

PATIENT INFORMATION

NAME: John Doe
DOB: 01/Feb/1958
SEX AT BIRTH: Male

SPECIMEN DETAILS

BARCODE: IHM_002
SAMPLE ID: Doe_001
TYPE: Buccal Swab
COLLECTED: 20/Nov/2023




ORDERED BY














provider name
GENERATED: 11/May/2023

This pharmacogenetic information is based on best evidence compiled from guidelines and databases including FDA, PharmGKB, Clinical Pharmacogenetics Implementation Consortium (CPIC) and Dutch Pharmacogenetics Working Group (DPWG). Please refer to the Methods, Limitations, and Liability Disclaimer at the end of this report.

Medication Summary

The Medication Summary is a list of medications with evidence for the use of pharmacogenetic information, organized by their therapeutic area. Medications are further organized based on drug-gene interactions. Health care providers should consider the information contained in the Medication Report before making any clinical or therapeutic decisions.

-  Mild or no known interaction
-  Moderate gene-drug interaction
-  Serious gene-drug interaction; should be evaluated carefully and alternative medications should be considered

<p>Analgesia</p> <p> _____</p> <p>Alfentanil Carisoprodol Celecoxib Codeine Fentanyl Flurbiprofen Hydrocodone Ibuprofen Meloxicam Morphine Piroxicam Tenoxicam Tramadol</p> <p> _____</p> <p>Imipramine</p> <p>Autoimmune</p> <p> _____</p> <p>Cevimeline Cyclosporine Siponimod</p>	<p>...Autoimmune</p> <p> _____</p> <p>Tacrolimus</p> <p>Cancer</p> <p> _____</p> <p>Erdafitinib Tamoxifen</p> <p>Cardiovascular</p> <p> _____</p> <p>Atorvastatin Carvedilol Clopidogrel Flecainide Fluvastatin Lovastatin Metoprolol Nebivolol Pitavastatin Pravastatin Propafenone Propranolol Rosuvastatin Simvastatin</p> <p> _____</p> <p>Warfarin</p>	<p>Gastroenterology</p> <p> _____</p> <p>Dronabinol Metoclopramide Ondansetron</p> <p> _____</p> <p>Dexlansoprazole Lansoprazole Omeprazole Pantoprazole</p> <p>Infection</p> <p> _____</p> <p>Efavirenz Voriconazole</p> <p>Mental Health</p> <p> _____</p> <p>Alprazolam Amoxapine Amphetamine Aripiprazole lauroxil Atomoxetine Bromazepam</p>	<p>...Mental Health</p> <p> _____</p> <p>Chlordiazepoxide Clobazam Clonazepam Clorazepate Desipramine Diazepam Donepezil Flurazepam Fluvoxamine Lorazepam Nitrazepam Nortriptyline Oxazepam Paroxetine Phenytoin Protriptyline Risperidone Temazepam Triazolam Venlafaxine Vortioxetine</p> <p> _____</p> <p>Amitriptyline</p>
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...Mental Health

2

- Aripiprazole
- Asenapine
- Brexipiprazole
- Cariprazine
- Chlorpromazine
- Citalopram
- Clomipramine
- Clozapine
- Doxepin
- Escitalopram
- Flupentixol
- Fluphenazine
- Haloperidol
- Iloperidone
- Imipramine
- Loxapine
- Lurasidone
- Methotrimeprazine
- Molindone
- Olanzapine
- Paliperidone
- Perphenazine
- Pimozide
- Prochlorperazine
- Promethazine
- Quetiapine
- Sertraline
- Thioridazine
- Trifluoperazine
- Trimipramine
- Ziprasidone
- Zuclopenthixol

Neurology

1

- Brivaracetam
- Clobazam
- Clonazepam
- Desipramine
- Deutetrabenazine
- Diazepam
- Donepezil
- Fosphenytoin
- Galantamine
- Nortriptyline
- Phenytoin
- Tetrabenazine
- Valbenazine
- Venlafaxine

2

- Amitriptyline

Rheumatology

1

- Celecoxib
- Flurbiprofen
- Ibuprofen
- Meloxicam
- Piroxicam
- Tenoxicam

Urology

1

- Darifenacin
- Fesoterodine
- Mirabegron
- Tamsulosin
- Tolterodine

Other

1

- Avatrombopag
- Elagolix
- Eliglustat
- Eltrombopag
- Flibanserin
- Lofexidine
- Meclizine
- Oral contraceptives

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Overview

This pharmacogenetic information is based on best evidence compiled from guidelines and databases including FDA, PharmGKB, Clinical Pharmacogenetics Implementation Consortium (CPIC) and Dutch Pharmacogenetics Working Group (DPWG).

This document includes:

1. Medication Summary: A list of medications organized by their therapeutic area of use and sorted based on their drug-gene interaction severity.
2. Medication Report: Provides information about factors affecting medication response.
3. Guidelines: A table of guidelines used to produce each interpretation.
4. References: Sources of information used to create this report.
5. Laboratory Report: Contains genetic test results in a technical table.

TreatGx and ReviewGx are clinical decision support tools that expand on the contents on this report.

TreatGx

[TreatGx](#) is clinical decision support software for precision prescribing that identifies condition-specific medication options based on multiple patient factors.

ReviewGx

[ReviewGx](#) uses patient factors including pharmacogenetics to highlight medication safety issues, help optimize medications, and identify deprescribing opportunities.

Components of the Medication Report

For all medications, clinical factors, medical conditions, lab values, drug-gene and drug-drug interactions may contribute to medication response and should be evaluated for each patient. The kidney and liver icon notations are intended for informational purposes only. The patient's kidney/liver function are not used for the purposes of displaying this information, and the potential interactions for that specific medication may not apply. TreatGx and ReviewGx help integrate this information to support precision prescribing and comprehensive medication management. The final genotype/phenotype call is at the discretion of the laboratory director. Medication changes should only be initiated at the discretion of the patient's healthcare provider after a full assessment.

Example:

Generic Name	Codeine	Phenotype	Genetic Test	Results	Source/Evidence
Brand Names	Codeine Contin Tylenol with Codeine No. 2/3/4	Poor metabolizer	CYP2D6	*3/*6	CPIC A ⁶ ; FDA PGx Table ³⁵
Potential Kidney or Liver Interaction	 	Implication:	CYP2D6 poor metabolizer: greatly reduced metabolism of Codeine may result in decreased response		
	 		Avoid Codeine use		

Source/Evidence for Drug-Gene Interactions:

For each medication, a source is listed for each drug-gene interaction. This report prioritizes guidance from CPIC if the drug-gene pair is assigned a CPIC Level of A or B. This is the threshold that CPIC defines as having sufficient evidence for at least one prescribing action to be recommended. See cpicpgx.org/prioritization for a full explanation of CPIC Levels for Genes/Drugs.

Pharmacogenetic information from FDA-approved drug labels or the FDA Table of Pharmacogenetic Associations (<https://www.fda.gov/medical-devices/precision-medicine/table-pharmacogenetic-associations>) is included when available.

If there is no CPIC guideline (level A or B) or FDA guidance, other sources may be referenced, such as DPWG guidelines, PharmGKB clinical annotations, and in some instances, clinical studies. See <https://www.pharmgkb.org/page/clinAnnLevels> for a full explanation of PharmGKB levels of evidence. Use of any of this information is at the discretion of the health professional.

* Other clinical factors, medical conditions and drug-drug interactions may contribute to medication response.

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Medication Report

The **Medication Report** provides information on how pharmacogenetic results affect each medication.

Use TreatGx and ReviewGx to explore personalized medication treatment options, dosing information and medication optimization.

