Supplemental Digital Content 1: GenoPharm Description

The GenoPharm® panel covers 120 pharmacogenetic variants covering over 45 genes, inclusive of some variants that are unique to people of African ancestry such as *CYP2D6* *17, CYP2D6*29 and CYP2B6*18. The panel also includes variants that are clinically actionable, with PharmGKB 1A or 1B levels of clinical significance. The variants have been uniquely selected/composed to predict and guide patient treatment needs in general and specifically for infectious diseases, cancer, cardiovascular disease, and neuropsychiatric disorders. The panel was designed to enable high throughput laboratories to simultaneously process many samples for hundreds of samples across a number of targets. The composition of the genes and variants on the GenoPharm® are listed in the table below;

Gene	Allele/variant covered
Phase I ADME genes	
ADLH2	Glu504Lys (rs671)
CYP1A2	*1C, *1D , *1F, *1K
CYP2B6	*4, *5, *6, *18
CYP2C19	*2, *3, *4, *7, *10, *17
CYP2C9	*2, *3, *4, *5, *6, *8, 11, C.1425A>T (rs1057911)
CYP2D6	*2, *2A, *4, *6, *7, *8, *9, *10, *11, *12, *14, *15, *17, *18, *19, *29, *31, *35, *41, *42, *44, *59, 4180G>C (rs1135840)
CYP3A4	*1B, *22
CYP3A5	*3, *6, *7
CYP4F2	*3
DPYD	*2A, *13, c.2846A>T
Phase II ADME genes	
COMT	Val158Met (rs4680)
NAT2	*5, *6, *7, *11, *12, *13, *14
SULT4A1	rs138097, rs138060
TPMT	*2, *3C, 3B, *4,
UGT1A1	*6 (rs4148323), -2936A>G (rs4124874)
UGT1A6	*4 (rs17863783)
Transporters	
ABCB1	c.1236T>C (rs1128503), c.2677T>G/A (rs2032582), c.3435C>T (rs1045642)
ABCG2	c.421C>A (rs2231142)
SLC28A3	L461L (rs7853758)
SLC2A2	T110I (rs5400)
SLCO1B1	*1B, *5, *15, *17, *21
Drug Target	
VKROC1	**rs9923231; rs7200749**
Other pharmacogenes	
HLA-B	*1502, *1502, *5801
CACNA1C-AS2.	c.5505G>A (rs1051375)
G6PD	376A>G (rs1050829)
NUDT15	c.415C>T (rs116855232)
RARG	S427L (rs2229774)
MTHFR	c.1298A>C (rs1801131), c.677C>T (rs1801133)
Health, lifestyle & performance genes	
ACE	G2350A (rs4343)
ACTN3;CTSF	R577X (rs1815739)
ADRA2A	C1291G (rs1800544)
AGT	A-6G (rs5051)
BAG6;APOM	rs3117583
BDNF-AS;BDNF	G196A (rs6265)
CDKN2B-AS1	rs1333049, rs10757278
CKAP5;F2	G20210 (rs1799963)
CELF4	rs1786814
DRD2	-241A>G (rs1799978)
FABP2	Ala54Thr (rs1799883)
F5	R506Q (rs6025)
FLOT1;TUBB	rs3909184
GRIK4	83-10039T>C (rs1954787)
GRIN2B	rs2058878
HTR2A	rs7997012
HTR2C	-759C/T (rs3813929)
IFNL4;IFNL3	IL28B (rs12979860)
LPA	I4399M (rs3798220), rs10455872
OPRM1	c.118A>G (rs1799971)
TAS1R2	Ile191Val (rs35874116)
TMEM165;CLOCK	3111C>T (rs1801260)
VEGFA	-634C>G (rs2010963)

Supplemental Digital Content 2: Summary of the observed and expected genotype frequencies for the genes on GenoPharm® in Black Zimbabwean population

