

Summary of Medications with Major & Moderate Actionable Drug-Gene Interactions

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NOTE: These interactions may increase in severity depending on patient's full genetic profile and medication regimen.

	Drug	Gene	Clinical Impact	Guidelines			
				CPIC	DPWG	FDA	Other
Cardiology	atorvastatin (Lipitor)	SLCO1B1	Moderate				X
	cilostazol (Pletal)	CYP2C19	Moderate			X	
	clopidogrel (Plavix)	CYP2C19	Major	X	X	X	
	flecainide (Tambocor)	CYP2D6	Moderate		X		
	metoprolol (Lopressor)	CYP2D6	Moderate		X		
	pitavastatin (Livalo)	SLCO1B1	Moderate				X
	pravastatin (Pravachol)	SLCO1B1	Moderate				X
	propafenone (Rythmol)	CYP2D6	Moderate		X		
	rosuvastatin (Crestor)	SLCO1B1	Moderate				X
	simvastatin (Zocor)	SLCO1B1	Moderate	X			X
	warfarin (Coumadin)	CYP2C9	Moderate	X		X	
	warfarin (Coumadin)	VKORC1	Moderate	X		X	
	Psychiatry	amitriptyline (Elavil)	CYP2D6	Major	X	X	
amitriptyline (Elavil)		CYP2C19	Moderate	X			
amoxapine		CYP2D6	Major	X			
aripiprazole (Abilify)		CYP2D6	Moderate		X	X	
atomoxetine (Strattera)		CYP2D6	Moderate			X	
brexipiprazole (Rexulti)		CYP2D6	Moderate			X	
citalopram (Celexa)		CYP2C19	Major	X	X	X	
clomipramine (Anafranil)		CYP2D6	Major	X	X		
clomipramine (Anafranil)		CYP2C19	Moderate	X			
desipramine (Norpramin)		CYP2D6	Major	X			
doxepin (Silenor)		CYP2D6	Major	X	X		
doxepin (Silenor)		CYP2C19	Moderate	X			
escitalopram (Lexapro)		CYP2C19	Major	X	X		
fluvoxamine (Luvox)		CYP2D6	Moderate	X			
haloperidol (Haldol)		CYP2D6	Moderate		X		
iloperidone (Fanapt)		CYP2D6	Moderate			X	
imipramine (Tofranil)		CYP2D6	Major	X	X		
imipramine (Tofranil)		CYP2C19	Major	X	X		
nortriptyline (Pamelor)		CYP2D6	Major	X	X		
paroxetine (Paxil)		CYP2D6	Major	X	X		
perphenazine (Trilafon)		CYP2D6	Moderate				X
pimozide (Orap)		CYP2D6	Moderate			X	
risperidone (Risperdal)		CYP2D6	Moderate				X
sertraline (Zoloft)		CYP2C19	Moderate	X	X		
thioridazine (Mellaril)		CYP2D6	Major			X	
trimipramine (Surmontil)		CYP2D6	Major	X			
trimipramine (Surmontil)		CYP2C19	Major	X			
venlafaxine (Effexor)	CYP2D6	Moderate		X			
vortioxetine (Trintellix/Brintellix)	CYP2D6	Moderate			X		

	Drug	Gene	Clinical Impact	Guidelines			
				CPIC	DPWG	FDA	Other
Pain	celecoxib (Celebrex)	CYP2C9	Moderate			X	
	codeine (Tylenol 3)	CYP2D6	Major	X	X	X	X
	dihydrocodeine (Synalgos-DC)	CYP2D6	Major			X	
	tramadol (Ultram)	CYP2D6	Major		X		
Miscellaneous	abacavir (Ziagen)	HLA-B	Major	X	X	X	
	allopurinol (Zyloprim)	HLA-B	Major	X			X
	azathioprine (Azasan, Imuran)	TPMT	Major	X	X	X	
	capecitabine (Xeloda)	DPYD	Major	X	X	X	
	carbamazepine (Tegretol)	HLA-A	Major				X
	carbamazepine (Tegretol)	HLA-B	Major	X		X	X
	clobazam (Onfi)	CYP2C19	Moderate			X	
	efavirenz (Sustiva)	CYP2B6	Moderate				X
	eliglustat (Cerdelga)	CYP2D6	Major			X	
	esomeprazole (Nexium)	CYP2C19	Moderate		X		
	estrogen-containing HRT	F5	Moderate				X
	estrogen-containing HRT	F2	Major				X
	estrogen-containing OCs	F5	Moderate		X		X
	estrogen-containing OCs	F2	Major				X
	fluorouracil (Aducril, Efudex)	DPYD	Major	X	X	X	
	fosphenytoin (Cerebyx)	HLA-B	Major				X
	lansoprazole (Prevacid)	CYP2C19	Moderate		X		
	mercaptopurine (Purixan)	TPMT	Major	X	X	X	
	omeprazole (Prilosec)	CYP2C19	Moderate		X		
	pantoprazole (Protonix)	CYP2C19	Moderate		X		
	phenytoin (Dilantin)	CYP2C9	Moderate	X	X		
	phenytoin (Dilantin)	CYP2C19	Moderate				X
	phenytoin (Dilantin)	HLA-B	Major				X
	tacrolimus (Prograf)	CYP3A5	Moderate	X			
	tamoxifen (Nolvadex)	CYP2D6	Major		X		
tamsulosin (Flomax)	CYP2D6	Moderate			X		
tetrabenazine (Xenazine)	CYP2D6	Moderate				X	
thioguanine (Tabloid)	TPMT	Major	X	X	X		

