

Precision Medicine Made Practical

Highlights

- **Complete PGx Coverage**

- Comprehensive analysis of 28 essential pharmacogenes in a single assay
- Covers major drug metabolism pathways (CYP450s including CYP2D6 whole gene CNV), transporters, drug targets, and more

- **Actionable Insights**

Actionable insights for medications across multiple therapeutic areas including cardiology, psychiatry, pain management, and oncology

- **Fast, Streamlined Assay Workflow**

Generate sequencing-ready libraries in just 3 hours using a rapid, three-step amplicon-based targeted NGS library preparation protocol

- **Superb Performance**

Prepare high-quality NGS libraries using CleanPlex® Technology to enable efficient use of sequencing reads and reduce costs

CleanPlex Pharmacogenomics Kit Specifications

Parameter	Specification
Enrichment Method	Multiplex PCR
Sequencing Platforms	Illumina®, Ion Torrent™, DNBSEQ™
Number of Genes	28
Targets	Gene variants associated with cardiovascular medications, psychiatric drugs, pain relievers, cancer therapeutics, and more.
Variant Types	SNV, Whole Gene CNV
Number of Amplicons	238
Amplicon Size	105 – 275 bp
Number of Primer Pools	2
Sample Types	Genomic DNA from blood or saliva
Total Assay Time	3 hours
Hands-On Time	75 minutes

CleanPlex Streamlined Workflow

The CleanPlex Pharmacogenomics Kit offers a simple and streamlined workflow. Starting from purified and quantitated DNA, the multiplex PCR-based protocol can be completed in just 3 hours, with 75 minutes of hands-on time, using a three-step workflow with minimal tube-to-tube transfers. Each step consists of a thermal cycling or incubation condition, followed by “with bead” purification using magnetic beads.



CleanPlex[®] Pharmacogenomics Kit Gene List and Associated Medications (1)

Gene-Drug Pairs (GDP) criteria are based on:

- Food and Drug Administration (FDA) drug labeling with actionable detailed pharmacogenomics content
- Clinical Pharmacogenomics Implementation Consortium (CPIC) Guidelines, Levels A and B
- Pharmacogenomics Knowledge Database (PharmGKB), Levels 1 and 2

Paragon Genomics partners with Genetica Consulting Services (GCS) for the clinical pharmacology analysis of this PGx panel

Therapeutic Area	Generic Name(s)	Brand Name	Gene(s) with Reported Variant(s)
Anesthesiology	Succinylcholine	Anectine; Quelicin	RYR1/CACNA1S, BCHE
	Desflurane	Suprane	RYR1/CACNA1S
	Enflurane	Ethrane	RYR1/CACNA1S
	Halothane	International use only	RYR1/CACNA1S
	Isoflurane	Forane; Terrell	RYR1/CACNA1S
	Methoxyflurane	International use only	RYR1/CACNA1S
	Sevoflurane	Ultane	RYR1/CACNA1S
	Articaine and Epinephrine	Ultacan; Ultacan Forte	G6PD
	Chloroprocaine	Clorotekal; Nesacaine	G6PD
	Lidocaine and Tetracaine	Synera	G6PD
	Mepivacaine	Carbocaine; Polocaine	G6PD
	Oxymetazoline and Tetracaine	Kovanaze	G6PD
	Ropivacaine	Naropin	G6PD
	Lidocaine and Prilocaine	Lidopril; Prikaan; Oraqix; AgonEaze	G6PD
	Lidocaine	Xylocaine; Lidomark 1/5; Lidomark 2/5; P-Care X; Akten; Lidoderm; LMX 4; LMX 5; Topicaïne; Lubricaïne	G6PD
	Mivacurium	Mivacron	BCHE
Cardiology	Carvedilol	Coreg	CYP2D6
	Labetalol	Normodyne; Trandate	CYP2D6
	Flecainide	Tambocor	CYP2D6
	Propafenone	Rythmol SR	CYP2D6
	Warfarin	Coumadin; Jantoven	CYP2C9/VKORC1/ CYP4F2
	Acenocoumarol	International use only	CYP2C9
			VKORC1
			CYP4F2
	Phenprocoumon	International use only	VKORC1
			CYP4F2
	Irbesartan	Avapro	CYP2C9
	Losartan	Cozaar	CYP2C9
	Simvastatin	Zocor	SLCO1B1/CYP2C9, APOE
	Rosuvastatin	Crestor; Ezallor Sprinkle	SLCO1B1/CYP2C9/ ABCG2, APOE
	Lovastatin	Altoprev; Mevacor	SLCO1B1/CYP2C9, APOE
	Atorvastatin	-	SLCO1B1/CYP2C9, APOE
	Pravastatin	Pravachol	SLCO1B1/CYP2C9, APOE
	Fluvastatin	-	SLCO1B1/CYP2C9, APOE
Pitavastatin	Livalo; Zypitamag	SLCO1B1/CYP2C9, APOE	
Aspirin	Ecotrin; Bayer; Asctiptin; Durlaza	CYP2C9	

