

TABLE: DRUG METABOLISM AND CYP450 GENES TYPED BY THE HILOmet SYSTEM

Psychiatric, neurological, pain medications are shown below in blue; Cardio-metabolic, in red.

CYP2D6 (CPT Code 81226, HILOmet 2D6)

Antidepressants	<i>Amitriptyline (Elavil®)</i> <i>Mirtazapine (Remeron®)</i> <i>Fluvoxamine (Luvox®)</i> <i>Duloxetine (Cymbalta®)</i> <i>Venlafaxine (Effexor® XR)</i> <i>Paroxetine (Paxil®)</i>
Antipsychotics	<i>Haloperidol (Haldol®)</i> <i>Aripiprazole (Abilify®)</i> <i>Risperidone (Risperdal®)</i> <i>Atomoxetine (Strattera®)</i>
ADHD	<i>Codeine</i>
Pain	
Beta Blockers	<i>Propranolol (Inderal®)</i> <i>Metoprolol (Lopressor®)</i>
Cancer	<i>Tamoxifen (Nolvadex®)</i>

CYP2C9 (CPT Code 81227, HILOmet 2C9)

Antidepressants	<i>Fluoxetine (Prozac®)</i> <i>Sertraline (Zoloft®)</i>
NSAIDs	<i>Ibuprofen (Advil®)</i> <i>Naproxen (Naprosyn®)</i>
Angiotension II Blockers	<i>Losartan (Cozaar®)</i> <i>Irbesartan (Avapro®)</i>
Glitazones	<i>Rosiglitazone (Avandia®)</i>
Anticoagulant	<i>Warfarin (Coumadin®)</i> <i>Pioglitazone (Actos®)</i>
Sulfonylureas	<i>Glipizide (Glucocontrol®)</i> <i>Glimepiride (Amaryl®)</i>

CYP2C19 (CPT Code 81225, HILOmet 2C19)

Antidepressants	<i>Escitalopram (Lexapro®)</i> <i>Citalopram (Celexa®)</i>
Anti-epileptics	<i>Phenytoin (Dilantin®)</i> <i>Diazepam (Valium®)</i>
Antiplatelet	<i>Clopidogrel (Plavix®)</i>
Proton Pump Inhibitors	<i>Omeprazole (Prilosec®)</i> <i>Lansoprazol (Prevacid®)</i> <i>Esomeprazole (Nexium®)</i>

For *Warfarin (Coumadin®)*, order also the *VKORC1 Test*, CPT Code 81355.



MEDtuning: Rx BEST DRUG

Genomas has developed MEDtuning, an advanced DNA-based assessment system to aid specialists and primary care clinicians with prescription drug selection and dosing.

HILOmet determines a person's innate drug metabolism capacity. HILOmet provides prescription guidance for 250 medications (see sample Table): 130 neuro-psychiatric drugs (anti-depressants, anti-psychotics, anti-convulsants, anxiolytics, stimulants, pain medications, hypnotics) and 120 cardio-metabolic drugs (for hypertension, diabetes, angina, thrombosis, gastric acid reflux, sexual dysfunction, asthma).

Based on past, current and proposed medications, MEDtuning alerts the clinician to medications that should not be prescribed, or dosed differently. MEDtuning then provides alternative medications in the same class best suited to the patient.

ORDERING HILOmet

- Order forms are available for download from the website of the Laboratory of Personalized Health (LPH) at www.genomas.com/LPH.

Further Questions?
Call the LPH at 860-545-4574 or
e-mail to LPH@genomas.net

LABORATORY OF PERSONALIZED HEALTH



HILOmet Phyziotype System for Diagnosis and Prevention of Adverse Drug Reactions



LPH is a Division of Genomas, Inc.
67 Jefferson Street · Hartford, CT 06106
TEL (860) 545-4574 · FAX (860) 545-4575
EMAIL LPH@genomas.net
WEBSITE www.genomas.com/LPH

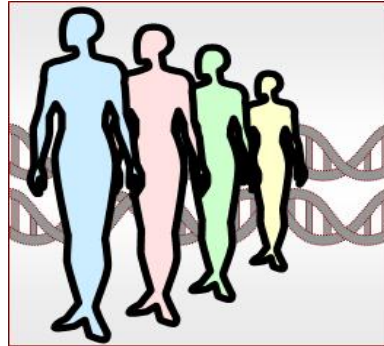
THE TOLL OF ADRs

It is estimated that adverse drug reactions (ADRs) from prescription drugs result in more than 100,000 deaths and 8 million hospitalizations per year. ADRs account for 17% of all hospital admissions. For the physician, ADRs often represent a diagnostic conundrum and result in protracted management. For the patient, ADRs represent an added burden on diseases they already have, and expect to be treated, not worsened, by medications, resulting in frustration and poor compliance

WHY DNA TYPING?

The large majority of ADRs are based on the patient's own inherited metabolic traits. DNA Typing identifies these inherited factors from the patient's DNA to predict individualized ADR risks. Clinical factors such as age, impaired renal function, and drug allergies are critical to the avoidance of ADRs, but do not account for idiosyncratic reactions, which are the problem. What is revolutionary for clinical practice is that by means of DNA typing, the innate metabolic capacity of the patient relevant to drug treatment can be predicted and diagnosed simply from a blood sample or cheek swab. With the HILOmet (*HIgh-to-LOW-METabolism*) PhyzioType System, patients with greatly compromised or enhanced capacity to metabolize drugs can be identified by DNA typing to avoid adverse drug reactions.

PEOPLE ARE NOT AVERAGE



The HILOmet PhyzioType System allows the patient's innate metabolism function to be characterized for each prescribed drug. About 25 percent of us are below average metabolizers and may face risks when a drug builds up and causes potentially serious or even life threatening complications. And about 25 percent of people have an above-average ability to metabolize drugs. This capacity could lead to lack of efficacy, as the medication is quickly broken down.

DNA-GUIDED MEDICINE

Similar to Global Positioning Systems (GPS) used to help us reach our intended destinations, the HILOmet tests enable *Genetic Prescription System* to be implemented from correlations of gene variation and drug response outcomes. This drug GPS leads clinicians and patients to their desired treatment goal, resulting in effective and individualized healthcare via DNA-Guided Medicine.

TECHNICAL INFORMATION

The HILOmet system performs high sensitivity DNA typing to diagnose and prevent adverse drug reactions. The HILOmet PhyzioType System determines an individual's ability to metabolize drugs using the cytochrome P450 (CYP450) family of enzymes. The HILOmet PhyzioType System provides, through 3 individually assayed tests, high-resolution combinatorial genotyping results of a total of 37 variants in genes *CYP2D6*, *CYP2C9* and *CYP2C19* (20, 7, 10 alleles, respectively). Variability in the CYP450 system, accumulated since prehistoric times, results in strikingly different drug levels, drug effectiveness and drug safety among individuals now treated with drugs where the recommended dose is designed to treat the "average" person. These CYP450 variances can now be measured, and drug selection and dosing tailored to provide safe and effective therapy for individual patients.

DNA Typing is performed at the Laboratory of Personalized Health (LPH), a division of Genomas Inc. (Hartford, CT). LPH is a high-complexity clinical DNA testing center licensed by the Departments of Public Health of Connecticut (# CL-0644), New York (PFI 8648), California (# COS 00800405), Florida (# 800026696), Rhode Island (# LCO-00591), and certified by the Centers for Medicare and Medicaid Services (ID # 07D1036625) under CLIA (Clinical Laboratory Improvement Amendments).