

Pharmacogenetic Test Report

Ordering Institution	Hospital A	Sample ID	20200101-123-4567
Name	Jason Doe	Age / Sex	35 / Male
Work No.		Sample Type	Whole Blood
Physician	Dr. Smith	Accepted / Reported	2020-01-01 / 2020-01-01

Pharmacogenetic test provides information for personalized regimen by analyzing the genetic factor associated with individual drug response and compatibility. With the result of this test, Jason can receive a more efficacious medication and avoid unexpected responses associated with inappropriate doses.

Result Summary

Category	Standard	Adverse Drug Reaction	Decrease in Therapeutic Efficacy
Diabetes Metabolic Diseases	Glimepiride Tolbutamide Glibenclamide Gliclazide		Metformin
Hyperlipidemia	Atrovastatin, Rosuvastatin		
Hypertension	Irbersartan # j = O Rosartan, Amlodipine, Nifedipine, Candesartan, Carvedilol, Vucindolol, Atenolol, Metoprolol		
Inflammatory Diseases	Celecoxib, Ibuprofen, Diclofenac, Naproxen, Piroxicam		
Cardiovascular Diseases	Clopidogrel, Wafarin, Acenocoumarol, Phenprocoumon		
Digestive Diseases	Esomeprazole, Lansoprazole, Pantoprazole, Omeprazole		

Jason, among the 34 drugs, is expected to show standard response to **33**, risk of adverse drug reaction to **0** and risk of decreased therapeutic efficacy to **1**. When taking the above drugs, please consult a medical doctor to get appropriate prescription.



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Detailed Result

Diabetes/Metabolic Disease

Metformin - Decrease in Therapeutic Efficacy

When the genotype of the test subject is SLC47A2 c.-130TT, drug resistance may be increased due to increased expression level of SLC47A2 and decreased blood concentration of metformin. There is no official guideline on the dose and regimen of metformin based on SLC47A2 genotype. However, in the study of association between SLC47A2 genotype and metformin phenotype, it was reported that if SLC47A2 c.-130TT genotype is detected, kidney clearance of metformin increases by 30% and the therapeutic effect of metformin for lowering blood glucose level is decreased by 13% and Hb1Ac drop effect of metformin is decreased by 80%.



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Diabetes/Metabolic Diseases

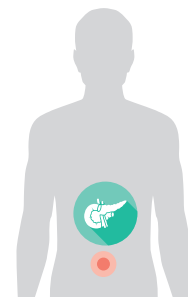
Diseases : Diabetes, Metabolic diseases

Drugs : Diabetes, Metabolic disease drugs

Drug	Genotype	Predicted Drug Response		
Metformin	SLC47A2 c.-130TT	<input type="checkbox"/> Standard	<input type="checkbox"/> Adverse Reaction	<input checked="" type="checkbox"/> Decrease in Therapeutic Efficacy
Glimepiride	TCF7L2 c.450+33966CC	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Adverse Reaction	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Tolbutamide	TCF7L2 c.450+33966CC	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Adverse Reaction	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Glibenclamide	TCF7L2 c.450+33966CC	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Adverse Reaction	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Gliclazide	TCF7L2 c.450+33966CC	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Adverse Reaction	<input type="checkbox"/> Decrease in Therapeutic Efficacy

Therapeutic Effect

Type 2 Diabetes



Major Adverse Reactions

Fatigue, high blood pressure, angina pectoris, arrhythmia, oligocythemia, nausea, vomiting, diarrhea, skin rash, itchiness etc.

Hyperlipidemia

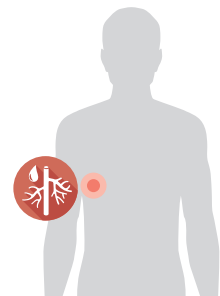
Diseases : Hyperlipidemia

Drug : Hyperlipidemia drug

Drug	Genotype	Predicted Drug Response	
Atrovastatin	COQ2 c.779-1022GG	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Adverse Reaction
Rosuvastatin	COQ2 c.779-1022GG	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Adverse Reaction

Therapeutic Effect

Hyperlipidemia & Dyslipidemia



Major Adverse Reaction

Muscle cramps, Muscle soreness, anaphylaxis, diabetes etc.

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Hypertension

Disease : Hypertension, circulatory disease
 Drug : Anti-hypertensive drug

Drug	Genotype	Predicted Drug Response	
Amlodepine	CACNA1C c.50-1658TT	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Nifedipine	CACNA1C c.50-1658TT	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Irbersartan	CYP2C9 *1/*1	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Rosartan	AGTR1 c.1166AA	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Candesartan	AGTR1 c.1166AA	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Carvedilol	ADRB1 c.1165CC	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Vucindolol	ADRB1 c.1165CC	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Atenolol	ADRB1 c.1165CC	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Metoprolol	ADRB1 c.1165CC	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Captopril	ACE I/I	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Quinapril	ACE I/I	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Enalapril	ACE I/I	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Lisinopril	ACE I/I	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Hydrochlorothiazide	NEDD4L c.24GA	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy

Therapeutic Effect
Hypertension

Major Adverse Reaction
 Skin rash, fatigue, edema, dizziness, headache, feeling drowsy and lack of energy, stomachache, nausea, liver problems, anemia, muscle soreness, impaired sense of taste, dry cough etc.

