Issue #4 - Fall 2004

Bio-Update

University of Lethbridge - Department of Biological Sciences Newsletter

NEWS FROM THE CHAIR

I would like to extend a hearty welcome to everyone in the Department. Specifically "welcome back" to all continuing members and "welcome to our family" to new members. It was great to see new faces at the BBQ a few weeks ago.

Our Department is growing. Joanne and Katrina have joined us as Academic Assistants and we now have a total of 16 graduate students and 16 postdocs or research associates.

With growth in Departmental membership it is inevitable that there is growth in program complexity and a corresponding increase in logistical problems. I want to thank everyone for helping to address these issues and for their assistance with everything from service on committees, through adjustments to teaching duties, to moving office locations. It is your cooperation that keeps the Department functioning. I especially thank Helena for agreeing to take on the position of Associate Chair.

I hope that this new academic year will be fun and rewarding for all members of the Department. This is my final year as Chair of the Department and thus the Chair Selection Committee is now active. It is particularly encouraging to see early evidence of a vigorous campaign for this prestigious position.

FROM THE NEWSLETTER TEAM

At the first Department meeting of this new Fall semester, the desire for a newsletter was once again reiterated so welcome to this first edition of the 04/05 year. As always, this newsletter cannot be produced without the input and support of all Department members, so if you have suggestions, please send them along to Katrina White (***katrina.white@uleth.ca***) or Laurie Pacarynuk (***pacarynuk@uleth.ca***). Many thanks and happy reading!

NEW FACES

Joanne Golden grew up on a farm near Carstairs. Following high school, she moved to Lethbridge and worked at ADRI for several years. She later met her husband Tom, and put her career on hold for several years in order to raise a family. Once her children were on their way to being moderately self-sufficient, she returned to school. She received both her B.Sc. and M.Sc from the University of Lethbridge. Joanne's M.Sc. research project, supervised by John Bain, focused on molecular phylogeography, looking at chloroplast DNA variation in *Packera*. Joanne has just been hired as an Academic Assistant and has experience teaching Field Botany (Biology 2850) and labs in Biology 1010, 1020, 2000, 3300, and 4770.

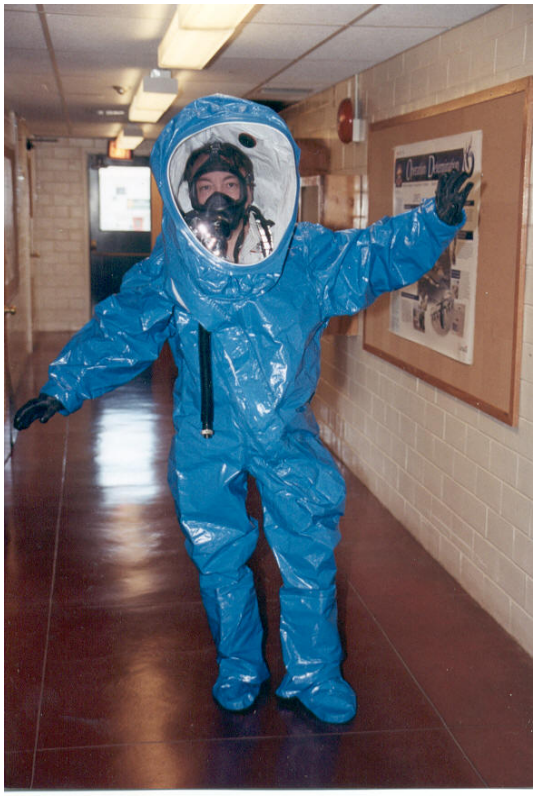
Joanne and Tom have two children, Peter, who is an engineer, and Jennifer, who is currently studying geography at the U of L. When Joanne is not busy on campus you might find her weaving in her local weavers gild. She does everything involved in the process, from shearing sheep to knitting sweaters. Joanne also loves camping and getting out into nature to enjoy intense hiking and canoeing trips.

Katrina White grew up on an acreage outside of Medicine Hat. She went to Medicine Hat College for two years in a University Transfer – Science program. Then she went to the University of Alberta and finished her B.Sc. with Honours in Invertebrate Biology. Following her graduation, she came to Lethbridge and started her M.Sc with Ralph Cartar studying the effects of prairie fire on the arthropod community. Although Katrina has just been hired as an Academic Assistant, Katrina has already accumulated a vast array of teaching experience, including lecturing in Environmental Science 2000, as well as teaching and coordinating labs in Biology 1010, 1020, 3420, 3430, and 3460. She also has image processing experience as she worked with Doug Bray on the BioDiTRIL project for a few semesters.

