Supplementary Table 2. Enrichr gene set enrichment analysis of AR up-regulated gene from AR90

Reactome_2016 Terms	Combined Score	Genes from AR90
Cytokine Signaling in Immune system_Homo sapiens_R-HSA-1280215	29.21	IFNAR2, SP100, IL10RB, PELI1, MAP3K8, SAMHD1, CSF2RA, KPNB1, TNFRSF1A, HAVCR2, HLA-E
Immune System_Homo sapiens_R-HSA-168256	26.21	IFNAR2, SP100, IL10RB, DAPP1, MYO9B, SAMHD1, LILRA2, CSF2RA, TNFRSF1A, HLA-E, NFKBIA, RNF213, PELI1, MAP3K8, CLEC4E, KPNB1, HAVCR2
Interferon Signaling_Homo sapiens_R-HSA-913531	15.97	IFNAR2, SP100, SAMHD1, KPNB1, HLA-E
Death Receptor Signalling_Homo sapiens_R-HSA-73887	15.27	USP4, CFLAR, TNFRSF1A
TNFR1-induced proapoptotic signaling_Homo sapiens_R-HSA-5357786	12.55	USP4, TNFRSF1A
Interferon alpha/beta signaling_Homo sapiens_R-HSA-909733	11.84	IFNAR2, SAMHD1, HLA-E
MyD88 cascade initiated on plasma membrane_Homo sapiens_R-HSA-975871	11.82	NFKBIA, PELI1, MAP3K8
Toll Like Receptor 10 (TLR10) Cascade_Homo sapiens_R-HSA-168142	11.78	NFKBIA, PELI1, MAP3K8
Toll Like Receptor 5 (TLR5) Cascade_Homo sapiens_R-HSA-168176	11.73	NFKBIA, PELI1, MAP3K8
TRAF6 mediated induction of NFkB and MAP kinases upon TLR7/8 or 9 activation_Homo sapiens_R-HSA-975138	11.72	NFKBIA, PELI1, MAP3K8
MyD88 dependent cascade initiated on endosome_Homo sapiens_R-HSA-975155	11.66	NFKBIA, PELI1, MAP3K8
Toll Like Receptor 7/8 (TLR7/8) Cascade_Homo sapiens_R-HSA-168181	11.62	NFKBIA, PELI1, MAP3K8
Toll Like Receptor 9 (TLR9) Cascade_Homo sapiens_R-HSA-168138	11.58	NFKBIA, PELI1, MAP3K8
MyD88:Mal cascade initiated on plasma membrane_Homo sapiens_R-HSA-166058	10.62	NFKBIA, PELI1, MAP3K8
Signaling by Interleukins_Homo sapiens_R-HSA-449147	10.60	IL10RB, PELI1, MAP3K8, CSF2RA, HAVCR2
Toll Like Receptor 2 (TLR2) Cascade_Homo sapiens_R-HSA-181438	10.54	NFKBIA, PELI1, MAP3K8
Toll Like Receptor TLR1:TLR2 Cascade_Homo sapiens_R-HSA-168179	10.51	NFKBIA, PELI1, MAP3K8
Toll Like Receptor TLR6:TLR2 Cascade_Homo sapiens_R-HSA-168188	10.44	NFKBIA, PELI1, MAP3K8
GO_Biological_Process_2017 Terms	**Combined Score**	**Genes from AR90**

type I interferon signaling pathway (GO:0060337)	31.72	IFNAR2, SP100, SAMHD1, HLA-E
neutrophil degranulation (GO:0043312)	25.78	RAB31, SERPINA1, RNASET2, HSPA6, ITGAX, KPNB1
defense response to protozoan (GO:0042832)	22.46	BATF2, LYST
leukocyte chemotaxis (GO:0030595)	22.45	LYST, CX3CL1
positive regulation of inflammatory response (GO:0050729)	20.73	NFKBIA, CX3CL1, TNFRSF1A
positive regulation of I-kappaB kinase/NF-kappaB signaling (GO:0043123)	19.82	AKAP13, PELI1, CFLAR, TNFRSF1A
apoptotic process (GO:0006915)	19.17	NFKBIA, PLK3, CFLAR, STK4
regulation of extrinsic apoptotic signaling pathway via death domain receptors (GO:1902041)	17.83	SP100, CFLAR
positive regulation of interleukin-4 production (GO:0032753)	17.33	HAVCR2, HLA-E
filopodium assembly (GO:0046847)	16.80	SPATA13, SRGAP2
defense response to virus (GO:0051607)	16.80	IFNAR2, SAMHD1, LYST
positive regulation of NF-kappaB transcription factor activity (GO:0051092)	14.49	NFKBIA, PRKD2, CFLAR
negative regulation of apoptotic process (GO:0043066)	14.37	NFKBIA, PLK3, CFLAR, MCL1
negative regulation of DNA binding (GO:0043392)	13.28	NFKBIA, SP100
regulation of heart contraction (GO:0008016)	13.07	ADORA3, CELF2
regulation of small GTPase mediated signal transduction (GO:0051056)	12.91	AKAP13, MYO9B, SRGAP2
I-kappaB kinase/NF-kappaB signaling (GO:0007249)	10.06	NFKBIA, TNFRSF1A