Alfentanil	Phenotype	Genetic Test	Results	Source/Evidence
Alfenta ReviewGx	Typical response Implication:	OPRM1 rs1799971	A/A	PharmGKB 3
	OPRM1 alleles indicate a typical response to Alfentanil			
Alprazolam	Phenotype	Genetic Test	Results	Source/Evidence
Xanax ReviewGx	Normal metabolizer Implication:	CYP2C9	*1/*1	Case-control studies ¹³
	CYP2C9 alleles indicate typical risk of Alprazolam-related falls			
Amitriptyline	Phenotype	Genetic Test	Results	Source/Evidence
Elavil Levate TreatGx ReviewGx	Normal metabolizer Rapid metabolizer Implication:	CYP2D6 CYP2C19	*1/*1 *1/*17	CPIC A ¹⁶ ;FDA PGx Table ³⁵ CPIC A ¹⁶
	CYP2C19 rapid metabolizer: increased metabolism of Amitriptyline may affect response or adverse drug reactions			
	2 Consider an alternative drug not predominantly metabolized by CYP2C19			
Amoxapine	Phenotype	Genetic Test	Results	Source/Evidence
ReviewGx	Normal metabolizer Implication:	CYP2D6	*1/*1	FDA PGx Table ³⁵
	CYP2D6 alleles do not indicate changes from recommended dose			
Amphetamine	Phenotype	Genetic Test	Results	Source/Evidence
Adzenys TreatGx ReviewGx	Normal metabolizer Implication:	CYP2D6	*1/*1	FDA PGx Table ³⁵
	CYP2D6 alleles do not indicate changes from recommended dose			
Aripiprazole	Phenotype	Genetic Test	Results	Source/Evidence
Abilify Aristada TreatGx ReviewGx	Normal metabolizer Increased risk of adverse drug reactions Implication:	CYP2D6 ANKK1 rs1800497	*1/*1 A/G	DPWG (PharmGKB 1A) ⁸ ;FDA PGx Table ³⁵ PharmGKB 3
	ANKK1 alleles indicate an increased risk of hyperprolactinemia			
	CYP2D6 alleles do not indicate changes from recommended dose			
Aripiprazole lauroxil	Phenotype	Genetic Test	Results	Source/Evidence
Aristada ReviewGx	Normal metabolizer Implication:	CYP2D6	*1/*1	FDA PGx Table ³⁵
	CYP2D6 alleles do not indicate changes from recommended dose			

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Asenapine	Phenotype	Genetic Test	Results	Source/Evidence
Saphris  TreatG% ReviewG%	Increased risk of adverse drug reactions Implication:	ANKK1 rs1800497	A/G	PharmGKB 3
	ANKK1 alleles indicate an increased risk of hyperprolactinemia			
Atomoxetine	Phenotype	Genetic Test	Results	Source/Evidence
Strattera  TreatG% ReviewG%	Normal metabolizer Implication:	CYP2D6 (Activity Score)	*1/*1	CPIC A ⁴ ;FDA PGx Table ³⁵
	CYP2D6 alleles do not indicate changes from recommended dose			
Atorvastatin	Phenotype	Genetic Test	Results	Source/Evidence
Lipitor  TreatG% ReviewG%	Normal function Implication:	SLCO1B1	*1/*1	CPIC A ⁵ ;FDA PGx Table ³⁵
	SLCO1B1 alleles indicate typical exposure to Atorvastatin Consider prescribing desired starting dose and adjust based on disease-specific guidelines			
Avatrombopag	Phenotype	Genetic Test	Results	Source/Evidence
Doptelet ReviewG%	Normal metabolizer Implication:	CYP2C9	*1/*1	FDA PGx Table ³⁵
	CYP2C9 alleles do not indicate changes from recommended dose			
Brexpiprazole	Phenotype	Genetic Test	Results	Source/Evidence
Rexulti   TreatG% ReviewG%	Normal metabolizer Increased risk of adverse drug reactions Implication:	CYP2D6 ANKK1 rs1800497	*1/*1 A/G	DPWG ⁸ ;FDA PGx Table ³⁵ PharmGKB 3
	ANKK1 alleles indicate an increased risk of hyperprolactinemia CYP2D6 alleles do not indicate changes from recommended dose			
Brivaracetam	Phenotype	Genetic Test	Results	Source/Evidence
Briviact Brivlera   ReviewG%	Rapid metabolizer Implication:	CYP2C19	*1/*17	FDA PGx Table ³⁵
	CYP2C19 alleles do not indicate changes from recommended dose			
Bromazepam	Phenotype	Genetic Test	Results	Source/Evidence
 ReviewG%	Normal metabolizer Implication:	CYP2C9	*1/*1	Case-control studies ¹³
	CYP2C9 alleles indicate typical risk of Bromazepam-related falls			

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Cariprazine	Phenotype	Genetic Test	Results	Source/Evidence
Vraylar 	Increased risk of adverse drug reactions	ANKK1 rs1800497	A/G	PharmGKB 3
	Implication:	ANKK1 alleles indicate an increased risk of hyperprolactinemia		
Carisoprodol	Phenotype	Genetic Test	Results	Source/Evidence
ReviewG 	Rapid metabolizer	CYP2C19	*1/*17	FDA PGx Table ³⁵
	Implication:	CYP2C19 alleles do not indicate changes from recommended dose		
Carvedilol	Phenotype	Genetic Test	Results	Source/Evidence
Coreg 	Normal metabolizer	CYP2D6	*1/*1	FDA PGx Table ³⁵
	Implication:	CYP2D6 alleles do not indicate changes from recommended dose		
Celecoxib	Phenotype	Genetic Test	Results	Source/Evidence
Celebrex 	Normal metabolizer	CYP2C9 (Star Alleles)	*1/*1	CPIC A ³² ; FDA PGx Table ³⁵
	Implication:	CYP2C9 alleles do not indicate changes from recommended dose		
Cevimeline	Phenotype	Genetic Test	Results	Source/Evidence
Evoxac 	Normal metabolizer	CYP2D6	*1/*1	FDA PGx Table ³⁵
	Implication:	CYP2D6 alleles do not indicate changes from recommended dose		
Chlordiazepoxide	Phenotype	Genetic Test	Results	Source/Evidence
Librium 	Normal metabolizer	CYP2C9	*1/*1	Case-control studies ¹³
	Implication:	CYP2C9 alleles indicate typical risk of Chlordiazepoxide-related falls		
Chlorpromazine	Phenotype	Genetic Test	Results	Source/Evidence
TreatG ReviewG 	Increased risk of adverse drug reactions	ANKK1 rs1800497	A/G	PharmGKB 3
	Implication:	ANKK1 alleles indicate an increased risk of weight gain and hyperprolactinemia		
Citalopram	Phenotype	Genetic Test	Results	Source/Evidence
Celexa 	Rapid metabolizer	CYP2C19	*1/*17	CPIC A ¹⁵ ; FDA PGx Table ³⁵
	Implication:	CYP2C19 rapid metabolizer: increased metabolism of Citalopram to less active compounds		
		Lower plasma concentrations of active drug may reduce response		
		Consider an alternative drug not predominantly metabolized by CYP2C19		

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Clobazam	Phenotype	Genetic Test	Results	Source/Evidence
Onfi	Rapid metabolizer	CYP2C19	*1/*17	FDA PGx Table ³⁵
Sympazan	Normal metabolizer	CYP2C9	*1/*1	Case-control studies ¹³

ReviewGx

Implication: CYP2C9 and CYP2C19 alleles indicate a typical response to Clobazam

Clomipramine	Phenotype	Genetic Test	Results	Source/Evidence
Anafranil	Normal metabolizer	CYP2D6	*1/*1	CPIC A ¹⁶ ; FDA PGx Table ³⁵
	Rapid metabolizer	CYP2C19	*1/*17	CPIC A ¹⁶

ReviewGx

Implication: CYP2C19 rapid metabolizer: increased metabolism of Clomipramine may affect response or adverse drug reactions

2 Consider an alternative drug not predominantly metabolized by CYP2C19

Clonazepam	Phenotype	Genetic Test	Results	Source/Evidence
Klonopin Rivotril	Normal metabolizer	CYP2C9	*1/*1	Case-control studies ¹³

TreatGx
ReviewGx

Implication: CYP2C9 alleles indicate typical risk of Clonazepam-related falls

Clopidogrel	Phenotype	Genetic Test	Results	Source/Evidence
Plavix	Rapid metabolizer	CYP2C19	*1/*17	CPIC A ²⁰ ; FDA PGx Table ³⁵

TreatGx
ReviewGx

Implication: CYP2C19 alleles do not indicate changes from recommended dose

Clorazepate	Phenotype	Genetic Test	Results	Source/Evidence
Gen-Xene Tranxene	Normal metabolizer	CYP2C9	*1/*1	Case-control studies ¹³

ReviewGx

Implication: CYP2C9 alleles indicate typical risk of Clorazepate-related falls

Clozapine	Phenotype	Genetic Test	Results	Source/Evidence
Clozaril	Normal metabolizer	CYP2D6	*1/*1	FDA PGx Table ³⁵
Fazaclor ODT Versacloz	Increased risk of adverse drug reactions	ANKK1 rs1800497	A/G	PharmGKB 3

