Dr. Olga Kovalchuk

Mid-Career Research Chair - New Perspective in Gender, Sex and Health

Research

Molecular mechanisms of the sex differences in radiation-induced bystander effect in vivo

Contact

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Biography

Dr. Olga Kovalchuk was a high-school student in Ukraine in April 1986 when the worst nuclear accident in history occurred at the Chernobyl plant, 600 kilometres from her home.

For Kovalchuk, now a cancer researcher based at the University of Lethbridge, Chernobyl remains a powerful symbol of why the world must remain vigilant of the risks involved in harnessing and using nuclear energy.

For cancer therapy, radiation is a two-sided coin. On one side, it's an effective form of treatment, which has allowed countless patients to survive. On the other, radiation therapy can result in life-threatening secondary cancers such as lymphoma and leukemia. Kovalchuk's research is aimed at addressing both sides of the coin—increasing survival rates while preventing secondary tumours.

Preliminary results suggest changes in the way chromosomes are packaged could contribute to increased risk of certain cancers in people exposed to radiation in the workplace or through cancer therapy. Kovalchuk plans to build on this research in an attempt to understand more about how radiation induces secondary tumours in cancer patients and what can be done to protect the children of radiation-exposed parents from contracting cancer.

Kovalchuk is also studying whether certain agents derived from plants could be given to patients before they receive radiation therapy to improve their chances of survival and reduce the negative side-effects of radiation. This research brings her full circle to studies she conducted in the mid-1990s with her husband, fellow University of Lethbridge biological scientist Igor Kovalchuk. The couple, then working on their respective PhDs in Switzerland, examined the effects of radiation contamination on plants as a result of the Chernobyl nuclear accident.

Since arriving in Lethbridge in 2001, Igor has continued to focus on various aspects of plant biology while Olga has been increasingly involved in cancer-related research. For Olga, who earned a medical degree prior to becoming a full-time researcher, this represents the marriage of two passions—health care and pure science. She believes that whatever is learned about preventing and treating human cancers could protect people should a Chernobyl-like tragedy ever strike again.