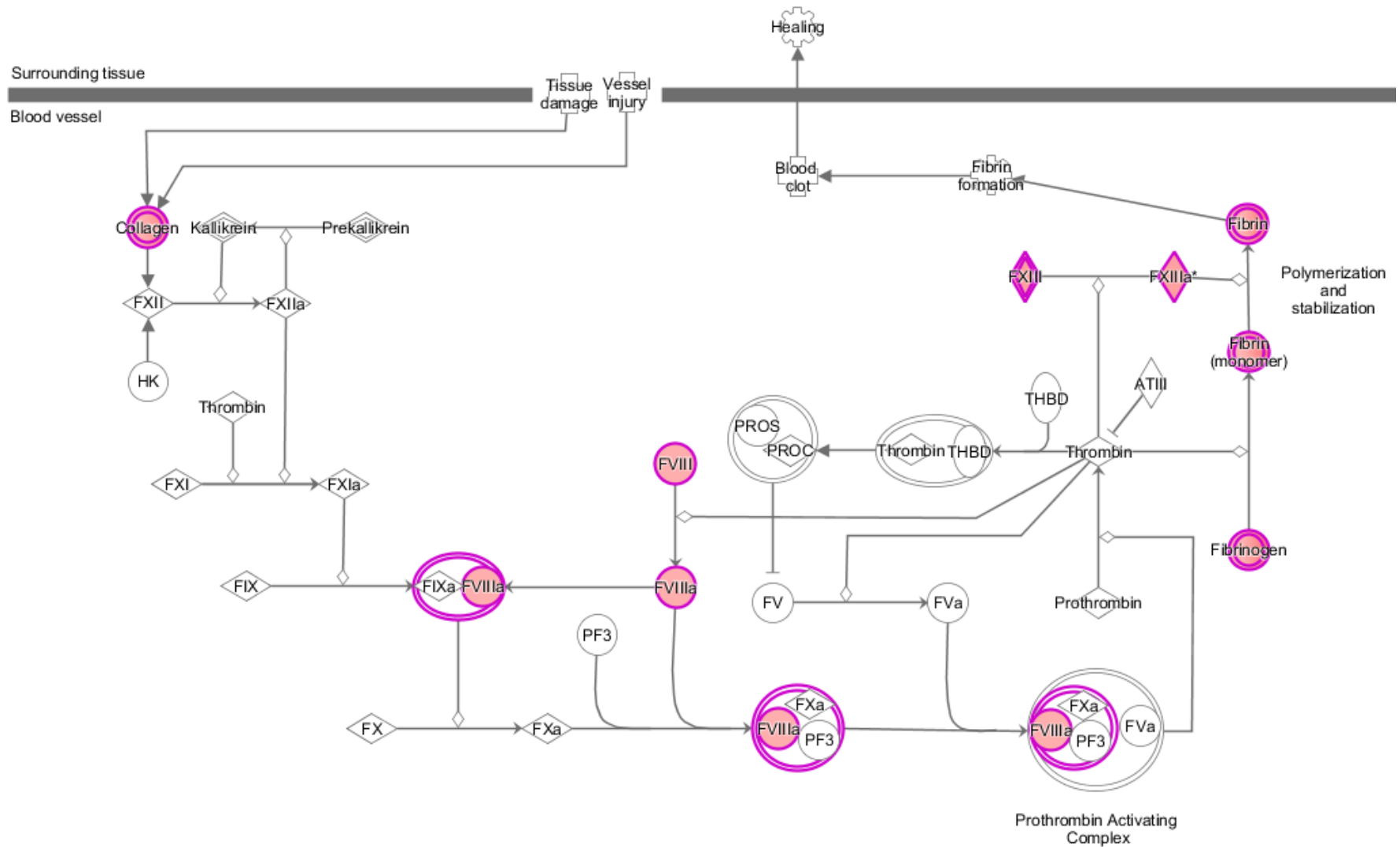


Supplementary data 11

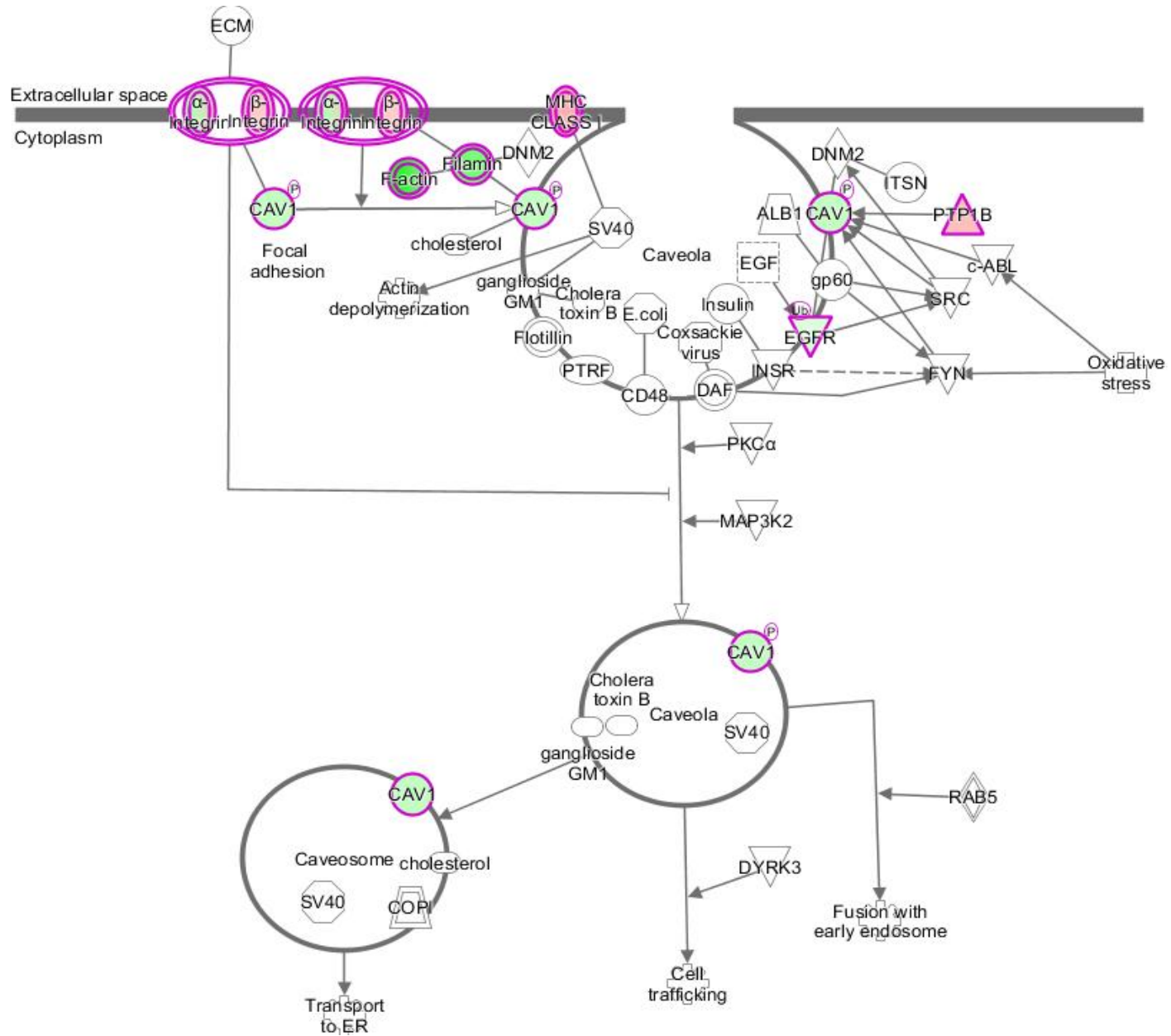
Statistically significant canonical pathways derived from differentially abundant proteins between grade III of astrocytoma neovascularization vessels and controls

1. Intrinsic prothrombin activation pathway
2. Caveolar-mediated endocytosis signaling
3. Hepatic fibrosis-Hepatic stellate cell activation
4. Atherosclerosis signaling
5. Calcium signaling
6. Antigen presentation pathway
7. phagosome maturation
8. Glutamate receptor signaling
9. Leukocyte extravasation signaling
10. Coagulation system
11. Epithelial adherens junction signaling
12. Neuropathic pain signaling in dorsal horn neurons
13. Agranulocyte adhesion and diapedesis
14. Signaling by Rho Family GTPases
15. Clathrin-mediated endocytosis signaling
16. Integrin signaling
17. Spliceosomal Cycle
18. Dendritic Cell maturation
19. Virus entry via endocytic pathways
20. Complement system
21. nNOS signaling in Neurons
22. Inhibition of Angiogenesis by TSP1
23. Inhibition of Matrix metalloproteases
24. Agrin Interactions at neuromuscular junction
25. Extrinsic Prothrombin Activation Pathway
26. Granulocyte adhesion and diapedesis
27. Actin Cytoskeleton signaling
28. Synaptic long term potentiation
29. Production of nitric oxide and reactive oxygen species in macrophages
30. Sertoli Cell-Sertoli Cell junction signaling
31. Axonal Guidance signaling
32. ILK signaling
33. EIF2 Signaling
34. Acute Phase response signaling
35. Cleavage and Polydenylation of Pre-mRNA
36. Remodeling of epithelial adherens junctions
37. CREB signaling in neurons
38. RhoGDI signaling
39. Bladder cancer signaling
40. Germ cell-sertoli cell junction signaling
41. Amyotrophic Lateral sclerosis signaling
42. Crosstalk between Dendritic cells natural killer cells
43. FAK signaling
44. LXR RXR activation
45. Gap junction signaling
46. Regulation of actin-based motility by Rho
47. D-myo-inositol-5-phosphate metabolism
48. 3-phosphoinositide degradation
49. Protein citrullination
50. D-myo-inositol(1,4,5,6)-Tetrakisphosphate biosynthesis
51. D-myo-inositol(3,4,5,6)-tetrakisphosphate biosynthesis
52. Ethanol Degradation II
53. G Beta Gamma signaling
54. Histamine Degradation
55. Paxillin signaling
56. Cellular effects of sildenafil(viagra)
57. PKC signaling in T Lymphocytes
58. Autoimmune thyroid disease signaling
59. Allograft rejection signaling
60. Ethanol Degradation IV
61. IL-8 signaling
62. Calcium-induced T Lymphocyte Apoptosis
63. Airway Pathology in chronic obstructive pulmonary disease
64. 3-phosphoinositide biosynthesis
65. Huntington's disease signaling
66. OX40 signaling pathway
67. phagosome formation
68. Communication between innate and adaptive immune cells
69. Synaptic long term depression
70. Superpathway of inositol phosphate compounds
71. Systemic Lupus Erythematosus signaling
72. GABA Receptor signaling
73. Noradrenaline and Adrenaline Degradation
74. Role of NFAT in regulation of the immune response
75. NF-KB Activation by viruses
76. STATS Pathway
77. Androgen signaling
78. IL-1 signaling
79. Glutaryl CoA Degradation
80. Guanosine Nucleotides degradation III
81. Fatty Acid α -oxidation
82. Superoxide radicals degradation
83. FXR RXR Activation
84. Nur77 signaling in T Lymphocytes
85. Regulation of cellular mechanics by calpain protease
86. Tec Kinase signaling
87. PPAR α RXR α Activation
88. Mechanism of viral exit from host cells

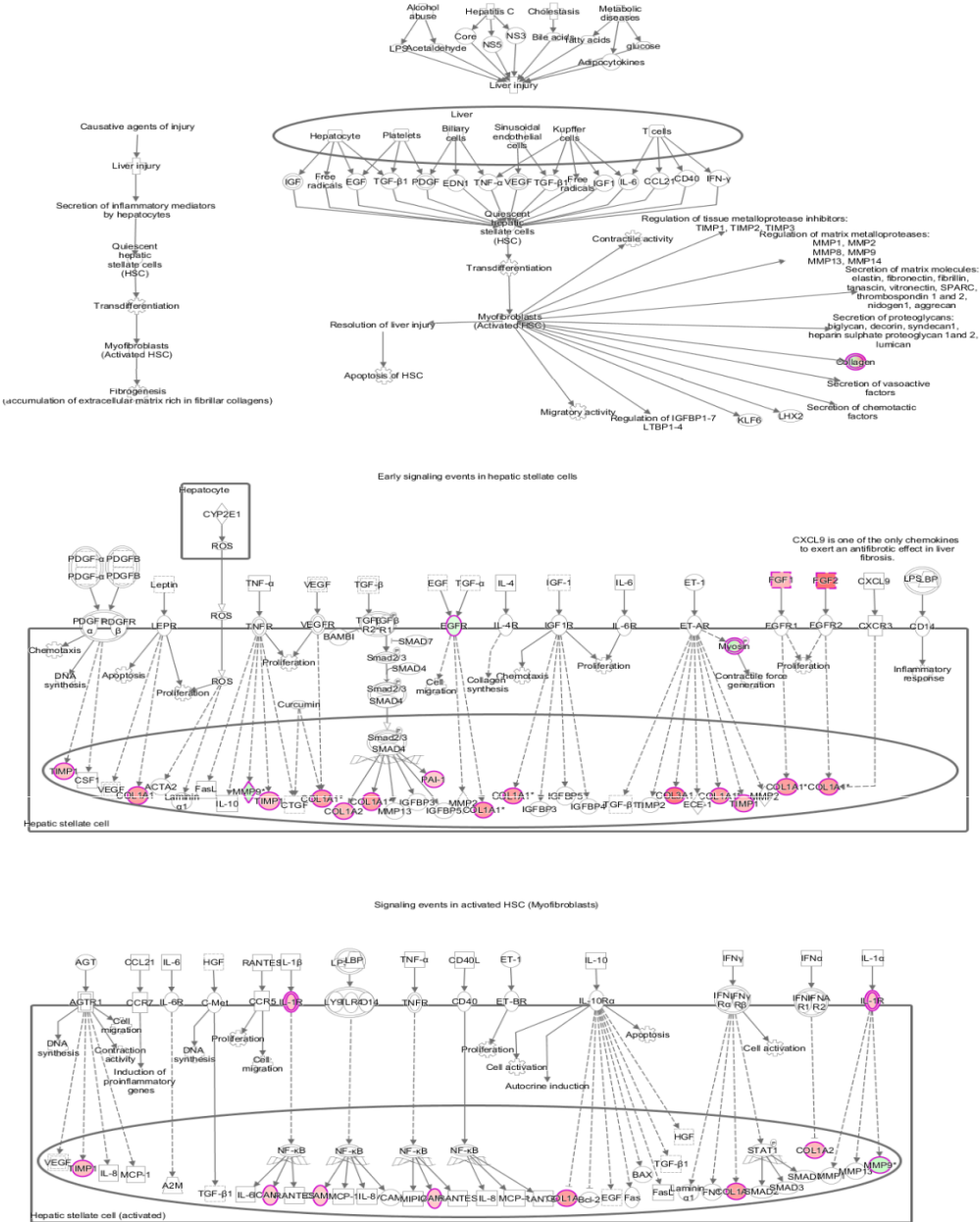
1. Intrinsic prothrombin activation pathway



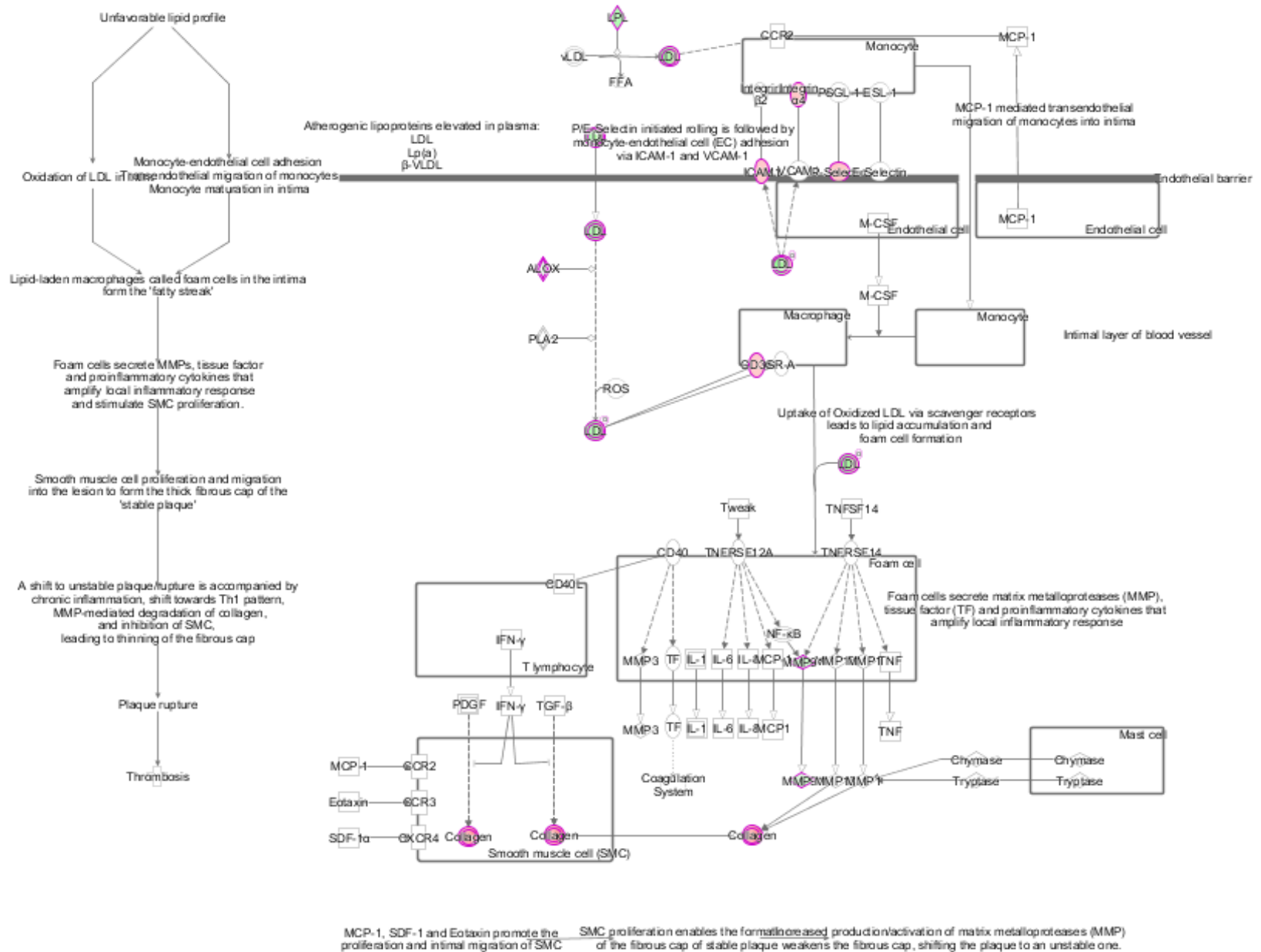
2. Caveolar-mediated endocytosis signaling



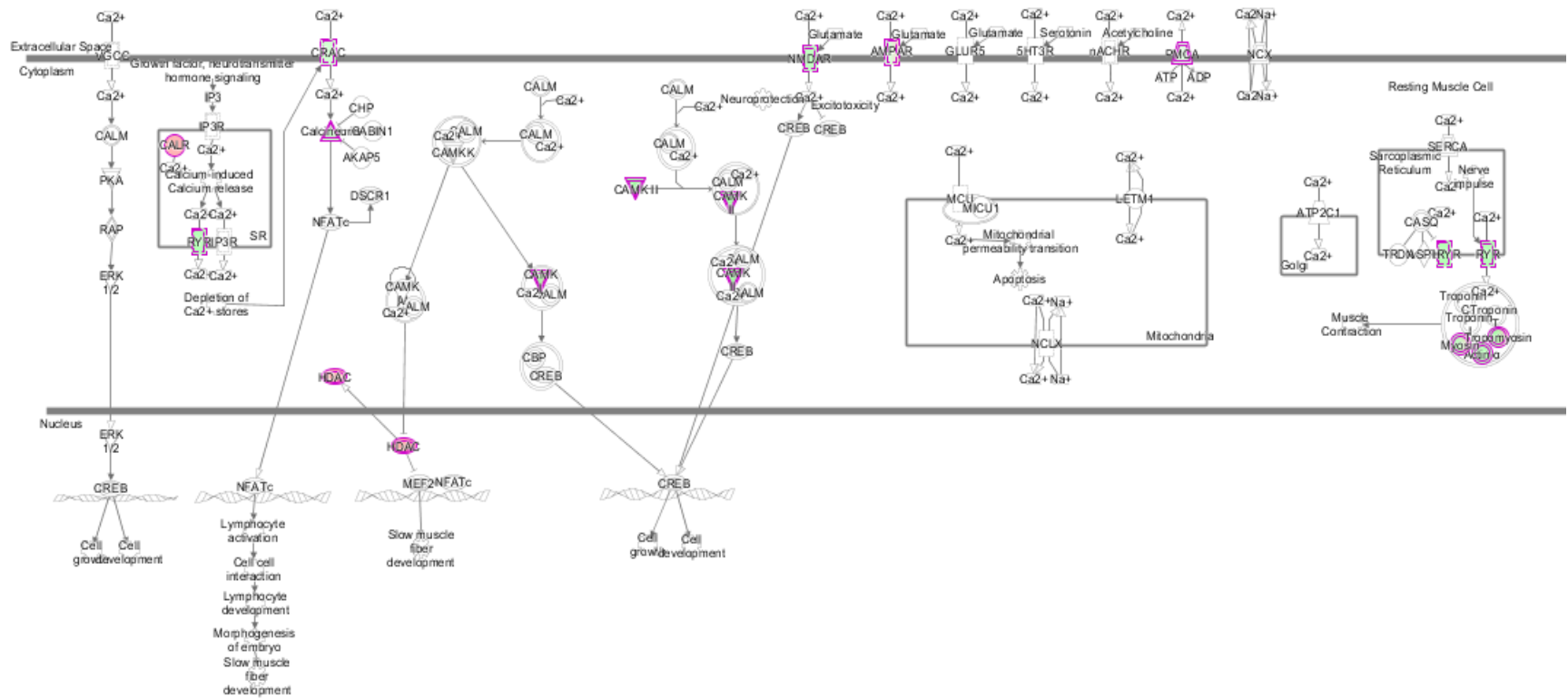
3. Haptic fibrosis-Hepatic stellate cell activation



