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Medical Treatments Made Just for You

An interview on current issues with:
Professor Brendan J. Frey | Computer Engineer, University of Toronto, CIFAR
Professor Charles M. Boone | Molecular Biologist, University of Toronto, CIFAR
Professor Frederick P. Roth | Molecular Biologist, University of Toronto, CIFAR

Why is genomics important?

Brendan J. Frey: Genomic medicine is a big deal. If you think of your loved ones, or yourself, your family members, over 60% of them are going to have a genetic disorder in their lifetime. So understanding the genome, figuring out the relationship between your genetics and disease will play a crucial role in bringing these costs down and also producing more effective medicine.

Charles M. Boone: We all look different, we behave differently, we respond to drugs differently, and therefore there is no perfect treatment for an individual in most cases. And so understanding who you are, how you're made up, and then tailoring treatments to you specifically is critical really, and should open a whole new door for medicine.

What can we now achieve with genomics?

We're at the point now where we actually understand a lot about how things are working and things are moving exponentially.

Frederick P. Roth: The cool story that's just come out in the last few months, there's a gene called PCSK9, okay so that's an alphabet soup, it's this gene that was originally found that there were changes in this gene that made you more susceptible to coronary artery disease, and then they learned that actually there are changes that protect you from coronary artery disease. So that went from a primary, fundamental discovery about this gene and it turns out just in the last few months, Amgen had a clinical trial where they reduced people's LDL, those are bad cholesterol, by extraordinary levels, even people who didn't respond to statins.

And so this is about a 14 year story from fundamental discovery that the gene is related to the disease to something in the clinic that's reducing mortality from a real and common human condition.

What is the role of CIFAR in your research?

Brendan J. Frey: CIFAR produces very good networking opportunities. So I'm part of the genetic networks program and also part of the neural computation program. And these programs have been excellent for bringing world leading experts together to create new, interdisciplinary, programs of research.

Frederick P. Roth: We all have learned each other's languages and we all get together and we critique each other's work. That's good to get the hard questions and the feedback from people who think about the world in different ways.

Charles M. Boone: If you can put a bunch of people together in a room for a couple of days and give them perfect freedom to think about, you know, wild new ideas, brave new ideas, then that's a good thing and that's what CIFAR does basically.