ONEOME®

OneOme RightMed® comprehensive test report overview

The RightMed comprehensive test is a pharmacogenomic test that analyzes a patient's DNA to determine how he or she may respond to hundreds of medications. When a provider orders a RightMed test, they get the standard RightMed comprehensive test report which contains their patient's results. Learn more about the RightMed comprehensive test report below, and then refer to the attached comprehensive test report.

WHAT INFORMATION IS INCLUDED IN THE RIGHTMED COMPREHENSIVE TEST REPORT?

The RightMed comprehensive test report contains a lot of valuable information, including:

- Drug-gene interactions binned based on the severity of the interaction
- Your patient's genotype and their predicted metabolic status across each gene
- Your patient's analytical test results
- A legend of the icons used throughout the report to help you interpret the results

DO YOU OFFER SUPPORT WITH INTERPRETING RESULTS?

Yes. Providers and pharmacists can set up complimentary, one-on-one consultations with clinical pharmacists from OneOme. Contact support@oneome.com to set up a consultation.

Additionally, providers have access to the RightMed Advisor, an online, interactive tool which gives providers further insights into their patients' results. With the RightMed Advisor, providers can quickly and easily interpret test results, access OneOme's expertly curated pharmacogenomic database, view pharmacogenomic clinical guidelines, evaluate drug-to-drug interactions, explore alternative medications, generate custom reports, and more.

HOW DO I GET THE RIGHTMED COMPREHENSIVE TEST REPORT?

After you order the RightMed comprehensive test, you will receive your patient's results in the RightMed comprehensive test report via our secure, online provider portal at portal.oneome.com.

WHAT OTHER REPORTS DOES ONEOME OFFER?

In addition to the comprehensive test report, providers can add specialty reports and RightMed Advisor reports. Speciality reports provide a streamlined view into a subset of medications, selected and classified by OneOme, that are specific to a medical specialty (like psychiatry). RightMed Advisor reports allow providers to create custom reports for a more in-depth look into the subset of medications most relevant for a patient. Learn more at oneome.com/rightmed-reports.

HOW DO I ORDER A RIGHTMED COMPREHENSIVE TEST?

Create an account at portal.oneome.com to place your first order. Or, download our test requisition form at www2.oneome.com/order-form.

I HAVE A QUESTION; WHO SHOULD I CONTACT?

We'd love to help. Please contact our customer support team at 844-ONEOME-5 (844-663-6635) or support@oneome.com. The team will put you in touch with the right person.

RightMed® comprehensive test report

The RightMed comprehensive test is a pharmacogenomic test that identifies how a patient's DNA affects their response to hundreds of medications. This report can be used to help determine safer, more effective medications and doses tailored to a patient's unique genomic profile. Additional reports, including RightMed Advisor custom reports and specialty reports, are available through the provider portal at portal.oneome.com.

Patient and report summary

Patient name: **Jane Doe**
Patient date of birth: **1972-07-08**
OneOme report date: **2017-10-04**

Ordering provider: **Test Doctor**
Ordering facility: **OneOme Health**
Product type: **Comprehensive**
Report type: **Original**

Report legend

Based on the genes in our panel, medications are reported according to genotype-predicted interactions described below.

Major gene-drug interaction	Major genotype-drug interaction identified that affects the metabolism of the medication and/or indicates an elevated risk of adverse reaction or loss of efficacy.
Moderate gene-drug interaction	Moderate genotype-drug interaction identified that affects the metabolism of the medication and/or indicates an elevated risk of adverse reaction or loss of efficacy.
Minimal gene-drug interaction	Minimal genotype-drug interaction identified that does not significantly impact medication metabolism or predict an elevated risk of adverse reaction or loss of efficacy.

Icon legend

Some medications are reported with icons to indicate that additional information is available. Consult the RightMed Advisor for more information on specific clinical annotations and/or dosing guidelines provided by the Clinical Pharmacogenetics Implementation Consortium (CPIC), the Dutch Pharmacogenomics Working Group (DPWG), the Food and Drug Administration (FDA), and/or other professional guidelines.

Increased exposure	Total exposure to active compound(s) may be increased. Monitor for adverse effects.
Decreased exposure	Total exposure to active compound(s) may be decreased. Monitor for lack of therapeutic response.
Difficult to predict	Total exposure to active compound(s) is difficult to predict. Monitor patient response.
Reduced response	Response to medication may be lowered due to genetic changes impacting mechanisms other than exposure (e.g. receptor function).
Additional testing	According to FDA labeling, additional laboratory testing may be indicated.
Professional guideline	Medication has professional guidelines associated with this patient's genetic test results. Avoidance, dose adjustment, or heightened monitoring may be indicated.

Genotype-derived recommendations for medications

Major gene-drug interaction

Cardiovascular

Labetalol 21

Gastroenterology

Esomeprazole 1, 2
Lansoprazole 1, 2, 112
Omeprazole 1, 2
Pantoprazole 1

Infectious disease

Atovaquone/Proguanil 1
Voriconazole 1, 2

Neurology

Brivaracetam 1
Clobazam 1
Fosphenytoin 1, 24, 98, 117
Phenytoin 1, 6, 18

Psychiatry

Amitriptyline 1, 2, 50, 190
Citalopram 1, 2, 8, 15, 38, 49, 52, 53, 54, 58, 75, 76, 86, 88, 90, 100, 104, 107, 114, 124, 130, 132, 194
Clomipramine 1, 2, 50
Diazepam 1, 60
Doxepin 1, 2, 50
Escitalopram 1, 2, 8, 15, 38, 49, 53, 54, 58, 86, 90, 100, 107, 114, 132, 194
Imipramine 1, 2, 50, 187
Risperidone 1, 2, 57, 195
Trimipramine 1, 2, 50, 81

Moderate gene-drug interaction

Analgesic/Anesthesiology

Carisoprodol 1, 45

Anti-inflammatory

Celecoxib 1
Diclofenac 1
Flurbiprofen 1, 168
Meloxicam 1
Piroxicam 1

Anticoagulant/Antiplatelet

Clopidogrel 1, 151, 152
Warfarin 1, 20, 66

Cardiovascular

Azilsartan 1
Fluvastatin 1
Guanabenz 28
Irbesartan 1
Losartan 1

Dietary

Caffeine 1

Endocrinology

Chlorpropamide 1, 158
Glimepiride 1
Glipizide 1, 79, 82, 173
Glyburide 1
Nateglinide 1
Tolbutamide 2

Gastroenterology

Dexlansoprazole 1
Rabeprazole 1

Immunosuppression

Azathioprine 1, 2, 91, 141, 142

Infectious disease

Nelfinavir 1
Peginterferon alfa-2a-containing regimens 1, 108
Peginterferon alfa-2b-containing regimens 1, 108