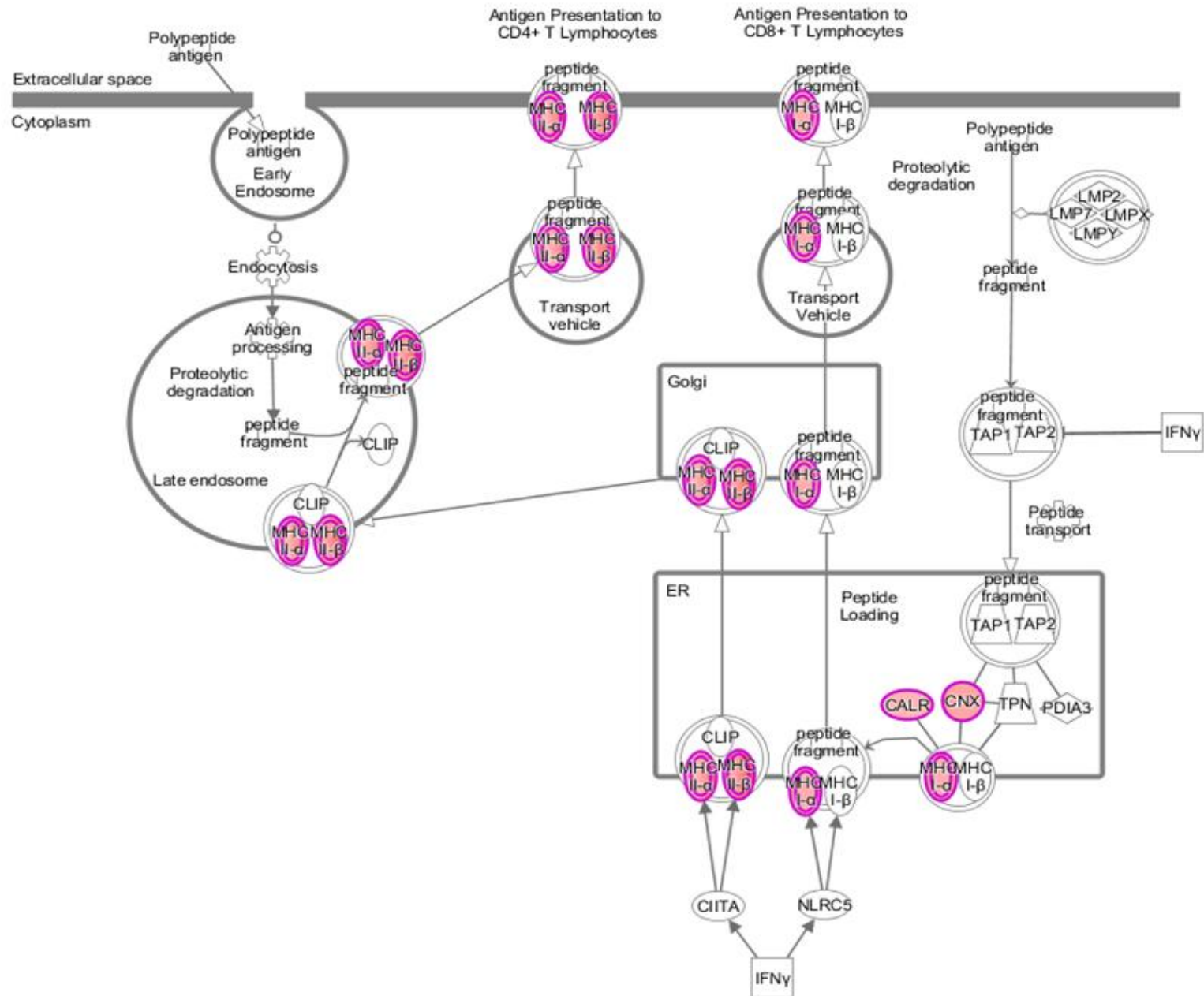
4. Atherosclerosis signaling



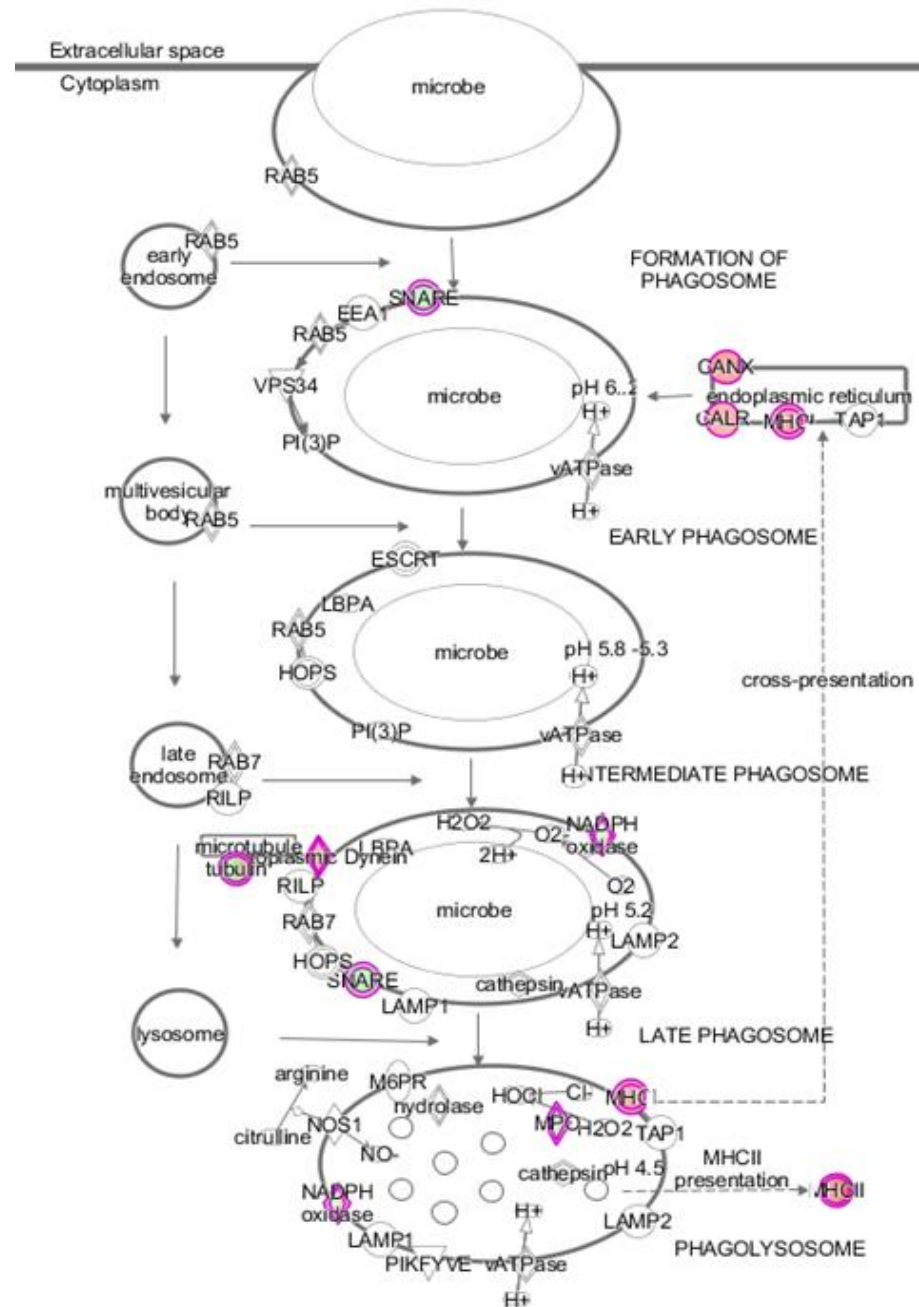
5. Calcium signaling



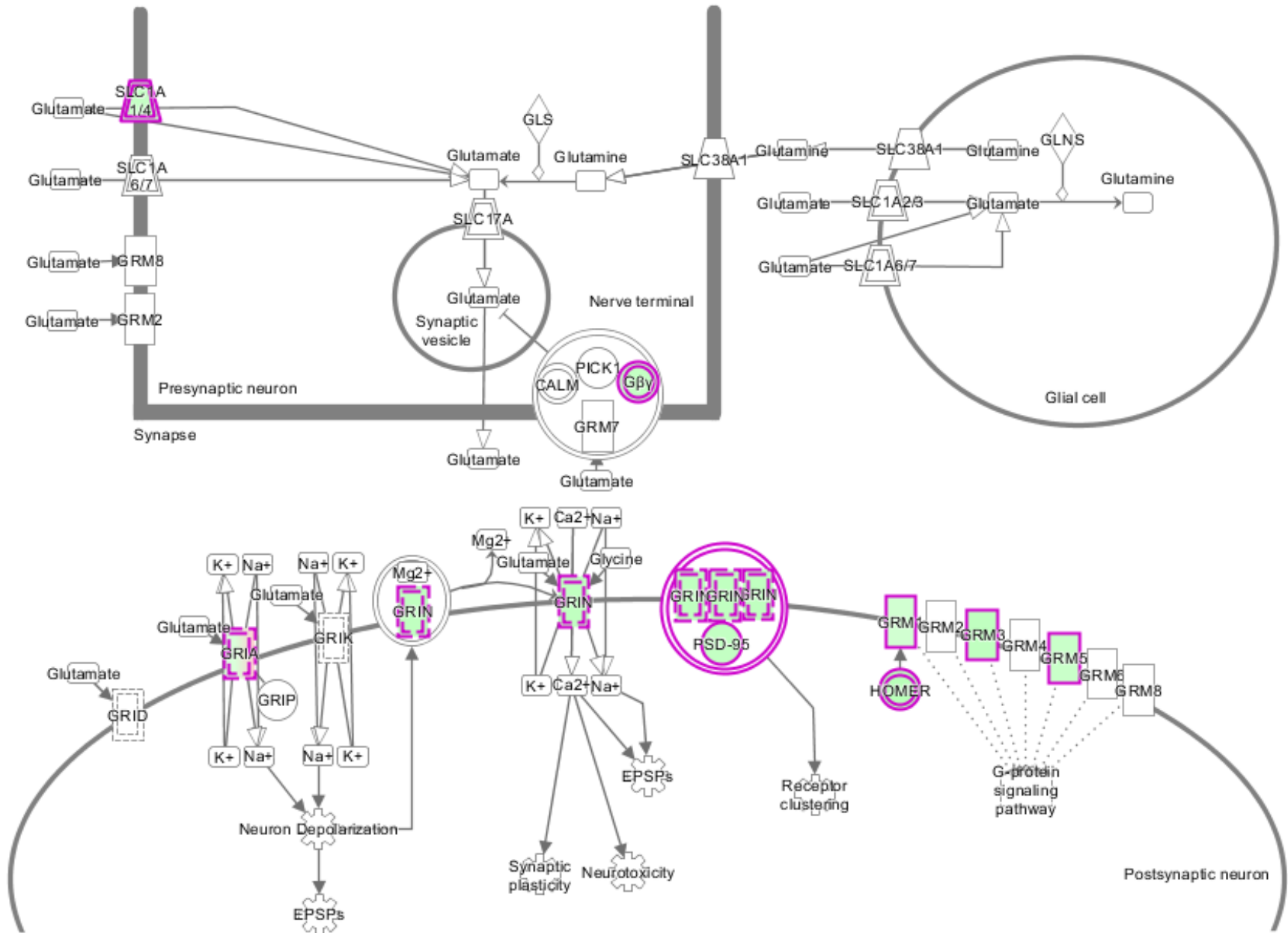
6. Antigen presentation pathway



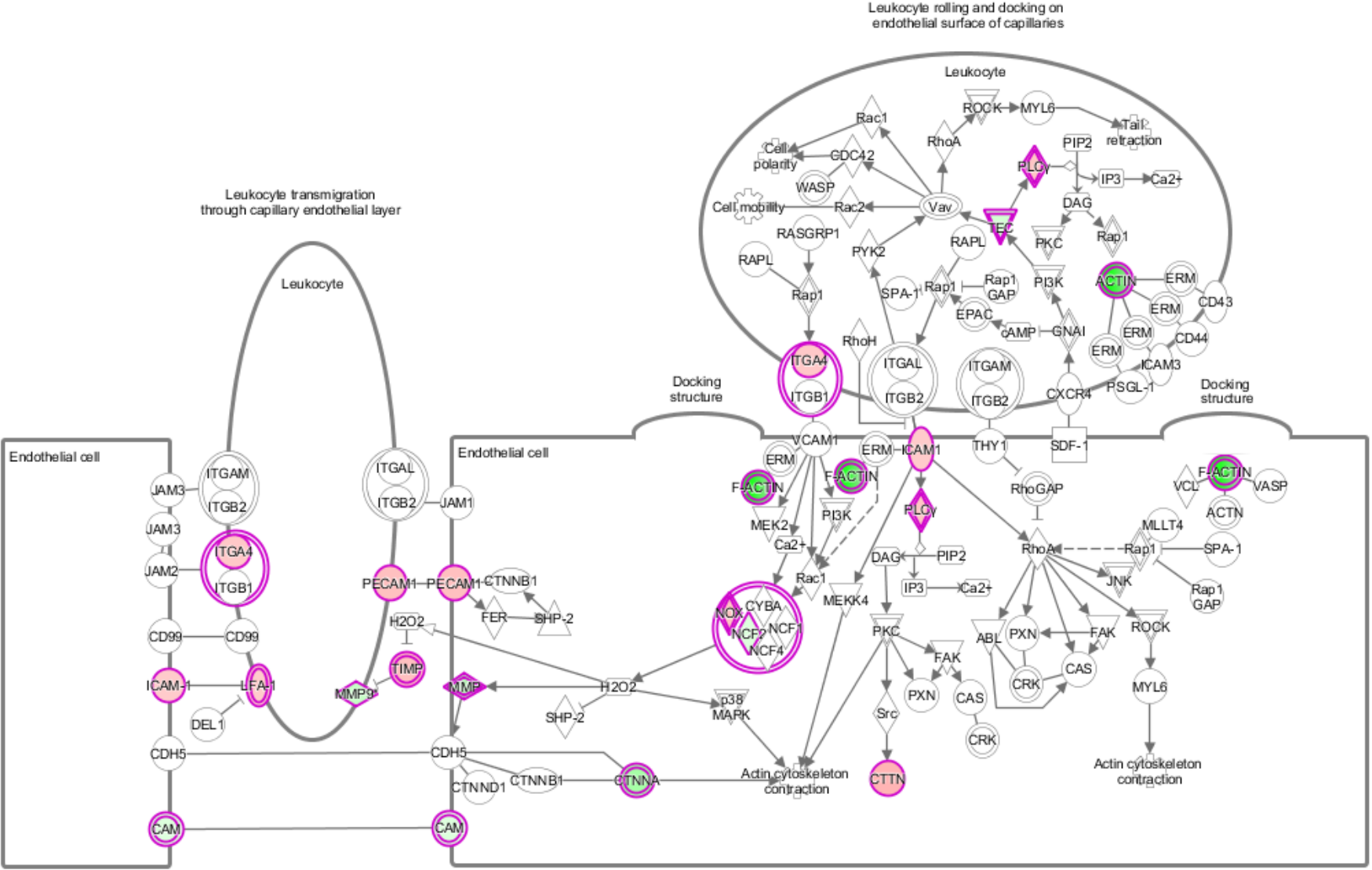
7. phagosome maturation



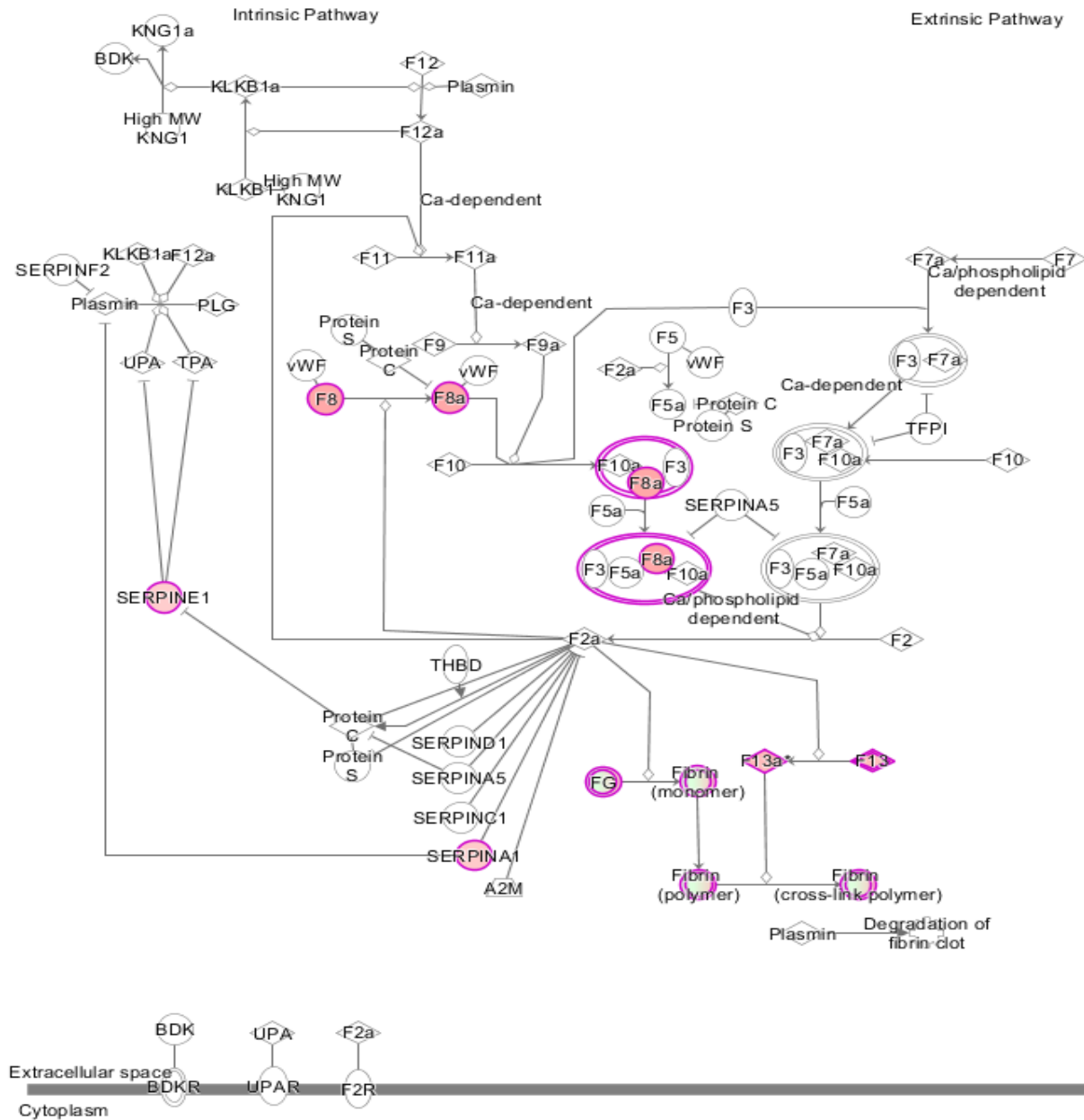
8. Glutamate receptor signaling



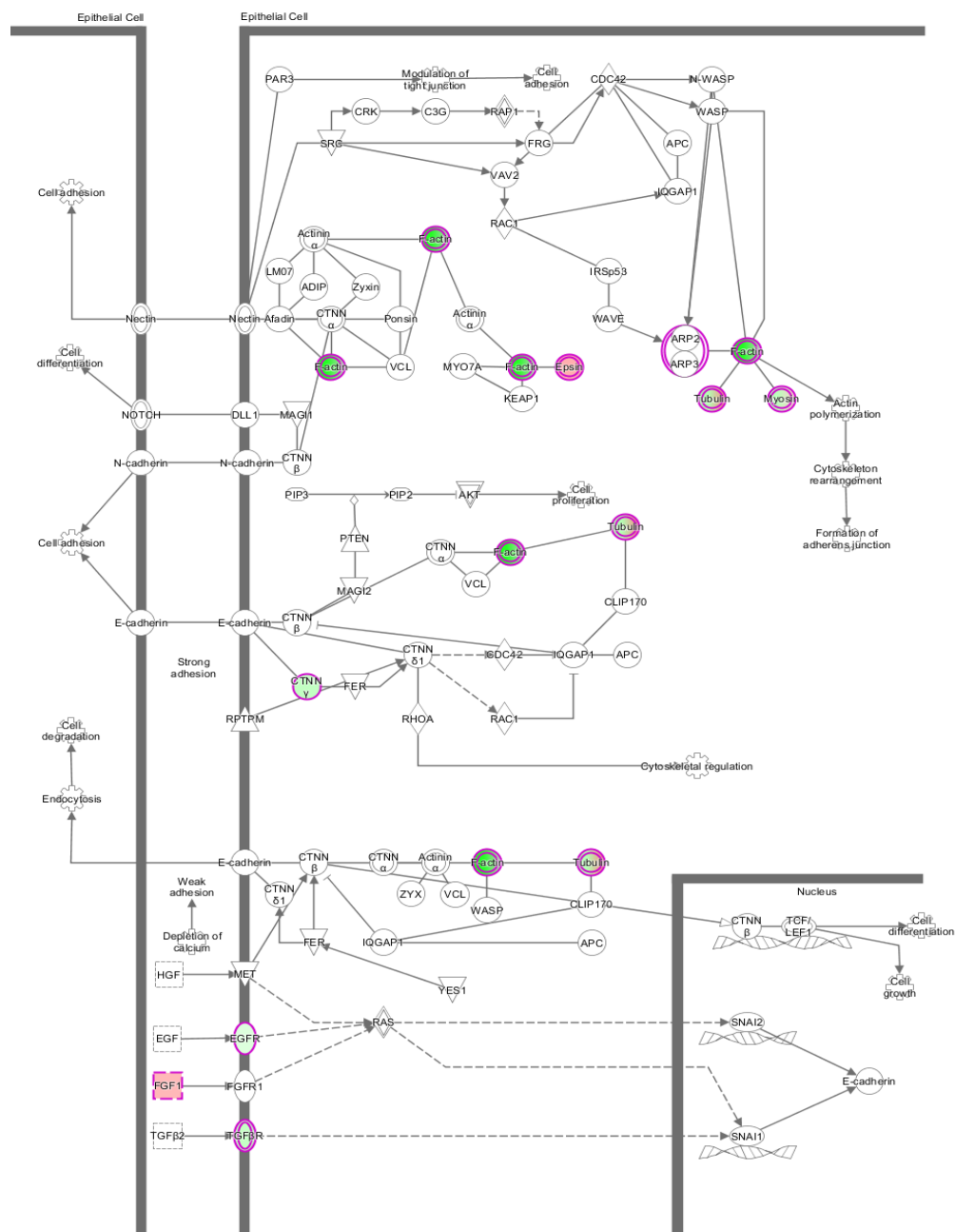
9. Leukocyte extravasation signaling



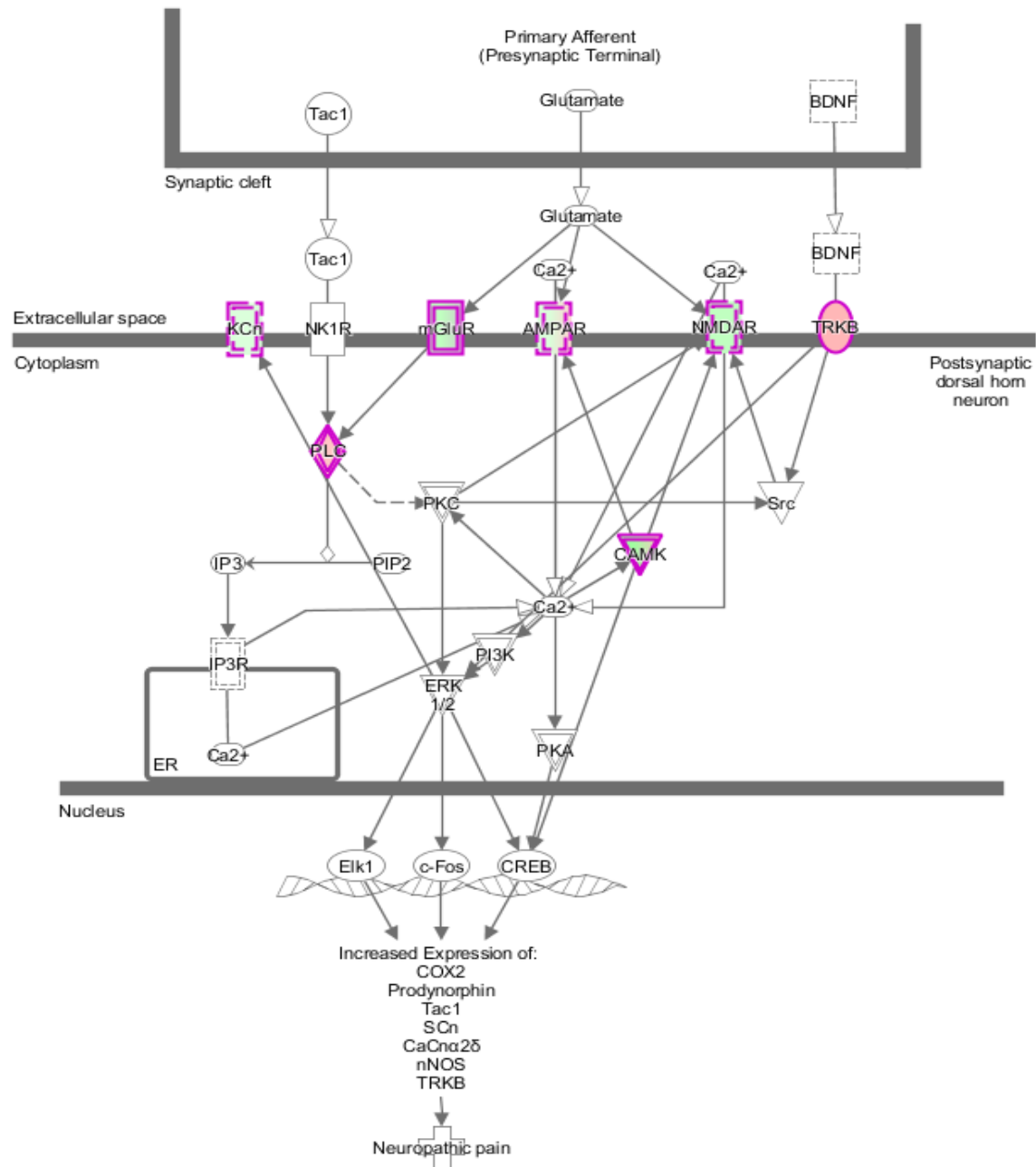
10. Coagulation system



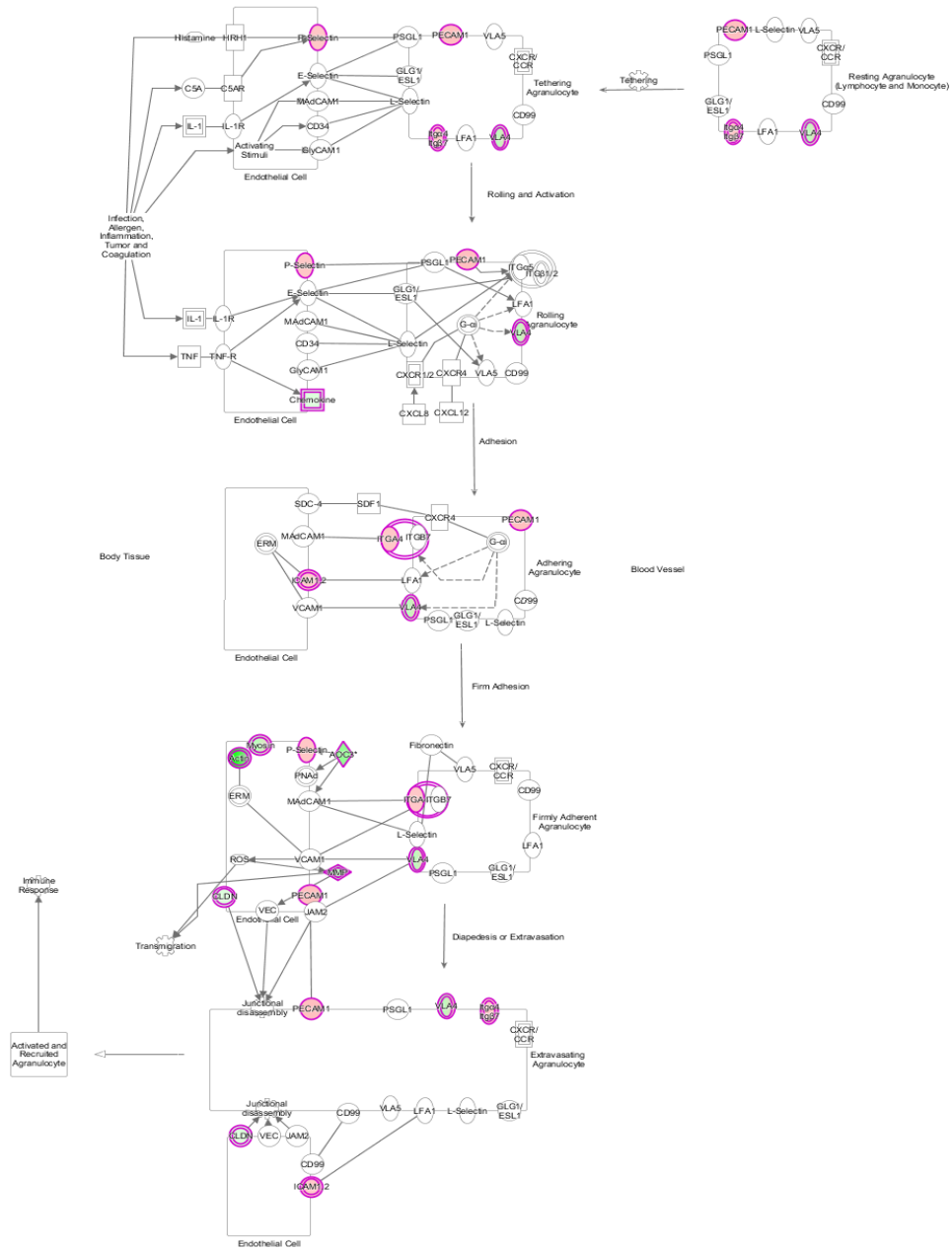
11. Epithelial adherens junction signaling



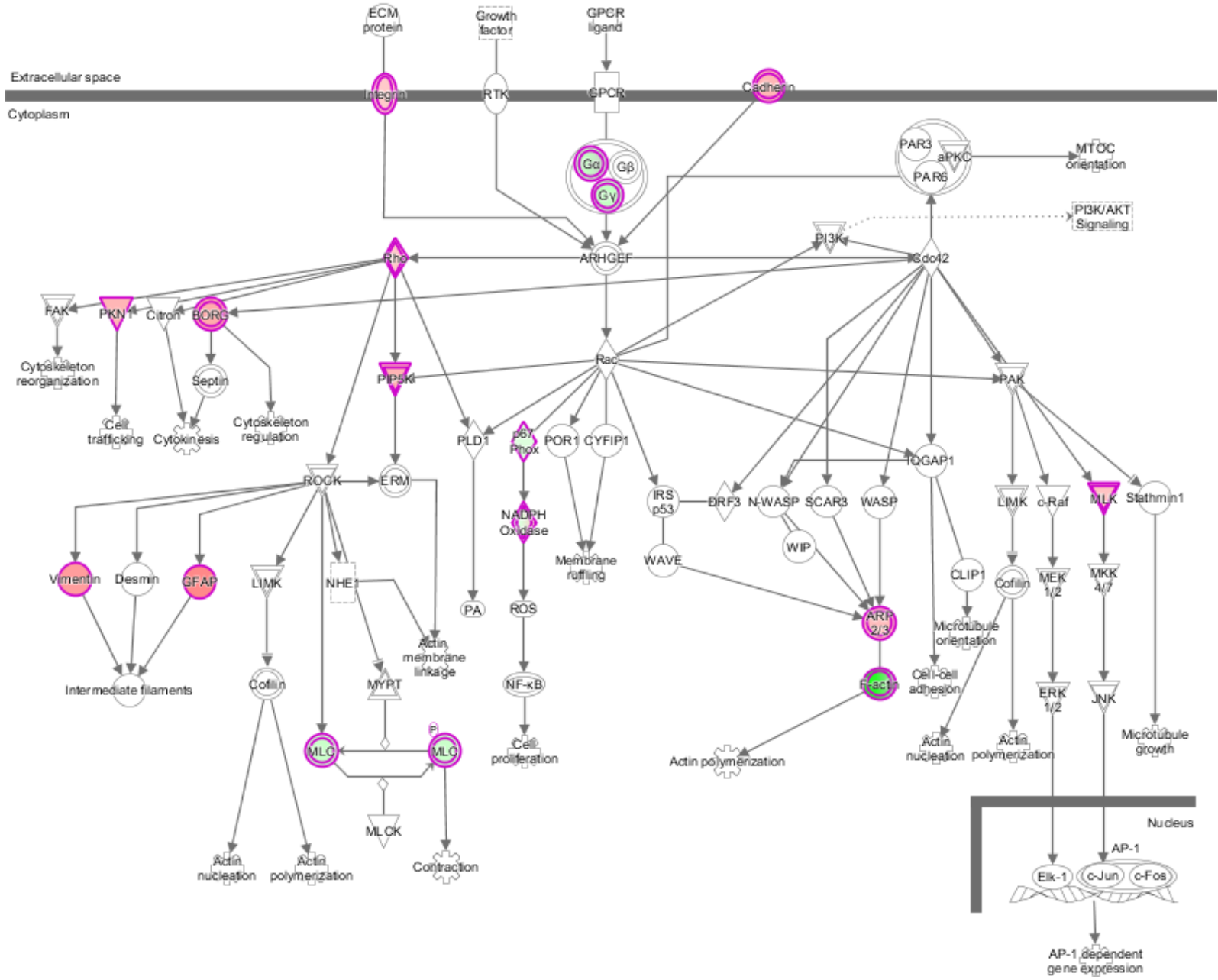
12. Neuropathic pain signaling in dorsal horn neurons



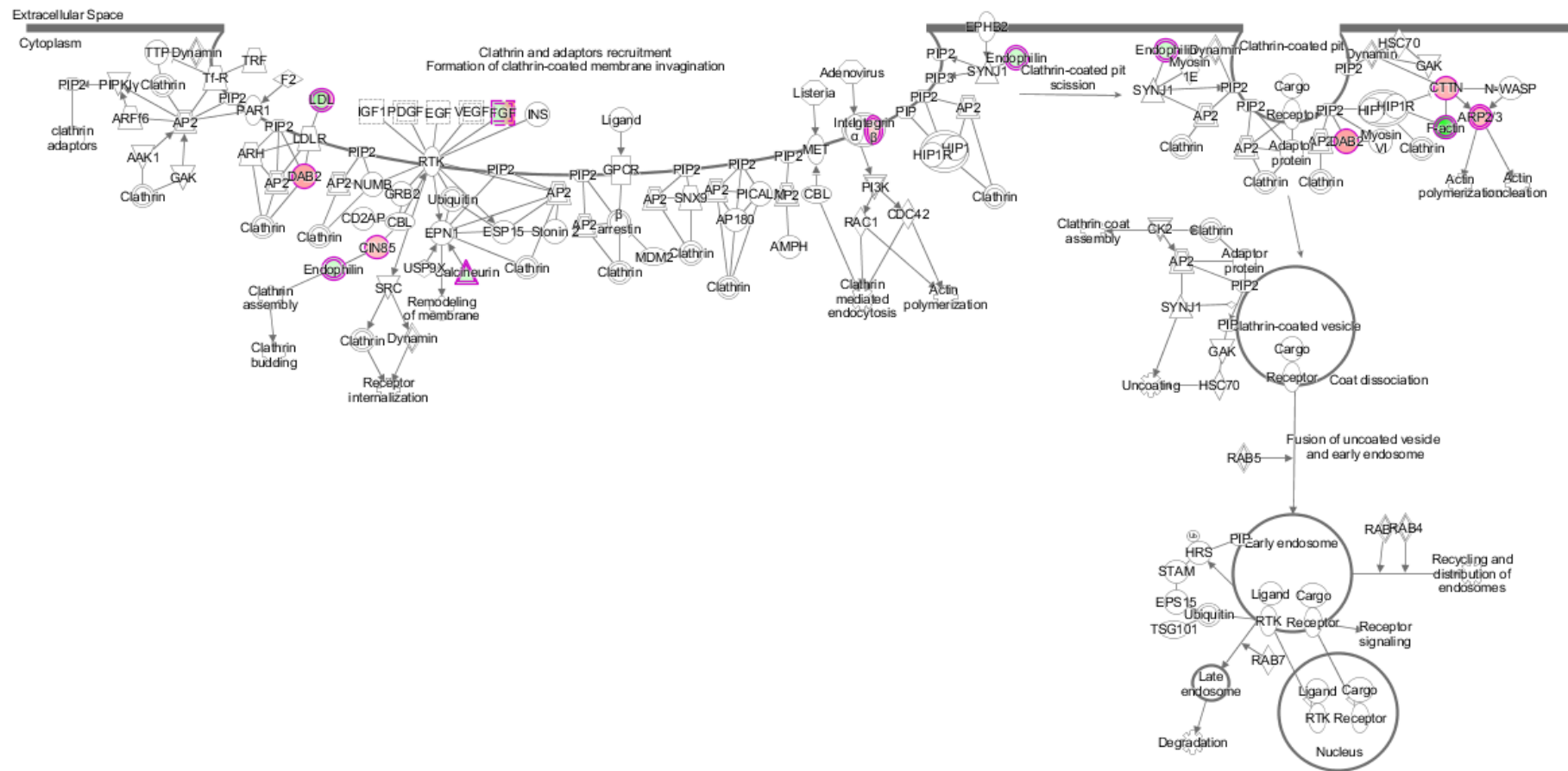
13. Agranulocyte adhesion and diapedesis



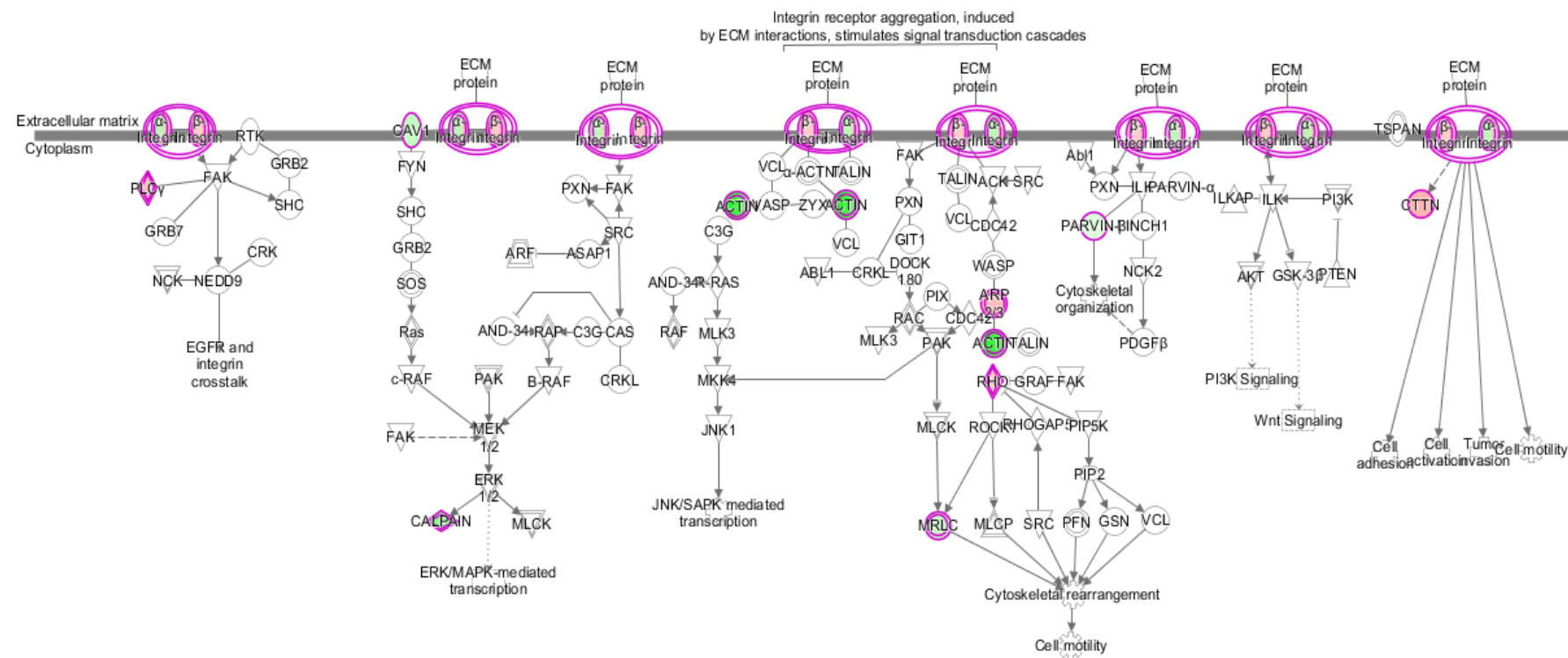
14. Signaling by Rho Family GTPases



15. Clathrin-mediated endocytosis signaling

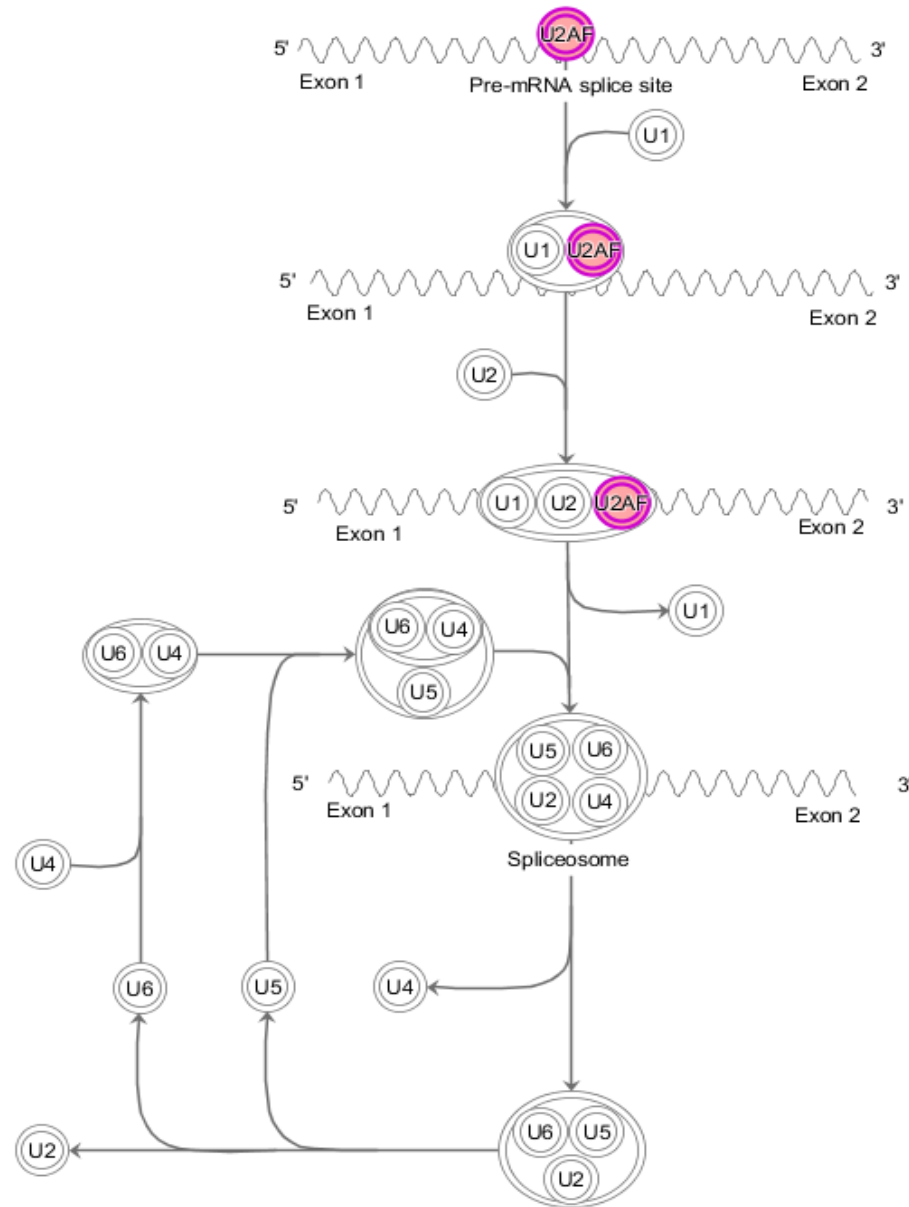


16. Integrin signaling

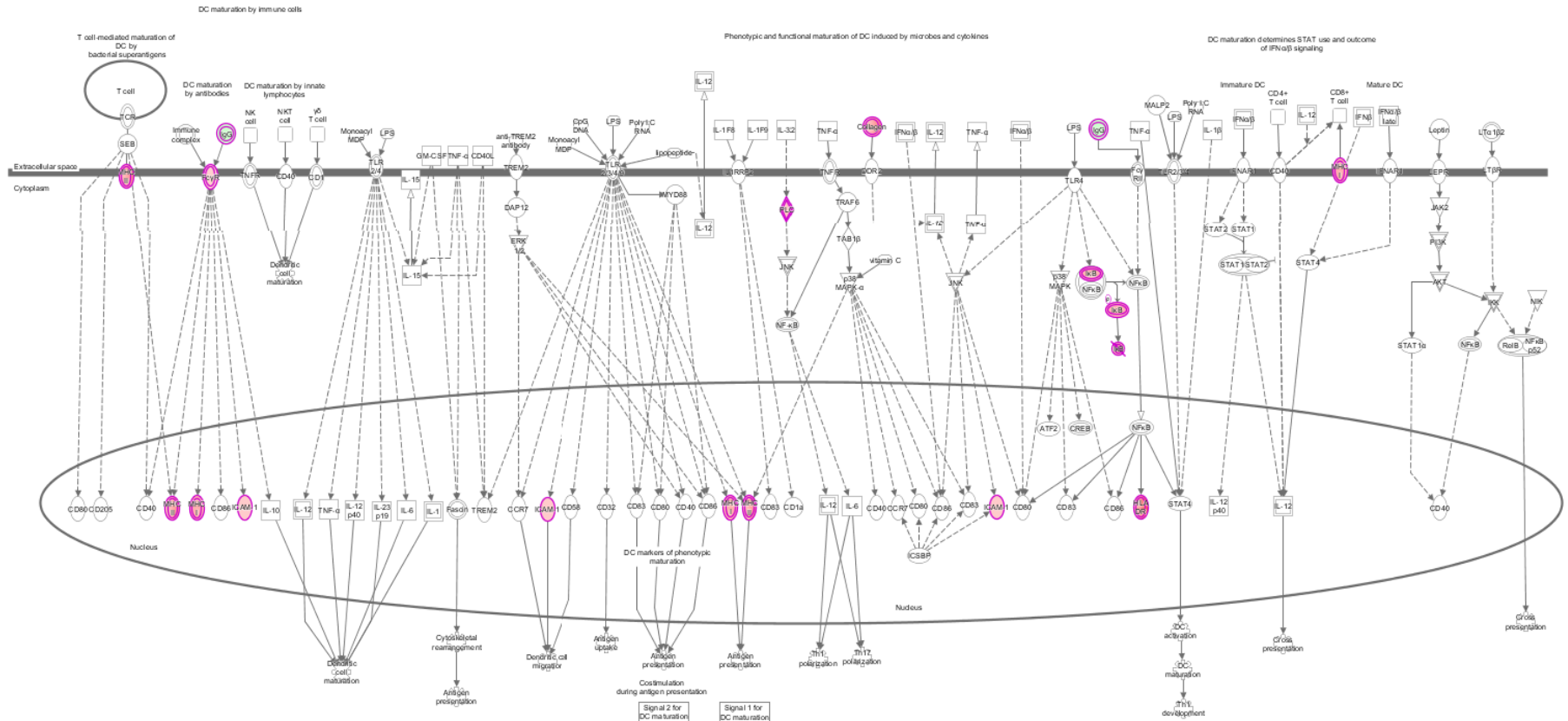
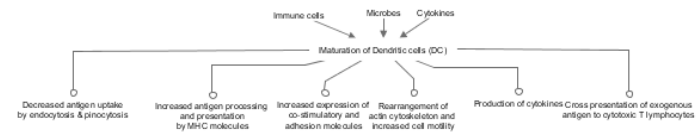


