



Technical Overview: Atlas Medication Response

Identify variants associated with medication response using whole-genome sequencing. This test produces a genomic dataset that MyOme can re-query as healthcare needs change and new information about the genome is discovered.

Clinical Use

This test is intended to facilitate the use of pharmacogenomic (PGx) guidance in a general care setting. MyOme reports variants and star alleles in 15 key pharmacogenes that are known to impact an individual's response to 70+ commonly prescribed medications. Reports include a summary of PGx findings and a Clinical Guidelines Supplement that contextualizes results according to gene-drug interactions outlined in the Clinical Pharmacogenetics Implementation Consortium (CPIC) guidelines¹ and FDA Table of Pharmacogenomic Associations². The results of this test should be interpreted by a trained healthcare provider based on the full context of a patient's medical situation.

Sample Types

- ✓ Blood (2 EDTA tubes)
- ✓ Buccal (2 swabs)

Turnaround Times

- Most results are delivered **5–6 weeks** from the day all samples are received.*
- Follow-up testing and re-requisitions are typically completed within **1 week**.

*Turnaround times are provided as estimates and begin once sample(s) are processed at MyOme. Turnaround times may be extended in cases outside of MyOme's control, including delays related to confirmation testing or other unforeseen circumstances.

Method

Genomic DNA obtained from submitted samples is sequenced using Illumina technology and reads are aligned to the human genome reference assembly GRCh38.p14. MyOme's Medication Response variant calling pipeline is used to call variants, star alleles, copy number variants, and assign pharmacogenomic diplotypes. A PCR-free whole-genome library is constructed and a sub-aliquot is taken through PCR amplification and exome selection. The blended genome-exome libraries are sequenced to generate 2x150 bp paired-end reads, resulting in low-coverage whole-genome and higher coverage exome data.

Genes Analyzed

SELECT (PR32005)

Test Performance³

- >98.5% accuracy for diplotypes
- 95% of core PGx variants at ≥20x depth
- 60x average exome-wide coverage

Variant Coverage

- **Tier 1:** 96% variant alleles recommended by the Association for Molecular Pathology (AMP) PGx Working Group for *CYP2C19*⁴, *CYP2C9*⁵, *CYP2D6*⁶ (excluding deletions and duplications), *TPMT* and *NUDT15*⁷
- **Tier 2:** All variants recommended by the AMP PGx Working Group for *CYP2C19*⁴, *CYP2C9*⁵, and *CYP2D6*⁶ (excluding hybridizations)

15 Genes Analyzed

CYP2B6: *4; *6; *9; *18; *22

CYP2C9: *2; *3; *4; *5; *6; *8; *11; *12; *13; *15; *16; *26; *28; *29; *30; *31; *42; *55

CYP2C19: *2; *3; *4; *5; *6; *7; *8; *9; *10; *17; *35

CYP2D6: *2; *3; *4; *6; *7; *8; *9; *10; *11; *12; *14; *15; *17; *21; *31; *40; *41; *42; *49; *56; *59; *100; *114

CYP3A4: *22

CYP3A5: *3; *6

CYP4F2: *3

DPYD: rs3918290; rs55886062;

rs59086055; rs67376798; rs75017182+rs56038477; rs112766203; rs115232898; rs146356975; rs183385770

F5: rs6025

IFNL3: rs12979860

NUDT15: *3; *4; *9

SLCO1B1: *5; *9; *14; *20

TPMT: *2; *3A; *3B; *3C; *4; *11; *29

UGT1A1: *6; *27

VKORC1: rs9923231

Drug-Gene Impact

SELECT (PR32005)

The list of drugs below can lead to a major or moderate drug-gene interaction based on the guidelines described in the technical overview.^{1,2}

BEHAVIORAL HEALTH

DRUG NAME	GENE(S)
amitriptyline	CYP2D6, CYP2C19
amoxapine	CYP2D6
amphetamine	CYP2D6
aripiprazole	CYP2D6
aripiprazole lauroxil	CYP2D6
atomoxetine	CYP2D6
brexpiprazole	CYP2D6
citalopram	CYP2C19, CYP2D6
clobazam	CYP2C19
clomipramine	CYP2D6
clozapine	CYP2D6
desipramine	CYP2D6
diazepam	CYP2C19
doxepin	CYP2D6, CYP2C19
duloxetine	CYP2D6
escitalopram	CYP2C19
fluoxetine	CYP2D6
fluvoxamine	CYP2D6
iloperidone	CYP2D6
imipramine	CYP2D6
lofexidine	CYP2D6
nortriptyline	CYP2D6
paroxetine	CYP2D6
perphenazine	CYP2D6
protriptyline	CYP2D6
sertraline	CYP2C19
thioridazine	CYP2D6
trimipramine	CYP2D6, CYP2C19
valbenazine	CYP2D6
venlafaxine	CYP2D6
vortioxetine	CYP2D6

