



# RESEARCH2REALITY

Shining a light on research & innovation.

## Dialling in New Tools for Cell Repair

An interview with Professor Gordon Keller  
Stem cell Scientist, University of Toronto

### What are pluripotent stem cells?

Our really central core is a very, very unique type of cell called a pluripotent stem cell and these cells have the capacity to make virtually any type of cell in the body. And so it's our mission, and it's been our mission for many, many years, to figure out how to direct these cells to make the cell type we want and that's really come a long way in the last 3-4 years. So we are at a position now where we can do some of the things we were dreaming about just a few years ago.

### How does your research work?

So the stem cells we use are called pluripotent stem cells. They are not existing in our body, they are made in a petri dish from either a fertilized egg or a reprogrammed adult cell. This reprogramming technology is probably one of the latest tools in the toolbox where we can take a cell from anybody in this room, anybody in the world, reprogram it back through genetic tricks to a pluripotent cell. So for instance, I can make your heart cells in a dish, I can make your liver cells in a dish, I can make your insulin-producing cells in a dish. That's personalized biology which will lead to personalized medicine.

### How will your research impact medicine?

The biology we're doing is going to impact medicine, there's no question. And you might imagine a day where people don't need to take insulin anymore because we can make new insulin producing cells and replace them. The other place there's going to be a huge impact is if someone has a genetic disease and we make stem cells from that person, we can then make the cells in which that disease is manifested in the petri dish; not only study the disease, but develop new drugs for those diseases, and I think that's going to have equal impact to actually repairing the tissue. A new way to identify new drugs. These are the dreams we're having now and this is the direction some of this work is going.