TreatGx
ReviewGx

Implication: ANKK1 alleles indicate an increased risk of hyperprolactinemia
 CYP2D6 alleles do not indicate changes from recommended dose

Codeine	Phenotype	Genetic Test	Results	Source/Evidence
Codeine Contin Tylenol with Codeine No. 2/3/4	Normal metabolizer	CYP2D6	*1/*1	CPIC A ⁶ ; FDA PGx Table ³⁵

TreatGx
ReviewGx

Implication: CYP2D6 alleles do not indicate changes from recommended dose

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Cyclosporine	Phenotype	Genetic Test	Results	Source/Evidence
Neoral Sandimmune ReviewG%	Poor metabolizer Implication:	CYP3A5	*3/*3	PharmGKB 3 CYP3A5 alleles do not indicate changes from recommended dose
Darifenacin	Phenotype	Genetic Test	Results	Source/Evidence
Enblex TreatG% ReviewG%	Normal metabolizer Implication:	CYP2D6	*1/*1	FDA PGx Table ³⁵ CYP2D6 alleles do not indicate changes from recommended dose
Desipramine	Phenotype	Genetic Test	Results	Source/Evidence
Norpramin TreatG% ReviewG%	Normal metabolizer Implication:	CYP2D6	*1/*1	CPIC A ¹⁶ ;FDA PGx Table ³⁵ CYP2D6 alleles do not indicate changes from recommended dose
Deutetrabenazine	Phenotype	Genetic Test	Results	Source/Evidence
Austedo ReviewG%	Normal metabolizer Implication:	CYP2D6	*1/*1	FDA PGx Table ³⁵ CYP2D6 alleles do not indicate changes from recommended dose
Dexlansoprazole	Phenotype	Genetic Test	Results	Source/Evidence
Dexilant TreatG% ReviewG%	Rapid metabolizer Implication:	CYP2C19	*1/*17	CPIC A ²² ;FDA PGx Table ³⁵ Optional CPIC recommendation: Initiate standard starting daily dose. Consider increasing dose by 50-100% of the standard daily dose for the treatment of Helicobacter pylori infection and erosive esophagitis.
Diazepam	Phenotype	Genetic Test	Results	Source/Evidence
Diastat Valium TreatG% ReviewG%	Rapid metabolizer Normal metabolizer Implication:	CYP2C19 CYP2C9	*1/*17 *1/*1	FDA PGx Table ³⁵ Case-control studies ¹³ CYP2C9 alleles indicate typical risk of Diazepam-related falls CYP2C19 alleles do not indicate changes from recommended dose
Donepezil	Phenotype	Genetic Test	Results	Source/Evidence
Aricept TreatG% ReviewG%	Normal metabolizer Implication:	CYP2D6	*1/*1	FDA PGx Table ³⁵ CYP2D6 alleles do not indicate changes from recommended dose
Doxepin	Phenotype	Genetic Test	Results	Source/Evidence
Silenor Sinequan TreatG% ReviewG%	Normal metabolizer Rapid metabolizer Implication:	CYP2D6 CYP2C19	*1/*1 *1/*17	CPIC A ¹⁶ ;FDA PGx Table ³⁵ CPIC A ¹⁶ CYP2C19 rapid metabolizer: increased metabolism of Doxepin may affect response or adverse drug reactions
		2		Consider an alternative drug not predominantly metabolized by CYP2C19

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Drug/Phenotype	Phenotype	Genetic Test	Results	Source/Evidence
Marinol Syndros ReviewG	Normal metabolizer Implication:	CYP2C9	*1/*1	FDA PGx Table ³⁵ CYP2C9 alleles do not indicate changes from recommended dose
Efavirenz Sustiva ReviewG	Intermediate metabolizer Implication:	CYP2B6	*1/*6	CPIC A ⁷ ; FDA PGx Table ³⁵ CYP2B6 intermediate metabolizer: reduced metabolism of Efavirenz to less active compounds 2 Consider initiating Efavirenz with decreased dose of 400 mg/day
Elagolix Orilissa ReviewG	Normal function Implication:	SLCO1B1	*1/*1	FDA PGx Table ³⁵ SLCO1B1 alleles indicate a typical response to Elagolix
Eliglustat Cerdelga ReviewG	Normal metabolizer Implication:	CYP2D6	*1/*1	FDA PGx Table ³⁵ CYP2D6 alleles do not indicate changes from recommended dose Multiple drug-drug interactions may further affect the safety of Eliglustat, refer to drug monograph or FDA labelling for dosing recommendations
Eltrombopag Promacta Revolade ReviewG	Typical risk of adverse drug reactions Typical risk of adverse drug reactions Implication:	Factor V rs6025 Factor II rs1799963	C/C G/G	FDA monograph ²⁸ PharmGKB 3 F2 and F5 alleles do not indicate changes from recommended dose
Erdafitinib Balversa ReviewG	Normal metabolizer Implication:	CYP2C9 (Star Alleles)	*1/*1	FDA PGx Table ³⁵ CYP2C9 alleles do not indicate changes from recommended dose
Escitalopram Cipralext Lexapro TreatG ReviewG	Rapid metabolizer Implication:	CYP2C19	*1/*17	CPIC A ¹⁵ ; FDA PGx Table ³⁵ CYP2C19 rapid metabolizer: increased metabolism of Escitalopram to less active compounds Lower plasma concentrations of active drug may reduce response 2 Consider an alternative drug not predominantly metabolized by CYP2C19

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Phenotype	Genetic Test	Results	Source/Evidence	
Abstral Actiq Duragesic Fentora Lazanda Subsys	Typical response	OPRM1 rs1799971	A/A	PharmGKB 3
Implication: OPRM1 alleles indicate a typical response to Fentanyl				

  [ReviewG](#)


Phenotype	Genetic Test	Results	Source/Evidence	
Toviaz	Normal metabolizer	CYP2D6	*1/*1	FDA PGx Table ³⁵
Implication: CYP2D6 alleles do not indicate changes from recommended dose				

  [TreatG](#)
[ReviewG](#)



Phenotype	Genetic Test	Results	Source/Evidence	
Tambocor	Normal metabolizer	CYP2D6	*1/*1	DPWG (PharmGKB 1A) ⁸
Implication: CYP2D6 alleles do not indicate changes from recommended dose				

  [TreatG](#)
[ReviewG](#)


Phenotype	Genetic Test	Results	Source/Evidence	
Addyi	Rapid metabolizer	CYP2C19	*1/*17	FDA PGx Table ³⁵
Implication: CYP2C19 alleles do not indicate changes from recommended dose				

 [ReviewG](#)


Phenotype	Genetic Test	Results	Source/Evidence	
Fluanxol	Increased risk of adverse drug reactions	ANKK1 rs1800497	A/G	PharmGKB 3
Implication: ANKK1 alleles indicate an increased risk of weight gain and hyperprolactinemia				

  [TreatG](#)
[ReviewG](#)

Phenotype	Genetic Test	Results	Source/Evidence	
Moderate	Increased risk of adverse drug reactions	ANKK1 rs1800497	A/G	PharmGKB 3
Implication: ANKK1 alleles indicate an increased risk of weight gain and hyperprolactinemia				

 [TreatG](#)
[ReviewG](#)

Phenotype	Genetic Test	Results	Source/Evidence	
TreatG	Normal metabolizer	CYP2C9	*1/*1	Case-control studies ¹³
Implication: CYP2C9 alleles indicate typical risk of Flurazepam-related falls				

 [ReviewG](#)

