



Customer Name: John Doe III
Date of Birth: June 20, 1983

Test ID: XXXXXXXXX
Test Date: May 17, 2015

Health Care Professional: Dr. Joe Berelli
Report Date: June 1, 2015

Thank you for investing in the most valuable stock
in the world - **Your health!**



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Quick Start

How to read this report and understand your unique results.

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Drug Guide

This section provides a drug - focused report by therapeutic category for easy identification.

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Summary of Genes Tested

This section provides a summary of your results for all 11 genes tested.

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D



Detailed Explanation of Findings

This section provides more information on your results for each individual gene tested.

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Key Words to Understand

- **Gene** - the molecular unit of heredity. Each gene codes for a protein. Proteins are complex “action” molecules that impact our physiology.
- **Variant** - alternative versions of a particular gene.
- **Genotype** - the variants you inherited for a particular gene from Mom and Dad.
- **Phenotype** - function or behavior of the genotype.
- **Physician** - the person with whom you must share this information.

Quick Start

Please use this page as a guide to exploring the answer to a riddle that took science 50 years and billions of dollars to solve.

What makes me unique?

The report contains three major sections:

- Your Drug Guide Page
- Summary of Genes Tested
- Detailed Explanation of Findings

All three sections are color-coded to easily show whether you have a genetic predisposition that may affect your response to drugs or indicate the potential for adverse effects.

- Green Color indicates **NORMAL**
- Yellow Color indicates **INCREASED RISK**
- Red Color indicates **EXTREME RISK**

- 1 Drug Guide** - Illustrates the impact of the 11 tested genes on the most commonly prescribed medications for which the FDA provides pharmacogenetic guidance or prescribing information. Simply identify your therapeutic category of interest and review the impact of your genetics on these drugs listed by medication name (both brand and generic).

The impact of your genetics as shown in the drug guide is derived by considering ALL tested genes that are relevant for each listed drug (also called combinatory pharmacogenetics).
- 2 Summary of Genes Tested** - Shows your genotype (your particular gene differences) and phenotype (how your genotype affects function) for each of the 11 genes tested.
- 3 Detailed Explanation of Findings** - Looks at each gene separately and explains how your particular genotype and phenotype may impact drug response. For each tested gene, the report shows how your phenotype impacts drugs, along with a list of the most commonly prescribed drugs affected by each gene.

So, enjoy your journey of self-discovery and remember: Your report is - **Good for Life™**

For additional information please visit our website at DNA4Life.com

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Drug Guide

Customer Name: John Doe III
Test ID: XXXXXXXXXX

These lists of drugs are color-coded to reflect whether a genetic predisposition indicates that there may be issues with regard to drug response or adverse effects.

Normal

A drug in GREEN font indicates that no genetic issues of clinical relevance were found for this drug among the genes tested.

Increased Risk

A drug in YELLOW FONT indicates that genetic issues of clinical relevance were found for this drug. Extra caution should be observed when considering this drug for this patient.

Extreme Risk

A drug in RED FONT Indicates that serious genetic issues of clinical relevance were found for this drug and extreme caution or avoidance of this drug should be observed when considering this drug for this patient.

Antipsychotic

aripiprazole (Abilify)
asenapine (Saphris)
chlorpromazine (Thorazine)
clozapine (Clozaril)
haloperidol (Haldol)
lloperidine (Fanapt)
lurasidone (Latuda)
olanzapine (Zyprexa)
perphenazine (Trilafon)
promazine (Sparine)
quetiapine (Seroquel)
risperidone (Risperdal)
thioridazine (Mellaril)
ziprasidone (Geodon)

Neuropsychiatric - Precognitive Drug

tacrine (Cognex)

Neuropsychiatric - Anticonvulsant

carbamazepine (Various brands)
phenytoin (Dilantin)
zonisamide (Zonegran)

Neuropsychiatric - Antidepressant

amitriptyline (Elavil)
bupropion
citalopram (Celexa)
clomipramine (Anafranil)
desipramine (Norpramin)
desvenlafaxine (Pristiq)
doxepin (Sinequan, Silenor,
Prudoxin, Zonalon)
escitalopram (Lexapro)
fluoxetine (Prozac)
imipramine (Tofranil)
mirtazapine (Remeron)
nefazodone (Serzone)
nortriptyline (Aventyl, Pamelor)
paroxetine (Paxil)
sertraline (Zoloft)
trazodone (Oleptro)
venlafaxine (Effexor)
vilazodone (Viibryd)

