

NO.36



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FUN AND SCIENCE IN THE SAME SENTENCE?

“Geneskool” Captivates Students from Dawson Creek to Haida Gwaii

It’s a gruesome crime scene. An unidentified male is found dead in the washroom of a plane bound from Vancouver to New York. Blood is splattered on the handle of the knife in his chest. In the tiny room, there are clear signs of a struggle.



No, it’s not an episode of CSI, or even a real crime scene. It’s a murder mystery from “GSI: Geneskool Investigation,” one of several **Geneskool on the Road** traveling workshops designed by Genome BC to give high school students the chance to explore genomics and practice real-world molecular biology lab techniques.

“In this forensics activity, the real fun starts when the students have to practice lifting fingerprints from the tiles,” explains **Vinci Au**, a Geneskool workshop and camp leader since 2008. “The students laugh because

it get’s messy. They get one chance to lift the final print from the piece of evidence, so they have to work as a team.”

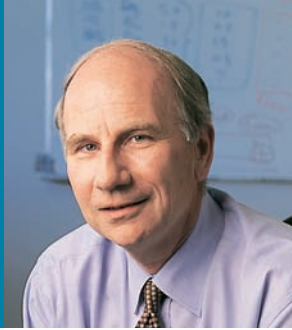
“The hands-on approach encourages them to participate in active learning,” adds Au, who has also been instrumental in keeping the program up-to-date with high school students in mind. “They learn more when they can come up with their own conclusions.”

A self-described “science geek,” Au graduated with a BSc in General Life Sciences from UBC last May and recently started a full-time job as a research assistant in a genomics lab at her alma mater. So it’s hard to believe that, back in high school, Au thought genomics was “really dry.” She remembers the exact moment her enthusiasm was ignited, thanks to an ‘amazing’ high school science teacher who regularly invited guest speakers to the class.

“I was sitting in science class expecting to be bored. Instead, I was blown away by some of the amazing applications the guest speaker described – like the concept of ‘gene therapy’, where you can potentially use viral vectors to treat a serious disease,” recalls Au.

...continued inside

MESSAGE FROM THE PRESIDENT & CEO



BUILDING A LEGACY FOR LIFE SCIENCES EDUCATION IN BC

The CSI television franchise brought DNA forensics into our living rooms, quickly popularizing DNA and many tools used in genomics. And every week seems to bring another genomics-related news story – a new gene has been identified or an underlying genetic susceptibility to a serious medical condition has been revealed.

Genomics is all around us – but do we really understand it? With any new technology or innovation, which has the potential to impact so many aspects of our lives, the ability to assess both its positives and negatives is a critical factor. Not only must we make informed decisions, we must also be able to identify potential safety and ethical issues, barriers to a technology's use, and opportunities to apply the technology for the benefit of society.

For this reason, when Genome BC was created, the board of directors decided from the outset that genomics education must be a cornerstone of what we do. With partners such as **Science World**, **Let's Talk Science** and the **BC Science Teachers' Association**, we launched outreach programs, including hands-on, experiential learning for high school students across BC, to improve access to genomics education and encourage more students to pursue careers in genomics-related fields. See this issue's cover story about our Geneskool and one of its long-time leaders, **Vinci Au**, and our profile of middle school teacher **Janet Cook**.

These free programs and activities are available to all classrooms in BC as we purposefully focus on rural areas where science education resources are not as readily available as in urban centres. These materials are developed to support existing curricula and prescribed learning outcomes. We regularly update our content-rich education website (www.genomebc.ca/education) with all the latest information for

exploring genomics and other related life sciences – a great resource for teachers, students and their parents no matter where they are located.

But we didn't want to just stop there. To ensure a legacy of ongoing life science education programs in the province, in 2003 we created the **Genome BC Foundation**, a non-profit entity affiliated with Genome BC. Our ultimate goal is to empower educators, students and the public with accurate information about genome sciences, so they can learn more about the relevance and impacts of genomics research.