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Drug/Protein	Phenotype	Genetic Test	Results	Source/Evidence
Ansaïd  TreatG [®] ReviewG [®]	Normal metabolizer	CYP2C9 (Star Alleles)	*1/*1	CPIC A ³² ; FDA PGx Table ³⁵
Implication: CYP2C9 alleles do not indicate changes from recommended dose				
Fluvastatin	Phenotype	Genetic Test	Results	Source/Evidence
Lescol 	Normal metabolizer	CYP2C9	*1/*1	CPIC A ⁵
	Normal function	SLCO1B1	*1/*1	CPIC A ⁵
TreatG [®] ReviewG [®]	Implication: SLCO1B1 alleles indicate typical exposure to Fluvastatin CYP2C9 alleles indicate typical exposure to Fluvastatin Consider prescribing desired starting dose and adjust based on disease-specific guidelines			
Fluvoxamine	Phenotype	Genetic Test	Results	Source/Evidence
Luvox 	Normal metabolizer	CYP2D6	*1/*1	CPIC B ¹⁵ ; FDA PGx Table ³⁵
TreatG [®] ReviewG [®]	Implication: CYP2D6 alleles do not indicate changes from recommended dose			
Fosphenytoin	Phenotype	Genetic Test	Results	Source/Evidence
Cerebyx  	Normal metabolizer	CYP2C9	*1/*1	CPIC A ¹⁸
ReviewG [®]	Implication: CYP2C9 normal metabolizer: normal metabolism of Fosphenytoin to less active compounds CYP2C9 alleles do not indicate changes from recommended dose			
Galantamine	Phenotype	Genetic Test	Results	Source/Evidence
Razadyne  	Normal metabolizer	CYP2D6	*1/*1	FDA PGx Table ³⁵
TreatG [®] ReviewG [®]	Implication: CYP2D6 alleles do not indicate changes from recommended dose			
Haloperidol	Phenotype	Genetic Test	Results	Source/Evidence
Haldol TreatG [®] ReviewG [®]	Increased risk of adverse drug reactions	ANKK1 rs1800497	A/G	PharmGKB 3
	Implication: ANKK1 alleles indicate an increased risk of weight gain and hyperprolactinemia			
Hydrocodone	Phenotype	Genetic Test	Results	Source/Evidence
Hysingla Zohydro  	Normal metabolizer	CYP2D6	*1/*1	CPIC B ⁶
TreatG [®] ReviewG [®]	Implication: CYP2D6 alleles do not indicate changes from recommended dose			

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SEX AT BIRTH: Male

SPECIMEN DETAILS

BARCODE: IHM_002
SAMPLE ID: Doe_001
TYPE: Buccal Swab
COLLECTED: 20/Nov/2023

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GENERATED: 11/May/2023

Drug	Phenotype	Genetic Test	Results	Source/Evidence
Advil Caldolor Duexis Motrin IB NeoProfen   TreatG ReviewG	Normal metabolizer	CYP2C9 (Star Alleles)	*1/*1	CPIC A ³²
	Implication:	CYP2C9 alleles do not indicate changes from recommended dose		
Iloperidone Fanapt   TreatG ReviewG	Phenotype	Genetic Test	Results	Source/Evidence
	Normal metabolizer	CYP2D6	*1/*1	FDA PGx Table ³⁵
	Increased risk of adverse drug reactions	ANKK1 rs1800497	A/G	PharmGKB 3
	Implication:	ANKK1 alleles indicate an increased risk of hyperprolactinemia CYP2D6 alleles do not indicate changes from recommended dose		
Imipramine Tofranil   TreatG ReviewG	Phenotype	Genetic Test	Results	Source/Evidence
	Normal metabolizer	CYP2D6	*1/*1	CPIC A ¹⁶ ; FDA PGx Table ³⁵
	Rapid metabolizer	CYP2C19	*1/*17	CPIC A ¹⁶
	Implication:	CYP2C19 rapid metabolizer: increased metabolism of Imipramine may affect response or adverse drug reactions		
		Consider an alternative drug not predominantly metabolized by CYP2C19		
Lansoprazole Prevacid   TreatG ReviewG	Phenotype	Genetic Test	Results	Source/Evidence
	Rapid metabolizer	CYP2C19	*1/*17	CPIC A ²² ; FDA PGx Table ³⁵
	Implication:	Moderate CPIC recommendation: Initiate standard starting daily dose. Consider increasing dose by 50-100% of the standard dose for the treatment of Helicobacter pylori infection and erosive esophagitis.		
Lofexidine Lucemyra   TreatG ReviewG	Phenotype	Genetic Test	Results	Source/Evidence
	Normal metabolizer	CYP2D6	*1/*1	FDA PGx Table ³⁵
	Implication:	CYP2D6 alleles do not indicate changes from recommended dose		
Lorazepam Ativan  ReviewG	Phenotype	Genetic Test	Results	Source/Evidence
	Normal metabolizer	CYP2C9	*1/*1	Case-control studies ¹³
	Implication:	CYP2C9 alleles indicate typical risk of Lorazepam-related falls		

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Lovastatin Altoprev   TreatG% ReviewG%	Normal function Implication:	SLCO1B1	*1/*1	CPIC A ⁵
SLCO1B1 alleles indicate typical exposure to Lovastatin Consider prescribing desired starting dose and adjust based on disease-specific guidelines				
Loxapine Adasuve Loxapac TreatG% ReviewG%	Increased risk of adverse drug reactions Implication:	ANKK1 rs1800497	A/G	PharmGKB 3
ANKK1 alleles indicate an increased risk of weight gain and hyperprolactinemia				
Lurasidone Latuda   TreatG% ReviewG%	Increased risk of adverse drug reactions Implication:	ANKK1 rs1800497	A/G	PharmGKB 3
ANKK1 alleles indicate an increased risk of hyperprolactinemia				
Meclizine Antivert ReviewG%	Normal metabolizer Implication:	CYP2D6	*1/*1	FDA PGx Table ³⁵
CYP2D6 alleles do not indicate changes from recommended dose				
Meloxicam Anjeso Mobic Qmiiiz ODT Vivlodex  TreatG% ReviewG%	Normal metabolizer Implication:	CYP2C9 (Star Alleles)	*1/*1	CPIC A ³²
CYP2C9 alleles do not indicate changes from recommended dose				
Methotrimoprazine Nozinan  TreatG% ReviewG%	Increased risk of adverse drug reactions Implication:	ANKK1 rs1800497	A/G	PharmGKB 3
ANKK1 alleles indicate an increased risk of weight gain and hyperprolactinemia				
Metoclopramide Metonia Reglan   TreatG% ReviewG%	Normal metabolizer Implication:	CYP2D6	*1/*1	FDA PGx Table ³⁵
CYP2D6 alleles do not indicate changes from recommended dose				

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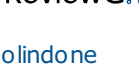



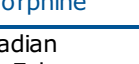



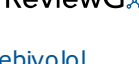










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Medication	Phenotype	Genetic Test	Results	Source/Evidence
Kaspargo Sprinkle Lopressor Toprol-XL  	Normal metabolizer	CYP2D6	*1/*1	DPWG (PharmGKB 1A) ⁸ ;FDA PGx Table ³⁵
Implication: CYP2D6 alleles do not indicate changes from recommended dose				
Mirabegron  	Phenotype	Genetic Test	Results	Source/Evidence
Myrbetriq  	Normal metabolizer	CYP2D6	*1/*1	FDA PGx Table ³⁵
Implication: CYP2D6 alleles do not indicate changes from recommended dose				
Molindone  	Phenotype	Genetic Test	Results	Source/Evidence
Moban  	Increased risk of adverse drug reactions	ANKK1 rs1800497	A/G	PharmGKB 3
Implication: ANKK1 alleles indicate an increased risk of weight gain and hyperprolactinemia				
Morphine  	Phenotype	Genetic Test	Results	Source/Evidence
Kadian M-Eslon Morphabond ER MS Contin MS-IR Statex  	Typical response	OPRM1 rs1799971	A/A	PharmGKB 3 ⁶
Implication: OPRM1 alleles indicate a typical response to Morphine				
Nebivolol  	Phenotype	Genetic Test	Results	Source/Evidence
Bystolic  	Normal metabolizer	CYP2D6	*1/*1	FDA PGx Table ³⁵
Implication: CYP2D6 alleles do not indicate changes from recommended dose				
Nitrazepam 	Phenotype	Genetic Test	Results	Source/Evidence
Mogadon 	Normal metabolizer	CYP2C9	*1/*1	Case-control studies ¹³
Implication: CYP2C9 alleles indicate typical risk of Nitrazepam-related falls				
Nortriptyline  	Phenotype	Genetic Test	Results	Source/Evidence
Aventyl Pamelor  	Normal metabolizer	CYP2D6	*1/*1	CPIC A ¹⁶ ;FDA PGx Table ³⁵
Implication: CYP2D6 alleles do not indicate changes from recommended dose				