Pain Management

alfentanil (Alfenta)
carisoprodol++ (Soma)
celecoxib (Celebrex)
codeine++
cyclobenzaprine (Flexaril)
fentanyl (Actiq, Duragesic,
Sublimaze)
hydrocodone++
ibuprofen (Advil, Motrin)
lidocaine (xylocaine,
various brands)
meperidine (Demerol)
naproxen (Aleve)
oxycodone++ (Oxycontin)
ropivacaine (Naropin)
tapentadol (Nucynta)
tizanidine (Zanaflex)
tramadol++ (Ultram)
zolmitriptan (Zomig)

Pain Management Neuropsychiatric

methadone

++ Pro-drug; may not be effective in Poor Metabolizers due to inability to metabolize and produce active metabolite

* The enzyme encoded by this gene is a minor metabolic pathway for this drug (of minor clinical importance)

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Normal



Increased Risk



Extreme Risk

Neuropsychiatric - Pain Management

duloxetine (Cymbalta)
tiagabine (Gabitril)

Antidiabetic

glimepiride (Amaryl)
glipizide (Glucotrol)
glyburide (Diabeta)
tolbutamide (Orinase)

Steroids

estradiol
progesterone
testosterone

Gastrointestinal

esomeprazole (Nexium)
lansoprazole (Prevacid)
omeprazole (Prilosec)
pantoprazole (Protonix)
rabeprazole (Aciphex)

Anti-Infectives

clarithromycin (Biaxin)
efavirenza (Sustiva)
erythromycin (E-Mycin)
indinavir (Crixivan)
nelfinavir (Viracept)
ritonavir (Norvir)
saquinavir (Invirase)
telithromycin (Ketek)

Cardiovascular - Antiarrhythmic

amiodarone (Cordarone)
dofetilide (Tikosyn)
flecainide (Tambocor)
propafenone (Rythmol)
quinidine (Various brands)

Cardiovascular - Antihypertensive

amlodipine (Norvasc)
carvedilol (Coreg)
diltiazem (Cardizem)
felodipine (Plendil)
lercanidipine (Zanidip)
losartan ++ (Cozaar)
metoprolol (Lopressor, Toprol)
nebivolol (Bystolic)
nifedipine (Adalat, Procardia)
nisoldipine (Sular)
nitrendipine
propranolol (Inderal)
timolol (Blocadren)

Neuropsychiatric - Anxiolytic

alprazolam (Xanax)
buspirone (BuSpar)
diazepam (Valium)
midazolam (Versed)
phenobarbital triazolam (Halcion)
zolpidem (Ambien)

Cardiovascular - Cholesterol Lowering

atorvastatin (Lipitor, Caduet)
fluvastatin (Lescol)
lovastatin (Mevacor)
pravastatin (Pravachol)
rosuvastatin (Crestor)
simvastatin (Zocor)

Cardiovascular - Anticoagulant

clopidogrel ++ (Plavix)
rivaroxaban (Xarelto)
ticargelol (Brilinta)
warfarin (Coumadin)

Cardiovascular - Antianginal

ranolazine (Ranexa)

Immunological

cyclosporine (Gengraf)
hydrocortisone
tacrolimus (Prograf)
zafirlukast (Accolate)

Oncology

cyclophosphamide (Cytoxan)++
docetaxel (Taxotere)
ifosfamide
tamoxifen ++ (Nolvadex)
vincristine (Vincasar, Oncovin)

Other

caffeine
sildenafil (Viagra)
theophylline

++ Pro-drug; may not be effective in Poor Metabolizers due to inability to metabolize and produce active metabolite

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Summary of Genes Tested

Customer Name: John Doe III
Test ID: XXXXXXXXXX

The following is a summary of your drug sensitivity report. More detail on each gene can be found on the pages referenced.

