Gene2Rx

Starter Pharmacogenetics Report

Report Information

Name: Leslie Knope

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About This Report

This report contains pharmacogenetic alleles and implications for drug response for the genetic data submitted. Both the genotypes presented and implicated medications are predictions based on the submitted data and published pharmacogenetics literature. This is not a clinical report and the data contained here in no way should be used as clinical guidance.

The information presented in this report is based on allele mappings and therapeutic implications developed by the Clinical Pharmacogenomics Implementation Consortium (CPIC®) and the US Food and Drug administration (FDA). Gene2Rx is not affiliated with CPIC or the FDA in any way. The contents of this page have not been endorsed by CPIC or the FDA and are the sole responsibility of Gene2Rx.

This report includes information about how your genetics may influence your response to common substances like caffeine, alcohol, nicotine, and ketamine. For information on 100+ prescription medications, upgrade to the full report.

The implications of taking medication for which you may have an atypical response are based on probabilities. You may or may not experience any side effects or altered efficaciousness. Consult your healthcare provider before making any changes to your healthcare.

The quality of uploaded data is not verified and may contain errors that result in alterations to your pharmacogenetic report. Genotyping panels (such as those used by direct to consumer genetics services) offer an incomplete representation of an individual's genetics. You may harbor additional genetic variation that can affect drug response.

⚠ **Disclaimer:** Do not alter your medication dose or stop your medication without first consulting your healthcare provider.

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Pharmacogenetics Summary

This table contains the specific variants identified in each of the genes assessed for your Gene2Rx report. Evidence and actionability differ by gene and medication.

A few genes (including CYP2D6, CYP2C9, and DPYD) get a number called an *activity score* instead of a single category. The score is the sum of the activity values of your two gene copies, and a higher number means more enzyme activity. Dosing guidelines for these genes are often based on the score, so we show it next to the phenotype when it applies.

	GENE	GENOTYPE	PHENOTYPE
✓	**ADH1B**	rs1229984C/rs1229984C	Normal Function
✓	**ALDH2**	rs671G/rs671G	Normal Function
↑	**CHRNA5**	rs16969968A/rs16969968A	Increased Risk
↓	**COMT**	rs4680A/rs4680G	Intermediate Function
↑	**CYP1A2**	*1/*30	Rapid Metabolizer
✓	**CYP2A6**	*1/*1	Normal Metabolizer
✓	**CYP2B6**	*1/*1	Normal Metabolizer

PHENOTYPE SYMBOLS

Each symbol represents the predicted function of the gene. A non-normal allele does not necessarily lead to a change in drug response.

- ✓ Normal function
- ↓ Decreased function
- ↑ Increased function
- ✕ Severely decreased function or high-risk finding
- ? Unknown function

Pharmacogenetic Results

Drugs are grouped by clinical class. For each class with three or more drugs in your report, a scoreboard summarizes which medications you are likely to use as directed, which warrant caution, and which you may want to discuss alternatives for. The detailed tables below each scoreboard show the underlying gene-drug findings.

Therapeutic Guidance Legend

- Use as directed
- Use with caution / dose adjustment
- Consider alternative

Other substances

4 drugs

USE AS DIRECTED 2	USE WITH CAUTION 2	CONSIDER ALTERNATIVE 0
Alcohol ADH1B, ALDH2	Caffeine CYP1A2	*No drugs in this category.*
Ketamine CYP2B6	Nicotine CHRNA5, COMT, CYP2A6	

Each card shows the gene driving the recommendation. Use as directed = your genetics suggest a typical response. Use with caution = consider dose adjustment or monitoring. Consider alternative = guidelines suggest discussing a different drug with your provider.

	GENERIC NAME	BRAND NAMES	GENE	YOUR GENE PHENOTYPE	IMPLICATION	SOURCE
✓	Alcohol		ADH1B	✓ Normal Function	*Implication:* Two Arg48 alleles (rs1229984). Usual rate of ethanol oxidation. Compared with His48 carriers, associated with higher risk of alcohol dependence and, among heavy drinkers in East Asian studies, higher risk of esophageal and head and neck cancer. Only rs1229984 is assessed: ADH1B*3 (rs2066702), common in people of African ancestry, is not read, so its carriers are reported here. *Therapeutic recommendation:* Follow standard guidelines for alcohol consumption.	Gene2Rx
			ALDH2	✓ Normal Function	*Implication:* Two Glu504 alleles (rs671 G/G, ALDH2*1/*1). Normal acetaldehyde clearance; typical risk of flushing, hangover and alcohol dependence for this gene. *Therapeutic recommendation:* Standard advice on drinking limits.	Gene2Rx
⚠	Caffeine	Coffee, Tea	CYP1A2	↑ Rapid Metabolizer	*Implication:* One rs762551 A allele (*1/*30). Modestly higher CYP1A2 activity, mainly in smokers. Note: in the coffee and cardiovascular literature, A/C carriers are classed as 'slow' metabolizers. *Therapeutic recommendation:* Caffeine may be cleared somewhat faster than average. Standard advice on moderate intake applies.	Gene2Rx
✓	Ketamine	Ketalar	CYP2B6	✓ Normal Metabolizer	*Implication:* Usual CYP2B6 activity and expected N-demethylation of ketamine to norketamine. CYP3A4 contributes to the same step, and the relative roles of the two enzymes are still debated. *Therapeutic recommendation:* Initiate with standard ketamine doses per clinical practice and titrate to effect.	Gene2Rx
⚠	Nicotine	Cigarettes, Zyn	CHRNA5	↑ Increased Risk	*Implication:* One or two rs16969968 A alleles (Asn398). The Asn398 receptor shows reduced response to nicotinic agonists in vitro. Associated with more cigarettes per day, higher risk of nicotine dependence, later smoking cessation and earlier lung cancer diagnosis in smokers. In a cessation trial, carriers of the high-risk haplotype benefited more from cessation pharmacotherapy than non-carriers. *Therapeutic recommendation:* Higher risk of heavy, persistent use. For patients who want to quit, offer cessation pharmacotherapy with counseling rather than an unassisted attempt.	Gene2Rx
			COMT	↓ Intermediate Function	*Implication:* rs4680 Val/Met. Moderately lower COMT activity. Associations with nicotine reward, withdrawal and smoking behavior are inconsistent across studies. *Therapeutic recommendation:* No genotype-based change to cessation treatment; monitor craving as usual.	Gene2Rx
			CYP2A6	✓ Normal Metabolizer	*Implication:* No reduced-function allele detected among those assessed. Typical nicotine clearance. The CYP2A6*4 deletion, *12 hybrid and duplications are not assessed, so reduced activity cannot be ruled out. *Therapeutic recommendation:* Typical response to nicotine. In smokers with normal nicotine metabolism, varenicline was more effective than the nicotine patch in a randomized trial.	Gene2Rx

Frequently Asked Questions

What do I do now?
If you find that you may have an atypical response to a medication you take or are considering taking, it is important that you first consult with your healthcare provider or a genetic counselor before making any changes.

Should I change medications or dosage based on my report?
No! Do not alter your medication dosage or stop taking your medication without first consulting your healthcare provider.

Why shouldn't I change my medication based on this report?
Direct-to-consumer data is not clinical grade, so anything included in the report should be used as a conversation starter with your healthcare provider to seek the appropriate clinical laboratory test.

Are these expert annotations?
The source is identified beside each finding. This report includes CPIC, FDA, DPWG, and Gene2Rx interpretations with different levels of evidence. Gene2Rx interpretations are not necessarily endorsed by those organizations. Gene2Rx interpretations explain the supporting research and its limitations alongside the finding.

More questions?
Contact us at contact@gene2rx.com.