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Drug	Phenotype	Genetic Test	Results	Source/Evidence
Olanzapine Zyprexa TreatG% ReviewG%	Increased risk of adverse drug reactions Implication:	ANKK1 rs1800497	A/G	PharmGKB 3
	ANKK1 alleles indicate an increased risk of hyperprolactinemia			
Omeprazole Losec Olex Prilosec TreatG% ReviewG%	Phenotype Rapid metabolizer Implication:	Genetic Test CYP2C19	Results *1/*17	Source/Evidence CPIC A ²² ;FDA PGx Table ³⁵
	Moderate CPIC recommendation: Initiate standard starting daily dose. Consider increasing dose by 50-100% of the standard dose for the treatment of Helicobacter pylori infection and erosive esophagitis.			
Ondansetron Zofran Zuplenz TreatG% ReviewG%	Phenotype Normal metabolizer Implication:	Genetic Test CYP2D6	Results *1/*1	Source/Evidence CPIC A ²
	CYP2D6 alleles do not indicate changes from recommended dose			
Oral contraceptives TreatG% ReviewG%	Phenotype Typical risk of adverse drug reactions Typical risk of adverse drug reactions Implication:	Genetic Test Factor V rs6025 Factor II rs1799963	Results C/C G/G	Source/Evidence PharmGKB 1A PharmGKB 3
	F2 and F5 alleles do not indicate changes from recommended dose			
Oxazepam TreatG% ReviewG%	Phenotype Normal metabolizer Implication:	Genetic Test CYP2C9	Results *1/*1	Source/Evidence Case-control studies ¹³
	CYP2C9 alleles indicate typical risk of Oxazepam-related falls			
Paliperidone Invega TreatG% ReviewG%	Phenotype Increased risk of adverse drug reactions Implication:	Genetic Test ANKK1 rs1800497	Results A/G	Source/Evidence PharmGKB 3
	ANKK1 alleles indicate an increased risk of hyperprolactinemia			
Pantoprazole Pantoloc Protonix Tecta TreatG% ReviewG%	Phenotype Rapid metabolizer Implication:	Genetic Test CYP2C19	Results *1/*17	Source/Evidence CPIC A ²² ;FDA PGx Table ³⁵
	Moderate CPIC recommendation: Initiate standard starting daily dose. Consider increasing dose by 50-100% of the standard dose for the treatment of Helicobacter pylori infection and erosive esophagitis.			

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PAROXETINE	Phenotype	Genetic Test	Results	Source/Evidence
Brisdelle Paxil Pexeva 	Normal metabolizer Implication:	CYP2D6	*1/*1	CPIC A ¹⁵ ;FDA PGx Table ³⁵
CYP2D6 alleles do not indicate changes from recommended dose				

Perphenazine	Phenotype	Genetic Test	Results	Source/Evidence
	Normal metabolizer Increased risk of adverse drug reactions Implication:	CYP2D6 ANKK1 rs1800497	*1/*1 A/G	FDA PGx Table ³⁵ PharmGKB 3
ANKK1 alleles indicate an increased risk of weight gain and hyperprolactinemia CYP2D6 alleles do not indicate changes from recommended dose				

Phenytoin	Phenotype	Genetic Test	Results	Source/Evidence
Dilantin Tremytoine Phenytek 	Normal metabolizer Implication:	CYP2C9	*1/*1	CPIC A ¹⁸
CYP2C9 normal metabolizer: normal metabolism of Phenytoin to less active compounds CYP2C9 alleles do not indicate changes from recommended dose				

Pimozide	Phenotype	Genetic Test	Results	Source/Evidence
Orap 	Normal metabolizer Increased risk of adverse drug reactions Implication:	CYP2D6 ANKK1 rs1800497	*1/*1 A/G	FDA PGx Table ³⁵ PharmGKB 3
ANKK1 alleles indicate an increased risk of weight gain and hyperprolactinemia CYP2D6 alleles do not indicate changes from recommended dose				

Piroxicam	Phenotype	Genetic Test	Results	Source/Evidence
Feldene 	Normal metabolizer Implication:	CYP2C9 (Star Alleles)	*1/*1	CPIC A ³² ;FDA PGx Table ³⁵
CYP2C9 alleles do not indicate changes from recommended dose				

Pitavastatin	Phenotype	Genetic Test	Results	Source/Evidence
Livalo Zypitamag 	Normal function Implication:	SLCO1B1	*1/*1	CPIC A ⁵
SLCO1B1 alleles indicate typical exposure to Pitavastatin Consider prescribing desired starting dose and adjust based on disease-specific guidelines				

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Pravastatin   TreatG ReviewG	Normal function Implication:	SLCO1B1	*1/*1	CPIC A ⁵
	SLCO1B1 alleles indicate typical exposure to Pravastatin Consider prescribing desired starting dose and adjust based on disease-specific guidelines			
Prochlorperazine   TreatG ReviewG	Increased risk of adverse drug reactions Implication:	ANKK1 rs1800497	A/G	PharmGKB 3
	ANKK1 alleles indicate an increased risk of weight gain and hyperprolactinemia			
Promethazine   TreatG ReviewG	Increased risk of adverse drug reactions Implication:	ANKK1 rs1800497	A/G	PharmGKB 3
	ANKK1 alleles indicate an increased risk of weight gain and hyperprolactinemia			
Rythmol   TreatG ReviewG	Normal metabolizer Implication:	CYP2D6	*1/*1	DPWG (PharmGKB 1A) ⁸ ; FDA PGx Table ³⁵
	CYP2D6 alleles do not indicate changes from recommended dose			
Inderal Innopran   TreatG ReviewG	Normal metabolizer Implication:	CYP2D6	*1/*1	FDA PGx Table ³⁵
	CYP2D6 alleles do not indicate changes from recommended dose			
Vivactil  ReviewG	Normal metabolizer Implication:	CYP2D6	*1/*1	FDA PGx Table ³⁵
	CYP2D6 alleles do not indicate changes from recommended dose			
Seroquel   TreatG ReviewG	Increased risk of adverse drug reactions Implication:	ANKK1 rs1800497	A/G	PharmGKB 3
	ANKK1 alleles indicate an increased risk of hyperprolactinemia			
Perseris Risperdal   TreatG ReviewG	Normal metabolizer Implication:	CYP2D6	*1/*1	DPWG (PharmGKB 1A) ⁸
	CYP2D6 alleles do not indicate changes from recommended dose			

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Drug	Phenotype	Genetic Test	Results	Source/Evidence
Crestor Ezallor 	Normal function	SLCO1B1	*1/*1	CPIC A ⁵ ; FDA PGx Table ³⁵
Implication: SLCO1B1 alleles indicate typical exposure to Rosuvastatin				
Zoloft 	Rapid metabolizer	CYP2C19	*1/*17	CPIC B ¹⁵
Implication: CYP2C19 alleles do not indicate changes from recommended dose				
2 If Sertraline is ineffective, consider an alternative drug not predominantly metabolized by CYP2C19				
Zocor Flolipid 	Normal function	SLCO1B1	*1/*1	CPIC A ⁵ ; FDA PGx Table ³⁵
Implication: SLCO1B1 alleles indicate typical exposure to Simvastatin				
Consider prescribing desired starting dose and adjust based on disease-specific guidelines				
Mayzent 	Normal metabolizer	CYP2C9 (Star Alleles)	*1/*1	FDA PGx Table ³⁵
Implication: CYP2C9 alleles do not indicate changes from recommended dose				
Advagraf Astagraf XL Envarsus XR Prograf Protopic 	Poor metabolizer	CYP3A5	*3/*3	CPIC A ³ ; FDA PGx Table ³⁵
Implication: CYP3A5 alleles do not indicate changes from recommended dose				
CYP3A4 alleles do not indicate changes from recommended dose				
Use therapeutic drug monitoring to guide dose adjustments				
Nolvadex Soltamox 	Normal metabolizer	CYP2D6 (Activity Score)	*1/*1	CPIC A ¹¹ ; FDA PGx Table ³⁵
Implication: CYP2D6 normal metabolizer: typical metabolism of Tamoxifen to endoxifen				
Strong CPIC recommendation for breast cancer therapy: Initiate therapy with recommended standard of care dosing. Avoid moderate and strong CYP2D6 inhibitors.				

