

Supplementary table 1 Description of ADRs, ICD-10 code and ADR genes per each cluster

* Serotonin syndrome is not classified by ICD-10 code.

Cluster	ADRs	ICD-10	ADR Genes
Cluster 0	Alopecia	L65.9	VDR
	Colitis	A09	PTGS2
	Diabetes mellitus	E10-E14	INSR
	Dyspepsia	R10.1	PTGS2
	Gastric ulcer	K25	PTGS2
	Myopathy	G72.9	GAA, RYR1
	Obesity	E66	PPARG
	Osteoporosis	M81.9	CYP18A1, ESR1, VDR
	Photosensitivity	L56.8	FECH
Cluster 1	Respiratory failure	J96.9	GAA
	Ataxia	R27.0	CACNA1A
	Dysarthria	R47.1	CACNA1A
	Hemiplegia	G81	CACNA1A
	Migraine	G43	ATP1A2, CACNA1A
	Nystagmus	H55	CACNA1A
Cluster 2	Vertigo	R42	CACNA1A
	Albuminuria	R80	AGT
	Bradycardia	I49.5	AGT
	Hypertension	I10	AGT
	Hypotension	I95	ACR, AGT
	Renal failure	N17-N19	AGT
Cluster 3	Tachycardia	I47.1	AGT
	Anosmia	R43.0	FGFR1
	Asthma	J45	CYSLTR2
	Breast pain	N64.4	PRL
	Deep vein thrombosis	I80.2	MTHFR
	Epilepsy	G40	CHRNA4, KCNQ2, KCNQ3, SCN1A
	Hirsutism	L68.0	PRL
	Irritable bowel syndrome	K58	SLC6A4
	Paralysis	G72.3	KCNJ2
	Proteinuria	R80	LRP2
	Tardive dyskinesia	G24.0	DRD3
	Thrombocytopenia	D69.6	ITGA2B, ITGB3
	Tremor	R25.1	HTR2A
	Uveitis	A18.5	RBP3
	Vasculitis	D69.0	MPO
Cluster 4	Viral infection	B34	TLR7
	Angioedema	T78.3	ACE
	Anxiety	F41.9	HTR1A, HTR2A, HTR2C, SLC6A4
	Coronary artery disease	I25.1	LPL
	Cough	R05	ACE
	Flushing	R23.2	CYP19A1, PDE5A
	Hypothermia	T68	HTR1A
	Pancreatitis	K85.3	LPL
	Serotonin syndrome	*X	HTR1A
Cluster 5	Anorexia	R63.0	TNF
	Joint welling	M25.4	TNF
	Psoriasis	L40	TNF
	Pulmonary fibrosis	J84.1	TNF
	Rash	L27.0	EGFR
Cluster 6	Atrial fibrillation	I48.9	KCNA5, KCNQ1
	Syncope	R55	KCNE1, KCNE2, KCNH2, KCNQ1, SCN5A

Ventricular fibrillation	I49.0	KCNQ1, SCN5A
Ventricular tachycardia	I47.2	KCNH2, KCNQ1, RYR2, SCN5A