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Pharmacogenomics and precision medicine: From laboratory to clinical practice

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Abstract

The goal of pharmacogenomics is to aid in individualized treatment (precision medicine). Pharmacogenomics now plays an increasingly important role in the process of drug development. Pharmacogenomics-informed treatment has the potential to increase the efficacy of commonly used therapeutics in hospital settings, while greatly reducing adverse drug reactions. Over the past few years, genetic polymorphisms in proteins involved in metabolism or transport have now been identified as clinically relevant, explaining differences in efficacy and impacting clinical care. Single nucleotide polymorphisms (SNPs) are the most commonly observed variants, and are responsible for greater than ninety percent of all genetic variation in the human genome. The Clinical Center at the National Institutes of Health has recently implemented pharmacogenetics testing in patients receiving certain medications. It is therefore important to review and understand the molecular and physiological basis for gene-drug interactions, and appreciate the impact on drug therapy and precision medicine.

Biography

Price received his B.S. degree from the University of Arkansas, his Ph.D. from Penn State University, and was a Howard Hughes Medical Institute post-doctoral fellow at Emory University. After 6 years as the Director of Molecular Biology at the Carolinas Medical Center, Dr. Price joined the National Cancer Institute in 2000 continuing his research efforts on prostate cancer in the Medical Oncology Branch. Dr. Price has over 80 publications and has been presented an NIH Award of Merit.