Several former Genome BC board members were early contributors to the Foundation, including **Haig Farris**, **Milton Wong**, and the late **Don Rix**. In September 2010, the Foundation helped to fund the establishment of the **Dr. Donald Rix BC Leadership Chair in Genetic Medicine** at UBC, with major support from the Province's **Leading Edge Endowment Fund** and a contribution from **LifeLabs**. It was recently announced on August 30, 2011 that the Chairholder is **Dr. Matthew Farrer**, a world expert in the genetic aspects of molecular neuroscience and Parkinson's disease. One legacy of the Foundation could be a better understanding of the underlying causes of Parkinson's which could ultimately improve treatment strategies.

Our work with education partners, industry advocates and key supporters continues. We are committed to helping life sciences education flourish and endure in this province, now and for generations to come. It could be Genome BC's most important legacy. <

A handwritten signature in black ink that reads "Alan E. Winter". The signature is written in a cursive style.

Alan E. Winter
President & CEO, Genome British Columbia



FUN AND SCIENCE IN THE SAME SENTENCE?

Cont'd from cover

With her teacher's encouragement, Au pursued her passion with enormous zeal. To learn more about genomics, she began attending Genome BC public forums. In her senior year of high school, Au competed in the Genome Canada-sponsored Sanofi-Aventis Biotalent Challenge, which gave her the opportunity to work closely with a mentor, UBC's Dr. Julian Davies.

With Geneskool, the student has become the teacher. Au's most satisfying moments happen when she witnesses a "light turn on" in one of her young Geneskool workshop participants.

"Especially in students who weren't so keen on genomics in the first place. To see them become really interested and engaged in the topic, that's when I feel like I've made a difference." ◀

GENESKOOL ON THE ROAD AND TRAVELING SUITCASES: Coming to a town near you!

With popular topics ranging from "Alien Babies", where students learn all about inheritance from parent to child, to "Edible DNA", where students get to make – and eat – a physical DNA structure, Genome BC's **Geneskool on the Road** outreach program has inspired more than 25,000 students in BC, from Dawson Creek to Prince George to Haida Gwaii. Led by university students from the "Let's Talk Science" program, the in-person workshops are offered free-of-charge to high schools in various locations throughout BC.

Genome BC also delivers "**Traveling Suitcases**" packed with stimulating hands-on activities and educational resources directly to schools, free-of-charge. Topics include a "Crash Course on Genomics", "What's All the Buzz About Bees?" (an exploration of why honeybees are disappearing) and "Mountain Pine Beetle" (an examination of the tiny bug currently ravaging the province's forests). These exhibits have logged thousands of kilometres touring science classrooms across the province. ◀



For more information, or to book a Geneskool workshop or Traveling Suitcase for your class, please contact Sheila Driscoll at sdriscoll@genomebc.ca

**PROFILE:
JANET COOK, TEACHER
WILDFLOWER MIDDLE SCHOOL
NELSON, BC**



Janet and her students: (from left to right) Kaden, Xavi, Kaelle, Janet Cook (behind Kaelle), Morgaine, Jess, Kaden, Harper

HONEYBEE EXHIBIT HITS CLOSE TO HOME FOR NELSON STUDENTS

When Janet Cook booked “What’s All the Buzz About Bees?” for her middle school students, she had no idea Genome BC’s Travelling Suitcase on genetics and the importance of honeybees would hit so close to home.

“The exhibit’s resources on the increasing disappearance of honeybees and prevalence of hive collapse were eye-opening for all my students,” notes Cook, who teaches at Wildflower Middle School in Nelson, BC. “It also turned out that two of the students’ families were raising bees on their properties, and one family was even struggling with a bad case of bee mites. These students brought their own experiences to the topic, which was very powerful. It sparked a lot of interest.”

Cook, who grew up in Vancouver and later attended university in Montreal, fell in love with the Kootenays after a summer of tree-planting in the area. Once she earned her teaching certificate seven years ago, she decided to settle in Nelson. She has worked at Wildflower since it opened four years ago, teaching small classes of 12 to 15 year-olds every subject (except math).

“We did many of the suitcase activities as a group, like following a genetic code to build a bee model. Some of the kids whose models didn’t seem to turn out – their bees had problems like missing wings – were devastated. They went back and read all the directions, but then realized that they had done everything right. In the genetic code things can go wrong and you can end up with a serious mutation. It was a great way to demonstrate that.”

