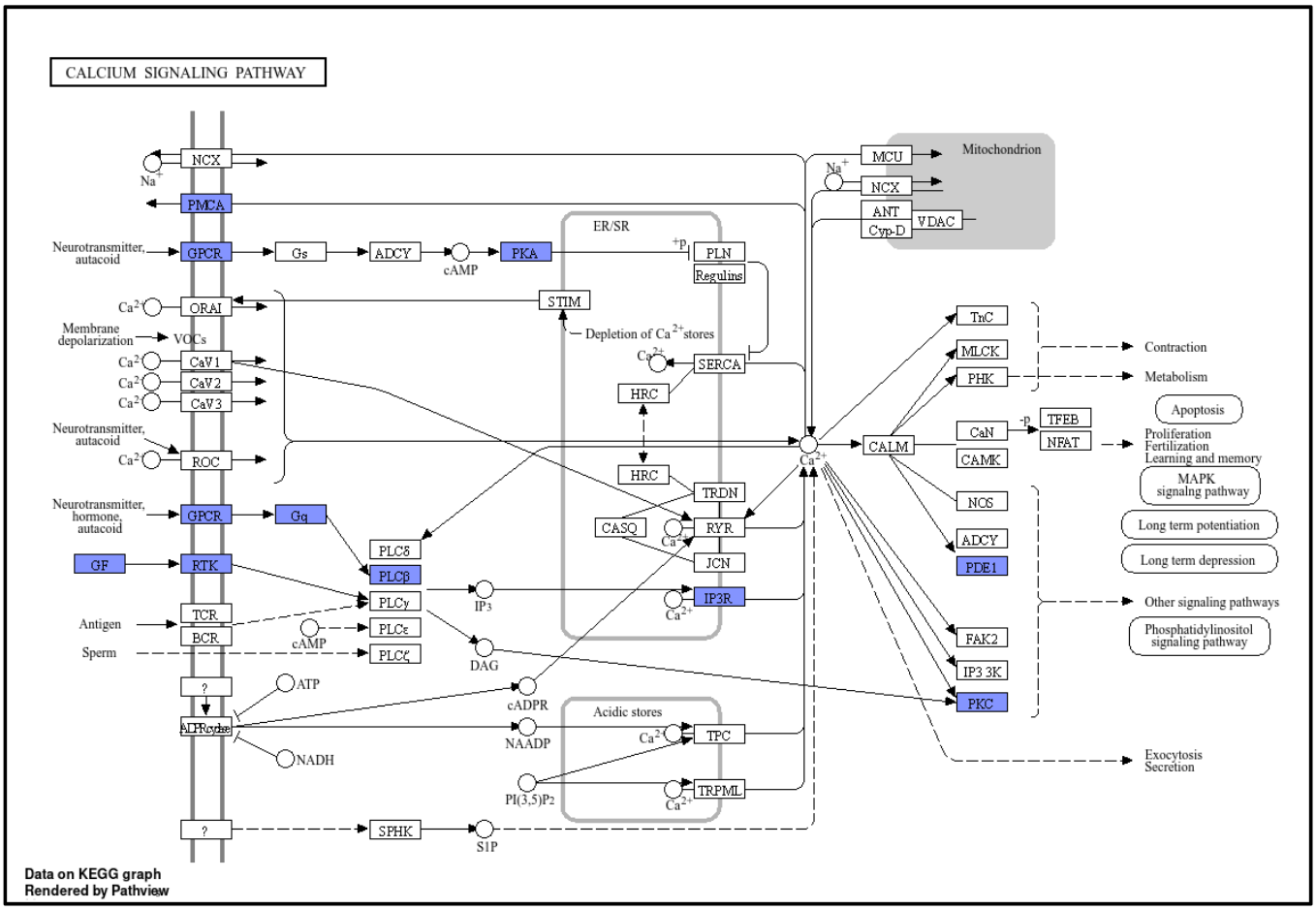
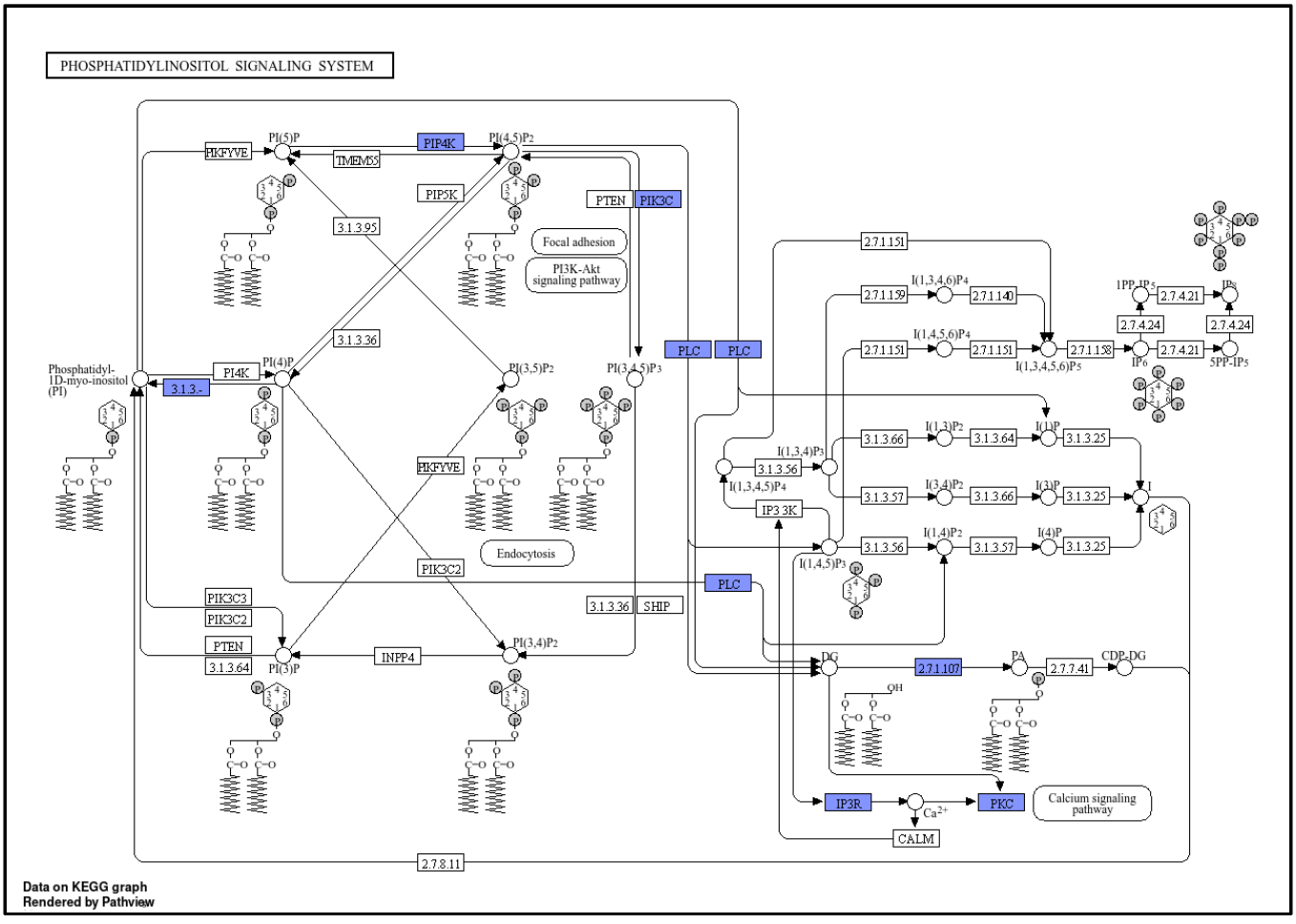
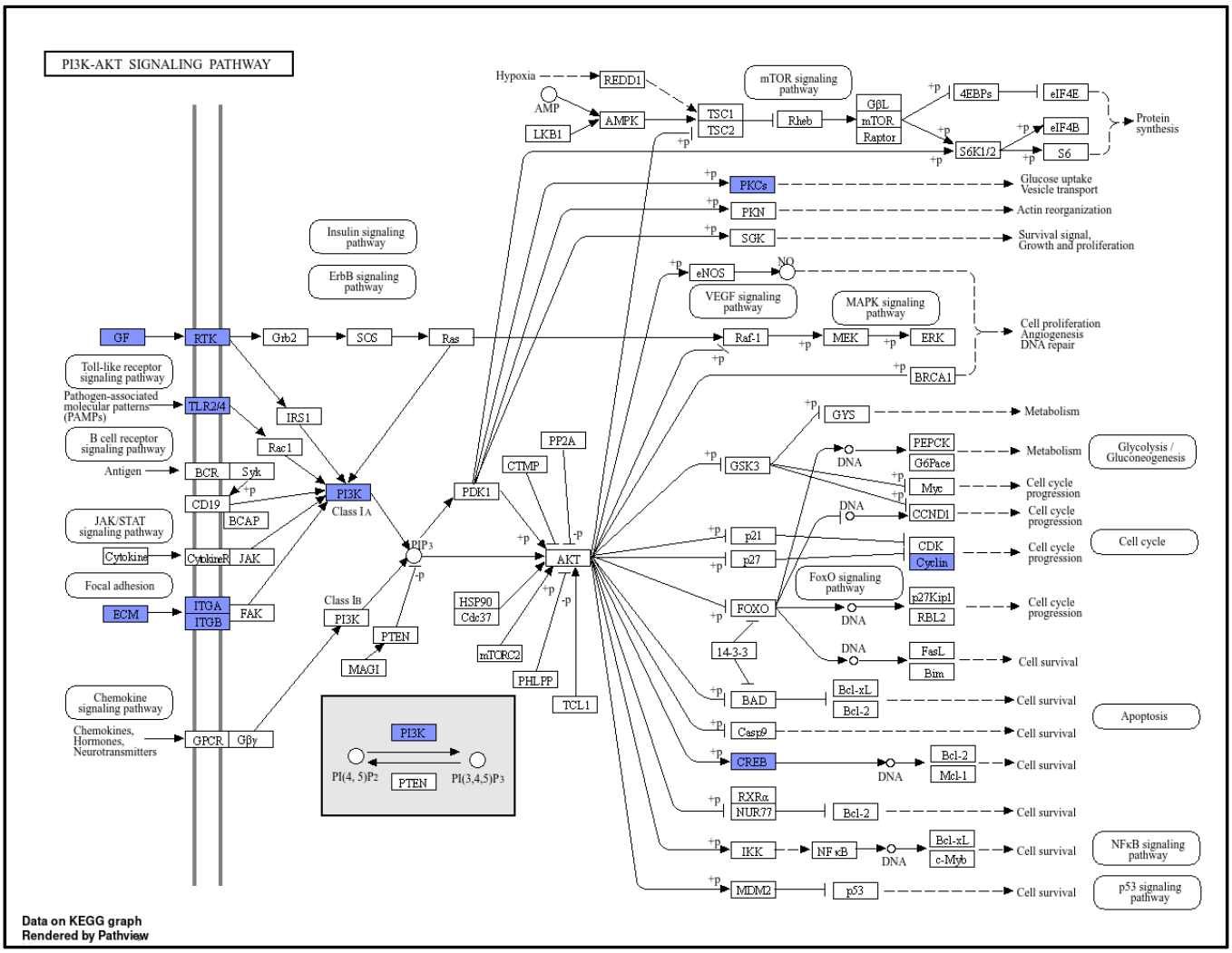
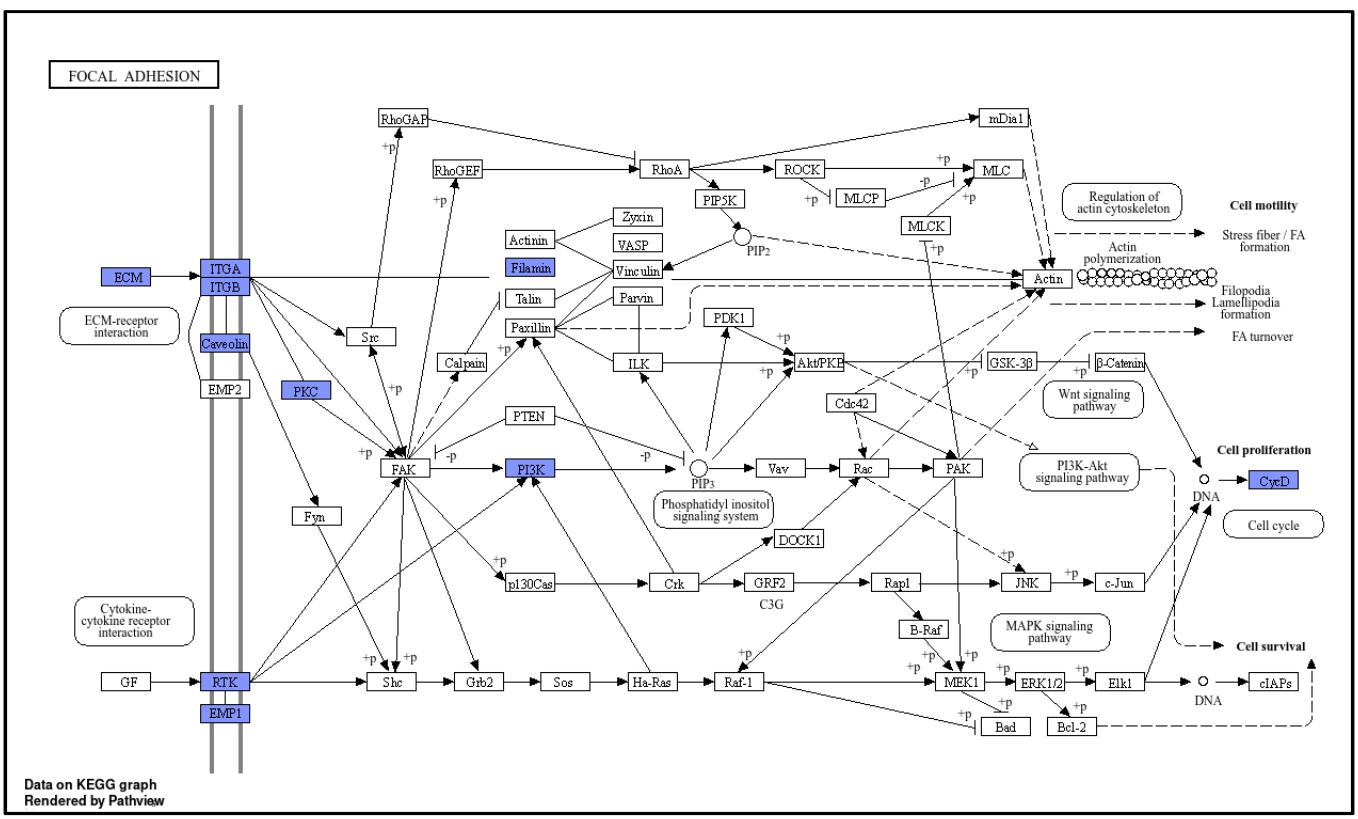
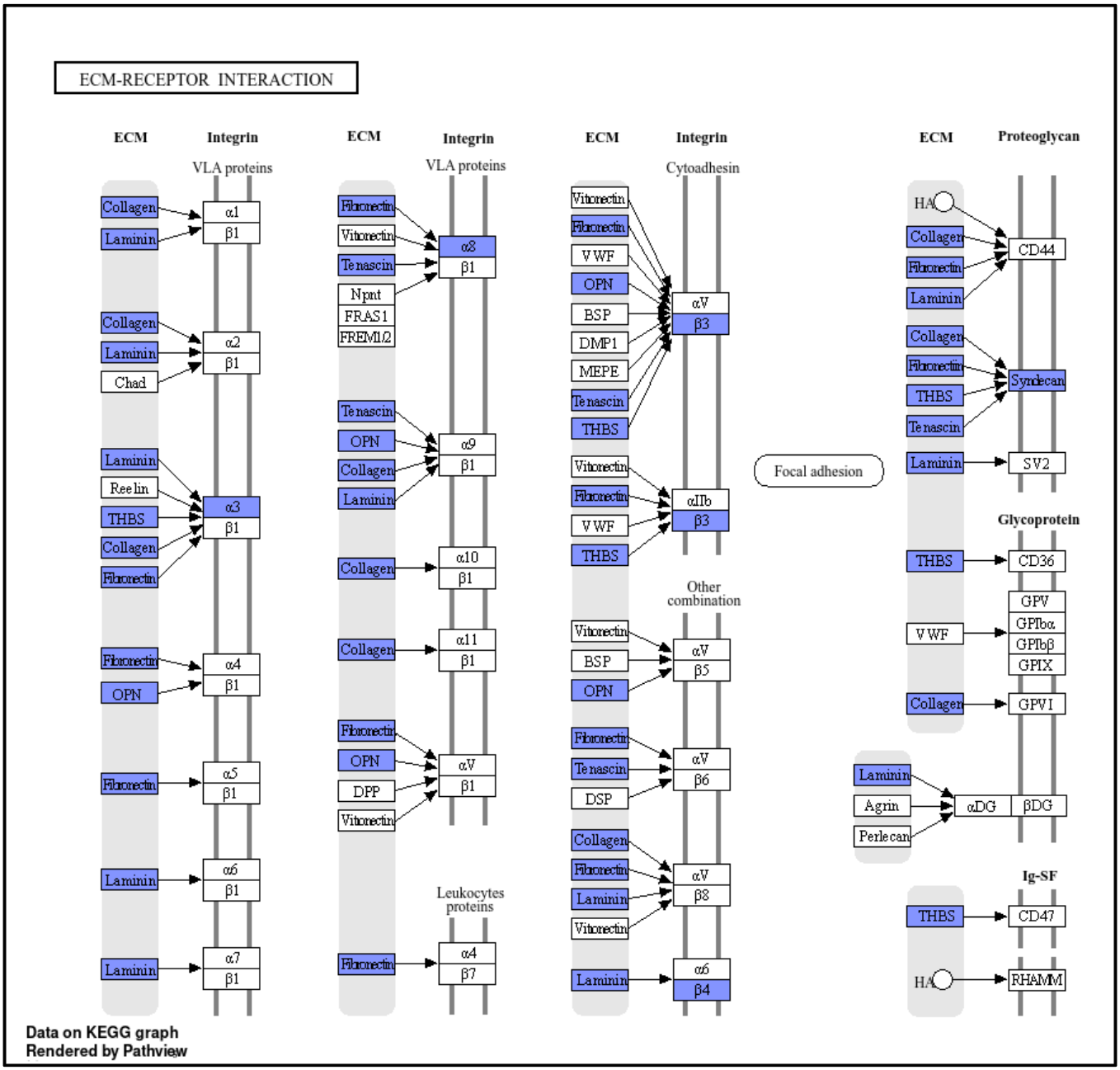
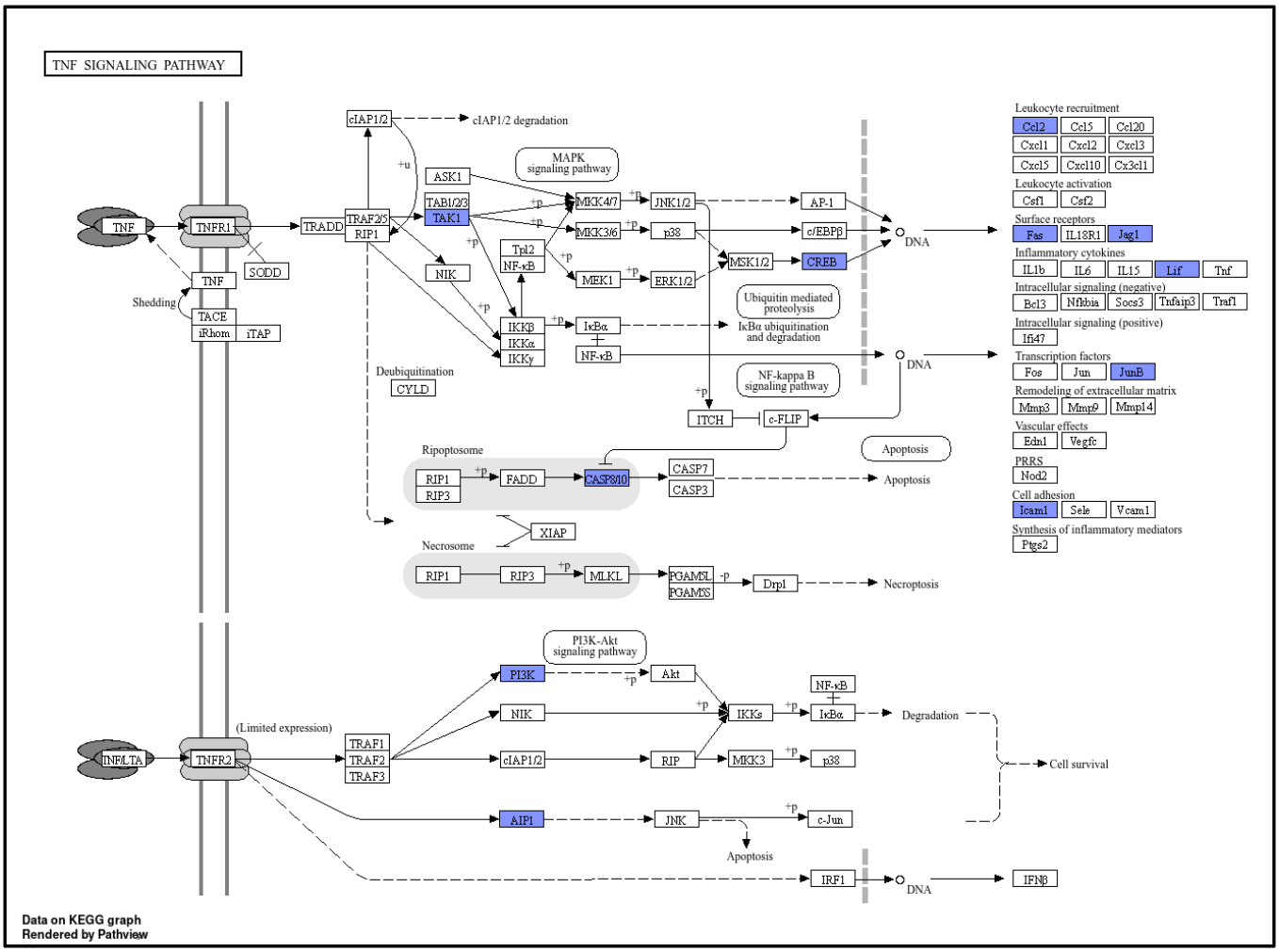

CALCIUM SIGNALING PATHWAY
NCX
PMCA
Neurotransmitter, autacoid
GPCR
Gs
ADCY
cAMP
PKA
ER/SR
PLN
Regulins
STIM
Depletion of Ca2+ stores
ORAI
Membrane depolarization
VOCs
CaV1
CaV2
CaV3
ROC
SERCA
HRC
TRDN
RYR
CASQ
JCN
IP3R
Neurotransmitter, hormone, autacoid
Gq
GF
RTK
PLCδ
PLCβ
PLCγ
PLCε
PLCζ
TCR
BCR
Antigen
Sperm
IP3
DAG
cAMP
ATP
cADPR
NAADP
NADH
ADPRcyclase
?
Acidic stores
TPC
TRPML
PI(3,5)P2
SPHK
S1P
Mitochondrion
MCU
NCX
ANT
Cyp-D
VDAC
CALM
TnC
MLCK
PHK
CaN
CAMK
TFEB
NFAT
NOS
ADCY
PDE1
FAK2
IP3 3K
PKC
Contraction
Metabolism
Apoptosis
Proliferation
Fertilization
Learning and memory
MAPK signalng pathway
Long term potentiation
Long term depression
Other signaling pathways
Phosphatidylinositol signaling pathway
Exocytosis
Secretion
Data on KEGG graph
Rendered by Pathview

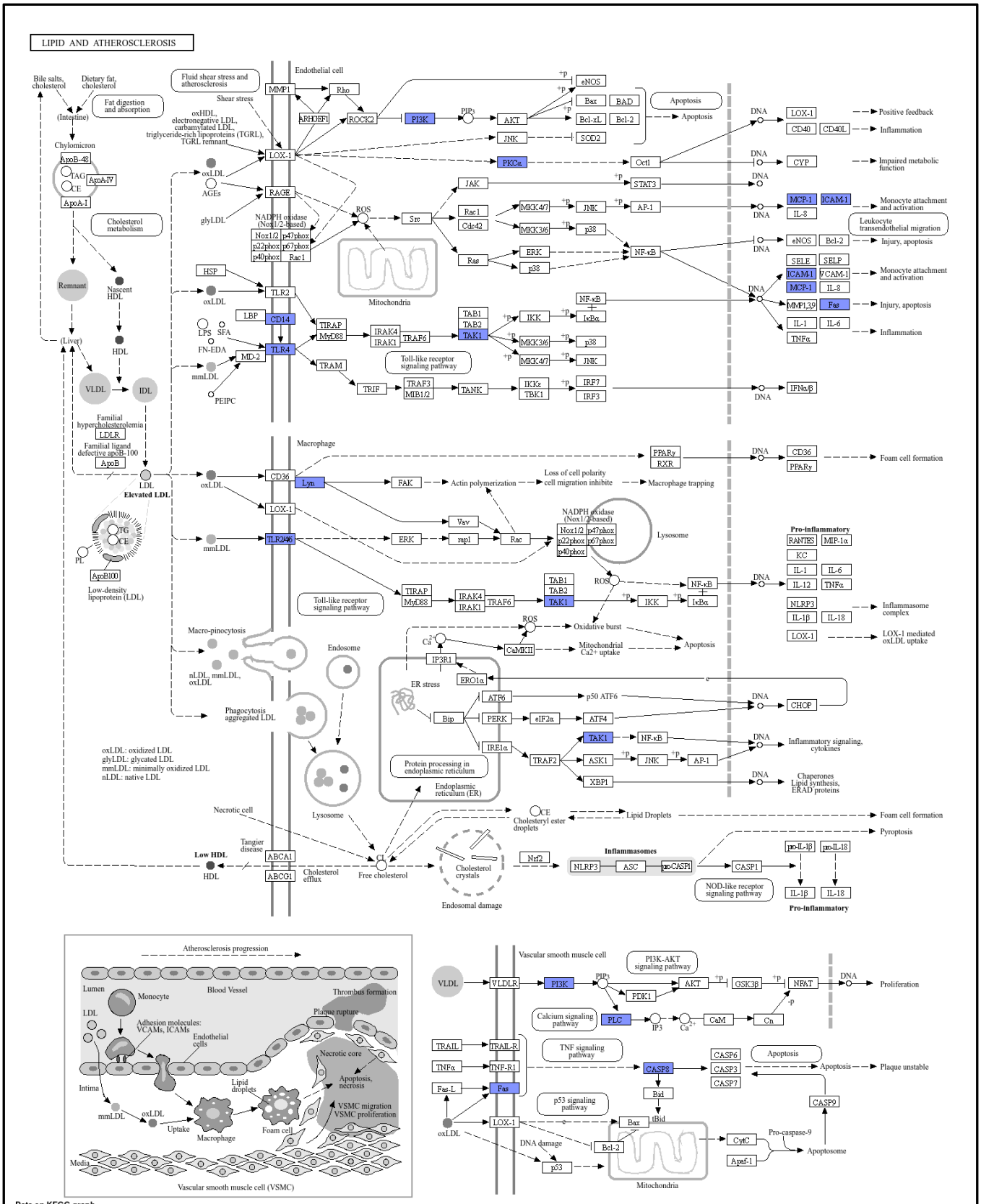

PHOSPHATIDYLINOSITOL SIGNALING SYSTEM
PI(5)P
PIKFYVE
TMEM55
PIP4K
PI(4,5)P2
PIP5K
PTEN
PIK3C
3.1.3.95
