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New computer program to assess diabetes risk with increased accuracy

An innovative and original computer program is on course to becoming the first multidisciplinary diagnostic tool for diabetes, thanks to a unique algorithm developed by a computing studies professor at Trinity Western University.

/24-7PressRelease/ - LANGLEY, BC, CANADA, November 10, 2005 - An original intelligent system is on course to becoming the first multidisciplinary diagnostic tool for diabetes, thanks to a unique algorithm developed by computing studies professor, Alma Barranco-Mendoza, PhD, at Trinity Western University.

The innovative computer program currently being prototyped at the University is designed to help health professionals identify people at risk of developing Type 2 diabetes with increased accuracy. While there is currently no cure for the disease that afflicts over two million Canadians, Type 2 diabetes—the most prevalent of the two types—is preventable.

"There are effective diagnostic tools available to doctors and nurses," explains Barranco-Mendoza who has already landed nominations for the 2004 BC Systems Institute Innovations Award and the 2005 NSERC PhD Dissertation Award, "but none of them employ intelligent profiling. Their capabilities are limited to a general estimate of risk since they are only able to take one risk factor into account."

Barranco-Mendoza's sophisticated algorithm is capable of assessing and weighing numerous risk factors—including lifestyle, race, genetic information, family history and pancreas tissue images. This algorithm sets Barranco-Mendoza's computer program on course to becoming the first multidisciplinary diagnostic tool for diabetes. Instead of delivering a general reading of low, medium or high—what patients currently receive—the new program will express risk as a specified percentage.

"Dr. Barranco-Mendoza developed a unique, highly original algorithm that represents an outstanding contribution to the field of Computing Sciences," says Veronica Dahl, PhD, Professor of Computing Science at Simon Fraser University and Barranco-Mendoza's PhD Supervisor. "It rests on state-of-the-art developments in logic programming, but it goes far beyond. By incorporating complex theories, the program is able to simultaneously consult and draw inferences from diverse and even incomplete sources."

Additionally, Barranco-Mendoza's making headway in diabetes research data collection, representation and analysis, collaborating with the BC Genome Sciences Centre and the Medical Image Analysis and Diabetes Research Laboratories at SFU. Together these groups can develop more comprehensive profiles of "at-risk" patients, thereby increasing the understanding and precision of diabetes risk-assessment in general.

"Once a certain amount of data is gathered," says Barranco-Mendoza, "the intelligent system will start learning by itself. It would mine the data and identify trends not evident to us. It is believed that there may be DNA markers for the disease and if we can identify them we're on our way to finding a fast and effective early diagnostic test and even possibly making headways to eventually find a cure."

This research was made possible by the TWU Diabetes Research Endowment Fund, initiated by a generous 2M dollar donation. Other three-year diabetes research projects underway include:

- Investigation of the disruption of insulin signalling for examining specific cell behaviours regulating glucose metabolism (TWU biologists)
- Partnership with a local First Nations community exploring strategies to identify and reduce risk factors for Type 2 diabetes in aboriginal youth (TWU nursing and kinesiology departments).

Trinity Western University, located in Langley, B.C., is a not-for-profit Christian liberal arts university enrolling over 3,500 students this year. With a broad based, liberal arts and sciences curriculum, the University offers undergraduate degrees in 38 major areas of study ranging from business, education and computer science to biology and nursing, and 14 other graduate degrees including counselling psychology, theology and administrative leadership. For more information:

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