

# Pharmacogenomic Testing at ARUP Laboratories

Leverage genetic testing to predict a patient's response to a drug and achieve therapeutic efficacy.

# Pharmacogenomic Testing

## Prevents Adverse Reactions

Genotype-guided treatment using pharmacogenomic testing significantly reduces the incidence of clinically relevant adverse drug reactions.<sup>1</sup>

## Reduces Cost

Systematic review of studies that assessed the cost-effectiveness of pharmacogenomic testing for drugs with existing recommendations based on genetic markers concluded that pharmacogenomic testing was either cost-effective or cost saving.<sup>2</sup>


## Expedites Therapeutic Success

- Accelerates time to therapeutic success with biomarker-guided therapy
- Improves patient compliance with drug therapy


“At ARUP, we provide affordable, high-throughput pharmacogenomic testing based on genes with the highest level of evidence. Our priority is to provide results that will effectively help clinicians manage their patients’ treatment plans.”

—Sherin Shaaban, MD, PhD, MSci, FACMG,  
Medical Director of Pharmacogenomics  
and Molecular Genetics


A recent study<sup>3</sup> involving members of the Kentucky Teachers’ Retirement System found that using pharmacogenomic testing resulted in a:




**6.8%**  
reduction in  
emergency  
department visits




**14.9%**  
reduction in  
inpatient visits



**\$218.34**  
reduction in  
direct medical  
charges (per  
member, per  
month)



**\$7,000**  
reduction in  
direct medical  
charges per  
patient in a  
32-month period



**\$37 million**  
in cumulative  
savings in a  
32-month period

## WHY CHOOSE ARUP?

ARUP provides pharmacogenomic testing for most gene-drug pairs with high levels of evidence and actionable clinical guideline recommendations.

### Expert Consultation

Consult with our medical directors on test selection and results interpretation.

### Clinical Relevance

Access testing curated for maximum clinical relevance that includes genes with the highest levels of evidence.

### Enhanced Reporting\*

Opt for additional reporting that provides drug-dosing guidelines based on your patient’s genetic profile.

\*Available for select tests

## PHARMACOGENOMIC TESTING AVAILABLE AT ARUP

ARUP TEST CODE AND NAME	GENES OR ALLELES ASSESSED
3004255 Cytochrome P450 Genotyping Panel, with GeneDose Access	CYP2B6, CYP2C19, CYP2C8, CYP2C9, CYP2D6, CYP3A4, and CYP3A5
3006366 Pharmacogenetics Panel: Psychotropics, with GeneDose Access	ANKK1, COMT, CYP2B6, CYP2C19, CYP2C9, CYP2D6, CYP3A4, CYP3A5, DRD2, GRIK4, HTR2A, HTR2C, MTHFR, OPRM1, and UGT2B15
3001524 Cytochrome P450 Genotyping Panel	CYP2B6, CYP2C19, CYP2C8, CYP2C9, CYP2D6, CYP3A4, and CYP3A5
3004471 Pharmacogenetics Panel: Psychotropics	ANKK1, COMT, CYP2B6, CYP2C19, CYP2C9, CYP2D6, CYP3A4, CYP3A5, DRD2, GRIK4, HTR2A, HTR2C, MTHFR, OPRM1, and UGT2B15
3001513 CYP2D6	CYP2D6
3001501 CYP2C8, CYP2C9, and CYP2C cluster	CYP2C8, CYP2C9, and CYP2C
3001508 CYP2C19	CYP2C19
3001518 CYP3A4 and CYP3A5	CYP3A4 and CYP3A5
2012166 Dihydropyrimidine Dehydrogenase (DPYD)	DPYD
3001535 TPMT and NUDT15	TPMT and NUDT15
3001541 Warfarin Sensitivity (CYP2C9, CYP2C cluster, CYP4F2, VKORC1) Genotyping	CYP2C9, CYP2C cluster, CYP4F2, and VKORC1
0051684 Glucose-6-Phosphate Dehydrogenase (G6PD) 2 Mutations	G6PD
3004457 Glucose-6-Phosphate Dehydrogenase Deficiency (G6PD) Sequencing	G6PD
2002429 HLA-B*57:01 for Abacavir Sensitivity	HLA-B*57:01
2012049 HLA-B*15:02 Genotyping, Carbamazepine Hypersensitivity	HLA-B*15:02
2008767 Opioid Receptor, mu OPRM1, 1 Variant	OPRM1
2008426 SLC01B1, 1 Variant	SLC01B1
0051332 UDP Glucuronosyltransferase 1A1 (UGT1A1) Genotyping	UGT1A1

## References

1. Swen JJ, van der Wouden CH, Manson LE, et al. A 12-gene pharmacogenetic panel to prevent adverse drug reactions: an open-label, multicentre, controlled, cluster-randomised crossover implementation study. *Lancet*. 2023;401(10374):347-356.
2. Morris SA, Alsaïdi AT, Verbyla A, et al. Cost effectiveness of pharmacogenetic testing for drugs with Clinical Pharmacogenetics Implementation Consortium (CPIC) guidelines: a systematic review. *Clin Pharmacol Ther*. 2022;112(6):1318-1328.
3. Jarvis JP, Peter AP, Keogh M, et al. Real-world impact of a pharmacogenomics-enriched comprehensive medication management program. *J Pers Med*. 2022;12(3):421.



**ARUP LABORATORIES**

500 Chipeta Way  
Salt Lake City, UT 84108-1221  
Phone: 800-522-2787  
Fax: 801-583-2712

*ARUP is a nonprofit enterprise of the University of Utah  
and its Department of Pathology.*

