Proactive Health MEDICATION RESPONSE™

TEST CODE: PR32005

Overview

MyOme Proactive Health Medication Response report uses a Blended Genome-Exome (BGE) backbone to identify variants associated with medication response. This allows MyOme to re-query a patient's data as healthcare needs change and new information about the genome is discovered.

Clinical Use

Test is intended to facilitate the use of pharmacogenomic guidance in a general care setting. MyOme reports variants and star alleles in 15 pharmacogenes that are known to impact an individual's response to medication. The results of this test should be interpreted by a trained healthcare provider based on the full context of a patient's medical situation.

Method

Genomic DNA obtained from submitted samples is used to construct a PCR-free whole genome library and an exome library and sequenced using Illumina technology. Reads are aligned to the GRCh38 reference assembly. MyOme's Medication Response variant calling pipeline is used to call variants, star alleles, copy number variants, and assign pharmacogenomic diplotypes.

Sample Types

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

Turn Around Time

- From initial sample received, approximately 6-8 weeks

Included

- Analysis of key genes with known pharmacogenomic implications for more than 70 drugs, including antidepressants, statins and opioids
- 96% Tier 1 variant alleles recommended by the Association for Molecular Pathology (AMP) PGx Working Group for *CYP2C19*[1], *CYP2C9*[2], *CYP2D6*[3] (excluding deletions/duplications), *TPMT* and *NUDT15*[4]
- All Tier 2 variant alleles recommended by the AMP PGx Working Group for *CYP2C19*[1], *CYP2C9*[2], *CYP2D6* (excluding hybridizations)[3]
- Independent healthcare provider review of analysis to make any potential drug recommendations based on gene-drug interactions outlined in the Clinical Pharmacogenetics Implementation Consortium (CPIC)[5] guidelines and FDA Table of Pharmacogenomic Associations[6]
- 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*

Test Performance[7]

- >98.5% accuracy for diplotypes
- 98% of core pharmacogenomic variants at ≥20x depth
- 60x average exome-wide coverage

1. Pratt VM et al. Recommendations for Clinical CYP2C19 Genotyping Allele Selection: A Report of the Association for Molecular Pathology. J Mol Diagn. 2018 May;20(3):269-276. doi: 10.1016/j.jmoldx.2018.01.011. 2. Pratt VM et al. Recommendations for Clinical CYP2C9 Genotyping Allele Selection. J Mol Diagn. 2019 Sep;21(5):746-755. doi: 10.1016/j.jmoldx.2019.04.003. 3. Pratt VM et al. Recommendations for Clinical CYP2D6 Genotyping Allele Selection. J Mol Diagn. 2021 Sep;23(9):1047-1064. doi: 10.1016/j.jmoldx.2021.05.013. 4. Pratt VM et al. TPMT and NUDT15 Genotyping Recommendations. J Mol Diagn. 2022 Oct;24(10):1051-1063. doi: 10.1016/j.jmoldx.2022.06.007. 5. CPIC. Genes-Drugs. Web. cpicpgx.org/genes-drugs. Accessed 2024 Dec. 6. US Food & Drug Administration. Table of Pharmacogenetic Associations. 2022 Oct. Web. Accessed 2024 Dec. 7.MyOme Inc, Data on File

DRUG-GENE IMPACT

The list of drugs below can lead to a major or moderate drug-gene interaction based on guidelines described above.[5,6]

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*

Urology

Drug Name	Gene(s)
darifenacin	*CYP2D6*
fesoterodine	*CYP2D6*
mirabegron	*CYP2D6*
tamsulosin	*CYP2D6*
tolterodine	*CYP2D6*

Reproductive and Sexual Health

Drug Name	Gene(s)
flibanserin	*CYP2C19, CYP2C9, 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*

Infectious Disease

Drug Name	Gene(s)
atazanavir	*UGT1A1*
dolutegravir	*UGT1A1*
efavirenz	*CYP2B6*
peginterferon alfa-2a	*IFNL3*
peginterferon alfa-2b	*IFNL3*
quinine	*CYP2D6*
voriconazole	*CYP2C19*

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*

Miscellaneous

Drug Name	Gene(s)
abrocitinib	*CYP2C19*
cevimeline	*CYP2D6*
eliglustat	*CYP2D6*
lesinurad	*CYP2C9*
meclizine	*CYP2D6*
tropisetron	*CYP2D6*

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*
lornoxicam	*CYP2C9*
meloxicam	*CYP2C9*
oliceridine	*CYP2D6*
piroxicam	*CYP2C9*
tenoxicam	*CYP2C9*
tramadol	*CYP2D6*

Hematology/Oncology

Drug Name	Gene(s)
capecitabine	*DPYD*
erdafitinib	*CYP2C9*
eltrombopag	*F5*
fluorouracil	*DPYD*
gefitinib	*CYP2D6*
mercaptopurine	*TPMT, NUDT15*
tamoxifen	*CYP2D6*
thioguanine	*TPMT, NUDT15*

Transplant

Drug Name	Gene(s)
azathioprine	*TPMT, NUDT15*
tacrolimus	*CYP3A5*

5. CPIC. Genes-Drugs. Web. cpicpgx.org/genes-drugs. Accessed 2024 Dec. 6. US Food & Drug Administration. Table of Pharmacogenetic Associations. 2022 Oct. Web. Accessed 2024 Dec.