harauz): now with SGS Canada (Mississauga)
- **Dan Krska** (Merrill): working for a local company
- **Megan Massey** (Whitfield): now employed with Bond
- Consulting (Etobicoke) as an Science Research and Experimental Development Tax Credit (SR & ED) Analyst
- **Tylar Meeks** (Colasanti): now at Sheridan Nurseries (Toronto) while she works on developing her own data analysis company
- **Roxanne Oshidari** (Yankulov): has moved on to do PhD studies under the supervision of Dr. Mekhail at UofT
- **Daniel Prevedel** (Lam): He has received job offers of Research Technician positions from (i) Sanofi Pasteur, (ii) a Research lab at Toronto General Hospital. He has not decided which one to accept yet.
- **Adam Rocker** (Vessey): U of Ottawa Medical School
- **Eric To** (Wood): accepted into Medical School

Defenses

Maria Anillo, MSc (Dawson)

David Bertin, MSc (Lu)
Erin Bolte, MSc (Allen-Vercoe)
Matt Clarke, MSc (Graether)
Andrew Jenkins, M.Sc (Harauz)
Alena Mammone, MSc (Mathur)
David Marom, MSc (Wood)
Megan Massey, MSc (Whitfield)
Tylar Meeks, MSc (Colasanti)
Daniel Prevedel, MSc, (Lam)
Rabih Roufayel, PhD (Mosser)

Honours & Awards

Congratulations to those who have been recognized within the University and beyond!

NSERC Graduate Scholarships

Kiah Barton CGS-D (Mathur lab)
Alison Berezuk, PGS-D (Khursigara lab)
Kelly Boddington, CGS-M (Graether lab)
Chelsea Coumoundouros, CGS-M, and Michael Smith Foreign Study Supplement (Wood lab)
Claire Martin, PGS-D (Jones lab)
Mark Minow PGS-D (Colasanti lab)
Mara Goodyear CGS-D (Khursigara lab)
Sean Liston CGS-D (Whitfield lab)
Evan Mann CGS-M (Whitfield lab)
Nathanial Secord CGS-M(Rothstein)
Alexander Weiss CGS-M (Van Raay lab)

Ontario Graduate Scholarships

Kelly Boddington (Graether lab)
Andrea Brumwell (Uniacke lab)
Christian Carlucci (Allen-Vercoe lab)
Kyla Cochrane (Allen-Vercoe lab)
Chelsea Coumoundouros (Wood lab)
Stephen Huszczynski (Lam lab)
Sean Liston (Whitfield lab)
Greg MacNeill (Emes/Tetlow lab)
Rachael McNeilly (Jones lab)
Fatemeh Mehrpooyan (Emes lab)
Lily Nasanovsky (Tetlow lab)
Kaitlyn Oliphant (Allen-Vercoe lab)
Jenelle Patterson (Emes lab)
Nathan Secord (Rothstein lab)
Alexander Weiss (Van Raay lab)
Brandon Wyse (Yankulov)

Ontario Trillium Scholarships

Maedeh Darziani Azizi (Lu lab)
Zhenhua Xu (Rothstein lab)

Arthur Richmond Memorial Scholarship

Ashley Brott (Clarke lab)

Vitamin Scholarship

Wesley Ehrefellner (Ryan lab)
Kaitlyn Oliphant (Allen-Vercoe lab)

Queen Elizabeth II Graduate Scholarship

Ashley Brott (Clarke lab)
Elisabeth Kell (Whitfield lab)
Jenelle Patterson (Emes lab)
Kathryn Reynolds (Vessey lab)
Sara Timpano (Uniacke lab)
Michael Wozny (Mathur lab)
Brandon Wyse (Yankulov lab)

MCB Donald Robert Phillips Scholarship.