Neurology

Frovatriptan 1
Nicotine 13, 33
Rasagiline 1
Selegiline 51, 69, 149

Oncology

Bortezomib 1
Mercaptopurine 1, 2, 141, 142
Thioguanine 1, 2, 141, 142

Psychiatry

Asenapine 1
Duloxetine 1
Olanzapine 1, 2, 87
Selegiline 51, 69, 149
Sertraline 1, 2, 37, 39, 49, 92, 110, 113, 118, 140, 145, 178, 186

Rheumatology

Lesinurad 1

Sleep medicine

Ramelteon 1

Minimal gene-drug interaction

Allergy

Loratadine 199

Analgesic/Anesthesiology

Alfentanil 1, 43, 120, 204
Buprenorphine 1
Codeine 1, 2, 9, 17, 29, 30, 159, 171
Cyclobenzaprine 1, 189
Fentanyl 1, 43
Hydrocodone 1, 29, 30
Methadone 1
Midazolam 1, 176
Oxycodone 1, 29, 30
Tramadol 1, 2, 29, 30, 95, 164, 167, 177

Anticoagulant/Antiplatelet

Apixaban 1
Cilostazol 1, 176
Ticagrelor 1

Cardiovascular

Aliskiren 1
Amiodarone 1
Amlodipine 1
Atorvastatin 1
Carvedilol 1
Clonidine 1
Diltiazem 1, 176
Disopyramide 1
Dofetilide 1
Dronedarone 1, 176
Eplerenone 1
Felodipine 1

Minimal gene-drug interaction (cont.)

Flecainide 1, 2
Lidocaine 34, 123
Lomitapide 1
Lovastatin 1
Metoprolol 1, 2
Nifedipine 1, 176
Nisoldipine 1, 176
Pravastatin 1, 115
Propafenone 1, 2
Propranolol 1
Quinidine 1
Ranolazine 1
Simvastatin 1, 84, 137, 153, 176, 191
Timolol 183
Verapamil 1, 176

Endocrinology

Ethinyl estradiol 1, 2

Gastroenterology

Aprepitant 1
Dolasetron 1
Ondansetron 1, 12, 68, 179

Genetic disease

Eliglustat 1
Ivacaftor 1

Immunosuppression

Cyclosporine 1
Everolimus 1, 176
Sirolimus 1
Tacrolimus 1, 14, 176

Infectious disease

Atazanavir 42, 65
Clarithromycin 1, 176
Darunavir 1
Delavirdine 1
Efavirenz 1
Erythromycin 176
Fosamprenavir 1
Indinavir 1, 176
Isavuconazole 1
Itraconazole 1
Ivermectin 1, 202
Ketoconazole 1
Maraviroc 1
Mefloquine 1
Nevirapine 1
Quinidine 1
Quinine 1, 176
Ritonavir 1
Saquinavir 1, 176
Simeprevir 1
Telithromycin 1
Terbinafine 1
Tipranavir 1

Neurology

Carbamazepine 1, 5, 6, 25, 26, 55, 89, 98, 105, 106, 116, 127, 134, 154, 200
Dextromethorphan/Quinidine 1
Donepezil 1
Eletriptan 1
Ethosuximide 10, 128
Tetrabenazine 1
Zonisamide 1

Oncology

Axitinib 1
Belinostat 1, 188
Bosutinib 1
Brentuximab vedotin 1
Cabazitaxel 1
Capecitabine 1, 19
Crizotinib 1
Dasatinib 1
Docetaxel 1
Enzalutamide 1
Erlotinib 1, 64
Etoposide 1, 206
Everolimus 1, 176
Exemestane 1
Fluorouracil 1, 2, 19
Gefitinib 1
Ifosfamide 1, 23
Imatinib 1
Irinotecan 1, 44, 83
Ixabepilone 1
Lapatinib 1, 150
Methotrexate 1, 135, 138, 175, 203
Nilotinib 1, 4
Paclitaxel 1
Pazopanib 1
Ponatinib 1
Regorafenib 1
Ruxolitinib 1
Sorafenib 1
Sunitinib 1
Tamoxifen 1, 2
Temsirolimus 1
Teniposide 85, 143
Trabectedin 1
Vemurafenib 1
Vincristine 1, 176
Vinorelbine 1

Psychiatry

Alprazolam 1, 176
Aripiprazole 1, 2, 180
Atomoxetine 1, 2
Brexpiprazole 1
Bupropion 1
Buspirone 1, 176, 205
Cariprazine 1, 3, 16, 27, 111
Chlorpromazine 1, 126, 165
Clozapine 1, 2, 94
Desipramine 1, 2, 50
Flibanserin 1
Fluoxetine 1, 46, 58, 63, 92, 99, 129, 139, 163, 198
Fluvoxamine 1, 49, 62, 72, 73, 155, 156, 160, 161, 163, 170, 201
Guanfacine 1, 103
Haloperidol 1, 2, 125, 157, 180
Iloperidone 1
Levomilnacipran 1
Lurasidone 1
Mirtazapine 1, 2, 80, 93, 166, 172
Nefazodone 1, 144, 184
Nortriptyline 1, 2, 50, 122, 182
Paroxetine 1, 2, 49, 61, 74, 109, 133, 146, 163, 174, 197
Perphenazine 1, 121
Pimozide 1, 180
Protriptyline 1
Quetiapine 1, 176
Thioridazine 1
Trazodone 1
Venlafaxine 1, 2, 185
Vilazodone 1
Vortioxetine 1

Pulmonary

Dextromethorphan 1
Indacaterol 1, 67
Salmeterol 1
Sildenafil 1
Tadalafil 1

Rheumatology

Cevimeline 1
Colchicine 1
Methotrexate 1, 135, 138, 175, 203
Tofacitinib 1

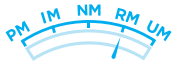
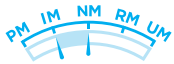
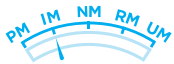
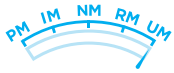
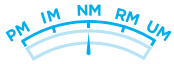
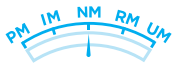
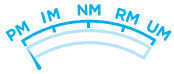
Sleep medicine

Armodafinil 1
Eszopiclone 1
Modafinil 1
Triazolam 1, 176
Zolpidem 1, 11, 184

Urology

Darifenacin 31, 77
Fesoterodine 1
Finasteride 1
Oxybutynin 1
Sildenafil 1
Tadalafil 1
Tamsulosin 1
Tolterodine 1
Vardenafil 1