Focal adhesion
PI3K-Akt signaling pathway
3.1.3.36
Phosphatidyl-1D-myo-inositol (PI)
PI4K
PI(4)P
3.1.3.-
PI(3,5)P2
PI(3,4,5)P3
PLC
PLC
PIKFYVE
Endocytosis
PIK3C2
PIK3C3
PIK3C2
PTEN
3.1.3.64
PI(3)P
INPP4
PI(3,4)P2
3.1.3.36
SHIP
PLC
2.7.8.11
2.7.1.151
I(1,3,4,6)P4
2.7.1.159
2.7.1.140
I(1,4,5,6)P4
2.7.1.151
2.7.1.158
I(1,3,4,5,6)P5
1PP-IP5
2.7.4.21
IP6
2.7.4.24
2.7.4.24
5PP-IP5
I(1,3,4)P3
3.1.3.56
I(1,3,4,5)P4
IP3 3K
I(1,3)P2
3.1.3.66
3.1.3.64
I(1)P
3.1.3.25
I(3,4)P2
3.1.3.57
3.1.3.66
I(3)P
3.1.3.25
I(1,4,5)P3
3.1.3.56
I(1,4)P2
3.1.3.57
I(4)P
3.1.3.25
DG
2.7.1.107
PA
2.7.7.41
CDP-DG
IP3R
Ca2+
PKC
Calcium signaling pathway
CALM
Data on KEGG graph
Rendered by Pathview


PI3K-AKT SIGNALING PATHWAY
Hypoxia
REDD1
AMP
AMPK
LKB1
mTOR signaling pathway
TSC1
TSC2
Rheb
GβL
mTOR
Raptor
4EBPs
eIF4E
eIF4B
S6K1/2
S6
Protein synthesis
PKCs
PKN
SGK
Glucose uptake
Vesicle transport
Actin reorganization
Survival signal,
Growth and proliferation
Insulin signaling pathway
ErbB signaling pathway
eNOS
NO
VEGF signaling pathway
MAPK signaling pathway
GF
RTK
Grb2
SOS
Ras
Raf-1
MEK
ERK
Cell proliferation
Angiogenesis
DNA repair
BRCA1
Toll-like receptor signaling pathway