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Drug	Phenotype	Genetic Test	Results	Source/Evidence
Flomax ReviewG	Normal metabolizer Implication:	CYP2D6	*1/*1	FDA PGx Table ³⁵ CYP2D6 alleles do not indicate changes from recommended dose
Temazepam	Phenotype	Genetic Test	Results	Source/Evidence
Restoril TreatG ReviewG	Normal metabolizer Implication:	CYP2C9	*1/*1	Case-control studies ¹³ CYP2C9 alleles indicate typical risk of Temazepam-related falls
Tenoxicam	Phenotype	Genetic Test	Results	Source/Evidence
Mobiflex ReviewG	Normal metabolizer Implication:	CYP2C9 (Star Alleles)	*1/*1	CPIC A ³² CYP2C9 alleles do not indicate changes from recommended dose
Tetrabenazine	Phenotype	Genetic Test	Results	Source/Evidence
Austedo Nitoman Xenazine ReviewG	Normal metabolizer Implication:	CYP2D6	*1/*1	FDA PGx Table ³⁵ CYP2D6 alleles do not indicate changes from recommended dose
Thioridazine	Phenotype	Genetic Test	Results	Source/Evidence
TreatG ReviewG	Normal metabolizer Increased risk of adverse drug reactions Implication:	CYP2D6 ANKK1 rs1800497	*1/*1 A/G	FDA PGx Table ³⁵ PharmGKB 3 ANKK1 alleles indicate an increased risk of weight gain and hyperprolactinemia CYP2D6 alleles do not indicate changes from recommended dose
Tolterodine	Phenotype	Genetic Test	Results	Source/Evidence
Detrol TreatG ReviewG	Normal metabolizer Implication:	CYP2D6	*1/*1	FDA PGx Table ³⁵ CYP2D6 alleles do not indicate changes from recommended dose
Tramadol	Phenotype	Genetic Test	Results	Source/Evidence
Conzip Durela Ralivia Ultram Zytram XL TreatG ReviewG	Normal metabolizer Implication:	CYP2D6	*1/*1	CPIC A ⁶ ; FDA PGx Table ³⁵ CYP2D6 alleles do not indicate changes from recommended dose

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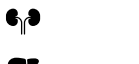



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Drug	Phenotype	Genetic Test	Results	Source/Evidence
Triazolam 	Normal metabolizer	CYP2C9	*1/*1	Case-control studies ¹³
	Implication: CYP2C9 alleles indicate typical risk of Triazolam-related falls			
Trifluoperazine 	Phenotype	Genetic Test	Results	Source/Evidence
	Increased risk of adverse drug reactions	ANKK1 rs1800497	A/G	PharmGKB 3
	Implication: ANKK1 alleles indicate an increased risk of weight gain and hyperprolactinemia			
Trimipramine 	Phenotype	Genetic Test	Results	Source/Evidence
	Normal metabolizer	CYP2D6	*1/*1	CPIC A ¹⁶ ; FDA PGx Table ³⁵
	Rapid metabolizer	CYP2C19	*1/*17	CPIC A ¹⁶
	Implication: CYP2C19 rapid metabolizer: increased metabolism of Trimipramine may affect response or adverse drug reactions			
	 Consider an alternative drug not predominantly metabolized by CYP2C19			
Valbenazine 	Phenotype	Genetic Test	Results	Source/Evidence
	Normal metabolizer	CYP2D6	*1/*1	FDA PGx Table ³⁵
	Implication: CYP2D6 alleles do not indicate changes from recommended dose			
Venlafaxine 	Phenotype	Genetic Test	Results	Source/Evidence
	Normal metabolizer	CYP2D6	*1/*1	DPWG (PharmGKB 1A) ⁸ ; FDA PGx Table ³⁵
	Implication: CYP2D6 alleles do not indicate changes from recommended dose			
Voriconazole 	Phenotype	Genetic Test	Results	Source/Evidence
	Rapid metabolizer	CYP2C19	*1/*17	CPIC A ²⁶ ; FDA PGx Table ³⁵
	Implication: CYP2C19 rapid metabolizer: increased metabolism of Voriconazole to less active compounds			
	Lower plasma concentrations of active drug may reduce response			
	 Consider an alternative drug not predominantly metabolized by CYP2C19			
Vortioxetine 	Phenotype	Genetic Test	Results	Source/Evidence
	Normal metabolizer	CYP2D6	*1/*1	FDA PGx Table ³⁵
	Implication: CYP2D6 alleles do not indicate changes from recommended dose			

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Warfarin	Phenotype	Genetic Test	Results	Source/Evidence
Coumadin Jantoven TreatGx ReviewGx	Normal metabolizer	CYP2C9	*1/*1	CPIC A ¹⁷ ;FDA PGx Table ³⁵
	Reduced response	VKORC1	G/G	CPIC A ¹⁷ ;FDA PGx Table ³⁵

Implication: ▲ 2 The algorithm in TreatGx includes pharmacogenetics and other clinical factors in calculating initial warfarin dose

Ziprasidone	Phenotype	Genetic Test	Results	Source/Evidence
Geodon Zeldox TreatGx ReviewGx	Increased risk of adverse drug reactions	ANKK1 rs1800497	A/G	PharmGKB 3

Implication: ANKK1 alleles indicate an increased risk of hyperprolactinemia

Zuclopenthixol	Phenotype	Genetic Test	Results	Source/Evidence
Clopixol TreatGx ReviewGx	Normal metabolizer	CYP2D6	*1/*1	DPWG (PharmGKB 1A) ⁸
	Increased risk of adverse drug reactions	ANKK1 rs1800497	A/G	PharmGKB 3

Implication: ANKK1 alleles indicate an increased risk of weight gain and hyperprolactinemia
 CYP2D6 alleles do not indicate changes from recommended dose

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Table of Available References

Drug	Genetic Test	Sources
Alfentanil	OPRM1 rs1799971	PharmGKB
Alprazolam	CYP2C9	Case-control studies ¹³
Amitriptyline	CYP2D6	CPIC ¹⁶ ;FDA ³⁵
Amitriptyline	CYP2C19	CPIC ¹⁶
Amoxapine	CYP2D6	FDA ³⁵
Amphetamine	CYP2D6	FDA ³⁵
Aripiprazole	CYP2D6	DPWG ⁸ ;FDA ³⁵
Aripiprazole	ANKK1 rs1800497	PharmGKB
Aripiprazole lauroxil	CYP2D6	FDA ³⁵
Asenapine	ANKK1 rs1800497	PharmGKB
Atomoxetine	CYP2D6 (Activity Score)	CPIC ⁴ ;FDA ³⁵
Atorvastatin	SLCO1B1	CPIC ⁵ ;FDA ³⁵
Avatrombopag	CYP2C9	FDA ³⁵
Brexpiprazole	CYP2D6	DPWG ⁸ ;FDA ³⁵
Brexpiprazole	ANKK1 rs1800497	PharmGKB
Brivaracetam	CYP2C19	FDA ³⁵
Bromazepam	CYP2C9	Case-control studies ¹³
Cariprazine	ANKK1 rs1800497	PharmGKB
Carisoprodol	CYP2C19	FDA ³⁵
Carvedilol	CYP2D6	FDA ³⁵
Celecoxib	CYP2C9 (Star Alleles)	CPIC ³² ;FDA ³⁵
Cevimeline	CYP2D6	FDA ³⁵
Chlordiazepoxide	CYP2C9	Case-control studies ¹³
Chlorpromazine	ANKK1 rs1800497	PharmGKB
Citalopram	CYP2C19	CPIC ¹⁵ ;FDA ³⁵

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Drug	Genetic Test	Sources
Clobazam	CYP2C19	FDA ³⁵
Clobazam	CYP2C9	Case-control studies ¹³
Clomipramine	CYP2D6	CPIC ¹⁶ ;FDA ³⁵
Clomipramine	CYP2C19	CPIC ¹⁶
Clonazepam	CYP2C9	Case-control studies ¹³
Clopidogrel	CYP2C19	CPIC ²⁰ ;FDA ³⁵
Clorazepate	CYP2C9	Case-control studies ¹³
Clozapine	CYP2D6	FDA ³⁵
Clozapine	ANKK1 rs1800497	PharmGKB
Codeine	CYP2D6	CPIC ⁶ ;FDA ³⁵
Cyclosporine	CYP3A5	PharmGKB
Darifenacin	CYP2D6	FDA ³⁵
Desipramine	CYP2D6	CPIC ¹⁶ ;FDA ³⁵
Deutetrabenazine	CYP2D6	FDA ³⁵
Dexlansoprazole	CYP2C19	CPIC ²² ;FDA ³⁵
Diazepam	CYP2C19	FDA ³⁵
Diazepam	CYP2C9	Case-control studies ¹³
Donepezil	CYP2D6	FDA ³⁵
Doxepin	CYP2D6	CPIC ¹⁶ ;FDA ³⁵
Doxepin	CYP2C19	CPIC ¹⁶
Dronabinol	CYP2C9	FDA ³⁵
Efavirenz	CYP2B6	CPIC ⁷ ;DPWG ⁸ ;FDA ³⁵
Elagolix	SLCO1B1	FDA ³⁵
Eliglustat	CYP2D6	DPWG ⁸ ;FDA ³⁵
Eltrombopag	Factor V rs6025	FDA ²⁸