17. Spliceosomal Cycle

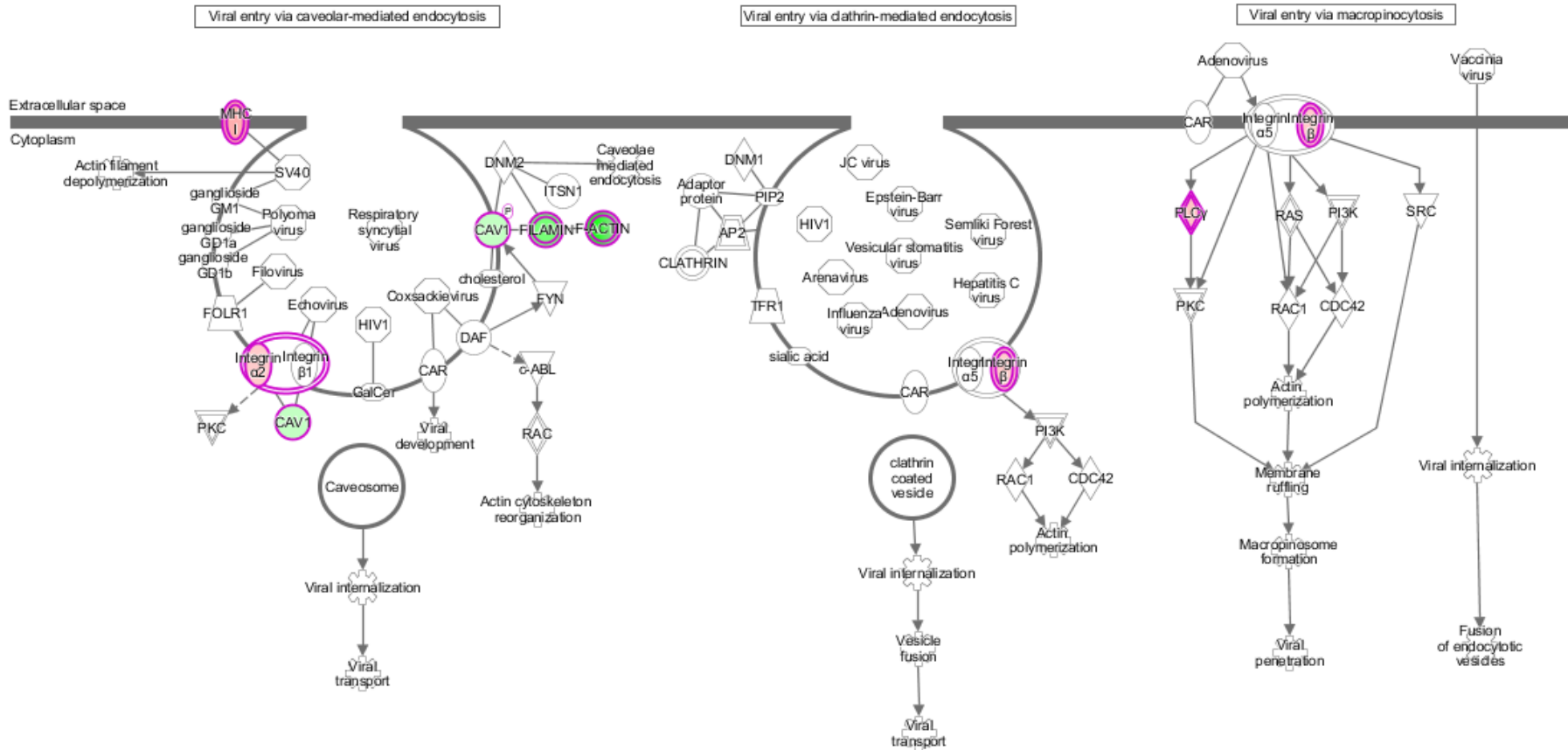
Nucleus



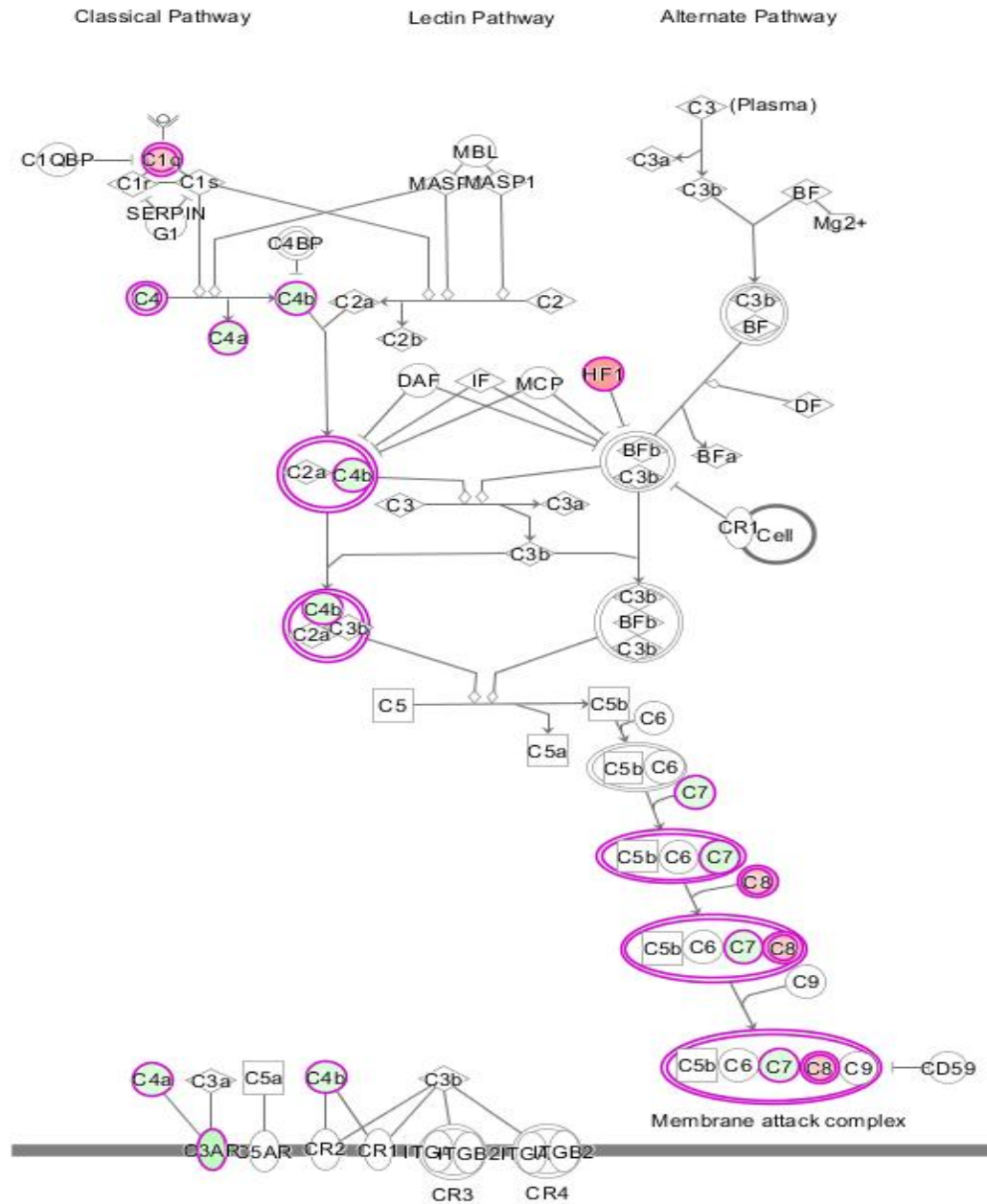
18. Dendritic Cell maturation



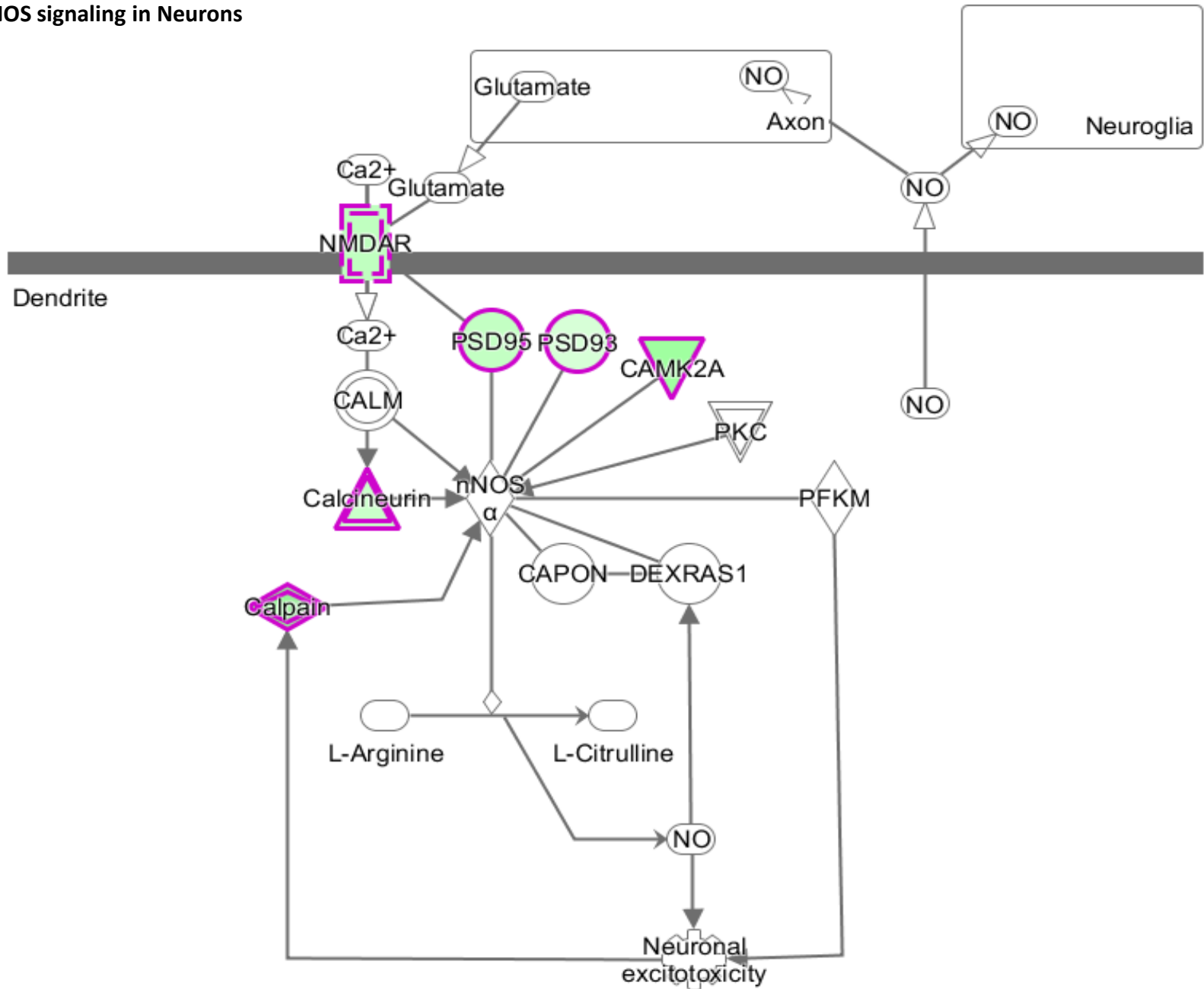
19. Virus entry via endocytic pathways



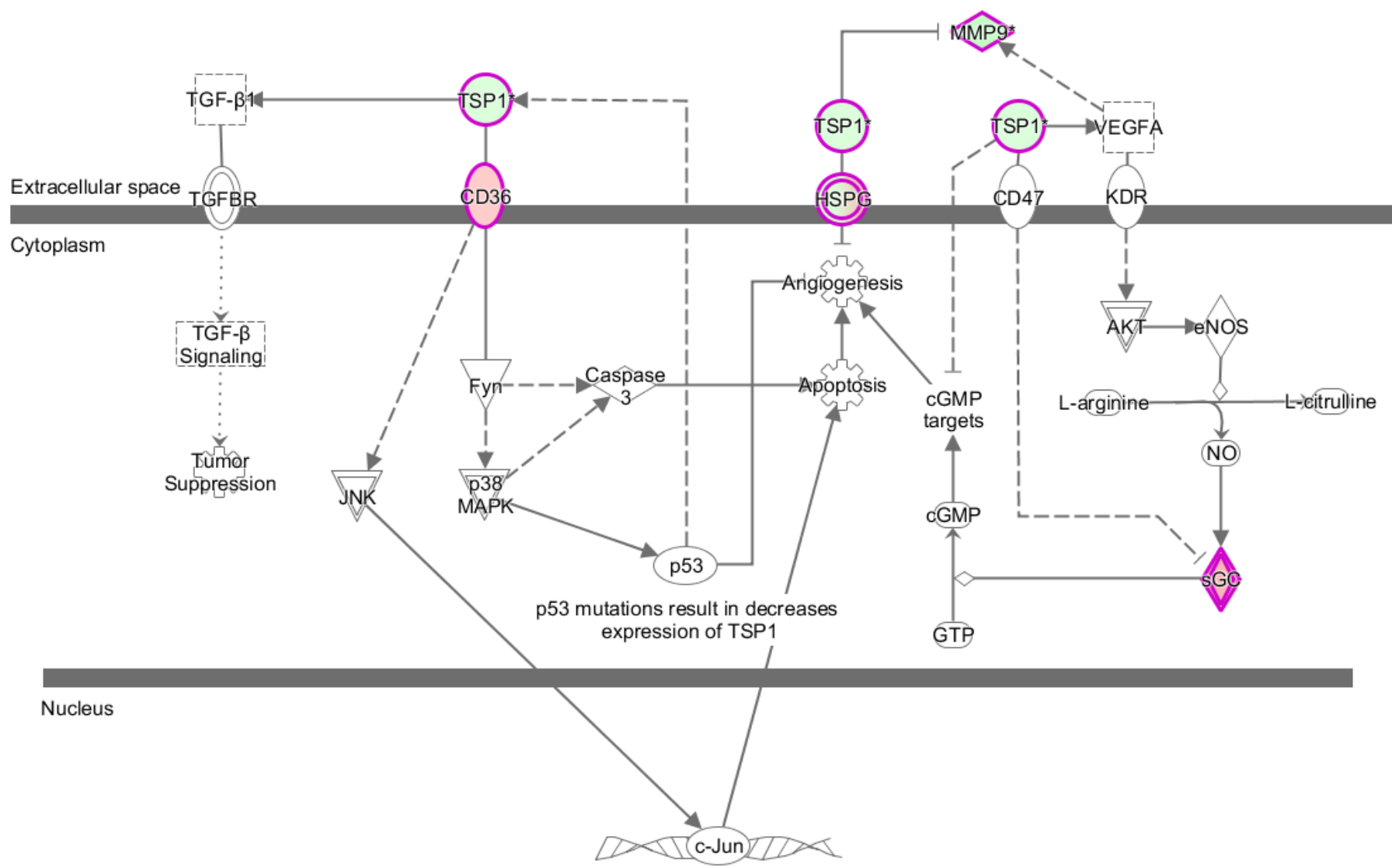
20. Complement system



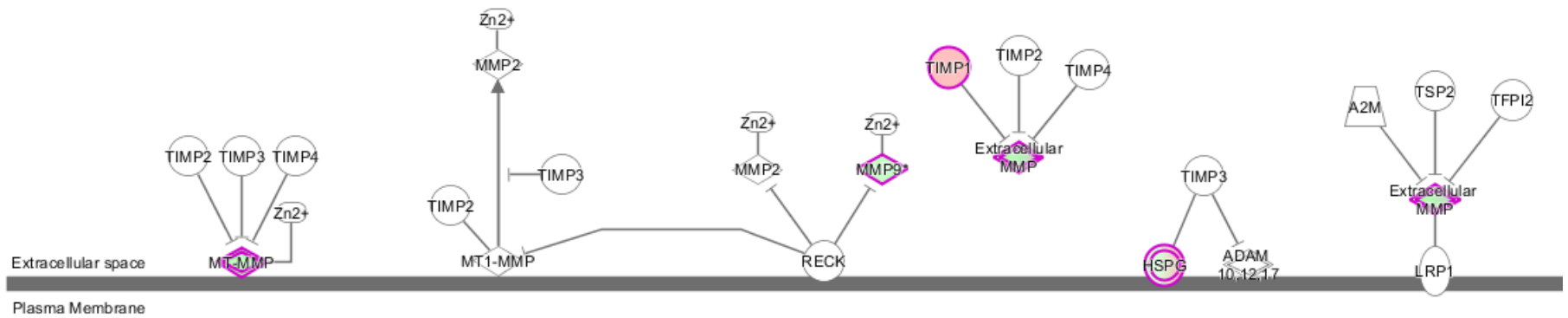
21. nNOS signaling in Neurons



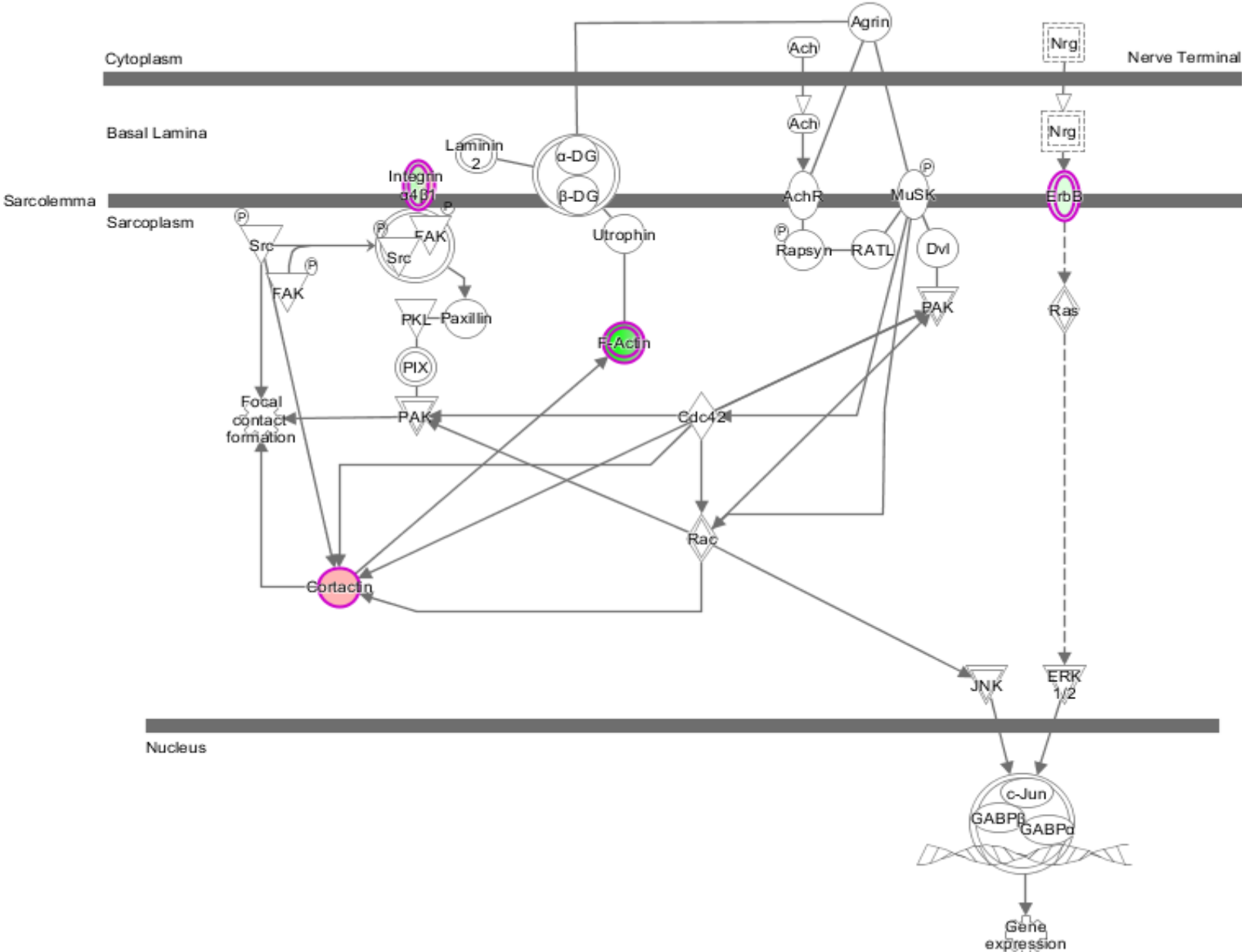
22. Inhibition of Angiogenesis by TSP1



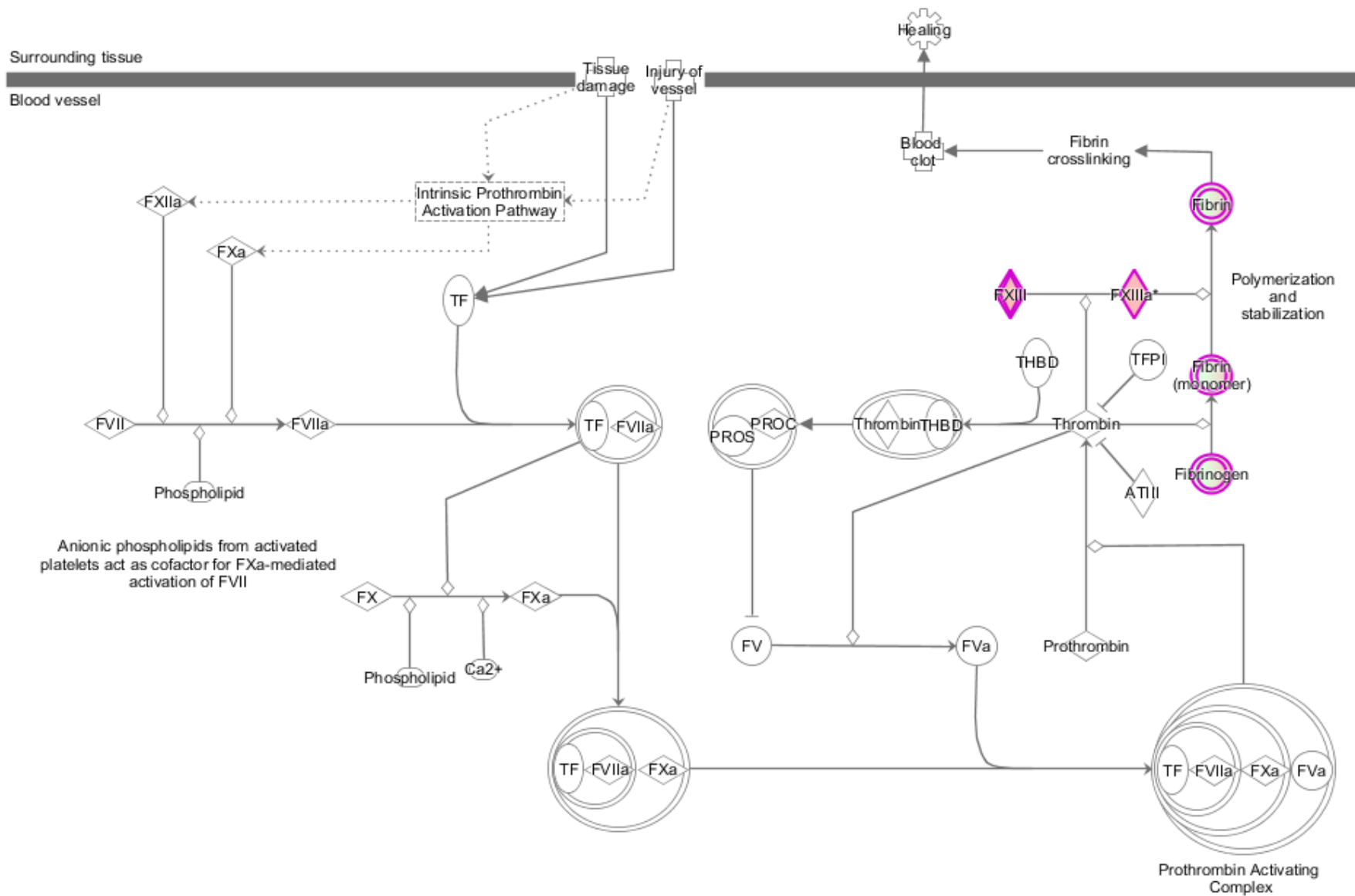
23. Inhibition of Matrix metalloproteases



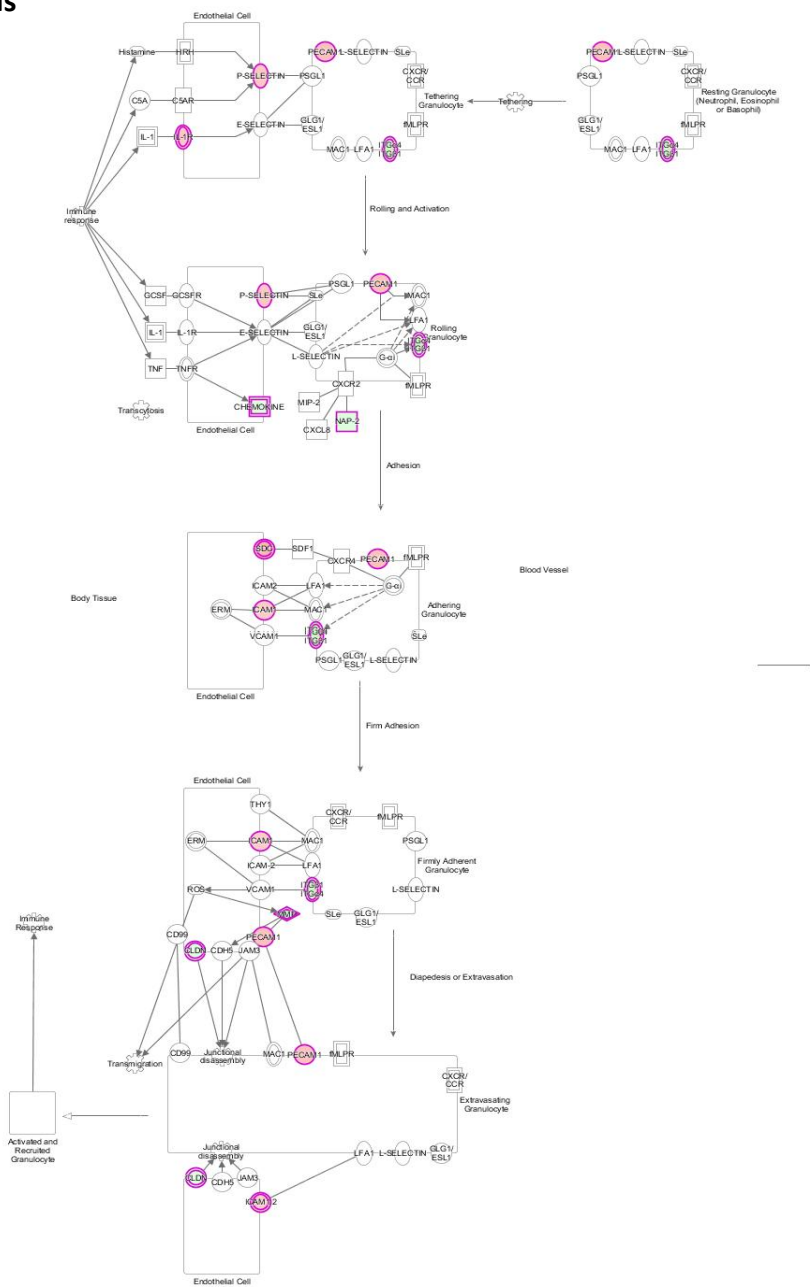
24. Agrin Interactions at neuromuscular junction



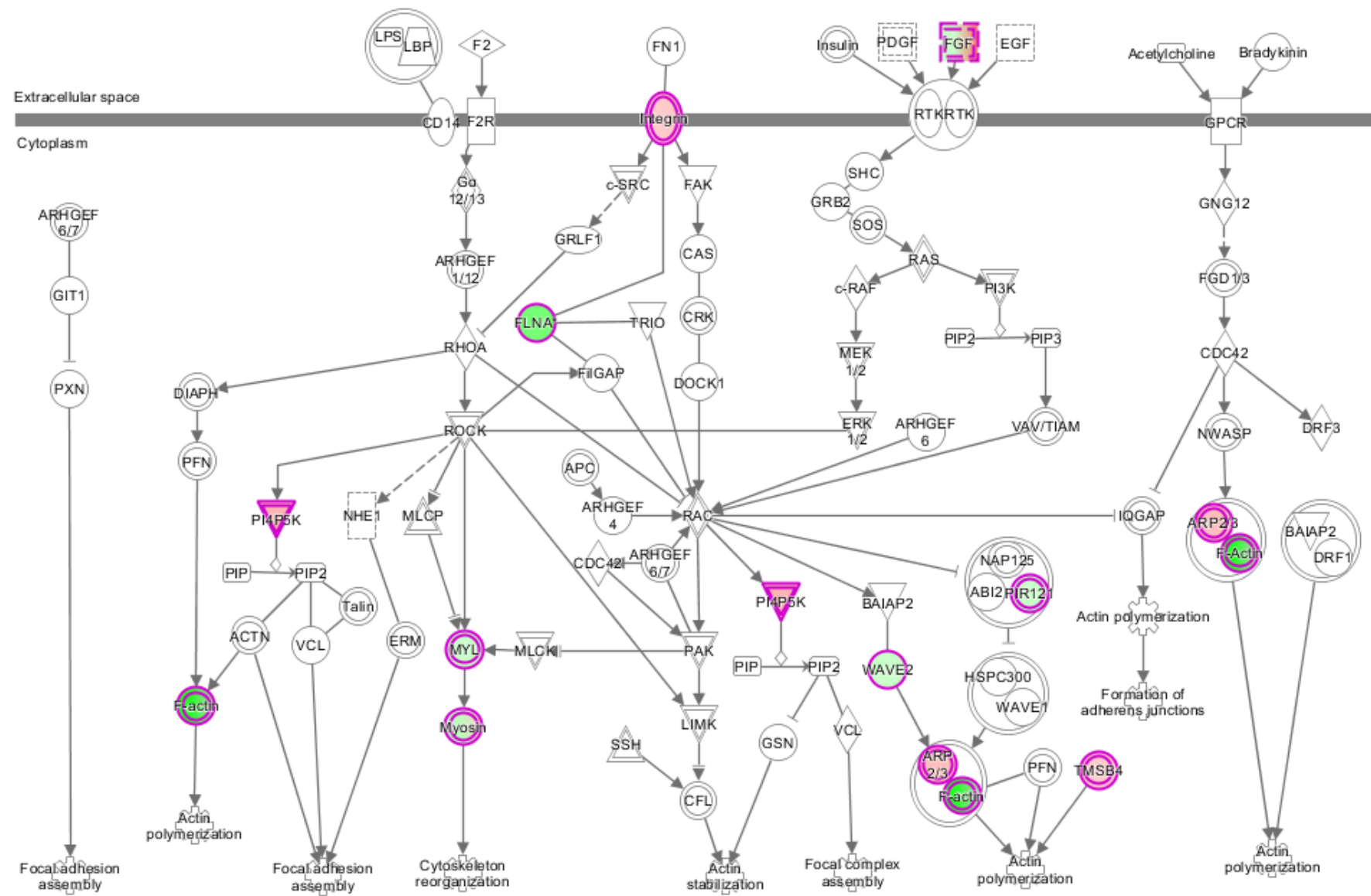
25. Extrinsic Prothrombin Activation Pathway



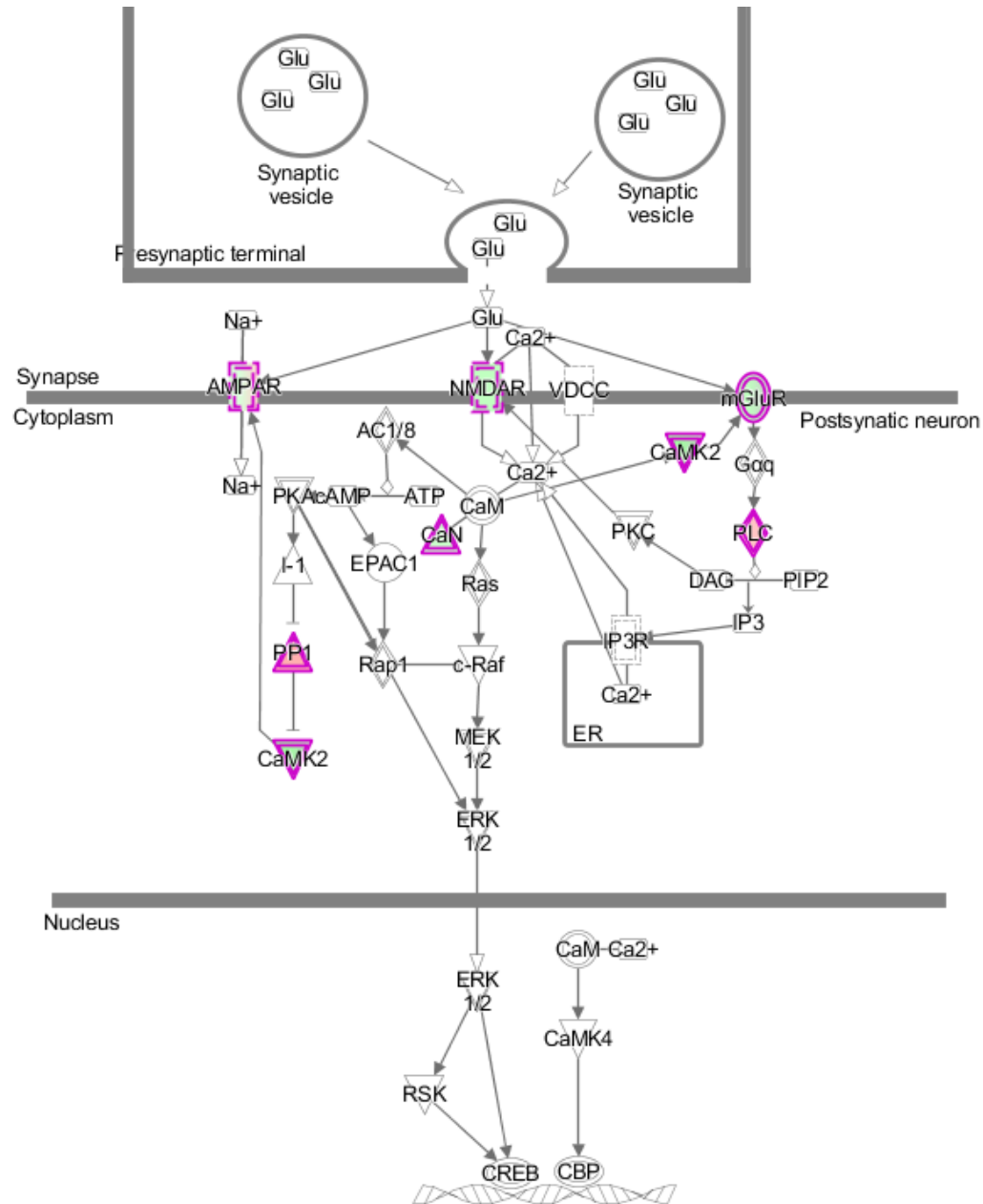
26. Granulocyte adhesion and diapedesis



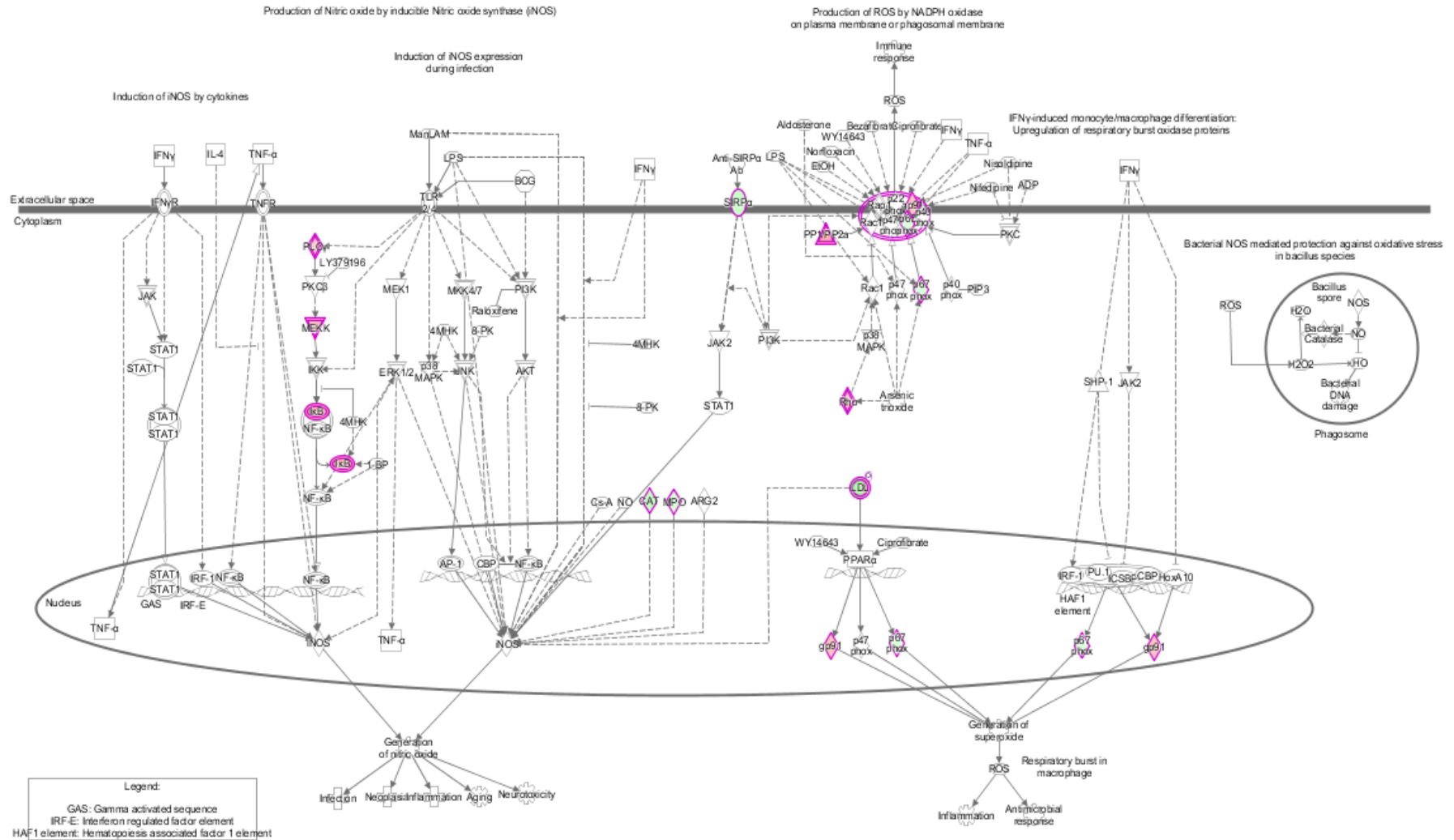
27. Actin Cytoskeleton signaling



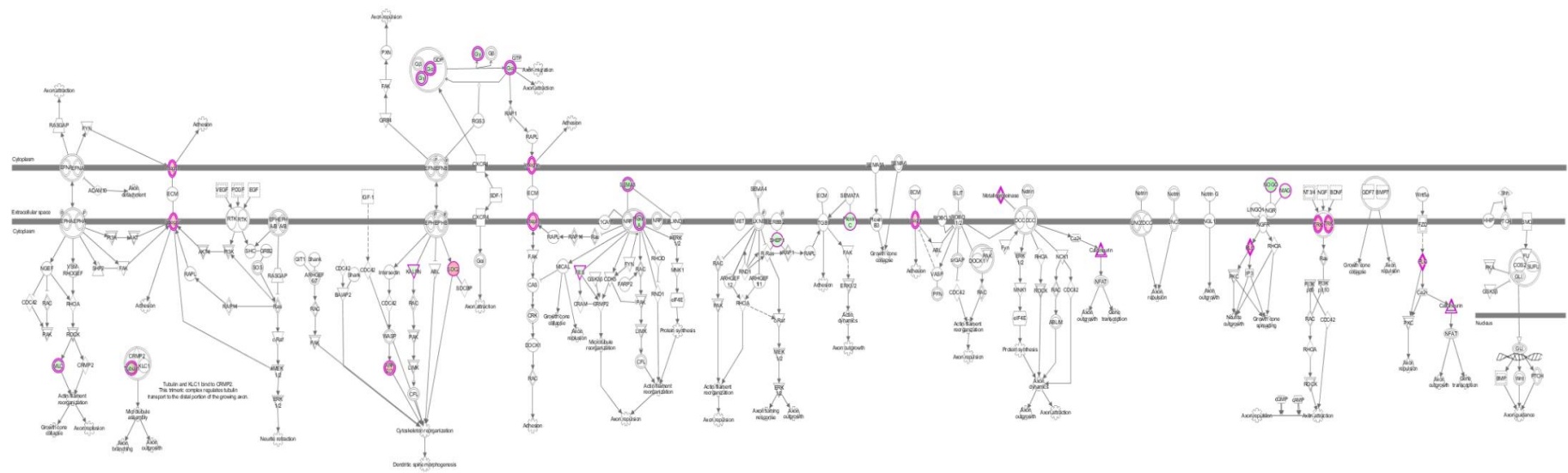
28. Synaptic long term potentiation



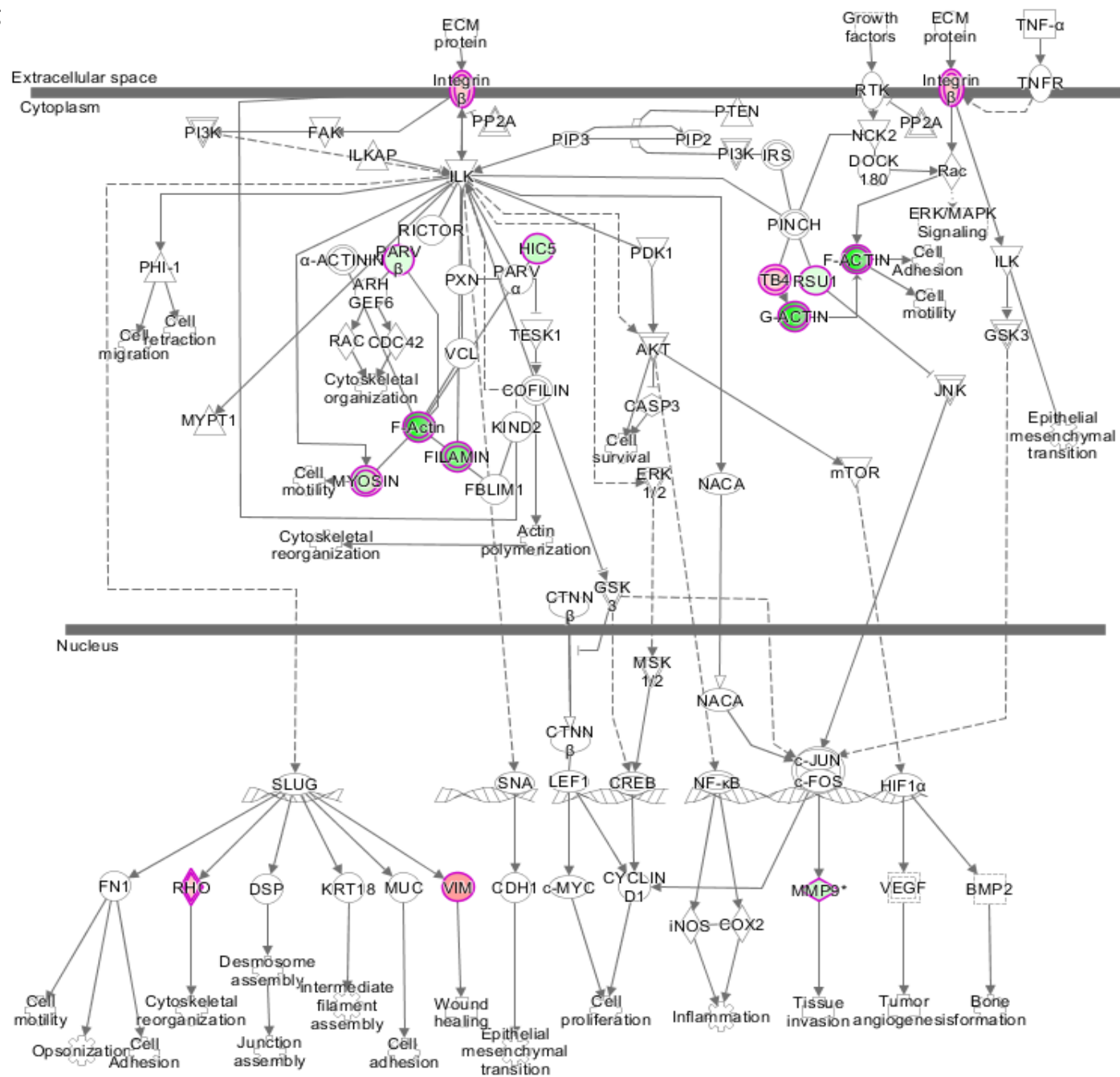
29. Production of nitric oxide and reactive oxygen species in macrophages



