Supplementary Material 2. Differential Equations:

dTCRdt = 1 / (1 + e ** (-b * (WTCR - .5))) - DTCR * TCR

dCD28dt = 1 / (1 + e ** (-b * (WCD28 - .5))) - DCD28 * CD28

dAP1dt = 1 / (1 + e ** (-b * (WAP1 - .5))) - DAP1 * AP1

dCD25dt = 1 / (1 + e ** (-b * (WCD25 - .5))) - DCD25 * CD25

dIL2Gdt = 1 / (1 + e ** (-b * (WIL2G - .5))) - DIL2G * IL2G

dIL2Edt = 1 / (1 + e ** (-b * (WIL2E - .5))) - DIL2E * IL2E

dMTORdt = 1 / (1 + e ** (-b * (WMTOR - .5))) - DMTOR * MTOR

dZAP70dt = 1 / (1 + e ** (-b * (WZAP70 - .5))) - DZAP70 * ZAP70

dSTAT5dt = 1 / (1 + e ** (-b * (WSTAT5 - .5))) - DSTAT5 * STAT5

dNFATdt = 1 / (1 + e ** (-b * (WNFAT - .5))) - DNFAT * NFAT

dNFKBdt = 1 / (1 + e ** (-b * (WNFKB - .5))) - DNFKB * NFKB

dAKTdt = 1 / (1 + e ** (-b * (WAKT - .5))) - DAKT * AKT

dCTLA4dt = 1 / (1 + e ** (-b * (WCTLA4 - .5))) - DCTLA4 * CTLA4

dCTLA4DIMdt = 1 / (1 + e ** (-b * (WCTLA4DIM - .5))) - DCTLA4DIM * CTLA4DIM

dBCL2dt = 1 / (1 + e ** (-b * (WBCL2 - .5))) - DBCL2 * BCL2

dNDRG1dt = 1 / (1 + e ** (-b * (WNDRG1 - .5))) - DNDRG1 * NDRG1

dDAGdt = 1 / (1 + e ** (-b * (WDAG - .5))) - DDAG * DAG

dSOSdt = 1 / (1 + e ** (-b * (WSOS - .5))) - DSOS * SOS

dRASGTPRdt = 1 / (1 + e ** (-b * (WRASGTPR - .5))) - DRASGTPR * RASGTPR

dlCKdt = 1 / (1 + e ** (-b * (WLCK - .5))) - DLCK * LCK

dDPK1dt = 1 / (1 + e ** (-b * (WPDK1 - .5))) - DPK1 * PDK1

dlLATdt = 1 / (1 + e ** (-b * (WLAT - .5))) - DLAT * LAT

dPLCdt = 1 / (1 + e ** (-b * (WPLC - .5))) - DPLC * PLC

dPI3Kdt = 1 / (1 + e ** (-b * (WPI3K - .5))) - DPI3K * PI3K

dPIP2dt = 1 / (1 + e ** (-b * (WPIP2 - .5))) - DPIP2 * PIP2
\[
\begin{align*}
\text{dPIP3dt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WIP3} - 0.5)}} \cdot \text{dPIP3} \cdot \text{PIP3} \\
\text{dIP3dt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WIP3} - 0.5)}} \cdot \text{dIP3} \cdot \text{IP3} \\
\text{dCA} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WCA} - 0.5)}} \cdot \text{dCA} \cdot \text{CA} \\
\text{dPKCdt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WPKC} - 0.5)}} \cdot \text{dPKC} \cdot \text{PKC} \\
\text{dTETdt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WTET} - 0.5)}} \cdot \text{dTET} \cdot \text{TET} \\
\text{dIFNGdt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WIFNG} - 0.5)}} \cdot \text{dIFNG} \cdot \text{IFNG} \\
\text{dGATA3dt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WGATA3} - 0.5)}} \cdot \text{dGATA3} \cdot \text{GATA3} \\
\text{dIL4dt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WIL4} - 0.5)}} \cdot \text{dIL4} \cdot \text{IL4} \\
\text{dFOXP3dt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WFOXP3} - 0.5)}} \cdot \text{dFOXP3} \cdot \text{FOXP3} \\
\text{dIL10dt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WIL10} - 0.5)}} \cdot \text{dIL10} \cdot \text{IL10} \\
\text{dTGFBDt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WTGF} - 0.5)}} \cdot \text{dTGF} \cdot \text{TGF} \\
\text{dRORGTdt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WRORGT} - 0.5)}} \cdot \text{dRORGT} \cdot \text{RORGT} \\
\text{dIL21dt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WIL21} - 0.5)}} \cdot \text{dIL21} \cdot \text{IL21} \\
\text{dIL17dt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WIL17} - 0.5)}} \cdot \text{dIL17} \cdot \text{IL17} \\
\text{dBCL6dt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WBCL6} - 0.5)}} \cdot \text{dBCL6} \cdot \text{BCL6} \\
\text{dIL9dt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WIL9} - 0.5)}} \cdot \text{dIL9} \cdot \text{IL9} \\
\text{dCD40Ldt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WCD40L} - 0.5)}} \cdot \text{dCD40L} \cdot \text{CD40L} \\
\text{dMTORC1dt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WMTORC1} - 0.5)}} \cdot \text{dMTORC1} \cdot \text{MTORC1} \\
\text{dMTORC2dt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WMTORC2} - 0.5)}} \cdot \text{dMTORC2} \cdot \text{MTORC2} \\
\text{dLKB1dt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WLKB1} - 0.5)}} \cdot \text{dLKB1} \cdot \text{LKB1} \\
\text{dAMPKdt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WAMPK} - 0.5)}} \cdot \text{dAMPK} \cdot \text{AMPK} \\
\text{dGlycolysisdt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WGlycolysis} - 0.5)}} \cdot \text{dGlycolysis} \cdot \text{Glycolysis} \\
\text{dOXPHOSdt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WOXPHOS} - 0.5)}} \cdot \text{dOXPHOS} \cdot \text{OXPHOS} \\
\text{dAMPATPratio} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WAMPATPratio} - 0.5)}} \cdot \text{dAMPATPratio} \cdot \text{AMPATPratio} \\
\text{dHIF1Adt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WHIF1A} - 0.5)}} \cdot \text{dHIF1A} \cdot \text{HIF1A} \\
\text{dGLUTAMINOLISISdt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WGLUTAMINOLISIS} - 0.5)}} \cdot \text{dGLUTAMINOLISIS} \cdot \text{GLUTAMINOLISIS} \\
\text{dAKGdt} &= \frac{1}{1 + e^{-1.5 \cdot (\text{WAKG} - 0.5)}} \cdot \text{dAKG} \cdot \text{AKG}
\end{align*}
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