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Pharmacogenomics signature: A novel strategy on the individual differences in drug response

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Abstract

Patients exhibit a wide heterogeneity in their responses to a drug treatment due to variations in the molecular determinants underlying this heterogeneity. Pharmacogenomics approaches can be used to integrate information on drug responsiveness with alterations in molecular entities, often on a genome-wide scale. However, most of the studies involving pharmacogenomics of specific therapeutics are in their early stages and thus are not ready for clinical utilization. Genotyping studies tackle around a candidate gene approach using genes known to be important in the pharmacokinetics and pharmacodynamics of the administered drugs. However, this approach could miss potentially important genes that influence drug sensitivity through unknown mechanisms. The way to get around this limiting approach is sought after. Here, we introduce and propose a novel concept of pharmacogenomics signature (PGx-S) for elucidating holistically the effects of genetic polymorphisms upon individual variations in drug responses in an attempt to boost the pharmacovigilant capacities of drug responses.