Gene and phenotype summary

Gene	Genotype		Phenotype summary / Metabolic status
CYP1A2	*1A/*1F		**Rapid** Increased activity. Drugs converted to active metabolite(s) may cause side effects or toxicity. Active drugs converted to inactive metabolite(s) may lack efficacy.
CYP2B6	*1/*5		**Intermediate to Normal** Decreased activity. Drugs converted to active metabolite(s) may have reduced efficacy. Active drugs converted to inactive metabolite(s) may cause side effects or toxicity.
CYP2C9	*1/*3		**Intermediate** Decreased activity. Drugs converted to active metabolite(s) may have reduced efficacy. Active drugs converted to inactive metabolite(s) may cause side effects or toxicity.
CYP2C19	*17/*17		**Ultrarapid** Increased activity. Drugs converted to active metabolite(s) may cause side effects or toxicity. Active drugs converted to inactive metabolite(s) may lack efficacy.
CYP2D6	*1/*1		**Normal** Normal level of activity. Drugs metabolized at a normal rate.
CYP3A4	*1/*1		**Normal** Normal level of activity. Drugs metabolized at a normal rate.
CYP3A5	*3/*3		**Poor** Normal dosing may be required because original dosing guidelines for drugs have been established on patients with poor metabolizer phenotype.
COMT	rs4680 GG		**High** COMT activity is predicted to be higher than in patients with the AA or GA genotypes at rs4680.
DPYD	*1/*1		**Normal risk** Normal metabolizer. Normal dihydropyrimidine dehydrogenase activity. Normal risk of toxicities with fluoropyrimidines (5-fluorouracil, capecitabine and tegafur).
DRD2	rs1799978 GG		**Reduced response** Genotype is associated with a lower likelihood of improvement in schizophrenia symptoms with risperidone compared to the AA or AG genotypes. Other clinical and/or genetic factors may influence response.

Gene and phenotype summary (cont.)

F2	rs1799963 GG		**Normal risk** Normal risk of thrombosis associated with Factor II (prothrombin). Other genetic and clinical factors contribute to the risk for thrombosis.
F5	rs6025 GG		**Normal risk** Normal risk of thrombosis associated with Factor V. Other genetic and clinical factors contribute to the risk for thrombosis.
GRIK4	rs1954787 CC		**Normal response** Genotype predicts a normal response to citalopram in patients with major depressive disorder related to the GRIK4 genotype alone. Other clinical and genetic factors may influence response.
HTR2A	rs7997012 AA		**Intron 2 genotype AA** Genotype predicts an increased likelihood of response to citalopram. Other clinical and genetic factors may influence response.
HTR2C	rs3813929 CC		**Normal risk** Genotype predicts a normal risk of weight gain with olanzapine treatment. Other clinical and/or genetic factors may influence response.
IFNL4	rs12979860 CT		**Reduced response** Genotype predicts a reduced likelihood of sustained virologic response (SVR) with peginterferon-containing regimens.
NUDT15	rs116855232 CC		**Normal Risk** No increased risk of toxicity of life-threatening toxicities with thiopurine administration related to the NUDT15 genotype. Toxicities with thiopurines can also occur due to impaired TPMT activity, regardless of the NUDT15 status.
OPRM1	rs1799971 GG		**Asp/Asp isoform** Analgesic effects of alfentanil, codeine, and tramadol (and possibly other opioids) may be lower in patients with this genotype. Other genetic and/or clinical factors influence response.
SLC6A4	L/L (La/La)		**Typical to increased expression** Genotype predicts a typical to increased expression of the SLC6A4 transporter compared to patients with other genotypes. The L/L genotype has been associated with increased likelihood and potentially quicker response to the SSRIs fluoxetine, fluvoxamine, and possibly citalopram and escitalopram. The opposite trend in response has been observed in East Asian populations, showing increased likelihood and potentially quicker response in carriers of the S allele.
SLCO1B1	*1/*1		**Normal Risk** Normal function of SLCO1B1. Normal risk of simvastatin-induced myopathy. Likelihood of normal response with pravastatin. Normal risk of methotrexate-induced toxicities when used at high dose.

Gene and phenotype summary (cont.)

TPMT	*1/*4		**Increased Risk** Intermediate TPMT metabolizer. Increased risk of myelotoxicity with azathioprine, mercaptopurine, and thioguanine. Toxicities with thiopurines can also occur due to impaired NUDT15 activity independently of the TPMT status.
UGT1A1	*1/*1		**Normal Risk** Normal UGT1A1 activity. No increased risk for severe neutropenia while taking irinotecan or for toxicity and/or hyperbilirubinemia while taking atazanavir, nilotinib, pazopanib or belinostat. Consult drug labeling for dosing recommendations.
VKORC1	rs9923231 GG		**Normal activity** Normal activity of the vitamin K epoxide reductase enzyme, associated with the c.-1639GG (rs9923231) variant. The VKORC1 genotype together with the CYP2C9 genotype determines the sensitivity to warfarin therapy.
Warfarin Response (CYP2C9; VKORC1)	*1/*3; rs9923231 GG		**Increased Sensitivity** Increased sensitivity to warfarin; lower doses may be required. Refer to warfarindosing.org and FDA labeling for dosing guidelines.

CYP phenotype abbreviations

PM	Poor metabolizer
IM	Intermediate metabolizer
NM	Normal metabolizer
RM	Rapid metabolizer
UM	Ultrarapid metabolizer

Test information

Specimen ID: **BU20171001001**
Specimen type: **Buccal swab**
Collection date: **2017-10-04**

Clinical Testing Performed By:
OneOme
807 Broadway St. NE Suite 100
Minneapolis, MN 55413

Lab director: **Dr. Justin Odegaard**
CLIA: **24D2109855**
CAP: **9432670**

Test results

The following analytical results were interpreted by OneOme to produce the pharmacogenomic interpretations and annotations described in the *Gene and phenotype summary*. Method-specific analytical limitations or inferred haplotypes may limit the ability to produce a definitive phenotype interpretation. See *Methodology and limitations* and/or the *Report and laboratory comments* sections for additional information.