CleanPlex® Pharmacogenomics Kit Gene List and Associated Medications (2)

Therapeutic Area	Generic Name(s)	Brand Name	Gene(s) with Reported Variant(s)
Cardiology	Prasugrel	Effient	CYP2C19/CYP2C9/ CYP3A5/CYP2B6
	Clopidogrel	Plavix	CYP2C19
	Ticagrelor	Brilinta	CYP2C19
	Rivaroxaban	Xarelto	F5
	Metoprolol	Lopressor; Toprol XL	CYP2D6
	Nebivolol	Bystolic	CYP2D6
	Acebutolol	International use only	CYP2D6
	Betaxolol	International use only	CYP2D6
	Bisoprolol	International use only	CYP2D6
	Timolol	Betimol	CYP2D6
	Propranolol	Inderal; Inderal LA; InnoPran XL; Propranolol HCl Intensol; Inderal XL; Hemangeol	CYP2D6
	Mavacamten	Camzyos	CYP2C19
	Procainamide	-	NAT2
	Hydralazine	Apresoline	NAT2
Dental	Cevimeline	Evovac	CYP2D6
Dermatology	Doxepin	Silenor; Zonalon; Sinequan; Prudoxin	CYP2D6/CYP2C19
	Abrocitinib	Cibinqo	CYP2C19
	Tacrolimus	Astagraf XL; Prograf; Protopic; Envarsus XR	CYP3A5
	Fluorouracil	Adrucil; Carac; Efudex; Fluoroplex	DPYD
Endocrinology	Eliglustat	Cerdelga	CYP2D6
	Glimepiride	Amaryl	CYP2C9
	Nateglinide	Starlix	CYP2C9
Gastroenterology	Dexlansoprazole	Dexilant	CYP2C19
	Esomeprazole	Nexium	CYP2C19
	Lansoprazole	Prevacid; Prevacid SoluTab	CYP2C19
	Omeprazole	Prilosec	CYP2C19
	Pantoprazole	Protonix	CYP2C19
	Rabeprazole	AcipHex	CYP2C19
	Metoclopramide	Reglan	CYP2D6
	Dronabinol	Syndros; Marinol	CYP2C9
	Ondansetron	Zofran; Zuplenz	CYP2D6
	Tropisetron	International use only	CYP2D6
	Palonosetron	Aloxi	CYP2D6
	Meclizine	Antivert; Bonine; Dramamine Less Drowsy; Motion-Time; Travel Sickness; Travel-Easy	CYP2D6
	Sulfasalazine	Azulfidine	NAT2/G6PD
	Mesalazine	Apriso; Asacol HD; Canasa; Delzicol; Lialda; Pentasa; Rowasa; SfRowasa	G6PD
Gynecology	Drospirenone and Ethinyl Estradiol	Jasmiel; Lo-Zumandimine; Loryna; Nikki; Ocella; Syeda; Vestura; Yasmin 28; YAZ; Zarah; Zumandimine	CYP2C19
	Hormonal Contraceptives For Systemic Use	-	F5
	Elagolix	Orilissa	SLCO1B1
	Flibanserin	Addyi	CYP2C19
Hematology	Avatrombopag	Doptelet	F5/CYP2C9/F2
	Lusutrombopag	Mulpleta	F5/F2