Chart Key

HRT: hormone replacement therapy

OCs: oral contraceptives

CPIC: Clinical Pharmacogenetics Implementation Consortium

DPWG: Dutch Pharmacogenetics Working Group

FDA: Food and Drug Administration

Other: Professional society or guideline

Summary of Medications with Minor Actionable Drug-Gene Interactions

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	Drug	Clinical Impact	Gene
Cardiology	carvedilol (Coreg)	Minor	CYP2D6
	fluvastatin (Lescol)	Minor	CYP2C9
	irbesartan (Avapro)	Minor	CYP2C9
	losartan (Cozaar)	Minor	CYP2C9
	mexiletine	Minor	CYP2D6
	nifedipine (Procardia)	Minor	CYP3A5
	timolol (Timoptic)	Minor	CYP2D6
	torseamide (Demadex)	Minor	CYP2C9
Pain	carisoprodol (Soma)	Minor	CYP2C19
	diclofenac (Voltaren)	Minor	CYP2C9
	dronabinol (Marinol)	Minor	CYP2C9
	flurbiprofen (Ansaid)	Minor	CYP2C9
	hydrocodone (Vicodin)	Minor	CYP2D6
	ibuprofen (Advil, Motrin)	Minor	CYP2C9
	meloxicam (Mobic)	Minor	CYP2C9
	methadone (Methadose)	Minor	CYP2B6
	naproxen (Naprosyn, Aleve)	Minor	CYP2C9
	oxycodone (Oxycontin)	Minor	CYP2D6
	piroxicam (Feldene)	Minor	CYP2C9
	Psychiatry	bupropion (Wellbutrin)	Minor
citalopram (Celexa)		Minor	GRIK4
clozapine (Clozaril)		Minor	CYP2C19
duloxetine (Cymbalta)		Minor	CYP2D6
fluoxetine (Prozac)		Minor	CYP2D6
fluoxetine (Prozac)		Minor	CYP2C19
maprotiline		Minor	CYP2D6
nefazodone (Serzone)		Minor	CYP2D6
protriptyline (Vivactil)		Minor	CYP2D6
trazodone (Oleptro)		Minor	CYP2D6
venlafaxine (Effexor)		Minor	CYP2C19

	Drug	Clinical Impact	Gene
Miscellaneous	brivaracetam (Briviact)	Minor	CYP2C19
	cevimeline (Evoxac)	Minor	CYP2D6
	chlorpheniramine (Chlor-Trimeton)	Minor	CYP2D6
	cisplatin (Platinol)	Minor	TPMT
	cyclophosphamide	Minor	CYP2B6
	cyclosporine (Neoral)	Minor	CYP3A4
	darifenacin (Enablex)	Minor	CYP2D6
	dexlansoprazole (Dexilant)	Minor	CYP2C19
	dextromethorphan (Nuedexta)	Minor	CYP2D6
	diazepam (Valium)	Minor	CYP2C19
	donepezil (Aricept)	Minor	CYP2D6
	eslicarbazepine (Aptiom)	Minor	HLA-B
	fesoterodine (Toviaz)	Minor	CYP2D6
	flibanserin (Addyi)	Minor	CYP2C19
	galantamine (Razadyne)	Minor	CYP2D6
	gefitinib (Iressa)	Minor	CYP2D6
	irinotecan (Camptosar)	Minor	SLC01B1
	isoniazid	Minor	NAT2
	lamotrigine (Lamictal)	Minor	HLA-B
	lesinurad (Zurampic)	Minor	CYP2C9
	methotrexate (Trexall)	Minor	SLC01B1
	mitotane (Lysodren)	Minor	CYP2B6
	nelfinavir (Viracept)	Minor	CYP2C19
	nevirapine (Viramune)	Minor	CYP2B6
	ondansetron (Zofran)	Minor	CYP2D6
	oxcarbazepine (Trileptal)	Minor	HLA-B
	peginterferon-alfa-containing drugs	Minor	IFNL3
	phenobarbital (Luminal)	Minor	HLA-B
	primidone (Mysoline)	Minor	HLA-B
	proguanil (Malarone)	Minor	CYP2C19
	quazepam (Doral)	Minor	CYP2C19
	rabeprazole (Aciphex)	Minor	CYP2C19
	repaglinide (Prandin)	Minor	SLC01B1
	sulfamethoxazole (Bactrim)	Minor	NAT2
	sulfasalazine (Azulfidine, Sulfazine)	Minor	NAT2
	thalidomide (Thalomid)	Minor	CYP2C19
	thrombosis-causing drugs	Minor	F5
	thrombosis-causing drugs	Minor	F2
	tolterodine (Detrol)	Minor	CYP2D6
	voriconazole (Vfend)	Minor	CYP2C19