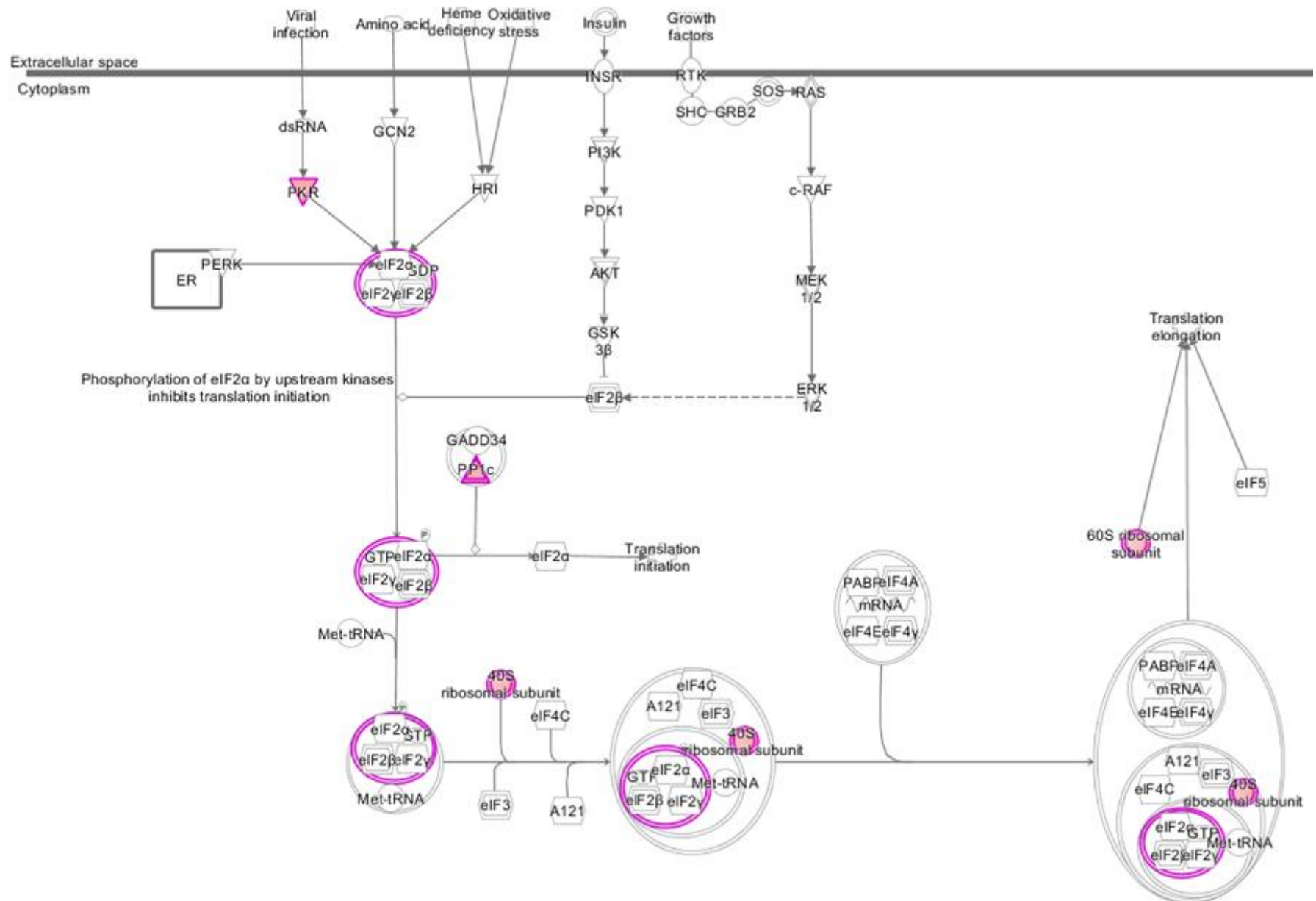
31. Axonal Guidance signaling



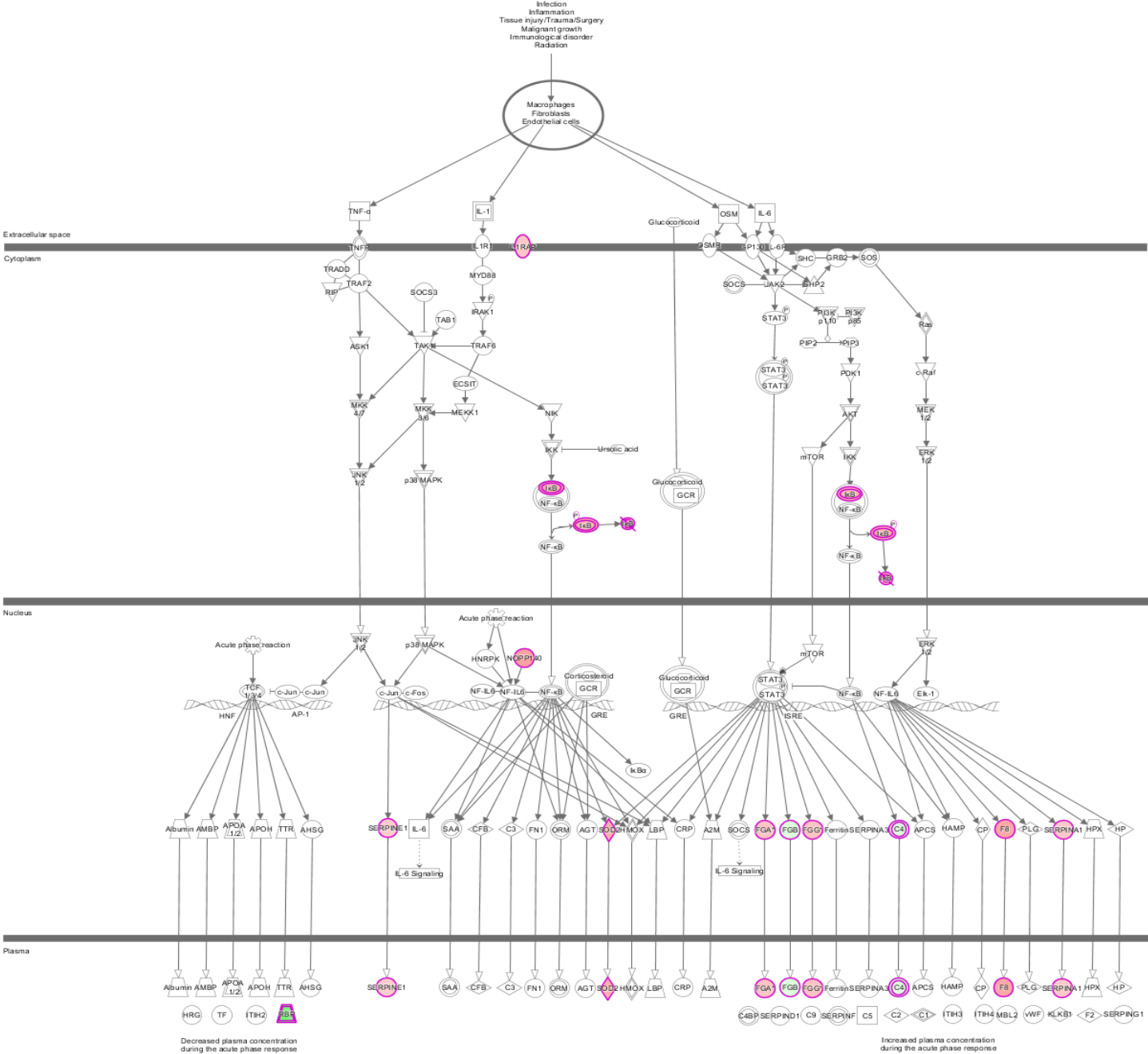
32. ILK signaling



33. EIF2 Signaling



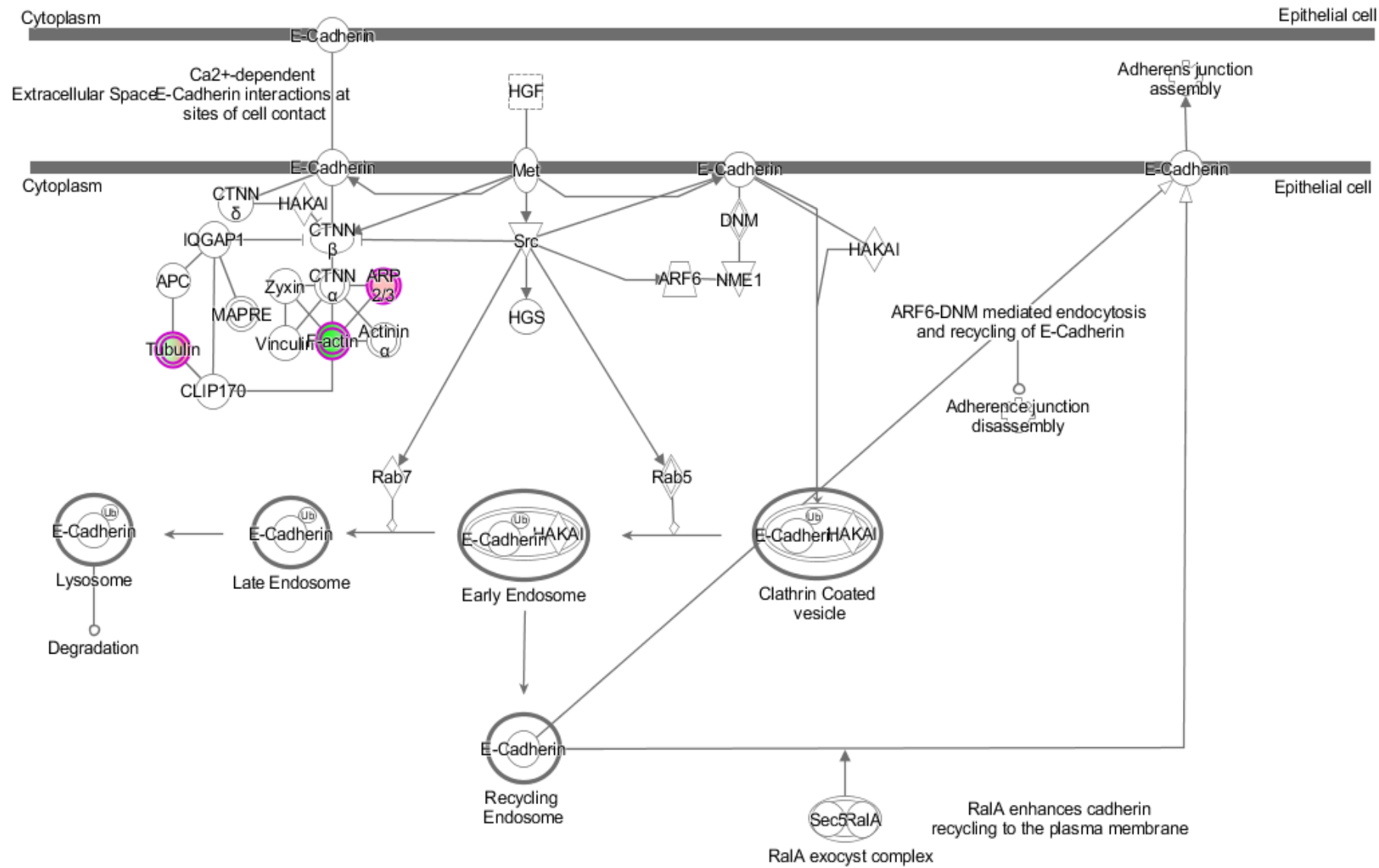
34. Acute Phase response signaling



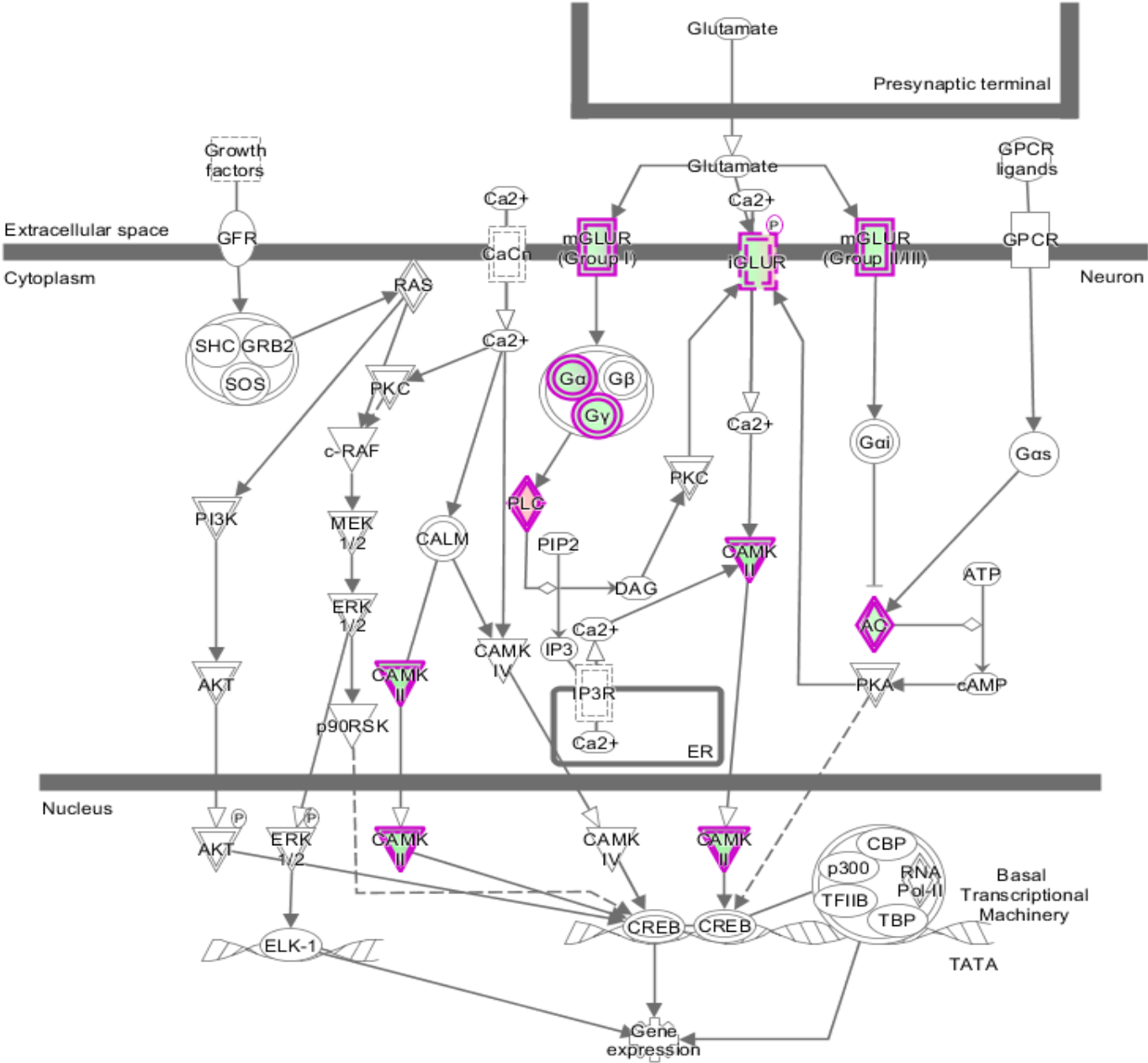
The diagram illustrates the process of polyadenylation in the nucleus, showing the assembly of the cleavage and polyadenylation complex and the subsequent addition of a poly(A) tail.

- Nucleus:** The process occurs within the nucleus.
- Initial State:** A pre-mRNA molecule with a 5' end and a 3' end containing the canonical polyadenylation signal (AAUAAA). CPSF family proteins bind to the AAUAAA signal.
- Complex Assembly:** CFI (Cleavage Factor I) and PAB (Polyadenylation Binding Protein) bind to the complex. CSTF (Cleavage Stimulation Factor) family proteins bind to a G/U rich canonical sequence downstream of the AAUAAA signal.
- Cleavage:** The complex performs a cleavage step, releasing the 5' end of the mRNA (labeled "Degraded") and leaving the 3' end with the AAUAAA signal.
- Polyadenylation:**
 - Slow polyadenylation:** PAB2 binds to the 3' end of the mRNA, and PA 3' adds a poly(A) tail to the 3' end of the mRNA.
 - Rapid polyadenylation:** The poly(A) tail is extended rapidly, resulting in a long poly(A) tail.
- Polyadenylated mRNA:** The final product is a mature mRNA molecule with a 5' end and a long poly(A) tail at the 3' end.

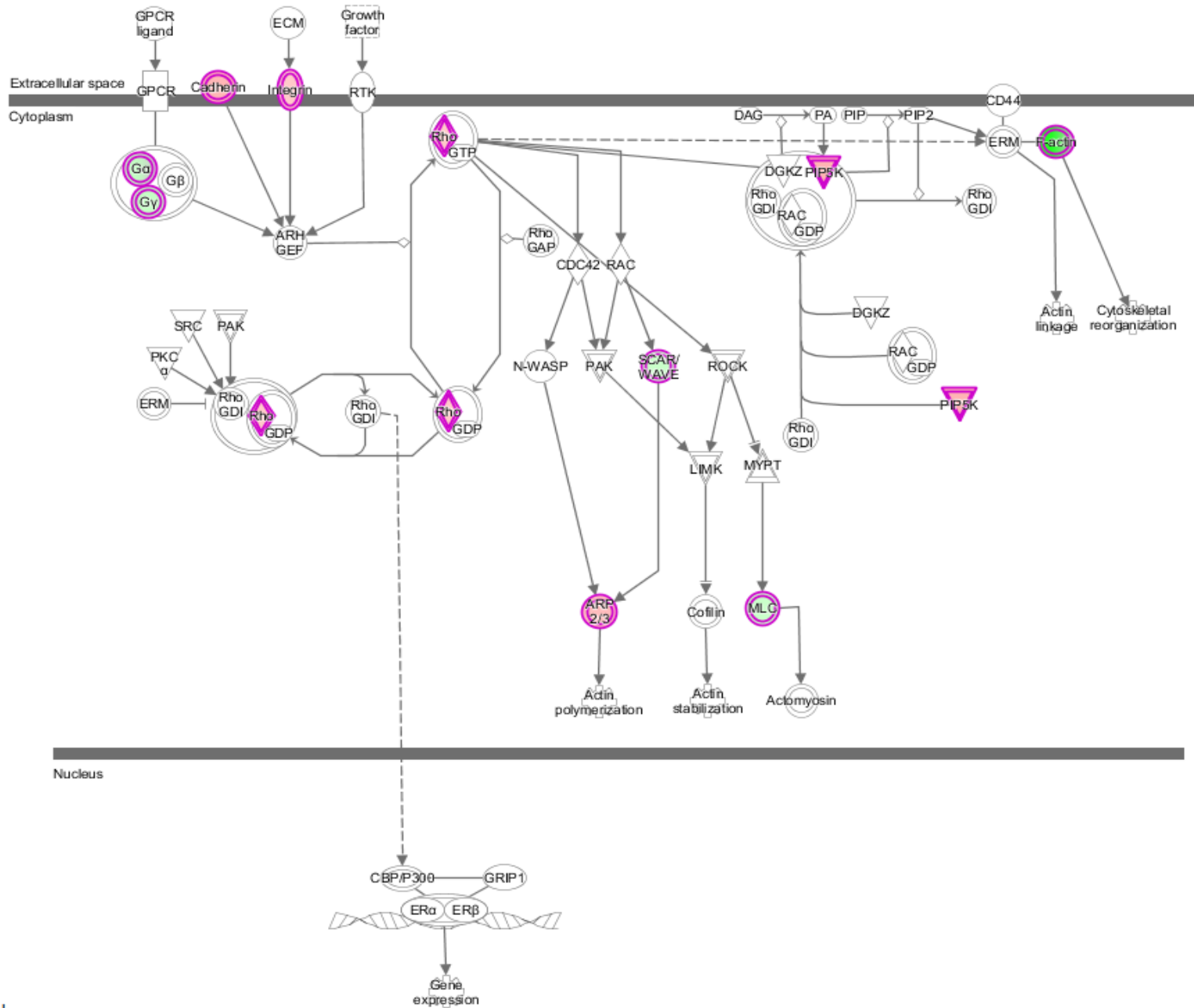
36. Remodeling of epithelial adherens junctions



37. CREB signaling in neurons



38. RhoGDI signaling



39. Bladder cancer signaling

- Gene mutations associated with bladder cancer:
- RB 1

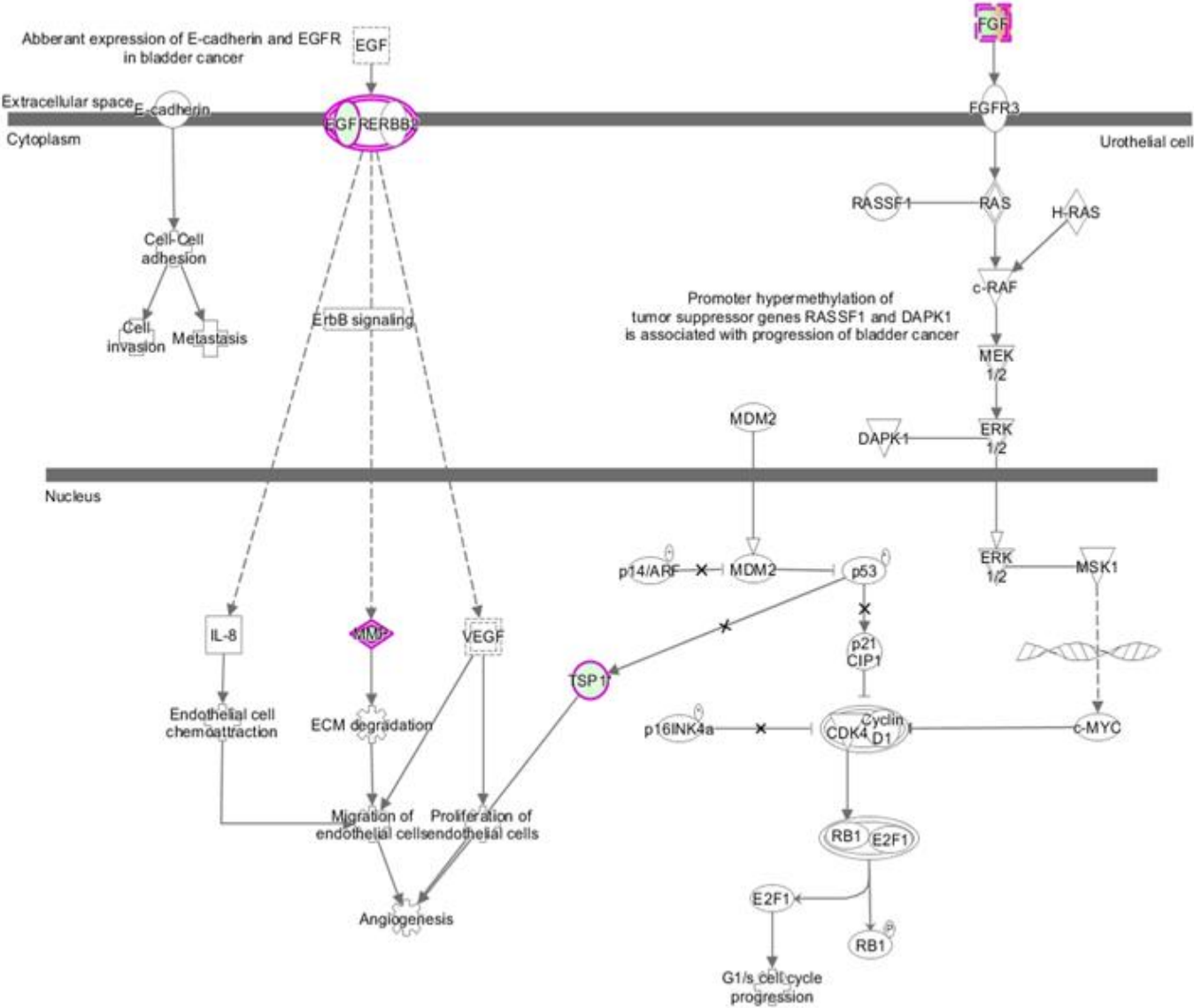
FGFR3

p53

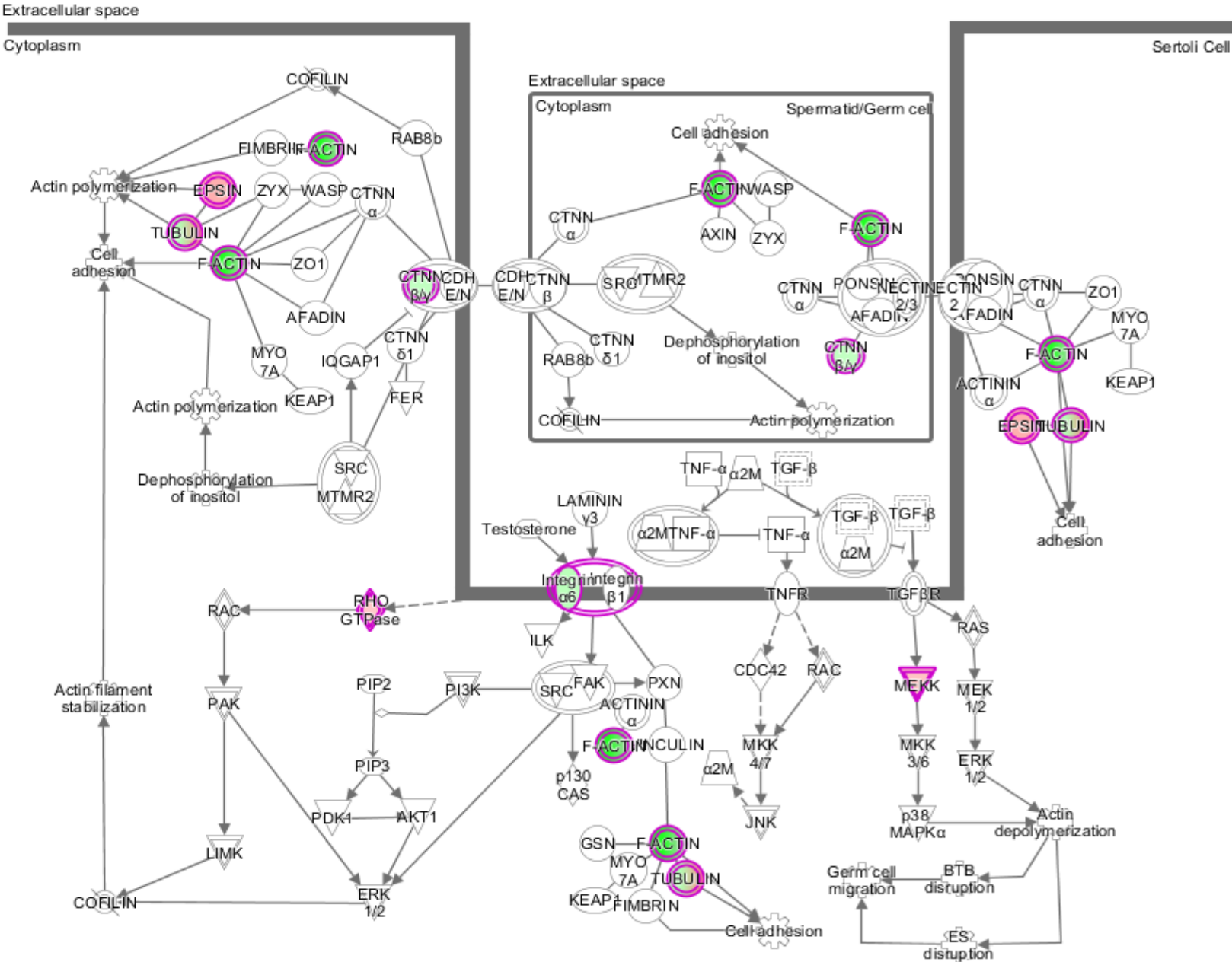
H-Ras

p14/ARF

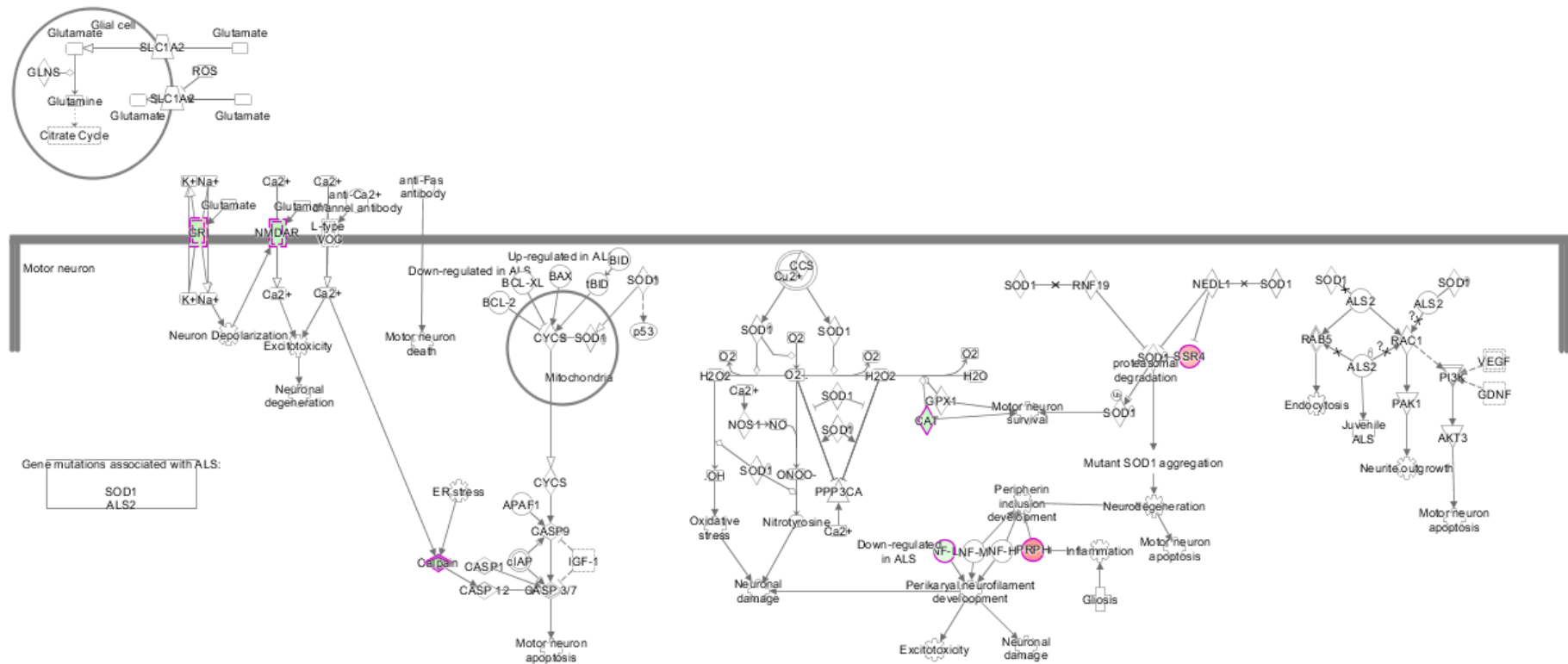
p16INK4a



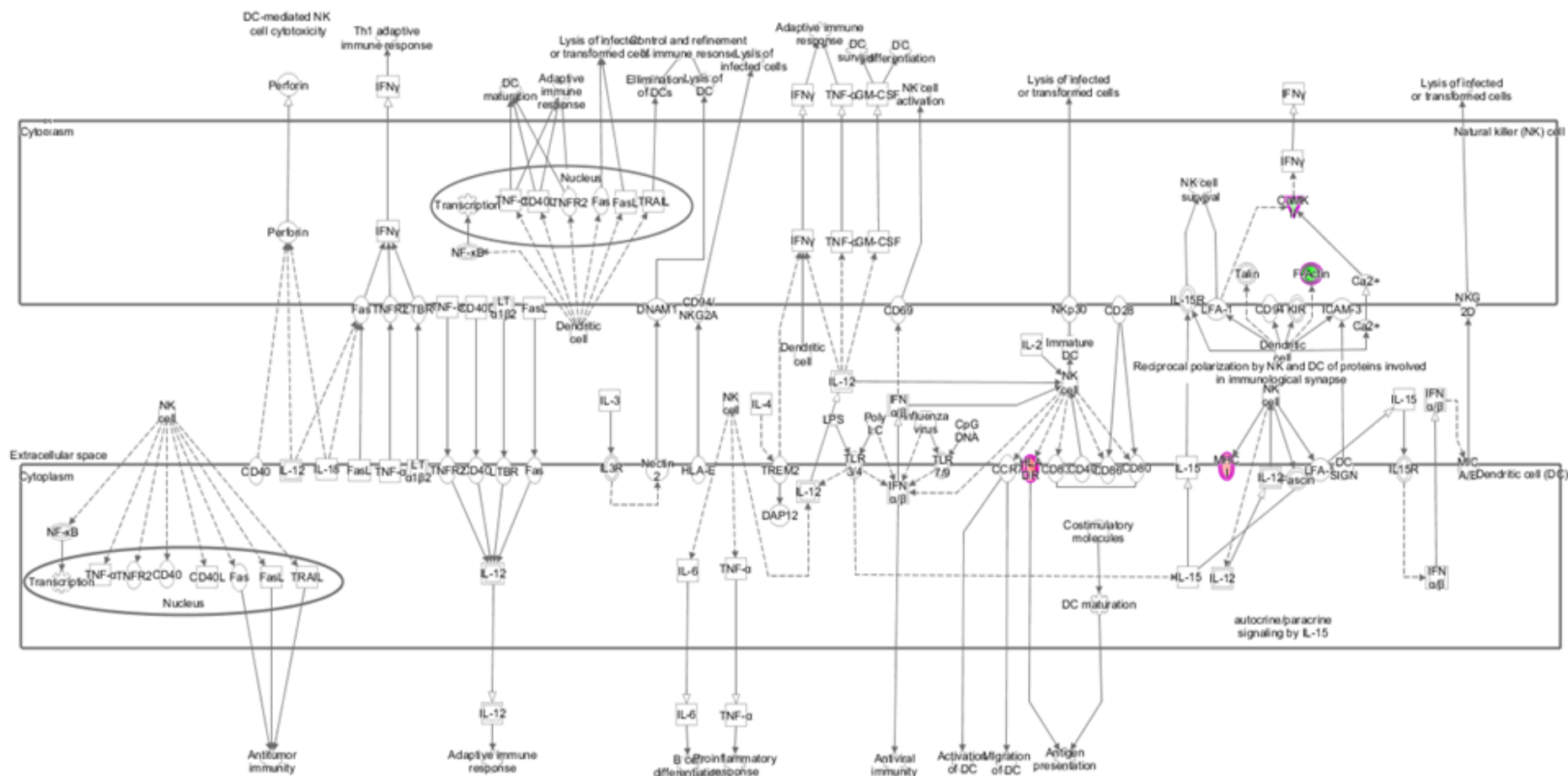
40. Germ cell-sertoli cell function signaling



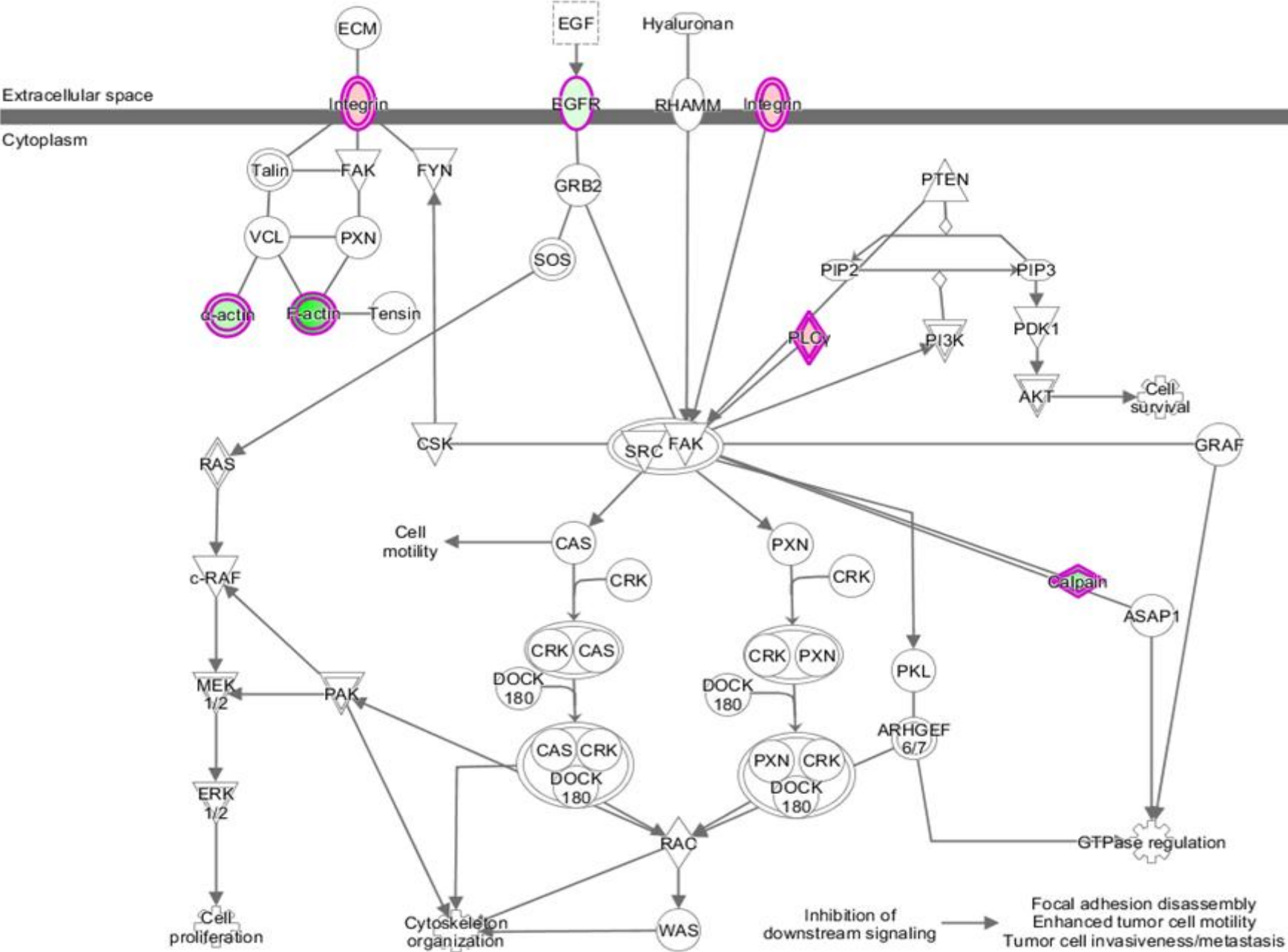
41. Amyotrophic Lateral sclerosis signaling



