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Pharmacogenetics and its Emerging Role in the Advancement of Personalised Medicine

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Abstract: *The medical community is paying more and more attention to the use of pharmacogenetics in personalized medicine. Pharmacogenetics investigates how a person's genetic makeup affects how they react to medicine, allowing for the development of individualized treatment plans. The goal of this review article is to provide a thorough examination of the present state of pharmacogenetics in personalized medicine as well as its potential future developments. The study examines how pharmacogenetics is now used in clinical practice in response to medicine, offering vital details for individualized treatment regimens. This article gives a summary of the uses and constraints of this fascinating area while examining the present viewpoints and potential future directions of pharmacogenetics. In addition to the possible influence of different environmental circumstances on an individual's reaction, the analysis highlights the need of taking into account inherited genetic characteristics when prescribing drugs. The article also discusses the current research initiatives aimed at optimizing the use of genetics in personalized medicine, such as the creation of novel testing techniques and the use of artificial intelligence to the analysis of intricate genetic data. In the end, this timely study offers important new information on the state of pharmacogenetics now and how it may affect personalized treatment in the future.*

Keywords: Pharmacogenetics, Personalized Medicine, Gene-Drug Interaction, Genetic Variability, Precision Therapy, Future Directions