PHARMACOGENOMIC

PREVENTIVE PANEL

Guideline-driven
personalized
medication
decisions for everyday
prescribing

MEDICOVER
GENETICS

ABOUT PHARMACOGENOMICS

Pharmacogenomics (PGx) examines how genetic differences affect an individual's response to medications. Variants in drug-related genes can influence how drugs are absorbed, metabolized, and cleared, which impacts both safety and efficacy. Research shows that up to 50% of adverse drug reactions (ADRs) may have a genetic cause.[1] By identifying these variants before treatment, PGx preventive screening supports more informed prescribing. It helps reduce side effects, improve treatment success, avoid ineffective or poorly tolerated medications, and lower healthcare costs by minimizing unnecessary medication adjustments.

WHAT IS PGx PREVENTIVE PANEL?

The PGx Preventive Panel is a preemptive, patient-focused genetic test that supports safer and more personalized prescribing from the start. It analyzes key genetic variants that affect how drugs are absorbed, processed, and eliminated, helping to reduce side effects and improve treatment outcomes. The panel follows the latest CPIC, FDA, and DPWG recommendations. It is applicable across several areas of care, including pain management (e.g., NSAIDs, opioids), mental health (e.g., antidepressants, antipsychotics), cardiovascular care (e.g., statins, anticoagulants), and primary care/internal medicine (e.g., polypharmacy, geriatrics). Results are provided in a clear report with gene and drug interaction summaries and evidence-based dosing guidance to support informed clinical decisions.

WHO COULD **BENEFIT** FROM THIS TEST?

- Patients interested in preventive and personalized healthcare
- Patients seeking to optimize medication choices before potential health issues arise
- Patients seeking to reduce the risk of ADRs or treatment failure
- Patients managing multiple prescriptions (polypharmacy)

WHY **RECOMMEND PGx PREVENTIVE PANEL**?

Genetic variation accounts for up to 95% of how individuals respond to medications.[2] Over 100 drugs now include pharmacogenomic guidance in FDA labeling, showing the growing role of genetics in prescribing. Our PGx Preventive Panel provides clear, evidence-based results to guide drug and dose selection before issues arise. It can help:

- Reduce the risk of ADRs
- Improve therapeutic efficacy
- Personalize treatment with greater precision
- Optimize long-term medication strategies

[1]Chenchula et al. 2024, PMID: 38490995; [2]Principi et al. 2023, PMID: 38004461; [3]Clinical Pharmacogenetics Implementation Consortium (CPIC®)

OUR TEST

PGx Preventive Panel analyzes 25 genes, including 16 core genes that are directly linked to drug response across more than 15 therapeutic areas. These genes, such as *CYP2D6*, *CYP2C19*, *CYP2C9*, *SLCO1B1*, or *TPMT*, are supported by strong clinical evidence and high-level prescribing guidelines. The panel is based on recommendations from leading pharmacogenomic societies[3] and focuses on key genes involved in drug metabolism. It includes a comprehensive analysis of the *CYP2D6* gene, capturing full genotypes including critical copy number variations (CNVs) and hybrid alleles, which are essential for accurate interpretation in clinical pharmacogenomics.

Applicable across a wide range of medical specialties, including:

- Cardiology
- Endocrinology
- Gastroenterology
- Internal Medicine
- Nephrology
- Neurology
- Oncology
- Pain Management
- Pediatrics
- Psychiatry
- Rheumatology
- Transplant Medicine

Additionally, diagnostic pharmacogenetic testing is available for patients with a confirmed diagnosis, supporting more targeted and effective treatment decisions. For more information, please visit www.medicover-genetics.com

BENEFITS OF PGx PREVENTIVE PANEL

HOW IT WORKS

Our analysis pipeline combines automated reporting with curated pharmacogenomic databases and established clinical guidelines to deliver accurate, evidence-based results. The process starts with DNA sample collection, followed by targeted pharmacogenomic short-read sequencing and also long-read sequencing of the *CYP2D6* gene.

Genetic variants, including SNVs, InDels, and CNVs, are processed through a bioinformatics workflow and annotated with clinically relevant information. The final report is generated automatically, providing clear and actionable insights to support personalized treatment decisions.

GENES ANALYZED AND CLINICAL IMPACT

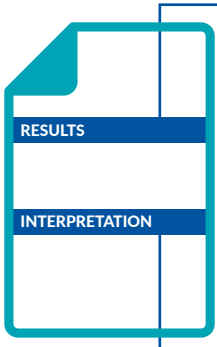
The panel analyzes 25 genes, including 16 with strong evidence-based drug recommendations. These genes are involved in drug metabolism, transport, and response across multiple therapeutic areas. Each gene is annotated in the report with its clinical relevance, function and, where applicable, dosing guidance.