Pathogen-associated molecular patterns (PAMPs)
TLR2/4
IRS1
Rac1
B cell receptor signaling pathway
Antigen
BCR
Syk
CD19
BCAP
PI3K
Class IA
PDK1
PP2A
CTMP
JAK/STAT signaling pathway
Cytokine
CytokineR
JAK
PIP3
AKT
Focal adhesion
ECM
ITGA
ITGB
FAK
Class IB
PI3K
PTEN
MAGI
HSP90
Cdc37
mTORC2
PHLPP
TCL1
Chemokine signaling pathway
Chemokines, Hormones, Neurotransmitters
GPCR
Gβγ
PI3K
PI(4, 5)P2
PTEN
PI(3,4,5)P3
GYS
Metabolism
GSK3
PEPCK
G6Pace
Glycolysis / Gluconeogenesis
Myc
CCND1
Cell cycle progression
p21
p27
CDK
Cyclin
Cell cycle
FoxO signaling pathway
FOXO
p27Kip1
RBL2
14-3-3
FasL
Bim
Cell survival
BAD
Bcl-xL
Bcl-2
Apoptosis
Casp9
CREB
Mcl-1
RXRα
NUR77
IKK
NFκB
c-Myb
NFκB signaling pathway
MDM2
p53
p53 signaling pathway
Data on KEGG graph
Rendered by Pathview


FOCAL ADHESION
RhoGAP
RhoGEF
RhoA
ROCK
mDia1
MLC
MLCP
MLCK
PIP5K
PIP2
Regulation of actin cytoskeleton
Cell motility
Stress fiber / FA formation
Actin polymerization
Actin
Filopodia
Lamellipodia formation
FA turnover
Actinin
Filamin
Talin
Paxillin
Zyxin
VASP
Vinculin
Parvin
ECM
ITGA
ITGB
ECM-receptor interaction
Caveolin
EMP2
PKC
Src
Calpain
PDK1
ILK
Akt/PKB
GSK-3β
β-Catenin
Wnt signaling pathway
Cdc42