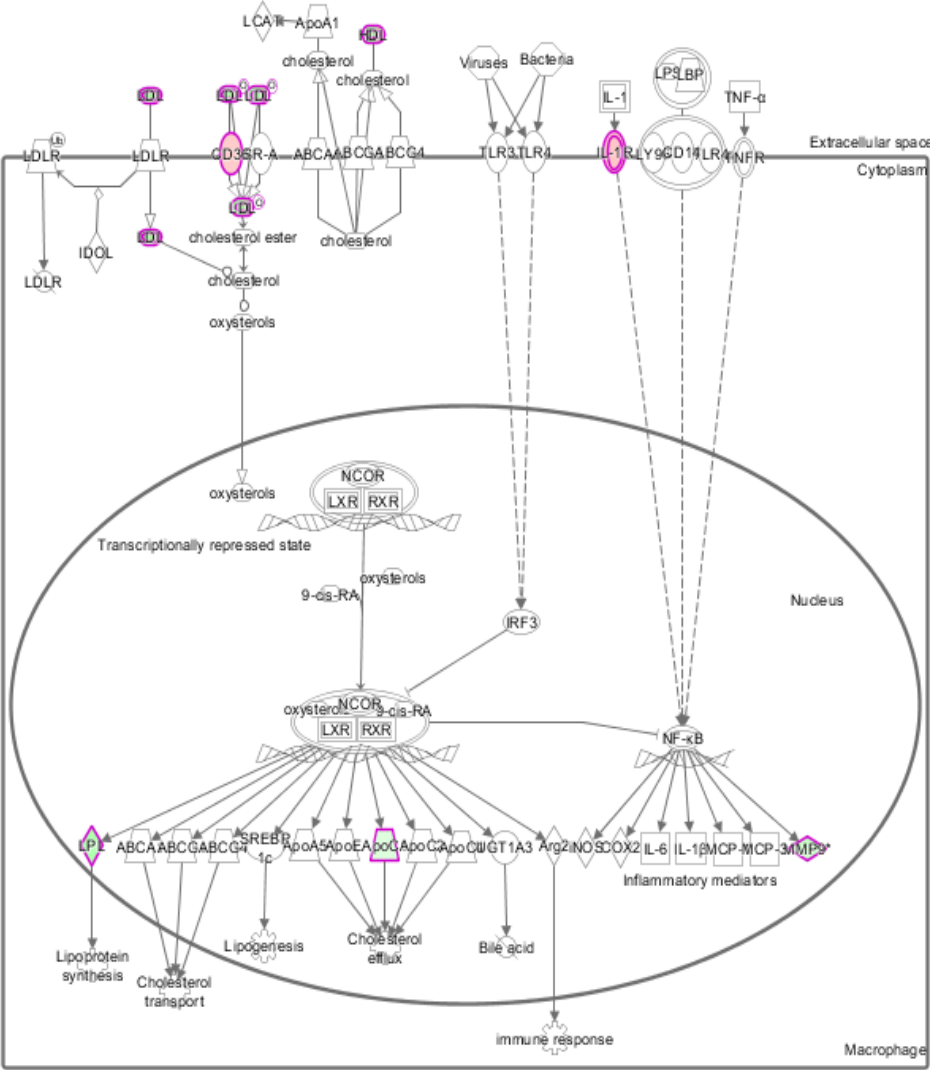
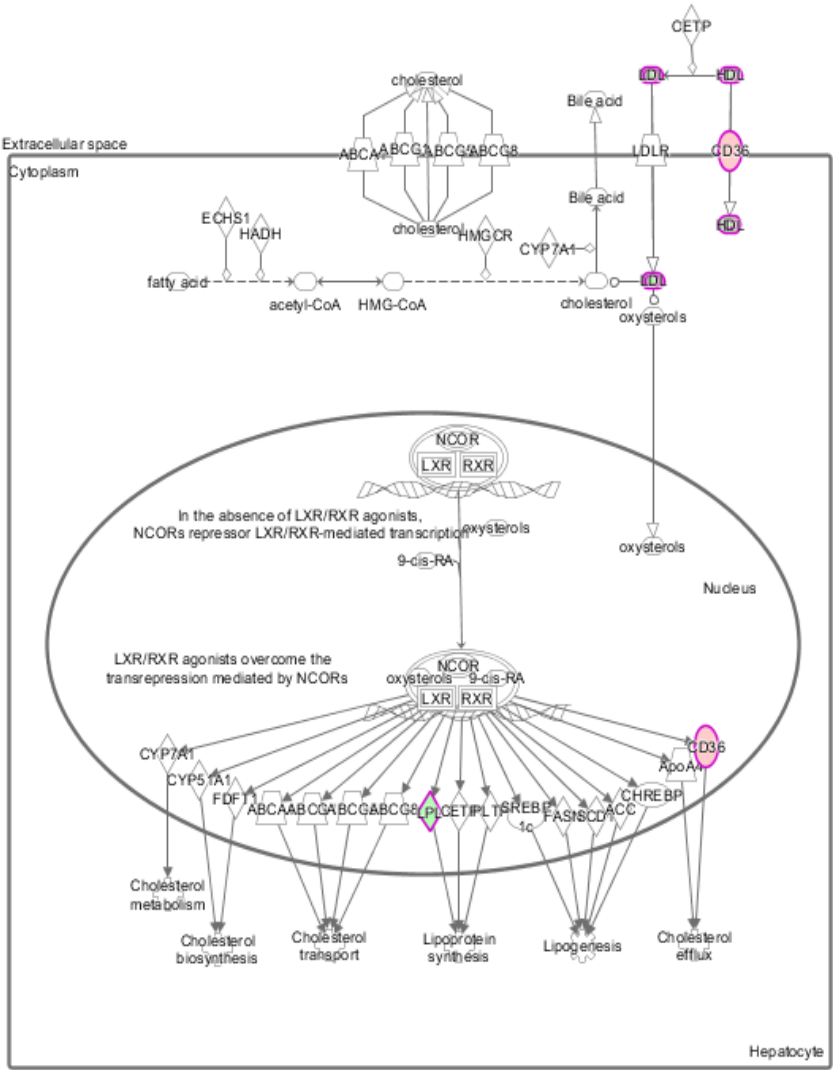
42. Crosstalk between Dendritic cells natural killer cells



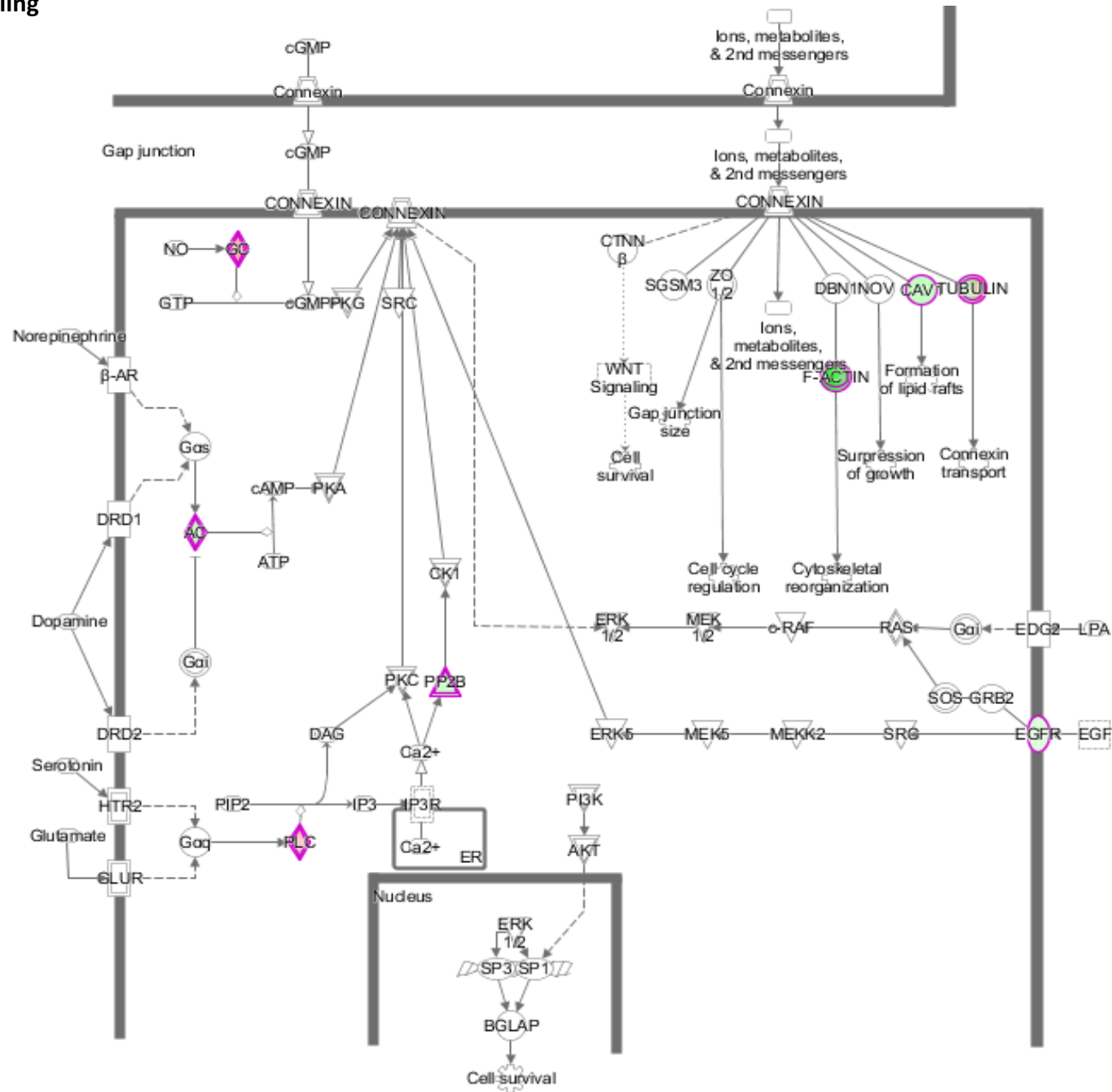
43. FAK signaling



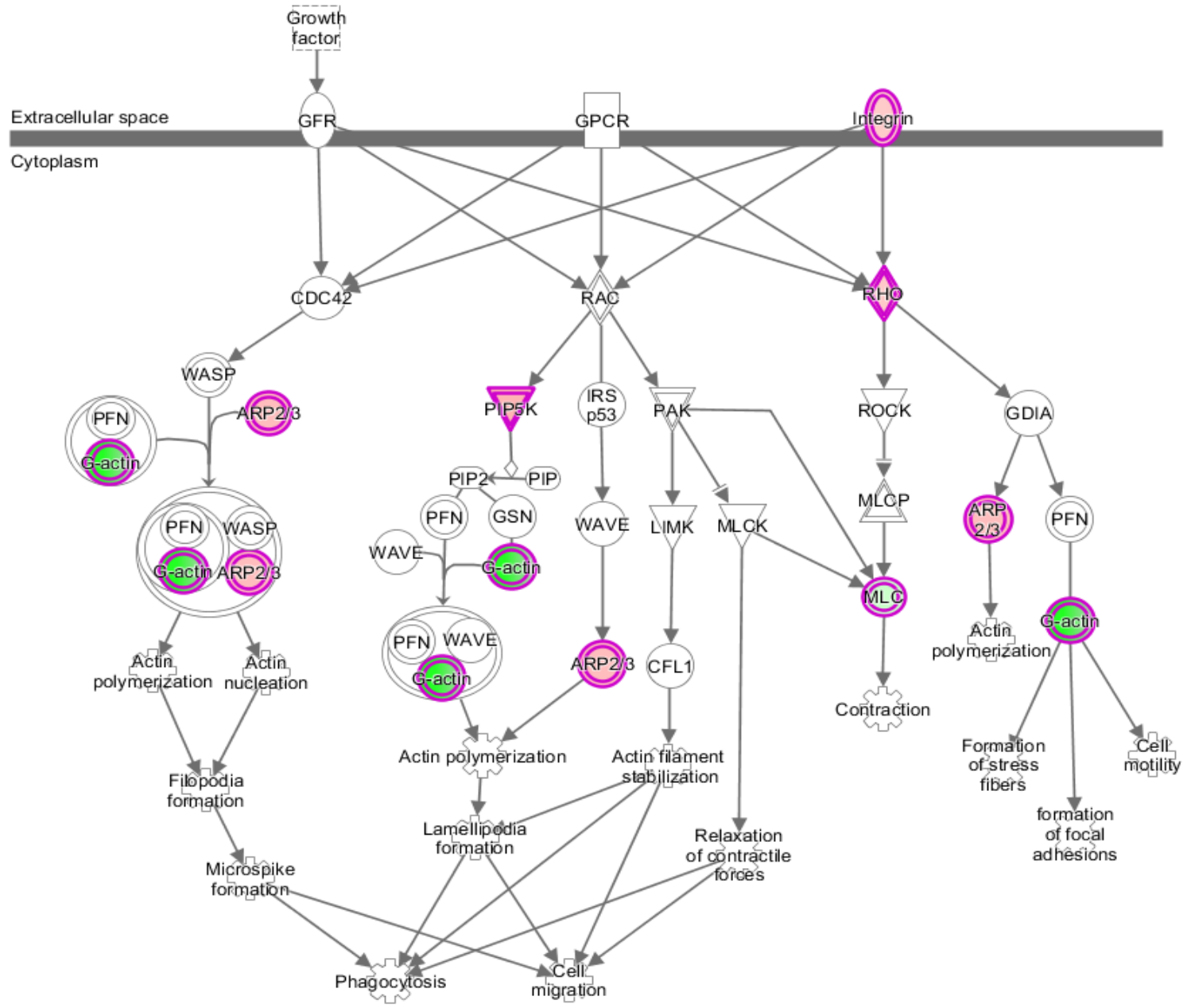
44. LXR RXR activation



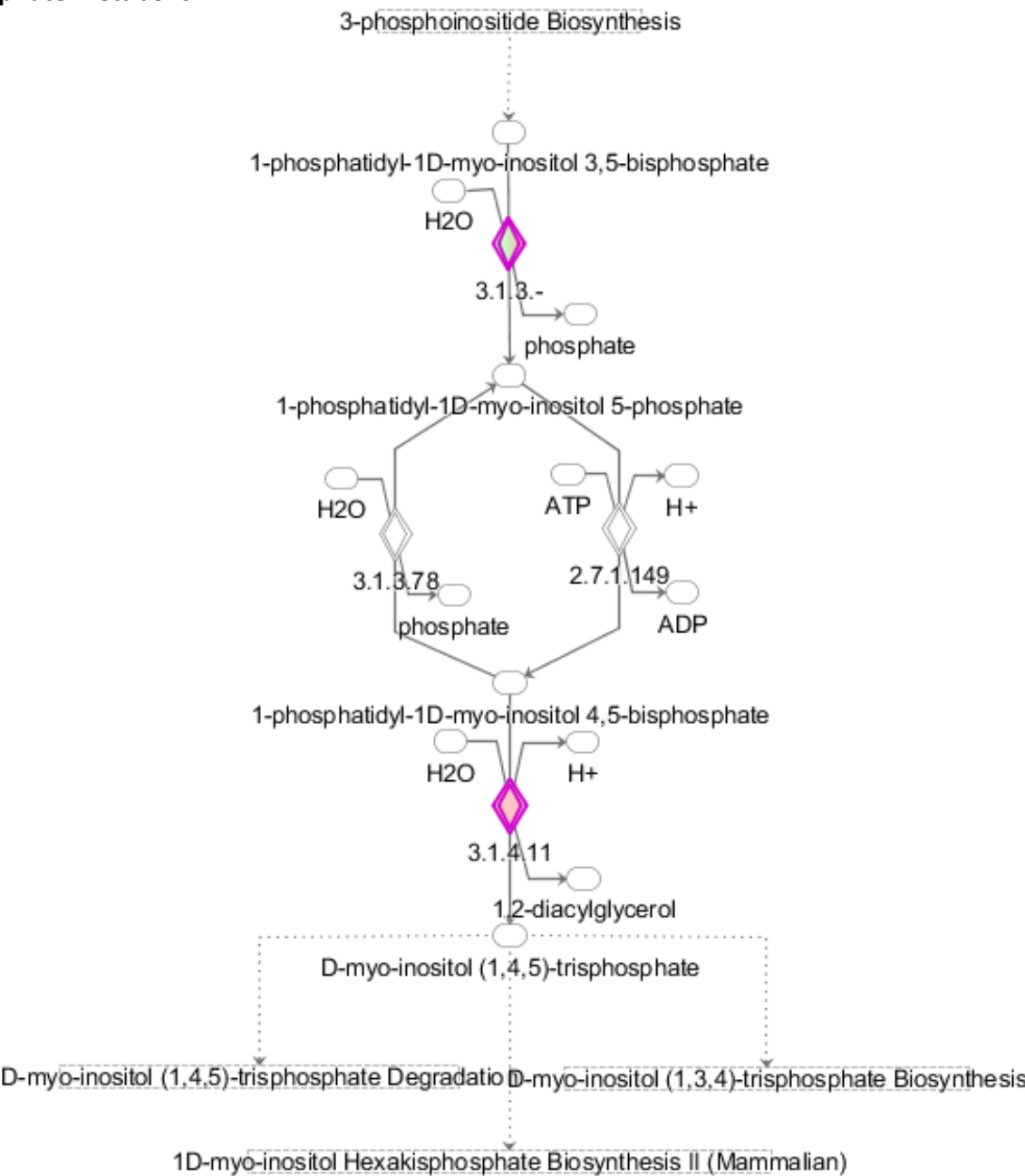
45. Gap junction signaling



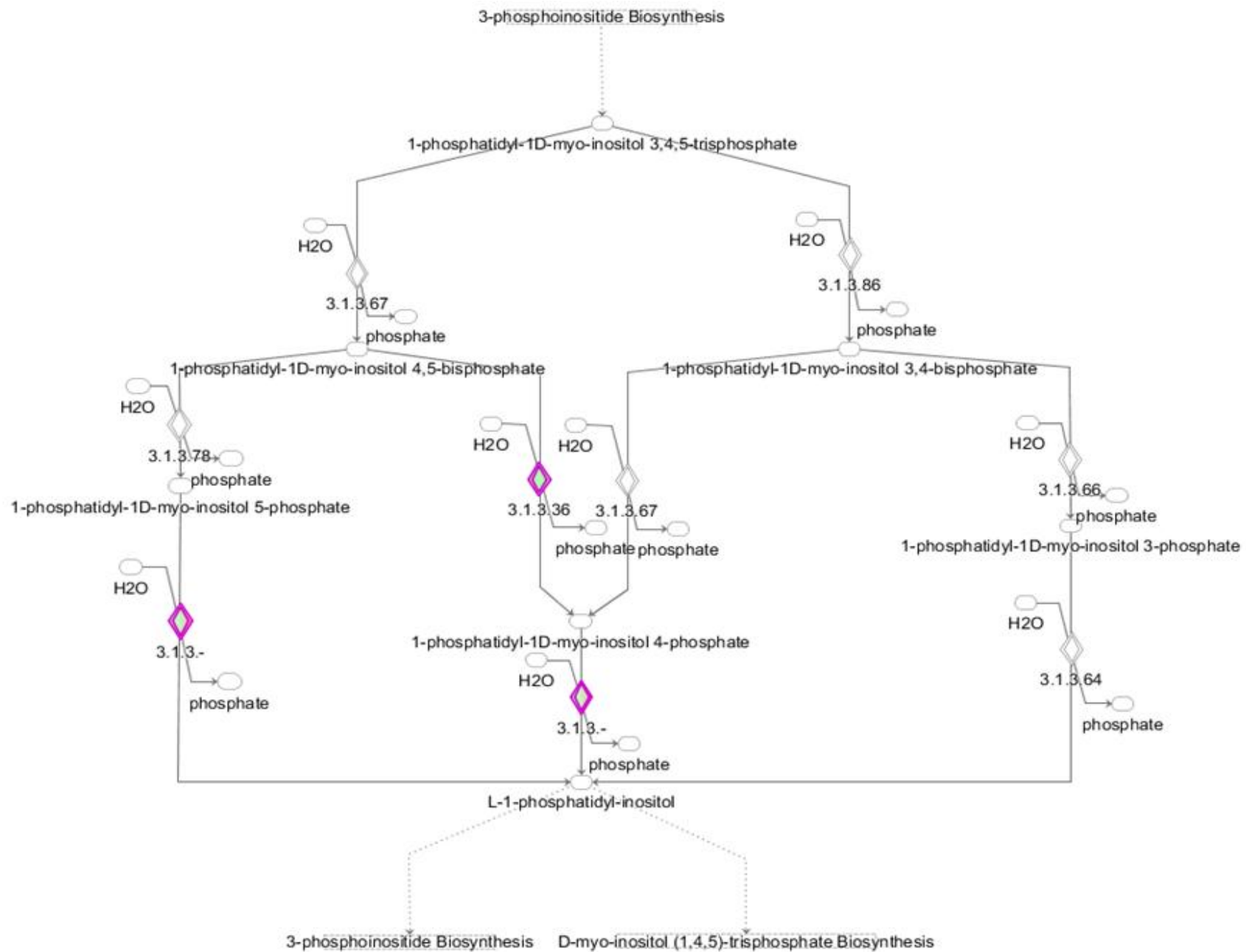
46. Regulation of actin-based motility by Rho



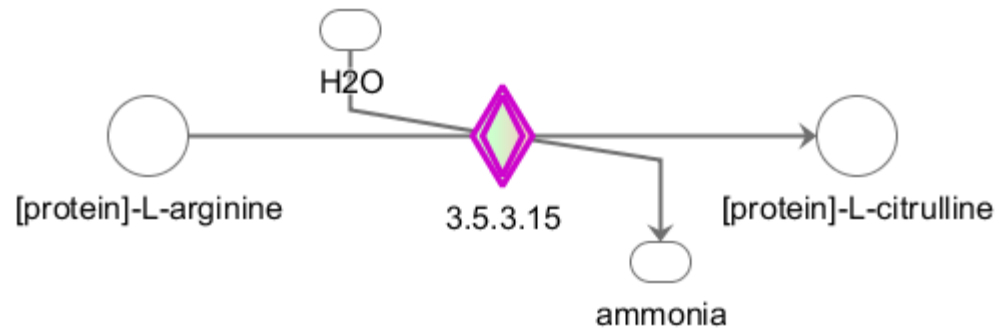
47. D-myo-inositol-5-phosphate metabolism



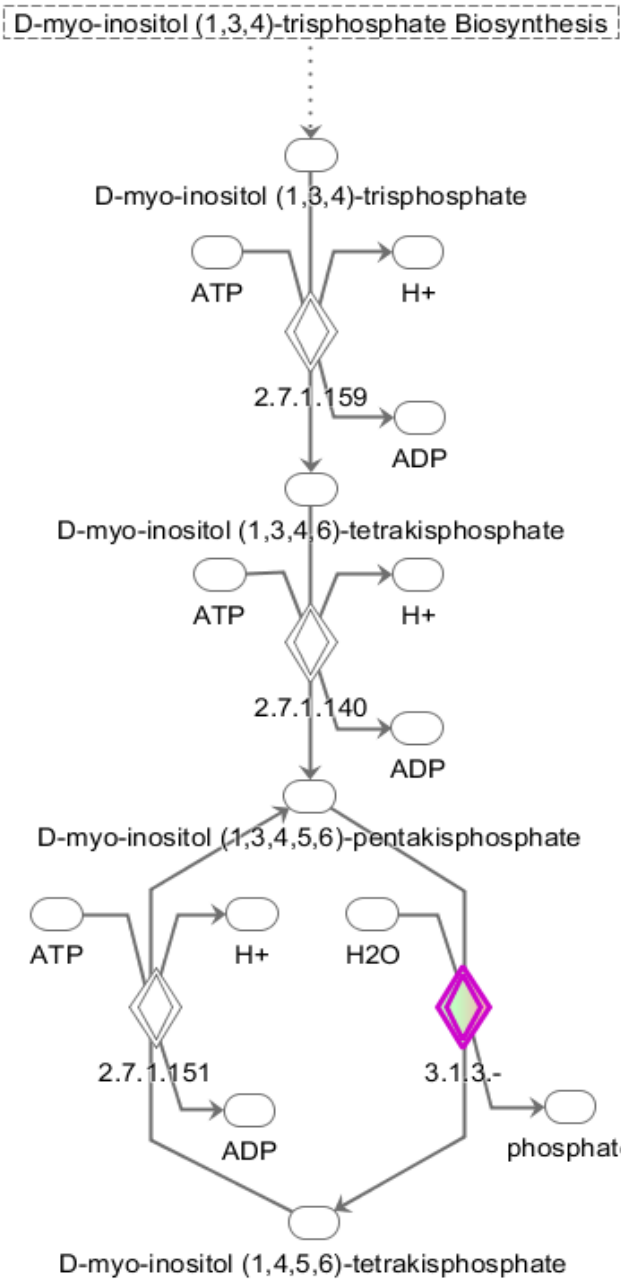
48. 3-phosphoinositide degradation



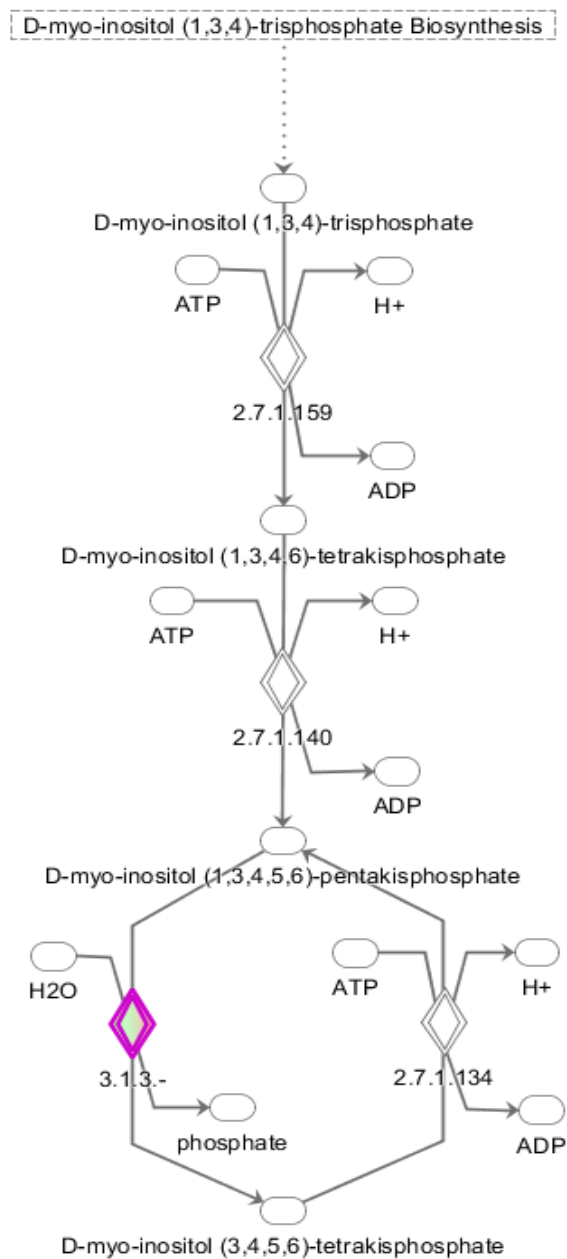
49. Protein citrullination



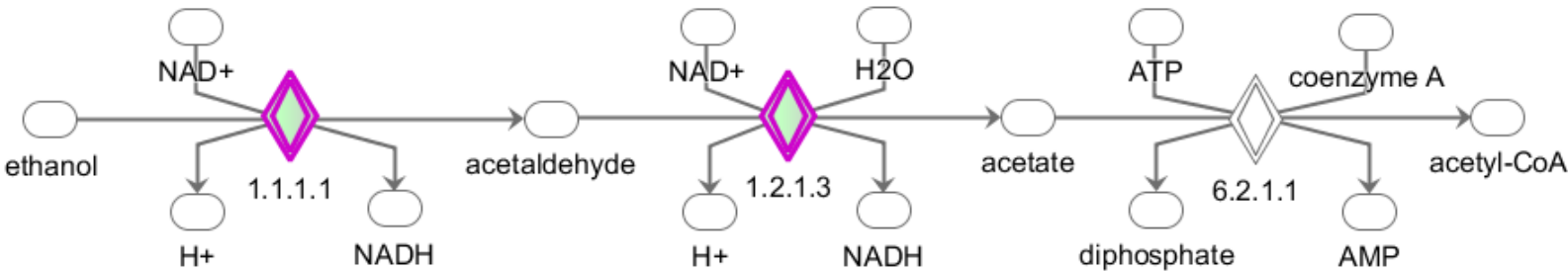
50. D-myo-inositol(1,4,5,6)-Tetrakisphosphate biosynthesis



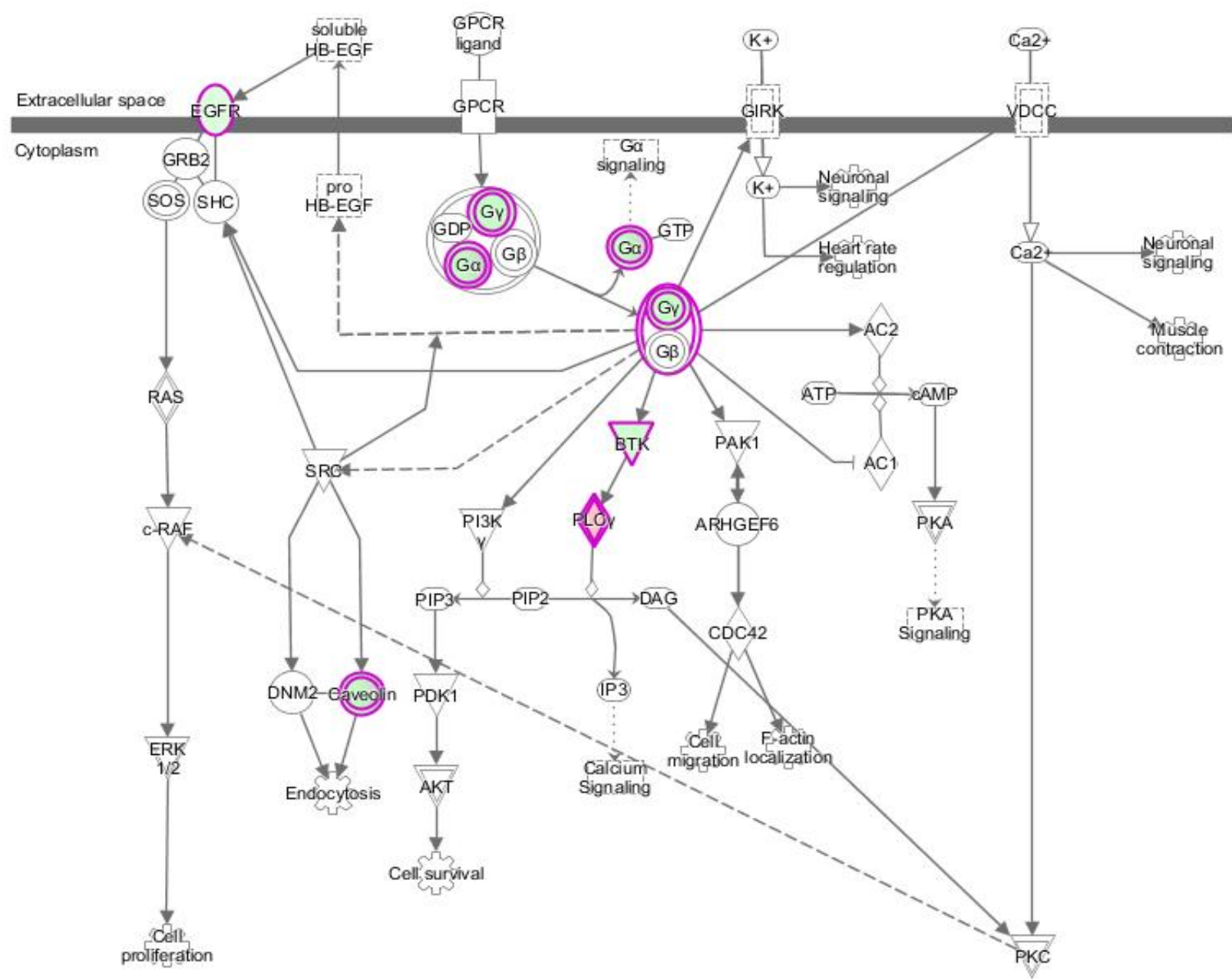
51. D-myo-inositol(3,4,5,6)-tetrakisphosphate biosynthesis



