

Title: From Drug Discovery to Drug Approval: A Comprehensive Review of the Pharmacogenomics Status Quo with a Special Focus on Egypt

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Statement of the Problem: Pharmacogenomics (PGx) is the hope for the full optimization of drug therapy while minimizing the accompanying adverse drug events that cost billions of dollars annually. It is the bridge to what is well-known today as “personalized medicine”. Addressing the drug’s pharmacokinetics and pharmacodynamics is one of the features of this science, owing to patient characteristics that vary on so many occasions. Mainly in the liver parenchymal cells, intricate interactions between the drug molecules and enzymes family of so-called “Cytochrome P450” occur which hugely affects how the body will react to the drug in terms of metabolism, efficacy, and safety. Regulations and laws shaping the clinical PGx practice can be misconceived; however, these pre-/post approval processes ensure the product’s safety and efficacy. National and international regulatory agencies seek guidance on maintaining conduct in PGx practice.
Methodology and Theoretical Orientation: This comprehensive review of patient-centric era, social and legal considerations manifest in a way that makes them unavoidable, involving patients and other stakeholders in a deliberate journey toward utmost patient well-being.
Findings: We contemporarily addressed the scientific leaps in PGx, along with various challenges that face the proper implementation of personalized medicine in Egypt. These informative insights were drawn to serve what the Egyptian population, in particular, would benefit from in terms of knowledge and know-how while maintaining the latest global trends.
Conclsion: This review is the first to discuss various modalities and challenges faced in Egypt regarding PGx, which we believe could be used as a pilot piece of literature for future studies locally, regionally, and internationally.

Biography:

Abobaker Salem Musaibah, PhD student at the age of 33 years from The American University, Cairo. He is student of Institute of Global Health and Human Ecology, School of Sciences and Engineering. He has published 2 papers in reputed journals. His dissertation was “developing and inventing feasible methods for drug delivery in accurate and safe way to minimize the toxicity and drug complications in the future od pharmacogenomic”.

About Research Topic:

The Human Genome Project was an eye-opening trek into the massive potential of genomic research. Pharmacogenomics (PGx) is a comprehensive approach that concerns the interaction between the human genome and exogenous substances. One of its main pillars is the accuracy of therapy and the safety of the drug on individuals. PGx studies the variations in the whole human genome and how they might affect drug response. However, pharmacogenetics is the daughter of PGx and can be defined as ‘the study of changes in a single gene and how it can affect drug activity’ [1]. The birth of PGx was upon the realization that genetic variations are the main reason for inconsistencies in drug responses. Because of how crucial it is to anticipate the body’s response to a certain drug, taking PGx one step backward to drug design is invaluable. Variation in responsiveness pushes us to harness both individual and population-level genomics.

About Institution:

Institute of Global Health and Human Ecology provides interdisciplinary and transdisciplinary educational graduate programs in public health and sustainable development, inclusive of diagnostics, bioethics, environmental health, communications and management.
The institute houses state-of-the-art Biomarkers, Environmental Assessment of Risks and Toxics on Health (EARTH) and Central Neuromics and Sequencing (CNS) Laboratories, as well as the community-engaging Center for Applied Research on the Environment and Sustainability (CARES).