PTEN
FAK
PI3K
PIP3
Vav
Rac
PAK
PI3K-Akt signaling pathway
Cell proliferation
CycD
DNA
Cell cycle
Phosphatidyl inositol signaling system
DOCK1
Fyn
p130Cas
Crk
GRF2
C3G
Rap1
JNK
c-Jun
B-Raf
MAPK signaling pathway
Cell survival
Cytokine-cytokine receptor interaction
GF
RTK
EMP1
Shc
Grb2
Sos
Ha-Ras
Raf-1
MEK1
ERK1/2
Elk1
cIAPs
Bad
Bcl-2
Data on KEGG graph
Rendered by Pathview


ECM-RECEPTOR INTERACTION
ECM
Integrin
VLA proteins
Collagen
Laminin
α1
β1
Collagen
Laminin
Chad
α2
β1
Laminin
Reelin
THBS
Collagen
Fibronectin
α3
β1
Fibronectin
OPN
α4
β1
Fibronectin
α5
β1
Laminin
α6
β1
Laminin
α7
β1
ECM
Integrin
VLA proteins
Fibronectin
Vitronectin
Tenascin
Npnt
FRAS1
FREM1/2
α8
β1
Tenascin
OPN
Collagen
Laminin
α9
β1
Collagen
α10
β1
Collagen
α11
β1
Fibronectin
OPN
DPP
Vitronectin
αV
β1
Leukocytes proteins
Fibronectin
α4
β7
ECM
Integrin
Cytoadhesin
Vitronectin
Fibronectin
VWF
OPN
BSP
DMP1
MEPE
Tenascin
THBS
αV
β3
Vitronectin
Fibronectin
VWF
THBS
αIIb
β3
Other combination
Vitronectin
BSP
OPN
αV
β5
Fibronectin
Tenascin
DSP
αV
β6
Collagen
Fibronectin
Laminin
Vitronectin
αV
β8
Laminin
α6
β4
Focal adhesion
ECM
Proteoglycan
HA
Collagen
Fibronectin
Laminin
CD44
Collagen
