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**MEDIA RELEASE**

# SFU researcher wins 2011 E.W.R. Steacie Memorial Fellowship

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SFU chemistry professor [David Vocadlo](#) is one of six recipients of the [E.W.R. Steacie Memorial Fellowship](#) for 2011. His work, involving innovative chemistry approaches in the field of glycobiology, is focused on research that could lead the way to new treatment options for cancer and Alzheimer's disease.

"[Glycobiology](#) is a growing area of research that is not widely recognized by the general public. It is an interesting field of study for me since environmental cues, like the availability of nutrients like glucose, can influence the formation of specialized sugar structures and in this way affect how cells interact and adapt. These combinations of sugars and other molecules are coming to light as essential players in many biological processes in both health and disease," Vocadlo explained.

Specialized carbohydrates form many complex structures, known as glycoconjugates, which are found inside and on the surface of cells. Vocadlo's work centres on understanding and manipulating the enzymes that assemble and break down these glycoconjugates, as well as the roles of these enzymes in biology.

"My lab is developing new chemical tools that enable researchers to study these specialized sugars so that we can monitor and manipulate their levels in cells and decode why they are important. Because the field of glycobiology is still an emerging area, there is a real need for new tools and approaches to make a number of research advances. The longer-term view is that by knowing how these sugars are involved in disease and health, and then being able to influence their levels, we might be able to uncover new therapeutic approaches."

He led his research team to groundbreaking discoveries, highlighted by work on enzymes that process a glycoconjugate known as O-GlcNAc. Their research clarified how these enzymes work at the molecular level. By controlling these enzymes in cells, they examined the involvement of O-GlcNAc levels in insulin resistance and Type-2 diabetes. Taking this work further, Vocadlo's group provided new insights into how the same glycoconjugate could play a role in Alzheimer's disease.

"I am increasingly interested in the role that specialized sugars play in regulating the function of different types of cells. My current aims are to forge ahead by developing chemical tools that allow us to perform new experiments to probe the roles played by these sugar structures in cells," Vocadlo said. "The fellowship will allow me to focus on research, to reflect and think creatively about how these sugars are exerting effects on cells, and also to develop the new tools that will allow us to test these new ideas in the broad area of glycoscience and glycobiology."

Vocadlo's group is also investigating an innovative carbohydrate-based approach to fighting antibiotic-resistant bacteria. The group is working to create compounds that block the bacteria from sensing and resisting the effects of certain antibiotics. This new stealth approach to the problem might overcome the growing threat of certain types of antibiotic resistance.

"My longer term expectation is that our research will contribute to improvements in human health. The major broad areas we are interested in now are antibiotic resistance and neurodegeneration," said Vocadlo. "I hope to see the research lead to practical applications in the not-too-distant future."

This fellowship from the [Natural Sciences and Engineering Research Council of Canada](#) (NSERC) is for a two-year period. It is named in the memory of Dr. Edgar William Richard Steacie, an outstanding chemist and research leader who made major contributions to the development of science in Canada during, and immediately following, the Second World War.

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