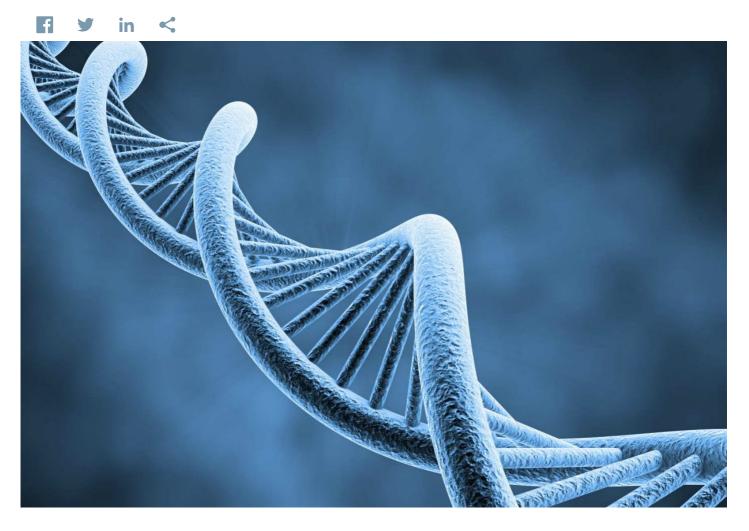# Quantitative Gene Expression (QGE)

Boston University

With the success of the Human Genome Project, bioscientists have made great strides in identifying genes that may predispose the body to developing specific diseases. However, analyzing small strands of DNA is a time-consuming and laborious process. Now researchers at Boston University have developed a new DNA-scanning technique that enhances the diagnosis of genetic diseases and disorders. Quantitative Gene Expression (QGE) was developed at Boston University's Center for Advanced Biotechnology by professor Charles Cantor, Ph.D., of the department of biomedical engineering, and Chunming Ding, Ph.D. Research was funded through a sponsored agreement with Sequenom, a biomedical company headquartered in San Diego, Calif.

> *Disclosed in 2002, QGE technology significantly improves an existing process called haplotyping, which scans chromosomes for clusters of mutated genes that may result in the onset of certain*

This process is, however, labor-intensive and can only analyze short strands of DNA. Results can be inconsistent and difficult to interpret without knowing the individual's genetic profile.

QGE technology combines several existing diagnostic processes (reverse transcription, competitive polymerase chain reaction (PCR), base extension and mass spectrometry) to create a high-throughput, automated gene expression analysis platform. Several hundred genes from up to 500 different samples can be accurately quantified in a single day — a much faster throughput compared to existing methods. QGE also requires a much smaller sample size and can test longer strands of DNA, eliminating the need for a genetic profile of the individual. These improvements allow medical researchers to more quickly and accurately identify gene patterns that result in disease, as well as permit earlier intervention with more effective treatments.

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