Alison Berezuk (Khursigara lab)
Véronique Taylor (Lam lab)

CBS Graduate Scholarship (Plant Science)

Samantha Watt (Mullen lab)

Cedarlane CSM Graduate Student Presentation Award

(2015 CSM Annual Meeting in Regina, SK.)
Véronique Taylor (Lam lab)

Roche Molecular Biochemicals Award of Excellence

Michal Pyc (Mullen lab)

Poster Prizes:

Karen Gonzalez (Wood lab): Regina Meeting of the Canadian Society of Microbiologists
Chelsea Coumoundouros (Wood lab): Waterloo Meeting of the Biophysical Society of Canada

Committee Reports

Distinguished Speaker Seminar Series

Our Winter 2015 Speakers were…

- Rowan Sage, University of Toronto (Joe Colasanti)
- Pierre Thibault, Université de Montréal (Joe Yankulov)
- Michael Gold, University of British Columbia (Chris Whitfield)
- Lindsay Eltis, University of British Columbia (Stephen Seah)

Our upcoming speakers will be…

- Mike Moran, Toronto's Hospital for Sick Children (Nina Jones)
- Tracy Raivio, University of Alberta (Chris Whitfield)
- Rheal Towner, Oklahoma Medical Research Foundation (David Josephy)
- David Evans, University of Alberta (Peter Krell)
- Thomas Wolever, University of Toronto (Ian Tetlow)
- Roger Levesque, University of Laval (Joe Lam)
- Dominique Bergmann, Stanford University (Annette Nassuth)

MCB Undergraduate Curriculum Committee: We set new working groups to tackle all the tasks that the UCC covers, with Ray Lu leading the Calendar group, Cezar Khursigara leading the Student Tracking group, Jim Uniacke leading the Education Proposals group, and Matt Kimber leading the MCB Senior Course Assessment group.

We addressed concerns about consistency between offerings of Core courses by proposing that concepts, assessments, and learning outcomes for all our Core offerings be the same, and we had a 1-day Summit in May to review consistency between MCB Core courses and to begin defining the ideal graduate in our different undergraduate programs so we have a goal to work toward.

Following up on the Summit, curriculum committee members facilitated Course Working Groups for the MCB Core courses that met in June to talk about how the courses are going and ensure consistency between offerings.

Concurrently, an ad hoc committee led by Ray Lu examined the MBG program and proposed changes to existing courses and a restructuring of the program to have more intentional 3rd year courses as gateways to advanced 4th year courses.

Should be a very active Fall, as the committee collects concept and skill inventories from the Core courses to map their progression and come up with options for instructors to collect learning outcome achievement data. At the same time, we'll be addressing any course changes coming out of the MBG program revisions.

MCB Graduate Committee: The department voted in a new Qualifying exam format.

MCB Joint Health and Safety Committee: The MCB Joint Health & Safety Committee would like to thank everyone for helping to keep us in compliance with all of the safety rules. As part of the Global Harmonization System for safety, there will be a new WHMIS coming out likely in the next year. The rollout will be over two years with new hazard labels being used.

Outreach/PR Committee: We have been busy updating our marketing materials, promoting MCB at various recruiting events and putting this newsletter together!!

Infrastructure Committee

Tossing out that broken toaster or dilapidated couch and taking those crates of good memories (empty bottles) to the Beer Store are always a good start to making your living space more functional. Same thing applies in MCB; the Infrastructure Committee has been working hard at turning former equipment graveyards and hoarding depots into functional departmental space. We (more specifically Jamie Jones) have been carting loads of pre-dinosaur era equipment to the loading dock where it was gladly disposed of by the local scrapper. Many of these legendary warriors (like the beloved J6B large capacity centrifuge in SSC 2202) served us well, but have come to the end of their days; the suppliers don't even make replacement parts anymore. We bid them farewell.

On to newer and more efficient times - MCB now has two central high speed/ultracentrifuge rooms (SSC 3202B-C and SSC 2202) as well the ultracentrifuge room in SSC 4203. We are working towards finalizing another central room on the fourth floor West wing within the next month or two. Also, a successful NSERC Research Tools and Instruments award (thanks to the superior grant writing skills of Drs. Rodney Merrill and Joseph Lam) allowed us to address the ever-frustrating, high blood pressure-inducing lack of high speed rotors. Each of the central centrifugation locations will now house multiple rotors designated to that room; rotors will no longer need to grow legs and wander around the department. In addition, the department received an additional Beckman XPN-90 ultracentrifuge that is located in SSC 4203.

On a more serious note, we have spent a HUGE amount of money to purchase new rotors and a new ultracentrifuge. The likelihood that we will gain access to these kinds of funds in the foreseeable future is slim to none. Jamie has trained more than 150 new graduate and undergraduate students in the last year on safe high speed centrifugation usage and the proper use and cleaning practices of the associated rotors. These are the first steps in securing the longevity of our centrifuges and rotors. Be diligent to routinely clean the rotors…this must sound like auto replay by now but for a reason!