Katrina is a very talented artist, particularly in the jewelry department as evidenced by the beautiful necklaces worn by various Department members! She swims and cycles, as well as pursues less athletic activities such as reading and listening to all kinds of music. She is also a self-professed movie junkie. She lives with her husband, Ivan, and her darling kitty, Scrimshaw.

Welcome to the Department, Joanne and Katrina!

ADJUNCT PROFILE – DR. JOHN CHERWONOGRODZKY



For the past several years, John has been known to the Department as the Mystery Man in the Suit. In fact, he has been in the Public Service for the past 21 years and has done research on high risk threat agents (hence the suit). From 1982-88 he was at Agriculture Canada's ADRI-Nepean (Ottawa) developing detection methods for *Brucella*, then switched to Defence Research and Development Suffield (DRDC-Suffield,1988-present) to develop medical countermeasures to threat agents.

Highlights to John's career include traveling to Latin American countries to assist a research network in the 1990s, attending the Biological and Toxins Weapons Convention in Geneva, Switzerland, and living a month in New York City (his favorite spot was on top of the World Trade Center) in 1995 to work at the United Nations Building to help collate inspection documents on Iraq's biological program.

Most of his work has dealt with a polysaccharide vaccine against brucellosis, but he has had the opportunity to work on a fairly long list of threat agents. John has always been a solid supporter of our students, supervising them for Independent Study and M.Sc. projects, and hiring our graduates to assist with his research program.

A quote from John:
"Although the Department of National Defence is a federal agency with ties across the country, I'm very pleased with the U of L influence. More and more, we're trying to accommodate U of L students. I'm very impressed with your centre of excellence, and how it applies to so many issues. Dr. Jim Thomas has greatly assisted our program against biological warfare and the terrorist threat, supervised a Master's student on this theme, and will be a co-author on an innovative "paradigm shift" on vaccines. My view has been that success should build on success, and I hope that we haven't been too much of a headache to develop our collaborations. Many thanks."

OTHER NEWS

Annual Biology Department Welcome Back Barbeque Highlights:
This year's barbeque was wonderful, despite the cool weather. The horseshoe tournament started off with several people learning the rules, and much discussion about what the "real" rules actually were. Fortunately, no one got hurt by any of the wayward shoes tossed by novices. This year there is no gloating winner, as the tournament was eventually called off due to hunger pangs experienced by the participants. Delicious beef and salads were enjoyed on Monday evening, as well as at lunches for a few days after the BBQ. Cheesecakes and chocolate cake topped off the yummy meal. Following dinner, there was much visiting and the children had a fun time whacking at the piñata. Joanne was responsible for getting this great event organized and deserves many thanks. Laurie and Katrina also helped out by arranging for the salads and the piñata, respectively.

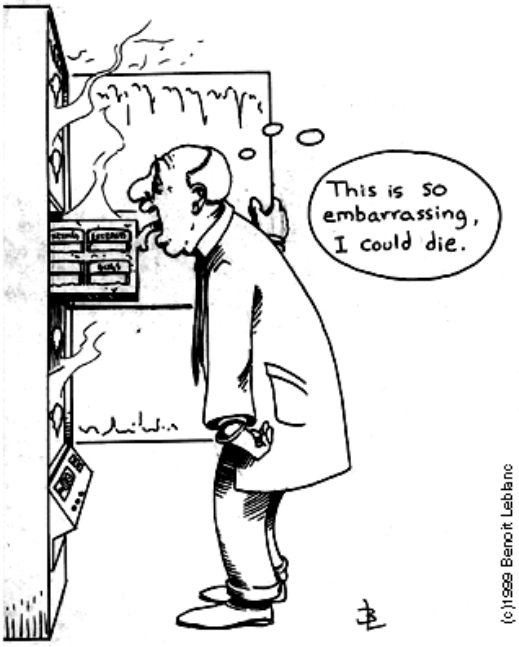
Scene from the unfinished horseshoe match

The spread and ravenous department members

Various department members and their families happily visiting

Get Ready for the Biology Department Semi-annual Halloween Bash:
Put your thinking caps on to create a unique carved pumpkin or costume for this year's departmental Halloween party. The festivities will be held on Friday October 29th in the Hepler Hall foyer area. Please bring your carved pumpkins to Hepler Hall by 3:00p.m. Judging will take place at 4:00p.m. and the party will run until 5:00p.m. (this allows those teaching on Friday afternoon to join in on part of the fun). Freaky snacks will be provided, but feel free to also bring your favourite treat to share. We encourage all of you to come in costume – even if just for the afternoon. There will be exciting prizes for best pumpkin and best costume, as determined by secret ballot. Even if you do not enter a pumpkin, please come to enjoy the fun and to cast your vote.