CYP1A2 *1A/*1F

rs2069514	NG_008431.2:g.28338G>A	GG
rs2069526	NM_000761.4:c.-10+103T>G	TT
rs12720461	NM_000761.4:c.-10+113C>T	CC
rs35694136	NM_000761.4:c.-1635delT	TT
rs762551	NM_000761.4:c.-9-154C>A	CA

CYP2B6 *1/*5

rs3211371	NM_000767.4:c.1459C>T	CT
rs3745274	NM_000767.4:c.516G>T	GG
rs2279343	NM_000767.4:c.785A>G	AA
rs28399499	NM_000767.4:c.983T>C	TT

CYP2C9 *1/*3

rs28371685	NM_000771.3:c.1003C>T	CC
rs1057910	NM_000771.3:c.1075A>C	AC
rs56165452	NM_000771.3:c.1076T>C	TT
rs28371686	NM_000771.3:c.1080C>G	CC
rs1057911	NM_000771.3:c.1425A>T	AA
rs1799853	NM_000771.3:c.430C>T	CC
rs7900194	NM_000771.3:c.449G>A	GG
rs9332131	NM_000771.3:c.817delA	AA

CYP2C19 *17/*17

rs12248560	NM_000769.2:c.-806C>T	TT
rs28399504	NM_000769.2:c.1A>G	AA
rs4986893	NM_000769.2:c.636G>A	GG
rs6413438	NM_000769.2:c.680C>T	CC
rs4244285	NM_000769.2:c.681G>A	GG

CYP2D6* *1/*1

rs1080985	NM_000106.5:c.-1584C>G	CC
rs1065852	NM_000106.5:c.100C>T	CC
rs59421388	NM_000106.5:c.1012G>A	GG
rs72549346	NM_000106.5:c.1088_1089insGT	--
rs5030862	NM_000106.5:c.124G>A	GG
rs267608319	NM_000106.5:c.1319G>A	GG
rs774671100	NM_000106.5:c.137_138insT	--
rs765776661	NM_000106.5:c.1411_1412insTGCCCACTG	GTGCCCACGTGCCCAC
rs1135840	NM_000106.5:c.1457G>C	GG
rs201377835	NM_000106.5:c.181-1G>C	GG
rs769258	NM_000106.5:c.31G>A	GG
rs28371706	NM_000106.5:c.320C>T	CC
rs5030655	NM_000106.5:c.454delT	TT
rs5030865	NM_000106.5:c.505G>[A,T]	GG
rs3892097	NM_000106.5:c.506-1G>A	GG
rs72549353	NM_000106.5:c.765_768delAACT	AACTAACT
rs35742686	NM_000106.5:c.775delA	AA
rs5030656	NM_000106.5:c.841_843delAAG	AAGAAG
rs16947	NM_000106.5:c.886C>T	CC
rs5030867	NM_000106.5:c.971A>C	AA
rs28371725	NM_000106.5:c.985+39G>A	GG

CYP3A4 *1/*1

rs2740574	NM_017460.5:c.-392G>A	AA
rs35599367	NM_017460.5:c.522-191C>T	CC

CYP3A5 *3/*3

rs41303343	NM_000777.4:c.1035_1036insT	--
rs776746	NM_000777.4:c.219-237G>A	GG
rs10264272	NM_000777.4:c.624G>A	GG

COMT rs4680 GG

rs4680	NM_000754.3:c.472G>A	GG

DPYD *1/*1

rs55886062	NM_000110.3:c.1679T>G	TT
rs3918290	NM_000110.3:c.1905+1G>A	GG
rs67376798	NM_000110.3:c.2846A>T	TT

DRD2 rs1799978 GG

rs1799978	NM_000795.3:c.-585A>G	GG

F2 rs1799963 GG

rs1799963	NM_000506.4:c.*97G>A	GG

F5 rs6025 GG

rs6025	NM_000130.4:c.1601G>A	GG

GRIK4 rs1954787 CC

rs1954787	NM_001282470.2:c.83-10039T>C	CC

Test results (cont.)

HTR2A rs7997012 AA

rs7997012	NM_000621.4:c.614-2211T>C	TT

HTR2C rs3813929 CC

rs3813929	NM_000868.3:c.-759C>T	CC

IFNL4 rs12979860 CT

rs12979860	NM_001276254.2:c.151-152G>A	CT

NUDT15 rs116855232 CC

rs116855232	NM_018283.3:c.415C>T	CC

OPRM1 rs1799971 GG

rs1799971	NM_000914.4:c.118A>G	GG

SLC6A4 L/L (La/La)

rs774676466	NM_001045.5:c.-1917_-1875del43	LL
rs25531	NM_001045.5:c.-1936A>G	AA

SLCO1B1 *1/*1

rs4149015	NM_006446.4:c.-910G>A	GG
rs4149056	NM_006446.4:c.521T>C	TT

TPMT *1/*4

rs1800462	NM_000367.3:c.238G>C	GG
rs1800460	NM_000367.3:c.460G>A	GG
rs1800584	NM_000367.3:c.626-1G>A	CT
rs1142345	NM_000367.3:c.719A>G	AA

UGT1A1 *1/*1

rs4148323	NM_001072.3:c.862-6536G>A	GG
rs1976391	NM_001072.3:c.862-9697A>G	AA

VKORC1 rs9923231 GG

rs9923231	NM_001311311.1:c.-1639G>A	GG

Methodology and limitations

Analytical results were produced using tests developed and validated by OneOme, LLC, a clinical laboratory located at 807 Broadway Street NE Suite 100 Minneapolis, MN 55413. These tests have not been cleared or approved by the U.S. Food and Drug Administration. OneOme is certified under CLIA-88 and accredited by the College of American Pathologists as qualified to perform high-complexity testing. This test is used for clinical purposes and should not be regarded as investigational or for research.

Genomic DNA was analyzed by PCR-based Thermo Fisher TaqMan® and/or LGC Biosearch BHQ® probe-based methods to interrogate the variant locations listed in the *Test results* table above. In addition, CYP2D6 copy number status was assessed at sites within the promoter, intron 2, intron 6, and exon 9. The test detects CYP2D6 deletions, duplications/multiplications, and hybrid alleles, but cannot differentiate duplications in the presence of a deletion. The test does not detect all known and unknown variations in the genes tested, nor does absence of a detectable variant (designated as *1 for cytochrome P450 genes) rule out the presence of other, non-detected variants. For a comprehensive listing of allele coverage for the RightMed test, visit oneome.com/rightmed-test.

As with other common SNP genotyping techniques, these assays cannot differentiate between the maternal and paternal chromosomes. In cases where observed variants are associated with more than one haplotype, OneOme infers and reports the most likely diplotype based on published allele frequency and/or ethnicity data. Inferences with potential clinical impact are reported in the *Report and laboratory comments* section.

Assays may be subject to general interference by factors such as PCR inhibitors and low quality or quantity of extracted DNA. When present, these interferents typically yield no result rather than an inaccurate one. Very infrequent variants or polymorphisms occurring in primer- or probe-binding regions may also affect testing and could produce an erroneous result or assay failure. Variant locations tested by the assay but not assigned a genotype call are reported as “No Call.” Test results and clinical interpretation may be inaccurate for individuals who have undergone or are receiving non-autologous blood transfusions, tissue, and/or organ transplant therapies. Although extremely rare, results could also be impacted by other factors not addressed above, such as laboratory error.

Due to the complexity of interpreting some genetic test results, such as those that may carry a probabilistic risk of disease, patients and providers should consider the benefits of consulting with a trained genetic counseling professional, physician, or pharmacogenomic specialist. Patients and providers are also encouraged to visit oneome.com to explore the tools and resources available to help understand these test results. For additional support, contact OneOme through the website or by calling 844-663-6635.

