



RESEARCH2REALITY

Shining a light on research & innovation.

Turning Science Fiction Into Science Reality

An interview with:

Professor Gary Bader | Computer scientist, Medicine by Design, University of Toronto

Professor Michael Laflamme | Heart Pathologist, University Health Network, Medicine by Design, University of Toronto

Professor Alison McGuigan | Biomedical Engineering, Medicine by Design, University of Toronto

Professor Philip Marsden | Kidney Doctor, St. Michael's Hospital, Medicine by Design, University of Toronto

Professor Freda Miller | Neuroscientist, Hospital for Sick Children, Medicine by Design, University of Toronto

Michael May | President and CEO, Centre for Commercialization of Regenerative Medicine

Gary Bader: Medicine by Design is kind of like a science fiction concept. We want to try and fix injured tissues using science of stem cells.

Michael Laflamme: Tissues normally are damaged through either wear and tear or disease over time, and most of our therapies for trying to treat those diseases are dealing with the symptoms. Regenerative medicine is to actually try to restore or to replace those tissues with new functional tissues or organs. The goal of our Medicine by Design program is to tackle some of the specific hurdles we see to making that into a viable therapy.

Alison McGuigan: I think Medicine by Design is really exciting because it's really allowing us to try new collaborations in areas that were really unimaginable and really push the boundary. Because that's really where the innovation comes, and that's where you get transformative science. Whereas, you know, if something's too safe, you're never really going to get to that next level.



Philip Marsden: The days of where a researcher, a man or a woman, would sit in their lab and try and figure out problems uniquely by themselves, is an approach that didn't get us the maximum impact. We have to engage patients, lay individuals, educating the future researchers of tomorrow. And what Medicine by Design does is bring together a large cohort of principal investigators and get them focused together as a team to make a difference.

Freda Miller: We live in a time when something as complex as the brain, you could actually imagine deciphering it. And you know what, ten or twenty years ago, I mean that was just like a pipe dream right, it was imagination. The reason that has happened is because of the meshing of these different areas. The meshing of people who work on humans, the meshing of people who do basic research, together with the computational people and the engineers.

Michael May: Medicine by Design represents the leading edge of cell and gene therapy, because it brings together cell therapy with synthetic biology, or the ability to manipulate cells, and then artificial intelligence and computational biology—all the leading edge stuff. And this means that we will be able to design cells, and thus tissue and organs in the future in ways that we can only imagine and that will change healthcare.