

Calgary

Dramatic hope for stem cell therapy, thanks to Calgary student, 17

Human embryonic stem cells have enormous potential to treat Parkinson's and Alzheimer's diseases, spinal cord injury, stroke, burns, heart disease, diabetes, osteoarthritis, and rheumatoid arthritis. However, such cells are extremely sensitive and, after having been frozen, only 15% survive intact.

Liz Meng of Calgary's Sir Winston Churchill High School found a way to boost their survival rate after freezing to a whopping 91%.

Meng's breakthrough involves blocking a cellular pathway, so that the stem cells become insensitive to physical changes. This solves a major problem for Meng's mentor, Dr. Derrick Rancourt at the University of Calgary Medical School, which is trying to slow and possibly reverse osteoarthritis in the knee joints using stem cells to grow new knee cartilage. The hope is to one day have an alternative to knee replacement surgery.

"Not being able to freeze passages of cells presented a major obstacle. Liz's project has helped us to circumvent this obstacle," says Dr Rancourt.

The lab work was challenging. "It took a long time to learn the necessary lab skills and you have to be really precise," says Meng.

The results are "very exciting," says Meng, because the new protocol for keeping stem cells alive could be used by the medical research community around the world. "Stem cell have enormous potential as treatments for wide range of diseases and medical conditions and this protocol could bring the wide use of stem cells one step closer."

Meng will enroll at New York's Cornell University this fall in a bioengineering program.