

Supplementary Material

Supplementary Table S1. Actionable pharmacogenetic tests included in the seven pharmacogenetic profiles and the complete pharmacogenetic report offered at Clinical Pharmacology Department, Hospital Universitario de La Princesa.

Pain Management Profile	Complete pharmacogenetic report
CYP2D6	CYP2D6
Tramadol	Tramadol
Codeine	Codeine
SSRIs (fluvoxamine, paroxetine)	SSRIs (fluvoxamine, paroxetine)
TCAs (desipramine, nortriptiline)	TCAs (desipramine, nortriptiline)
CYP2C19	Tropisetron, ondansetron
PPIs (omeprazole, pantoprazole, lansoprazole, dexlansoprazole)	Tamoxifen
SSRIs (citalopram, escitalopram, sertraline)	Antipsychotics (aripiprazole, haloperidol, risperidone)
TCAs (clomipramine, doxepine, imipramine, trimipramine, amitriptiline, nortriptiline)	CYP2C19
CYP2C9	PPIs (omeprazole, pantoprazole, lansoprazole, dexlansoprazole)
NSAIDs (celecoxib, flurbiprofen, lornoxicam, ibuprofen, meloxicam, piroxicam, tenoxicam)	SSRIs (citalopram, escitalopram, sertraline)
SLCO1B1	TCAs (clomipramine, doxepine, imipramine, trimipramine, amitriptiline, nortriptiline)
Atorvastatin, simvastatin	Voriconazole
HLA-B*15 y A*31	Clopidogrel
Carbamazepine	CYP2C9
Oncology profile.	NSAIDs (celecoxib, flurbiprofen, lornoxicam, ibuprofen, meloxicam, piroxicam, tenoxicam)
CYP2D6	Siponimod
Tramadol	CYP2C9+HLA-B
Codeine	Phenytoin
Tropisetron, ondansetron	SLCO1B1
Tamoxifen	Atorvastatin, simvastatin
DPYD	HLA-B*15 y A*31
5-fluorouracil, capecitabine, tegafur	Carbamazepine
TPMT and NUDT15	TPMT and NUDT15
Azathioprine and mercaptopurine	Azathioprine and mercaptopurine
CYP3A5	CYP3A5
Tacrolimus	Tacrolimus
UGT1A1	UGT1A1
Irinotecan	Irinotecan
Department of Neuropsychiatry	Atazanavir
CYP2D6	DPYD
Antipsychotics (aripiprazole, haloperidol, risperidone)	Flucytosine
SSRIs (fluvoxamine, paroxetine)	HLA-B*57:01
TCAs (desipramine, nortriptiline)	Abacavir
CYP2C19	IFNL3
SSRIs (citalopram, escitalopram, setrtraline)	Ribavirin, peg- α -2a/2b interferon
	UGT1A1
	CYP2B6

TCAs (clomipramine, doxepine, imipramine, trimipramine, amitriptiline, nortriptiline)
CYP2C9
Siponimod
CYP2C9+HLA-B
Phenytoin
HLA-B*15 y A*31
Carbamazepine
Immunosuppressants profile.
CYP3A5
Tacrolimus
TPMT and NUDT15
Azathioprine and mercaptopurine
Infectious Diseases profile.
DPYD
Flucytosine
HLA-B*57:01
Abacavir
IFNL3
Ribavirin, peg- α -2a/2b interferon
UGT1A1
Atazanavir
CYP2B6
Efavirenz
CYP2C19
Voriconazole
Gastroenterology profile.
CYP2C19
PPIs (omeprazole, pantoprazole, lansoprazole, dexlansoprazole)
Clopidogrel
TPMT and NUDT15
Azathioprine and mercaptopurine
CYP2C9, CYP4F2 and VKORC1
Warfarin, acenocumarol
Cardiovascular medicine profile.
CYP2C19
PPIs (omeprazole, pantoprazole, lansoprazole, dexlansoprazole)
Clopidogrel
SLCO1B1
Atorvastatin, simvastatin
CYP2C9, CYP4F2 and VKORC1
Warfarin, acenocumarol

Efavirenz
CYP2C19
Voriconazole
CYP2C9, CYP4F2 and VKORC1
Warfarin, acenocumarol

Supplementary File 1. Complete report.

COMPLETE REPORT

Example

PATIENT:	<i>Example</i>	PATIENT ID	<i>Example</i>
REQUESTING PHYSICIAN	<i>Example</i>	DEPARTMENT	<i>Example</i>
DATE OF REQUEST	<i>Example</i>	REPORT DATE:	<i>Example</i>

GENES AND VARIANTS

Gene	Allele	Genotype	Phenotype	Gene	Allele	Genotype	Phenotype
CYP2B6	*1, *4...	*1/*6	Intermediate metabolizer	COMT	rs13306278, rs4680	WT/MUT	Intermediate metabolizer
CYP2C19	*1, *2, *17...	*2/*17	Intermediate metabolizer	COMT	rs4680, rs13306278	WT/MUT	Intermediate metabolizer
CYP2C9	*1,*2, *3...	*1/*11	Intermediate metabolizer (AS: 1.0)	HCP5	rs2395029	T/T	Normal metabolizer
CYP2D6	*1, *3, *4, ...	*1/*2	Normal metabolizer	HLA	rs1061235	WT/WT	Non-carrier
CYP3A5	*1, *3, *6	*3/*3	Poor metabolizer	IL28B	rs12979860, rs8099917	C/C	Favourable response
SLCO1B1	*1, *2, *3, *5...		Decreased function				
CYP4F2	*1, *3	*1/*1	Normal metabolizer				
DPYD	*2, *13, rs67376798, HapB3...	*1/*1	Normal metabolizer				
NUDT15	*1, *3	*1/*1	Normal metabolizer				
TPMT	*1, *2, *3B, *3C, *4	*1/*1	Normal metabolizer				
UGT1A1	*6, *80	*80/*80	Poor metabolizer				

For more information, please refer to the Annex, which contains clinical recommendations based on Clinical Pharmacogenetics Implementation Consortium¹ and the Dutch Pharmacogenetics Working Group (DPWG)² with the most up to date information at this time.