Few things are as bone-chilling as an Ultra-Low Temperature freezer alarm first thing on a Monday morning along with the associated discovery that the "Ultra-Low" is now sitting at a balmy -20°C….. What to do!!! What to do!!! First thing…relax. The department purchased a Thermo Forma -86°C ULT freezer, conveniently located in the SSC 3202B-C equipment room, that is available to all of MCB as a shuttle freezer for defrosting purposes or for emergency short term storage in the event of the pesky and always annoying freezer crash. The operative phrase here is "short term storage" - no long term squatting allowed.

Finally, the old adage that electricity and water don't go together motivated us to move the Millipore Super-Q water system previously in the now-ultra centrifuge room to the more centrally located SSC 4402B (autoclave room). The second Millipore Super-Q water system remains in SSC 2202.

More to come from the ever-busy Infrastructure Committee….watch this space!

Teaching

Janet Wood's MICR*3260 has international appeal. Here is an email she received:

"Dear ma'am,

I am Pritam from India writing this letter to say that I am very much thankful for your research lab guide which is available as MICR*3260. Actually, I was assigned to write a review and I was totally lost on huge amount of scientific articles and it was just seemed to impossible for me. Luckily I got your course page by random googling ! and to be honest it is the stand alone guide that is helping me to finish my job.

Thank you. Thank you very much for your Research lab guide. We students really need such type of contribution.

Yours sincerely,
Pritam Saha"

Tariq Akhtar: BOT4380 was an amazing success. We learned all about the splendid array of compounds that plants synthesize and even sampled some of them in class!

Redesigning MICR*2430, by Wendy Keenleyside

Since its 2nd offering, F12, I have been working on developing an active learning format for MICR2430 - Techniques in Microbial Culture and Physiology (originally called Microbiology Methods I). Now, after 3 iterations, the course will go forward F15-W16 with a blended format. In term 1 of next year's offerings, (i.e. the first 5 weeks) the 1.5h seminar will consist of lectures + class discussions with a learning specialist on different aspects of metacognition, helping the students with their learning skills. In term 2, following a 2-stage midterm (individual followed by group), we will use a flipped format, with screencasts and assigned readings done before coming to class and lab, an interrupted case study written for the F13 semester by Melanie Wills and I, including group discussions and lab activities occurring in the lab, and, in the seminar, smaller, largely ungraded active learning exercises done in *ad hoc* groups, using REEF polling by >clicker, exit tickets, some "just-in-time" instruction and, in some cases, IF-AT "scratch-and-win" cards (http://www.epsteineducation.com/home/). The course will conclude with a lab exam that includes a group written component, in addition to the bell-ringer, and individual final exam. Melanie and I gave a presentation at the Western Conference on Science Education (July 7th-10th) on how the various perceived obstacles of the last 3 fall offerings of the course, and collaborations beyond the department (the community of practice Ontario Consortium of undergraduate Biology Educators/oCUBE, UofG Educational Developer Erin Aspenlieder and UofG Science Learning Specialist Lauren Grant) finally led to a fully scalable, pedagogically sound active learning course format that will require neither additional resources nor a steep learning curve for any future instructors. The talk was entitled: *Adventures in flipping a course: how fiscal constraints, student complaints and colleague skepticism helped me achieve my goal*.

In trying to embed a deeper discussion of ethics in my 4th year microbial ecology course, and consulting with Alan Watson in SES and Karen Houle in Philosophy to do just that, and recognizing that ethics features in both the degree-level and university level learning outcomes, Karen has now taken the initiative, to implement a "teach the teachers" annual workshop and possibly additional supports, to enable those science instructors who are interested, to embed a consideration of ethics in a meaningful way. Such workshops will likely be facilitated through OpenEd. In the meantime, **we're trying to collect information on any existing initiatives, either here at UofG, or elsewhere, on embedding ethics, to one extent or the other, in science courses.** If anyone in MCB has any experience or knowledge in this regard, please contact me!

