BROOKSIDE GENETICS
PERSONALIZED MEDICINE GENOMIC TESTING

PATIENT INFORMATION		SPECIMEN DETAILS		PROVIDER INFORMATION
NAME:	[redacted]	**SPECIMEN TYPE:**	Buccal Swab	[redacted]
ACC #:	221026100015	**COLLECTION DATE:**	10/24/2022	
DOB:	6/17/1978	**RECEIVED DATE:**	10/26/2022	
SEX:	Male	**REPORT DATE:**	1/4/2023	

Comprehensive Pharmacogenomic Report

Current Patient Medications

Acetaminophen, Albuterol Sulate, Amlodipine, ATORVASTATIN CALCIUM, Celecoxib, Diphenhydramine, Divalproex Sodium, Gabapentin, Medroxyprogesterone Acetate, Melatonin, Olanzapine, Omeprazole, Polyethylene Glycol, Propranolol, Quetiapine, Sertraline, Topiramate, Metformin

⚠ Olanzapine
Zyprexa®

Increased Risk of Weight Gain with Olanzapine (HTR2C: Homozygous for the C allele (rs3813929)) — **INFORMATIVE**

Genetic variations in the Serotonin 2C Receptor (HTR2C) gene in known to be partially involved in the adverse effects associated with atypical antipsychotic medications. The patient is homozygous for C allele of HTR2C variant rs3813929. Patients with this genotype may have an increased risk of weight gain when treated with olanzapine.

- Godlewska BR, Olajossy-Hilkesberger L, Ciwoniuk M, Olajossy M, Marmurowska-Michałowska H, Limon J, Landowski J. Olanzapine-induced weight gain is associated with the -759C/T and -697G/C polymorphisms of the HTR2C gene. Pharmacogenomics J 2009 Aug;9(4):234-41.
- Ellingrod VL, Perry PJ, Ringold JC, Lund BC, Bever-Stille K, Fleming F, Holman TL, Miller D. Weight gain associated with the -759C/T polymorphism of the 5HT2C receptor and olanzapine. Am J Med Genet B Neuropsychiatr Genet 2005 Apr;134B(1):76-8.
- Daray FM, Rodante D, Carosella LG, Silva ME, Martínez M, Fernández Busch MV, Faccone DF, Rothlin RP, Maffía PC. -759C>T Polymorphism of the HTR2C Gene is Associated with Second Generation Antipsychotic-Induced Weight Gain in Female Patients with Schizophrenia. Pharmacopsychiatry 2017 Jan;50(1):14-18.

⚠ Omeprazole
Prilosec®

Slightly Decreased to Normal Exposure to Omeprazole (CYP2C19: Rapid Metabolizer) — **ACTIONABLE**

The patient's genotype may be associated with a slightly decreased omeprazole exposure following standard dosing. Be alert for insufficient response, consider prescribing omeprazole at standard label-recommended dosage and administration. May consider increasing the recommended dose for certain indications by 50-100% to optimize therapeutic efficacy.

- Lima JJ, Thomas CD, Barbarino J, Desta Z, Van Driest SL, El Rouby N, Johnson JA, Cavallari LH, Shakhnovich V, Thacker DL, Scott SA, Schwab M, Uppugunduri CRS, Formea CM, Franciosi JP, Sangkuhl K, Gaedigk A, Klein TE, Gammal RS, Furuta T. Clinical Pharmacogenetics Implementation Consortium (CPIC) Guideline for CYP2C19 and Proton Pump Inhibitor Dosing. Clin Pharmacol Ther. 2020 Aug 8.

⚠ Sertraline
Zoloft®

Possible Reduced Response to Sertraline (CYP2C19: Rapid Metabolizer) — **INFORMATIVE**

Sertraline can be prescribed at standard label-recommended dosage and administration. If patient does not respond to recommended maintenance dosing, consider an alternative medication.

- Hicks JK, Bishop JR, Sangkuhl K, Müller DJ, Ji Y, Leckband SG, Leeder JS, Graham RL, Chiulli DL, LLerena A, Skaar TC, Scott SA, Stingl JC, Klein TE, Caudle KE, Gaedigk A, . Clinical Pharmacogenetics Implementation Consortium (CPIC) Guideline for CYP2D6 and CYP2C19 Genotypes and Dosing of Selective Serotonin Reuptake Inhibitors. Clin Pharmacol Ther 2015 Aug;98(2):127-34.

✓ Atorvastatin
Lipitor®

Normal Atorvastatin Exposure (SLCO1B1: Normal Function) — **ACTIONABLE**

Atorvastatin can be prescribed at standard label-recommended dosage and administration.

- Cooper-DeHoff RM, Niemi M, Ramsey LB, Luzum JA, Tarkiainen EK, Straka RJ, Gong L, Tuteja S, Wilke RA, Wadelius M, Larson EA, Roden DM, Klein TE, Yee SW, Krauss RM, Turner RM, Palaniappan L, Gaedigk A, Giacomini KM, Caudle KE, Voora D. The Clinical Pharmacogenetics Implementation Consortium Guideline for SLCO1B1, ABCG2, and CYP2C9 genotypes and Statin-Associated Musculoskeletal Symptoms. Clin Pharmacol Ther 2022 May;111(5):1007-1021.
- Lipitor [package insert]. New York, NY: Pfizer Inc.; 2020.

✓ Atorvastatin
Lipitor®

Normal Response to Atorvastatin (CYP3A4: Normal Metabolizer) — **INFORMATIVE**

The genotype result indicates that the patient does not carry the CYP3A4*22 allele (this allele is associated with a decreased CYP3A4 enzyme activity). The patient is expected to achieve an optimal lipid control goal with standard atorvastatin dose requirements.

- Wang D, Guo Y, Wrighton SA, Cooke GE, Sadee W. Intronic polymorphism in CYP3A4 affects hepatic expression and response to statin drugs. Pharmacogenomics J 2011 Aug;11(4):274-86.

✓ Celecoxib
Celebrex®

Normal Celecoxib Exposure (CYP2C9: Normal Metabolizer) — **ACTIONABLE**

Celecoxib therapy can be initiated at standard label-recommended dosage and administration.

Consider initiating treatment at the lowest end of the dosing range in geriatric patients. A dosage adjustment may be warranted when celecoxib is administered with CYP2C9 inhibitors or inducers.

Osteoarthritis, Rheumatoid Arthritis, Ankylosing Spondylitis, Acute Pain, Primary Dysmenorrhea: Consider using the lowest effective dosage for the shortest duration consistent with the patient treatment goals.