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Drug	Genetic Test	Sources
Eltrombopag	Factor II rs1799963	PharmGKB
Erdafitinib	CYP2C9 (Star Alleles)	FDA ³⁵
Escitalopram	CYP2C19	CPIC ¹⁵ ;FDA ³⁵
Fentanyl	OPRM1 rs1799971	PharmGKB
Fesoterodine	CYP2D6	FDA ³⁵
Flecainide	CYP2D6	DPWG ⁸
Flibanserin	CYP2C19	FDA ³⁵
Flupentixol	ANKK1 rs1800497	PharmGKB
Fluphenazine	ANKK1 rs1800497	PharmGKB
Flurazepam	CYP2C9	Case-control studies ¹³
Flurbiprofen	CYP2C9 (Star Alleles)	CPIC ³² ;FDA ³⁵
Fluvastatin	CYP2C9	CPIC ⁵
Fluvastatin	SLCO1B1	CPIC ⁵
Fluvoxamine	CYP2D6	CPIC ¹⁵ ;FDA ³⁵
Fosphenytoin	CYP2C9	CPIC ¹⁸
Galantamine	CYP2D6	FDA ³⁵
Haloperidol	ANKK1 rs1800497	PharmGKB
Hydrocodone	CYP2D6	CPIC ⁶
Ibuprofen	CYP2C9 (Star Alleles)	CPIC ³²
Iloperidone	CYP2D6	FDA ³⁵
Iloperidone	ANKK1 rs1800497	PharmGKB
Imipramine	CYP2D6	CPIC ¹⁶ ;FDA ³⁵
Imipramine	CYP2C19	CPIC ¹⁶
Lansoprazole	CYP2C19	CPIC ²² ;FDA ³⁵
Lofexidine	CYP2D6	FDA ³⁵

PATIENT INFORMATION

NAME: John Doe
DOB: 01/Feb/1958
SEX AT BIRTH: Male

SPECIMEN DETAILS

BARCODE: IHM_002
SAMPLE ID: Doe_001
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Drug	Genetic Test	Sources
Lorazepam	CYP2C9	Case-control studies ¹³
Lovastatin	SLCO1B1	CPIC ⁵
Loxapine	ANKK1 rs1800497	PharmGKB
Lurasidone	ANKK1 rs1800497	PharmGKB
Meclizine	CYP2D6	FDA ³⁵
Meloxicam	CYP2C9 (Star Alleles)	CPIC ³²
Methotrimeprazine	ANKK1 rs1800497	PharmGKB
Metoclopramide	CYP2D6	FDA ³⁵
Metoprolol	CYP2D6	DPWG ⁸ ;FDA ³⁵
Mirabegron	CYP2D6	FDA ³⁵
Molindone	ANKK1 rs1800497	PharmGKB
Morphine	OPRM1 rs1799971	PharmGKB ⁶
Nebivolol	CYP2D6	FDA ³⁵
Nitrazepam	CYP2C9	Case-control studies ¹³
Nortriptyline	CYP2D6	CPIC ¹⁶ ;FDA ³⁵
Olanzapine	ANKK1 rs1800497	PharmGKB
Omeprazole	CYP2C19	CPIC ²² ;FDA ³⁵
Ondansetron	CYP2D6	CPIC ²
Oral contraceptives	Factor V rs6025	PharmGKB
Oral contraceptives	Factor II rs1799963	PharmGKB
Oxazepam	CYP2C9	Case-control studies ¹³
Paliperidone	ANKK1 rs1800497	PharmGKB
Pantoprazole	CYP2C19	CPIC ²² ;FDA ³⁵
Paroxetine	CYP2D6	CPIC ¹⁵ ;FDA ³⁵
Perphenazine	CYP2D6	FDA ³⁵

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Drug	Genetic Test	Sources
Perphenazine	ANKK1 rs1800497	PharmGKB
Phenytoin	CYP2C9	CPIC ¹⁸
Pimozide	CYP2D6	DPWG ⁸ ;FDA ³⁵
Pimozide	ANKK1 rs1800497	PharmGKB
Piroxicam	CYP2C9 (Star Alleles)	CPIC ³² ;FDA ³⁵
Pitavastatin	SLCO1B1	CPIC ⁵
Pravastatin	SLCO1B1	CPIC ⁵
Prochlorperazine	ANKK1 rs1800497	PharmGKB
Promethazine	ANKK1 rs1800497	PharmGKB
Propafenone	CYP2D6	DPWG ⁸ ;FDA ³⁵
Propranolol	CYP2D6	FDA ³⁵
Protriptyline	CYP2D6	FDA ³⁵
Quetiapine	ANKK1 rs1800497	PharmGKB
Risperidone	CYP2D6	DPWG ⁸
Rosuvastatin	SLCO1B1	CPIC ⁵ ;FDA ³⁵
Sertraline	CYP2C19	CPIC ¹⁵
Simvastatin	SLCO1B1	CPIC ⁵ ;FDA ³⁵
Siponimod	CYP2C9 (Star Alleles)	FDA ³⁵
Tacrolimus	CYP3A5	CPIC ³ ;FDA ³⁵
Tacrolimus	CYP3A4	PharmGKB
Tamoxifen	CYP2D6 (Activity Score)	Clinical trial ¹⁴ ;CPIC ¹¹ ;FDA ³⁵
Tamsulosin	CYP2D6	FDA ³⁵
Temazepam	CYP2C9	Case-control studies ¹³
Tenoxicam	CYP2C9 (Star Alleles)	CPIC ³²
Tetrabenazine	CYP2D6	FDA ³⁵

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Drug	Genetic Test	Sources
Thioridazine	CYP2D6	FDA ³⁵
Thioridazine	ANKK1 rs1800497	PharmGKB
Tolterodine	CYP2D6	FDA ³⁵
Tramadol	CYP2D6	CPIC ⁶ ;FDA ³⁵
Triazolam	CYP2C9	Case-control studies ¹³
Trifluoperazine	ANKK1 rs1800497	PharmGKB
Trimipramine	CYP2D6	CPIC ¹⁶ ;FDA ³⁵
Trimipramine	CYP2C19	CPIC ¹⁶
Valbenazine	CYP2D6	FDA ³⁵
Venlafaxine	CYP2D6	DPWG ⁸ ;FDA ³⁵
Voriconazole	CYP2C19	CPIC ²⁶ ;FDA ³⁵
Vortioxetine	CYP2D6	FDA ³⁵
Warfarin	CYP2C9	CPIC ¹⁷ ;FDA ³⁵
Warfarin	VKORC1	CPIC ¹⁷ ;FDA ³⁵
Ziprasidone	ANKK1 rs1800497	PharmGKB
Zuclopenthixol	CYP2D6	DPWG ⁸
Zuclopenthixol	ANKK1 rs1800497	PharmGKB

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PATIENT INFORMATION

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PATIENT INFORMATION

NAME: John Doe
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SPECIMEN DETAILS

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Methods

The results meet stringent quality control metrics for DNA isolation and genotyping. SNPs are processed in an OpenArray platform. Each call has an estimated quality value >95%, based on the autocaller algorithm in the TaqMan® Genotyper software (ThermoFisher Scientific). Copy number calls are accepted when confidence values are >95%. The HLA assays are processed using an RT-PCR-based presence/absence assay, and HLA positive calls are sequenced using Sanger technology to confirm. To avoid false negatives in HLA genotyping, if the presence/absence assay results are uncertain and Sanger sequencing results do not confirm them, a positive call is made.