Teaching Cont'd

In the trenches with Joe Lam:

1. A proportion of the students in MICR*4010 (Pathogenic Bacteriology) protested that I did not post my lecture slides in D2L for them.
2. After spending >40 hours marking the term papers from this class, I asked the students to do revisions and resubmit so that they could learn how to improve their writing. One student out of the class of 31 complained that I did not specify this requirement of the term paper assignment in the course outline and this individual failed to resubmit. I've turned the 30 revised term papers into chapters in 3 volumes of "My Pet Pathogen" and made it available for the class to have access to in D2L.
3. Students were allowed to bring a clean copy of a Nature article that had been discussed in class for use in the mid term examination. They learned that the "open book section" of the examination is not that easy.

MCB*4510 Poster Session (John Dawson)
This winter was the first poster session under the revised MCB*4510 course, with amazing participation by the Department and enthusiasm from the students.

A group of happy project students.

Thrilling poster presentation and assessment action-shot!

MCB*6360 Spectrophotometer tear-down (John Dawson)
As part of the 6360 course, graduate students took apart a Beckman DU-600 spectrophotometer (a generous donation from Janet Wood), and wrote technical reports on how each part works, complete with pictures of the actual instrument (see figure).

l-r: Wadood Malik , Ziad Marroushi, Danielle Williams , Chelsea Coumoundouros, Kelly Boddington , Haidun Liu, David Bolton, Darryl Good

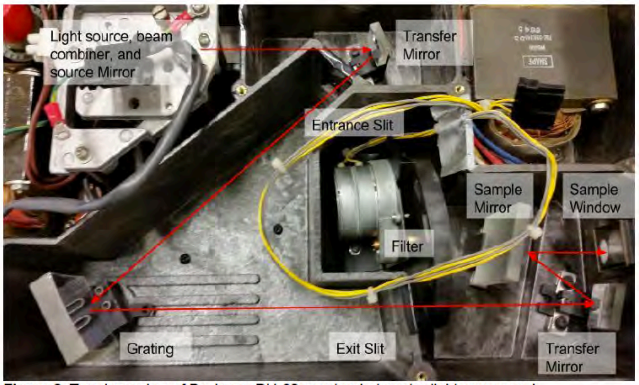
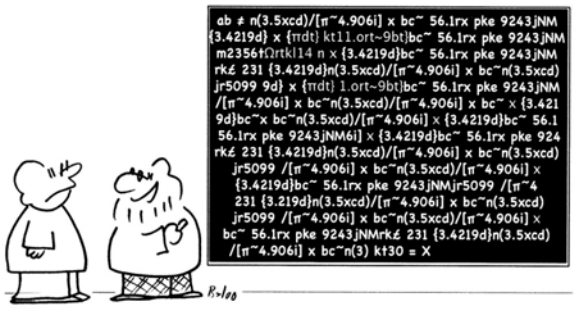


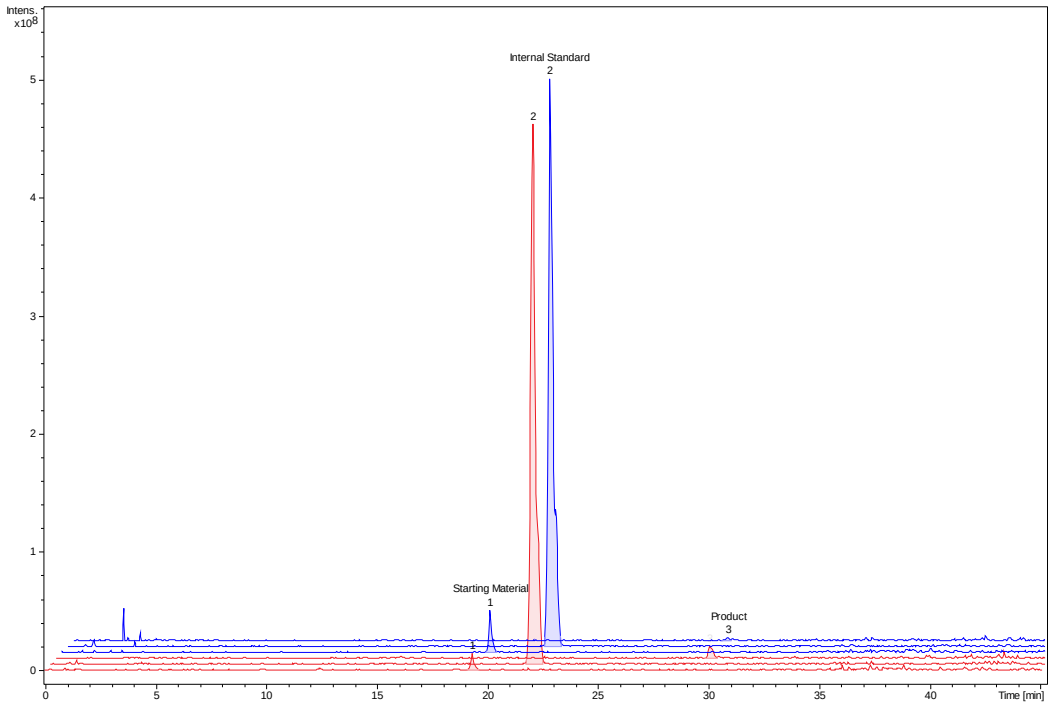
Figure 2. Top down view of Beckman DU-60 spectrophotometer light source and monochromator compartments. Path of produced light is shown in red. Only major components are labeled.

