BPG Pharmacogenomics Report

Patient Name:	John Black	**Ordering Clinician:**	Dr Test Doctor	**Approved By:**	Dr Keith Byron
Date of Birth:	20th May 2003	**Referring Lab:**	Sunquest Lab	**Accreditation No:**	020374
Report Date:	10th June 2022	**Referring Lab No:**	22-2939393		
Collection Date:	1st June 2022			**Requisition No:**	BP-0000-0000-1234
Received at Lab Date:	7th June 2022			**Sample Identifier:**	2200274

TEST RESULTS

ABCB1	
rs1045642	G/G
rs2032582	C/A
rs2229109	C/C
ABCG2	
rs2231137	C/C
rs2231142	G/G
COMT	
rs4680	A/A
OPRM1	
rs1799971	A/A
VKORC1	
rs9923231	T/T

CYP1A2	**Rapid metaboliser**	***1A/*1F**
CYP2B6	**Normal metaboliser**	***1/*1**
CYP2C19	**Poor metaboliser**	***3/*3**
CYP2C9	**Normal metaboliser**	***1/*1**
CYP2D6	**Normal metaboliser**	***1/*2**
CYP3A4	**Normal metaboliser**	***1/*1**
CYP3A5	**Poor metaboliser**	***3/*3**
SLCO1B1	**Normal function**	***1/*1**
UGT1A1	**Normal metaboliser**	***1/*1**

MEDICATION ASSESSMENT

Warning: All medication decisions & adjustments must be in consultation with the treating clinician. The information contained in this report is intended to be interpreted by a treating clinician. This report is not intended to take the place of professional medical advice. Decisions on the use of medications must be made only after consulting with the treating clinician and should consider the patient's medical history and current treatment regimen.

Alert to consider Standard precautions

Medication	Gene(s)	Alert	Alert Description	Source
Anti-ADHD				
Amphetamine		✓		
Atomoxetine		✓		
Anti-Convulsant				
Phenytoin		✓		
Clobazam	CYP2C19 (PM)	!	Results in higher systemic active metabolite concentrations. Poor metabolism results in higher adverse reaction risk. Dosage adjustment is recommended.	FDA
Brivaracetam	CYP2C19 (PM)	!	Results in higher systemic concentrations and higher adverse reaction risk. Consider dosage reductions in poor metabolizers.	FDA
Anti-Platelet				
Clopidogrel	CYP2C19 (PM)	!	Significantly reduced clopidogrel active metabolite formation. Avoid clopidogrel, if possible.	CPIC
Anticoagulant				
Warfarin		✓		
Antidepressant				
Amitriptyline	CYP2C19 (PM)	!	Avoid amitriptyline use. If amitriptyline is warranted, consider a 50% reduction of recommended starting dose.	CPIC
Nortriptyline		✓		
Clomipramine	CYP2C19 (PM)	!	Greatly reduced metabolism of tertiary amines compared to normal metabolisers. Decreased conversion of tertiary amines to secondary amines may affect response or side effects.	CPIC
Desipramine		✓		
Doxepin	CYP2C19 (PM)	!	Greatly reduced metabolism of tertiary amines compared to normal metabolisers. Decreased conversion of tertiary amines to secondary amines may affect response or side effects.	CPIC
Imipramine	CYP2C19 (PM)	!	Greatly reduced metabolism of tertiary amines compared to normal metabolisers. Decreased conversion of tertiary amines to secondary amines may affect response or side effects.	CPIC

Trimipramine	CYP2C19 (PM)	⚠	Greatly reduced metabolism of tertiary amines compared to normal metabolisers. Decreased conversion of tertiary amines to secondary amines may affect response or side effects.	CPIC
Vortioxetine		✓		
Antiemetic				
Ondansetron		✓		
Tropisetron		✓		
Antifungal				
Voriconazole	CYP2C19 (PM)	⚠	Results in higher systemic concentrations and may result in higher adverse reaction risk.	FDA
Anti-Psychotic				
Aripiprazole		✓		
Brexpiprazole		✓		
Iloperidone		✓		
Pimozide		✓		
Thioridazine		✓		
Perphenazine		✓		
Clozapine		✓		
Antiretroviral				
Efavirenz		✓		
Immunosuppressant				
Tacrolimus		✓		
Non-steroidal Anti-Inflammatory				
Celecoxib		✓		
Flurbiprofen		✓		

