

# KEGG pathways for *Trichuris suis*

March 24, 2011

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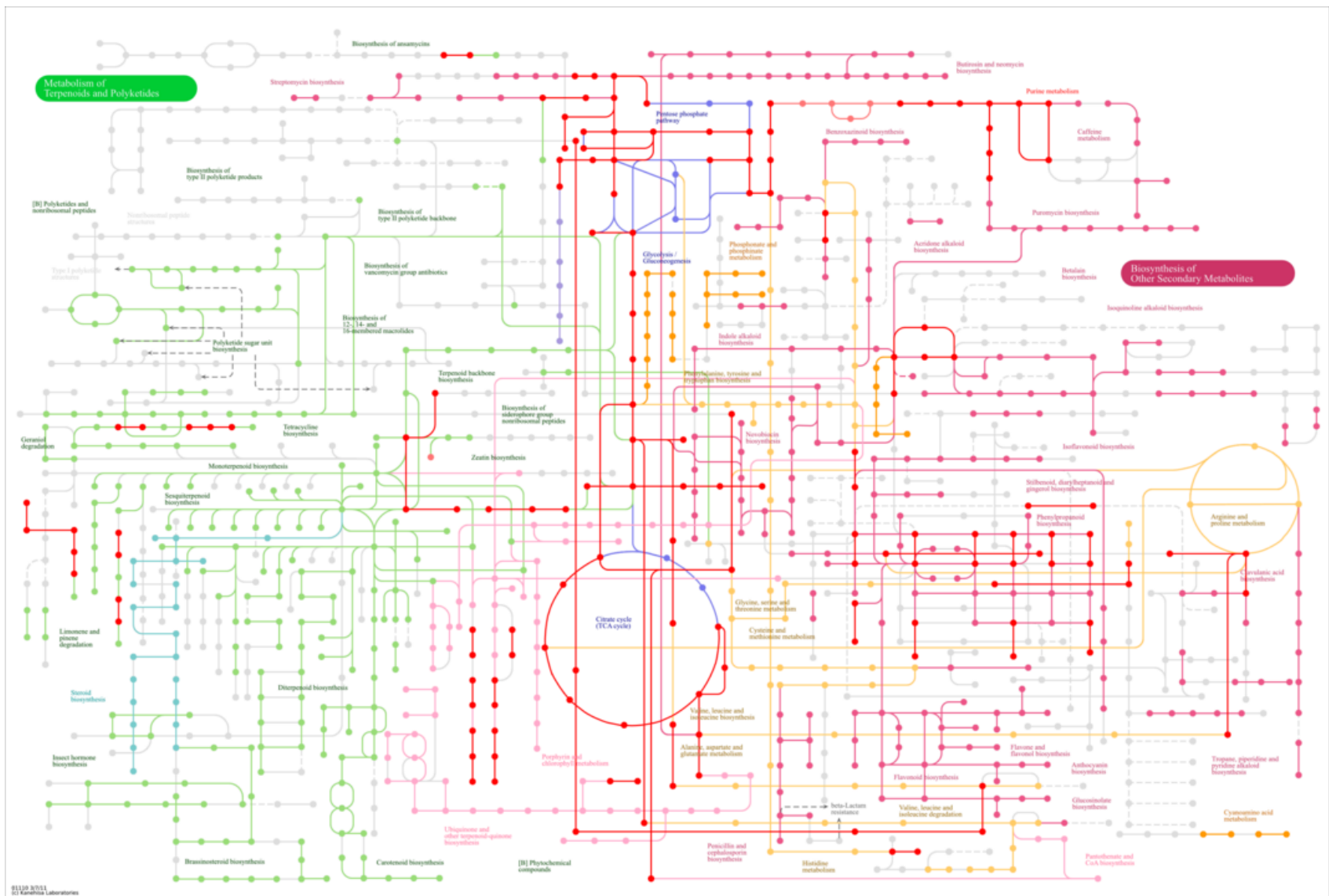