Acute Migraine: Consider using for the fewest number of days per month, as needed.

Osteoarthritis and Hypertension (co-formulation with amlodipine): Consider using the lowest effective dosage for the shortest duration consistent with the patient treatment goals.

- Theken KN, Lee CR, Gong L, Caudle KE, Formea CM, Gaedigk A, Klein TE, Agúndez JAG, Grosser T. Clinical Pharmacogenetics Implementation Consortium Guideline (CPIC) for CYP2C9 and Nonsteroidal Anti-Inflammatory Drugs. Clin Pharmacol Ther 2020 Mar;():.
- Celebrex [package insert]. New York City, NY: Pfizer; 2019.
- Consensi [package insert]. Hot Springs, AR: Burke Therapeutics, LLC.; 2020.
- Elyxyb [package insert]. Bridgewater, NJ: Promius Pharma, LLC.; 2020.

✓ Gabapentin
Neurontin®

Normal Response to Gabapentin — **INFORMATIVE**

Pharmacogenetic guidance: no genetically guided drug selection or dosing recommendations are available.
Polypharmacy guidance: Gabapentin is eliminated primarily through renal excretion and is not metabolized by CYPs. Genetic variations in these metabolizing enzymes are not expected to affect its efficacy or toxicity profiles. Gabapentin can be prescribed at standard label-recommended dosage and administration.

- Neurontin [package insert]. New York, NY: Pfizer Inc.; 2015.

✓ Propranolol
Inderal®

Normal Sensitivity to Propranolol (CYP2D6: Normal or Ultra-Rapid Metabolizer) — **INFORMATIVE**

Based on the genotype result, this patient MAY be a CYP2D6 intermediate or normal, although the result is not definitive. The following recommendations apply to both CYP2D6 metabolizer statuses:

Propranolol can be prescribed at standard label-recommended dosage and administration. Careful titration is recommended with monitoring until a favorable response is achieved.

- Sowinski KM, Burlew BS. Impact of CYP2D6 poor metabolizer phenotype on propranolol pharmacokinetics and response. Pharmacotherapy ;17(6):1305-10.

✓ Topiramate
Topamax®

Normal Response to Topiramate — **INFORMATIVE**

Pharmacogenetic guidance: no genetically guided drug selection or dosing recommendations are available.
Polypharmacy guidance: About 50% of absorbed topiramate dose appears unchanged in urine, and an additional 50% is present as metabolites and conjugates. Topiramate metabolism by cytochrome P450 enzymes is minor for its elimination when the drug is given as a monotherapy. However, this pathway is enhanced by concomitant use of enzyme-inducing antiepileptic drugs, and may result in reduced topiramate plasma concentrations. Thus, this drug should be titrated slowly, and dose adjustment must be considered in presence of inducers. Concomitant administration of valproic acid and topiramate has been associated with hyperammonemia with and without encephalopathy.

- Topamax [package insert]. Titusville, NJ: Janssen Pharmaceuticals, Inc.; 2014.

Medications outside the scope of the report: Recognized drugs: Acetaminophen, Amlodipine, Diphenhydramine, Divalproex Sodium, Medroxyprogesterone, Melatonin, polyethylene glycol, Quetiapine, Metformin Unrecognized drugs: Albuterol Sulate

⊗ A medication has potentially reduced efficacy, increased toxicity or the patient has an increased risk for the indicated condition.	**ACTIONABLE**	Recommendations based upon publications by international pharmacogenetic expert groups, consortia or regulatory bodies (CPIC, DPWG, FDA, EMA). Recommendations are suitable for implementation in a clinical setting. Guidelines may change as knowledge arises.
⚠ Guidelines exist for adjusting dosage, increased vigilance or the patient has a moderate risk for the indicated condition.		
✓ The medication can be prescribed according to standard regimens or the patient's risk for the indicated condition is not increased.	**INFORMATIVE**	There are insufficient or contradictory findings documenting the impact of a given genetic polymorphism or drug interaction. Recommendations are informative and implementation in a clinical setting is optional.

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Risk Management

Hyperuricemia and Gout

Normal Risk of Gout

The patient carries two copies of ABCG2 rs2231142 C allele.
The ABCG2 rs2231142 C allele is associated with normal ABCG2 activity and subsequent normal renal elimination of uric acid. The patient's genotype is associated with a normal risk of hyperuricemia and gout.
No action is needed for this patient unless other genetic or non-genetic risk factors are present.

Type III Hyperlipoproteinemia

Not Associated with Type III Hyperlipoproteinemia

The patient is positive for the APOE c.388 T>C (Cys130Arg) mutation and negative for the APOE c.526 C>T (Arg176Cys) mutation. The patient's genotype is ε4/ε4 (frequency: 0.7-3%).
The APOE E4 confers a limitation of HDL binding to its receptor, and is associated with increased plasma cholesterol and elevations of low-density lipoproteins (LDL). The APOE ε4/ε4 genotype is associated with increased serum cholesterol levels and increased risk for developing atherosclerosis and cardiovascular disease.
Consider dietary adjustments (very low fat diet) and lipid-lowering therapy based on lipid profiles and other risk factors.

Hyperhomocysteinemia - Depression

No Increased Risk of Hyperhomocysteinemia

The patient does not carry the MTHFR c.665C>T variant. MTHFR enzyme activity is normal.
Patients diagnosed with depression often have low folate levels and homocysteine is a highly sensitive marker of folate status. Functional folate deficiency is indicated by elevated homocysteine. With a normal MTHFR activity, this patient can process folate normally and is unlikely to have elevated plasma levels of homocysteine.
Patients diagnosed with depression: as lower folate levels are associated with poorer antidepressant response, and baseline levels of folate within the normal range predict antidepressant response, testing for homocysteine levels and serum folate levels may be informative for this patient before prescribing methylfolate as an antidepressant-augmenting agent.

Calcium Channels Function and Bipolar Disorder

Risk of Bipolar Disorder: Caucasians - Increased; Asians - Increased

The patient carries two copies of the rs1006737 A alleles and two copies of the rs1051375 G allele. Caucasians: Risk alleles of CACNA1C rs1006737 are present. Asians: Risk alleles of CACNA1C rs1051375 are present.
The patient carries a variant in the gene coding for the voltage-dependent calcium channel L-type, alpha 1C subunit (CACNA1C). This genotype is associated with an altered calcium gating, excessive neuronal depolarization and an altered mood regulation function. This genotype has been associated with higher rates of mood disorder recurrence and an increased risk of bipolar disorder in Caucasians. The patient carries two copies of the risk alleles for bipolar disorder in Asians population. Preliminary studies report that this genotype is associated with lower age of onset of bipolar disease in Asians. However, the exact functional significance of this variant remains unknown.
Bipolar disorder is a polygenic disorder and, as such, several genes are implicated in the etiology of the disease. Identification of one or more risk alleles in genes such as CACNA1C cannot replace standard clinical diagnostic tests, and this test should not be used as a diagnostic test for bipolar disorder.