Ibuprofen		✓		
Lornoxicam		✓		
Meloxicam		✓		
Piroxicam		✓		
Tenoxicam		✓		
Aceclofenac		✓		
Diclofenac		✓		
Indomethacin		✓		
Nabumetone		✓		
Naproxen		✓		
Opioid				
Codeine		✓		
Tramadol		✓		
Hydrocodone		✓		
Oliceridine		✓		
Oxycodone		✓		
Proton Pump Inhibitor				
Lansoprazole	CYP2C19 (PM)	⚠	Increased plasma concentration of PPI compared with CYP2C19 normal metabolisers. increased chance of efficacy and potentially toxicity.	CPIC
Omeprazole	CYP2C19 (PM)	⚠	Increased plasma concentration of PPI compared with CYP2C19 normal metabolisers. increased chance of efficacy and potentially toxicity.	CPIC
Pantoprazole	CYP2C19 (PM)	⚠	Results in higher systemic concentrations. Consider dosage reduction in children who are poor metabolisers. No dosage adjustment is needed for adult patients who are intermediate or poor metabolisers.	FDA
Dexlansoprazole	CYP2C19 (PM)	⚠	Increased plasma concentration of PPI compared with CYP2C19 normal metabolisers. increased chance of efficacy and potentially toxicity.	CPIC

Esomeprazole	CYP2C19 (PM)		Increased plasma concentration of PPI compared with CYP2C19 normal metabolisers. increased chance of efficacy and potentially toxicity.	CPIC
Rabeprazole	CYP2C19 (PM)		Increased plasma concentration of PPI compared with CYP2C19 normal metabolisers. increased chance of efficacy and potentially toxicity.	CPIC
SSRI's				
Citalopram	CYP2C19 (PM)		Results in higher systemic concentrations and adverse reaction risk (QT prolongation). The maximum recommended dose is 20 mg.	FDA
Escitalopram	CYP2C19 (PM)		Greatly reduced metabolism when compared to normal metabolisers. Higher plasma concentrations may increase the probability of side effects.	CPIC
Paroxetine				
Fluvoxamine				
Venlafaxine				
Sertraline	CYP2C19 (PM)		Greatly reduced metabolism when compared to normal metabolisers. Higher plasma concentrations may increase the probability of side effects.	CPIC
Statin				
Atorvastatin				
Fluvastatin				
Lovastatin				
Pitavastatin				
Rosuvastatin				
Simvastatin				
Other				
Irinotecan				
Lofexidine				
Metoclopramide				
Propafenone				
Siponimod				

Tetrabenazine		✓		
Valbenazine		✓		
Carvedilol		✓		
Cevimeline		✓		
Nilotinib		✓		
Pazopanib		✓		
Tolterodine		✓		
Tamoxifen		✓		

REPORT KEYS

Phenotype Abbreviations

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

Guidance Source

FDA	U.S. Food & Drug Administration / www.fda.gov
CPIC	Clinical Pharmacogenetics Implementation Consortium / www.cpicpgx.org
DPWG	Dutch Pharmacogenetics Working Group / www.upgx.eu

METHODOLOGY

Analysis was performed using methods developed and validated by BasePair Genomics. Patient genomic DNA was analyzed by the MassARRAY® System using primers and probes designed by Agena Bioscience and BasePair Genomics. This assay detects the variants and alleles listed below.

CYP2D6	*2, *3, *4, *5, *6, *7, *8, *9, *10, *11, *12, *14A, *14B, *15, *17, *18, *19, *20, *29, *36, *41 & duplications and hybrids.
CYP2C9	*2, *3, *4, *5, *6, *8, *11, *12, *13, *15
CYP2C19	*2, *3, *4, *5, *6, *7, *8, *17
CYP1A2	*1A, *1C, *1F, *1K, *7, *11
CYP3A4	*2, *17, *22
CYP3A5	*2, *3, *6, *7
CYP2B6	*6, *18
UGT1A1	*28, *36, *37
ABCB1	rs1045642, rs2032582, rs2229109
ABCC1	rs212090
ABCG2	rs2231137, rs2231142
COMT	rs4680
ORPM1	rs1799971
SLCO1B1	rs4149056
VRORC1	rs9923231

ASSAY LIMITATIONS

Rare variants not detected by this assay may be present but not reported. Such undetected genetic and/or non-genetic factors such as drug-drug interactions, may impact the phenotype.

Test performance may be limited by the presence of PCR inhibitors in the patient's sample or by a low quantity or quality of extracted DNA. These interferents and limitations typically produce failure to amplify (no result) rather than an inaccurate result. The presence of rare or otherwise unidentified nearby variants may also affect test performance at the targeted locations. Test results and clinical interpretation may be inaccurate in patients who have undergone tissue transplant therapy.