NOTE: should you have any problems with the interpretation of these results, please contact the Clinical Pharmacology Department of Hospital Universitario de la Princesa: +34915202425 or fcl.hlpr@salud.madrid.org.

Supplementary File 1. Complete report.

ANNEX

Gene	Phenotype	Drugs involved	Clinical recommendation
CYP2B6	Intermediate metabolizer	EFAVIRENZ	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2C19	Intermediate metabolizer	SERTRALINE, ESCITALOPRAM, CITALOPRAM	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2C9	Intermediate metabolizer (AS: 1.0)	CITALOPRAM, ESCITALOPRAM, SERTRALINE	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2C9	Intermediate metabolizer (AS: 1.0)	OMEPRAZOLE, LANSOPRAZOLE, PANTOPRAZOLE, DEXLANSOPRAZOLE	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2C9	Intermediate metabolizer (AS: 1.0)	CELECOXIB, FLURBIPROPHEN, IBUPROPHEN, LORNOXICAM	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2C9	Intermediate metabolizer (AS: 1.0)	CLOPIDOGREL	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2C9	Intermediate metabolizer (AS: 1.0)	MELOXICAM	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2C9	Intermediate metabolizer (AS: 1.0)	PIROXICAM, TENOXICAM	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2C9	Intermediate metabolizer (AS: 1.0)	VORICONAZOLE	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2D6	Normal metabolizer	FLUVOXAMINE	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2D6	Normal metabolizer	CODEINE	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2D6	Normal metabolizer	PROPAFENONE	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2D6	Normal metabolizer	HALOPERIDOL	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2D6	Normal metabolizer	ATOMOXTINE	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2D6	Normal metabolizer	TAMOXIFEN	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2D6	Normal metabolizer	VENLAFAXINE	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2D6	Normal metabolizer	TRICYCLIC ANTIDEPRESSANTS	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2D6	Normal metabolizer	PAROXETINE	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2D6	Normal metabolizer	TROPISETRON, ONDASETRON	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2D6	Normal metabolizer	METOPROLOL	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP3A5	Poor metabolizer	TACROLIMUS	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP4F2	Normal metabolizer	WARFARINE	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
DPYD	Normal metabolizer	FLUOROPYRIMIDINES	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
DPYD	Normal metabolizer	FLUOROPYRIMIDINES	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
UGT1A1	Poor metabolizer	ATAZANAVIR	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
UGT1A1	Poor metabolizer	ATAZANAVIR	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
UGT1A1	Poor metabolizer	IRINOTECAN**	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
IL28B	Favorable response	RIBAVIRIN PEG-IFN	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.

Supplementary File 1. Complete report.

SLCO1B1	Decreased function	SIMVASTATIN	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
SLCO1B1	Decreased function	ATORVASTATIN	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
TPMT - NUDT15	Normal metabolizer - Normal metabolizer	AZATHIOPRINE, 6- MERCAPTOPURINE	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2C9 - HLA	Intermediate metabolizer - Non- carrier	PHENYTOIN	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.
CYP2C19 - CYP2D6	Intermediate metabolizer - Normal metabolizer	AMITRIPTYLYNE	Clinical recommendations based on CPIC and DPWG pharmacogenetic guidelines written in Spanish.

REFERENCES

1. Relling MV, Klein TE. CPIC: Clinical Pharmacogenetics Implementation Consortium of the Pharmacogenomics Research Network. *Clinical Pharmacology & Therapeutics*. marzo de 2011;89(3):464-7.
2. Royal Dutch Pharmacists Association - Pharmacogenetics Working Group, CYP2D6-Tramadol, disponible en: <https://www.g-standaard.nl/risicoanalyse/B0001590.PDF>.

Supplementary file 2. Relevant findings report.

RELEVANT FINDINGS REPORT

Example

PATIENT:	<i>Example</i>	PATIENT ID	<i>Example</i>
REQUESTING PHYSICIAN	<i>Example</i>	DEPARTMENT	<i>Example</i>
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You have been genotyped for a panel of genes and variants that determine response to numerous drugs. The relevant pharmacogenetic findings are described below:

GENES AND VARIANTS

Gene	Allele	Genotype	Phenotype
CYP2B6	*1, *4, *6, *9	*1/*6	Intermediate metabolizer
CYP2C19	*1, *2, *3, *4, *17	*2/*17	Intermediate metabolizer
CYP2C9	*1, *2, *3	*1/*11	Intermediate metabolizer (AS: 1.0)
CYP3A5	*1, *3, *6	*3/*3	Poor metabolizer.
SLCO1B1	rs4149056	*1A/*15	Decreased function
UGT1A1	*80	*80/*80	Poor metabolizer.

This document requires interpretation by qualified healthcare personnel. Please give it to your practitioner. Should they have any problems with the interpretation of these results, please contact the Clinical Pharmacology Department of Hospital Universitario de la Princesa: +34915202425 or fcl.hlpr@salud.madrid.org.