Fibronectin
THBS
Tenascin
Syndecan
Laminin
SV2
Glycoprotein
THBS
CD36
VWF
GPV
GPIbα
GPIbβ
GPIX
Collagen
GPVI
Laminin
Agrin
Perlecan
αDG
βDG
Ig-SF
THBS
CD47
HA
RHAMM
Data on KEGG graph
Rendered by Pathview


TNF SIGNALING PATHWAY
cIAP1/2
cIAP1/2 degradation
MAPK signaling pathway
ASK1
TAB1/2/3
TAK1
MKK4/7
JNK1/2
AP-1
MKK3/6
p38
c/EBPβ
DNA
TNF
TNFR1
TRADD
TRAF2/5
RIP1
Tpl2
NF-κB
MEK1
ERK1/2
MSK1/2
CREB
NIK
SODD
Shedding
TACE
iRhom
iTAP
IKKβ
IKKα
IKKγ
IκBα
NF-κB
Ubiquitin mediated proteolysis
IκBα ubiquitination and degradation
Deubiquitination
CYLD
NF-kappa B signaling pathway
ITCH
c-FLIP
Ripoptosome
RIP1
RIP3
FADD
CASP8/10
CASP7
CASP3
Apoptosis
XIAP
Necrosome
MLKL
PGAM5L
PGAM5S
Drp1
Necroptosis
Leukocyte recruitment
Ccl2
Ccl5
Ccl20
Cxcl1
Cxcl2
Cxcl3
Cxcl5
Cxcl10
Cx3cl1
Leukocyte activation
Csf1
Csf2
Surface receptors
Fas
IL18R1
Jag1
Inflammatory cytokines
IL1b
IL6
IL15
Lif
Tnf
Intracellular signaling (negative)
Bcl3
Nfkbia
Socs3
Tnfaip3
Traf1
Intracellular signaling (positive)
Ifi47
Transcription factors
Fos
Jun
JunB
Remodeling of extracellular matrix
Mmp3
Mmp9
Mmp14
Vascular effects
Edn1
Vegfc
PRRS
Nod2
Cell adhesion
Icam1
Sele
Vcam1
Synthesis of inflammatory mediators