Figure 1: ko01110 Biosynthesis of secondary metabolites

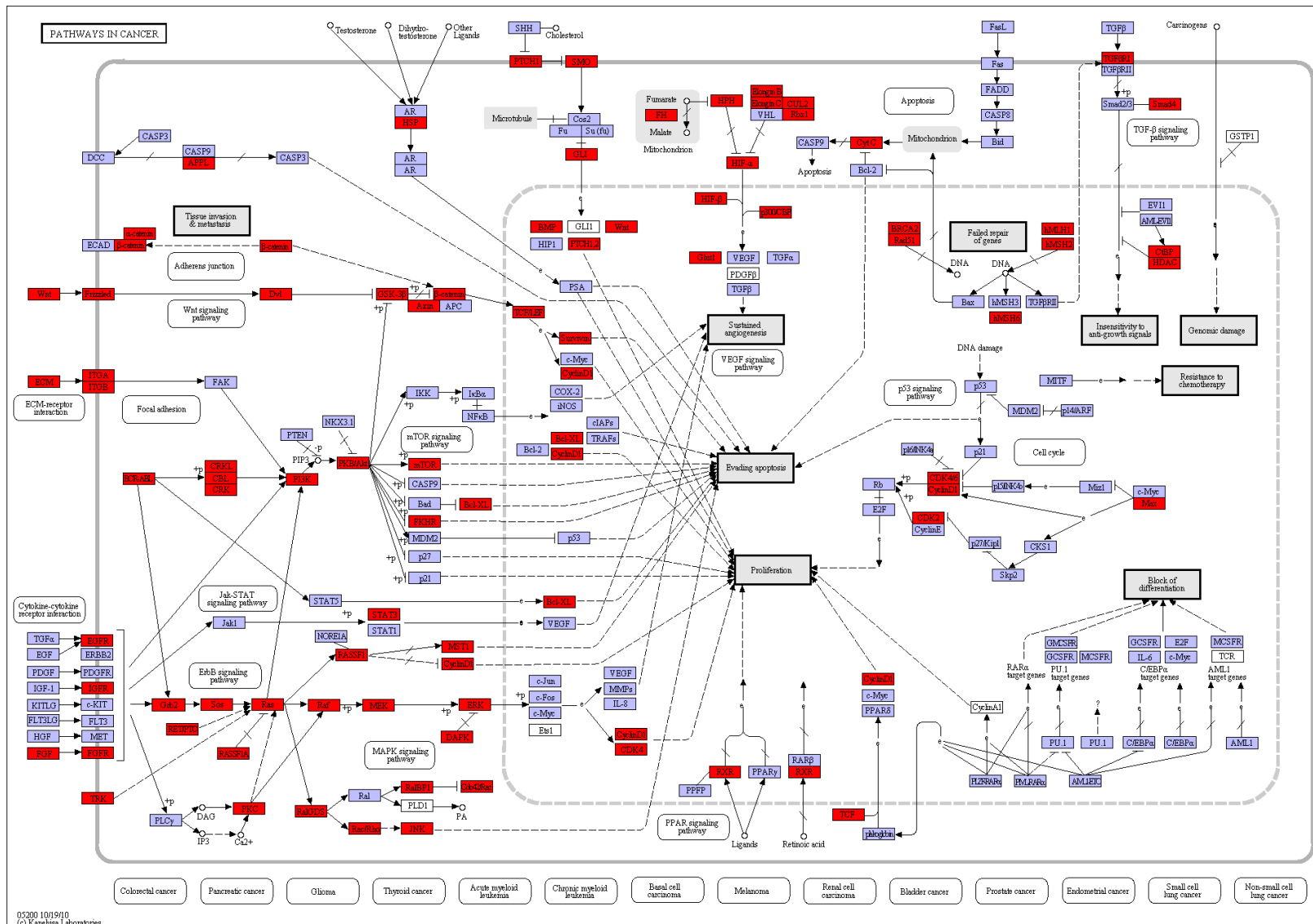


Figure 2: ko05200 Pathways in cancer

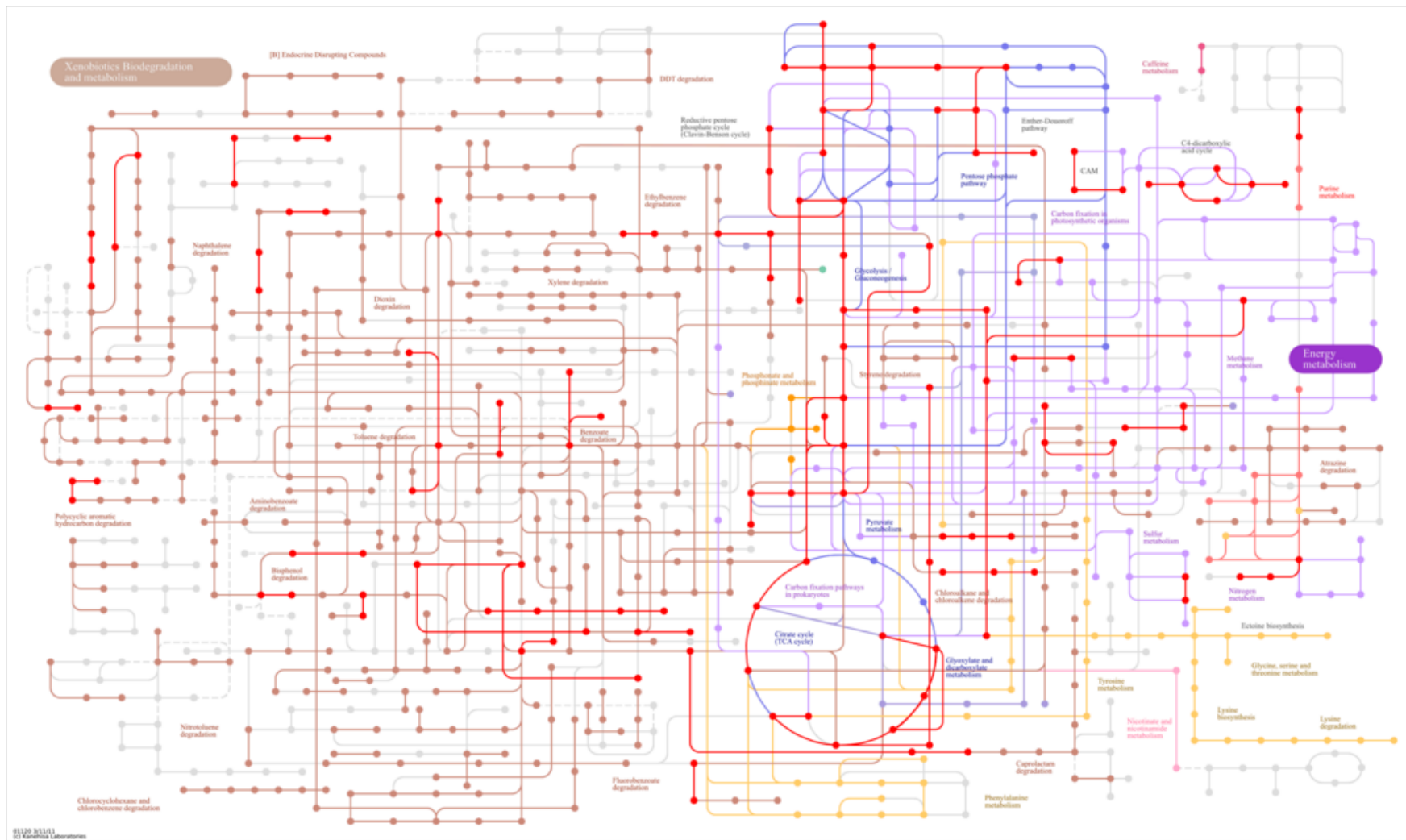