CleanPlex[®] Pharmacogenomics Kit Gene List and Associated Medications (3)

Therapeutic Area	Generic Name(s)	Brand Name	Gene(s) with Reported Variant(s)	
Hematology	Eltrombopag	Promacta	F5	
	Methylene Blue	ProvayBlue; Urolene Blue	G6PD	
Immunology	Siponimod	Mayzent	CYP2C9	
	Cevimeline	Evoxac	CYP2D6	
	Tacrolimus	Astagraf XL; Prograf; Protopic; Envarsus XR	CYP3A5	
	Sirolimus	Rapamune	CYP3A5	
	Azathioprine	Azasan; Imuran	TPMT/NUDT15	
Infectious Diseases	Voriconazole	Vfend	CYP2C19	
	Quinine Sulfate	Qualaquin	CYP2D6	
	Efavirenz	Sustiva	CYP2B6	
	Nevirapine	Viramune; Viramune XR	CYP2B6	
	Abacavir	Ziagen	HLA-B	
	Dolutegravir	Tivicay	UGT1A1	
	Raltegravir	Isentress	UGT1A1	
	Atazanavir and Ritonavir	Available only as generic	UGT1A1	
	Atazanavir	Reyataz	UGT1A1	
	Flucloxacillin	International use only	HLA-B	
	Amikacin	Arikayce	MT-RNR1	
	Tobramycin	Tobrex; Bethkis; Kitabis Pak; Tob; Tob; Tob Podhaler	MT-RNR1	
	Gentamicin	Gentak	MT-RNR1	
	Kanamycin	International use only	MT-RNR1	
	Paromomycin	Humatin	MT-RNR1	
	Plazomicin	Zemdri	MT-RNR1	
	Streptomycin	International use only	MT-RNR1	
	Boceprevir	Victrelis	IFNL3/IFNL4	
	Telaprevir	Incivek	IFNL3/IFNL4	
	Simeprevir	Olysio	IFNL3/IFNL4	
	Peginterferon Alfa-2A	Pegasys	IFNL3/IFNL4	
	Peginterferon Alfa-2B	PegIntron; Sylatron	IFNL3/IFNL4	
	Ribavirin	-	IFNL3/IFNL4	
	Isoniazid	Nydrazid	NAT2	
	Rifampin, Isoniazid, and Pyrazinamide	Rifater	NAT2	
	Ethambutol	Myambutol	NAT2	
	4-Aminosalicylic Acid	Paser	G6PD	
	Ceftriaxone	Rocephin	G6PD	
	Sulfadiazine	Silvadene	G6PD	
	Sulfamethoxazole and Trimethoprim	Bactrim; Septra; Sulfatrim	NAT2/G6PD	
	Sulfacetamide	Bleph-10; Klaron; Ovace; Sodium Sulfacetamide Wash	G6PD	
	Sulfisoxazole	Gantrisin Pediatric; Truxazole	G6PD	
	Sulfadimidine	Available only as generic	G6PD	
	Sulfamethoxazole		G6PD	
	Norfloxacin	International use only	F5	
	Nalidixic Acid	NegGram	G6PD	
	Ofloxacin	-	G6PD	
	Furazolidone	Furoxone	G6PD	
	Neurology	Galantamine	Razadyne; Razadyne ER	CYP2D6

CleanPlex® Pharmacogenomics Kit Gene List and Associated Medications (4)