Thrombophilia

Normal Risk of Thrombosis

The patient does not carry the F5 c.1601G>A variant (also known as Factor V Leiden) or the F2 c.*97G>A variant (also known as Factor II 20210G>A).
The patient's risk of thrombosis is not increased (average risk of clotting is about 1 in 1000 for anyone in a year). However, because this test cannot find all of the inherited reasons for abnormal clotting, other factors may affect this risk assessment.
Assess thrombotic risk based on other genetic and/or circumstantial risk factors such as smoking, obesity, malignancy, prolonged immobilization or surgery.

Estrogen-containing contraceptive and hormone replacement therapy: unless other genetic and/or circumstantial risk factors are present, consider standard prescribing and monitoring practices.

Hyperhomocysteinemia - Thrombosis

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No Increased Risk of Hyperhomocysteinemia

The patient does not carry the MTHFR c.665C>T variant or MTHFR c.1286A>C variant. MTHFR enzyme activity is normal.

Based on results for the MTHFR c.665C>T and c.1286A>C variants, the patient has normal MTHFR activity and is unlikely to have elevated plasma levels of homocysteine. Hyperhomocysteinemia is associated with a risk for venous thromboembolism (VTE). Unless other risk factors are present, the patient is not expected to have an increased risk for VTE.

MTHFR enzyme activity is normal.

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Potentially Impacted Medications

CATEGORY	DRUG CLASS	STANDARD PRECAUTIONS	USE WITH CAUTION	CONSIDER ALTERNATIVES
Anticancer Agents	**Antifolates**	Methotrexate (Trexall®)		
Cardiovascular	**Angiotensin II Receptor Antagonists**	Azilsartan (Edarbi®, Edarbyclor®) Candesartan (Atacand®) Eprosartan (Teveten®) Irbesartan (Avapro®) Losartan (Cozaar®, Hyzaar®) Olmesartan (Benicar®) Telmisartan (Micardis®) Valsartan (Diovan®, Entresto®)		
	Antianginal Agents	Ranolazine (Ranexa®)		
	Antiarrhythmics	Amiodarone (Nexterone®, Pacerone®) Disopyramide (Norpace®) Quinidine (Quinidine®) Sotalol (Betapace®, Sorine®, Sotylize®)	Mexiletine (Mexitil®) Propafenone (Rythmol®)	Flecainide (Tambocor®)
	Anticoagulants	Apixaban (Eliquis®) Betrixaban (Bevyxxa®) Dabigatran Etexilate (Pradaxa®) Edoxaban (Savaysa®) Fondaparinux (Arixtra®) Rivaroxaban (Xarelto®) Warfarin (Coumadin®)		
	Antiplatelets	Clopidogrel (Plavix®) Prasugrel (Effient®) Ticagrelor (Brilinta®) Vorapaxar (Zontivity®)		
	Beta Blockers	Atenolol (Tenormin®) Bisoprolol (Zebeta®) Carvedilol (Coreg®) Labetalol (Normodyne®, Trandate®) Nebivolol (Bystolic®) Propranolol (Inderal®) Timolol (Blocadren®)		Metoprolol (Lopressor®)
	Calcium Channel Blockers		Verapamil (Covera-HS®, Verelan®, Isoptin®)	
	Diuretics	Torsemide (Demadex®)		
	Statins	Atorvastatin (Lipitor®) Fluvastatin (Lescol®) Lovastatin (Mevacor®, Altoprev®, Advicor®) Pitavastatin (Livalo®) Pravastatin (Pravachol®) Rosuvastatin (Crestor®) Simvastatin (Zocor®)		

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Diabetes	Meglitinides	Nateglinide (Starlix®) Repaglinide (Prandin®, Prandimet®)		
	Sulfonylureas	Chlorpropamide (Diabinese®) Glimepiride (Amaryl®) Glipizide (Glucotrol®) Glyburide (Micronase®) Tolbutamide (Orinase®)		
Gastrointestinal	Antiemetics	Aprepitant (Emend-oral®) Dronabinol (Marinol®) Fosaprepitant (Emend-IV®) Metoclopramide (Reglan®) Rolapitant (Varubi®)	Dolasetron (Anzemet®) Fosnetupitant / Palonosetron (Akynzeo-IV®) Granisetron (Sancuso®, Sustol®) Netupitant / Palonosetron (Akynzeo-oral®) Palonosetron (Aloxi®)	Ondansetron (Zofran®, Zuplenz®)
	Proton Pump Inhibitors	Esomeprazole (Nexium®) Rabeprazole (Aciphex®)	Dexlansoprazole (Dexilant®, Kapidex®) Lansoprazole (Prevacid®) Omeprazole (Prilosec®) Pantoprazole (Protonix®)	
Gaucher Disease	Endocrine-Metabolic Agents	Imiglucerase (Cerezyme®) Miglustat (Zavesca®) Taliglucerase alfa (Elelyso®) Velaglucerase alfa (Vpriv®)		Eliglustat (Cerdelga®)
Gynecology	Endometriosis Pain Agents	Elagolix (Orilissa®)		
Hematology	Hemostatic Agents	Avatrombopag (Doptelet®) Eltrombopag (Promacta®) Lusutrombopag (Mulpleta®)		
Infections	Antifungals	Amphotericin B (AmBisome®, Abelcet®) Anidulafungin (Eraxis®) Caspofungin (Cancidas®) Fluconazole (Diflucan®) Flucytosine (Ancobon®) Isavuconazonium (Cresemba®) Itraconazole (Sporanox®) Micafungin (Mycamine®) Posaconazole (Noxafil®)		Voriconazole (Vfend®)
	Anti-HIV Agents	Dolutegravir (Tivicay®, Triumeq®) Doravirine (Pifeltro®) Efavirenz (Sustiva®) Etravirine (Edurant®) Raltegravir (Isentress®, Dutrebis®) Rilpivirine (Intelence®)		
	Antimalarials	Proguanil (Malarone®)		
	Interferons			Peginterferon alfa-2a (Pegasys®) Peginterferon alfa-2b (Pegintron®, Sylatron®)