Figure 3: ko01120 Microbial metabolism in diverse environments

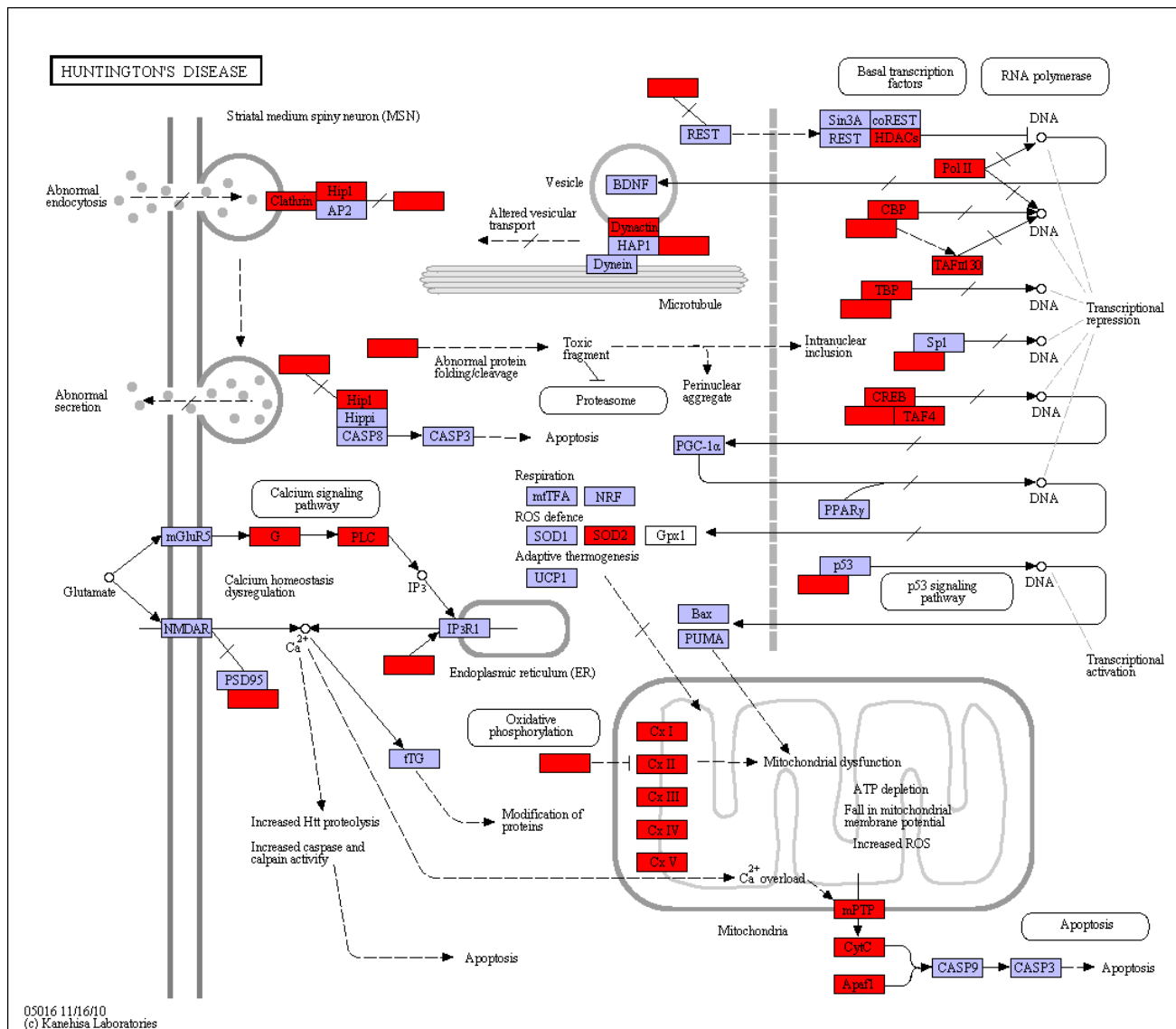


Figure 4: ko05016 Huntington's disease



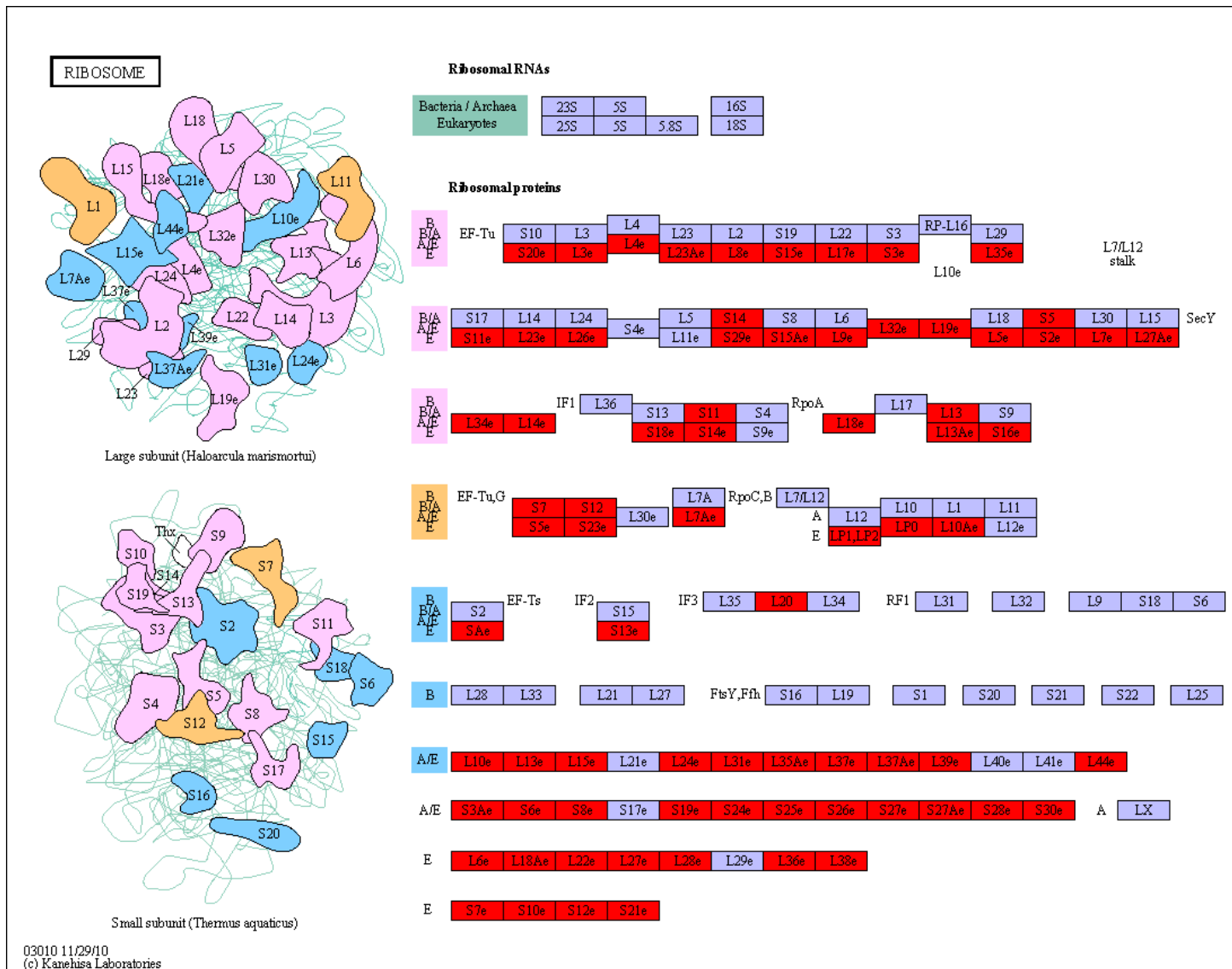