New Funding



- **Joseph Yankulov**- NSERC Discovery Grant
- **Chris Whitfield**: NSERC Discovery Grant
- **Chris Whitfield**: CRC tier 1 in Microbial Cell Biology (2nd renewal, 7yrs)
- **John Vessey**: CFI John R. Evans Leaders Fund
- **George van der Merwe:** Gryphon's LAAIR grant, Stream B
- **Jim Uniacke**: (take a seat, this could take a while)
- **Jim Uniacke**: Canadian Cancer Society Innovation Grant
- **Jim Uniacke**: Ontario Early Researcher Award
- **Jim Uniacke**: NSERC Discovery Grant
- **Jim Uniacke**: CFI matching funds from the Ministry of Research and Innovation Ontario Research Fund.
- **Scott Ryan**: CFI John R. Evans Leaders Fund
- **Lucy Mutharia**: Gryphon's LAAIR grant, Stream A
- **Rod Merrill**: Gryphon's LAAIR grant, Stream A
- **Baozhong Meng**: OMAFRA-U of G partnerships-Emergency Management
- **Baozhong Meng**: Ontario Grape and Wine Research Inc. grant
- **Jaideep Mathur**: NSERC Discovery Grant
- **Joe Lam**, **Matt Kimber**, **Chris Whitfield**, **Anthony Clarke**: Glyconet: a new Network of Centres of Excellence
- **Cezar Khursigara**:NSERC Discovery Grant
- **Cezar Khursigara**:NSERC Engage (Industrial Collaboration with EastGate Biotech)
- **Nina Jones**: Kidney Foundation of Canada grant
- **Steffen Graether**: Gryphon's LAAIR grant, Stream A
- **John Dawson** and **Terry Van Raay**: Heart and Stroke Grant-in-Aid
- **Emma Allen-Vercoe**: Canadian Cancer Society Innovation Grant
- **Emma Allen-Vercoe**: National Institutes of Health R01 (as co-PI with Erika Claud, U of Chicago)
- **Emma Allen-Vercoe**: Gryphon's LAAIR grant, Stream B
- **Tariq Akhtar**: OMAFRA University of Guelph Partnership Grant
- **Tariq Akhtar**: NSERC Engage grant with Plantform (Guelph based biopharma corporation)
- **Tariq Akhtar**: CFI John R. Evans Leaders Fund

First Floor Core



Dr. Dyanne Brewer, Mass Spectrometry Facility:
Here is an example of how Mass Spec Facility can help you monitor enzyme reactions by LC-MS with high precision. This example uses whole cell lysate as the enzyme source (courtesy of Reema Deol in Dr. D. Josephy's lab). Blue lines are the reaction mixture at T=0 with starting material extraction ion chromatogram (EIC) of 262 m/z at 19.4 min (1), internal standard EIC of 254 m/z at 21.9 min (2) and no product (3). Red lines are the same reaction after 10 min with product EIC of 303 m/z appearing at 29.4 min.

Dr. Michaela Strüder-Kypke, Molecular and Cellular Imaging Facility:
The latest acquisition of the imaging facility, the Spinning Disc confocal microscope, has received comparatively extensive media coverage – maybe because we stressed the point that parts of an older instrument were re-used in the assembly of this new equipment. If you read the first articles, it sounded as if we had assembled the microscope ourselves in some shady basement. Curious? Check out this great video, which has just been published: https://www.youtube.com/watch?v=ByrJtvpSNFs. If you missed the workshop in January, you still can arrange for a demo session to see if the Spinning Disk would be useful for your research - just contact Michaela (confocal@uoguelph.ca). And because we love workshops so much: Keep your eyes open for an invitation to demonstration and workshop sessions in collaboration with Zeiss: the LSM 880 AiryScan confocal microscope - planned for late September!