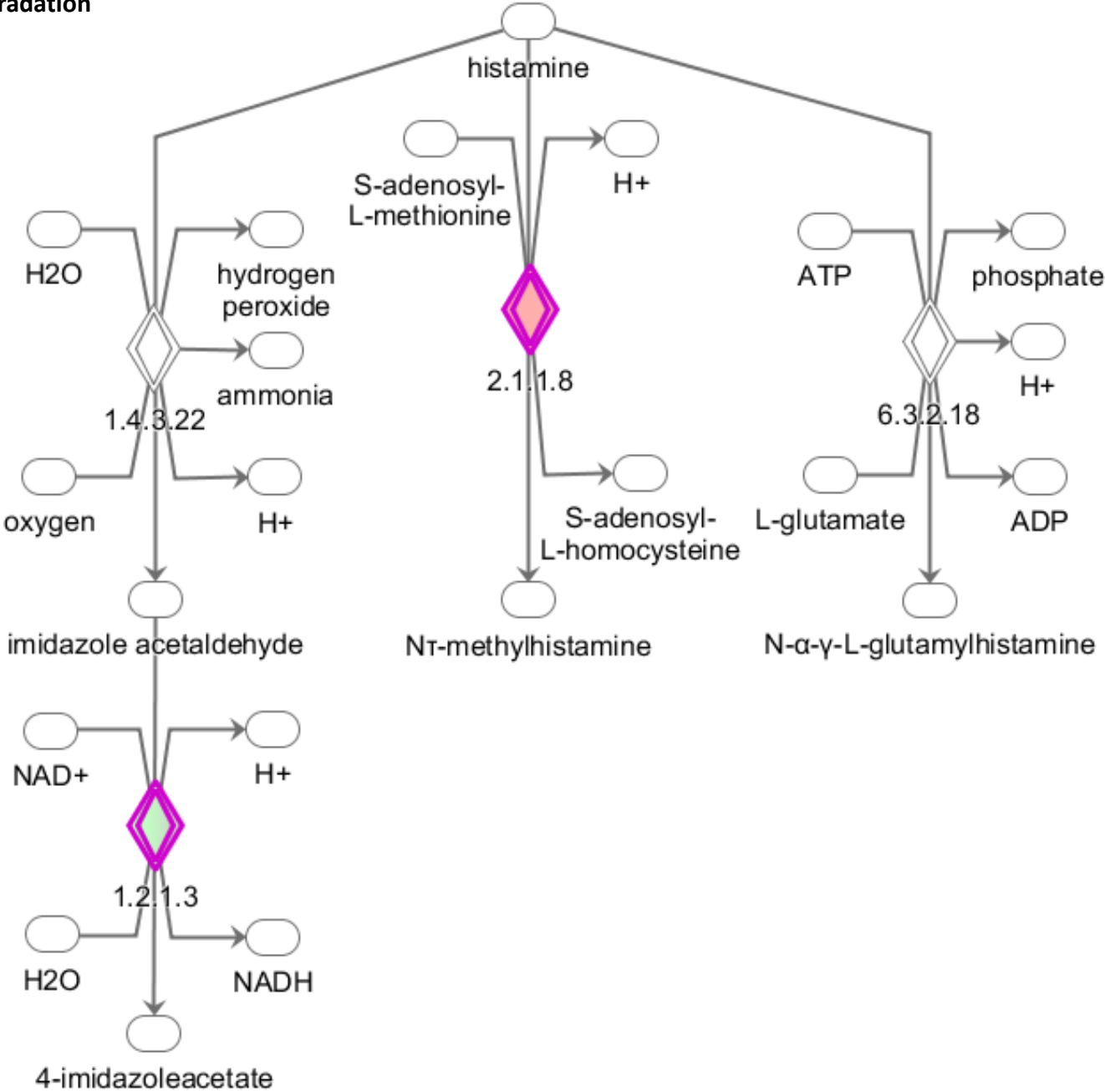
52. Ethanol Degradation II



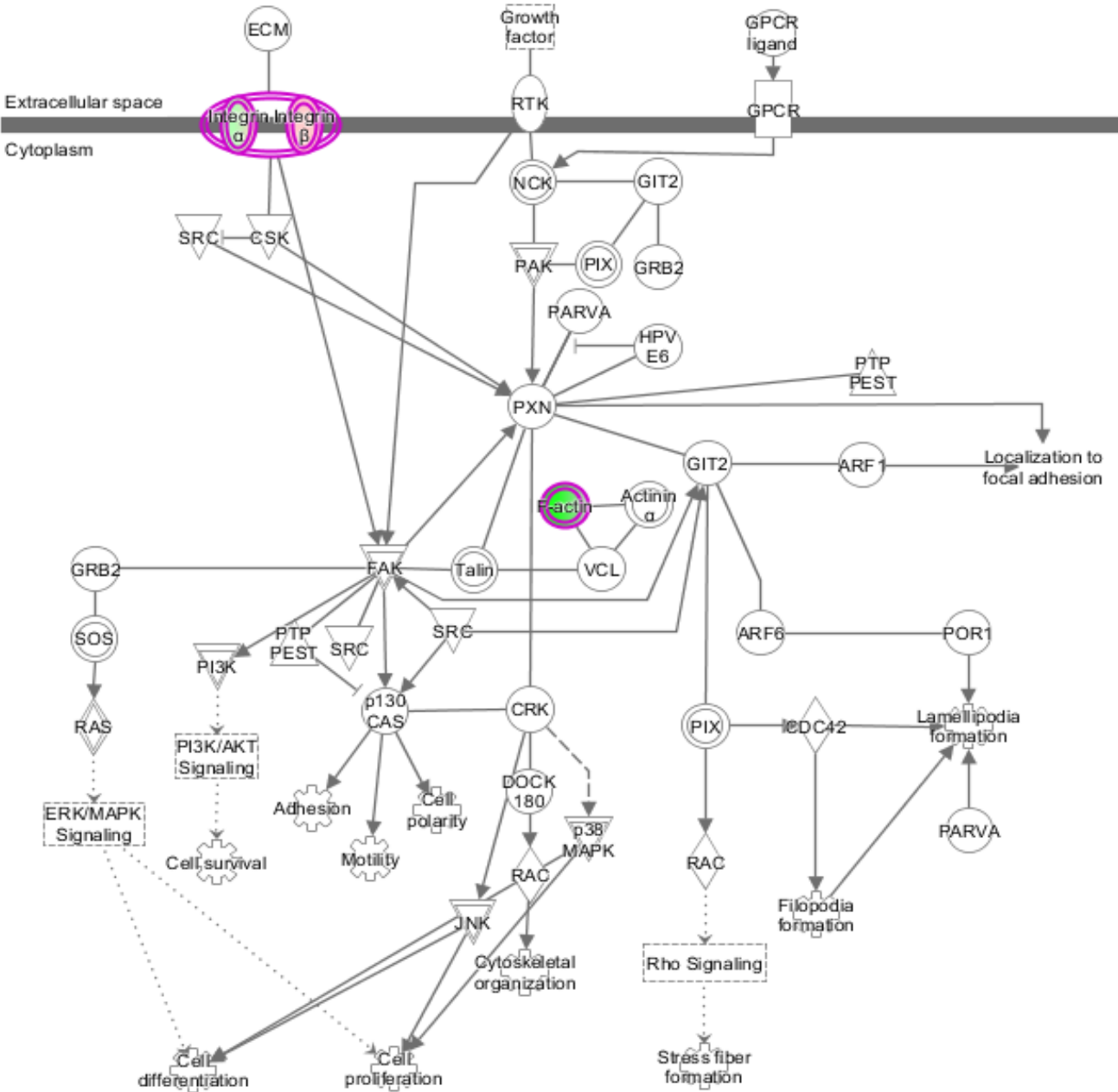
53. G Beta Gamma signaling



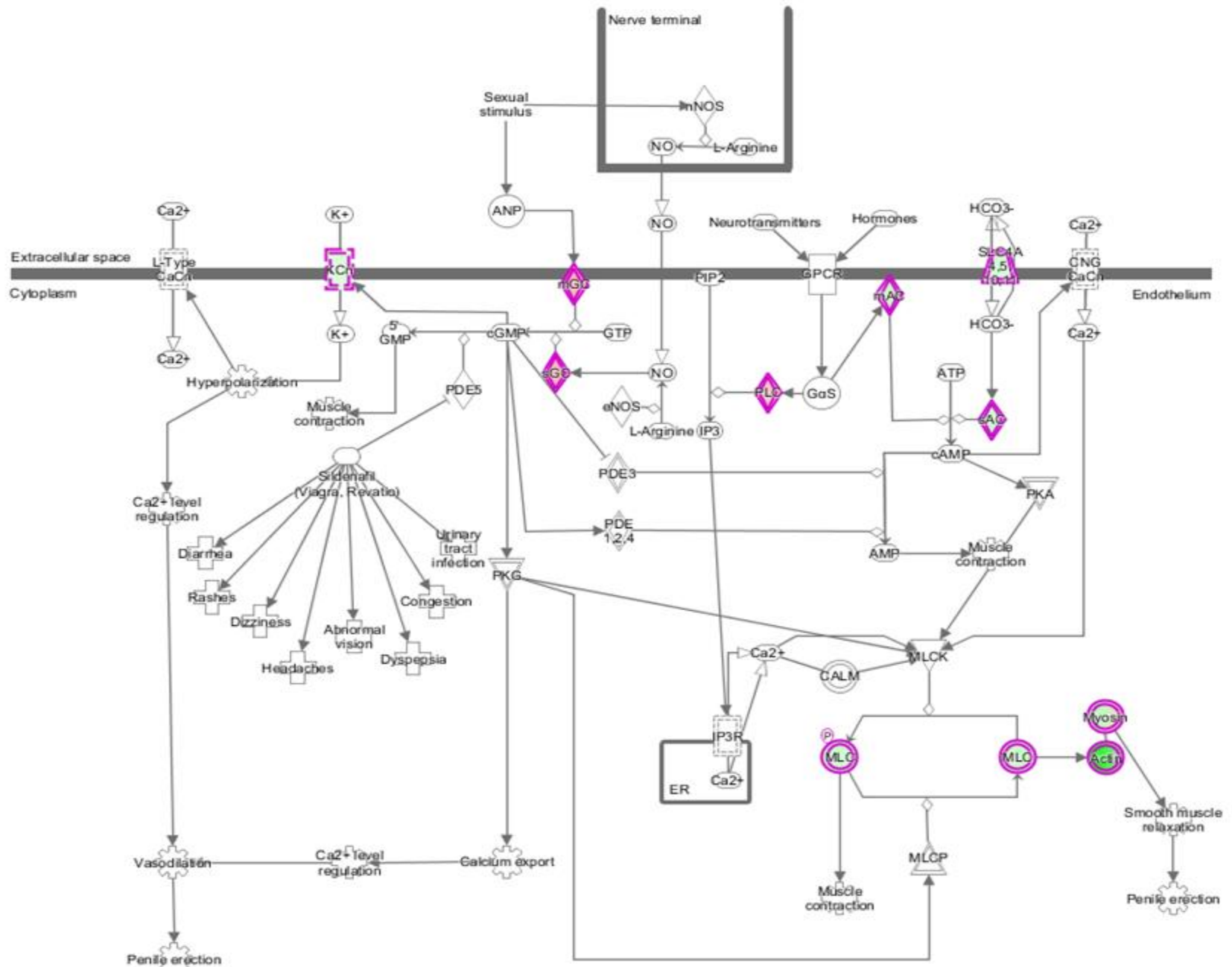
54. Histamine Degradation



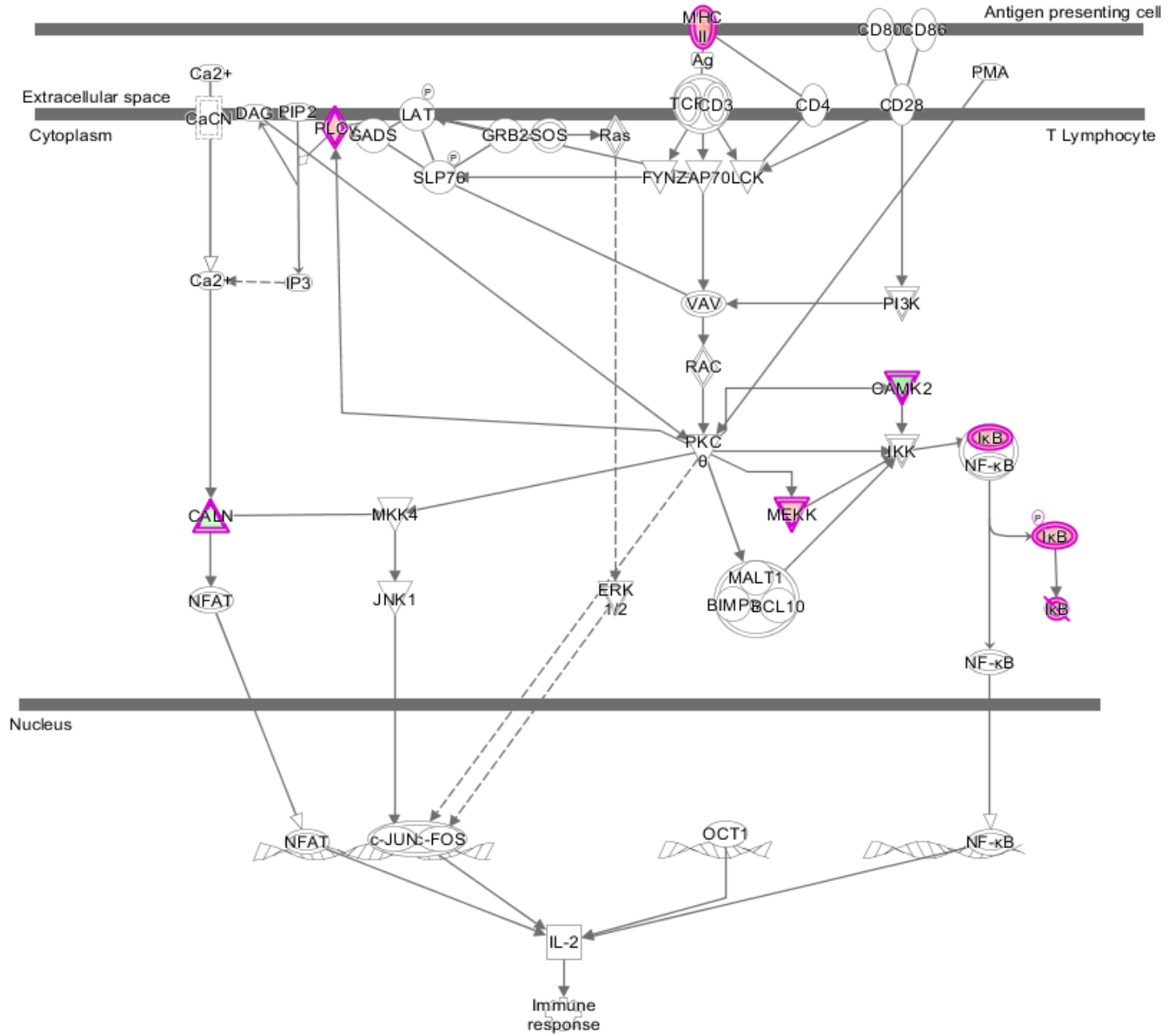
55. Paxillin signaling



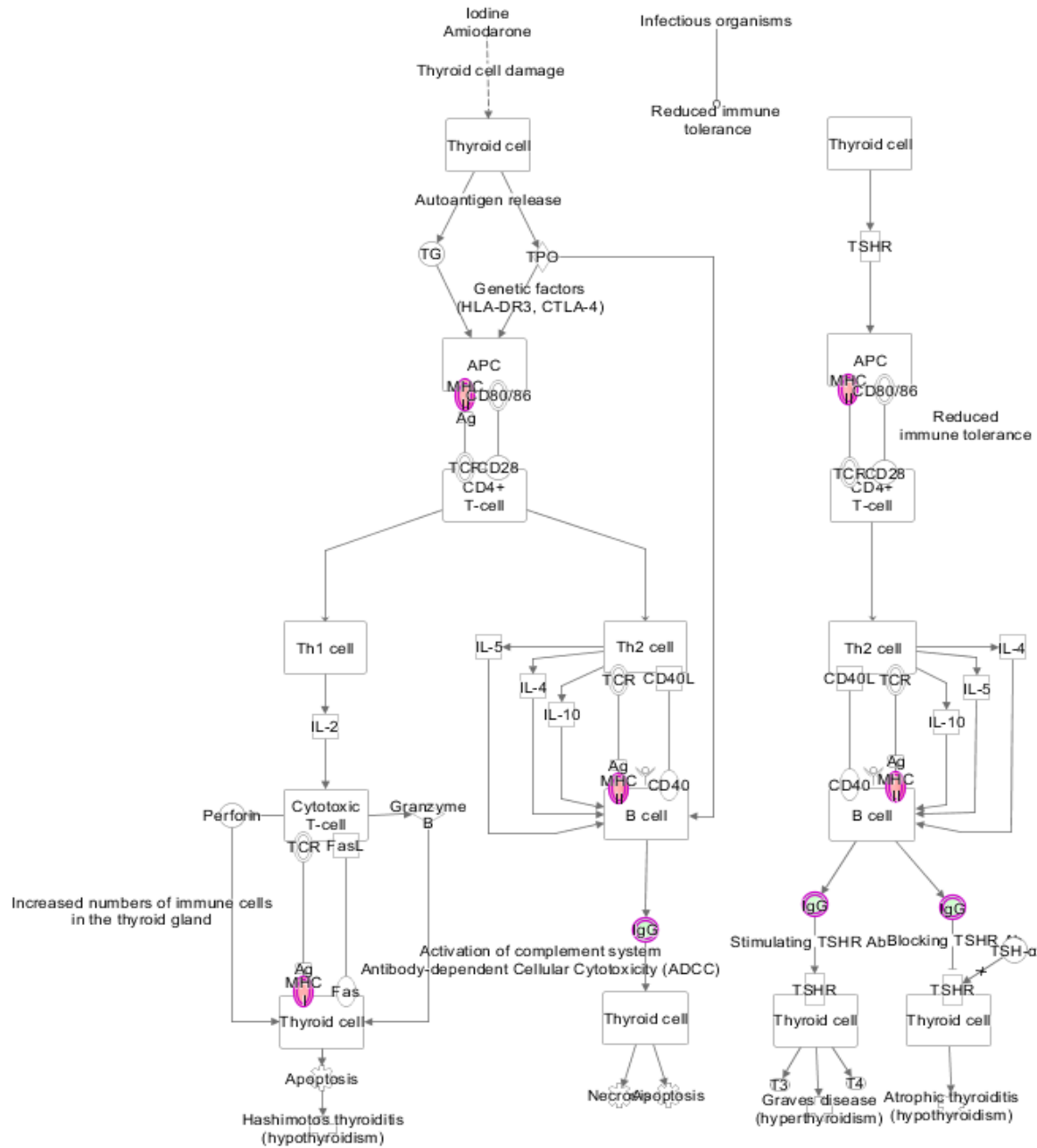
56. Cellular effects of sildenafil(viagra)



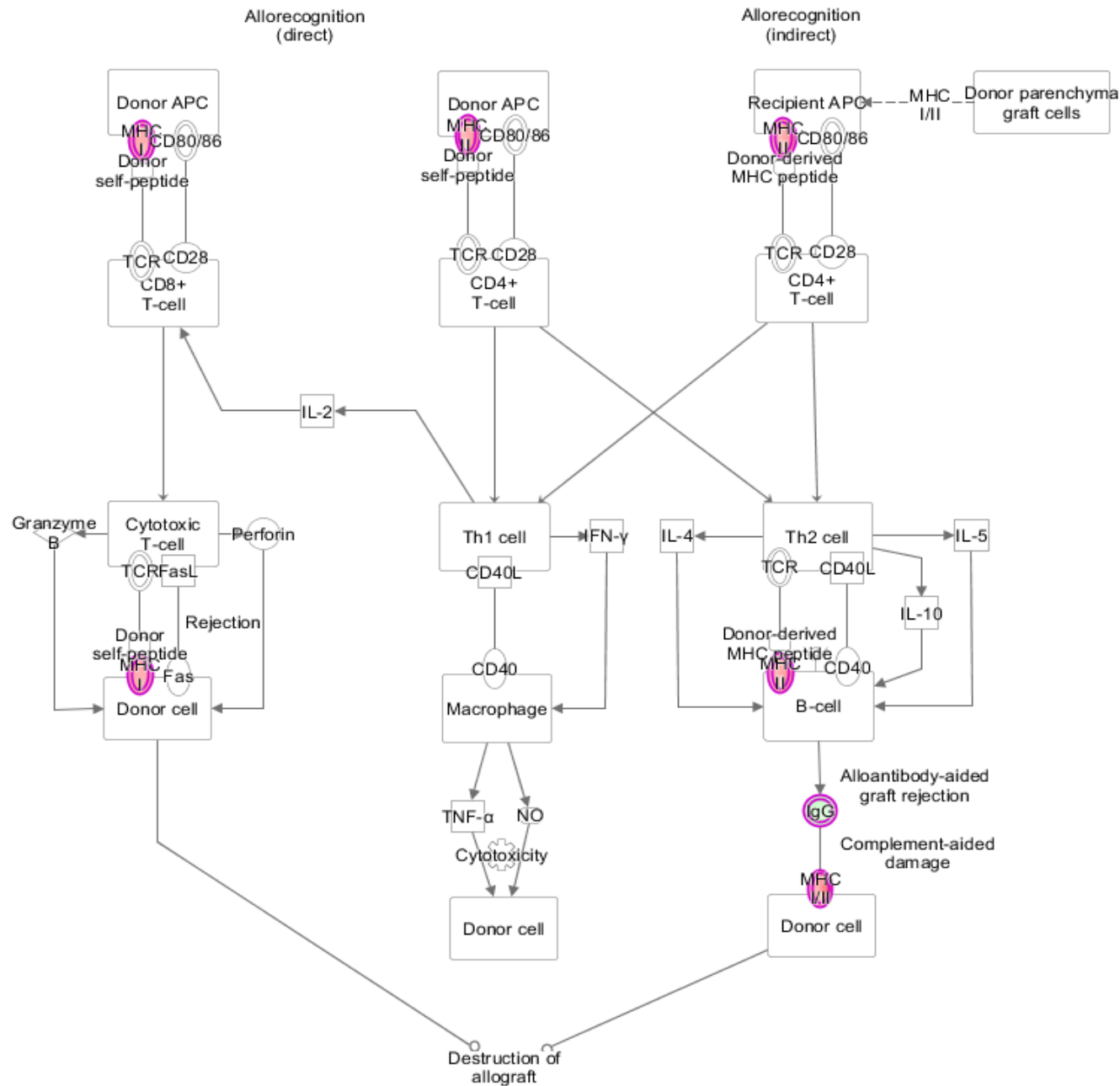
57. PKC signaling in T Lymphocytes



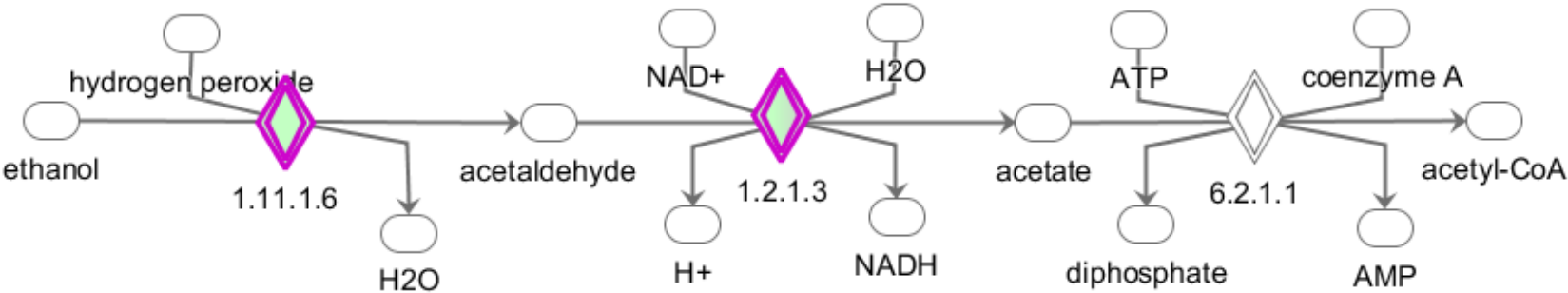
58. Autoimmune thyroid disease signaling



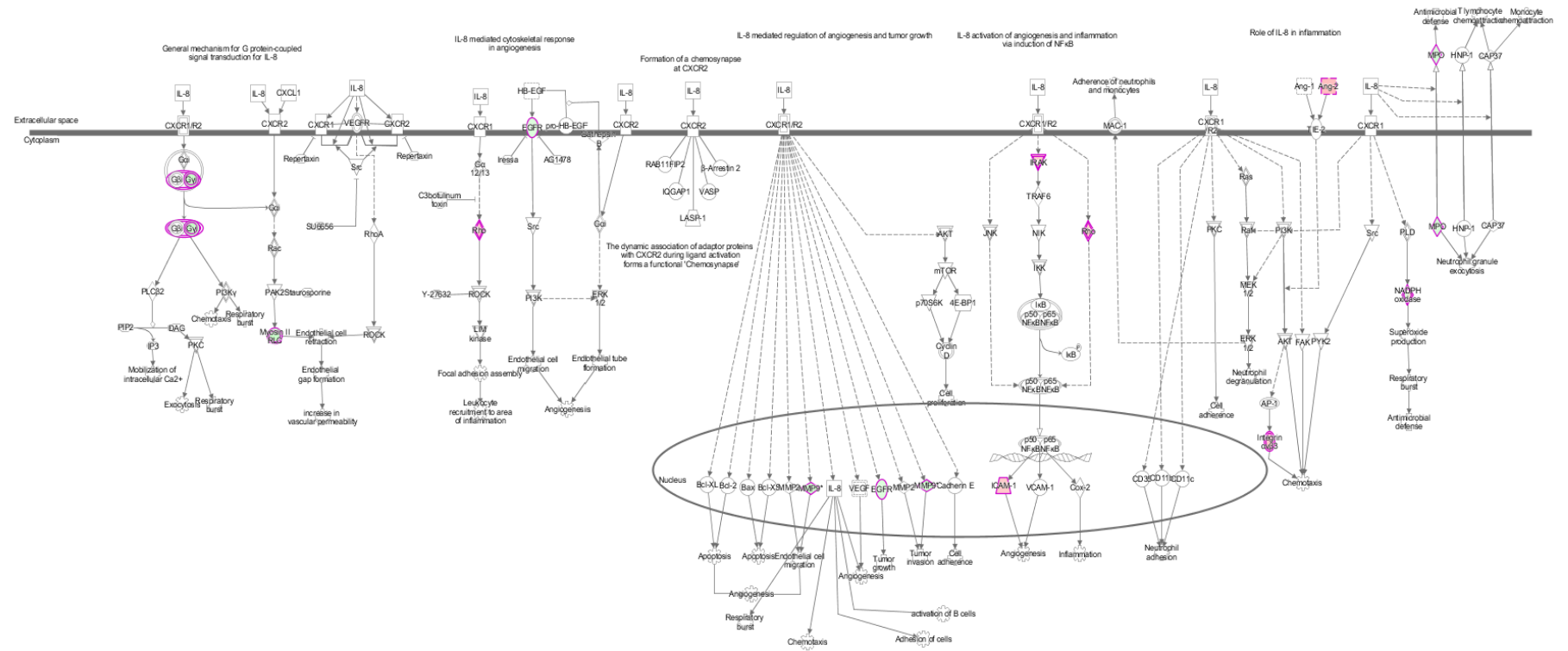
59. Allograft rejection signaling



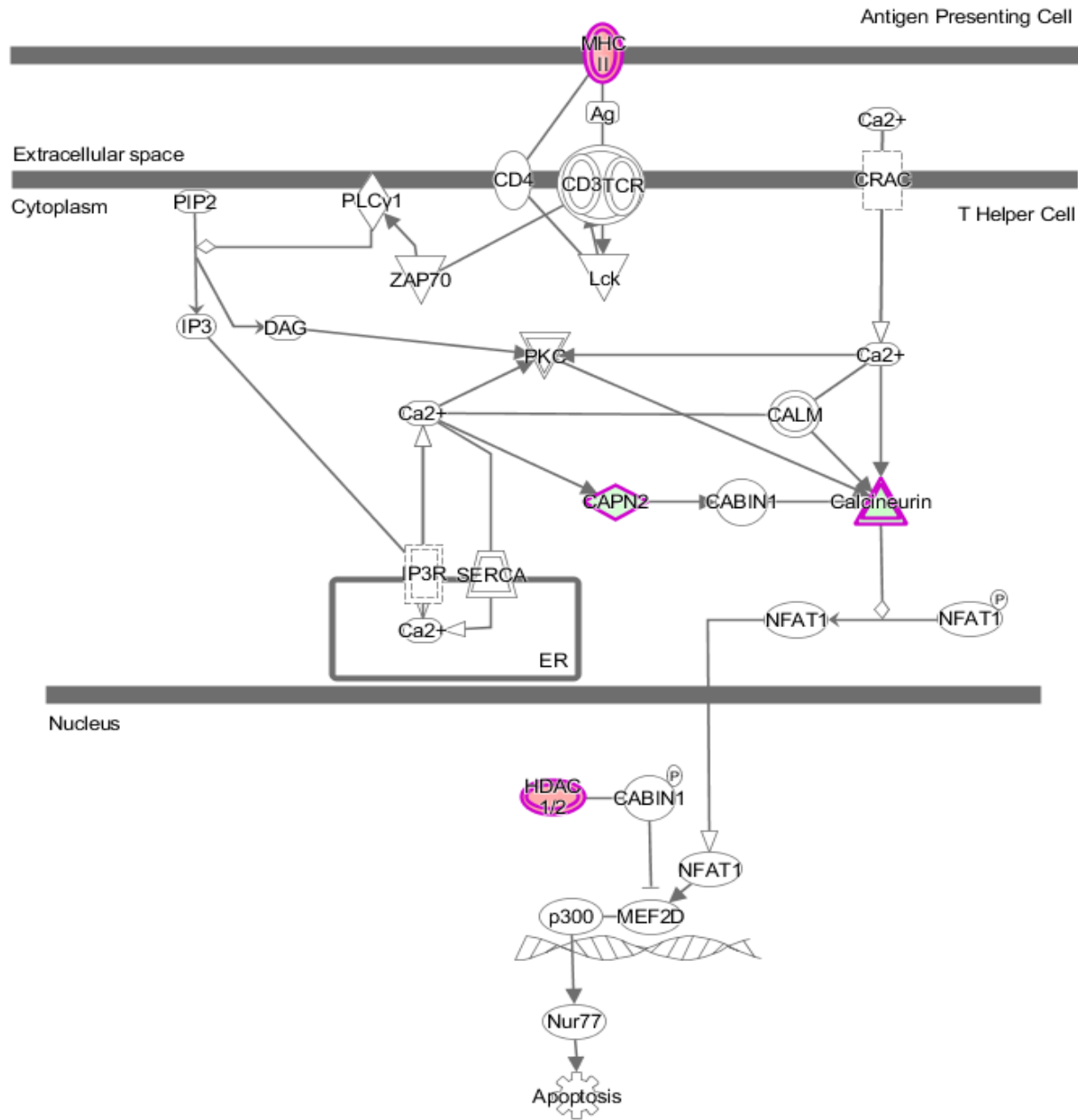
60. Ethanol Degradation IV



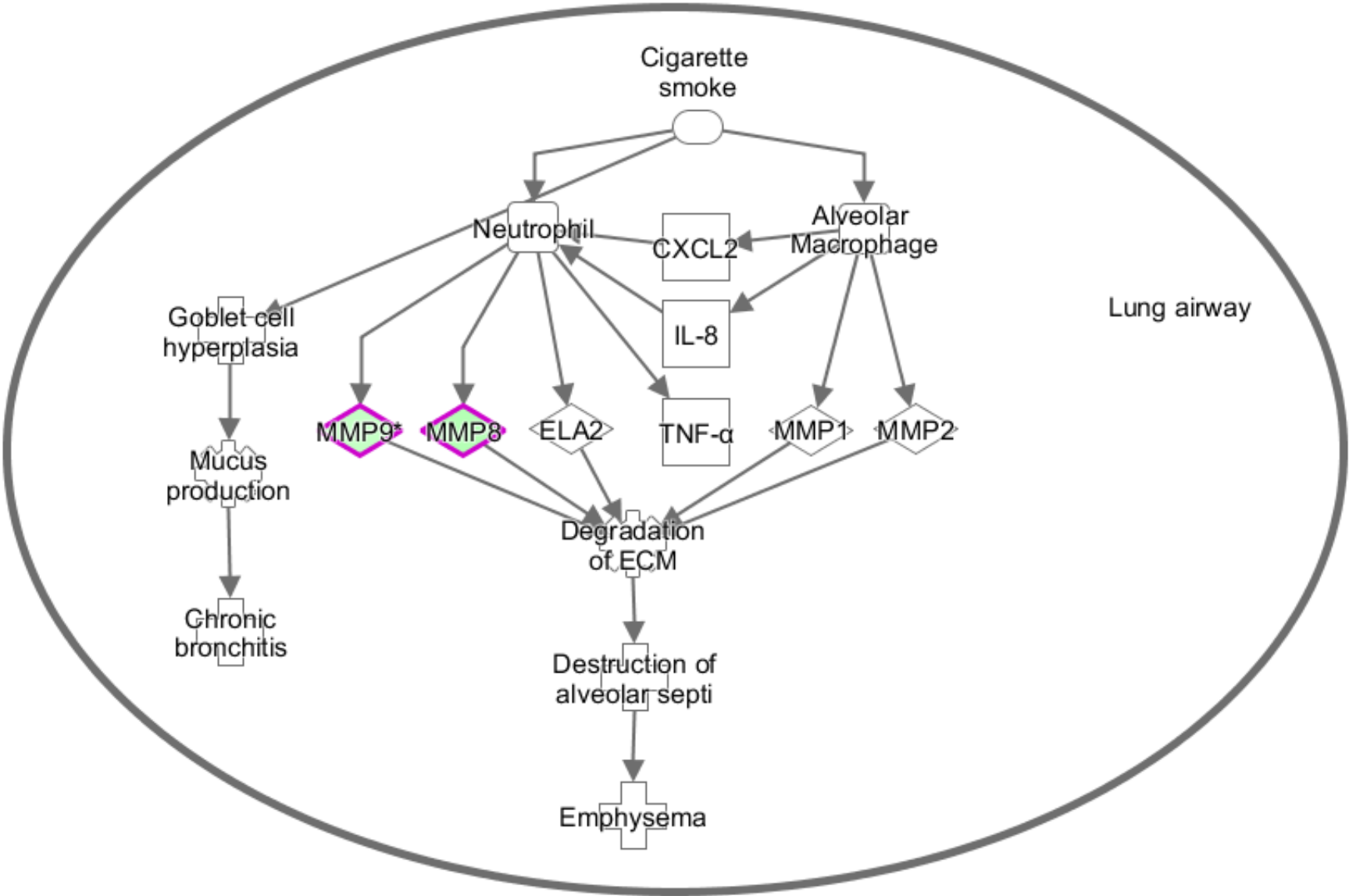
61. IL-8 signaling



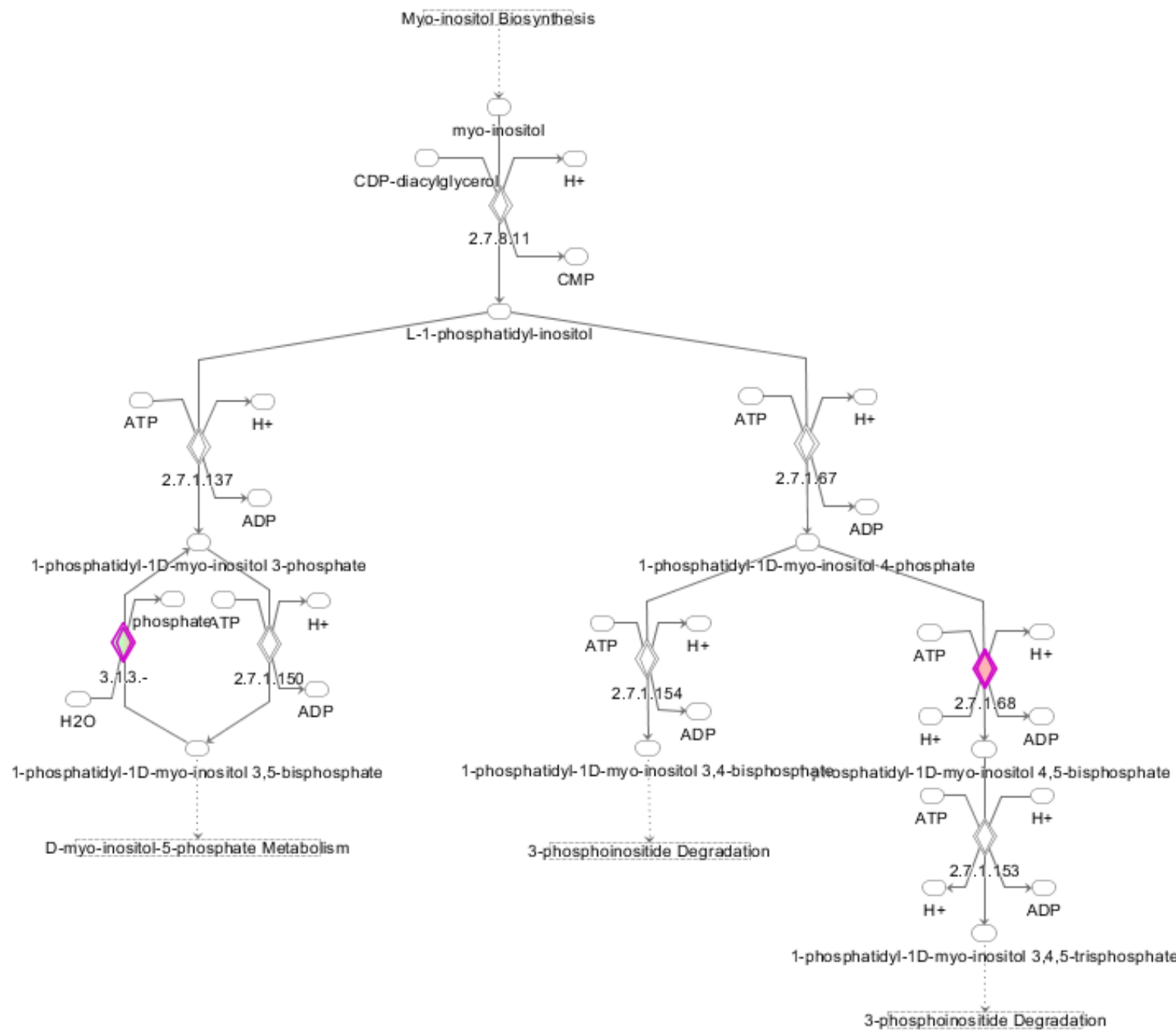
62. Calcium-induced T Lymphocyte Apoptosis



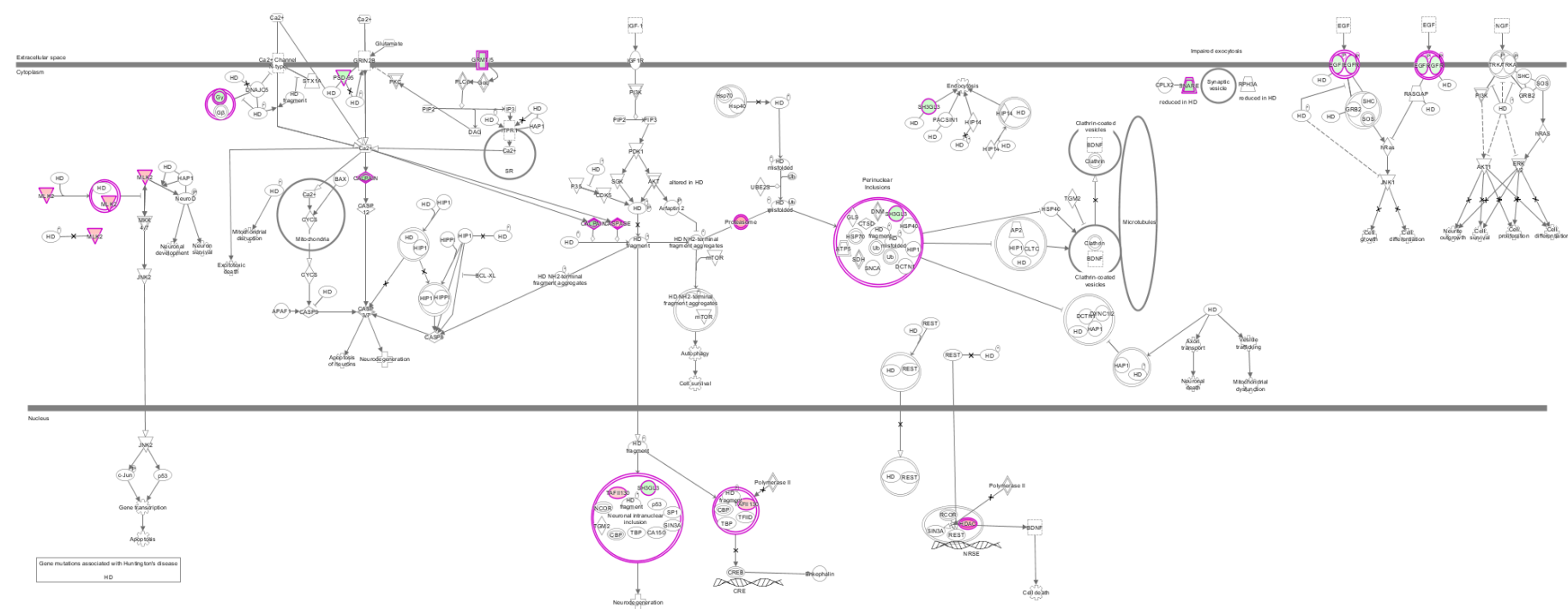
63. Airway Pathology in chronic obstructive pulmonary disease