Figure 6: ko03010 Ribosome





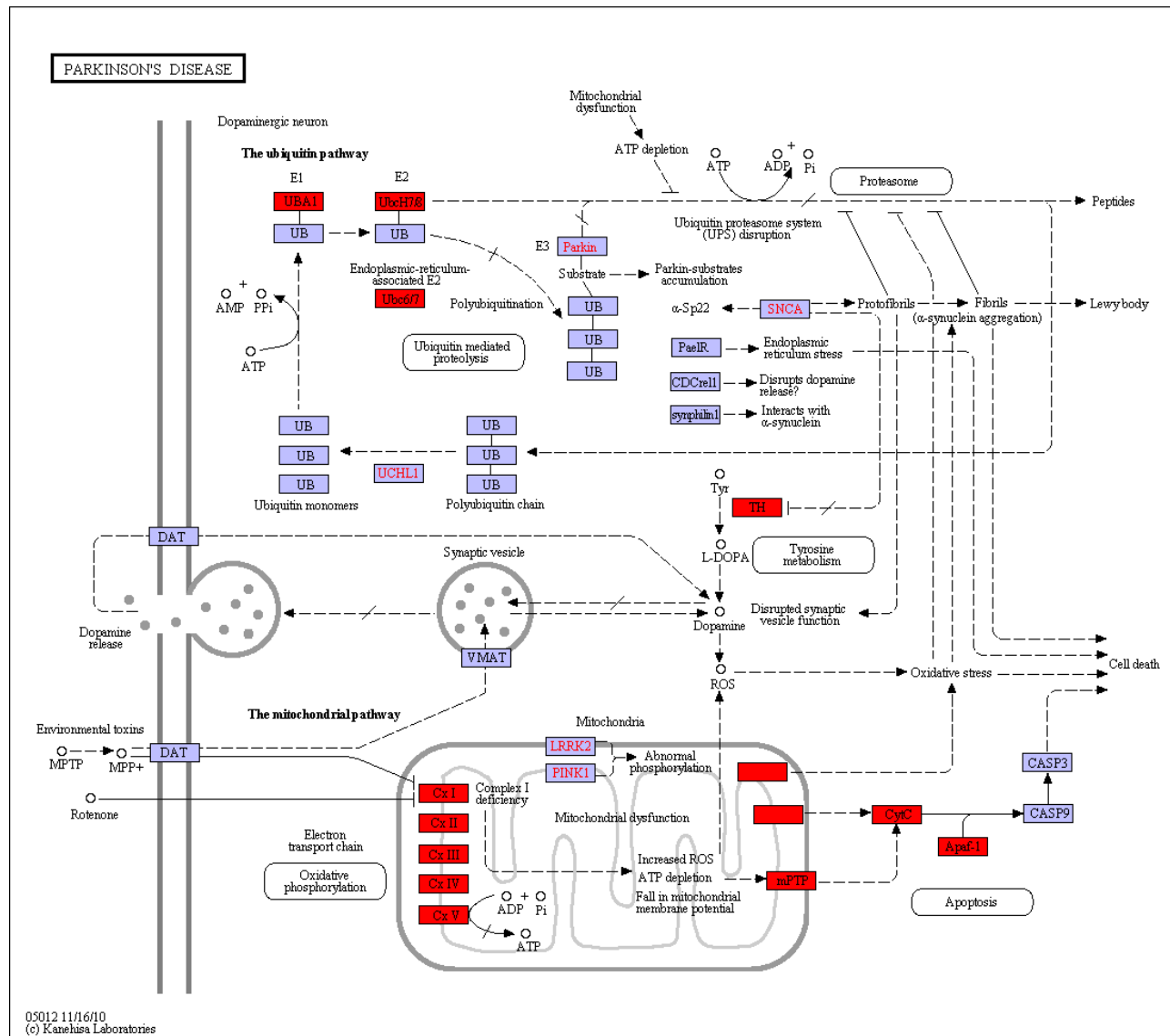


Figure 8: ko05012 Parkinson's disease

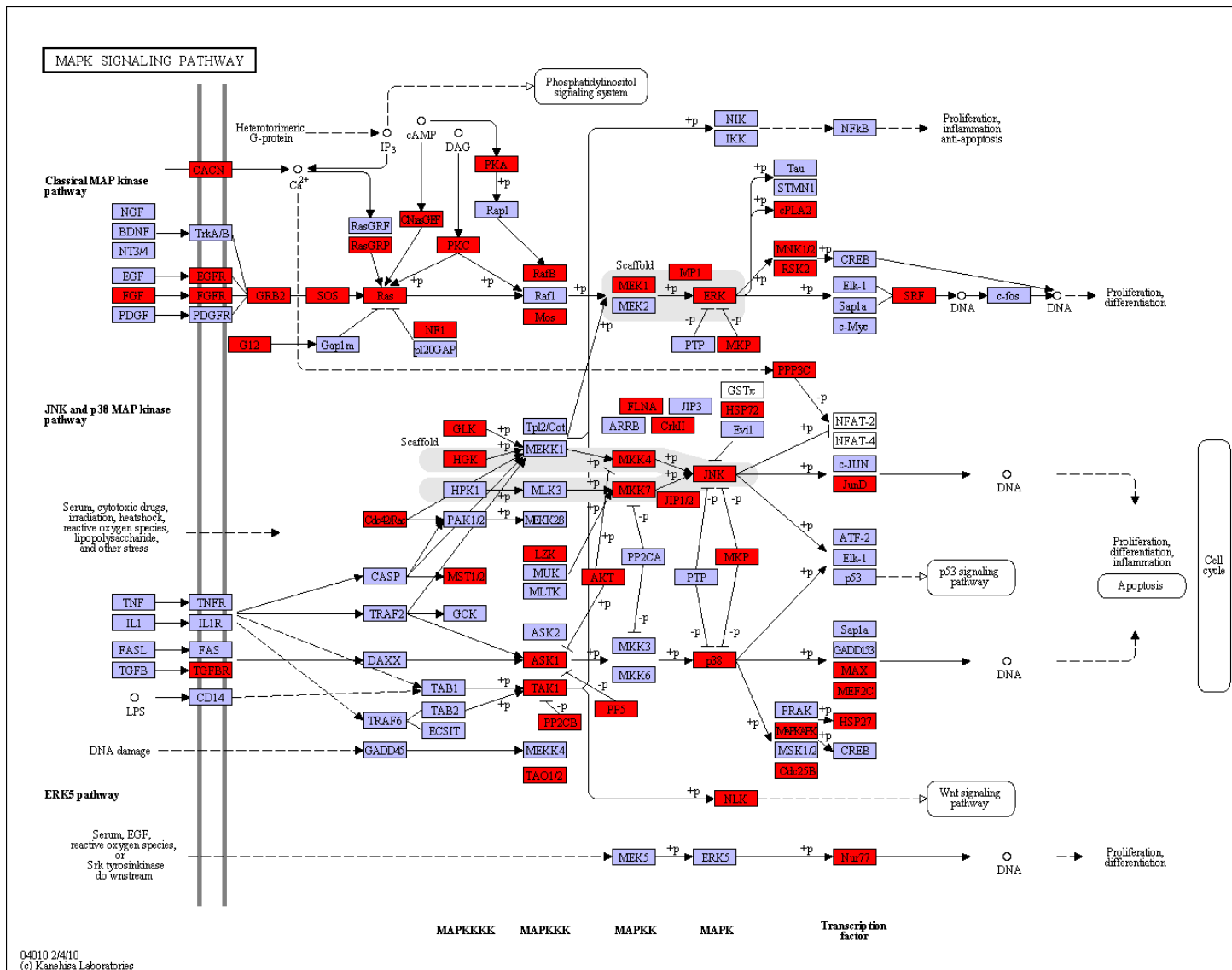