Ptgs2
PI3K-Akt signaling pathway
PI3K
Akt
NF-κB
NIK
IKKs
IκBα
Degradation
(Limited expression)
TNFLTA
TNFR2
TRAF1
TRAF2
TRAF3
cIAP1/2
RIP
MKK3
p38
Cell survival
AIP1
JNK
c-Jun
Apoptosis
IRF1
DNA
IFNβ
Data on KEGG graph
Rendered by Pathview


LIPID AND ATHEROSCLEROSIS
Endothelial cell
Fluid shear stress and atherosclerosis
Shear stress
oxHDL, electronegative LDL, carbamylated LDL, triglyceride-rich lipoproteins (TGRL), TGRL remnant
Bile salts, cholesterol
Dietary fat, cholesterol
Fat digestion and absorption
(Intestine)
Chylomicron
ApoB-48
TAG
CE
ApoA-IV
ApoA-I
Cholesterol metabolism
Remnant
Nascent HDL
(Liver)
HDL
VLDL
IDL
Familial hypercholesterolemia
LDLR
Familial ligand defective apoB-100
ApoB
LDL
Elevated LDL
TG
CE
PL
ApoB100
Low-density lipoprotein (LDL)
MMP1
Rho
ROCK2
ARHGEF1
PI3K
PIP3
AKT
eNOS
Bax
BAD
Bcl-xL
Bcl-2
JNK
SOD2
Apoptosis
LOX-1
oxLDL
AGEs
glyLDL
RAGE
NADPH oxidase (Nox1/2-based)
Nox1/2
p47phox
p22phox
p67phox
p40phox
Rac1
ROS
Src
Mitochondria
JAK
STAT3
Rac1
Cdc42
Ras
MKK4/7
MKK3/6
ERK
p38
JNK
AP-1
NF-κB
NF-κB
IκBα
HSP
TLR2
oxLDL
LBP
CD14
LPS
SFA
FN-EDA
TLR4
MD-2
mmLDL
PEIPC
TIRAP
MyD88
IRAK4
IRAK1
TRAF6
TRAM
TRIF
TRAF3