Therapeutic Area	Generic Name(s)	Brand Name	Gene(s) with Reported Variant(s)
Neurology	Donepezil	Aricept	CYP2D6
	Phenytoin	Dilantin; Phenytek	CYP2C19/CYP2C9/ HLA-B
	Fosphenytoin	Cerebyx	CYP2C19/CYP2C9/ HLA-B
	Carbamazepine	Carbatrol; Epitol; Equetro; Tegretol; Tegretol-XR	HLA-B/HLA-A
	Oxcarbazepine	Oxtellar; Trileptal	HLA-B
	Brivaracetam	Briviact	CYP2C19
	Lacosamide	Vimpat	CYP2C19
	Deutetrabenazine	Austedo	CYP2D6
	Tetrabenazine	Xenazine	CYP2D6
	Valbenazine	Ingrezza	CYP2D6
	Dextromethorphan and Quinidine	Nuedexta	CYP2D6
	Siponimod	Mayzent	CYP2C9
	Rimegepant	Nurtec	CYP2C9
	Diazepam	Valium; Diastat AcuDial; Diazepam Intensol; Diastat Pediatric	CYP2C19
	Clobazam	Onfi; Sympazan	CYP2C19
	Midazolam	Nayzilam	CYP3A5
	Amifampridine	Ruzurgi	NAT2
	Amifampridine Phosphate	Firdapse	NAT2
	Lecanemab	Leqembi	APOE
	Aducanumab	Aduhelm	APOE
Oncology	Tamoxifen	Soltamox	CYP2D6/F5/F2
	Erdafitinib	Balversa	CYP2C9
	Gefitinib	Iressa	CYP2D6
	Rucaparib	Rubraca	CYP2D6
	Belzutifan	Welireg	CYP2C19
	Tegafur	International use only	DPYD
	Cisplatin	Platinol-AQ	TPMT
	Belinostat	Beleodaq	UGT1A1
	Irinotecan	Camptosar; Ovipryde	UGT1A1
	Sacituzumab Govitecan-hziy	Trodelyv	UGT1A1
	Nilotinib	Tasigna	UGT1A1
	Pazopanib	Votrient	UGT1A1/HLA-B*5701
	Binimetinib	Mektovi	UGT1A1
	Fluorouracil	Adrucil; Carac; Efudex; Fluoroplex	DPYD
	Capecitabine	Xeloda	DPYD
	Mercaptopurine	Purinethol; Purixan	TPMT/NUDT15
	Peginterferon Alfa-2B	PegIntron; Sylatron	IFNL3/IFNL4
	Thioguanine	Tabloid	TPMT/NUDT15
	Flutamide	Eulexin	G6PD
	Trametinib	Mekinist	G6PD
	Doxorubicin	Adriamycin; Doxil	G6PD
	Dabrafenib	Tafinlar	G6PD
	Rasburicase	Elitek	G6PD
Ophthalmology	Timolol	Betimol	CYP2D6

CleanPlex® Pharmacogenomics Kit Gene List and Associated Medications (5)

Therapeutic Area	Generic Name(s)	Brand Name	Gene(s) with Reported Variant(s)
Pain Management	Celecoxib	Celebrex	CYP2C9
	Lumiracoxib	International use only	CYP2C9
	Aceclofenac	International use only	CYP2C9
	Flurbiprofen	Ansaid	CYP2C9
	Piroxicam	Feldene	CYP2C9
	Meloxicam	Anjeso; Mobic; Qmiiz ODT; Vivlodex	CYP2C9
	Ibuprofen	Addaprin; Advil Junior Strength; Advil Migraine; Advil; Caldolor; Childrens Advil; Childrens Motrin; Dyspel; Genpril; GoodSense Ibuprofen Childrens; GoodSense Ibuprofen; IBU; Ibuprofen Childrens; Infants Advil ; KS Ibuprofen; Motrin Childrens; Motrin IB; Motrin Infants Drops; NeoProfen; Provil	CYP2C9
	Lornoxicam	International use only	CYP2C9
	Tenoxicam	International use only	CYP2C9
	Diclofenac	Diclozor; Flector; Pennsaid; Voltaren; Xrylix; Cambia; Zipsor; Zorvolex	CYP2C9
	Indomethacin	Indocin; Tivorbex	CYP2C9
	Naproxen	Aleve; EC-Naprosyn; EC-Naproxen; GoodSense Naproxen Sodium; Mediproxen; Naprelan; Naprosyn; Naproxen DR	CYP2C9
	Aspirin	Ecotrin; Bayer; Asctiptin; Durlaza	CYP2C9
	Metamizole	International use only	CYP2C9, G6PD
	Tramadol	Ultram; ConZip	CYP2D6/CYP2B6/COMT/OPRM1
	Methadone	Dolophine; Methadone HCL Intensol; Methadose; Diskets Dispersible	CYP2D6/CYP2B6/COMT/OPRM1
	Oxycodone	Oxaydo; OxyCONTIN; Roxicodone; Xtampza ER	CYP2D6/COMT/OPRM1
	Hydrocodone	Hysingla ER; Zohydro ER	CYP2D6/COMT/OPRM1
	Codeine	Available only as generic	CYP2D6/COMT/OPRM1
	Oliceridine	Olinvyk	CYP2D6
	Lofexidine	Lucemyra	CYP2D6
	Morphine	Arymo ER; Duramorph; Infumorph 200; Infumorph 500; Kadian; Mitigo; MorphaBond ER; MS Contin	COMT/OPRM1
	Sufentanil	Dsuvia; Sufenta	COMT/OPRM1
	Remifentanil	Ultiva	COMT/OPRM1
	Alfentanil	Alfenta	COMT/OPRM1
	Hydromorphone	Dilaudid	COMT/OPRM1
	Levomethadone	International use only	COMT/OPRM1
	Fentanyl	Abstral; Actiq; Duragesic; Fentora; Ionsys; Lazanda; Sublimaze; Subsys	COMT/OPRM1
	Buprenorphine	Belbuca; Buprenex; Butrans; Probuphine Implant Kit; Sublocade	COMT/OPRM1
	Naltrexone	Vivitrol	COMT/OPRM1
Psychiatry	Sertraline	Zoloft	CYP2C19/CYP2B6
	Fluoxetine	Prozac; Sarafem	CYP2D6
	Citalopram	Celexa	CYP2C19/CYP2D6
	Escitalopram	Lexapro	CYP2C19/CYP2D6

