

Table S7. Approved Drugs and Corresponding Disease and Disease Genes obtained from OMIM (May. 1th, 2011).

| Drug Name | Known Association (Target) | Validated New Target | Drug Indications | Disease Name | Predict Disease Name | Disease Gene Names | Disease Gene Entrez Gene IDs |
|--------------|--|--------------------------|---|----------------------|------------------------------------|---|---|
| Montelukast | LTRA1; Alox5 | DPP-IV | For the treatment of asthma | Asthma | diabetes | PHF11;MS4A2;ALOX5;ADRB2;PTGDR;GPR154;HNMT;IL12B;IL13;PLA2G7;SCGB3A2;TNF;SCGB1A1 | 51131;2206;240;154;5729;387129;3176;3593;3596;7941;117156;7124;7356 |
| Diclofenac | COX-1; COX2; TTR | Er α ; ER β | For the acute and chronic treatment of signs and symptoms of osteoarthritis and rheumatoid arthritis. | Osteoarthritis | neuroprptective | MATN3;FRZB;ASPN;COL2A1 | 4148;2487;54829;1280 |
| Simvastatin | TNFR5; ICAM1; LT-beta; CYP3A3; MAPK3; Pr; Itgb2; PPAR-alpha; PAI-1; Caspase-3; TNF; VEGF-A; BMP-2; COLXIII A1; CCL2; IFN-gamma; IL-6; IL-8; LA; MMP-9; RHOA; HMGCR | ER β | For the treatment of hypercholesterolemia. | Hypercholesterolemia | PD, AD, breast cancer | APOB;LDLR;PCSK9;LDLRAP1;EPHX2;APOA2;C7orf16;ITIH4 | 338;3949;255738;26119;2053;336;10842;3700 |
| Ketoconazole | CYP51A1 | ER β | For the treatment of the following systemic fungal infections: candidiasis, chronic mucocutaneous candidiasis, oral thrush, candiduria, blastomycosis, coccidioidomycosis, histoplasmosis, chromomycosis, and paracoccidioidomycosis. | Candidiasis | prostate cancer, AD | <i>not available</i> | <i>not available</i> |
| Itraconazole | MRP1; CYP51A1 | Er α & ER β | For the treatment of the following fungal infections in immunocompromised and non-immunocompromised patients: pulmonary and extrapulmonary blastomycosis, histoplasmosis, aspergillosis, and onychomycosis. | Pulmonary disease | prostate cancer; AD; breast cancer | <i>not available</i> | <i>not available</i> |