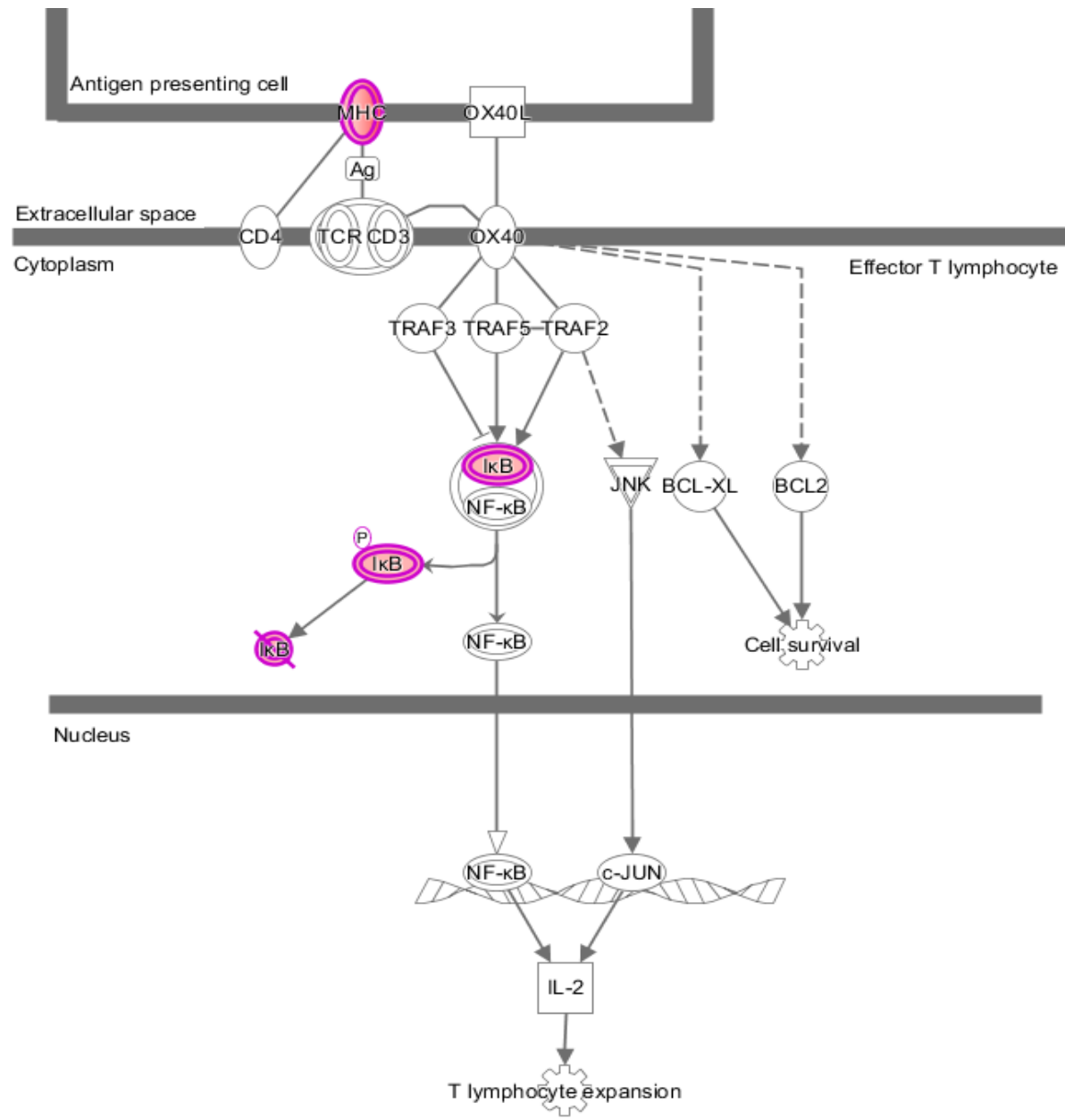
64. 3-phosphoinositide biosynthesis



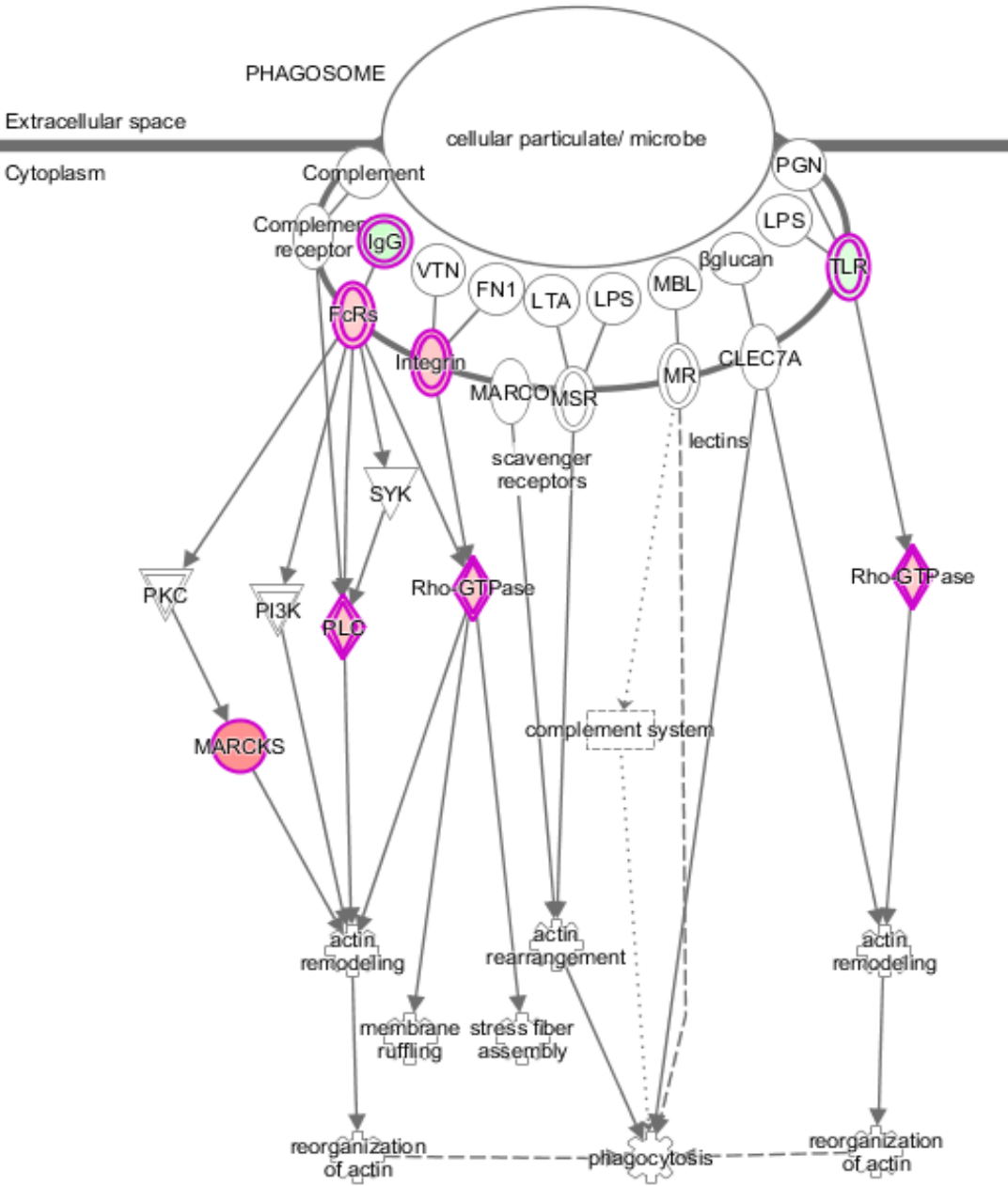
65. Huntington's disease signaling



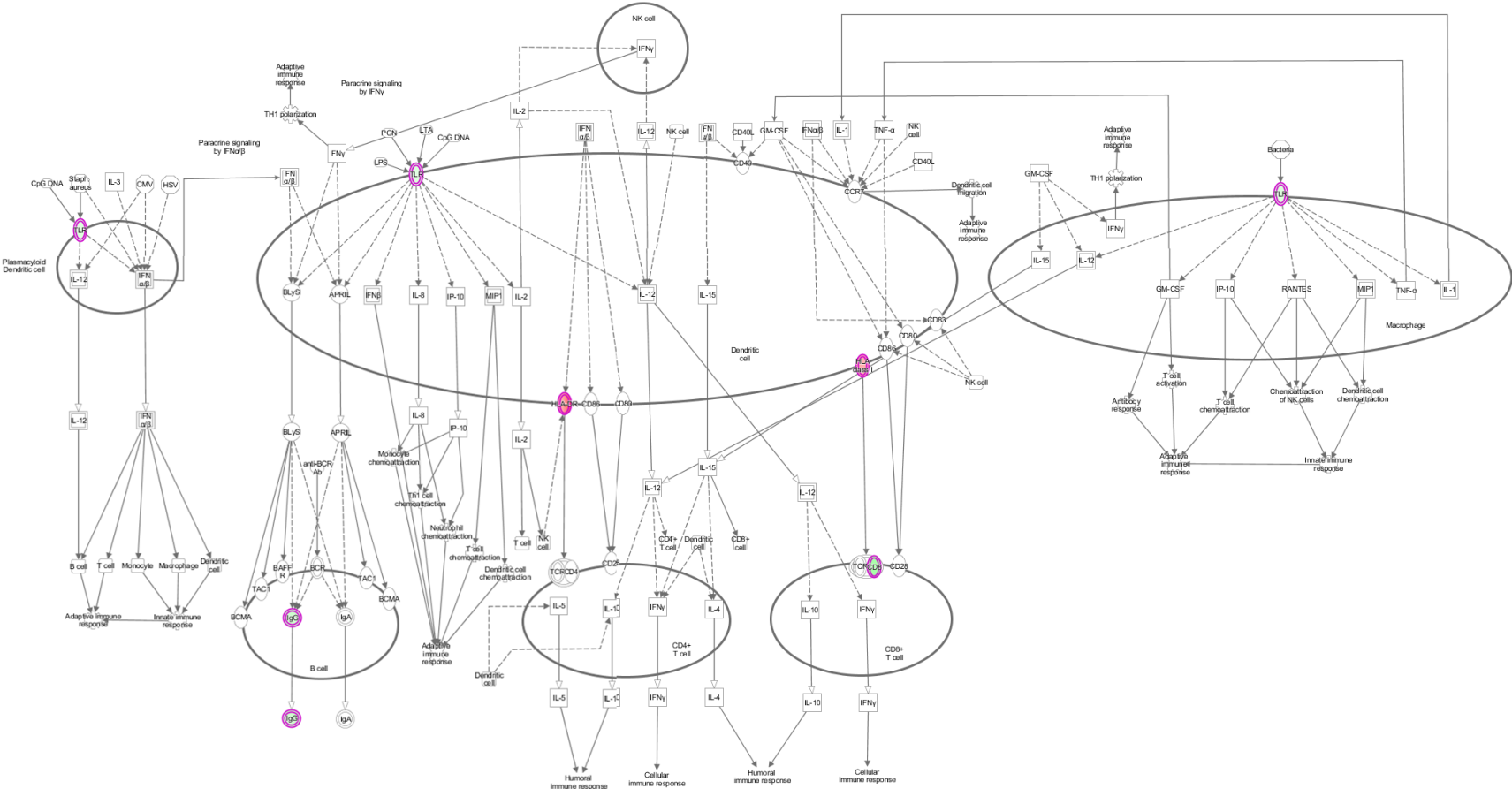
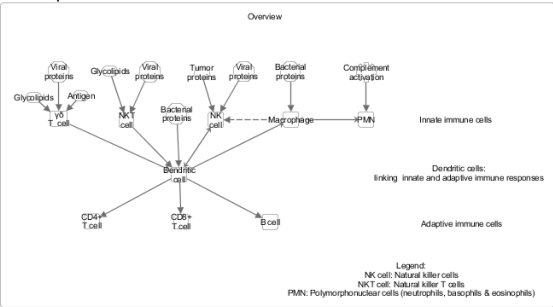
66. OX40 signaling pathway



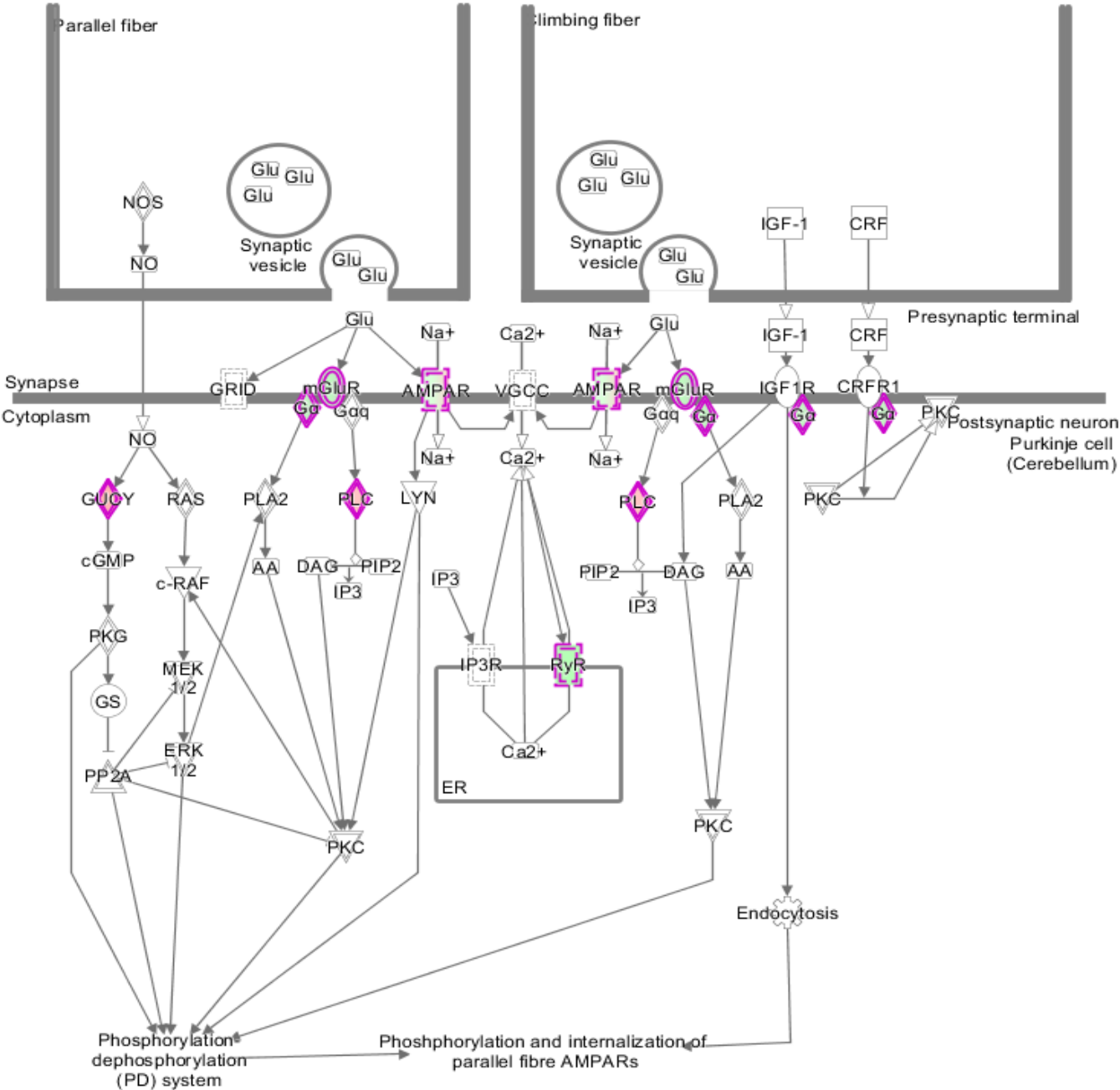
67. phagosome formation



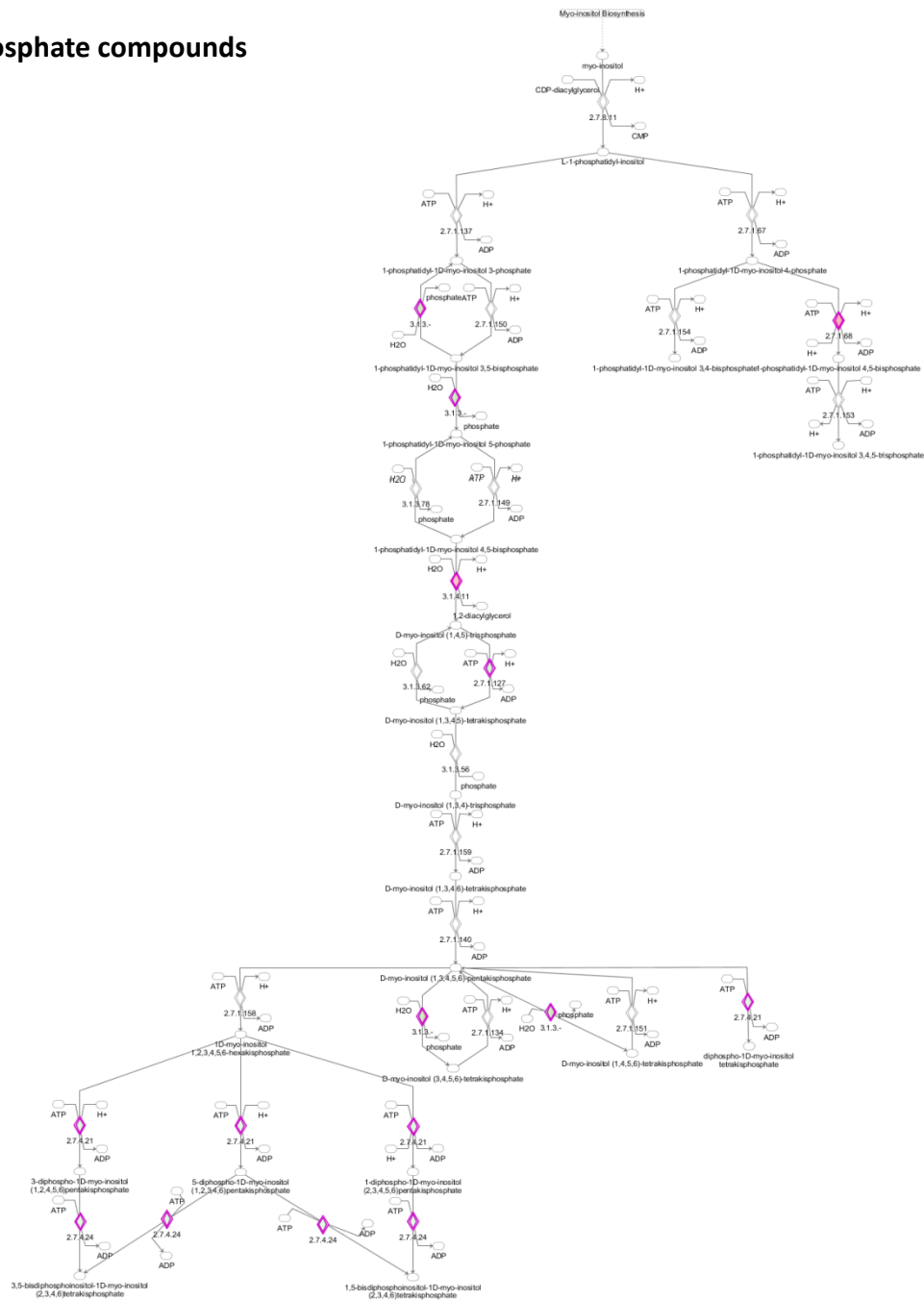
68. Communication between innate and adaptive immune cells



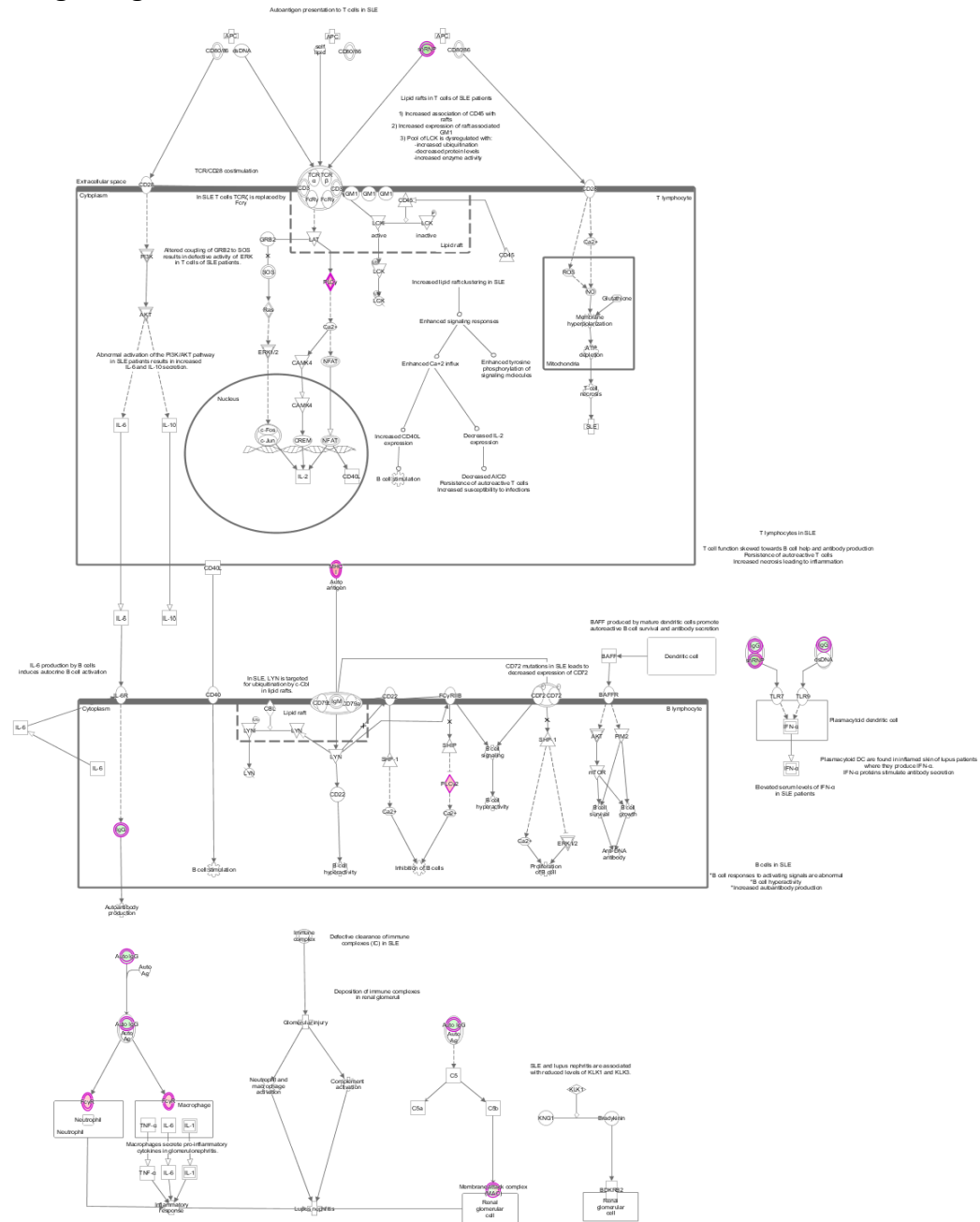
69. Synaptic long term depression



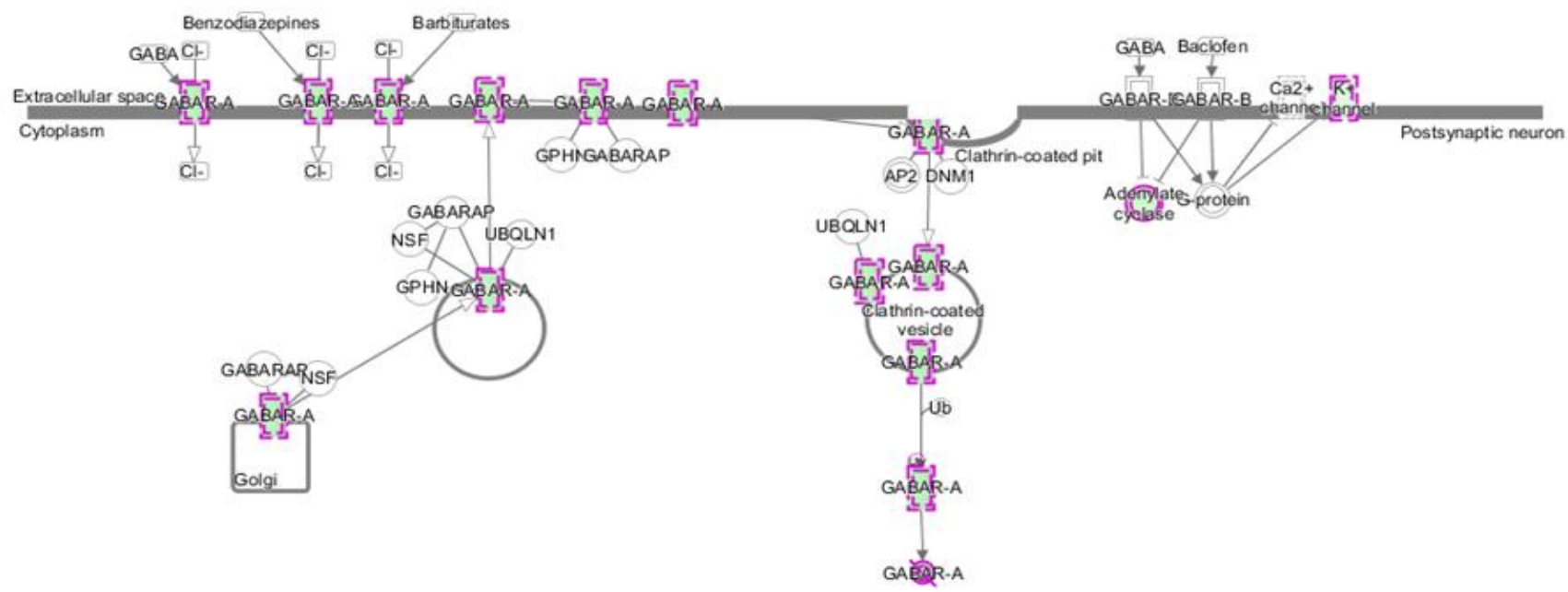
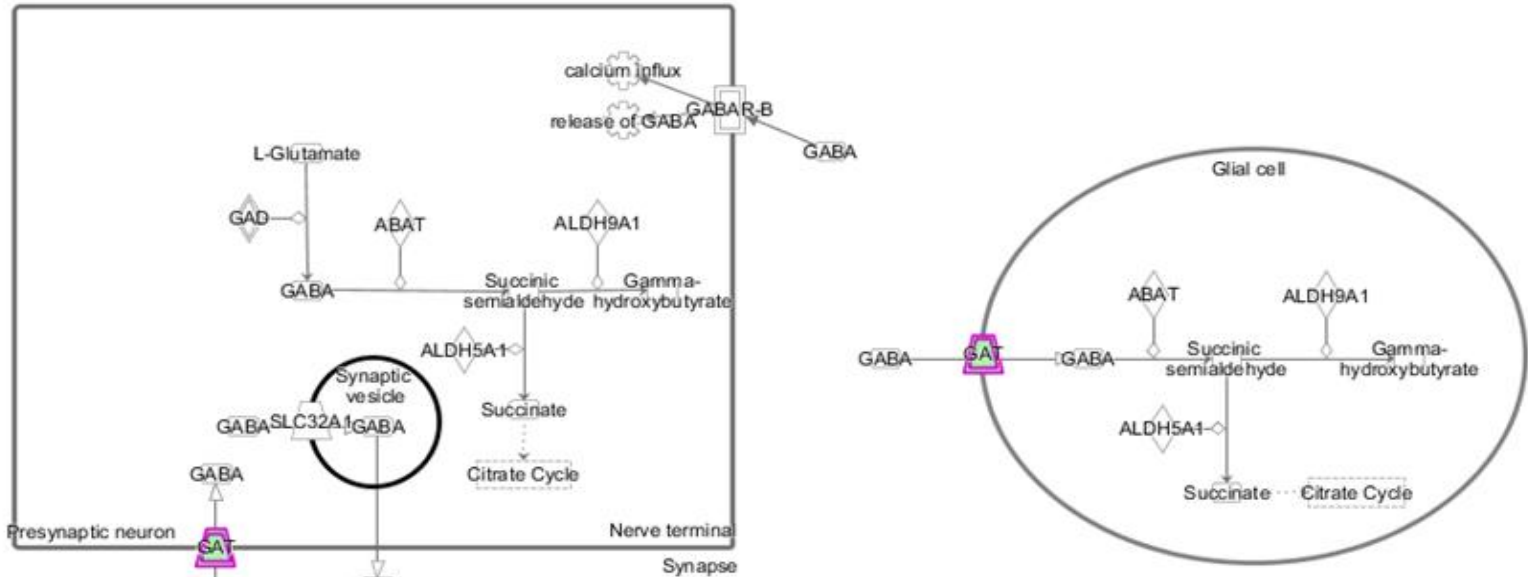
70. Superpathway of inositol phosphate compounds



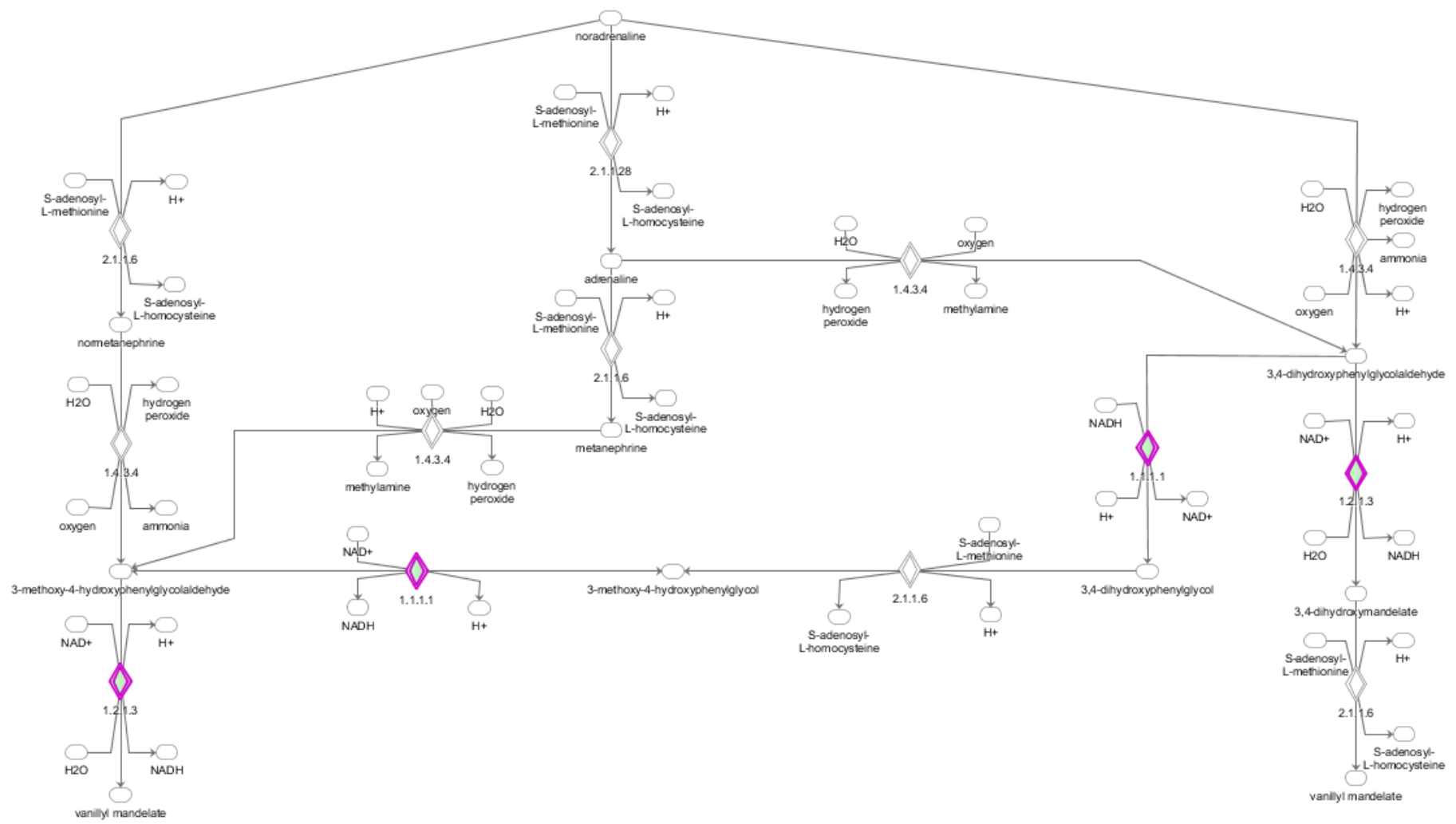
71. Systemic Lupus Erythematosus signaling



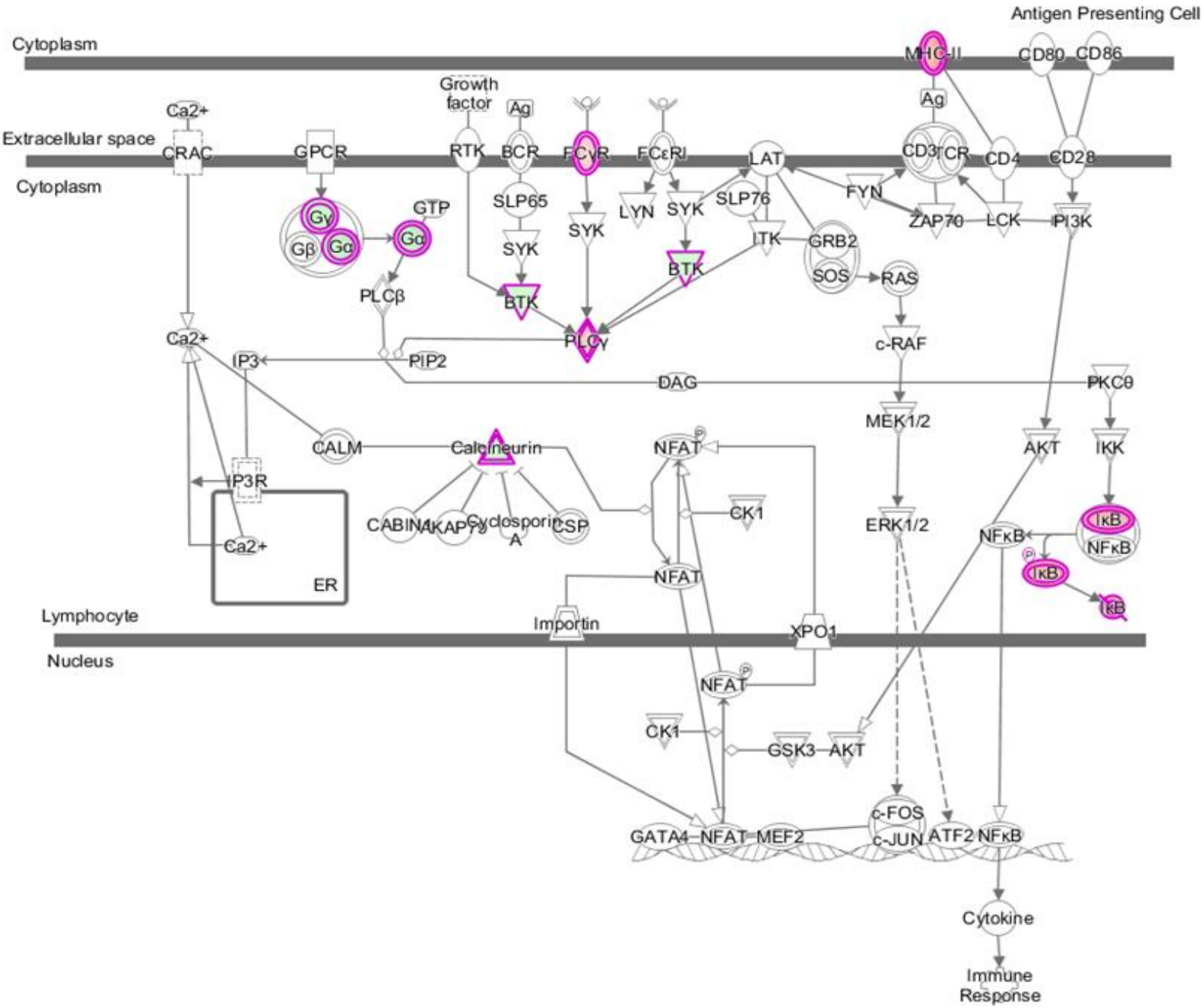
72. GABA Receptor signaling



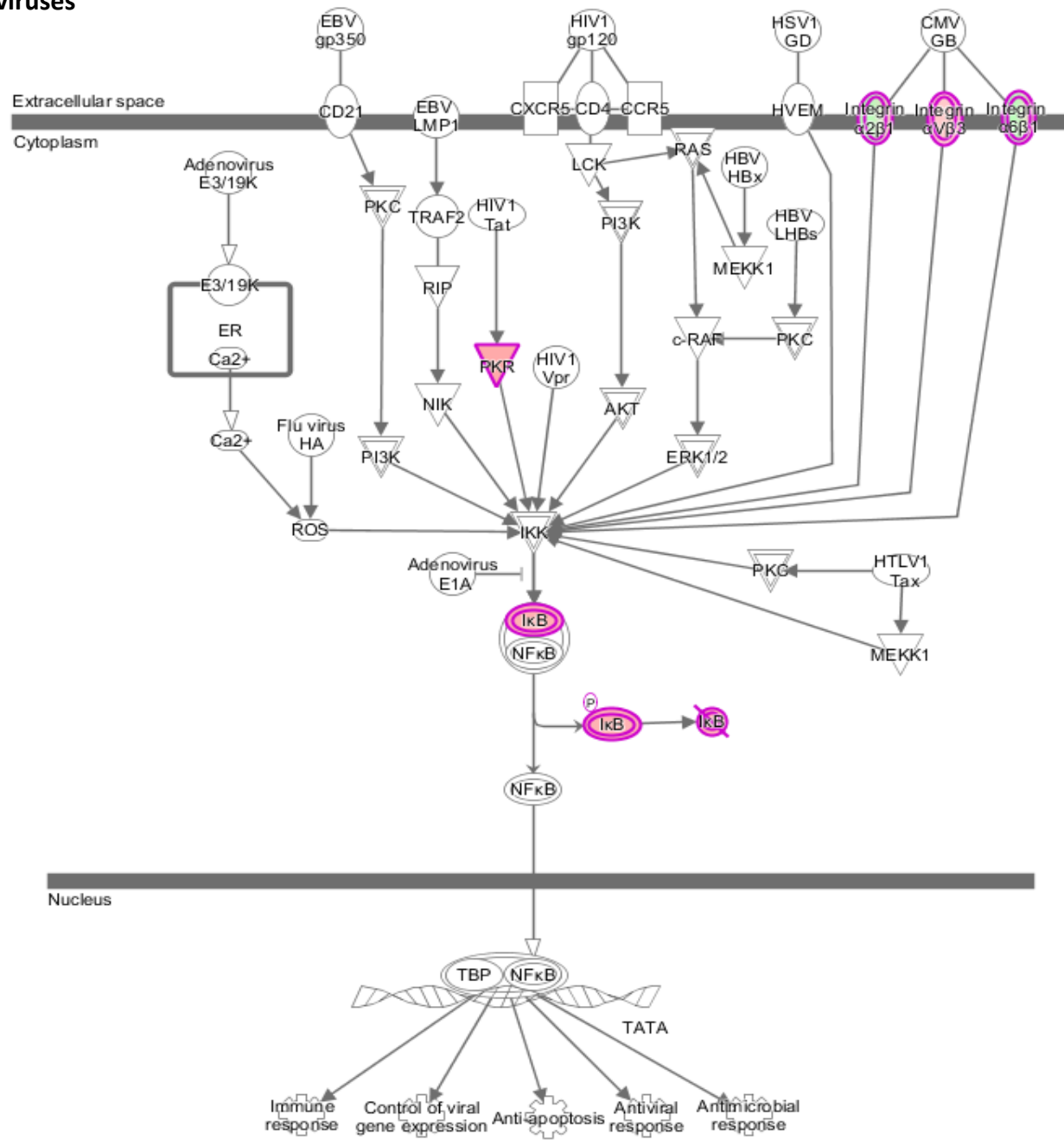
73. Noradrenaline and Adrenaline Degradation