Genes affecting drug metabolism

Gene (Genotype)	Phenotype (Gene expression)	What it means
CYP2D6 *10 / *10	Intermediate Metabolizer	This genotype predicts less than normal metabolic enzyme activity for the enzyme controlled by this gene. Increased potential for drug accumulation and adverse drug reactions. ++ Caution should be observed with pro-drugs, e.g., codeine. Less than normal active metabolite formation is expected and a full effect of the drug may not be achieved. See page 6
CYP2C19 *1 / *3	Intermediate Metabolizer	This genotype predicts less than normal metabolic enzyme activity for the enzyme controlled by this gene. Increased potential for drug accumulation and adverse drug reactions. ++ Caution should be observed with pro-drugs, e.g., clopidogrel. Less than normal active metabolite formation is expected and a full effect of the drug may not be achieved. See page 7
CYP3A4 *1 / *1	Normal Metabolizer	This genotype predicts normal metabolic activity for the enzyme controlled by this gene. See pages 8 and 9
CYP3A5 *1A / *1A	Ultra-Rapid Metabolizer	This genotype predicts markedly reduced or no metabolic activity for the enzyme controlled by this gene. High risk for drug accumulation and adverse drug reactions. See pages 8 and 9
CYP2C9 *1 / *1	Normal Metabolizer	This genotype predicts normal metabolic activity for the enzyme controlled by this gene. See page 10
CYP1A2 *1A / *1F	Ultra-Rapid Metabolizer	Extremely rapid metabolism expected for the enzyme controlled by this gene, especially in smokers. See page 11
CYP2B6 *1 / *1	Normal Metabolizer	This genotype predicts normal metabolic activity for the enzyme controlled by this gene. See page 12

Genes affecting response or function


OPRM1 A/A	Normal Opioid Responder	Normal opiate receptor function expected. Morphine and other active opiates (e.g., oxycodone, fentanyl) should produce a usual analgesic response. See Page 13
SLC6A4 SA/SA	Poor Responder	Decreased serotonin transporter expression expected. Risk of no therapeutic benefit from selective serotonin reuptake inhibitors (SSRIs). Please discuss your results with a health care professional or a pharmacist before considering treatment changes. See Page 13
SLCO1B1 *1/*1	Normal Function	No increased risk of statin-induced myopathy expected at low to moderate doses. See Page 13
VKORC1 *2/*2	High Warfarin Sensitivity	Lower warfarin doses may be sufficient to produce the desired anticoagulant effect. Excessive anticoagulant activity is associated with an increased risk of serious bleeding. See page 13

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Detailed Explanation of Findings

Customer Name: John Doe III
Test ID: XXXXXXXXXX

Gene (Genotype)	Phenotype (Gene expression)	What it means
CYP2D6	 Intermediate Metabolizer	<p>This genotype predicts less than normal metabolic enzyme activity for the enzyme controlled by this gene. Increased potential for drug accumulation and adverse drug reactions.</p> <p>++ Caution should be observed with pro-drugs, e.g., codeine. Less than normal active metabolite formation is expected and a full effect of the drug may not be achieved.</p>

COMMON MEDICINES METABOLIZED BY CYP2D6

Neuropsychiatric Medications

amitriptyline (Elavil)	haloperidol (Haldol)
amphetamine (Adderall)	iloperidone (Fanapt)
aripiprazole (Abilify)	imipramine (Tofranil)
asenapine (Saphris)	mirtazapine (Remeron) *
atomoxetine (Strattera)	nortriptyline (Aventyl, Pamelor)
bupropion (Wellbutrin)	olanzapine (Zyprexa) *
chlorpromazine (Thorazine)	paroxetine (Paxil)
citalopram (Celexa) *	perphenazine (Trilafon)
clomipramine (Anafranil)	quetiapine (Seroquel) *
desipramine (Norpramin)	risperidone (Risperdal)
desvenlafaxine (Pristiq) *	sertraline (Zoloft) *
doxepin (Sinequan, Silenor, Prudoxin, Zonalon)	tacrine (Cognex)
duloxetine (Cymbalta)	thioridazine (Mellaril)
escitalopram (Lexapro)	trazadone (Olepto) *
fluoxetine (Prozac)	venlafaxine (Effexor)

Pain Medications

celecoxib (Celebrex) *
codeine++
cyclobenzaprine (Flexeril) *
hydrocodone++
ibuprofen *
methadone *
oxycodone++ (Oxycontin)
tiagabine (Gabitril) *
tramadol++ (Ultram)

