

**MEDIA RELEASE**

*Embargoed until Friday, January 23, 2009 at 8:00 a.m. Pacific Standard Time*

**New research will help predict potentially fatal adverse reactions to specific children's drugs**

*(Vancouver, BC)* When a child is fighting a life-threatening illness such as a brain tumour, the last thing they need to deal with is a serious adverse reaction to the very drugs that are meant to be saving their lives.

This is precisely what happened to then one and a half year old Stefan. Diagnosed with a serious brain tumour, he underwent invasive surgery followed by five rounds of debilitating chemotherapy that left the normally active toddler bedridden for weeks at a time.

It wasn't until the final round of chemotherapy that it became clear that Stefan's hearing had been damaged. He, like many others, had an adverse reaction to the necessary cancer drug, cisplatin.

His mother, Dana Tent recalls, "We were warned that this could happen. We kept doing audio tests after each round of chemo, but we had no choice but to go on if we wanted to beat the cancer. When it was finally confirmed that his hearing had been permanently damaged, I almost couldn't bear it. It was just so unfair."

According to Health Canada, more than 50 percent of newly approved therapeutic health products have serious Adverse Drug Reactions (ADRs) that are discovered after the product reaches the market. Additionally, a full 75 percent of medications have never been tested in children.

It's not surprising that ADRs lead to 10,000 - 22,000 deaths per year in Canada alone, and over \$13 billion dollars in health spending.

But thanks to a ground-breaking new Genome BC research project "Genotype-Specific Approaches to Therapy in Childhood: The Canadian Pharmacogenomics Network for Drug Safety", announced today in Vancouver at the Child and Family Research Institute (CFRI), frequent adverse drug reactions to specific drugs commonly used to treat cancer in children, as well as pain, may soon become a thing of the past.

Internationally-renowned, BC-based project leaders Dr. Bruce Carleton, (a clinical pharmacologist and Director of Pharmaceutical Outcomes Program at Children and Women's Health Centre of BC\*) and Dr. Michael Hayden, (a geneticist and Director of the UBC Centre for Molecular Medicine and Therapeutics at CFRI), have their sights set on the ultimate prize: diagnostic tests that will evolve into a routine tool for clinicians to safely select medications and drug doses for patients, based on their individual genetic makeup.

Building on the work they have done to establish a cross-Canada network to monitor ADRs, the researchers have collected thousands of samples from patients who experienced ADRs reported by 9 paediatric teaching hospitals across Canada, and targeted three key drugs that can cause serious ADRs in children:

- **Cisplatin-induced deafness** - The drug of choice for solid tumours in children and ovarian cancer in women, it causes hearing impairment in the vast majority of children who receive it - a million new patients per year in North America and Europe.
- **Anthracycline-induced cardiotoxicity** - A very effective leukemia drug, it causes heart damage in 18% of children who receive it. There are nearly a million patients in North America who receive this drug annually.
- **Infant mortality associated with maternal use of codeine** - Up to 2,000 Canadian babies per year are at risk based on their genetic profiles.

Project leader Dr. Bruce Carleton believes in the huge potential of this research. "If we can know in advance that people have genetic variations, and specific variations lead to harmful outcomes, then we know how to make decisions about using a particular drug."

"It's kind of like buying shoes," says Dr. Michael Hayden. "We measure the foot first and take into account that everyone has a different shoe size," he says. "The same goes for drugs."

Drs. Hayden and Carleton both feel strongly about the unique role of Canada's public healthcare system in facilitating a nationwide approach to identify people who have had adverse side effects. "This research simply wouldn't have been possible in another type of healthcare system in another part of the world," says Hayden.

"Today's announcement supports the Province's commitment to promoting and supporting research that ensures children - and their families - have the best treatment options," said B.C. Health Services Minister George Abbott. "The ground-breaking efforts of the Genome BC research projects will help minimize potential adverse drug reactions and the team behind the work should be commended."

The scientists expect to develop this diagnostic test within two years, which will ultimately become a tool for clinicians, a simple saliva test, to determine a patient's potential risk for ADRs and customize their treatment.

"Genome BC is delighted to support such a high-caliber research project that addresses a critical need such as ADRs in children. This project embodies the promise of personalized medicine," says Alan Winter, Genome BC's President and CEO.

#### **About Genome BC:**

Genome British Columbia is a research organization that invests in and manages large-scale genomics and proteomics research projects and science and technology platforms focused on areas of strategic importance such as human health, forestry, fisheries, ethics, agriculture, and the environment. By working collaboratively with all levels of government, universities and industry, Genome BC is the catalyst for a vibrant, genomics-driven life sciences cluster with far reaching social and economic benefits for the Province and Canada.

For more information, visit [www.genomebc.ca](http://www.genomebc.ca)

**Media contacts:**

Rachael Froese Zamperini  
Communications Consultant, Genome BC  
604-612-6345

Julia White  
Communications Officer, Genome BC  
604-637-4378

*\*The Children & Women's Health Centre of BC is comprised of BC Children's Hospital, Sunny Hill Health Centre and BC Women's Hospital & Health Centre*