TRANSPLANT

DRUG NAME	GENE(S)
azathioprine	TPMT, NUDT15
tacrolimus	CYP3A5

CARDIOLOGY

DRUG NAME	GENE(S)
atorvastatin	SLCO1B1
carvedilol	CYP2D6
clopidogrel	CYP2C19
fluvastatin	CYP2C9, SLCO1B1
lovastatin	SLCO1B1
mavacamten	CYP2C19
pitavastatin	SLCO1B1
pravastatin	SLCO1B1
rosuvastatin	SLCO1B1
simvastatin	SLCO1B1
warfarin	CYP2C9, CYP4F2, VKORC1

NEUROLOGY

DRUG NAME	GENE(S)
brivaracetam	CYP2C19
deutetrabenazine	CYP2D6
donepezil	CYP2D6
fosphenytoin	CYP2C9
modafinil	CYP2D6
phenytoin	CYP2C9
pimozide	CYP2D6
pitolisant	CYP2D6
siponimod	CYP2C9
tetrabenazine	CYP2D6
valbenazine	CYP2D6

PAIN MANAGEMENT

DRUG NAME	GENE(S)
carisoprodol	CYP2C19
celecoxib	CYP2C9
codeine	CYP2D6
elagolix	SLCO1B1
flurbiprofen	CYP2C9
ibuprofen	CYP2C9
loroxicam	CYP2C9
meloxicam	CYP2C9
oliceridine	CYP2D6
piroxicam	CYP2C9
tenoxicam	CYP2C9
tramadol	CYP2D6

UROLOGY

DRUG NAME	GENE(S)
darifenacin	CYP2D6
fesoterodine	CYP2D6
mirabegron	CYP2D6
tamsulosin	CYP2D6
tolterodine	CYP2D6

GASTROENTEROLOGY

DRUG NAME	GENE(S)
dexlansoprazole	CYP2C19
dronabinol	CYP2C9
esomeprazole	CYP2C19
lansoprazole	CYP2C19
metoclopramide	CYP2D6
nateglinide	CYP2C9
omeprazole	CYP2C19
ondansetron	CYP2D6
pantoprazole	CYP2C19
rabeprazole	CYP2C19

HEMATOLOGY/ONCOLOGY

DRUG NAME	GENE(S)
capecitabine	DPYD
erdafitinib	CYP2C9
eltrombopag	F5
fluorouracil	DPYD
gefitinib	CYP2D6
mercaptopurine	TPMT, NUDT15
tamoxifen	CYP2D6
thioguanine	TPMT, NUDT15

INFECTIOUS DISEASE

DRUG NAME	GENE(S)
atazanavir	UGT1A1
dolutegravir	UGT1A1
efavirenz	CYP2B6
peginterferon alfa-2a	IFNL3
peginterferon alfa-2b	IFNL3
quinine	CYP2D6
voriconazole	CYP2C19

MISCELLANEOUS

DRUG NAME	GENE(S)
abrocitinib	CYP2C19
cevimeline	CYP2D6
eliglustat	CYP2D6
lesinurad	CYP2C9
meclizine	CYP2D6
tropisetron	CYP2D6

REPRODUCTIVE AND SEXUAL HEALTH

DRUG NAME	GENE(S)
flibanserin	CYP2C19, CYP2C9, CYP2D6

1. Clinical Pharmacogenetics Implementation Consortium (CPIC). Genes–drugs. <https://cpicpgx.org/genes-drugs>. 2. US Food and Drug Administration. Table of pharmacogenetic associations. 2022. 3. MyOme Inc. Data on file. 4. Pratt VM, et al. Recommendations for clinical CYP2C19 genotyping allele selection. *J Mol Diagn*. 2018;20(3):269–276. doi:10.1016/j.jmoldx.2018.01.011. 5. Pratt VM, et al. Recommendations for clinical CYP2C9 genotyping allele selection. *J Mol Diagn*. 2019;21(5):746–755. doi:10.1016/j.jmoldx.2019.04.003. 6. Pratt VM, et al. Recommendations for clinical CYP2D6 genotyping allele selection. *J Mol Diagn*. 2021;23(9):1047–1064. doi:10.1016/j.jmoldx.2021.05.013. 7. Pratt VM, et al. TPMT and NUDT15 genotyping recommendations. *J Mol Diagn*. 2022;24(10):1051–1063. doi:10.1016/j.jmoldx.2022.06.007.

These tests were developed, and their performance characteristics were determined, by MyOme, Inc., a clinical laboratory certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA) and College of American Pathologist (CAP) accredited to perform high complexity clinical laboratory testing. These tests have not been cleared or approved by the U.S. Food and Drug Administration (FDA). Test results should always be interpreted by a clinician in the context of clinical and familial data with the availability of genetic counseling when appropriate. MyOme is not responsible for the content or accuracy of third-party websites.