What Do Your Genes Say About Addiction?

Marissa Ehringer
Associate Professor, Integrative Physiology

CURRENT RESEARCH

Analyzing alcohol and tobacco addiction from a genetic perspective

Genetic research has made monumental strides since its humble beginnings just over 150 years ago. Today, researchers have the technical ability to examine the human genome and evaluate DNA. Dr. Marissa Ehringer, Associate Professor of Integrative Physiology at the University of Colorado, Boulder is studying the genetics of addiction, primarily tobacco and alcohol disorders. Dr. Ehringer's goal is to understand why people develop addictions, tolerance, and how those suffering from addiction can be treated more effectively.

Dr. Ehringer runs genetic studies designed to identify many factors affecting addiction. She uses genotyping and DNA sequencing to map variation in DNA. This information is used to identify specific genetic factors that influence certain addictive behaviors. While focusing on human genetics, research is also conducted using molecular lab studies and mouse models to understand the idea of addiction as a whole.

- The genes studied by Dr. Ehringer code for nicotonic acetylcholine receptors. Found throughout the body but concentrated heavily in the brain, these are proteins in the nervous system that signal for a muscle to contract upon being chemically stimulated. When functioning normally, acetylcholine, a neurotransmitter, binds to these sites. Acting as a "hijacker" of the same site, nicotine will also bind at these sites, ultimately leading to a change in their function. This leads to an increased tolerance to nicotine, raising the required intake needed to achieve the same effects. Dr. Ehringer and others have discovered that a person with this genetic risk variant smoke an average of one additional cigarette a day. When compiled over a long term this creates a...

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AFFILIATION

University of Colorado, Boulder

EDUCATION

- Ph.D. in Human Medical Genetics 2001 , University of Colorado Health Sciences Center
- B.S. in Biology, with Honors 1995 , Indiana University
- B.A. in French 1995 , Indiana University

AWARDS

- Postdoctoral Traning Fellowship

RESEARCH AREAS

Health & Wellness, Alcoholism, Addiction, Substance Abuse Research

FUNDING REQUEST

Your contributions will be used to support the personnel necessary for conducting these experiments. Laboratory costs, specifically acquiring DNA sequencing data, are very high, so funding will be directed toward supporting this and other experiments.