CleanPlex® Pharmacogenomics Kit Gene List and Associated Medications (6)

Therapeutic Area	Generic Name(s)	Brand Name	Gene(s) with Reported Variant(s)
Psychiatry	Fluvoxamine	Luvox; Luvox CR	CYP2D6
	Paroxetine	Paxil; Pexeva; Brisdelle	CYP2D6
	Duloxetine	Cymbalta; Drizalma Sprinkle	CYP2D6
	Venlafaxine	Effexor	CYP2D6
	Nefazodone	Serzone	CYP2D6
	Mirtazapine	Remeron	CYP2D6
	Vortioxetine	Trintellix	CYP2D6
	Bupropion	Aplenzin; Forfivo XL; Wellbutrin SR; Wellbutrin XL	CYP2D6
	Aripiprazole	Abilify	CYP2D6
	Aripiprazole Lauroxil	Aristada; Aristada Initio	CYP2D6
	Brexpiprazole	Rexulti	CYP2D6
	Cariprazine	Vraylar	CYP2D6
	Haloperidol	Haldol	CYP2D6
	Risperidone	Risperdal	CYP2D6
	Paliperidone	Invega	CYP2D6
	Iloperidone	Fanapt	CYP2D6
	Clozapine	Clozaril; Versacloz	CYP2D6
	Zuclopenthixol	International use only	CYP2D6
	Perphenazine	Trilafon	CYP2D6
	Thioridazine	Mellaril	CYP2D6
	Pimozide	Orap	CYP2D6
	Doxepin	Silenor; Zonalon; Sinequan; Prudoxin	CYP2D6/CYP2C19
	Atomoxetine	Strattera	CYP2D6
	Viloxazine	Qelbree	CYP2D6/SLCO1B1
	Amphetamine	Dyanavel XR; Adzenys XR-ODT; Adzenys ER	CYP2D6
	Modafinil	Provigil	CYP2D6
	Pitolisant	Wakix	CYP2D6
	Doxepin	Silenor; Zonalon; Sinequan; Prudoxin	CYP2D6/CYP2C19
	Clomipramine	Anafranil	CYP2D6/CYP2C19
	Imipramine	Tofranil	CYP2D6/CYP2C19
	Trimipramine	Surmontil	CYP2D6/CYP2C19
	Amitriptyline	Elavil; Vanatrip	CYP2D6/CYP2C19
	Amoxapine	Asendin	CYP2D6
Desipramine	Norpramin	CYP2D6	
Protriptyline	Vivactil	CYP2D6	
Nortriptyline	Pamelor	CYP2D6	
Diazepam	Valium; Diastat AcuDial; Diazepam Intensol; Diastat Pediatric	CYP2C19	
Respiratory	Umeclidinium	Incruse Ellipta	CYP2D6
	Arformoterol	Brovana	CYP2D6/UGT1A1
	Indacaterol	Arcapta Neohaler	UGT1A1
	Dextromethorphan	Robitussin; Delsym; Pediacare; Robafen	CYP2D6
	Ivacaftor	Kalydeco	CFTR
	Ivacaftor, Tezacaftor, and Elexacaftor	Trikafta	CFTR
	Ivacaftor and Lumacaftor	Orkambi	CFTR
	Ivacaftor and Tezacaftor	Symdeko	CFTR