Milestones & Achievement

News of a more personal nature. Some of it science related, some of it not!

Joe Lam

Joe Lam and his family went to Calgary to help his dad, Justin, celebrate his 100th birthday. The number of people in his extended family has grown to 49, some came from as far as Portugal, Shanghai, and Hong Kong. The family was joined by ~200 guests in the celebration event that served a 10-course meal in a Chinese restaurant. Part of the program also included having professional performers doing the Lion's Dance. His dad is living in a condo by himself in Calgary; he is very strong (walking without a cane or other device), very outgoing, and he carries on a daily routine that includes doing exercise in the gym every morning, playing Majong with friends for 4 hours, reading Chinese newspaper and taking a nap for a few hours, before joining his two daughters and a son-in-law for dinner. He goes to bed by 8-8:30 pm.

Scopulariopsis

John Dawson

On May 31, 2015, five riders from the Guelph Cardiovascular Centre rode in the Heart and Stroke Foundation's Ride for Heart. It was a cold and wet day, but the event was superbly organized, with lots of activities in addition to the ride itself. While team captain, John Dawson, peddled the 25 km route in about 75 minutes, Jordan Meyers propelled through the 50 km route in 95 minutes! The team raised $1,510 as part of the Ride for Research, which had nearly 200 research and medical professionals participate in the ride. Thank you for all of your support! It directly impacts research and the lives of Canadians through preventing disease, saving lives, and promoting recovery.

l-r: John Dawson, Haidun Liu, Brieanne MacKay, Charles Wroblewski, Jordan Meyers

GACCATAGCA CCTGAAGTAC TTGCCGCCGT TTTAGCCGCG CTCACCGTCG CAGCATCAGC
TTTGAGGTTA CTTGAGTTGC TGGTGGCTGC ATTCAAGATC GCATCTTTAA TGGCAGTTTT
CTGATCAGCG GTTGGTGCTA CGCCAGCAGT TAAAGAAGAG ATAGCTGAGC CCAGTTCTAC
GGTATTTTTC AAACCAGAGG CACCCAACAT GGTGTCTTTG GCCGCGCTGA TAACACCAGC
AGCAGTAGCC GGGGTTGTCG CGCCAGTCAC TGCGGTAGAG AAGGCAGTAA TTGCAGCATC
AACATCAGCA TCTTTCACGC CAACAGCGGT CAGGTAAGTG GCTTTAGCGG TAGAAATCAA
GCCACTGTTA TTCACGGTTT CAGATGAAGT ACCACCGGCA CCGGCAGTCG CCAGGTTCCA
GCCTGCGCTT GAACCAATTT CGATATTGAT TTTCTGAGTA TCTTGCGCAC CCACCTGGAA
AGCATATTCC GCGTTGGCTG CCGTGCGGTT ATCCAAGACT TTAATGCCGT TGAAATCGGC

Roz Stevenson (AKA " Fish Lab")

Recently posted the complete genome for serovar 2 of the fish pathogen pathogen*Yersinia ruckeri* Big Creek 74 (NZ_CP011078.1). This was based on sequencing and assembly work by **Oliver Tremblay, Melinda Raymond,** project student **Anna Manore,** and with a LOT of help from **Dr. Andrew Kropinski**. Now we are just trying to figure out what it all means.

Steve Lord was also able to find the kidney and other internal organs in a lamprey submitted for testing (why?!) … we invented the "kiss-plate" to culture its teeth (many) and **Melinda Raymond** found a neat fungus: *Scopulariopsis*

Milestones and Achievements cont'd

Emma Allen-Vercoe

I continued with my travels for the last part of my sabbatical and have given almost 20 talks at various different venues since January, including Dallas, New York, San Diego, Birmingham (UK), and Heidelberg (Germany). I still don't have enough Aeroplan miles to get myself into the Air Canada Lounge, though. The lab has done some filming with CBC's Leora Eisen for an upcoming documentary for *The Nature of Things*, to be aired sometime this Fall, including a memorable segment where the film crew came to my house and filmed my family having supper… We were also filmed for another documentary, this time a French language doc, by CBC Quebec, again scheduled for the Fall.

