Proliferation

INPUT 4: XDNAdamage == 0, XDNAdamage\_high == 0, XIGF1 == 1, XlowNutrition == 0

OUTPUT 4: XATG13 == 0, XATG5 == 0, XATM/ATR == 0, XATM/ATR\_2 == 0, XCASP3 == 0, XE2F1 == 1, XEIF4EBP1 == 0, XIL1B == 0, XIL6 == 0, XMTOR == 1, XNFKB1 == 0, XRB1 == 0, XS6K1 == 1, XTNF == 0, XTP53 == 0, XTP53\_s46 == 0, XULK1 == 0

Extra: XADP/ATP == 0, XAMP/ATP == 0, XAMPK == 0, XATP == 1, XCASP9 == 0, XCDK4 == 1, XCDKN1A == 0, XCDKN2A == 0, XNFKBIE == 1

Unit step function: H(x); W > 0

H(-WPIK3CA \* XPIK3CA + bABL1) = XABL1

-WATP +bADP/ATP < 0

H(WPDK1 \* XPDK1 – WPPARGC1A \* XPPARGC1A + bAKT1) = XAKT1

-WATP + bAMP/ATP < 0

bAMPK < 0

bATG13 < 0

bATG5 < 0

WFOXO3 \* XFOXO3 + bATM/ATR < 0

bATM/ATR\_2 < 0

WGlycolysis + WTCA cycle + bATP > 0

H(-WSIRT1 \* XSIRT1 - WBCL2 \* XBCL2 – WAKT1 \* XAKT1 + bBAX) = XBAX

H(WMAPK1 \* XMAPK1 – WFOXO3 \* XFOXO3 + WAKT1 \* XAKT1 + bBCL2) = XBCL2

WBAX \* XBAX + bCASP3 < 0

WABL1 \* XABL1 + WBAX \* XBAX – WAKT1 \* XAKT1 – WMAPK1 \* XMAPK1 + bCASP9 < 0

bCDK4 > 0

WFOXO3 \* XFOXO3 – WAKT1 \* XAKT1 + bCDKN1A < 0

WMAPK14 \* XMAPK14 – WAKT1 \* XAKT1 + bCDKN2A < 0

bE2F1 > 0

-WMAPK1 \* XMAPK1 – WMTOR + bEIF4EBP1 < 0

H(WMAPK14 \* XMAPK14 + WSIRT1 \* XSIRT1 – WMAPK1 \* XMAPK1 – WSGK1 \* XSGK1 – WMDM2 \* XMDM2 – WAKT1 \* XAKT1 + bFOXO3) = XFOXO3

H(WFOXO3 \* XFOXO3 + bG6PC) = XG6PC

H(WSLC2A4 \* XSLC2A4 + bGlucose) = XGlucose

WG6PC \* XG6PC + WGlucose \* XGlucose + bGlycolysis > 0

bHIPK2 < 0

WIGF1 + bIGF1R > 0

WPDK1 \* XPDK1 + WAKT1 \* XAKT1 – WNFKBIE + bIKBKB < 0

bIL1B < 0

bIL6 < 0

bINSR > 0

WINSR + WIGF1R – WS6K1 + bIRS1 > 0

WINSR + WIGF1R + bKRAS > 0

H(WROS \* XROS + bMAP2K3/MAP2K6) = XMAP2K3/MAP2K6

H(WKRAS + bMAPK1) = XMAPK1

H(WMAP2K3/MAP2K6 \* XMAP2K3/MAP2K6 + bMAPK14) = XMAPK14

H(WAKT1 \* XAKT1 – WABL1 \* XABL1 – WS6K1 + bMDM2) = XMDM2

WAKT1 \* XAKT1 + WROS \* XROS + WRHEB \* XRHEB – WABL1 \* XABL1 + bMTOR > 0

bNAD+ < 0

-WSIRT1 \* XSIRT1 – WNFKBIE + bNFKB1 < 0

bNFKBIE > 0

H(WPIK3CA \* XPIK3CA – WPTEN \* XPTEN + bPDK1) = XPDK1

WKRAS + WIRS1 + bPIK3CA > 0

H(WE2F1 + WSIRT1 \* XSIRT1 + WMTOR + bPPARGC1A) = XPPARGC1A

H(–WAKT1 \* XAKT1 + bPTEN) = XPTEN

-WCDK4 – WMDM2 \* XMDM2 + bRB1 < 0

H(-WTSC2 \* XTSC2 + bRHEB) = XRHEB

H(WTCA cycle – WSOD2 \* XSOD2 + bROS) = XROS

WMTOR + bS6K1 > 0

H(WPDK1 \* XPDK1 + bSGK1) = XSGK1

H(WFOXO3 \* XFOXO3 - WE2F1 + bSIRT1) = XSIRT1

H(WAKT1 \* XAKT1 + WPPARGC1A \* XPPARGC1A + bSLC2A4) = XSLC2A4

H(WFOXO3 \* XFOXO3 + bSOD2) = XSOD2

WGlycolysis + bTCA cycle > 0

bTNF < 0

WMAPK14 \* XMAPK14 – WSIRT1 \* XSIRT1 – WMDM2 \* XMDM2 + bTP53 < 0

WMAPK14 \* XMAPK14 – WSIRT1 \* XSIRT1 – WMDM2 \* XMDM2 +bTP53\_s46 < 0

H(WSIRT1 \* XSIRT1 – WAKT1 \* XAKT1 – WMAPK1 \* XMAPK1 + bTSC2) = XTSC2

-WMTOR + bULK1 < 0

Derived

XHIPK2 == 0

XIGF1R == 1

XINSR == 1

XKRAS == 1

XNAD+ == 0

XIKBKB == 0

XGlycolysis == 1

XTCA cycle == 1

XIRS1 == 1