KEGG_2019_Human Terms	Combined Score	Genes from AR90
TNF signaling pathway	860.63	NFKBIA, MAP3K8, CFLAR, CX3CL1, TNFRSF1A
Legionellosis	349.55	NFKBIA, HSPA6
Toxoplasmosis	292.20	NFKBIA, IL10RB, HSPA6, TNFRSF1A
Toll-like receptor signaling pathway	248.19	IFNAR2, NFKBIA, MAP3K8
Amyotrophic lateral sclerosis (ALS)	234.98	TNFRSF1A
Human cytomegalovirus infection	227.09	NFKBIA, AKAP13, IL10RB, CX3CL1, TNFRSF1A, HLA-E
Osteoclast differentiation	208.76	IFNAR2, NFKBIA, LILRA2, TNFRSF1A
NF-kappa B signaling pathway	174.63	NFKBIA, CFLAR, TNFRSF1A
Graft-versus-host disease	124.12	HLA-E
Autoimmune thyroid disease	122.23	HLA-E
Complement and coagulation cascades	118.73	SERPINA1, ITGAX
RIG-I-like receptor signaling pathway	104.87	NFKBIA

Necroptosis	101.20	IFNAR2, CFLAR, TNFRSF1A
Allograft rejection	99.26	HLA-E
Fructose and mannose metabolism	79.48	PFKFB4
Chagas disease (American trypanosomiasis)	74.84	NFKBIA, CFLAR, TNFRSF1A
Cytosolic DNA-sensing pathway	71.03	NFKBIA
C-type lectin receptor signaling pathway	67.63	NFKBIA, PLK3, CLEC4E
Natural killer cell mediated cytotoxicity	64.90	IFNAR2, HLA-E
Antigen processing and presentation	64.16	HSPA6, HLA-E
Sphingolipid signaling pathway	62.77	ADORA3, TNFRSF1A
Shigellosis	62.35	NFKBIA
Small cell lung cancer	61.00	NFKBIA
T cell receptor signaling pathway	49.01	NFKBIA, MAP3K8
Adipocytokine signaling pathway	47.81	NFKBIA, TNFRSF1A
B cell receptor signaling pathway	45.05	NFKBIA, DAPP1
Chronic myeloid leukemia	41.08	NFKBIA
Viral myocarditis	32.66	HLA-E
Apoptosis	32.28	NFKBIA, CFLAR, TNFRSF1A, MCL1
Pyrimidine metabolism	31.50	UPP1
Th17 cell differentiation	31.48	NFKBIA
Type I diabetes mellitus	30.04	HLA-E
Measles	29.58	IFNAR2, NFKBIA, HSPA6
Tuberculosis	27.24	PLK3, IL10RB, ITGAX, CLEC4E, TNFRSF1A
IL-17 signaling pathway	22.49	NFKBIA
Th1 and Th2 cell differentiation	19.51	NFKBIA
Non-small cell lung cancer	17.33	STK4
Insulin resistance	15.55	NFKBIA, TNFRSF1A
Influenza A	15.48	IFNAR2, NFKBIA, HSPA6, TNFRSF1A
Fc gamma R-mediated phagocytosis	13.31	ASAP1
Longevity regulating pathway	13.28	HSPA6, SOD2
JAK-STAT signaling pathway	11.25	IFNAR2, IL10RB, CSF2RA, MCL1
Parathyroid hormone synthesis, secretion and action	11.15	AKAP13
Human immunodeficiency virus 1 infection	11.07	NFKBIA, SAMHD1, TNFRSF1A, HLA-E
Hepatitis C	10.88	IFNAR2, NFKBIA, CFLAR, TNFRSF1A
Peroxisome	10.60	SOD2
FoxO signaling pathway	10.44	PLK3, STK4, SOD2
Leishmaniasis	10.38	NFKBIA