Christian Carlucci, PhD student, was invited to speak at the 5th International *Clostridium difficile* Symposium, Bled, Slovenia, June 2015. (He was very nervous but did us proud!)

Emma will be moving house to the Exhibition Park area, August 4th

Jaideep Mathur

Accepted position as Review Editor for the prestigious cell biology journal Protoplasma.

Chris Whitfield

I have now finished my post-Chair administrative leave and will be back in the classroom this fall. In addition to trying to keep track of the progress of a full lab of 14 productive folks, I seem to have spent most of the last few months reviewing grants. In addition to participating in the review of all of the project proposals for the new Glyconet network, I recently served as a member of the CIHR Microbiology & Infectious Diseases (MID) transitional operating grants committee. I have been involved on and off in various capacities with MID over a period spanning more than 20 years and sadly, with the new CIHR reforms, this was the last face-to-face meeting of the panel.

Nina Jones

I was invited to give a talk in the opening session of a Keystone Symposium entitled "The Biological Code of Cell Signalling" in January. My luggage unfortunately didn't make it to Steamboat Springs on time – note to self to always plan for the worst when travelling ☺

The Jones Lab and its neighbours hosted members of the local chapter of the Kidney Foundation of Canada this spring. Grad and undergrad students dressed up the lab and showed guests the magic of DNA extraction, GFP, podocytes and zebrafish.

Andrew Bendall

We spent the semester as itinerants while our house was being renovated

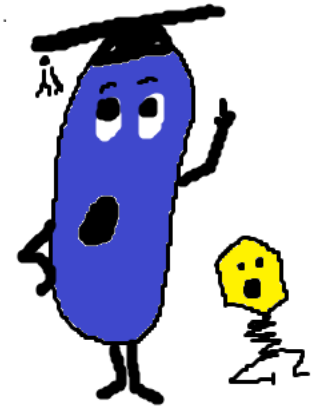
George Harauz

(L) Wedding of Miguel and Jena (Feb 28, 2015). (R) Danica Grant (born 15 March 2015) to Janine Voyer-Grant (former technician)

Tariq Akhtar

Jacob Alistair Akhtar turned one year old in April. Time flies!

Excerpt from Roz Stevenson's June 9th convocation address, where she offered some thoughts on things that microbes can teach us about life:



Life is about continuing to GROW … Even with **sparse nutrients and tough conditions**, bacteria keep growing and persisting.

Life is about living in COMMUNITY- It takes some **30 billion cells** to produce a just-visible bacterial colony … yet microbes still constitute about half of global biomass. Communities are powerful.But microbes also show us **"the power of one"** …. a single virulent pathogen establishing infection or
just a few microbes can set up an effective symbiotic relationship– with a plant root, or with giant gutless tubeworms in the deep sea.
Microbes teach **the value of DIVERSITY** – a **microscope** is needed to appreciate the remarkable **morphological diversity** of these small, single cells, but more important is their **metabolic diversity** – they may get energy from light or from various sulfur compounds, or maybe they "eat organic" – sugars – or perhaps methane, or cellulose or chitin!
A microbe is best known by WHAT IT DOES ….. whether that's fixing nitrogen, dealing with compost, making yoghurt, or infecting us. A microbe is more than its Latin binomial name – or its genome sequence, just as each graduate is more than his or her degree letters or program major, and is known by what they do.
Life is about GOING PLACES, exploring new geographies and environments and microbes are found just about everywhere – in soil, in oceans and lakes, under the Antarctic ice. Microbes are also found on and in all plants and animals – including us!
So, Life is very much about ASSOCIATIONS and INTERACTIONS. Some ancestral microbes were even the origin of mitochondria …the energy machines in our cells.
Microbes also teach that **Life is about CHANGE and meeting new challenges by ADAPTING. Perhaps Microbes can even give us a sense of PERSPECTIVE** …. If we humans disappeared from the planet, we'd not really be missed. But without the Nitrogen cycle, the Carbon cycle, the Sulfur cycle **– services** provided by the interactions of diverse groups of microbes - this planet would soon be another rock in space.
So – the message from microbes:

keep growing and keep adapting,
work in community – while still **remembering what a single cell or individual can do**.
value diversity and associations,

and **whatever you do**, **do it well**,
and **wherever you go**, **be brave**!
And today and every day, **celebrate** your accomplishments!