Limitations

The annotations and interpretations provided in this report are based on scientific literature and do not take into account drug-drug interactions, medical conditions or other clinical factors that may affect medication response. Gene-drug interactions are ranked according to guidelines, level of evidence and clinical utility. GenXys reports and TreatGx Clinical Decision Support are regularly updated. Current predicted phenotype and allele functionality may change in the future depending on new evidence. Phenotype annotations for CYP2C9 are based on total activity scores as defined by CPIC⁷⁹. Genetic test results and interpretation may be inaccurate for individuals who have undergone or are receiving non-autologous blood transfusion, tissue, or organ transplant therapies.

The report includes alleles of proteins involved in the metabolism of many medications. In rare cases, a variant that is not covered may be typed as *1 or other variants. In the case of pseudogenes and mutations in the untranslated regions of genes, incorrect allele typing may occur despite proper SNP detection. Preferential amplification of one allele over another present in the sample may also lead to incorrect genotyping.

Liability Disclaimer

This test was developed and its performance characteristics determined by GenXys Health Care Systems. It has not been cleared or approved by the US Food and Drug Administration. The report is not a diagnostic test, and TreatGx is not a prescribing system. You should discuss your pharmacogenetic information with a physician or other health care provider before you act upon the pharmacogenetic information resulting from this report. The medication brand names are not an exhaustive list and do not include combination therapies. Not all medications in this report are included in the TreatGx or ReviewGx software or other GenXys derivative works.

Laboratory Director

07/Dec/2023

Thomas S. Alexander, Laboratory Director, PhD., D(ABMLI), CLIA
#39D2176007, CAP #9410964

Date of Signature

PATIENT INFORMATION

NAME: John Doe
DOB: 01/Feb/1958
SEX AT BIRTH: Male

SPECIMEN DETAILS

BARCODE: IHM_002
SAMPLE ID: Doe_001
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Laboratory Report

The **Laboratory Report** contains your genetic results.

Gene	rsID	HGVS	HGVS Reference	Result
ABCB1	rs1045642	c.3645G>A	NC_000007.14	G/G
APOE	rs429358	c.388T>C	NC_000019.10	T/T
COMT	rs4680	c.472G>A	NC_000022.11	G/A
CYP1A2	rs12720461	c.-10+113C>T	NC_000015.10	C/C
CYP1A2	rs2069514	g.74745879G>A	NC_000015.10	G/G
CYP1A2	rs56107638	g.74753271G>A	NC_000015.10	G/G
CYP1A2	rs72547513	c.558C>T	NC_000015.10	C/C
CYP1A2	rs762551	c.-9-154A>C	NC_000015.10	C/A
CYP2B6	rs28399499	c.983T>C	NC_000019.10	T/T
CYP2B6	rs3745274	c.516G>A/T	NC_000019.10	G/T
CYP2C19	rs12248560	c.-806C>T	NC_000010.11	C/T
CYP2C19	rs28399504	c.1A>G/T	NC_000010.11	A/A
CYP2C19	rs41291556	c.358T>C	NC_000010.11	T/T
CYP2C19	rs4244285	c.681G>A/C/T	NC_000010.11	G/G
CYP2C19	rs4986893	c.636G>A	NC_000010.11	G/G
CYP2C19	rs72552267	c.395G>A	NC_000010.11	G/G
CYP2C19	rs72558186	c.819+2T>A	NC_000010.11	T/T
CYP2C19	rs56337013	c.1297C>T	NC_000010.11	C/C
CYP2C9	rs1057910	c.1075A>C/G	NC_000010.11	A/A
CYP2C9	rs1304490498	c.353_362del	NC_000010.11	A/A
CYP2C9	rs1799853	c.430C>T	NC_000010.11	C/C
CYP2C9	rs28371685	c.1003C>T	NC_000010.11	C/C
CYP2C9	rs28371686	c.1080C>A/G/T	NC_000010.11	C/C
CYP2C9	rs56165452	c.1076T>A/C	NC_000010.11	T/T
CYP2C9	rs72558187	c.269T>C/G	NC_000010.11	T/T
CYP2C9	rs72558190	c.485C>A/T	NC_000010.11	C/C
CYP2C9	rs7900194	c.449G>A/C/T	NC_000010.11	G/G
CYP2C9	rs9332131	c.818del/dup	NC_000010.11	A/A
CYP2C9	rs9332239	c.1465C>T	NC_000010.11	C/C
CYP2D6	dup4125_4133	c.1403_1411dup	NC_000022.11	D/D
CYP2D6	rs1065852	c.100C>T/G	NC_000022.11	G/G
CYP2D6	rs1135840	c.1457G>C/A	NC_000022.11	C/C
CYP2D6	rs16947	c.886C>T/A	NC_000022.11	G/G
CYP2D6	rs201377835	c.181-1G>C	NC_000022.11	G/G
CYP2D6	rs28371706	c.320C>G/A	NC_000022.11	G/G

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Gene	rsID	HGVS	HGVS Reference	Result
CYP2D6	rs28371725	c.985+39G>A	NC_000022.11	C/C
CYP2D6	rs35742686	c.775del	NC_000022.11	T/T
CYP2D6	rs3892097	c.506-1G>A	NC_000022.11	C/C
CYP2D6	rs5030655	c.454del	NC_000022.11	A/A
CYP2D6	rs5030656	c.841_843del	NC_000022.11	TCT/TCT (A/A) ¹
CYP2D6	rs5030862	c.124G>A	NC_000022.11	C/C
CYP2D6	rs5030865	c.505G>T/C/A	NC_000022.11	C/C
CYP2D6	rs5030867	c.971A>C	NC_000022.11	T/T
CYP2D6	rs59421388	c.1012G>A	NC_000022.11	C/C
CYP2D6	rs72549353	c.765_768del	NC_000022.11	A/A
CYP2D6	rs72549354	c.635dup	NC_000022.11	D/D
CYP2D6	rs774671100	c.137dup	NC_000022.11	A/A (D/D) ¹
CYP3A4	rs35599367	c.522-191C>T	NC_000007.14	G/G
CYP3A4	rs4987161	c.566T>C	NC_000007.14	A/A
CYP3A4	rs55785340	c.664T>C/A	NC_000007.14	A/A
CYP3A5	rs10264272	c.624G>A	NC_000007.14	C/C
CYP3A5	rs28365083	c.1193C>A	NC_000007.14	G/G
CYP3A5	rs41303343	c.1035dup	NC_000007.14	D/D
CYP3A5	rs776746	c.219-237=	NC_000007.14	C/C
DRD2	rs1800497	c.2137G>A	NC_000011.10	A/G
Factor II	rs1799963	c.*97G>A	NC_000011.10	G/G
Factor V	rs6025	c.1601G>A	NC_000001.11	C/C
GLP1R	rs1042044	c.780C>A	NC_000006.12	C/A
GLP1R	rs2300615	c.510-1135T>G	NC_000006.12	G/T
GLP1R	rs6923761	c.502G>A	NC_000006.12	G/G
MTHFR	rs1801131	c.1409T>G	NC_000001.11	G/T
MTHFR	rs1801133	c.788G>A	NC_000001.11	G/A
OPRM1	rs1799971	c.118A>G	NC_000006.12	A/A
PNPLA5	rs5764010	c.950-169C>T	NC_000006.12	C/C
SLCO1B1	rs4149056	c.521T>C	NC_000012.12	T/T
SULT4A1	rs763120	c.743-374T>C	NC_000022.11	T/T
VKORC1	rs9923231	c.-1639G>T	NC_000016.10	G/G (C/C) ¹

1: Pharmacogenetic testing may occasionally lead to unusual genotypes. In these situations pharmacogenetic laboratories will sometimes report on alternative genotypes. If this is done then both genotypes appear in the result table; a genotype in () is the alternative genotype chosen by the lab.

Copy Number Variation

Gene	Reference	Result
CYP2D6	NG_008376.3	2N

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Phenotype Table

Gene	Allele Result	Phenotype Result
CYP2D6	*1/*1	Normal Metabolizer
CYP2C9	*1/*1	Normal Metabolizer
CYP2C19	*1/*17	Rapid Metabolizer
SLCO1B1	*1/*1	Normal Function
CYP2B6	*1/*6	Intermediate Metabolizer
CYP3A5	*3/*3	Poor Metabolizer
CYP3A4	*1/*1	Normal Metabolizer