Gene	Drug Recommendations	Function & Clinical Relevance
ABCG2	•	Drug transporter; affects chemotherapy and gout medications
CYP2B6	•	Metabolizes bupropion, efavirenz, methadone; impacts efficacy/toxicity
CYP2C19	•	Affects PPIs, antidepressants, clopidogrel
CYP2C9	•	Impacts NSAIDs, warfarin, antidiabetics, antiepileptics
CYP2D6	•	Metabolizes 25% of drugs; CNVs and mutations influence response
CYP3A4	•	Major enzyme; processes statins, immunosuppressants, chemotherapy
CYP3A5	•	Works with *CYP3A4*; variants affect clearance
CYP4F2	•	Vitamin K metabolism; warfarin dosing
DPYD	•	Fluoropyrimidine metabolism; toxicity risk
G6PD	•	Hemolysis risk with certain drugs
IFNL3	•	Response to hepatitis C therapy
NUDT15	•	Thiopurine metabolism; toxicity risk
SLCO1B1	•	Statin transport; myopathy risk
TPMT	•	Thiopurine metabolism; toxicity risk
UGT1A1	•	Irinotecan metabolism; toxicity risk
VKORC1	•	Warfarin sensitivity and dosing
ABCB1	○	P-glycoprotein; influences drug transport and resistance
ALDH2	○	Alcohol metabolism; nitroglycerin sensitivity
BCHE	○	Butyrylcholinesterase activity; anesthetic sensitivity
COMT	○	Involved in dopamine and catecholamine metabolism
CYP1A1	○	Xenobiotic metabolism; emerging relevance
CYP1A2	○	Caffeine and antipsychotic metabolism
CYP2C8	○	Repaglinide and paclitaxel metabolism
F2	○	Thrombosis risk; anticoagulant relevance
F5	○	Factor V Leiden; affects clotting and warfarin response

● - *gene with guideline-based drug recommendations (e.g., CPIC, FDA, DPWG)*
○ - *gene with emerging or context-specific clinical relevance*

WHAT ARE THE POSSIBLE **OUTCOMES** OF THE TEST?

The PGx Preventive Panel provides a comprehensive, clinically relevant report with clear and actionable insights based on the individual's genetic profile.



SUMMARY

The report includes a summary of key gene-drug interactions relevant to the individual. A total of 25 genes are analyzed, including 16 key pharmacogenes involved in drug metabolism. Star alleles are detected and reported to support an accurate interpretation of the patient's profile.

RECOMMENDATIONS

For the 16 core pharmacogenes, the report offers precise dose recommendations based on the patient's genotype. Each gene is annotated with its clinical significance, mode of action, and potential implications. The report also includes interpretation guidance, relevant disclaimers, and a comprehensive list of scientific references to support the recommendations.

CLINICALLY ACTIONABLE & EVIDENCE-BASED

The findings are aligned with the latest pharmacogenomic standards, including CPIC, DPWG, and FDA guidelines, ensuring the report is both evidence-based and supports clinical decision-making.

LIMITATIONS: The PGx Preventive Panel focuses on well-established pharmacogenomic markers and may not detect all possible genetic variants. Some rare or complex genetic changes, including certain structural variants, may not be included in the analysis. The report prioritizes medications with strong clinical prescribing guidelines; additional gene-drug interactions may exist but are not reported. Non-genetic factors, such as age, comorbidities, drug–drug interactions, or lifestyle, are not assessed by this assay and should be considered separately during clinical decision-making.

ABOUT THIS TEST: This PGx test is intended for preventive screening purposes only. It is not diagnostic and should not be used to guide treatment without appropriate clinical consultation. The test complies with GenDG, GDPR, and IVDR. Results are provided exclusively with patient consent.

TECHNICAL **HIGHLIGHTS**

- 25 genes analyzed, including 16 core pharmacogenes with strong clinical relevance
- Targeted short-read sequencing enables robust detection of actionable genotypes in clinically relevant PGx genes
- *CYP2D6* analysis via long-read sequencing resolves complex structural variants in the *CYP2D6-CYP2D7* locus, identifying gene duplications, deletions, and hybrid genes that may be missed by standard methods
- Guideline-aligned interpretation based on international pharmacogenomic standards, including CPIC, DPWG, and FDA recommendations

HOW TO **ORDER**?

Recommend PGx Preventive Panel to your patient

Collect the sample(s) - EDTA blood (preferred) or buccal swab

Send the sample(s) to **Medicover Genetics**

The sample(s) will be analyzed at **Medicover Genetics** laboratories

Results will be sent to you

MORE **QUESTIONS**?

If you have additional questions or concerns, please contact us at **info.genetics@medicover.com**

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Medicover Genetics GmbH
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