Photos from the June recognition event in honour of Mike Emes' Deanship. Congratulations to Mike, and welcome back to MCB (even though we know you technically never left!). Thanks to Joe Lam for the great photos. Joe had this to say: "The well dressed couple in the lower right corner (man in grey suit and wife in red dress are Dr. Ken Gregory and his wife Marilyn; Ken used to be the Chair of Microbiology. He is the one to be blamed for bringing in characters like Reggie Lo, Chris Whitfield, and Joe Lam to the Department of Microbiology in the early 1980s"

Publication Depot

Publications since January 1, 2015

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A two-component enzyme complex is required for dolichol biosynthesis in tomato. Brasher MI, Surmacz L, Leong B, Pitcher J, Swiezewska E, Pichersky E, **Akhtar TA**. Plant Journal. 2015. 82(6):903-14.

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Book project:
Co-editor of 'THE GUT MICROBIOME HANDBOOK' to be published by DesTECH Fall 2015.

Colasanti

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Khursigara

Visualizing and Quantifying Pseudomonas aeruginosa Infection in the Hindbrain Ventricle of Zebrafish using Confocal Laser Scanning Microscopy. Rocker, AJ, Weiss, ARE, Lam, JS, Van Raay, TJ,* **Khursigara, CM**,* J. Micro. Meth. 2015 (In Press; *-joint corresponding authors)

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Lam

Visualizing and Quantifying Pseudomonas aeruginosa Infection in the Hindbrain Ventricle of Zebrafish using Confocal Laser Scanning Microscopy. Rocker, AJ, Weiss, ARE, **Lam, JS,** Van Raay, TJ,* Khursigara, CM,* J. Micro. Meth. 2015 (In Press; *-joint corresponding authors)

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Meng

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Van Raay

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Yankulov

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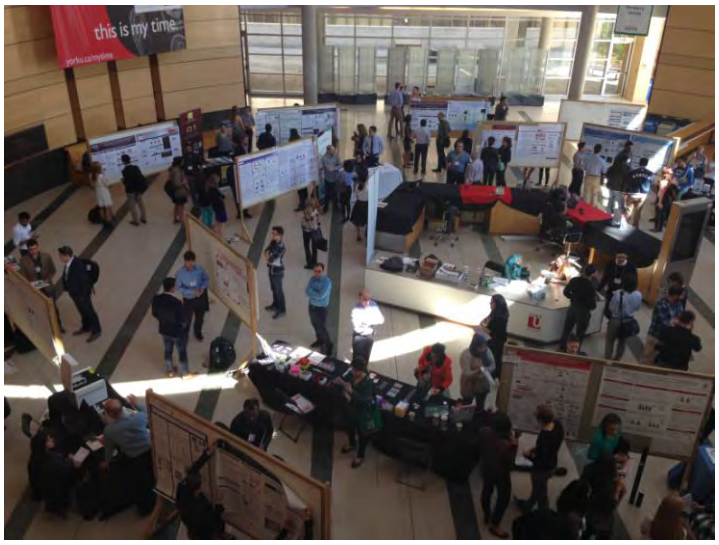

Final Word

Best Wishes for a well deserved retirement…

Dr. Roz Stevenson

University of Manitoba: B.Sc. (Hons) 1969, Ph.D. 1974
University of Manitoba; PDFs at the Alberta Research Council and Washington University St. Louis.
Assistant Professor, Dept of Microbiology 1977
Honours and Awards:
YMCA-YWCA Guelph- Women of Distinction Nominee in Public Service; Award of Excellence in Teaching, College of Biological Science; Distinguished Professor Award: University of Guelph Faculty Association award for the College of Biological Science.
Publications:
57 peer reviewed publications
11 chapters and technical reports

Dr. Marc Boileau

University of Windsor: B.Sc. 1985, Ph.D. 1989
Cornell University: NSERC PDF.
Publications:
2 Multimedia titles
1 book
18 Scientific publications
12+ corporate case studies, training manuals and software development plans
40+ newspaper and magazine articles

Editorial Team: Emma Allen-Vercoe and Terry Van Raay