Gene	Genotype	Observed Frequency	Expected Frequency	p-value
CYP2B6	*1/*1	0.2457	0.2358	0.814
	*1/*4	0.0058	0.0196	0.4752
	*1/*5	0.0077	0.0065	
	*1/*6	0.3589	0.3672	0.7161
	*1/*7	0.0077	0.0037	
	*1/*18	0.0998	0.1025	0.7738
	*4/*4	0.0038	0.0004	
	*4/*6	0.0173	0.0152	
	*4/*18	0.0096	0.0043	
	*5/*5	0.0019	0.0000	
	*5/*6	0.0019	0.0051	
	*6/*6	0.1459	0.1430	
	*6/*18	0.0864	0.0798	0.6293
	*18/*18	0.0077	0.0111	
CYP2D6	*1/*1	0.1676	0.1568	0.6439
	*1/*10	0.0289	0.0252	0.6129
	*1/*17	0.1098	0.1190	
	*1/*2	0.1561	0.1465	0.838
	*1/*29	0.0520	0.0755	
	*1/*2A	0.0173	0.0137	
	*1/*41	0.0058	0.0069	
	*1/*5	0.0867	0.0916	0.6115
	*10/*17	0.0058	0.0096	
	*10/*29	0.0058	0.0061	
	*17/*17	0.0347	0.0226	0.3117
	*17/*29	0.0289	0.0287	
	*2/*10	0.0173	0.0118	
	*2/*17	0.0289	0.0556	0.1709
	*2/*2	0.0347	0.0342	
	*2/*29	0.0520	0.0353	
	*2/*2A	0.0116	0.0064	
	*2/*5	0.0347	0.0428	
	*29/*29	0.0058	0.0091	
	*29/*41	0.0058	0.0017	
	*2A/*17	0.0058	0.0052	
	*5/*10	0.0058	0.0074	
	*5/*17	0.0520	0.0347	0.7328
	*5/*29	0.0347	0.0221	

	*5/*41	0.0058	0.0020	
	*5/*5	0.0058	0.0134	
CYP2C9	*1/*1	0.7332	0.7197	
	*1/*2	0.0019	0.0016	
	*1/*3	0.0019	0.0033	
	*1/*4	0.0019	0.0016	
	*1/*5	0.0307	0.0261	0.6116
	*1/*6	0.0038	0.0081	
	*1/*8	0.1497	0.1661	0.5944
	*1/*11	0.0403	0.0505	0.3114
	*3/*11	0.0019	0.0001	
	*6/*11	0.0019	0.0003	
	*8/*8	0.0154	0.0096	0.1766
	*6/*8	0.0038	0.0009	
	*8/*11	0.0115	0.0058	
	*11/*11	0.0019	0.0009	
CYP2C19	*1/*1	0.4368	0.4483	
	*1/*2	0.2318	0.2155	0.3373
	*1/*3	0.0038	0.0026	
	*1/*10	0.0019	0.0013	
	*1/*17	0.2280	0.2232	0.8337
	*2/*17	0.0479	0.0536	0.56
	*2/*2	0.0211	0.0259	0.4164
	*17/*17	0.0287	0.0278	
CYP3A4	*1/*1	0.0670	0.0537	
	*1/*1B	0.3295	0.3561	0.2
	*1B/*1B	0.6034	0.5901	0.533
CYP3A5	*1/*1	0.2739	0.2529	
	*1/*3	0.1648	0.1782	0.4233
	*1/*6	0.1590	0.1840	0.7234
	*1/*7	0.1322	0.1368	
	*1/*8	0.0019	0.0010	
	*3/*3	0.0345	0.0314	0.6116
	*6/*6	0.0421	0.0335	0.3373
	*3/*6	0.0651	0.0648	
	*3/*7	0.0556	0.0482	0.4123
	*6/*7	0.0575	0.0498	0.421
	*7/*7	0.0134	0.0185	
G6PD	T/T or T	#REF!	0.4100	0.0001
	C/T	#REF!	0.3300	

	C/C or C	#REF!	0.2600	0.7658
CYP4F2	*1/*1	0.9004	0.8992	
	*1/*3	0.0958	0.0981	0.6006
	*3/*3	0.0038	0.0027	0.3168
ABCB1	*1/*1	0.9234	0.9248	
	*1/*2	0.0728	0.0700	
	*1/*13	0.0038	0.0037	
ACE	AA	0.7337	0.7333	
	AG	0.2452	0.2461	
	GG	0.0211	0.0206	
ADRA2A	GG	0.6494	0.6536	
	CG	0.3180	0.3097	
	CC	0.0326	0.0367	
F2	GG	1.0000	1.0000	
F5	CC	1.0000	1.0000	
TPMT	*1/*1	0.8602	0.8579	
	*1/*3C	0.1322	0.1366	
	*3C/*3C	0.0077	0.0054	
COMT	G/G	0.4310	0.4280	
	A/G	0.4464	0.4524	
	A/A	0.1226	0.1196	
DPYD	*1/*1	0.9904	0.9904	
	*1/*2A	0.0038	0.0038	
	*1/*9B	0.0057	0.0057	
DRD2	TT	0.6418	0.6154	
	TC	0.2854	0.3381	
	CC	0.0728	0.0464	
SLC28A3	G/G	0.3827	0.3623	
	C/G	0.4385	0.4792	
	C/C	0.1788	0.1585	
RARG	G/G	0.6161	0.4347	
	A/G	0.0864	0.4492	0.0001
	A/A	0.2975	0.1161	0.0001
UGT1A1	*1/*1	0.9962	0.9962	