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Multiple Sclerosis	**Disease-Modifying Agents**	Siponimod (Mayzent®)		
Pain	**Fibromyalgia Agents**	Milnacipran (Savella®)		
	Muscle Relaxants	Cyclobenzaprine (Flexeril®, Amrix®) Metaxalone (Skelaxin®) Methocarbamol (Robaxin®)	Carisoprodol (Soma®)	
	NSAIDs	Celecoxib (Celebrex®) Diclofenac (Voltaren®) Flurbiprofen (Ansaid®) Ibuprofen (Advil®, Motrin®) Indomethacin (Indocin®) Ketoprofen (Orudis®) Ketorolac (Toradol®) Meloxicam (Mobic®) Nabumetone (Relafen®) Naproxen (Aleve®) Piroxicam (Feldene®) Sulindac (Clinoril®)		
	Opioids	Alfentanil (Alfenta®) Buprenorphine (Butrans®, Buprenex®) Fentanyl (Actiq®) Hydrocodone (Vicodin®) Hydromorphone (Dilaudid®, Exalgo®) Levorphanol (Levo Dromoran®) Meperidine (Demerol®) Methadone (Dolophine®) Oliceridine (Olinvyk) Oxycodone (Percocet®, Oxycontin®) Oxymorphone (Opana®, Numorphan®) Sufentanil (Sufenta®) Tapentadol (Nucynta®)	Benzhydrocodone (Apadaz®) Dihydrocodeine (Synalgos-DC®) Morphine (MS Contin®)	Codeine (Codeine; Fioricet® with Codeine) Tramadol (Ultram®)
	Antiaddictives	Bupropion (Wellbutrin®, Zyban®, Aplenzin®, Contrave®) Lofexidine (Lucemyra®)	Naltrexone (Vivitrol®, Contrave®)	
	Anti-ADHD Agents	Amphetamine (Adderall®, Evekeo®) Clonidine (Kapvay®) Dexmethylphenidate (Focalin®) Dextroamphetamine (Dexedrine®) Guanfacine (Intuniv®) Lisdexamfetamine (Vyvanse®) Methylphenidate (Ritalin®, Aptensio XR®, Concerta®, Metadate ER®, Quillivant ER®)	Atomoxetine (Strattera®)	

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Psychotropic	**Anticonvulsants**	Brivaracetam (Briviact®) Cannabidiol (Epidiolex®) Carbamazepine (Tegretol®, Carbatrol®, Epitol®) Eslicarbazepine (Aptiom®) Ethosuximide (Zarontin®) Ezogabine (Potiga®) Felbamate (Felbatol®) Fosphenytoin (Cerebyx®) Gabapentin (Neurontin®) Lacosamide (Vimpat®) Lamotrigine (Lamictal®) Levetiracetam (Keppra®) Oxcarbazepine (Trileptal®, Oxtellar XR®) Perampanel (Fycompa®) Phenobarbital (Luminal®) Phenytoin (Dilantin®) Pregabalin (Lyrica®) Primidone (Mysoline®) Rufinamide (Banzel®) Tiagabine (Gabitril®) Topiramate (Topamax®) Valproic Acid (Depakene®) Vigabatrin (Sabril®) Zonisamide (Zonegran®)		
	Antidementia Agents	Galantamine (Razadyne®) Memantine (Namenda®)	Donepezil (Aricept®)	
	Antidepressants	Desvenlafaxine (Pristiq®) Duloxetine (Cymbalta®) Fluoxetine (Prozac®, Sarafem®) Levomilnacipran (Fetzima®) Mirtazapine (Remeron®) Nefazodone (Serzone®) Trazodone (Oleptro®) Vilazodone (Viibryd®) Vortioxetine (Trintellix®)	Amoxapine (Amoxapine®) Fluvoxamine (Luvox®) Maprotiline (Ludiomil®) Protriptyline (Vivactil®) Sertraline (Zoloft®)	Amitriptyline (Elavil®) Citalopram (Celexa®) Clomipramine (Anafranil®) Desipramine (Norpramin®) Doxepin (Silenor®) Escitalopram (Lexapro®) Imipramine (Tofranil®) Nortriptyline (Pamelor®) Paroxetine (Paxil®, Brisdelle®) Trimipramine (Surmontil®) Venlafaxine (Effexor®)

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	Antipsychotics	Aripiprazole (Abilify®, Aristada®) Asenapine (Saphris®) Brexpiprazole (Rexulti®) Cariprazine (Vraylar®) Clozapine (Clozaril®) Fluphenazine (Prolixin®) Iloperidone (Fanapt®) Loxapine (Loxitane®, Adasuve®) Lurasidone (Latuda®) Paliperidone (Invega®) Pimavanserin (Nuplazid®) Pimozide (Orap®) Thioridazine (Mellaril®) Thiothixene (Navane®) Trifluoperazine (Stelazine®) Ziprasidone (Geodon®)	Chlorpromazine (Thorazine®) Olanzapine (Zyprexa®) Perphenazine (Trilafon®)	Haloperidol (Haldol®) Risperidone (Risperdal®)
	Benzodiazepines	Alprazolam (Xanax®) Clobazam (Onfi®) Clonazepam (Klonopin®)	Diazepam (Valium®)	
	Other Neurological Agents	Deutetrabenazine (Austedo®) Dextromethorphan / Quinidine (Nuedexta®) Flibanserin (Addyi®) Valbenazine (Ingrezza®)	Tetrabenazine (Xenazine®)	
Pulmonology	Asthma/COPD	Arformoterol (Brovana®) Indacaterol (Arcapta Neohaler®, Utibron®)		
Rheumatology	Anti-Hyperuricemics and Anti-Gout Agents	Allopurinol (Zyloprim®, Lopurin®, Aloprim®) Colchicine (Mitigare®) Febuxostat (Uloric®)		
	Immunomodulators	Apremilast (Otezla®) Leflunomide (Arava®) Tofacitinib (Xeljanz®)		
	Other Antirheumatic Agents		Sulfasalazine (Azulfidine®, Sulfazine®)	
Sjogren's Syndrome	Cholinergic Agonists	Cevimeline (Evoxac®)		
Sleep Disorder Agents	Narcoleptic Agents	Pitolisant (Wakix®)		
Transplantation	Immunosuppressants		Tacrolimus (Prograf®)	
	5-Alpha Reductase Inhibitors for Benign Prostatic Hyperplasia	Dutasteride (Avodart®) Finasteride (Proscar®)		
	Alpha-Blockers for Benign Prostatic Hyperplasia	Alfuzosin (UroXatral®) Doxazosin (Cardura®) Silodosin (Rapaflo®) Tamsulosin (Flomax®) Terazosin (Hytrin®)		

