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Genes May Hold the Key to Overcoming Addiction

An interview with Professor Rachel Tyndale
Addiction Biologist, University of Toronto

What research are you doing in addiction?

We look at the extremes of drug response - whether people have a big response to a drug or a little response to a drug, or they have an adverse reaction to the drug. In the example of smoking, we see variation in how people respond to their first cigarette and how they are inclined to have their second cigarette, and then, how quickly they move from that being an optional behavior to being a dependent behavior where they really need that next cigarette. We are interested in what aspects of their genetics contribute to risks for that trajectory, that change. And then 20 years later, because that is usually when we see them in treatment, some of the same kinds of genes can influence how they respond to nicotine as a therapeutic; a nicotine replacement therapy. But we think that at various stages of drug dependence, genes can have more than one kind of influence on risk or then on treatment.

How can we curb smoking addition?

Lung cancer is probably 95% due to smoking, so we remove that if we remove smoking. And I think in the area of addictions, it is a particularly exciting period of time because again the disease is based on a drug, so our vast increase in understanding of how drugs and genes interact is going to help us immeasurably in understanding how drug dependence proceeds and how we may find key points in time where we can intercede more efficiently. We have now really moved from theoretically understanding how genes are having these influences on behaviours or on treatment to really implementing them in the clinic and that is a dream for someone who has worked in the area for a long time.