

HEALTH RESEARCH & Innovation

AUTUMN 2013

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Half empty or half full?

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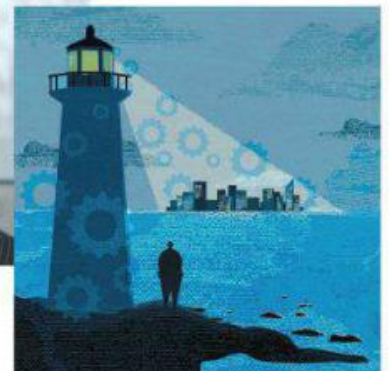
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Hopeful in Halifax

A global initiative to tackle the complexity of cancer is being spearheaded from the Nova Scotia capital

By Alison DeLory



A new way of thinking about cancer research appears to be gaining momentum, and its roots are on Canada's East Coast. A year-long initiative called The Halifax Project is currently underway, with two objectives: to design an entirely new approach to therapy based on what has been learned about cancer's complexity, and to assess whether everyday exposures to chemicals in the environment are a factor in causing the disease.

The project involves 350 cancer researchers from 31 countries, divided into 24 cross-functional teams, each focused on a different aspect of cancer biology, but the driving force behind it, Leroy Lowe, is neither a clinician nor a scientist.

Lowe is president of Getting to Know Cancer, a Nova Scotia-based non-governmental organization, who says his background in business and aerospace engineering has given him a unique and critical outsider perspective. His inspirations for starting this project were his grandfather and aunt, both of whom died from cancer in considerable pain.

He spent eight years reading the literature on the disease and came to question traditional medical methods of prevention and treatment. The Halifax Project, Lowe says, is "bringing scientists together to try to solve a problem that has never been tackled."

For about 70 years, says Dr. Michael Gilbertson, co-founder and chief scientist for Getting to Know Cancer, research into the disease has been influenced by the political economy, and funding has disproportionately gone into investigating genetic and lifestyle factors rather than environmental effects.

"In 2013, epidemiologists can only explain about half of the incidences of many cancers with reference to 'known' risk factors. Despite 40 years of research since President Nixon's declaration of the War

350 cancer researchers from 31 countries

Leroy Lowe:
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on Cancer, incidences of many cancers in North America remain among the highest in the world and continue to increase," Dr. Gilbertson says.

One of the project's objectives is to propose a non-toxic, broad-spectrum approach to preventing and treating cancer. "Cancer is heterogeneous in nature," says Lowe. "Most cancer research is narrowly focused, so we have very few solutions that address the problem of heterogeneity."

He believes the answer may lie in using combinations of non-toxic chemicals aimed at a great number of prioritized cellular targets, and that there's untapped prophylactic and therapeutic potential in plant- and other food-based sources that the pharmaceutical industry has overlooked. Lowe says such inquiries are currently outside normal investigative avenues that examine chemicals individually.

Dr. Keith Block, medical and scientific director of the Block Center for Integrative Cancer Treatment in Evanston, Ill., became involved in the project because he says the mainstream model for treating cancer is erroneously focused on mostly single-intervention strategies.

It's a myth that simply matching a biomarker or molecular target to a drug is "personalized medicine," Dr. Block says. Rather, a comprehensive, multi-dimensional, multi-targeted approach to patient care is needed.

"[True personalized medicine] is focused on boosting treatment effectiveness; restoring biological integrity; reducing treatment side-effects, toxicity and resistance; and diminishing risk of disease recurrence, while laying the foundation essential to an enduring recovery," he says.

Dr. Block disparages what he calls the antiquated "magic bullet" mindset: the belief that a single intervention will ultimately conquer cancer. "Cancer can rarely be overcome if we limit our treat-

ment to targeting a single defect, or even a single pathway.

"Each cancer carries with it multiple defects and multiple growth pathways that can utilize any number of compensatory, substitute or alternative pathways to escape the inhibitory effect of treatment."

He says cancer requires a multi-dimensional, multi-targeted treatment approach including therapeutic diet, selective supplementation, bio-behavioural strategies and prescriptive exercise programs, all tailored to the patient's unique needs.

The project's second goal is to share scientific knowledge to reduce public exposure to environmental agents that can instigate cancer when combined — for example, the estrogenic role of bisphenol A in altering developmental processes and predisposing offspring to development of various cancers. Lowe is intrigued by how environmental agents combine to both harm and help us. He also stresses that non-patentable treatments could hold great therapeutic potential.

The Halifax Project, says Dr. Gilbertson, offers an opportunity to look at the diversity of environmental factors that may contribute to cancer through examining the variety of cellular mechanisms that can be disturbed by exposures to minute concentrations of chemicals in our environments.

He believes the new synthesis of the two highly specialized fields — environmental toxicology and the biological mechanisms of cancer — offers exciting opportunities. "Participants will come away with new perspectives on the way their work can contribute to the reduction of the incidences of cancers," he says.

More than 100 project members met for two workshops at a conference in Halifax in August. An immediate next step is preparation of special issues of *Seminars in Cancer Biology*, which Dr.



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Block will guest-edit, and *Carcinogenesis*. Organizers hope more peer-reviewed articles will also be published as a result of the workshops.

Lowe stresses that the project's findings and recommendations aren't necessarily intended to replace current cancer treatment strategies that focus on narrower targets, but rather to develop alternatives or complementary approaches that are broader-based and less toxic. **HRI**

Alison DeLory is a Halifax-based writer.