You Know You're a Scientist When…



2003/2004 Research Activities

Awards:

- The Goater lab received funding from Environment Canada (Ecological Assessment and Monitoring Network) to evaluate the recovery of macro-invertebrate and zooplankton communities in alpine lakes in Waterton Lakes National Park 30 years after the introduction of exotic species of trout. Jillian Barnes (B.Sc. Biology, 2001) is working on this project.
- Igor Kovalchuk has received $88 000.00/year for 4 years from AARI - Monocots transgenesis via single-stranded T-DNA complex delivery to pollen
- Floate, K.D. 2003-2004. Doramectin in pasture ecosystems: consequences for environmental health. Jointly funded by private industry and AAFC's Matching Investments Initiative ($80K over two years)

Conference Presentations (Posters and Talks):

- S.N. Acharya, J.E. Thomas, S.K. Basu: Fenugreek an annual forage legume and its role in preservation of water quality and conservation of water. Poster - March, 2004. 7th Annual Oldman River Basin Water Quality Workshop.
- Bain, J. F. and Golden, J. 2003. Haplotype diversity patterns in autogamous *Packera pauciflora*. New Phytologist Plant Speciation Symposium. Poster - Plant Canada Conference – Antigonish N.S.
- Basu, S., Acharya, S., Bandara, M. and Thomas, J. 2004. Agronomic and genetic approaches for improving seed quality and yield of fenugreek (*Trigonella foenum-graecum* L.) in western Canada. Proceedings of the Science of Changing Climates-Impact on Agriculture, Forestry and Wetlands, Canadian Society for Agronomy Annual Meeting, July, 20-23, University of Alberta, Edmonton, AB, Canada, pg. 38.
- Duke, G., Byrne, J., Kienzel, S., Johnson, D., VanLeeuwen, J., Little, J., T. Graham, T., V.P.J. Gannon, V.P.J., Selinger, B. and Thomas, J.E. 2004. Strategies to effectively manage contaminated rural water supplies. Presented at Confronting Water Scarcity: Challenges and Choices. Lethbridge, Alberta. July 13 – 16.
- Duke, G., Byrne, J., Kienzel, S., Johnson, D., VanLeeuwen, J., Little, J., T. Graham, T., V.P.J. Gannon, V.P.J., Selinger, B. and Thomas, J.E. 2004. Effective management of pathogen contaminated rural water supplies. Canadian Water Network Meetings: Connecting Water Resources. Ottawa, Ontario, June 20 – 22.
- Filkowski, J., Kovalchuk, I. Genome stability of *Arabidopsis thaliana* mutants impaired in protection against oxidative stress. 7th International Congress of Plant Molecular Biology, ISPMB 2003, Barcelona, Spain, June 2003.
- Gannon, V.P.J, T.A. Graham, S. Read, K. Ziebell, J. Thomas, B. Selinger, I. Townshend, L. Chui and J. Byrne. 2003. *Escherichia coli* O157:H7 in Waters of the Oldman River Basin in Alberta, Canada. VTEC 2003, Edinburgh.
- Gannon, V.P.J, T.A. Graham, S.Read, K. Ziebell, J. Thomas, B. Selinger, I. Townshend, L. Chui and J. Byrne. 2003. Risks Associated with Waterborne Enteric Pathogens" at the workshop entitled Developing, Water and Wastewater Treatment Infrastructure for First Nation Communities: Section 2. June 4-5, Vancouver, BC.
- Kovalchuk I., Filkowski, J., Heinlein, M., Hohn, B. Increased frequency of homologous recombination as a response to pathogen attack. 7th International Congress of Plant Molecular Biology, ISPMB 2003, Barcelona, Spain, June 2003.
- Lang, C., Byrne, J., Townshend, I., Kienzle, S., Graham, T., Gannon, V., Thomas, J. and Selinger, B.: Fingerprinting Waterborne Bacteria Using Metabolic Profiling. Poster - March, 2004. 7th Annual Oldman River Basin Water Quality Workshop.
- Kovalchuk O., Burke, P., Arkhipov, A., Hohn, B., Kovalchuk, I. Molecular aspects of plant adaptation to ionizing radiation. 7th International Congress of Plant Molecular Biology, ISPMB 2003, Barcelona, Spain, June 2003.
- Patterson, S.J. Acharya, S.N., Thomas, J.E. and Bertschi, A.B. (2003) Effect of land application of wood ash: biomass and grain yield in barley andcanola. Presented at the Canadian Society for Agronomy Annual Meeting, Montreal, Quebec, August 10-15.