Anti-Infectives

indinavir (Crixivan) *
ritonavir (Norvir) *

Oncologic Medications

tamoxifen ++

Cardiovascular Medications

carvedilol (Coreg)	propafenone (Rythmol)
flecainide (Tambocor)	propranolol (Inderal)
lercandipine (Zandip)	quinidine (various brands)
metoprolol (Lopressor, Toprol)	timolol (Blocadren)
nebivolol (Bystolic)	

++ Pro-drug; may not be effective in Poor Metabolizers due to inability to metabolize and produce active metabolite


* The enzyme encoded by this gene is a minor metabolic pathway for this drug (of minor clinical importance)

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Detailed Explanation of Findings

Customer Name: John Doe III
Test ID: XXXXXXXXXX

Gene (Genotype)	Phenotype (Gene expression)	What it means
CYP2C19	 Intermediate Metabolizer	<p>This genotype predicts less than normal metabolic enzyme activity for the enzyme controlled by this gene. Increased potential for drug accumulation and adverse drug reactions.</p> <p>++ Caution should be observed with pro-drugs, e.g., clopidogrel. Less than normal active metabolite formation is expected and a full effect of the drug may not be achieved.</p>

COMMON MEDICINES METABOLIZED BY CYP2C19

Neuropsychiatric Medications

citalopram (Celexa)	paroxetine (Paxil) *
clomipramine (Anafranil) *	perphenazine (Trilafon) *
diazepam (Valium)	phenobarbital
doxepin (Sinequan, Silenor, Prudoxin, Zonalon)	phenytoin (Dilantin)
escitalopram (Lexapro)	sertraline (Zoloft)
imipramine (Tofranil)	venlafaxine (Effexor) *
	vilazodone (Viibryd) *

Pain Medications

carisoprodol ++ (Soma)
 ibuprofen *
 meperidine (Demerol)
 methadone
 tapentadol (Nucynta)

Antivirals, Hormones, and Anti-Diabetics

efavirenz (Sustiva) *	progesterone *
nelfinavir (Viracept)	tolbutamide (Orinase) *

GERD Medications

esomeprazole (Nexium)
 lansoprazole (Prevacid)
 omeprazole (Prilosec)
 pantoprazole (Protonix)
 rabeprazole (Aciphex)

Anti-Infectives

indinavir (Crixivan) *
 ritonavir (Norvir) *

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Detailed Explanation of Findings

Customer Name: John Doe III
Test ID: XXXXXXXXXX

Gene (Genotype)	Phenotype (Gene expression)	What it means
CYP3A4	+	The expected metabolic activities for the enzymes controlled by these genes are shown at left. CYP3A4 and CYP3A5 are so similar that they generally affect the same drugs. If you are normal for one of these genes, then you can expect to metabolize these drugs normally. If you are impaired for both of these genes, then there is increased potential for drug accumulation and adverse drug reactions.
CYP3A5	✗	
	Normal Metabolizer	
	Ultra-Rapid Metabolizer	

COMMON MEDICINES METABOLIZED BY CYP3A4 AND CYP3A5

Pain Medications

alfentanil (Alfenta)	lidocaine (xylocaine, various) *
codeine *	meperidine (Demerol)
cyclobenzaprine (Flexeril)	methadone
fentanyl (Actiq, Duragesic, Sublimaze)	oxycodone (Oxycontin)
hydrocodone *	ropivacaine (Naropin) *
ibuprofen *	tizanidine (Zanaflex) *
	tramadol (Ultram) *

Neuropsychiatric Medications

alprazolam (Xanax)	midazolam (Versed)
amphetamine (Adderall) *	mirtazapine (Remeron)
aripiprazole (Abilify)	nefazodone (Serzone)
atomoxetine (Strattera) *	paroxetine (Paxil) *
bupirone (Buspar)	perphenazine (Trilafon)
carbamazepine (Tegretol, Various brands)	phenytoin (Dilantin) *
chlorpromazine (Thorazine) *	promazine (Sparine)
citalopram (Celexa) *	quetiapine (Seroquel)
clomipramine (Anafranil) *	sertraline (Zoloft) *
clozapine (Clozaril) *	thioridazine (Mellaril)
desvenlafaxine (Pristiq)	tiagabine (Gabitril)
diazepam (Valium)	trazodone (Oleptro)
escitalopram (Lexapro) *	triazolam (Halcion)
fluoxetine (Prozac) *	venlafaxine (Effexor) *
haloperidol (Haldol)	vilazodone (Viibryd)
iloperidone (Fanapt)	ziprasidone (Geodon)
lurasidone (Latuda)	zolpidem (Ambien)
	zonisamide (Zonegran)