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CATEGORY	DRUG CLASS	STANDARD PRECAUTIONS	USE WITH CAUTION	CONSIDER ALTERNATIVES
Urologicals	**Antispasmodics for Overactive Bladder**	Darifenacin (Enablex®) Fesoterodine (Toviaz®) Mirabegron (Myrbetriq®) Oxybutynin (Ditropan®) Solifenacin (Vesicare®) Tolterodine (Detrol®) Trospium (Sanctura®)		
	Phosphodiesterase Inhibitors for Erectile Dysfunction	Avanafil (Stendra®) Sildenafil (Viagra®) Tadalafil (Cialis®) Vardenafil (Levitra®)		

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Dosing Guidance

Amitriptyline *Elavil®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider an alternative medication or use a higher dose with therapeutic drug monitoring.	**ACTIONABLE**
Amitriptyline *Elavil®*	**CYP2C19 Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider an alternative medication or use a standard dose with therapeutic drug monitoring.	**INFORMATIVE**
Citalopram *Celexa®*	**CYP2C19 Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider using therapeutic drug monitoring and careful dose titration.	**ACTIONABLE**
Clomipramine *Anafranil®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure and cardiotoxicity. Consider an alternative medication or an increased dose and therapeutic drug monitoring.	**INFORMATIVE**
Clomipramine *Anafranil®*	**CYP2C19 Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider an alternative medication or use therapeutic drug monitoring to guide dose adjustment.	**INFORMATIVE**
Codeine *Codeine; Fioricet® with Codeine*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate a possible increased risk of adverse effects. Consider an alternative medication.	**ACTIONABLE**
Desipramine *Norpramin®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider an alternative medication or using increased doses and monitor carefully with gradual dose titration.	**INFORMATIVE**
Doxepin *Silenor®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider an alternative medication or increasing the dose by 100% with therapeutic drug monitoring.	**INFORMATIVE**
Doxepin *Silenor®*	**CYP2C19 Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider an alternative medication or using standard prescribing practices with therapeutic drug monitoring.	**INFORMATIVE**
Eliglustat *Cerdelga®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider an alternative medication.	**ACTIONABLE**
Escitalopram *Lexapro®*	**CYP2C19 Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider an alternative medication or use therapeutic drug monitoring.	**ACTIONABLE**
Flecainide *Tambocor®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Carefully titrate and use therapeutic drug monitoring or may select alternative medication.	**INFORMATIVE**
Haloperidol *Haldol®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate a possible increased risk of therapeutic failure. Consider an alternative medication or use standard prescribing and monitoring practices with careful dose titration.	**ACTIONABLE**
Imipramine *Tofranil®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer**	**INFORMATIVE**

		Test results indicate an increased risk of therapeutic failure. Consider an alternative medication or using increased doses and therapeutic drug monitoring.	
⊗	**Imipramine** *Tofranil®*	**CYP2C19 Rapid Metabolizer** Test results indicate a possible increased risk of adverse effects. Consider an alternative medication or a reduced starting dose with therapeutic drug monitoring.	**INFORMATIVE**
⊗	**Metoprolol** *Lopressor®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate a possible increased risk of therapeutic failure. Consider an alternative medication or using increased doses.	**ACTIONABLE**
⊗	**Nortriptyline** *Pamelor®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of adverse effects or therapeutic failure. Consider an alternative medication or using increased doses with therapeutic drug monitoring.	**ACTIONABLE**
⊗	**Ondansetron** *Zofran®, Zuplenz®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider an alternative medication.	**ACTIONABLE**
⊗	**Paroxetine** *Paxil®, Brisdelle®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider an alternative medication.	**ACTIONABLE**
⊗	**Peginterferon alfa-2a** *Pegasys®*	**IFNL3 Unfavorable Genotype Response** Test results indicate an increased risk of therapeutic failure. Monitor for decreased response.	**ACTIONABLE**
⊗	**Peginterferon alfa-2b** *Pegintron®, Sylatron®*	**IFNL3 Unfavorable Genotype Response** Test results indicate an increased risk of therapeutic failure. Monitor for decreased response.	**ACTIONABLE**
⊗	**Risperidone** *Risperdal®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider an alternative medication.	**ACTIONABLE**
⊗	**Tramadol** *Ultram®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate a possible increased risk of adverse effects. Consider an alternative medication.	**ACTIONABLE**
⊗	**Trimipramine** *Surmontil®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider an alternative medication or using increased doses and therapeutic drug monitoring.	**INFORMATIVE**
⊗	**Trimipramine** *Surmontil®*	**CYP2C19 Rapid Metabolizer** Test results indicate an increased risk of adverse effects. Consider an alternative medication or using standard prescribing practices with therapeutic drug monitoring.	**INFORMATIVE**
⊗	**Venlafaxine** *Effexor®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate a possible increased risk of therapeutic failure. Consider an alternative medication or using increased doses (up to 150% of the normal dose) and therapeutic drug monitoring.	**ACTIONABLE**
⊗	**Voriconazole** *Vfend®*	**CYP2C19 Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider an alternative medication.	**ACTIONABLE**
⚠	**Amoxapine** *Amoxapine®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate a possible increased risk of therapeutic failure. Consider gradual titration until desired response is achieved and monitor closely.	**INFORMATIVE**
⚠	**Atomoxetine** *Strattera®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider standard prescribing practices. If no clinical response and in absence of adverse events at 2 weeks post-dose titration, consider therapeutic drug monitoring (1-2 hr post dose) to guide subsequent dose adjustments.	**ACTIONABLE**

PATIENT INFORMATION
NAME: [redacted]
ACC #: 221026100015
DOB: 6/17/1978
SEX: Male