MIB1/2
TANK
TAB1
TAB2
TAK1
IKK
MKK3/6
MKK4/7
p38
JNK
IKKε
TBK1
IRF7
IRF3
Toll-like receptor signaling pathway
DNA
LOX-1
CD40
CD40L
Positive feedback
Inflammation
CYP
Impaired metabolic function
MCP-1
ICAM1
IL-8
Monocyte attachment and activation
Leukocyte transendothelial migration
eNOS
Bcl-2
Injury, apoptosis
SELE
SELP
ICAM1
VCAM-1
MCP-1
IL-8
Monocyte attachment and activation
MMP1,3,9
Fas
Injury, apoptosis
IL-1
IL-6
TNFα
Inflammation
IFNα/β
Macrophage
CD36
Lyn
FAK
Actin polymerization
Loss of cell polarity
cell migration inhibite
Macrophage trapping
PPARγ
RXR
Foam cell formation
Vav
ERK
rap1
Rac
NADPH oxidase (Nox1/2-based)
Lysosome
Pro-inflammatory
RANTES
MIP-1α
KC
IL-1
IL-6
IL-12
TNFα
NLRP3
IL-1β
IL-18
Inflammasome complex
LOX-1
LOX-1 mediated oxLDL uptake
Macro-pinocytosis
Endosome
nLDL, mmLDL, oxLDL
Phagocytosis aggregated LDL
oxLDL: oxidized LDL
glyLDL: glycated LDL
mmLDL: minimally oxidized LDL
nLDL: native LDL
Ca2+
CaMKII
Oxidative burst
Mitochondrial Ca2+ uptake
Apoptosis
IP3R1
ER stress
ERO1α
Bip
ATF6
p50 ATF6
PERK
eIF2α
ATF4
CHOP
IRE1α
TRAF2
ASK1
TAK1
NF-κB
JNK
AP-1
XBP1
Inflammatory signaling, cytokines
Chaperones Lipid synthesis, ERAD proteins