Figure 9: ko04010 MAPK signaling pathway





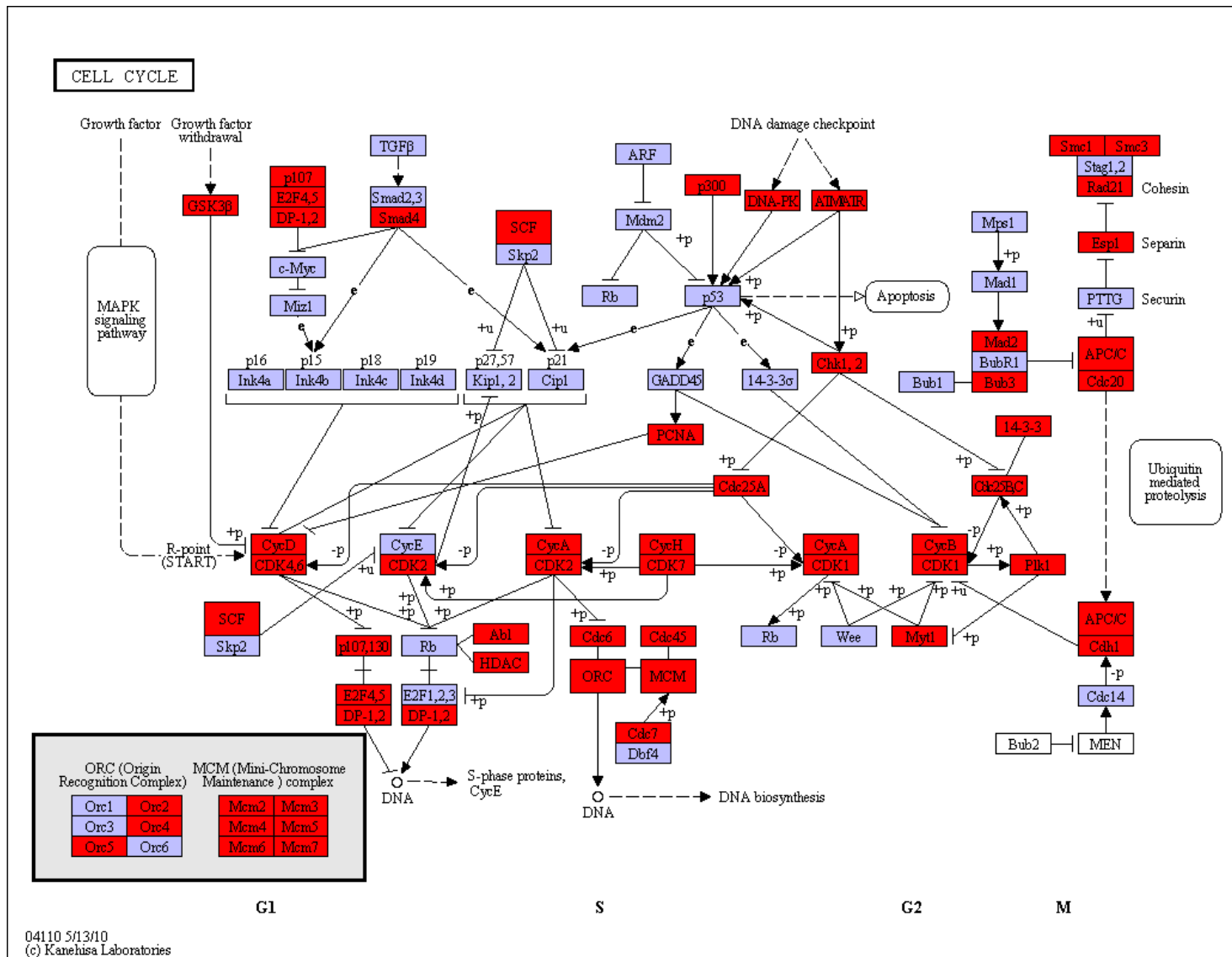


Figure 12: ko04110 Cell cycle



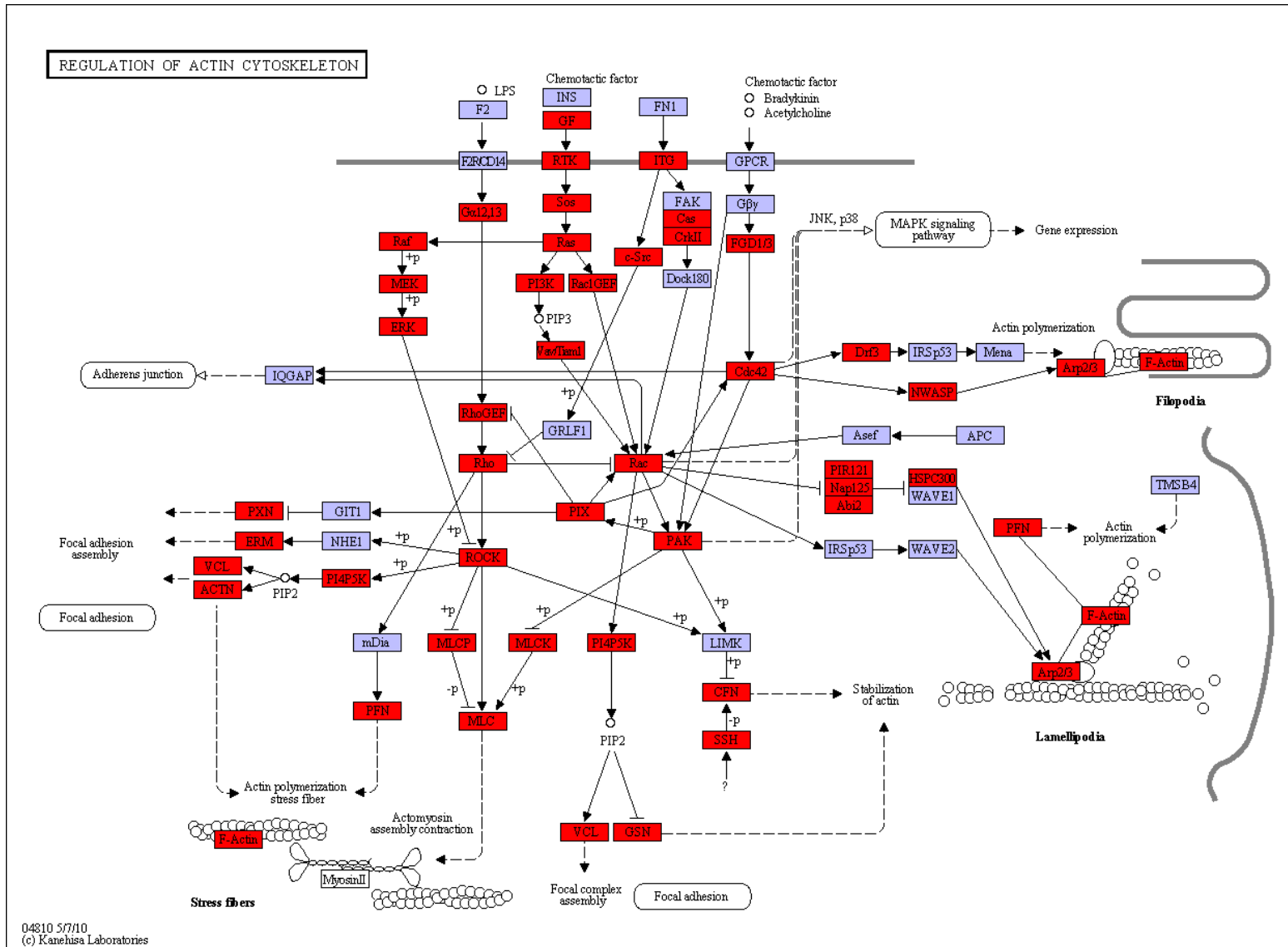