OneOme liability disclaimer

The interpretations and clinical annotations provided by OneOme are intended solely for use by a medical professional and do not constitute medical advice by OneOme. The treating provider remains ultimately responsible for all diagnosis and treatment decisions for the patient. Information included in this report is based upon scientific literature and does not take into account other genetic variants and environmental or social factors that may affect a patient's response. Other factors not included in this report include, but are not limited to, environmental factors (e.g., smoking), health factors (e.g., diet), social and familial factors, various medical conditions, and drug-to-drug interactions. Administration of any medication, including the ones listed in the OneOme reports, requires careful therapeutic monitoring regardless of the phenotype or genotype-derived recommendation. As a matter of practice, OneOme will routinely update its pharmacogenomic database as new information becomes available to the scientific community. Drug binning and annotations found on the patient's RightMed comprehensive test report, RightMed Advisor reports, or RightMed specialty reports are therefore dependent on the date of generation and/or the database version used to generate that report. Providers may access these reports with updated annotations using OneOme’s latest released version through the provider portal at portal.oneome.com.

References

1. FDA. See FDA Drug Label. *US Food Drug Adm.* 2017. Available at: http://www.fda.gov/ScienceResearch/BioinformaticsTools/ucm289739.htm
2. Swen JJ, Nijenhuis M, de Boer A, et al. *Clin Pharmacol Ther.* 2011;89(5):662-73.
3. Abstracts 10th Eur Reg ISSX Mtg. *Drug Metab Rev.* 2008;40 Suppl 1:1-172.
4. Abumiya M, Takahashi N, Niioka T, et al. *Drug Metab Pharmacokinet.* 2014;29(6):449-54.
5. Al-Gahtany M, Karunakaran G, Munisamy M. *BMC Genomics.* 2014;15(Suppl 2):P2.
6. Amstutz U, Shear NH, Rieder MJ, et al. *Epilepsia.* 2014;55(4):496-506.
7. Argiris A, Karamouzis MV, Gooding WE, et al. *J Clin Oncol.* 2011;29:1140-45.
8. Arias B, Catalan R, Gasto C, et al. *J Clin Psychopharmacol.* 2003;23(6):563-7.
9. Baber M, Chaudhry S, Kelly L, et al. *Pharmacogenomics J.* 2015;15(5):430-5.
10. Bachmann K, He Y, Sarver JG, et al. *Xenobiotica.* 2003;33(3):265-76.
11. Barkin RL. *Am J Ther.* 2007;14(3):299-305.
12. Bell GC, Caudle KE, Whirl-Carrillo M, et al. *Clin Pharmacol Ther.* 2016. DOI: 10.1002/cpt.598
13. Benowitz NL, Hukkanen J, Jacob P. *Handb Exp Pharmacol.* 2009;192:29-60.
14. Birdwell KA, Decker B, Barbarino JM, et al. *Clin Pharmacol Ther.* 2015;98(1):19-24.
15. Bousman C, Sarris J, Won E, et al. *J Clin Psychopharmacol.* 2014;34(5):645-8.
16. Caccia S, Invernizzi RW, Nobili A, et al. *Ther Clin Risk Manag.* 2013;9:319-28.
17. Campa D, Gioia A, Tomei A, et al. *Clin Pharmacol Ther.* 2008;83(4):559-66.
18. Caudle KE, Rettie AE, Whirl-Carrillo M, et al. *Clin Pharmacol Ther.* 2014;96(5):542-8.
19. Caudle KE, Thorn CF, Klein TE, et al. *Clin Pharmacol Ther.* 2013;94(6):640-5.
20. Cavallari LH, Langaee TY, Momary KM, et al. *Clin Pharmacol Ther.* 2010;87(4):459-64.
21. Chan SW, Hu M, Ko SSW, et al. *Eur J Clin Pharmacol.* 2013;69:799-806.
22. Chen JS, Chao Y, Bang YJ, et al. *Anticancer Drugs.* 2010;21(8):777-84.
23. Chugh R, Wagner T, Griffith KA, et al. *Cancer.* 2007;109(11):2315-22.
24. Chung WH, Chang WC, Lee YS, et al. *JAMA.* 2014;312(5):525-34.
25. Chung WH, Hung SI, Chen YT. *Curr Opin Allergy Clin Immunol.* 2007;7(4):317-23.
26. Chung WH, Hung SI, Hong HS, et al. *Nature.* 2004;428(6982):486.
27. Citrome L. *Adv Ther.* 2013;30(2):114-26.
28. Clement B, Demesmaeker M. *Drug Metab Dispos.* 1997;25(11):1266-71.
29. Crews K, Gaedigk A, Dunnenberger HM, et al. *Clin Pharmacol Ther.* 2012;91(2):321-6.
30. Crews K, Gaedigk A, Dunnenberger HM, et al. *Clin Pharmacol Ther.* 2014;95(4):376-82.
31. Croom KF, Keating GM. *Drug Aging.* 2004;21(13):885-92.
32. Cui LH, Yu Z, Zhang TT, et al. *Pharmacogenomics.* 2011;12(6):797-808.
33. David SP, Johnstone EC, Churchman M, et al. *Nicotine Tobacco Res.* 2011;13(3):157-67.
34. De Martin S, Orlando R, Bertoli M, et al. *Clin Pharmacol Ther.* 2006;80(6):597-606.
35. Dean L. *Med Genet Summ.* Bethesda: NCBI, 2017. Available at: https://www.ncbi.nlm.nih.gov/books/NBK100662/
36. DeMaio W, Kane CP, Nichols AI, et al. *J Bioequiv.* 2011;3(7):151-60.
37. Dogan O, Yuksel N, Ergun M, et al. *Genet Test.* 2008;12(2):225-31.
38. Dreimüller N, Tadić A, Dragicevic A, et al. *Pharmacopsychiatry.* 2011;45(03):108-13.