Benzhydrocodone *Apadaz®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of adverse effects. Consider a dose reduction and monitor closely or consider using an alternative medication not metabolized by CYP2D6.	**INFORMATIVE**
Carisoprodol *Soma®*	**CYP2C19 Rapid Metabolizer** Test results indicate an a possible increased risk of adverse effects. Consider a dose reduction and monitor closely.	**INFORMATIVE**
Chlorpromazine *Thorazine®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider standard prescribing and monitoring practices with careful dose titration.	**INFORMATIVE**
Dexlansoprazole *Dexilant®, Kapidex®*	**CYP2C19 Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Monitor for insufficient response and consider a dose increase in certain conditions.	**INFORMATIVE**
Diazepam *Valium®*	**CYP2C19 Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider standard prescribing practices and monitor closely.	**INFORMATIVE**
Dihydrocodeine *Synalgos-DC®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of adverse effects. Consider a dose reduction and monitor closely or Consider alternative medication.	**INFORMATIVE**
Dolasetron *Anzemet®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider standard prescribing practices and monitor closely.	**INFORMATIVE**
Donepezil *Aricept®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate a decreased exposure. Consider standard prescribing practices and monitor closely.	**INFORMATIVE**
Fluvoxamine *Luvox®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate a possible risk of therapeutic failure. Consider standard prescribing practices and monitor closely or may select an alternative medication.	**INFORMATIVE**
Fosnetupitant / Palonosetron *Akynzeo-IV®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider standard prescribing practices and monitor closely.	**INFORMATIVE**
Granisetron *Sancuso®, Sustol®*	**ABCB1 Heterozygous- Variant Allele Present** The genotype may not yield full therapeutic benefits. Monitor for decreased response or may select alternative medication.	**INFORMATIVE**
Lansoprazole *Prevacid®*	**CYP2C19 Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Monitor for insufficient response and consider a dose increase in certain conditions.	**ACTIONABLE**
Maprotiline *Ludiomil®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate a possible increased risk of therapeutic failure. Consider a standard starting dose and gradual titration until desired response is achieved.	**INFORMATIVE**
Mexiletine *Mexitil®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider standard prescribing practices with ECG and therapeutic drug monitoring.	**INFORMATIVE**

PATIENT INFORMATION
NAME: [redacted]
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Morphine *MS Contin®*	**COMT High/Normal COMT Activity** Test results indicate possible decreased response to standard doses of the drug. Consider standard prescribing and monitoring practices with careful dose titration.	**INFORMATIVE**
Naltrexone *Vivitrol®, Contrave®*	**OPRM1 Normal OPRM1 Function** The genotype may not yield therapeutic benefits for the treatment of alcohol dependence. Monitor for decreased response.	**INFORMATIVE**
Netupitant / Palonosetron *Akynzeo-oral®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider standard prescribing practices and monitor closely.	**INFORMATIVE**
Olanzapine *Zyprexa®*	**HTR2C Homozygous for the C allele (rs3813929)** Test results indicate an increased risk of weight gain. Consider standard prescribing practices and monitor closely.	**INFORMATIVE**
Omeprazole *Prilosec®*	**CYP2C19 Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Monitor for insufficient response and consider a dose increase in certain conditions.	**ACTIONABLE**
Palonosetron *Aloxi®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider standard prescribing practices and monitor closely.	**INFORMATIVE**
Pantoprazole *Protonix®*	**CYP2C19 Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Monitor for insufficient response and consider a dose increase in certain conditions.	**ACTIONABLE**
Perphenazine *Trilafon®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider using increased doses and monitor closely.	**INFORMATIVE**
Propafenone *Rythmol®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate a possible increased risk of therapeutic failure. Consider standard prescribing with therapeutic drug monitoring and careful dose titration with ECG monitoring or may select an alternative medication.	**ACTIONABLE**
Protriptyline *Vivactil®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** Test results indicate a possible increased risk of therapeutic failure. Consider a standard starting dose and gradual titration until desired response is achieved.	**INFORMATIVE**
Sertraline *Zoloft®*	**CYP2C19 Rapid Metabolizer** Test results indicate an increased risk of adverse effects or therapeutic failure. Consider standard prescribing and closer monitoring. If therapy failure consider an alternative medication.	**INFORMATIVE**
Sulfasalazine *Azulfidine®, Sulfazine®*	**ABCG2 Normal Function** The genotype may not yield therapeutic benefits for the treatment of rheumatoid arthritis. Monitor for decreased response.	**INFORMATIVE**
Tacrolimus *Prograf®*	**CYP3A5 Normal Metabolizer** Test results indicate an increased risk of therapeutic failure. Consider using increased doses and therapeutic drug monitoring.	**ACTIONABLE**

PATIENT INFORMATION

NAME: [redacted]
ACC #: 221026100015
DOB: 6/17/1978
SEX: Male

⚠ **Tetrabenazine** *Xenazine®*	**CYP2D6 Normal or Ultra-Rapid Metabolizer** The risk of therapeutic failure and adverse effects is unknown. Because the phenotype cannot be accurately predicted recommendations are not available.	**ACTIONABLE**
⚠ **Verapamil** *Covera-HS®, Verelan®, Isoptin®*	**CACNA1C Homozygous for rs1051375 G allele** Test results indicate an increased risk of adverse effects in patients also prescribed atenolol.	**INFORMATIVE**

PATIENT INFORMATION
NAME: [redacted]
ACC #: 221026100015
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Test Details