CleanPlex® Pharmacogenomics Kit Gene List and Associated Medications (7)

Therapeutic Area	Generic Name(s)	Brand Name	Gene(s) with Reported Variant(s)
Rheumatology	Lesinurad	Zurampic	CYP2C9
	Allopurinol	Zyloprim	HLA-B
	Upadacitinib	Rinvoq	CYP2D6
	Azathioprine	Azasan; Imuran	TPMT/NUDT15
	Celecoxib	Celebrex	CYP2C9
	Lumiracoxib	International use only	CYP2C9
	Aceclofenac	International use only	CYP2C9
	Flurbiprofen	Ansaid	CYP2C9
	Piroxicam	Feldene	CYP2C9
	Meloxicam	Anjeso; Mobic; Qmiiz ODT; Vivlodex	CYP2C9
	Ibuprofen	Addaprin; Advil Junior Strength; Advil Migraine; Advil; Caldolor; Childrens Advil; Childrens Motrin; Dyspel; Genpril; GoodSense Ibuprofen Childrens; GoodSense Ibuprofen; IBU; Ibuprofen Childrens; Infants Advil ; KS Ibuprofen; Motrin Childrens; Motrin IB; Motrin Infants Drops; NeoProfen; Provil	CYP2C9
	Lornoxicam	International use only	CYP2C9
	Tenoxicam	International use only	CYP2C9
	Diclofenac	Diclozor; Flector; Pennsaid; Voltaren; Xrylix; Cambia; Zipsor; Zorvolex	CYP2C9
	Indomethacin	Indocin; Tivorbex	CYP2C9
	Naproxen	Aleve; EC-Naprosyn; EC-Naproxen; GoodSense Naproxen Sodium; Mediproxen; Naprelan; Naprosyn; Naproxen DR	CYP2C9
	Nabumetone	Relafen DS	CYP2C9
	Aspirin	Ecotrin; Bayer; Ascriptin; Durlaza	CYP2C9
Carisoprodol	Soma; Vanadom	CYP2C19	
Sulfasalazine	Azulfidine	NAT2/G6PD	
Pegloticase	Krystexxa	G6PD	
Probenecid	Benemid; Probalan	G6PD	
Smoking Cessation	Bupropion	Aplenzin; Forfivo XL; Wellbutrin SR; Wellbutrin XL	CYP2B6
Urology	Tamsulosin	Flomax	CYP2D6
	Tolterodine	Detrol	CYP2D6
	Fesoterodine	Toviaz	CYP2D6
	Darifenacin	Enablex	CYP2D6
	Mirabegron	Myrbetriq	CYP2D6
	Phenazopyridine	AZO Urinary Pain Relief; Pyridium; Urinary Pain Relief	G6PD
Toxicology	Sodium Nitrite	Nithiodote	G6PD
	Succimer	Chemet	G6PD
	Dimercaprol	Bal In Oil	G6PD
Supplements	Vitamin C	Acerola C 500; Ascor; BProtected Vitamin C; Fruit C 500; Fruity C [OTC]; Vita-C; VitaChew Vit C Citrus Burst	G6PD
	Vitamin K	Mephylon	G6PD

CleanPlex® Pharmacogenomics Kit Gene List and Associated Medications (8)

Therapeutic Area	Generic Name(s)	Brand Name	Gene(s) with Reported Variant(s)
Infectious Diseases/ Ophthalmology	Moxifloxacin	Avelox; Moxeza; Vigamox	G6PD