Cardiovascular Medications

amiodarone (Cordarone)
amlodipine (Norvasc)
atorvastatin (Lipitor, Caduet)
carvedilol (Coreg) *
clopidogrel (Plavix) *
diltiazem (Cardizem)
dofetilide (Tikosyn)
felodipine (Plendil)
fluvastatin (Lescol) *
lercanidipine (Zanidip)
losartan (Cozaar)
lovastatin (Mevacor)
nifedipine (Adalat, Procardia)
nisoldipine (Sular)
nitrendipine
propafenone (Rythmol)
quinidine (Various brands)
ranolazine (Ranexa)
rivaroxaban (Xarelto)
simvastatin (Zocor)
ticagrelor (Brilinta)

Oncological Medications

docetaxel (Taxotere)
tamoxifen (Nolvades) *
vincristine (Vincasar, Oncovin)

++ Pro-drug; may not be effective in Poor Metabolizers due to inability to metabolize and produce active metabolite

* The enzyme encoded by this gene is a minor metabolic pathway for this drug (of minor clinical importance)

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Detailed Explanation of Findings

Customer Name: John Doe III
Test ID: XXXXXXXXXX

COMMON MEDICINES METABOLIZED BY CYP3A4 AND CYP3A5, CONT.

Anti-Infective Medications

clarithromycin (Biaxin)	nelnavir (Viracept)
efavirenz (Sustiva)	ritonavir (Norvir)
erythromycin (E-Mycin)	saquinavir (Invirase)
indinavir (Crixivan)	telithromycin (Ketek)

Hormonal / Endocrine

estradiol
hydrocortisone
progesterone
testosterone

Gastrointestinal Medications

esomeprazole (Nexium)	pantoprazole (Protonix) *
lansoprazole (Prevacid)	rabeprazole (Aciphex)
omeprazole (Prilosec) *	

Antidiabetic Medications

glipizide (Glucotrol) *
glyburide (Diabeta)

Immunosuppressant Medications

cyclosporine (Gengraf)	tacrolimus (Prograf)
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Impotence Medications

sildenafil (Viagra)

Immunomodulation Medications

cyclophosphamide (Cytosan) *
ifosfamide
zafirlukast (Accolate) *

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Detailed Explanation of Findings

Customer Name: John Doe III
Test ID: XXXXXXXXXX

Gene (Genotype)	Phenotype (Gene expression)	What it means
CYP2C9	 Normal Metabolizer	This genotype predicts normal metabolic activity for the enzyme controlled by this gene.

COMMON MEDICINES METABOLIZED BY CYP2C9

Cardiovascular Medications

carvedilol (Coreg) *	glyburide (Diabeta)
clopidogrel (Plavix) *	losartan (Cozaar)
fluvastatin (Lescol)	rosuvastatin (Crestor)
glimepiride (Amaryl)	tolbutamide (Orinase)
glipizide (Glucotrol)	warfarin (Coumadin)

Steroids

progesterone

Anti- Infectives

efavirenz (Sustiva) *

Pain Medications

carisoprodol	methadone *
celecoxib (Celebrex)	naproxen (Aleve)
ibuprofen (Advil, Motrin)	tapentadol (Nucynta)

Oncology

tamoxifen (Nolvadex) *

Neuropsychiatric Medications

fluoxetine (Prozac) *	sertraline (Zoloft) *
phenobarbital	zolpidem (Ambien) *
phenytoin (Dilantin)	

Other

sildenafil (Viagra) *

Immunomodulation Medications

zarlukast (Accolate)

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Detailed Explanation of Findings

Customer Name: John Doe III
Test ID: XXXXXXXXXX

Gene (Genotype)	Phenotype (Gene expression)	What it means
CYP1A2	 Ultra-Rapid Metabolizer	Extremely rapid metabolism expected for the enzyme controlled by this gene, especially in smokers.