Cam Goater was one of three invited speakers for a symposium this past May for the annual meeting of the Canadian Society of Zoology:

Goater, CP. Altered Behaviour and Pathology of Trematode-infected Minnows. Invited Symposium Speaker for “Parasites and altered host phenotypes” 30th Annual Meeting of the Canadian Society of Zoologists, Acadia University, Nova Scotia, 12-16 May, 2004.

Papers:

- Bain, J.F. and Golden, J.L. (2003). Phylogeographic relationships within *Packera sanguisorboides*, a narrow endemic species that straddles a major biogeographic boundary. American Journal of Botany 90: 1087-1094.
- Baldwin, R and CP Goater. (2003). Circulation of helminths among sympatric fishes in Northern Alberta. J. Parasitology 89: 215-225.
- Besplug J., Filkowski J., Burke P., Kovalchuk I. and O. Kovalchuk. (2004) Atrazine induces homologous recombination but not point mutation in the transgenic plant-based biomonotoring assay. Arch. Environ. Cont. Toxic. 46(3), 296-300.
- Dube, T., Kovalchuk, I., Hohn, B. and Thomson, JA. (2004) *Agrobacterium tumefaciens* Mediated Transformation of Plants by the pTF-FC2 plasmid is Efficient and Strictly Dependent on the MobA Protein. Plant Molecular Biology, in press.
- Filkowski, J., Kovalchuk, O., Kovalchuk, I. (2004) Genome stability of vtc1, tt4 and tt5 *Arabidopsis thaliana* mutants impaired in protection against oxidative stress.. Plant J., 38, 60-69.
- Filkowski, J., Kovalchuk, O. and Kovalchuk, I. (2004) Dissimilar mutation and recombination rates in *Arabidopsis* and tobacco. Plant Science, 166, 265-272.
- Filkowski, J., Yeoman, A., Kovalchuk, O. and Kovalchuk, I. (2004) Systemic plant signal triggers genome instability. Plant J., 38, 1-11.
- Floate, K.D. 2003. Field trials of *Trichomalopsis sarcophagae* (Gahan) (Hymenoptera: Pteromalidae) in feedlots: a potential biocontrol agent for filth flies. Canadian Entomologist 135:599-608.
- Hurly, T. A. (2003) The twin-threshold model: risk-intermediate foraging by rufous hummingbirds. Animal Behaviour 66:751-761.
- Hyland, R., Byrne, J., Selinger, B., Graham, T., Thomas, J.E., Townshend, I. and Gannon, V. (2003) Spatial and Temporal Distribution of Faecal Indicator Bacteria in Southern Alberta, Canada. Water Qual. Res. J. Canada 38:15-32.
- Ilnytskyy, Y., Boyko, A. and Kovalchuk, I. (2004) Luciferase-based transgenic recombination assay is more sensitive than beta-glucoronidase-based. Mutation Research, 559, 189-97.
- Johnson, J.Y., Thomas, J.E., Graham, T.A., Townshend, I., Byrne, J., Selinger, B. and Gannon, V.P.J. (2003) Prevalence of *Escherichia coli* O157:H7 and *Salmonella* spp. in Surface Waters of Southern Alberta and its Relation to Manure Sources. Can. J. Microbiol. 49:326-335.
- Kovalchuk, I., Abramov, V., Pogribny, I. and Kovalchuk, O. (2004) Molecular aspects of plant adaptation to life in the Chernobyl zone. Plant Physiology., 135(1), 357-63.
- Kovalchuk I., Bojko V., Kovalchuk O., Gloeckler V., Filkowski, J., Heinlein, M. and B. Hohn. (2003) Pathogen induced systemic plant signal triggers genome instability. Nature, 423, 760-762.
- Kovalchuk, I., Filkowski, J., Smith, K. and Kovalchuk, O. (2003) The dualistic nature of radicals: the high-low phenomenon. Plant Cell and Environment, 26, 1531-1539.
- O. Kovalchuk, I. Kovalchuk, A. Arkhipov, B. Hohn and Yu. Dubrova. (2003) Extremely complex pattern of microsatellite mutation in the germline of wheat exposed to the post-Chernobyl radioactive contamination. Mutation Research, 525, 93-101.
- O. Kovalchuk, I. Kovalchuk, P. Telyuk, B. Hohn, V. Titov, L. Kovalchuk (2003) Monitoring of the genotoxicity of drinking water from the inhabited areas of Ukraine affected by the Chernobyl accident using plant bioassays. Bulletin of Environ. Contamination and Toxic Proceedings: 70, 847-853.