Using the suitcase materials as a springboard, Cook also encouraged her students to follow their own curiosity and “go further” with their learning.

“They were able to engage with the materials that were of specific interest to them. Some students wrote stories, others created art projects. Some used the books in the exhibit to learn more about a specific topic.”

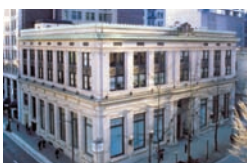
Her only complaint? “One week wasn’t long enough. We could have spent three weeks with the materials,” she laughs.

Along with the Traveling Exhibit, Cook has also booked several of Genome BC’s free, in-person Geneskool workshops, such as DNA Extraction and the Mini CSI Investigation.

“Those were also fantastic because we don’t have science lab here. To have a real scientist come here with all kinds of specialized equipment was a treat for the students.”

Keeping up-to-date with genomics is a challenge for any science teacher. Cook regularly visits the Education section on Genome BC’s website (www.genomebc.ca/education) to get up-to-date information for her science units.

“This field is always changing, and most textbooks are out-of-date the moment they’re printed, so I go to Genome BC’s education website all the time. It’s got all the latest info on genomics and it was obviously created with students in mind – it’s fun and engaging without being patronizing.”



→ SAVE THE DATE!

Book Tuesday, January 24th, 2012 into your calendars for Genome BC’s annual Winter Symposium at the Segal Graduate School of Business.

NEWS & ANNOUNCEMENTS

Gordon Minaker is this year's recipient of the Genome BC Scholarship at the BC Science Fair Foundation Provincial Awards. Gordon is now a UBC science student! "After doing the science fair, I knew I wanted to pursue sciences in order to pursue a career in the health field. I am now working with a professor of medicine to try and have my science fair project "Surviving Cardiac Arrest" published in the *Canadian Journal of Emergency Medicine*. I hope to continue studying health sciences to one day become a doctor, or better yet, a clinician scientist."



Dr. Matthew Farrer, a world expert in the genetic aspects of Parkinson's disease and molecular neuroscience, was appointed to the Dr. Donald Rix B.C. Leadership Chair in Genetic Medicine at an announcement on August 30th. This Chair is supported by the Province of BC, LifeLabs and the Genome BC Foundation.



To help meet the mandates for cleaner energy; Genome Canada, Genome BC and other partners announced they are funding a \$9.8 million research project "POPCAN: Genetic Improvement of Poplar Trees as a Canadian Bioenergy Feedstock." Principal investigators **Dr. Carl Douglas** and **Dr. Shawn Mansfield**, both at UBC, are using genomics to enhance breeding and selection of poplars to improve their potential as a biofuel resource.



Dr. Gabe Kalmar, Genome BC (left) and Dr. Carl Douglas, UBC (right)

On Canada's first National Tree Day, September 20th, Genome BC announced three major projects that will use our increasing understanding of the genomics of trees – how they control growth, adaptability, and much more – to help address substantial challenges in climate change, fuel shortages and dwindling natural resources. These projects are led by **Dr. Sally Aitken** (UBC), **Dr. Jorg Bohlmann** (UBC) and **Dr. John MacKay** (Laval), **Dr. Lindsay Eltis** and **Dr. Bill Mohn** (both at UBC).



In this photo from l-r: Drs. Pierre Meulien, Jorg Bohlmann, Cindy Prescott, Lindsay Eltis, Sally Aitken, Alan Winter

Genome BC and the BC Clinical Genomics Network announced the winners of the 2011 **Gene Screen BC** film competition on September 26th. "18 Things You Should Know About Genetics," by **David Murawsky**, won first prize! All of the videos submitted to the competition can be viewed at: www.genescreenbc.com



On October 19th, Genome BC announced a new project: **Genomics Research Entrepreneurship to Accelerate Translation (GREAT)**. This unique project funded through Genome Canada's Entrepreneurship Education in Genomics (EEG) pilot program, will be led by UBC's Sauder School of Business. [▶](#)

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