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# HMX Pro Genetics - Essentials

The way we diagnose and treat diseases is changing, with new technologies enabled by a deeper understanding of the human genome and its relationship to health and disease. This shift has broad implications for those who work in health care and related areas. This foundational course prepares participants for more in-depth investigation of how genetics is changing health care. Participants will:

- Get an introduction to key concepts in genetics
- Understand how variation in DNA sequence occurs, is inherited, and can lead to disease
- See how advances in sequencing and genetic testing are increasing our understanding of genetic risk

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## Topics Covered

### Overview of Genetics and Genomics

- Introduction to the Genomic Revolution
- The Human Genome

### The Central Dogma and Genetic Variation

- Representations of DNA
- Central Dogma Overview
- Transcription
- Translation
- The Central Dogma and Genetic Variation

### Mendelian Inheritance of Disease

- Meiosis and Inheritance
- Autosomal Inheritance
- Sex-linked Inheritance
- Mitochondrial Inheritance
- Pedigree Analysis
- Penetrance and Expressivity

### Genetic Variation and Architecture

- Genetic Variation and Architecture
- Whole Chromosome Aneuploidy
- Structural Variation
- Unstable Repeats
- Common Complex Traits
- Genetic Testing

### Wrap-up

- The Promise of Genetics in Human Health and Disease

The HMX Pro Series offers a new online learning experience designed to get busy professionals up to speed on the latest advances in medicine. Concepts are taught using whiteboard-style videos and animations and reinforced by interactive elements, true-to-life scenarios, and real patient cases to enhance learning.