39. Durham L, Webb S, Milos P, et al. *Psychopharmacology.* 2003;174(4):525-9.
40. Faruki H, Heine U, Brown T, et al. *Pharmacogenet Genomics.* 2007;17(10):857-60.
41. Fukasawa T, Suzuki A, Otani K. *J Clin Pharm Ther.* 2007;32:333-41.
42. Gammel RS, Court MH, Haidar CE, et al. *Clin Pharmacol Ther.* 2015:1-7.
43. Ginosar Y, Davidson EM, Meroz Y, et al. *Br J Anesthesia.* 2009;103(3):420-7.
44. Goetz MP, McKean HA, Reid JM, et al. *Invest New Drugs.* 2013;31(6):1559-67.
45. Gonzalez LA, Gatch MB, Taylor CM, et al. *J Pharmacol Exp Ther.* 2009;329(2):827-37.
46. Gudayol-Ferré E, Herrera-Guzmán I, Camarena B, et al. *J Affect Disord.* 2010;127(1-3):343-51.
47. Guilemette C. *Pharmacogenomics J.* 2003;3(3):136-58.
48. Hershfield MS, Callaghan JT, Tassaneeyakul W, et al. *Clin Pharmacol Ther.* 2013;93(2):153-8.
49. Hicks JK, Bishop JR, Sangkuhl K, et al. *Clin Pharmacol Ther.* 2015;98(2):127-34.
50. Hicks JK, Swen JJ, Thorn CF, et al. *Clin Pharmacol Ther.* 2013;93(5):402-8.
51. Hidestrand M, Oscarson M, Salonen JS, et al. *Drug Metab Dispos.* 2001;29(11):1480-4.
52. Horstmann S, Lucae S, Menke A, et al. *Neuropsychopharmacol.* 2010;35:727-40.
53. Hu X, Rush A, Charney D, et al. *Arch Gen Psychiatry.* 2007;64(7):783.
54. Huezo-Diaz P, Uher R, Smith R, et al. *Br J Psych.* 2009;195(1):30-8.
55. Hung SI, Chung WH, Jee SH, et al. *Pharmacogenet Genomics.* 2006;16(4):297-306.
56. Hung SI, Chung WH, Liou LB, et al. *PNAS.* 2005;102(11):4134-4139.
57. Ikeda M, Yamanouchi Y, Kinoshita Y, et al. *Pharmacogenomics.* 2008;9(10):1437-43.
58. Illi A, Poutanen O, Setälä-Soikkeli E, et al. *Eur Arch Psychiatry Clin Neurosci.* 2010;261(2):95-102.
59. Innocenti F, Grimsley C, Das S, et al. *Pharmacogenetics.* 2002;12(9):725-33.
60. Inomata S, Nagashima A, Itagaki F, et al. *Clin Pharmacol Ther.* 2005;78(6):647-55.
61. Ishiguro S, Watanabe T, Ueda M, et al. *Eur J Clin Pharmacol.* 2011;67(12):1213-21.
62. Ito K, Yoshida K, Sato K, et al. *Psychiatry Res.* 2002;111(2-3):235-9.
63. Ivanets N, Kinkulkina M, Tikhonova Y, et al. *Zu Nevrol Psikhiatr Im S S Korsakova.* 2017;47(4):386-92.
64. Jackman DM, Kindler HL, Yeap BY, et al. *Cancer.* 2008;113(4):808-14.
65. Johnson DH, Venuto C, Ritchie MD, et al. *Pharmacogenet Genomics.* 2014;24(4):195-203.
66. Johnson JA, Gong L, Whirl-Carrillo M, et al. *Clin Pharmacol Ther.* 2011;90(4):625-9.
67. Kagen M, Dain J, Peng L, et al. *Drug Metab Dispos.* 2012;40(9):1712-22.
68. Kaiser R, Sezer O, Papies A, et al. *J Clin Oncol.* 2002;20(12):2805-11.
69. Kamada T, Chow T, Hiroi T, et al. *Drug Metab Pharmacokinet.* 2002;17(3):199-206.
70. Kaniwa N, Saito Y. *Ther Adv Drug Saf.* 2013;4(6):246-53.
71. Karonen T, Filppula A, Laitila J, et al. *Clin Pharmacol Ther.* 2010;88(2):223-30.
72. Kato M, Fukuda T, Wakeno M, et al. *Neuropsychobiology.* 2006;53(4):186-95.
73. Kato M, Ikenaga Y, Wakeno M, et al. *Int Clin Psychopharmacol.* 2005;20(3):151-6.
74. Kato M, Nonen S, Serretti A, et al. *J Clin Psychopharmacol.* 2012:1.
75. Kato M, Serretti A. *Mol Psychiatry.* 2010;15:473-500.
76. Kawaguchi DM, Glatt SJ. *Pharmacogenomics.* 2014;15(11):1451-9.
77. Kerbusch T, Waehlby U, Milligan PA, et al. *Br J Clin Pharmacol.* 2003;56:639-52.
78. Khanna D, FitzGerald JD, Khanna PP, et al. *Arthritis Care Res.* 2012;64(10):1431-46.
79. Kidd RS, Straughn AB, Meyer MC, et al. *Pharmacogenetics.* 1999;9(1):71-80.
80. Kirchheiner J, Henckel HB, Meineke I, et al. *J Clin Psychopharmacol.* 2004;24(6):647-52.
81. Kirchheiner J, Muller G, Meineke I, et al. *J Clin Psychopharmacol.* 2003;23(5):459-66.
82. Kirchheiner J, Roots I, Goldammer M, et al. *Clin Pharmacokinet.* 2005;44(12):1209-25.
83. Kitagawa C, Ando M, Ando Y, et al. *Pharmacogenet Genomics.* 2005;15(1):35-41.
84. Kitzmiller JP, Luzum JA, Baldassarre D, et al. *Pharmacogenet Genomics.* 2014;24(10):486-91.
85. Kivisto KT, Kroemer HK, Eichelbaum M. *Br J Clin Pharmacol.* 1995;40:523-30.
86. Kraft J, Peters E, Slager S, et al. *Biol Psychiatry.* 2007;61(6):734-42.
87. Laika B, Leucht S, Heres S, et al. *Pharmacogenomics J.* 2010;10:20-29.
88. Laje G, Perlis RH, Rush AJ, et al. *Psychiatr Serv.* 2009;60(11):1446-57.
89. Leckband SG, Kelsoe JR, Dunnenberger HM, et al. *Clin Pharmacol Ther.* 2013;94(3):324-8.
90. Lewis G, Mulligan J, Wiles N, et al. *Br J Psych.* 2011;198(6):464-71.
91. Liang JJ, Geske JR, Boilson BA, et al. *Pharmacogenet Genomics.* 2013;23(12):658-655.
92. Lim S, Won H, Kim H, et al. *PLoS ONE.* 2014;9(9):e107098.
93. Lind AB, Reis M, Bengtsson F, et al. *Clin Pharmacokinet.* 2009;48(1):63-70.