Figure 14: ko04810 Regulation of actin cytoskeleton

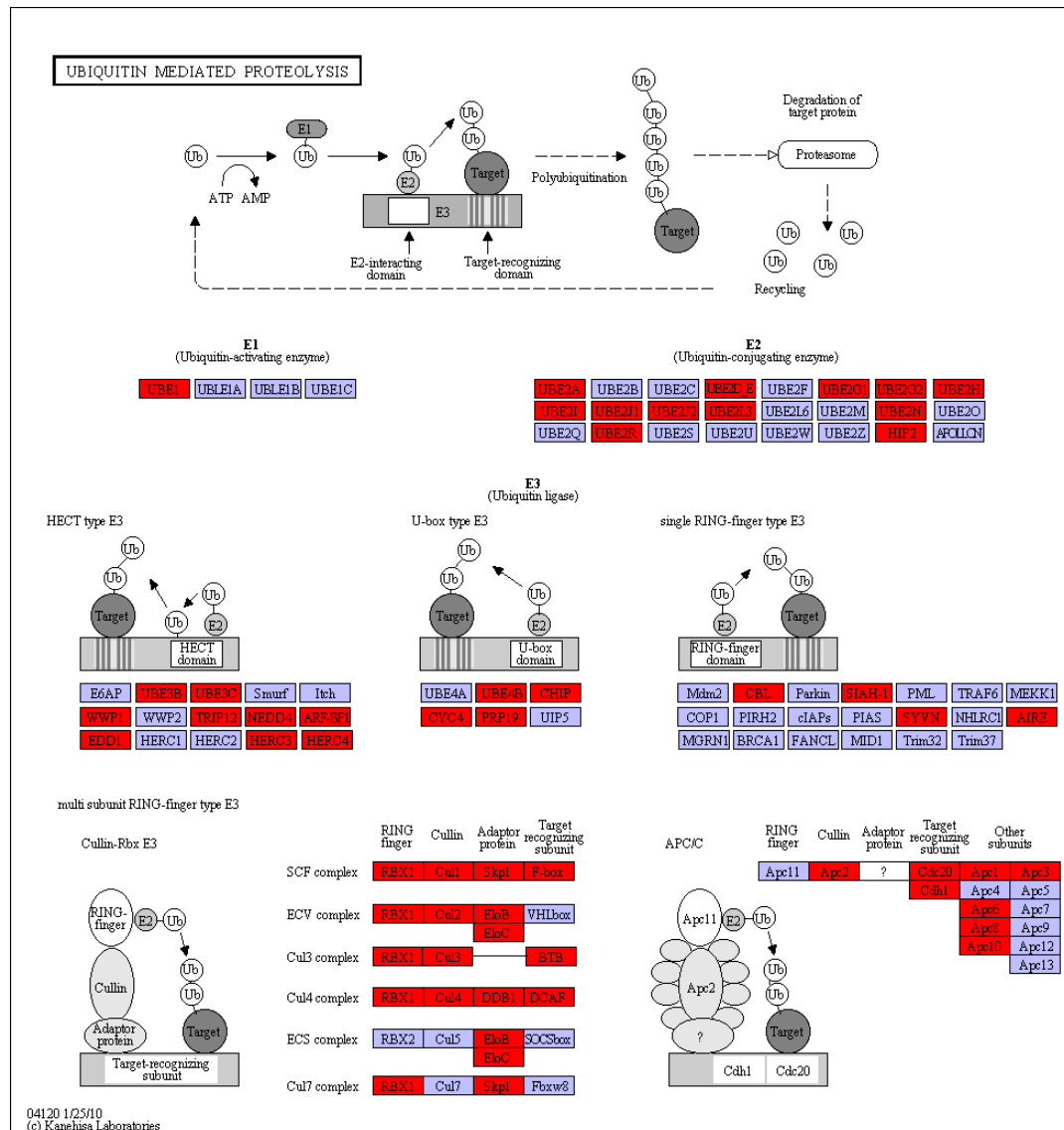


Figure 15: ko04120 Ubiquitin mediated proteolysis



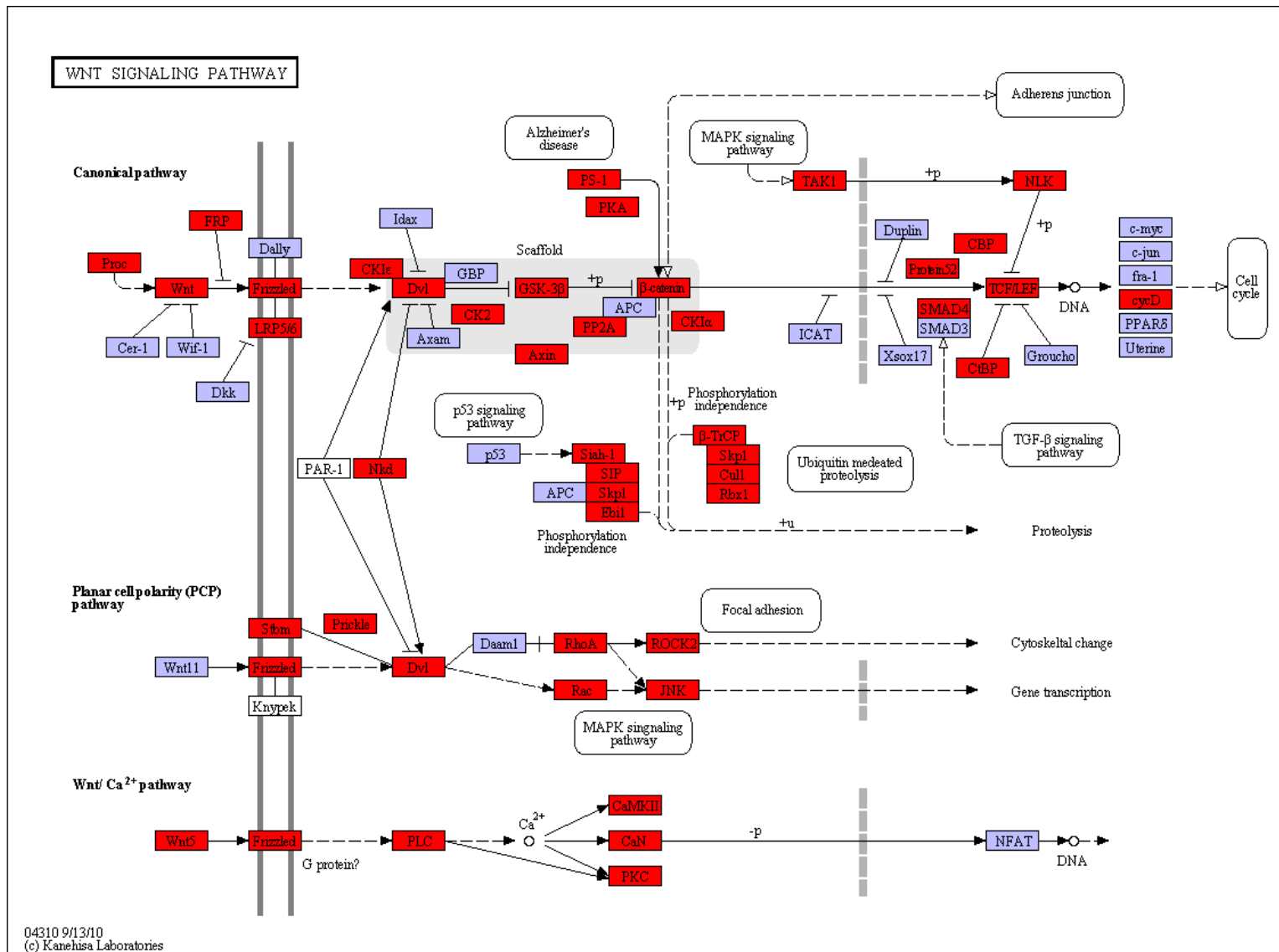