Protein processing in endoplasmic reticulum
Endoplasmic reticulum (ER)
Necrotic cell
Lysosome
CE
Cholesteryl ester droplets
Lipid Droplets
Foam cell formation
Pyroptosis
Tangier disease
Low HDL
HDL
ABCA1
ABCG1
Cholesterol efflux
Free cholesterol
Cholesterol crystals
Endosomal damage
Nrf2
Inflammasomes
NLRP3
ASC
proCASP1
CASP1
pro-IL-1β
pro-IL-18
IL-1β
IL-18
Pro-inflammatory
NOD-like receptor signaling pathway
Atherosclerosis progression
Lumen
Blood Vessel
Monocyte
Thrombus formation
LDL
Plaque rupture
Adhesion molecules: VCAMs, ICAMs
Endothelial cells
Necrotic core
Intima
Lipid droplets
Apoptosis, necrosis
mmLDL
oxLDL
Uptake
Macrophage
Foam cell
VSMC migration
VSMC proliferation
Media
Vascular smooth muscle cell (VSMC)
Vascular smooth muscle cell
VLDL
VLDLR
PI3K
PIP3
PI3K-AKT signaling pathway
PDK1
AKT
GSK3β
NFAT
Proliferation
Calcium signaling pathway
PLC
IP3
Ca2+
CaM
Cn
TRAIL
TRAIL-R
TNF signaling pathway
TNFα
TNF-R1
Fas-L
Fas
CASP8
CASP6
CASP3
CASP7
Apoptosis
Apoptosis
Plaque unstable
Bid
CASP9
p53 signaling pathway
LOX-1
oxLDL
Bax
tBid
DNA damage
Bcl-2
p53
CytC
Pro-caspase-9
Apaf-1
Apoptosome
Mitochondria
Data on KEGG graph
Rendered by Pathview