94. Linnet K, Olesen OV. *Drug Metab Dispos.* 1997;25(12):1379-82.
95. Liu YC, Wang WS. *Cancer.* 2012;118:1718-25.
96. Mallal S, Nolan D, Witt C, et al. *Lancet.* 2002;359(9308):727-32.
97. Mallal S, Phillips E, Carosi G, et al. *N Engl J Med.* 2008;358(6):568-79.
98. Man CB, Kwan P, Baum L, et al. *Epilepsia.* 2007;48(5):1015-18.
99. Manoharan A, Shewade D, Rajkumar R, et al. *Eur J Clin Pharmacol.* 2016;72(10):1215-20.
100. Maron E, Tammiste A, Kallassalu K, et al. *Eur Neuropsychopharmacol.* 2009;19(6):451-6.
101. Martin MA, Hoffman JM, Freimuth RR, et al. *Clin Pharmacol Ther.* 2014;95(5):499-500.
102. Martin MA, Klein TE, Dong BJ, et al. *Clin Pharmacol Ther.* 2012;91(4):734-8.
103. Martinez-Raga J, Knecht C, de Alvaro R. *Neuropsychiatr Dis Treat.* 2015;11:1359-70.
104. McMahon FJ, Buervenich S, Charney D, et al. *Am J Hum Genet.* 2006;78(5):804-14.
105. Meng H, Ren J, Lv Y, et al. *Neurology Asia.* 2011;16(1):39-45.
106. Milovanovic D, Radosavljevic I, Radovanovic M, et al. *Serbian J Exper Clin Res.* 2015;16(2):93-9.
107. Mrazek D, Rush A, Biernacka J, et al. *Am J Med Genet B Neuropsychiatr Genet.* 2009;150B(3):341-51.
108. Muir AJ, Gong L, Johnson SG, et al. *Clin Pharmacol Ther.* 2014;95(2):141-6.
109. Murphy G, Hollander S, Rodrigues H, et al. *Arch Gen Psychiatry.* 2004;61(11):1163-9.
110. Mushtaq D, Ali A, Margoob M, et al. *J Affect Disord.* 2012;136(3):955-62.
111. Nakamura T, Kubota T, Iwakaji A, et al. *Drug Des Devel Ther.* 2016;10:327-38.
112. Naritomi Y, Terashita S, Kagayama A. *Xenobiotica.* 2004;34(5):415-27.
113. Ng C, Easteal S, Tan S, et al. *Prog Neuropsychopharmacol Biol Psychiatry.* 2006;30(5):953-7.
114. Ng C, Sarris J, Singh A, et al. *Hum Psychopharmacol.* 2013;28(5):516-22.
115. Niemi M, Neuvonen PJ, Hofmann U, et al. *Pharmacogenet Genomics.* 2005;15(5):303-9.
116. Niihara H, Kakamu T, Fujita Y, et al. *J Dermatol.* 2012;39(7):594-601.
117. Niinuma Y, Saito T, Takahashi M, et al. *Pharmacogenomics J.* 2014;14:107-14.
118. Obach RS, Cox LM, Tremaine LM. *Drug Metab Dispos.* 2005;33(2):262-70.
119. Oda Y, Hamaoka N, Hiroi T, et al. *Br J Clin Pharmacol.* 2001;51(3):281-5.
120. Oertel BG, Schmidt R, Schneider A, et al. *Pharmacogenet Genomics.* 2006;16:625-36.
121. Olesen OV, Linnet K. *Br J Clin Pharmacol.* 2000;50(6):563-571.
122. Olesen OV, Linnet K. *Drug Metab Dispos.* 1997;25(6):740-44.
123. Orlando R, Piccoli P, De Martin S, et al. *Clin Pharmacol Ther.* 2004;75(1):80-8.
124. Paddock S, Laje G, Charney D, et al. *Am J Psych.* 2007;164:1181-8.
125. Pan LP, Wijnant P, De Vriendt C, et al. *Br J Clin Pharmacol.* 1997;44(6):557-64.
126. Pantuck EJ, Pantuck CB, Anderson KK, et al. *Clin Pharmacol Ther.* 1982;31(4):533-8.
127. Park P, Seo Y, Ahn J, et al. *J Clin Pharm Ther.* 2009;34(5):569-74.
128. Patsalos PN. *Epilepsia.* 2005;46(9):140-8.
129. Perlis R, Mischoulon D, Smoller J, et al. *Biol Psychiatry.* 2003;54(9):879-83.
130. Peters EJ, Slager SL, Jenkins GD, et al. *Pharmacogenet Genomics.* 2009;19(1):1-10.
131. Picard N, Cresteil T, Premaud A, et al. *Ther Drug Monit.* 2004;26(6):600-8.
132. Poland R, Lesser I, Wan Y, et al. *Life Sci.* 2013;92(20-21):967-70.
133. Pollock BG, Ferrell RE, Mulsant BH, et al. *Neuropsychopharmacol.* 2000;23(5):587-90.
134. Puranik Y, Birnbaum A, Marino S, et al. *Pharmacogenomics.* 2013;14(1):35-45.
135. Radtke S, Zolk O, Renner B, et al. *Blood.* 2013;121(26):5145-53.
136. Raffel DM, Corbett JR, del Rosario RB, et al. *J Nucl Med.* 1999;40:232-238.
137. Ramsey LB, Johnson SG, Caudle KE, et al. *Clin Pharmacol Ther.* 2014;96(4):423-8.
138. Ramsey LB, Panetta JC, Smith C, et al. *Blood.* 2013;121(6):898-904.
139. Rausch J, Johnson M, Fei Y, et al. *Biol Psychiatry.* 2002;51(9):723-32.
140. Reimherr F, Amsterdam J, Dunner D, et al. *Psychiatry Res.* 2010;175(1-2):67-73.
141. Relling MV, Gardner EE, Sandborn WJ, et al. *Clin Pharmacol Ther.* 2011;89(3):387-91.
142. Relling MV, Gardner EE, Sandborn WJ, et al. *Clin Pharmacol Ther.* 2013;93(4):324-5.
143. Relling MV, Nemec J, Schuetz EG, et al. *Mol Pharmacol.* 1994;45(2):352-8.
144. Rotzinger S, Baker GM. *Eur Neuropsychopharmacol.* 2002;12(2):91-100.
145. Rudberg I, Hermann M, Refsum H, et al. *Euro J Clin Pharmacol.* 2008;64(12):1181-8.
146. Ruhé H, Ooteman W, Booij J, et al. *Pharmacogenet Genomics.* 2009;19(1):67-76.
147. Saag M, Balu R, Phillips E, et al. *Clin Infect Dis.* 2008;46(7):1111-8.
148. Saito Y, Stamp LK, Caudle KE, et al. *Clin Pharmacol Ther.* 2015;99(1):36-37.
149. Salonen JS, Nyman L, Boobis AR, et al. *Drug Metab Dispos.* 2003;31(9):1093-1102.