- Kovalchuk, I., Pelczar, P. and Kovalchuk, O. (2004) The high frequency of nucleotide misincorporations upon the processing of the double-strand breaks. DNA Repair, 3, 217-223.
- Kovalchuk, I., Titov, V., Hohn, B. Kovalchuk, O. (2004) Molecular aspects of influence of Cd2+ and Pb2+ on the plant genome. Mutation Research, in press.
- Kovalchuk O., Ponton A., Filkowski, J and Kovalchuk I. (2004) Transcriptome profiling reveals dissimilar genome response to acute and chronic low dose radiation in male and female mice. Mutation Research, in press.
- Kyei-Poku, G.K., K.D. Floate, B. Benkel and M.S. Goettel. 2003. Elimination of Wolbachia from *Urolepis rufipes* (Ashmead) (Hymenoptera: Pteromalidae) with heat and antibiotic treatments: implications for host reproduction. Biocontrol Science and Technology 13:341-354
- Molinier, J., Oakeley, E.J., Niederhauser, O., Kovalchuk, I. Hohn, B. (2004) Dynamic response of plant genome to ultraviolet radiation and other genotoxic stresses Mutation Research, in press.
- Patterson, S.J., Acharya, S.N, Bertschi, A.B. and Thomas, J.E. (2004) Application of wood ash to acidic boralf soils and its effect on oilseed quality of Canola [*Brassica rapa* (L.)]. Agron. J. 96: 1344-1348.
- Patterson, S.J., Acharya, S.N., Thomas, J.E., Bertschi, A.B. and Rothwell, R.L. (2004) Barley biomass and grain yield and canola seed yield response to land application of wood ash. Agron. J. 96: 971-977.
- Pearce, D.W., Rood, S.B. and Wu, R.. (2004). Hormones and shoot growth in a three-generation hybrid poplar family. Tree Physiology 24: 217-224.
- Samuelson, G.M. and Rood, S.B. 2004. Differing influences of natural and artificial disturbances on riparian cottonwoods from prairie to mountain ecoregions in Alberta, Canada. Journal of Biogeography 31: 435-450.
- Schleppe, J and CP Goater. 2004. Comparative life-histories of two diplostomid trematodes, *Ornithodiplostomum ptychocheilus* and *Posthodiplostomum minimum*. J. Parasitology (in Press)
- Shirakashi, S and CP Goater. 2004. Chronology of parasite-induced alteration of minnow behaviour: effects of parasite maturation and host experience. Parasitology (In Press)

Upcoming Issue:

Please stay tuned for the new graduate student profiles that will appear in next semester's newsletter.

Department Christmas Party Survey

Please detach this form, fill it in, and return to Katrina White through campus mail. For each question, circle your preferred option. Return by **October 8th, 2004**

1. Do you want to attend a department Christmas Party this year? Y N

If you answered yes to Question 1, please fill in the rest of the survey.

2. What is the best locale for such an event?

   a) booked banquet room department member's home
   b) on-campus off-campus

3. What is the best format for the food provided?

   a) catered pot-luck
   b) full supper appetizers and drinks

4. Would you be willing to pay to attend the party? Y N

5. Would you be willing to have the party in your home? Y N
   (Please note that having the party in your home requires sufficient capacity for 60 adults plus children. If you would be willing to host the party, this or any year, please inform Laurie or Katrina.)

6. Should we have a gift exchange game? Y N
   (Each person wanting to participate would bring a unisex gift of specified value, probably $5.)

7. Should we request a visit from Santa? Y N
   (Presumably, Santa would bring a small gift for each child.)

Additional Comments?: