EXAMPLE REPORT · COMPLETE REPORT FOR YOUR DOCTOR OR PHARMACIST

Starter Report

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Report version	Created	Data source	Genome build
4.6	**Nov 8, 2026**	**23andMe**	**GRCh37**

4 substances · 7 genes · 1 drug class

This complete edition includes every gene result and every medication in this report tier, including results labeled “Use as directed,” all source guidance, evidence levels and limitations.

This is not a clinical test. Results are predictions from consumer DNA data and published research. The quality of submitted data is not independently verified and errors can affect the report. Do not change a dose or stop a medication without talking to your prescriber. Confirm any result that matters with a clinical-grade test.

Coverage depends on your data and report tier. A medication missing from this report may still have guidance from a clinical guideline or product label.

Reading the guidance

CONSIDER ALTERNATIVE 0 · USE WITH CAUTION 2 · USE AS DIRECTED 2 · UNABLE TO DETERMINE 0

Use as directed: no change suggested by the assessed genetic findings. Use with caution: a dose change, slower titration or monitoring may be suggested. Consider alternative: discuss another medication or the source’s dose advice. Unable to determine: the available data could not establish a result. These labels do not guarantee effectiveness or freedom from side effects.

Report contents

Gene results at a glance · Complete medication guidance · Gene details and frequencies · About this report

Other substances 4 substances

Your genes at a glance

All 7 results. Evidence and actionability differ by gene and medication. An activity score adds the activity values of your gene copies; higher scores indicate more enzyme activity. The detailed gene section explains each result.

GENE	YOUR TWO COPIES	GENOTYPE	PHENOTYPE	ACTIVITY SCORE
ADH1B		rs1229984C/rs1229984C	Normal Function	-
ALDH2		rs671G/rs671G	Normal Function	-
CHRNA5	A A	rs16969968A/rs16969968A	Increased Risk	-
COMT		rs4680A/rs4680G	Intermediate Function	-
CYP1A2		*1/*30	Rapid Metabolizer	-
CYP2A6		*1/*1	Normal Metabolizer	-
CYP2B6		*1/*1	Normal Metabolizer	-

Color shows the overall gene result. Dot fill shows each copy's function; lettered dots show your DNA letters where copy function isn't defined.

Normal / typical / favorable · Intermediate / decreased · Poor / increased risk · Rapid / increased · Not determined

Filled dots: works normally. Half-filled: works less well. Empty: does not work. Ringed: more active than usual. Dotted gray: not determined. Letters show DNA bases without assigning copy function. A non-normal allele does not necessarily change medication guidance.

Complete medication guidance

All 4 substances, grouped by drug class. Each source's wording and evidence level are retained; sources may offer different recommendations.

Other substances 4 substances

2 Use with caution 2 Use as directed

Alcohol

USE AS DIRECTED

Your genes have little effect on how your body handles alcohol.

ADH1B Normal function **ALDH2** Normal function

ADH1B: Normal function

GENE2RX RESEARCH SUMMARY, ADH1B USE AS DIRECTED See the drug page

WHAT IT MEANS 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.

WHAT THE RESEARCH SUGGESTS Follow standard guidelines for alcohol consumption.

ALDH2: Normal function

GENE2RX RESEARCH SUMMARY, ALDH2 USE AS DIRECTED See the drug page

IN PLAIN WORDS Your genes have little effect on how you clear the toxic by-product of alcohol.

WHAT IT MEANS Two Glu504 alleles (rs671 G/G, ALDH2*1/*1). Normal acetaldehyde clearance; typical risk of flushing, hangover and alcohol dependence for this gene.

WHAT THE RESEARCH SUGGESTS Standard advice on drinking limits.

Caffeine

USE WITH CAUTION

Coffee, Tea

Caffeine may wear off slightly sooner for you than average. The usual advice on caffeine limits applies.

CYP1A2 Rapid metabolizer

CYP1A2: Rapid metabolizer

GENE2RX RESEARCH SUMMARY, CYP1A2 USE WITH CAUTION Evidence: moderate See the drug page

WHAT IT MEANS 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.

WHAT THE RESEARCH SUGGESTS Caffeine may be cleared somewhat faster than average. Standard advice on moderate intake applies.

Ketamine

USE AS DIRECTED

Ketalar

Your body processes ketamine at the usual rate.

CYP2B6 Normal metabolizer

CYP2B6: Normal metabolizer

GENE2RX RESEARCH SUMMARY, CYP2B6 USE AS DIRECTED Evidence: strong See the drug page

WHAT IT MEANS 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.

WHAT THE RESEARCH SUGGESTS Initiate with standard ketamine doses per clinical practice and titrate to effect.

Nicotine

USE WITH CAUTION

Cigarettes, Zyn

This variant is linked to heavier smoking and finding it harder to quit. Stop-smoking medicines appear to help people with this result as much as or more than others.

CHRNA5 Increased risk **COMT** Intermediate function **CYP2A6** Normal metabolizer

CHRNA5: Increased risk

GENE2RX RESEARCH SUMMARY, CHRNA5 USE WITH CAUTION Evidence: strong See the drug page

WHAT IT MEANS 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.

WHAT THE RESEARCH SUGGESTS Higher risk of heavy, persistent use. For patients who want to quit, offer cessation pharmacotherapy with counseling rather than an unassisted attempt.

COMT: Intermediate function

GENE2RX RESEARCH SUMMARY, COMT USE WITH CAUTION Evidence: weak See the drug page

IN PLAIN WORDS This result has been studied in relation to smoking, but the findings are mixed, so it tells you little about how you respond to nicotine.

WHAT IT MEANS rs4680 Val/Met. Moderately lower COMT activity. Associations with nicotine reward, withdrawal and smoking behavior are inconsistent across studies.

WHAT THE RESEARCH SUGGESTS No genotype-based change to cessation treatment; monitor craving as usual.

Nicotine

USE WITH CAUTION

Cigarettes, Zyn

This variant is linked to heavier smoking and finding it harder to quit. Stop-smoking medicines appear to help people with this result as much as or more than others.

CHRNA5 Increased risk **COMT** Intermediate function **CYP2A6** Normal metabolizer

CYP2A6: Normal metabolizer

GENE2RX RESEARCH SUMMARY, CYP2A6 USE AS DIRECTED Evidence: strong See the drug page

IN PLAIN WORDS Your body is expected to clear nicotine at a typical rate.

WHAT IT MEANS 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.

WHAT THE RESEARCH SUGGESTS Typical response to nicotine. In smokers with normal nicotine metabolism, varenicline was more effective than the nicotine patch in a randomized trial.

Gene details and frequencies

All 7 genes. Frequency context describes populations, not your chance of a side effect. A missing frequency estimate means no supported reference is available for that result.

ADH1B Normal function

rs1229984C/rs1229984C · Both copies work normally.

Turns alcohol into acetaldehyde, a toxic by-product.

1 substance lists this gene. Guidance unchanged

ADH1B rs1229984 C allele: 29.6% to 99.7% of DNA copies across ancestry groups

Your result has 2 copies of this allele. These gnomAD frequencies count DNA copies, not people who share your genotype or phenotype, and do not measure your chance of side effects. No ancestry is assumed for you.

Counts below show copies of the C allele / total DNA copies measured.

African / African American	**98.8%** 41,031 / 41,534	Admixed American	**93.2%** 14,240 / 15,282
Amish	**89.9%** 820 / 912	Ashkenazi Jewish	**73.1%** 2,539 / 3,472
East Asian	**29.6%** 1,530 / 5,168	Finnish	**99.7%** 10,586 / 10,618
Middle Eastern	**78.6%** 231 / 294	European (non-Finnish)	**96.4%** 65,617 / 68,036
South Asian	**95.9%** 4,626 / 4,822	Remaining ancestry group	**88.4%** 1,861 / 2,106

Reference: gnomAD v4.1 genomes, GRCh38 4-99318162-T-C. Frequencies are allele count divided by allele number within each ancestry group. Study groups are not representative of the worldwide population. Data retrieved 2026-10-17.

ALDH2 Normal function

rs671G/rs671G · Both copies work normally.

Clears acetaldehyde, the toxic by-product of alcohol.

1 substance lists this gene. Guidance unchanged

ALDH2 rs671 A allele: 0% to 22.5% of DNA copies across ancestry groups

Your result has 0 copies of this allele. These gnomAD frequencies count DNA copies, not people who share your genotype or phenotype, and do not measure your chance of side effects. No ancestry is assumed for you.

Counts below show copies of the A allele / total DNA copies measured.

African / African American	**<0.1%** 8 / 41,546	Admixed American	**<0.1%** 14 / 15,274
Amish	**0%** 0 / 912	Ashkenazi Jewish	**0%** 0 / 3,470
East Asian	**22.5%** 1,154 / 5,132	Finnish	**<0.1%** 1 / 10,598
Middle Eastern	**0%** 0 / 294	European (non-Finnish)	**<0.1%** 2 / 68,020
South Asian	**<0.1%** 4 / 4,820	Remaining ancestry group	**0.5%** 10 / 2,108

Reference: gnomAD v4.1 genomes, GRCh38 12-111803962-G-A. Frequencies are allele count divided by allele number within each ancestry group. Study groups are not representative of the worldwide population. Data retrieved 2026-10-17.

CHRNA5 Increased risk

rs16969968A/rs16969968A

A nicotine receptor in the brain linked to heavy smoking.

You carry a variant linked to heavier smoking and a harder time quitting.

1 substance lists this gene. Changes the guidance for 1

CHRNA5 rs16969968 A allele: 3.2% to 40.7% of DNA copies across ancestry groups

Your result has 2 copies of this allele. These gnomAD frequencies count DNA copies, not people who share your genotype or phenotype, and do not measure your chance of side effects. No ancestry is assumed for you.

Counts below show copies of the A allele / total DNA copies measured.

African / African American	**5.9%** 2,458 / 41,526	Admixed American	**22.6%** 3,458 / 15,290
Amish	**40.7%** 368 / 904	Ashkenazi Jewish	**37.5%** 1,302 / 3,470
East Asian	**3.2%** 166 / 5,186	Finnish	**32.7%** 3,455 / 10,568
Middle Eastern	**40.1%** 118 / 294	European (non-Finnish)	**34.7%** 23,587 / 67,982
South Asian	**22.2%** 1,069 / 4,826	Remaining ancestry group	**27.5%** 581 / 2,112

Reference: gnomAD v4.1 genomes, GRCh38 15-78590583-G-A. Frequencies are allele count divided by allele number within each ancestry group. Study groups are not representative of the worldwide population. Data retrieved 2026-10-17.

COMT Intermediate function



rs4680A/rs4680G · One copy works and one works less well.

Breaks down dopamine and other brain chemicals.

1 substance lists this gene. Changes the guidance for 1

COMT rs4680 A allele: 27.4% to 66.4% of DNA copies across ancestry groups

Your result has 1 copy of this allele. These gnomAD frequencies count DNA copies, not people who share your genotype or phenotype, and do not measure your chance of side effects. No ancestry is assumed for you.

Counts below show copies of the A allele / total DNA copies measured.

African / African American	**31.0%** 12,853 / 41,484	Admixed American	**40.4%** 6,184 / 15,292
Amish	**66.4%** 604 / 910	Ashkenazi Jewish	**45.3%** 1,571 / 3,466
East Asian	**27.4%** 1,414 / 5,152	Finnish	**55.3%** 5,854 / 10,592
Middle Eastern	**46.9%** 138 / 294	European (non-Finnish)	**51.8%** 35,191 / 67,942
South Asian	**44.5%** 2,147 / 4,822	Remaining ancestry group	**41.8%** 883 / 2,110

Reference: gnomAD v4.1 genomes, GRCh38 22-19963748-G-A. Frequencies are allele count divided by allele number within each ancestry group. Study groups are not representative of the worldwide population. Data retrieved 2026-10-17.

CYP1A2 Rapid metabolizer



***1/*30** · One copy works normally and one works faster than usual.

Breaks down caffeine and some medicines, such as clozapine.

1 substance lists this gene. Changes the guidance for 1

CYP2A6 Normal metabolizer



***1/*1** · Both copies work normally.

Breaks down nicotine.

1 substance lists this gene. Guidance unchanged

CYP2B6 Normal metabolizer

***1/*1** · Both copies work normally.

Breaks down efavirenz, ketamine, methadone and some drugs for depression.

1 substance lists this gene. Guidance unchanged

CYP2B6 normal metabolizer: estimated in 13.0% to 48.6% of people across population groups

These CPIC estimates describe this phenotype, not your exact DNA combination or your chance of side effects. Frequencies vary by population; no ancestry is assumed for you.

African American/Afro-Caribbean	**33.4%**	Central/South Asian	**42.2%**
East Asian	**48.6%**	European	**43.0%**
Latino	**33.6%**	Near Eastern	**29.1%**
Oceanian	**13.0%**	Sub-Saharan African	**14.3%**

Estimated from published allele frequencies, rather than a direct count of people with this result. Study coverage and methods vary. Reference: CPIC CYP2B6 frequency table and methods. Data retrieved 2026-10-17.

About this report

7 of 7 genes have results; 4 substances have a determined guidance label.

Rare variants can be missed. Arrays test selected positions; imputation helps fill the gaps but can still miss rare variants.

How the results were read

Untested array positions are estimated using a reference panel (imputation). The two gene copies are named and matched to published phenotype tables and medication guidance.

Sources

Gene2Rx - Gene2Rx research summaries: 4 substances. Published studies we summarize where no guideline exists yet.

Source links in the medication guidance remain clickable in the PDF. Gene2Rx is not affiliated with or endorsed by CPIC, the FDA or DPWG. Research summaries can have different evidence and actionability from clinical guidelines.

Questions

What do I do now?

If you may have an unusual response to a medication you take or are considering, talk with your healthcare provider or a genetic counselor before making changes. The sources beside each finding explain its evidence and limits. Not every finding supports a treatment change.

Should I change medications or my dose based on this report?

No. Do not change a dose or stop a medication without talking to your healthcare provider first. Consumer DNA data is not clinical grade. Use this report to start a conversation with your provider, who may order a clinical lab test. Research on consumer genetic testing.

Are these expert annotations?

Each finding names its source. CPIC, FDA, DPWG and Gene2Rx interpretations have different levels of evidence. These organizations do not endorse Gene2Rx interpretations, which explain the research and its limitations alongside each finding.

Why would my results change?

Your genes do not change, but research does. Guidelines and drug labels are updated when new research meets strict standards and experts agree. Your report preserves the guidance used when it was made; an updated report may use newer guidance.

I do not see my medication. Why not?

Not every medication is affected by genetics, and some need more research before guidance exists. A medication may also be missing because of your report tier, your data or what this report covers. A missing medication may still have guidance from a clinical guideline or drug label.

Why should I confirm results before changing treatment? Consumer data is not clinical grade and the findings are predictions. Additional genetic variation, health conditions and other medicines can affect response. Discuss any treatment decision with your healthcare provider or pharmacist.

More questions: contact@gene2rx.com. Full interactive report: gene2rx.com.