COMMON MEDICINES METABOLIZED BY CYP1A2

Neuropsychiatric Medications

amphetamine (Adderall) *	paroxetine (Paxil) *
asenapine (Saphris)	perphenazine (Trilafon) *
clomipramine (Anafranil) *	promazine (Sparine)
clozapine (Clozaril)	tacrine (Cognex)
duloxetine (Cymbalta)	tiagabine (Gabitril) *
mirtazapine (Remeron)	thioridazine (Mellaril)
olanzapine (Zyprexa)	ziprasidone (Geodon) *

Misc. Medications

caffeine
carvedilol (Coreg) *
clopidogrel (Plavix) *
estradiol
propranolol (Inderal)
ritonavir (Norvir) *
theophylline

Pain Medications and Local Anesthetics

cyclobenzaprine (Flexeril)	lidocaine (xylocaine, various brands)
naproxen (Aleve)	ropivacaine (Naropin)
tizanidine (Zanaflex)	
zolmitriptan (Zomig)	

++ Pro-drug; may not be effective in Poor Metabolizers due to inability to metabolize and produce active metabolite


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Detailed Explanation of Findings

Customer Name: John Doe III
Test ID: XXXXXXXXXX

Gene (Genotype)	Phenotype (Gene expression)	What it means
CYP2B6	 Normal Metabolizer	This genotype predicts a normal rate of metabolic enzyme activity.

COMMON MEDICINES METABOLIZED BY CYP2B6

Misc. Medications

bupropion	ibuprofen (Advil, Motrin) *	sertraline (Zoloft)
clopidogrel (Plavix) *	ifosfamide	tramadol (Ultram) *
cyclophosphamide (Cytoxan)++	meperidine (Demerol)	
efavirenz (Sustiva)	methadone	

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Detailed Explanation of Findings

Customer Name: John Doe III
Test ID: XXXXXXXXXX

Gene (Genotype)	Phenotype (Gene expression)	What it means
OPRM1	 Normal Opioid Responder	Normal opiate receptor function expected. Morphine and other active opiates (e.g., oxycodone, fentanyl) should produce a usual analgesic response.
SLC6A4	 Poor Responder	Decreased serotonin transporter expression expected. Risk of no therapeutic benefit from selective serotonin reuptake inhibitors (SSRIs).
SLCO1B1	 Normal Function	No increased risk of statin-induced myopathy expected at low to moderate doses.
VKORC1	High Warfarin Sensitivity	Lower warfarin doses may be sufficient to produce the desired anticoagulant effect. Excessive anticoagulant activity is associated with an increased risk of serious bleeding.

++ Pro-drug; may not be effective in Poor Metabolizers due to inability to metabolize and produce active metabolite

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Method Summary

This specimen was analyzed for gene mutations leading to a loss or gain of biological function by Single Nucleotide Polymorphism (SNP) detection via Real-Time Polymerase Chain Reaction with TaqMan® Probes following DNA extraction. This test was developed and its performance characteristics determined by Clinical Testing Laboratories, Inc., a division of General Genetics Corporation, in a manner consistent with CLIA requirements. Clinical Testing Laboratories, Inc. is a CLIA certified facility. This test has not been approved by the U.S. Food & Drug Administration. Test performed by: Clinical Testing Laboratories, Inc., 3655 Research Drive, Las Cruces, NM 88003.

Loci / Mutations Tested

CYP2D6: *1, *2, *3, *4, *5, *XN, *6, *7, *8, *9, *10, *11, *12, *14A, *14B, *15, *17, *18, *19, *20, *29, *41, *69
CYP2C19: *1, *2, *3, *4, *17
CYP3A4: *1, *2, *17, *22
CYP3A5: *1A, *2, *3, *7
CYP2C9: *1, *2, *3, *4, *5, *6, *8, *11, *12, *13, *15, *25
VKORC1: high sensitivity variant 1639 G>A
CYP1A2: *1A, *1C, *1K, *1F, *7, *11
CYP2B6: *1, *18
OPRM1: decrease expression variant 118 A>G
SLC6A4: LA, LG, SA, SG
SLCO1B1: variant *5 T>C

Final Report Reviewed and Released By: John Spalding, Ph.D

Note: Direct DNA testing will not detect all known mutations that result in abnormal biological activity. Absence of a detectable cytochrome P450 mutation or polymorphism does not rule out the possibility that an individual has an intermediate or poor metabolizer phenotype, or impaired enzyme activity. This assay does not detect polymorphisms other than those tested in the assay. Therapeutic drug monitoring is recommended for those with genetic variations from normal.

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**For any additional questions or information
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