Gene	Genotype	Phenotype	Alleles Tested
ABCB1	2677G>T G/T	**Heterozygous- Variant Allele Present**	3435C>T, 1725+38G>A, 1678A>G, 1000-44G>A, 1236T>C, 2677G>T
ABCB1	3435C>T C/T	**Heterozygous- Variant Allele Present**	3435C>T, 1725+38G>A, 1678A>G, 1000-44G>A, 1236T>C, 2677G>T
ABCB1	1236T>C T/C	**Heterozygous- Variant Allele Present**	3435C>T, 1725+38G>A, 1678A>G, 1000-44G>A, 1236T>C, 2677G>T
ABCB1	1725+38G>A G/A	**Heterozygous- Variant Allele Present**	3435C>T, 1725+38G>A, 1678A>G, 1000-44G>A, 1236T>C, 2677G>T
ABCB1	1000-44G>A G/A	**Heterozygous- Variant Allele Present**	3435C>T, 1725+38G>A, 1678A>G, 1000-44G>A, 1236T>C, 2677G>T
ABCG2	421C>A C/C	**Normal Function**	421C>A, 376C>T
ACE	rs4341 G/C	**Intermediate angiotensin I-converting enzyme plasma activity**	rs4341, A2350G, G12269A , C17888T
ADRA2A	5749G>A G/G	**Wild Type for rs1800545**	C-1291G, 5749G>A
ADRA2A	C-1291G C/G	**Heterozygous for the G Allele**	C-1291G, 5749G>A
ADRB2	rs1042714 G/G	**Gln27Gly G/G**	rs1042714, rs1042713
ADRB2	rs1042713 A/A	**Altered ADRB2 Function**	rs1042714, rs1042713
AGT	rs699 G/G	**Met235Thr C/C**	rs699
APOE	ε4/ε4	**Altered APOE function**	ε2, ε4, (ε3 is reference)
CACNA1C	5361G>A G/G	**Homozygous for rs1051375 G allele**	270344G>A, 5361G>A
CACNA1C	270344G>A A/A 5361G>A G/G	**Risk of Bipolar Disorder: Caucasians - Increased; Asians - Increased**	270344G>A, 5361G>A
CFTR	c.4046G>A G/G	**No CFTR mutation detected**	c.617T>G, c.1055G>A, c.1646G>A, c.1645A>C, c.1000C>T, c.1651G>A, c.1475C>T, c.3197G>A, c.3194T>C, c.3230T>C, c.1400T>C, c.4046G>A, c.3208C>T, c.3302T>A, c.200C>T, c.1007T>A, c.1021T>C, c.1A>G, c.2834C>T, c.3752G>A, c.1364C>A, c.3484C>T, c.1652G>A, c.3454G>C, c.1675G>A, c.254G>A, c.3846G>A, c.1013C>T, c.1558G>T, c.350G>A, c.3209G>A, c.3909C>G, c.532G>A, c.1647T>G, c.3731G>A, c.3763T>C, E56K, R74W, D110E, F508del/Class: II, VI, K1060T, A1067T, F1074L, D1270N
COMT	Val158Met G/G	**High/Normal COMT Activity**	Val158Met, 36C>T, 408C>G, c.1-98A>G
CYP1A1	2454A>G T/T	**Ile462Val A/A**	rs4646903, 2454A>G, 2452C>A, rs1800031, rs41279188, 3922C>A, rs72547509, rs72547510, , ,
CYP1A1	rs4646903 T/T	**Msp1T>C T/T**	rs4646903, 2454A>G, 2452C>A, rs1800031, rs41279188, 3922C>A, rs72547509, rs72547510, , ,
CYP2A6	g.40848628A>T A/A	**Homozygous for the A allele (rs1801272)**	g.40848628A>T, rs28399433, rs28399454
CYP2B6	*1/*1	**Normal Metabolizer**	*5, *6, *7, *9, *18, *18.002, *19, *20, *22

PATIENT INFORMATION
NAME: [redacted]
ACC #: 221026100015
DOB: 6/17/1978
SEX: Male

CYP2C19	*1/*17	**Rapid Metabolizer**	*2, *3, *4A, *4B, *5, *6, *7, *8, *9, *10, *11, *12, *13, *14, *15, *17, *19, *24, *25, *26, *35
CYP2C9	*1/*1	**Normal Metabolizer**	*2, *3, *4, *5, *6, *7, *8, *9, *10, *11, *12, *13, *14, *15, *16, *18, *27, *31, *36
CYP2D6	*10/*45 XN	**Normal or Ultra-Rapid Metabolizer**	*2, *3, *4, *4M, *6, *7, *8, *9, *10, *11, *12, *14, *15, *17, *19, *20, *22, *29, *35, *38, *40, *41, *42, *43, *44, *45, *46, *47, *49, *50, *51, *53, *54, *56A, *56B, *57, *59, *70, *72, *84, *100, *101, *114, *5 (gene deletion), XN (gene duplication)
CYP3A4	*1/*1	**Normal Metabolizer**	*2, *3, *4, *5, *6, *7, *8, *10, *11, *12, *13, *14, *15, *16A, *16B, *17, *18A, *18B, *19, *22
CYP3A5	*1/*1	**Normal Metabolizer**	*3, *6, *7, *8, *9
DPYD	Activity Score: 2	**Normal Metabolizer**	c.85T>C, c.703C>T, c.2657G>A, c.2983G>T, c.1905+1G>A, c.299_302del, c.1679T>G, c.1601C>T, c.496A>G, c.525G>A, c.1627A>G, c.2194G>A, c.2846A>T, c.61C>T, c.62G>A, c.1236G>A, c.1003G>T, c.557A>G, c.1156G>T, c.1129-5923C>G
DRD1	48G>A T/T	**Homozygous for rs4532 T allele**	48G>A
DRD2	957C>T G/G	**Homozygous for the C allele (rs6277)**	rs1124493, rs2283265, 939T>C, 957C>T, 811-83G>T, -241A>G
DRD2	rs2283265 C/C	**Homozygous for rs2283265 C allele**	rs1124493, rs2283265, 939T>C, 957C>T, 811-83G>T, -241A>G
DRD2	-241A>G T/T	**Homozygous for rs1799978 T allele**	rs1124493, rs2283265, 939T>C, 957C>T, 811-83G>T, -241A>G
DRD3	rs6280 T/T	**Homozygous for rs6280 T allele**	rs6280
F2 **F5**	rs1799963 GG rs6025 CC	**Normal Risk of Thrombosis**	rs1799963, rs6025
F7	rs6046 A/G	**Heterozygous for rs6046 A allele**	rs6046
FAAH	385C>A C/A	**Heterozygous for rs324420 A allele**	385C>A
GRIK4	83-10039T>C T/C	**Reduced Response to Citalopram**	83-10039T>C
HTR1A	63250851T>G T/T	**Homozygous for the T allele (rs1364043)**	63250851T>G, g.63962738C>G
HTR2A	102C>T G/A	**Heterozygous for the A allele (rs6313)**	102C>T, -1438G>A, rs7997012
HTR2A	-1438G>A C/T	**Heterozygous for the T Allele (rs6311)**	102C>T, -1438G>A, rs7997012
HTR2A	rs7997012 G/G	**Homozygous for G allele (rs7997012)**	102C>T, -1438G>A, rs7997012
HTR2C	114138144C>G G/G	**Homozygous for the G allele (rs1414334)**	-759C>T, 114138144C>G
HTR2C	-759C>T C/C	**Homozygous for the C allele (rs3813929)**	-759C>T, 114138144C>G
IFNL3/IFNL4	g.39743165T>G T/T	**Homozygous for the T allele (rs8099917)**	rs12979860, g.39743165T>G
IFNL3/IFNL4	rs12979860 C/T	**Unfavorable Genotype Response**	rs12979860, g.39743165T>G
LDLR	773A>G A/A	**Homozygous for rs2738466 A allele**	666T>C, 773A>G, 11230881T>C, 1773C>T
MTHFR	c.665C>T CC	**Normal MTHFR Activity**	c.1286A>C, c.665C>T, 1305C>T