	*1/*6	0.0038	0.0038	
	*6/*6	0.0000	0.0000	
UGT1A6	*1b/*1b	0.7490	0.7514	
	*1b/*4b	0.2356	0.2308	
	*4b/*4b	0.0153	0.0177	0.7367
ABCG2	GG	0.9923	0.9923	
	GT	0.0077	0.0076	
	TT	0.0000	0.0000	
CACNA1C	GG	0.7605	0.7581	
	AG	0.2203	0.2252	
	AA	0.0192	0.0167	
CELF4 (rs1786814)	GG	0.8084	0.6613	
	AG	0.0096	0.3038	
	AA	0.1820	0.0349	
AGT	TT	0.8506	0.8562	
	CT	0.1494	0.1383	
	CC	0.0000	0.0056	
ACTN3	RR	0.8027	0.8055	
	RX	0.1897	0.1840	
	XX	0.0077	0.0105	
CDKN2B-AS1	AA	0.6599	0.6664	
	AG	0.3129	0.2999	
	GG	0.0272	0.0337	
SULT4A1 (rs138060)	AA	0.2299	0.2358	
	AC	0.5115	0.4996	0.5396
	CC	0.2586	0.2646	
SULT4A1 (rs138097)	AA	0.2726	0.2786	
	AG	0.5106	0.4985	0.5396
	GG	0.2169	0.2229	

Allele and genotype frequencies for the three genes tested were estimated from the results obtained. The genotypes observed were matched to Hardy Weinberg Expectation (HWE) expectation. The Difference between observed and expected were measured using the X2 test, with a p value ≤ 0.05 indicating deviation from HWE.

Total number of genotyped individuals n=522

The Difference between observed and expected were measured using the X^2 test, with a p value ≤ 0.05 indicating deviation from HWE

Supplemental Digital Content 3: Allele frequencies of the Black Zimbabwean Population for the genes included in the study.

Gene	Allele	Allele Frequency
CYP2B6	*1	0.4866
	*4	0.0201
	*5	0.0067
	*6	0.3774
	*7	0.0038
	*18	0.1054
CYP2D6	*1	0.3960
	*2	0.1850
	*2A	0.0173
	*5	0.1156
	*10	0.0318
	*17	0.1503
	*29	0.0954
	*41	0.0087
CYP2C9	*1	0.8467
	*2	0.0010
	*3	0.0029
	*4	0.0010
	*5	0.0153
	*6	0.0048
	*8	0.0977
	*11	0.0307
CYP2C19	*1	0.6695
	*2	0.1609
	*3	0.0019
	*10	0.0010
	*17	0.1667
CYP3A5	*1	0.5029
	*3	0.1775
	*6	0.1833
	*7	0.1363
CYP3A4	*1	0.2318
	*1B	0.7682
CYP4F2	*1	0.9483
	*3	0.0517
G6PD	T	0.6670
	C	0.3330

ABCB1	*1	0.9617
	*2	0.0364
	*13	0.0019
TPMT	*1	0.9262
	*3C	0.0738
COMT	G	0.6542
	A	0.3458
DPYD	*1	0.9952
	*2A	0.0019
	*9B	0.0029
SLC28A3	G	0.6019
	C	0.3981
RARG	G	0.6593
	A	0.3407
UGT1A1	*1	0.9981
	*6	0.0019
UGT1A6	*1b	0.8669
	*4b	0.1331
ABCG2	G	0.9962
	T	0.0038
CACNA1C	G	0.8707
	A	0.1293
SULT4A1 (rs138060)	A	0.4856
	G	0.5144
SULT4A1 (rs138097)	T	0.5278
	C	0.4722