Figure 16: ko04310 Wnt signaling pathway

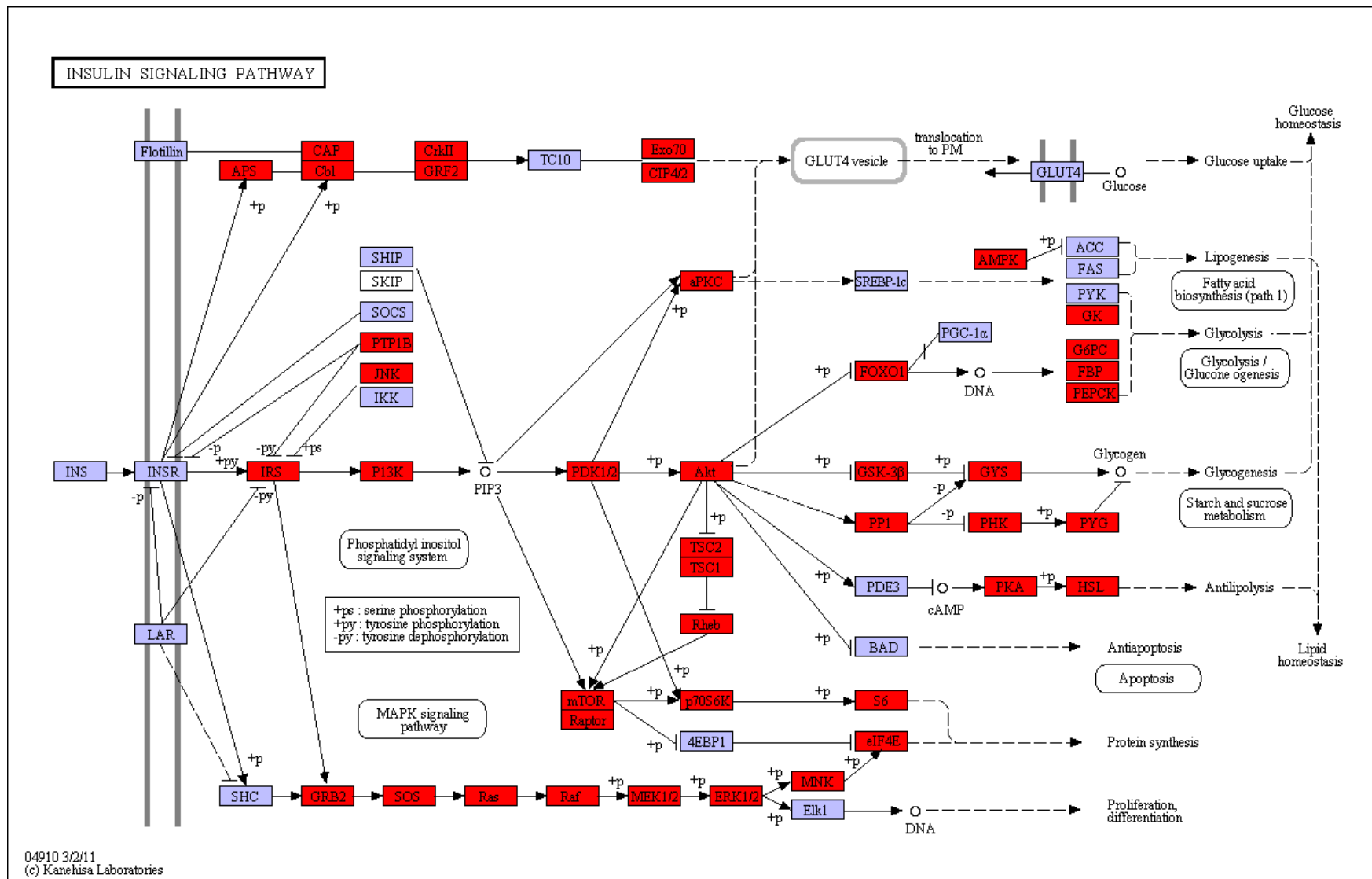


Figure 17: ko04910 Insulin signaling pathway

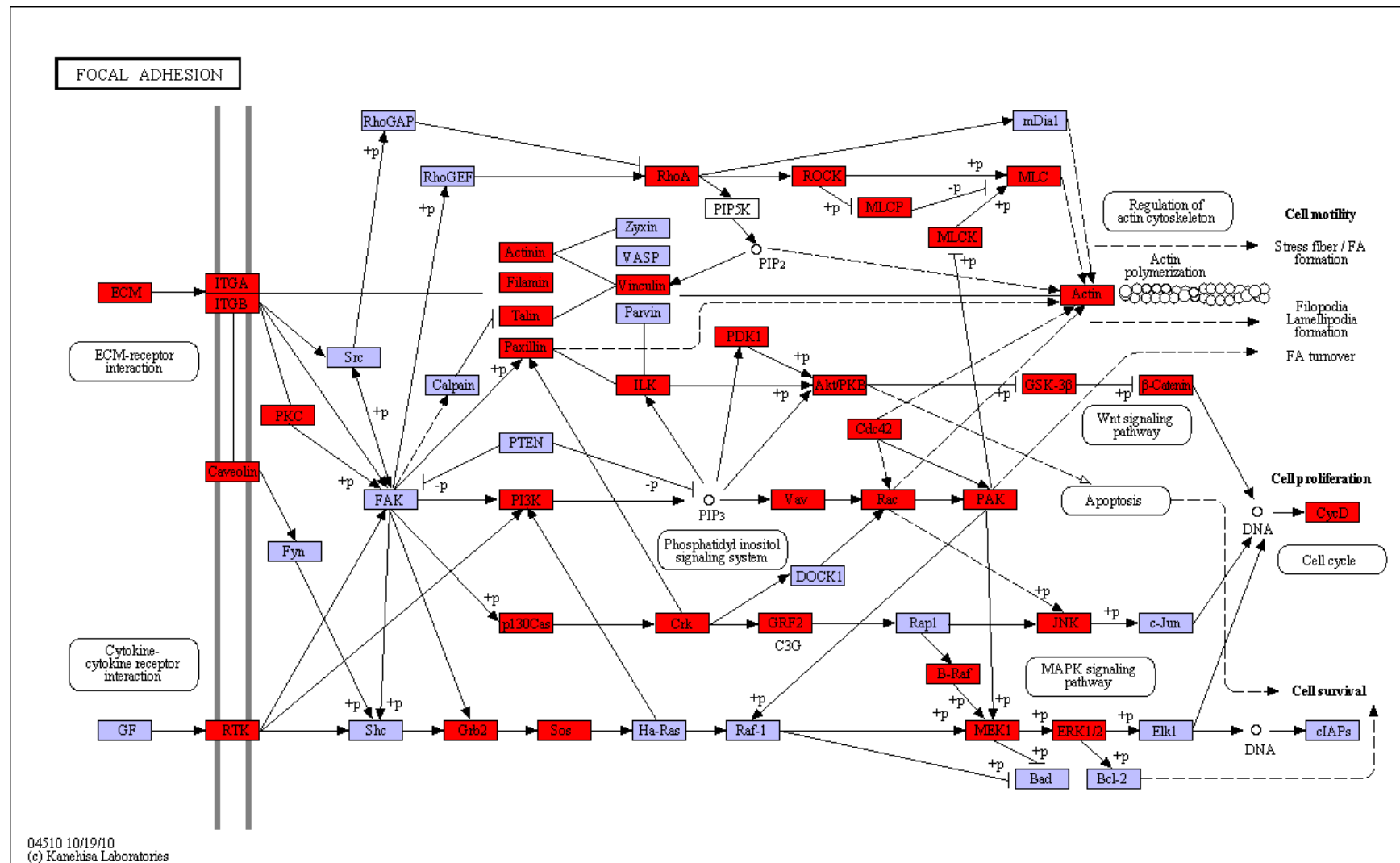


