

Supplementary Table 1: Pharmacogenetic Biomarkers in Cancer.

Drug	Therapeutic Area	Biomarker
Abemaciclib (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=208716)	Oncology	ER ^{a,b} ERBB2 (HER2)
Ado-Trastuzumab Emtansine (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=125427)	Oncology	ERBB2 (HER2)
Afatinib (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=201292)	Oncology	EGFR
Alectinib (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=208434)	Oncology	ALK
Anastrozole (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=020541)	Oncology	ER, PgR
Arsenic Trioxide (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=021248)	Oncology	PML-RAR α
Atezolizumab (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=761034)	Oncology	CD274 (PD-L1)
Avelumab (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=761049)	Oncology	CD274 (PD-L1)
Belinostat (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=206256)	Oncology	UGT1A1
Binimetinib (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=210498)	Oncology	BRAF UGT1A1
Blinatumomab (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=125557)	Oncology	BCR-ABL1 (Philadelphia chromosome)
Bosutinib (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=203341)	Oncology	BCR-ABL1 (Philadelphia chromosome)

Brentuximab Vedotin (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=125388)	Oncology	ALK
Brigatinib (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=208772)	Oncology	ALK
Busulfan (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=09386)	Oncology	BCR-ABL1 (Philadelphia chromosome)
Cabozantinib (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=203756)	Oncology	RET
Capecitabine (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=020896)	Oncology	DPYD
Ceritinib (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=205755)	Oncology	ALK
Cetuximab (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=125084)	Oncology	EGFR RAS
Cisplatin (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=018057)	Oncology	TPMT
Cobimetinib (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=206192)	Oncology	BRAF
Crizotinib (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=202570)	Oncology	ALK ROS1
Dabrafenib (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=202806)	Oncology	BRAF G6PD RAS
Dasatinib (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=021986)	Oncology	BCR-ABL1 (Philadelphia chromosome)
Denileukin Diftitox (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=103767)	Oncology	IL2RA (CD25 antigen)
Dinutuximab (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=125516)	Oncology	MYCN

Durvalumab http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=761069	Oncology	CD274 (PD-L1)
Enasidenib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=209606	Oncology	IDH2
Encorafenib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=210496	Oncology	BRAF
Erlotinib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=021743	Oncology	EGFR
Everolimus http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=022334	Oncology	ERBB2 (HER2) ER
Exemestane http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=020753	Oncology	ER, PgR
Fluorouracil http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=012209	Oncology	DPYD
Fulvestrant http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=021344	Oncology	ERBB2 (HER2) ER, PgR
Gefitinib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=206995	Oncology	EGFR CYP2D6
Ibrutinib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=205552	Oncology	BTK Chromosome 17p deletion Chromosome 11q deletion
Imatinib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=021588	Oncology	KIT BCR-ABL1 (Philadelphia chromosome) PDGFRB FIP1L1-PDGFR
Inotuzumab Ozogamicin http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=761040	Oncology	BCR-ABL1 (Philadelphia chromosome)
Irinotecan http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=020571	Oncology	UGT1A1

Lapatinib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=022059	Oncology	ERBB2 (HER2) ER, PgR HLA-DQA1, HLA-DRB1
Letrozole http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=020726	Oncology	ER, PgR
Mercaptopurine http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=09053	Oncology	TPMT
Mercaptopurine http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=205919	Oncology	NUDT15
Midostaurin http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=207997	Oncology	FLT3 NPM1 KIT
Neratinib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=208051	Oncology	ERBB2 (HER2) ER, PgR
Nilotinib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=022068	Oncology	BCR-ABL1 (Philadelphia chromosome) UGT1A1
Niraparib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=208447	Oncology	BRCA
Nivolumab http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=125554	Oncology	BRAF CD274 (PD-L1) Microsatellite Instability, Mismatch Repair
Obinutuzumab http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=125486	Oncology	MS4A1 (CD20 antigen)
Olaparib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=206162	Oncology	BRCA
Olaratumab http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=761038	Oncology	PDGFRA
Omacetaxine http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=203585	Oncology	BCR-ABL1 (Philadelphia chromosome)

Osimertinib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=208065	Oncology	EGFR
Palbociclib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=207103	Oncology	ER ERBB2 (HER2)
Panitumumab http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=125147	Oncology	EGFR RAS
Pazopanib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=022465	Oncology	UGT1A1 HLA-B
Pembrolizumab http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=125514	Oncology	BRAF CD274 (PD-L1) Microsatellite Instability, Mismatch Repair
Pertuzumab http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=125409	Oncology	ERBB2 (HER2) ER, PgR
Ponatinib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=203469	Oncology	BCR-ABL1 (Philadelphia chromosome)
Rasburicase http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=103946	Oncology	G6PD CYB5R
Ribociclib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=209092	Oncology	ER, PgR ERBB2 (HER2)
Rituximab http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=103705	Oncology	MS4A1 (CD20 antigen)
Rucaparib http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=209115	Oncology	BRCA CYP2D6 CYP1A2
Tamoxifen http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=017970	Oncology	ER, PgR F5 (Factor V Leiden) F2 (Prothrombin)
Thioguanine http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=012429	Oncology	TPMT NUDT15

Trametinib (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=204114)	Oncology	BRAF G6PD RAS
Trastuzumab (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=103792)	Oncology	ERBB2 (HER2) ER, PgR
Tretinoin (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=020438)	Oncology	PML-RARA
Vemurafenib (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=202429)	Oncology	BRAF RAS
Venetoclax (http://www.accessdata.fda.gov/scripts/cder/daf/index.cfm?event=overview.process&varAppNo=208573)	Oncology	Chromosome 17p deletion
<p>^a: Representative biomarkers are listed based on standard nomenclature as per the Human Genome Organization (HUGO) symbol and/or simplified descriptors using other common conventions.</p> <p>^b: ER: estrogen receptor.</p> <p>^c: PgR: progesterone receptor.</p>		

<https://www.fda.gov/drugs/scienceresearch/ucm572698.htm>