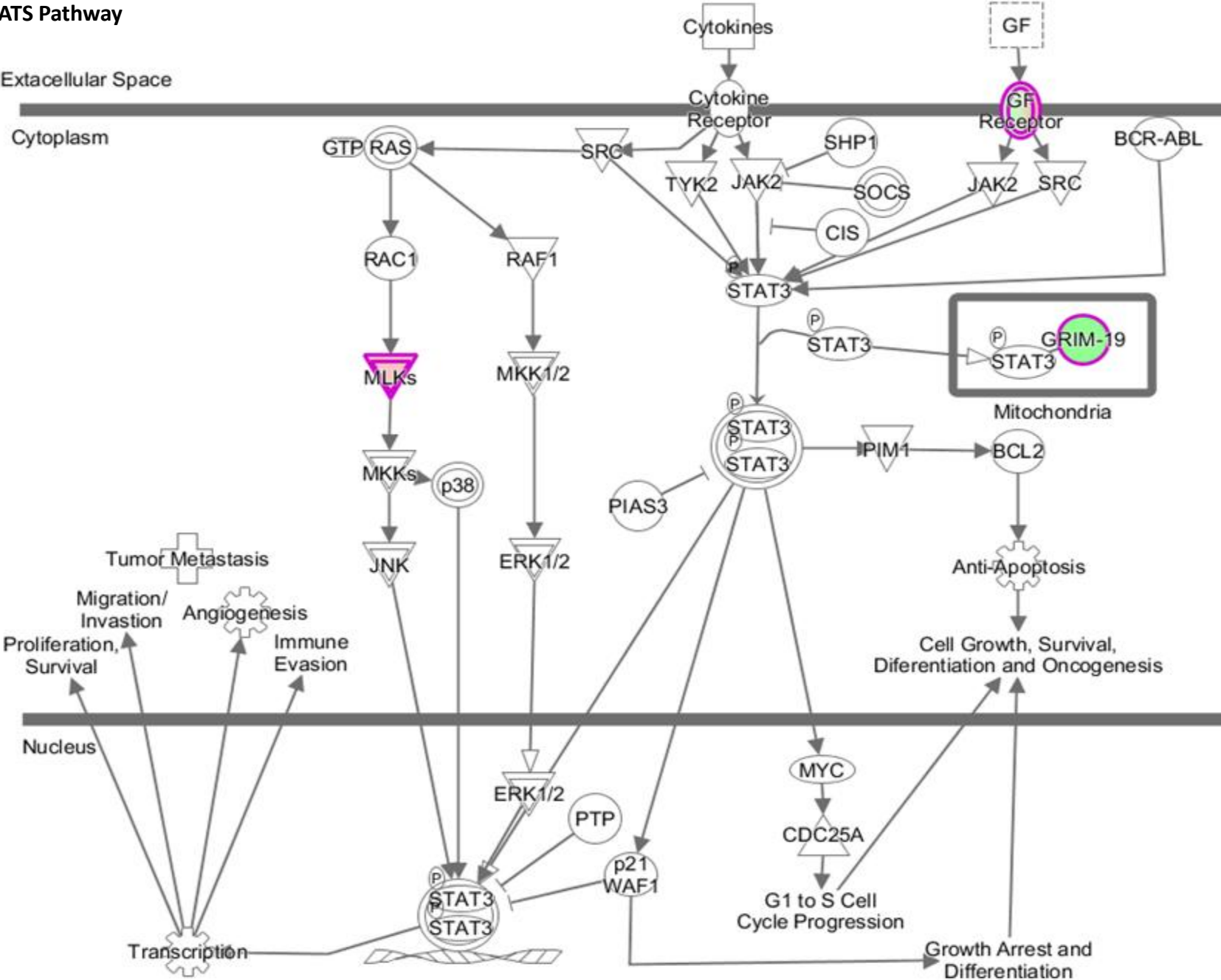
74. Role of NFAT in regulation of the immune response



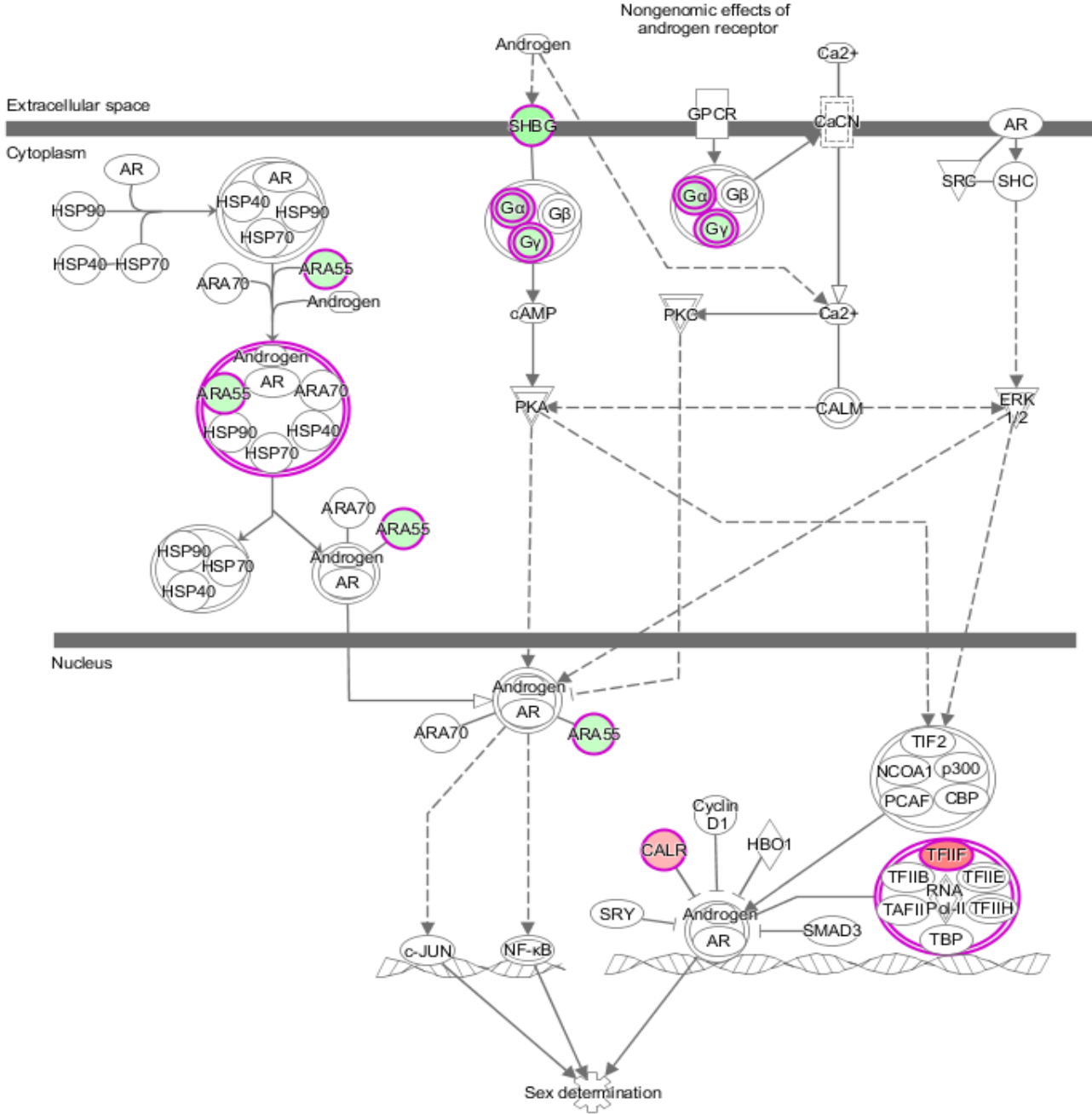
75. NF-KB Activation by viruses



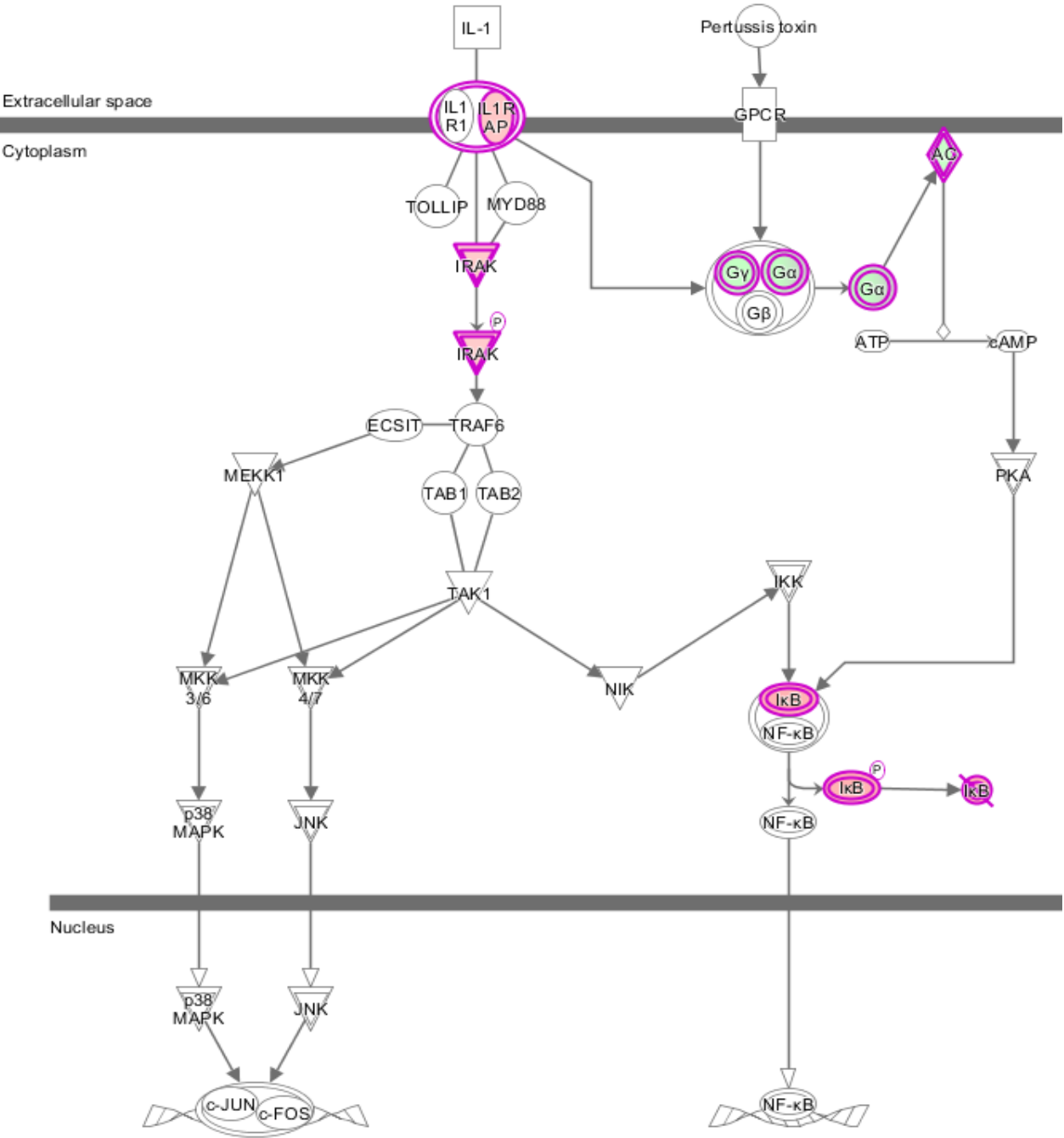
76. STATS Pathway



77. Androgen signaling



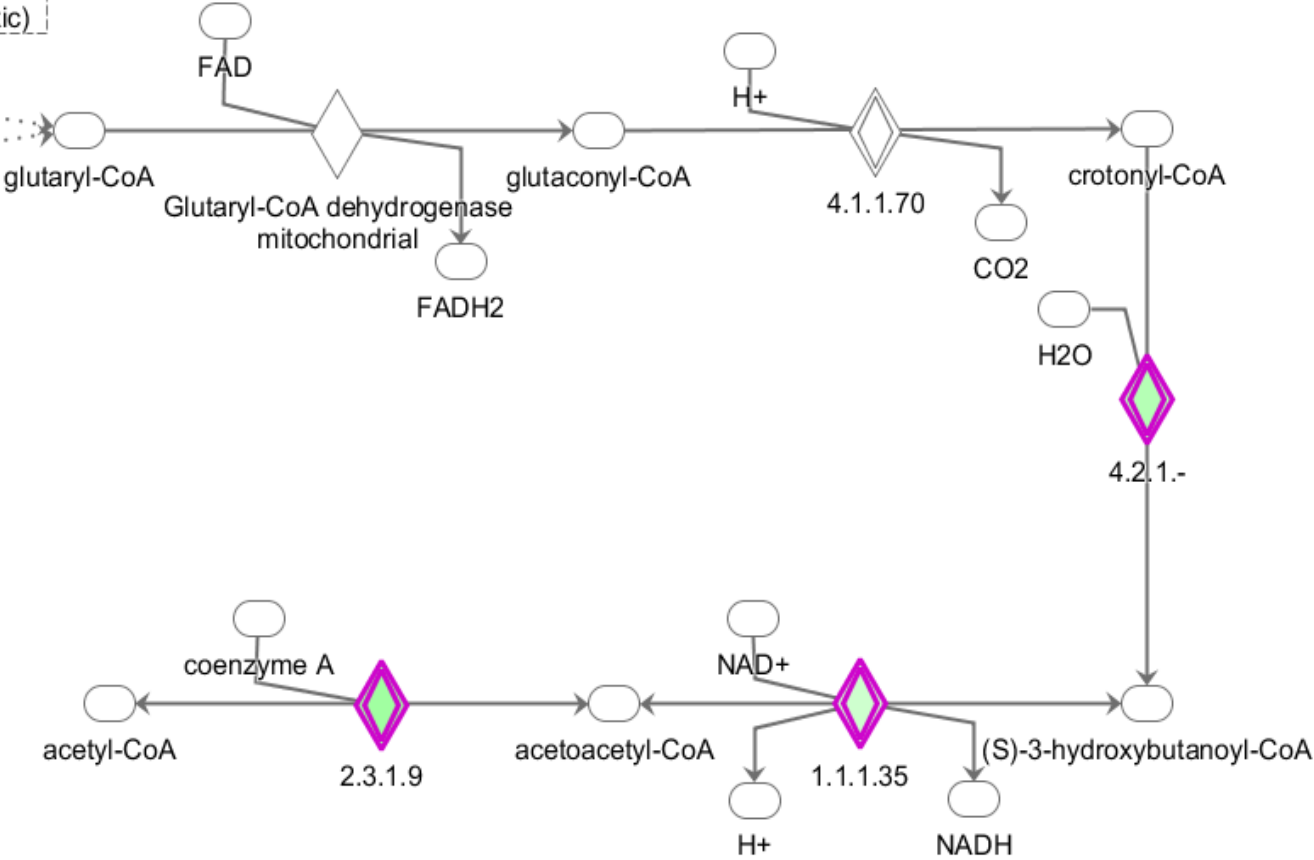
78. IL-1 signaling



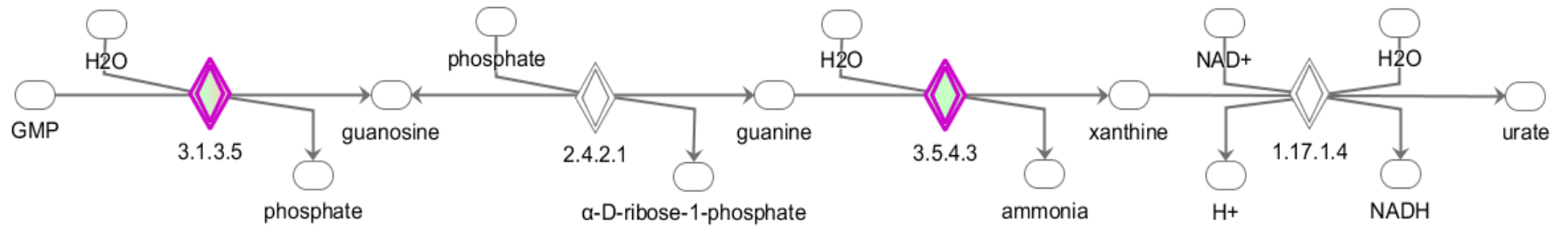
79. Glutaryl CoA Degradation

Tryptophan Degradation III (Eukaryotic)

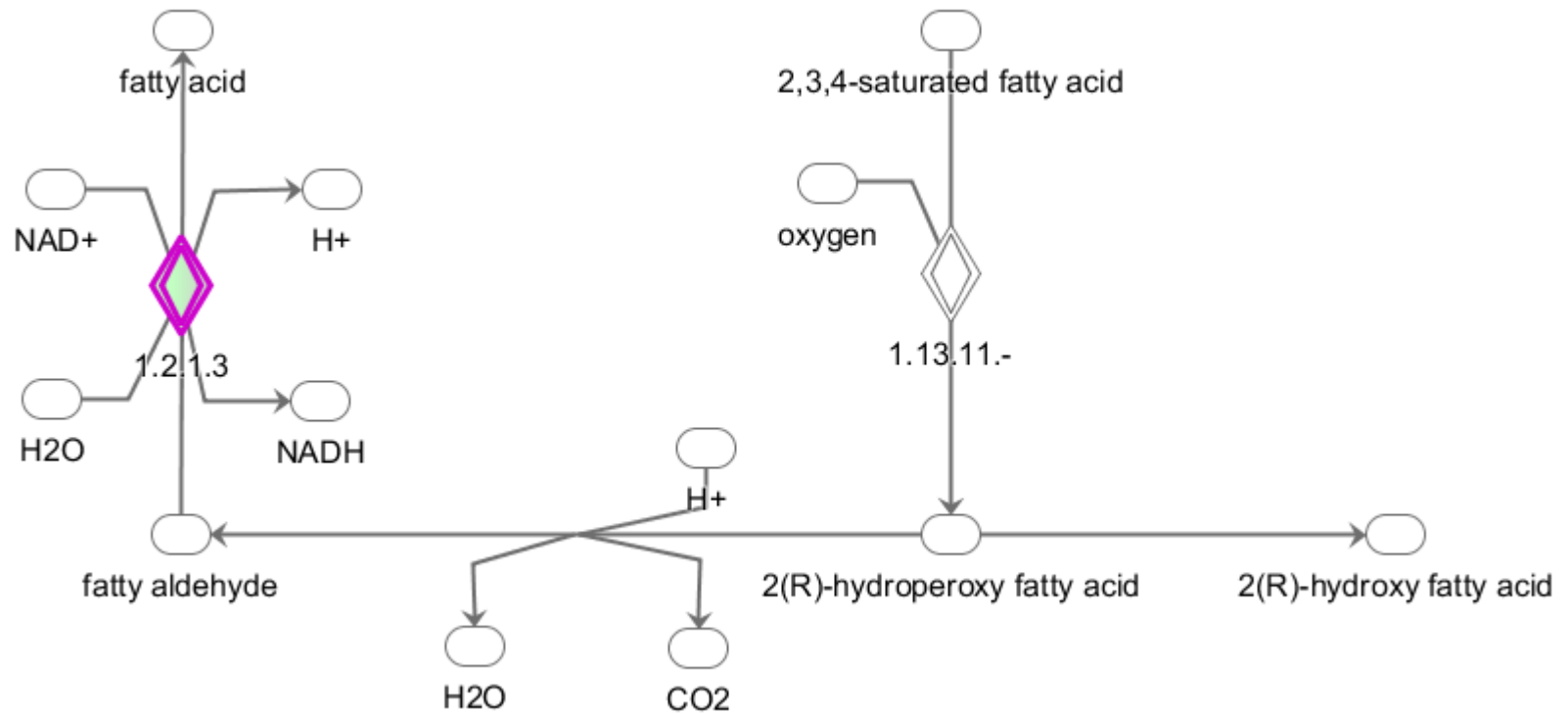
Lysine Degradation II



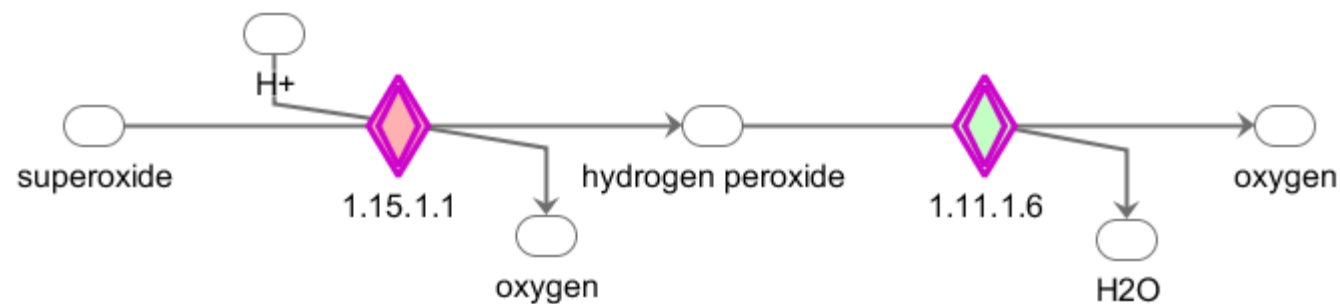
80. Guanosine Nucleotides degradation III



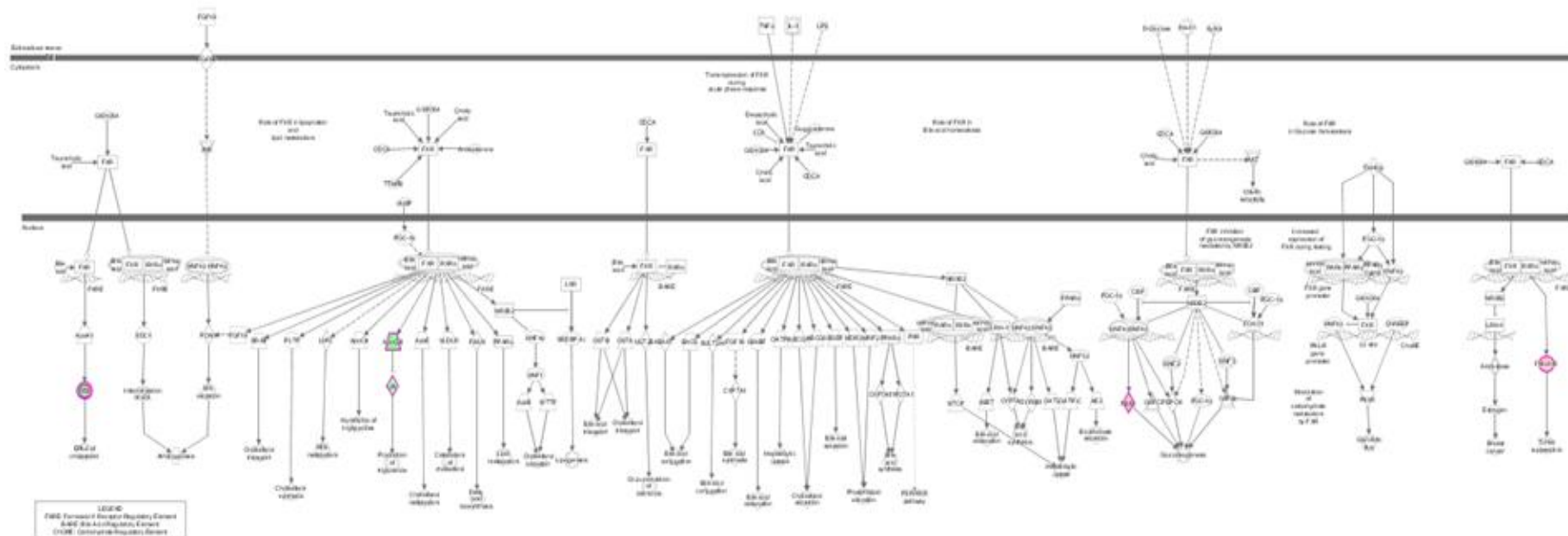
81. Fatty Acid α -oxidation



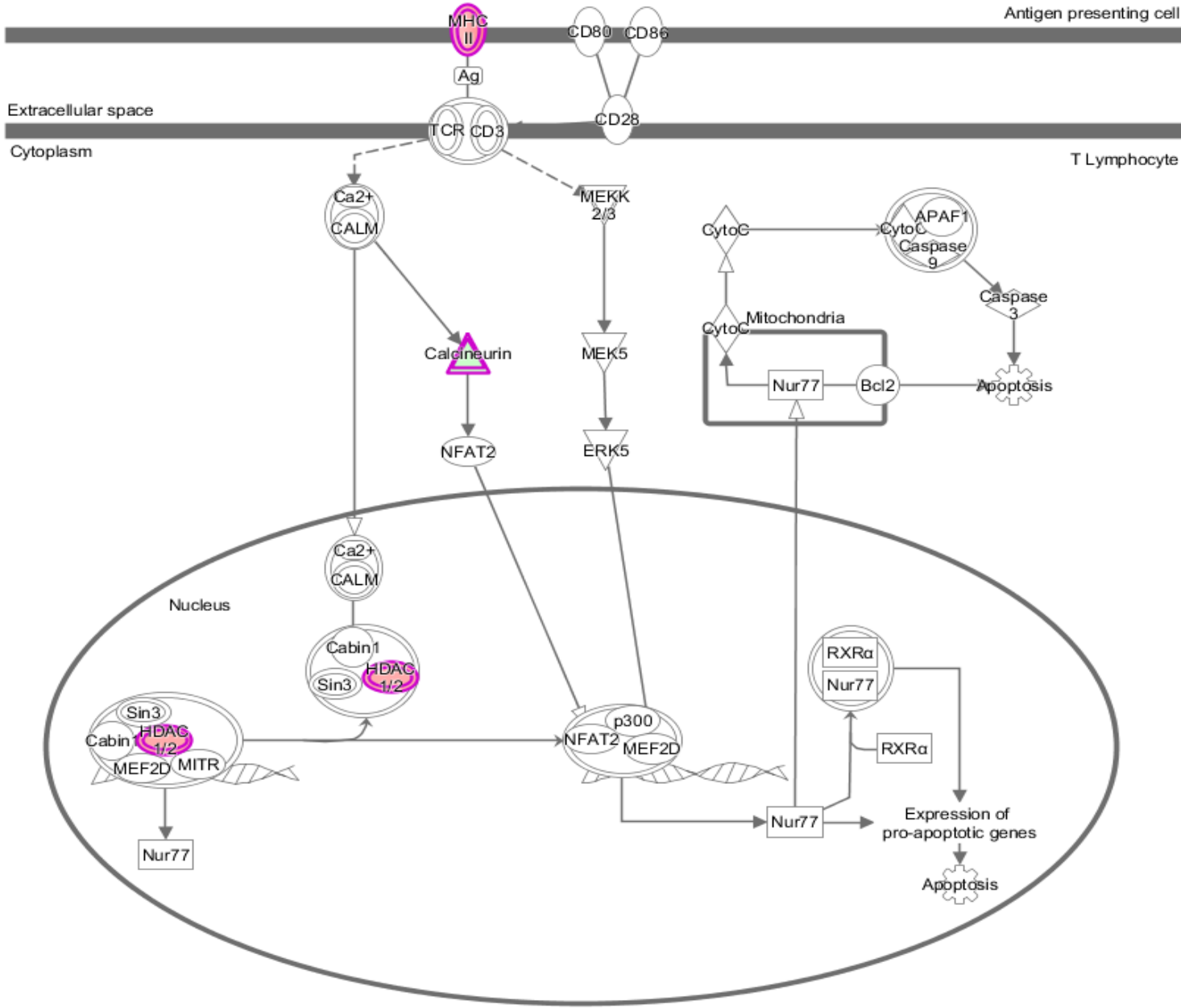
82. Superoxide radicals degradation



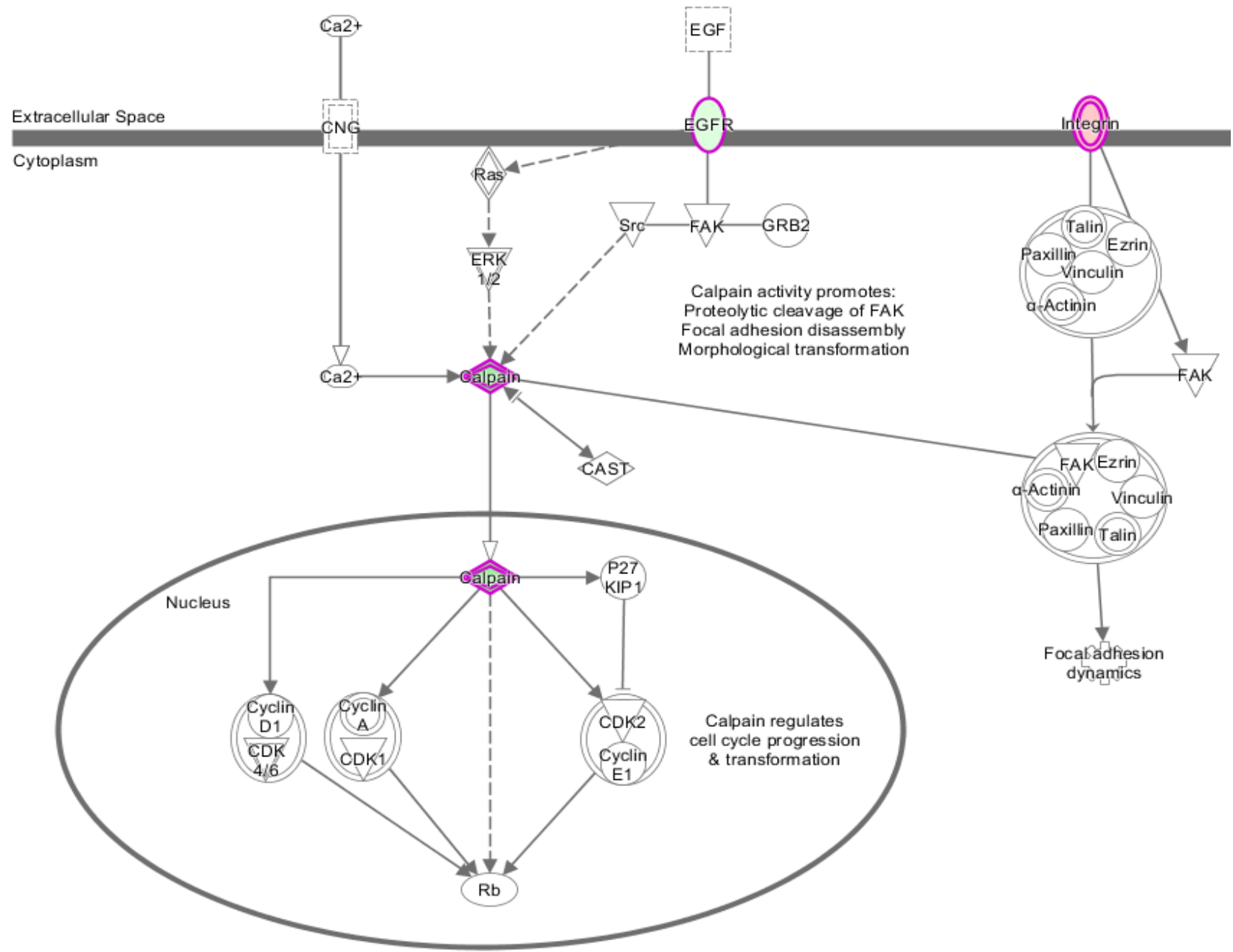
83. FXR RXR Activation



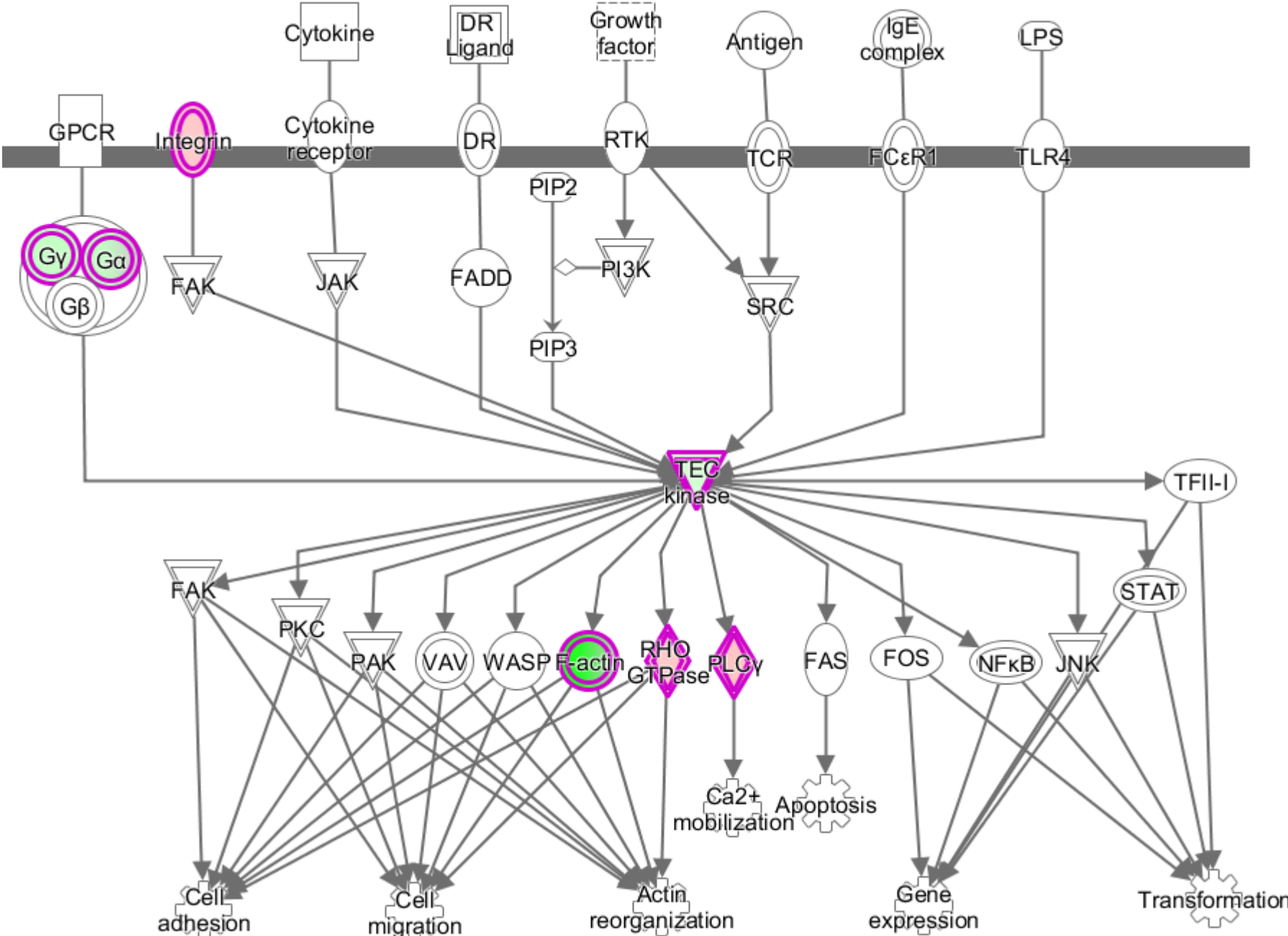
84. Nur77 signaling in T Lymphocytes



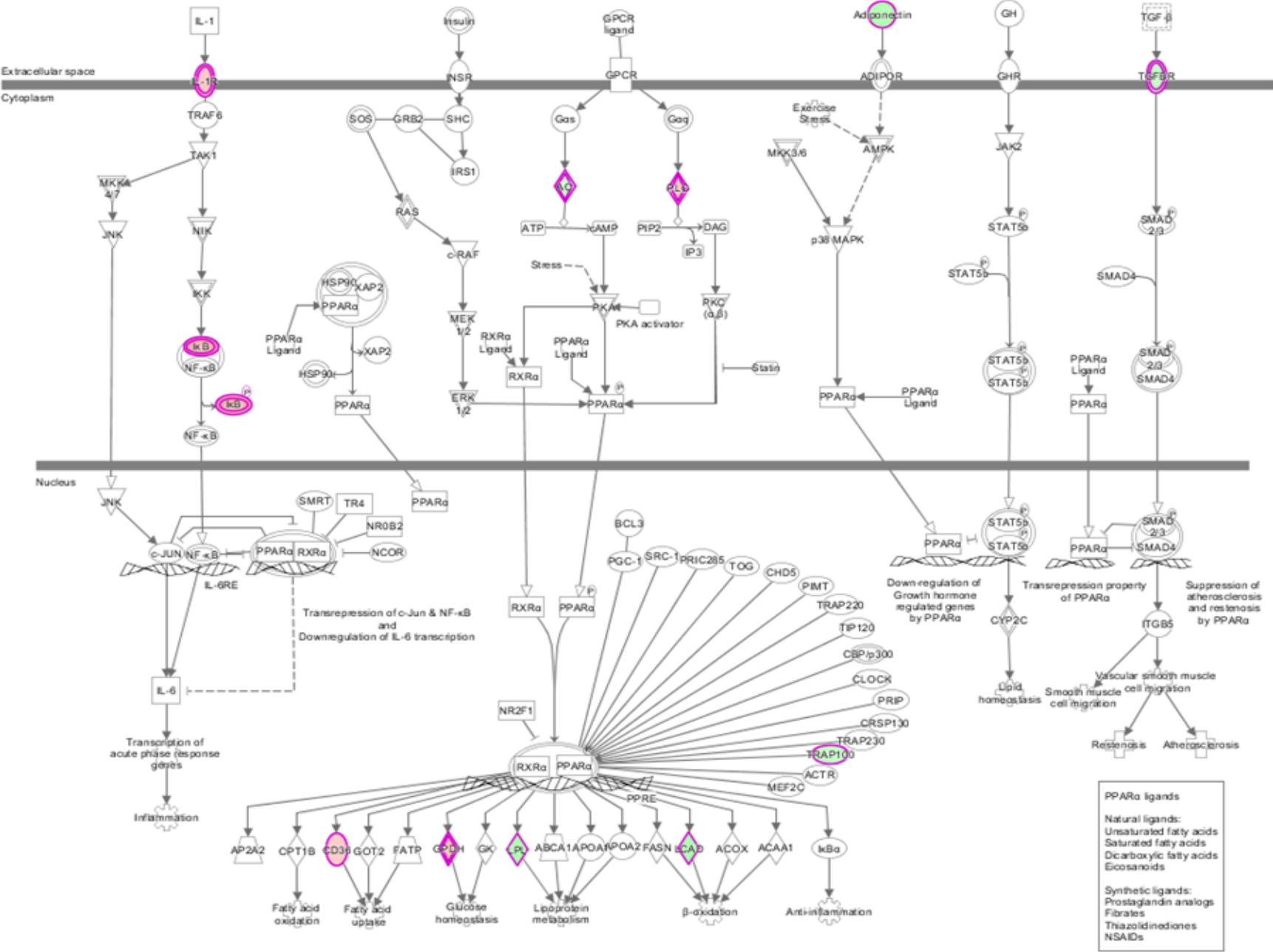
85. Regulation of cellular mechanics by calpain protease



86. Tec Kinase signaling



87. PPARα RXRa Activation



88. Mechanism of viral exit from host cells

