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(54) Title: INDIVIDUAL AND COHORT PHARMACOLOGICAL PHENOTYPE PREDICTION PLATFORM

(57) Abstract: For patients who exhibit or may exhibit primary or comorbid disease, pharmacological phenotypes may be predicted through the collection of panomic, physiomic, environmental, sociomic, demographic, and outcome phenotype data over a period of time. A machine learning engine may generate a statistical model based on training data from training patients to predict pharmacological phenotypes, including drug response and dosing, drug adverse events, disease and comorbid disease risk, drug-gene, drug-drug, and polypharmacy interactions. Then the model may be applied to data for new patients to predict their pharmacological phenotypes, and enable decision making in clinical and research contexts, including drug selection and dosage, changes in drug regimens, polypharmacy optimization, monitoring, etc., to benefit from additional predictive power, resulting in adverse event and substance abuse avoidance, improved drug response, better patient outcomes, lower treatment costs, public health benefits, and increases in the effectiveness of research in pharmacology and other biomedical fields.



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