PATIENT INFORMATION
NAME: [redacted]
ACC #: 221026100015
DOB: 6/17/1978
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MTHFR	c.1286A>C AA c.665C>T CC	**No Increased Risk of Hyperhomocysteinemia**	c.1286A>C, c.665C>T, 1305C>T
NUDT15	*1/*1	**Normal Metabolizer**	*2, *3, *4, *5
OPRM1	A118G A/A	**Normal OPRM1 Function**	A118G, rs9479757
RYR1	No Pathogenic Variant Detected	**Uncertain Susceptibility to Malignant Hyperthermia**	See Variant Results section for this gene.
SLC6A2	c.274+4226C>T C/C	**Homozygous for the C allele (rs3785143)**	c.274+4226C>T, c.1261-210C>A
SLCO1B1	*1/*37	**Normal Function**	*4, *5, *14, *15, *37
TPMT	*1/*1	**Normal Metabolizer**	*2, *3A, *3B, *3C, *4, *5, *6, *8, *9, *10, *11, *12, *13, *14, *15, *16, *18, *23
VKORC1	-1639G>A G/G	**Low Warfarin Sensitivity**	-1639G>A, rs17880887, 698C>T, 1542G>C, 2255C>T, 358C>T, 3730G>A, 5808T>G, rs104894539, rs104894540, rs104894541, rs104894542, rs17878544, rs17886199, g.31093399C>T, rs7196161, g.31093557G>A

Limitation: This test will not detect all the known alleles that result in altered or inactive tested genes. This test does not account for all individual variations in the individual tested. Absence of a detectable gene mutation does not rule out the possibility that a patient has different phenotypes due to the presence of an undetected polymorphism or due to other factors such as drug-drug interactions, comorbidities and lifestyle habits.

Methodology: Array based assays detect listed alleles, including all common and most rare variants with known clinical significance at analytical sensitivity and specificity >99%.

Approved by: John Hanson, Ph.D., HCLD(ABB)

PATIENT INFORMATION

NAME: [redacted]
ACC #: 221026100015
DOB: 6/17/1978
SEX: Male

Patient Information Card

This is a summary genetic report for your patient to share with other healthcare providers. The card can be cut out along the dashed line and carried with the patient.

ABSOLUTE GENOMICS

REPORT DETAILS
Name: Michael Dotts
DOB: 6/17/1978
ACC #: 221026100015

Pharmacogenetic Test Summary

ABCB1	1236T>C T/C	Heterozygous- Variant Allele Present
ABCB1	1725+38G>A G/A	Heterozygous- Variant Allele Present
ABCB1	3435C>T C/T	Heterozygous- Variant Allele Present
ABCB1	2677G>T G/T	Heterozygous- Variant Allele Present
ABCB1	1000-44G>A G/A	Heterozygous- Variant Allele Present
ABCG2	421C>A C/C	Normal Function
ACE	rs4341 G/C	Intermediate angiotensin I-converting enzyme plasma activity
ADRA2A	5749G>A G/G	Wild Type for rs1800545
ADRA2A	C-1291G C/G	Heterozygous for the G Allele
ADRB2	rs1042714 G/G	Gln27Gly G/G
ADRB2	rs1042713 A/A	Altered ADRB2 Function
AGT	rs699 G/G	Met235Thr C/C
APOE	ε4/ε4	Altered APOE function
CACNA1C	270344G>A A/A	Homozygous for rs1006737 A allele
CACNA1C	5361G>A G/G	Homozygous for rs1051375 G allele
CFTR	c.4046G>A G/G	No CFTR mutation detected
COMT	Val158Met G/G	High/Normal COMT Activity
CYP1A1	2454A>G T/T	Ile462Val A/A
CYP1A1	rs4646903 T/T	Msp1T>C T/T
CYP2A6	g.40848628A>T A/A	Homozygous for the A allele (rs1801272)
CYP2B6	*1/*1	Normal Metabolizer
CYP2C19	*1/*17	Rapid Metabolizer
CYP2C9	*1/*1	Normal Metabolizer
CYP2D6	*10/*45 XN	Normal or Ultra-Rapid Metabolizer
CYP3A4	*1/*1	Normal Metabolizer
CYP3A5	*1/*1	Normal Metabolizer
DPYD	Activity Score: 2	Normal Metabolizer

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ACC #: 221026100015
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DRD1	48G>A T/T	Homozygous for rs4532 T allele
DRD2	957C>T G/G	Homozygous for the C allele (rs6277)
DRD2	rs2283265 C/C	Homozygous for rs2283265 C allele
DRD2	-241A>G T/T	Homozygous for rs1799978 T allele
DRD3	rs6280 T/T	Homozygous for rs6280 T allele
F2	rs1799963 GG	Normal Thrombosis Risk
F5	rs6025 CC	Normal Thrombosis Risk
F7	rs6046 A/G	Heterozygous for rs6046 A allele
FAAH	385C>A C/A	Heterozygous for rs324420 A allele
GRIK4	83-10039T>C T/C	Reduced Response to Citalopram
HTR1A	63250851T>G T/T	Homozygous for the T allele (rs1364043)
HTR2A	102C>T G/A	Heterozygous for the A allele (rs6313)
HTR2A	-1438G>A C/T	Heterozygous for the T Allele (rs6311)
HTR2A	rs7997012 G/G	Homozygous for G allele (rs7997012)
HTR2C	114138144C>G G/G	Homozygous for the G allele (rs1414334)
HTR2C	-759C>T C/C	Homozygous for the C allele (rs3813929)
IFNL3/IFNL4	g.39743165T>G T/T	Homozygous for the T allele (rs8099917)
IFNL3/IFNL4	rs12979860 C/T	Unfavorable Genotype Response
LDLR	773A>G A/A	Homozygous for rs2738466 A allele
MTHFR	c.1286A>C AA	Normal MTHFR Activity
MTHFR	c.665C>T CC	Normal MTHFR Activity
NUDT15	*1/*1	Normal Metabolizer
OPRM1	A118G A/A	Normal OPRM1 Function
RYR1	No Pathogenic Variant Detected	Uncertain Susceptibility to Malignant Hyperthermia
SLC6A2	c.274+4226C>T C/C	Homozygous for the C allele (rs3785143)
SLCO1B1	*1/*37	Normal Function
TPMT	*1/*1	Normal Metabolizer
VKORC1	-1639G>A G/G	Low Warfarin Sensitivity

For a complete report contact Absolute Genomic
www.absolutegenomic.com

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