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Inflammatory Disease

Disease : acute pain, arthritis, spondylitis, dysmorrhoea etc.
 Drug : anti-inflammtory drugs

Drug	Genotype	Predicted Drug Response			
Celecoxib	CYP2C9	<input checked="" type="checkbox"/>	Standard	<input type="checkbox"/> Adverse Reaction	<input type="checkbox"/> Decrease in Therapeutic Efficacy
	*1/*1				
Ibuprofen	CYP2C9	<input checked="" type="checkbox"/>	Standard	<input type="checkbox"/> Adverse Reaction	<input type="checkbox"/> Decrease in Therapeutic Efficacy
	*1/*1				
Diclofenac	CYP2C9	<input checked="" type="checkbox"/>	Standard	<input type="checkbox"/> Adverse Reaction	<input type="checkbox"/> Decrease in Therapeutic Efficacy
	*1/*1				
Naproxen	CYP2C9	<input checked="" type="checkbox"/>	Standard	<input type="checkbox"/> Adverse Reaction	<input type="checkbox"/> Decrease in Therapeutic Efficacy
	*1/*1				
Piroxicam	CYP2C9	<input checked="" type="checkbox"/>	Standard	<input type="checkbox"/> Adverse Reaction	<input type="checkbox"/> Decrease in Therapeutic Efficacy
	*1/*1				

Therapeutic Effect

Arthritis /rheumatoid arthritis/
acute pain/ dysmorrhoea
treatment

Major Adverse Reaction

Dyspepsia, diarrhea, esophagitis,
stomach ulcers, vomiting, dental
disorder, stomach pain, dizziness,
leg swelling, respiratory problem
etc.

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Cardiovascular Disease

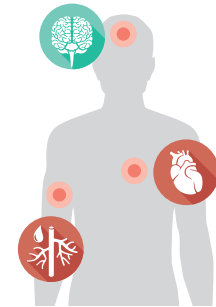
Disease : Stroke, Myocardial infarction, atrial fibrillation, deep vein thrombosis, pulmonary embolism

Drug : Anti-platelet, Anticoagulant drugs

Drug	Genotype	Predicted Drug Response	
Clopidogrel	CYP2C19 *1/*1	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Warfarin	CYP2C9 *1/*1	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Acenocoumarol	CYP2C9 *1/*1	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Phenprocoumon	CYP2C9 *1/*1	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy

Therapeutic Effect

Stroke, myocardial infarction, arteriosclerosis etc. improvement and secondary thrombosis prevention.



Major Adverse Reaction

Hemorrhagic arthrosis, hematuria, hemoptysis, cerebral hemorrhage, aplastic anemia, hemoglobin anemia, leukemia, bleeding from overdose, hemorrhagic complications (sensitization, headache, muscle pain, etc.)

Digestive Disease

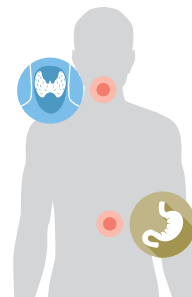
Disease : Gastric ulcer, duodenal ulcer, reflux esophagitis, etc.

Drug : Peptic Ulcer drugs

Drug	Genotype	Predicted Drug Response	
Esomeprazole	CYP2C19 *1/*1	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Lansoprazole	CYP2C19 *1/*1	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Pantoprazole	CYP2C19 *1/*1	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy
Omeprazole	CYP2C19 *1/*1	<input checked="" type="checkbox"/> Standard	<input type="checkbox"/> Decrease in Therapeutic Efficacy

Therapeutic Effect

Gastric ulcer, reflux esophagitis, treatment of Gastrointestinal ulcer, gastric ulcer due to administration of NSAID, gastric ulcer associated with Helicobacter pylori.



Major Adverse Reaction

Headache, drowsiness, insomnia, dizziness, diarrhea, constipation, nausea, vomiting, chest pain, tachycardia etc.

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Limitations

- * Only the results on drugs associated with the genetic variants in this test is reported.
- * The result of this test is not for disease diagnosis. For definitive diagnosis and treatment decision, consultation with medical doctor is mandatory. The result analysis and interpretation was based on the references up to date, and may change following further research findings.
- * There may be certain difference between the reported result and the actual drug responses due to factors not covered by this test such as the test subjects' clinical history and other genetic factors. Final drug prescription and any adjustment of regimen must be decided by the medical doctor.

Tested Genes & Genotypes

Gene	Genotype	Gene	Genotype
ACE	I, D	ADRB1	c.1165C/G
AGTR1	c.1166A/C	CACNA1C	c.50-1658T/G
COQ2	c.779-1022C/G	CYP2C19	*1, *2, *3, *17
CYP2C9	*1, *3	NEDD4L	c.24G/A
SLC47A2	c.-130C/T	TCF7L2	c.450+33966C/T

Test Method

Real-time PCR and Single Nucleotide Polymorphism (SNP) Genotyping

Result Guide

- Standard:** No abnormal responses to the drug substance is expected.
- Adverse Reaction:** The genotype is associated with enhanced sensitivity to the drug substance, and can increase the risk of showing adverse reaction. Decrease in dosage or use of alternative drug may be necessary for the optimal responses. Please consult medical doctor for definitive dose/regimen.
- Decrease in therapeutic efficacy:** The genotype is associated with enhanced resistance to the drug substance, and can increase the possibility of decrease in therapeutic efficacy of the drugs. Increase in dosage or use of alternative drug may be necessary for the optimal responses. Please consult medical doctor for definitive dose/regimen.



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