References (cont.)

150. Schaid DJ, Spraggs CF, McDonnell SK, et al. *J Clin Oncol.* 2014;32(22):2296-303.
151. Scott SS, Sangkuhl K, Gardner EE, et al. *Clin Pharmacol Ther.* 2011;90(2):328-32.
152. Scott SS, Sangkuhl K, Stein CM, et al. *Clin Pharmacol Ther.* 2013;94(3):317-23.
153. SEARCH Collaborative Group, Link E, Parish S, et al. *N Engl J Med.* 2008;359(8):789-99
154. Seo T, Nakada N, Ueda N, et al. *Clin Pharmacol Ther.* 2006;79(5):509-10.
155. Serretti A, Cusin C, Rossini D, et al. *Am J Med Genet.* 2004;129B(1):36-40.
156. Serretti A, Zanardi R, Rossini D, et al. *Mol Psychiatry.* 2001;6(5):586-92.
157. Shimoda K, Someya T, Morita S, et al. *Progress Neuropsychopharmacol Biological Psych.* 2002;26(2):261-5.
158. Shon JH, Yoon YR, Kim MJ, et al. *Br J Clin Pharmacol.* 2005;59(5):552-63.
159. Sistonen J, Madadi P, Ross CJ, et al. *Clin Pharmacol Ther.* 2012;91(4):692-9.
160. Smeraldi E, Serretti A, Artioli P, et al. *Psychiatr Genet.* 2006;16(4):153-8.
161. Smeraldi E, Zanardi R, Benedetti F, et al. *Mol Psychiatry.* 1998;3(6):508-11.
162. Smit EF, Burgers SA, Biesma B, et al. *J Clin Oncol.* 2009;27:2038-45.
163. Smits K, Smits L, Peeters F, et al. *Psychiatr Genet.* 2008;18(4):184-90.
164. Stamer UM, Musshoff F, Stüber F, et al. *Pain.* 2016;157(11):2467-75.
165. Stimmel GL, Falloon IR. *J Clin Psychiatry.* 1983;44(11):420-22.
166. Stormer E, von Moltke LL, Greenblatt DJ. *J Pharmacol Exper Ther.* 2000;295(2):793-801.
167. Subrahmanyam V, Renwick AB, Walters DG, et al. *Drug Metab Dispos.* 2001;29(8):1146-55.
168. Subramanian M, Agrawal V, Sandee D, et al. *Pharmacogenet Genomics.* 2012;22(8):590-7.
169. Sun HY, Hung CC, Lin PH, et al. *J Antimicrob Chemother.* 2007;60(3):599-604.
170. Takahashi H, Yoshida K, Ito K, et al. *Eur Neuropsychopharmacol.* 2002;12(5):477-81.
171. Thorn CF, Klein TE, Altman RB. *Pharmacogenet Genomics.* 2009;19(7):556-8.
172. Timmer CJ, Ad Sitsen JM, Delbressine LP. *Clin Pharmacokinet.* 2000;38(6),461-74.
173. Tirkkonen T, Heikkila P, Huupponen R, et al. *J Intern Med.* 2010;268(4):359-66.
174. Tomita T, Yasui-Furukori N, Nakagami T, et al. *PLoS ONE.* 2014;9(5):e98099.
175. Treviño LR, Shimasaki N, Yang W, et al. *J Clin Oncol.* 2009;27(35):5972-8.
176. Tseng E, Walsky RL, Luzietti RA, et al. *Drug Metab Dispos.* 2014;42(7):1163-73.
177. Tzvetkov MV, Saadatmand AR, Lötsch J, et al. *Clin Pharmacol Ther.* 2011;90(1):143-50.
178. Umene-Nakano W, Yoshimura R, Ueda N, et al. *J Psychopharmacol.* 2009;24(12):1764-71.
179. Van der Padt A, Van Schaik RHN, Sonneveld P. *Neth J Med.* 2006;64(5):160-2.
180. Van der Weide K, van der Weide J. *J Clin Psychopharmacol.* 2015;35(3):228-36.
181. Van Huis-Tanja LH, Gelderblom H, Punt CJ, et al. *Pharmacogenet Genomics.* 2013;23(4):208-18.
182. Venkatakrishnan K, von Moltke LL, Greenblatt DJ. *J Clin Pharmacol.* 1999;39(6):567-77.
183. Volotinen M, Turpeinen M, Tolonen A, et al. *Drug Metab Dispos.* 2007;35(7):1135-41.
184. Von Moltke LL, Greenblatt DJ, Granda BW, et al. *Br J Clin Pharmacol.* 1999;48(1):89-97.
185. Waade RB, Hermann M, Moe HL, et al. *Eur J Clin Pharmacol.* 2014;70:933-40.
186. Wang JH, Liu ZQ, Wang W, et al. *Clin Pharmacol Ther.* 2001;70(1):42-7.
187. Wang JS, Wang W, Xie HG, et al. *Br J Clin Pharmacol.* 1997;44(2):195-8.
188. Wang LZ, Ramirez J, Yeo W, et al. *PLoS ONE.* 2013;8(1):1-10.
189. Wang RW, Liu L, Cheng H. *Drug Metab Dispos.* 1996;24(7):786-791.
190. Wen B, Ma L, Zhu M. *Chemico-Biological Interactions.* 2008;173(1):59-67.
191. Wilke RA, Ramsey LB, Johnson SG, et al. *Clin Pharmacol Ther.* 2012;92(1):112-7.
192. Williams JA, Hyland R, Jones BC, et al. *Drug Metab Dispos.* 2004;32(11):1201-8.
193. Wire MB, McLean HB, Pendry C, et al. *Antimicrobial Agents Chemother.* 2012;56(6):2846-51.
194. Won E, Chang H, Lee H, et al. *Neuropsychobiology.* 2012;66(4):221-9.
195. Xing Q, Qian X, Li H, et al. *Inter J Neuropsychopharm.* 2007;10:631-7.
196. Yang KH, Choi YH, Lee U, et al. *J Pharm Pharmacol.* 2009;61(1):47-54.
197. Yoshimura R, Umene-Nakano W, Suzuki A, et al. *Human Psychopharmacology.* 2009;24(6):489-94.
198. Yu Y, Tsai S, Chen T, et al. *Mol Psychiatry.* 2002;7(10):1115-9.
199. Yumibe N, Huie K, Chen KJ, et al. *Biochem Pharmacol.* 1996;51:165-172.
200. Yun W, Zhang F, Hu C, et al. *Epilepsy Res.* 2013;107(3):231-7.
201. Zanardi R, Serretti A, Rossini D, et al. *Biol Psychiatry.* 2001;50(5):323-30.
202. Zeng Z, Andrew NW, Arison BH, et al. *Xenobiotica.* 1998;28(3):313-21.
203. Zhang HN, He XL, Wang C, et al. *Pediatr Blood Cancer.* 2014;61(12):2203-7.
204. Zhang W, Yuan JJ, Kan QC, et al. *Minerva Anesthesiologica.* 2011;77:33-9.
205. Zhu M, Zhao W, Jimenez H, et al. *Drug Metab Dispos.* 2005;33(4):500-7.
206. Zhuo X, Zheng N, Felix CA, et al. *Drug Metab Dispos.* 2004;32(9):993-1000.