Figure 18: ko04510 Focal adhesion

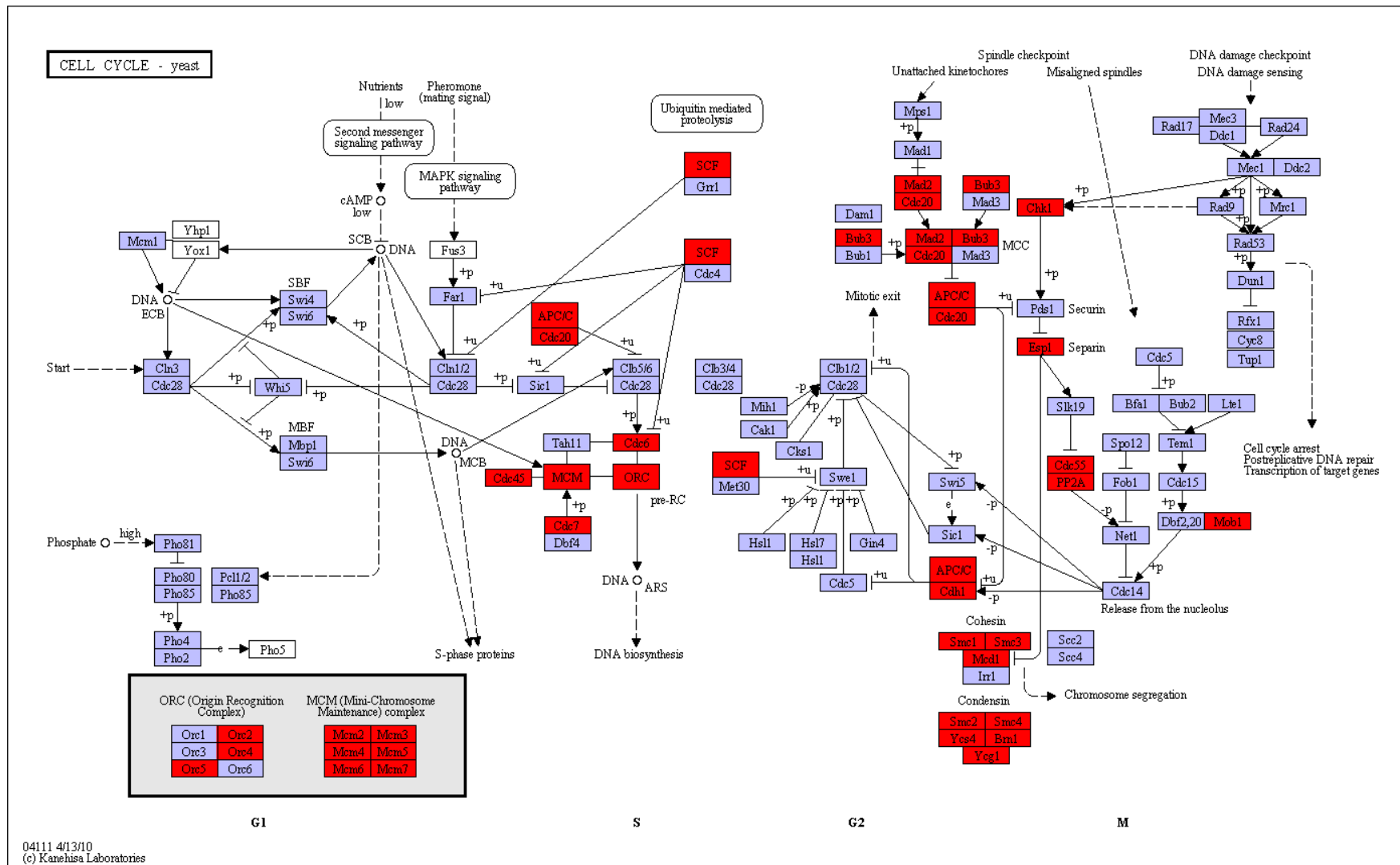


Figure 19: ko04111 Cell cycle - yeast



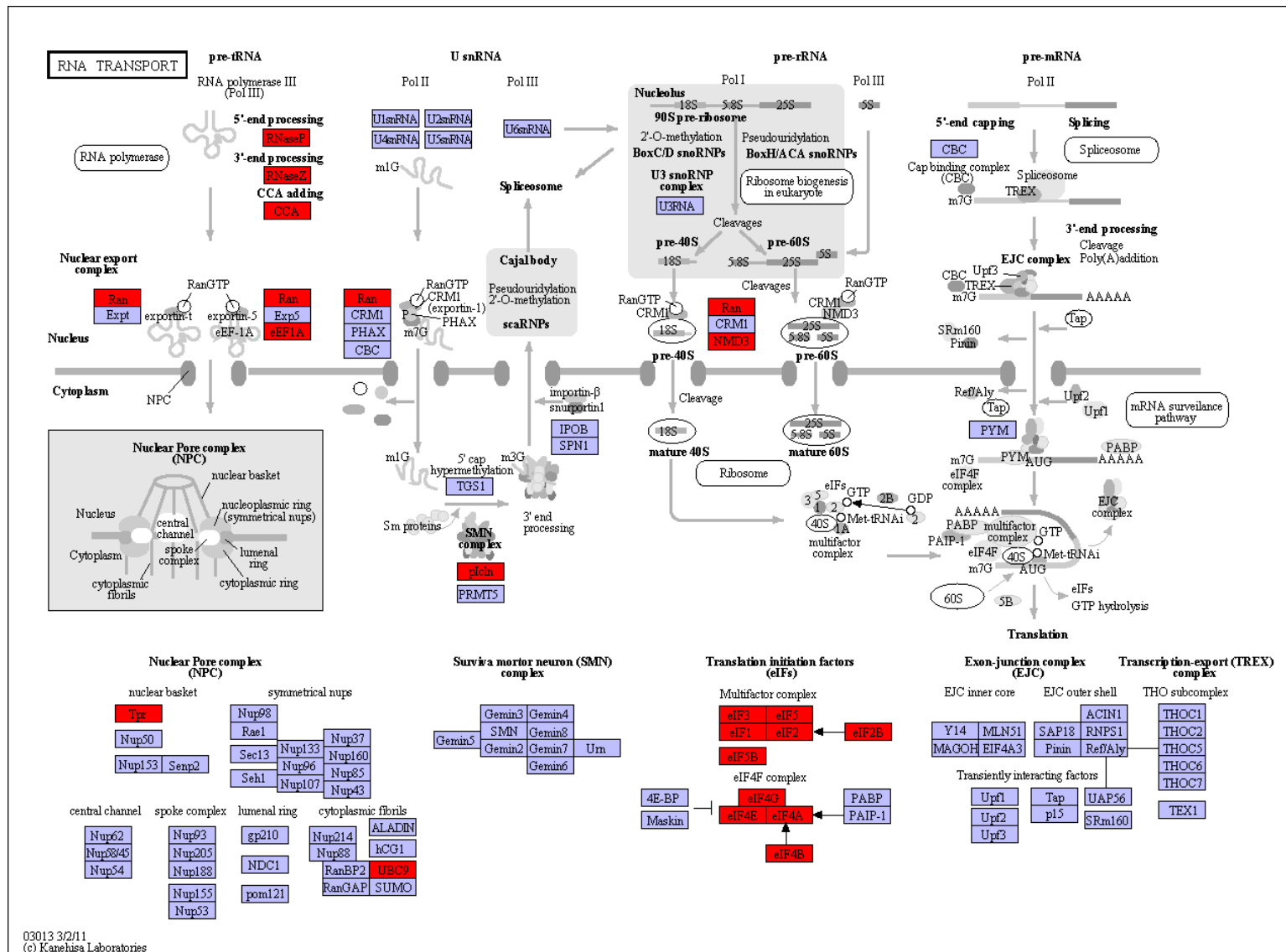


Figure 21: ko03013 RNA transport

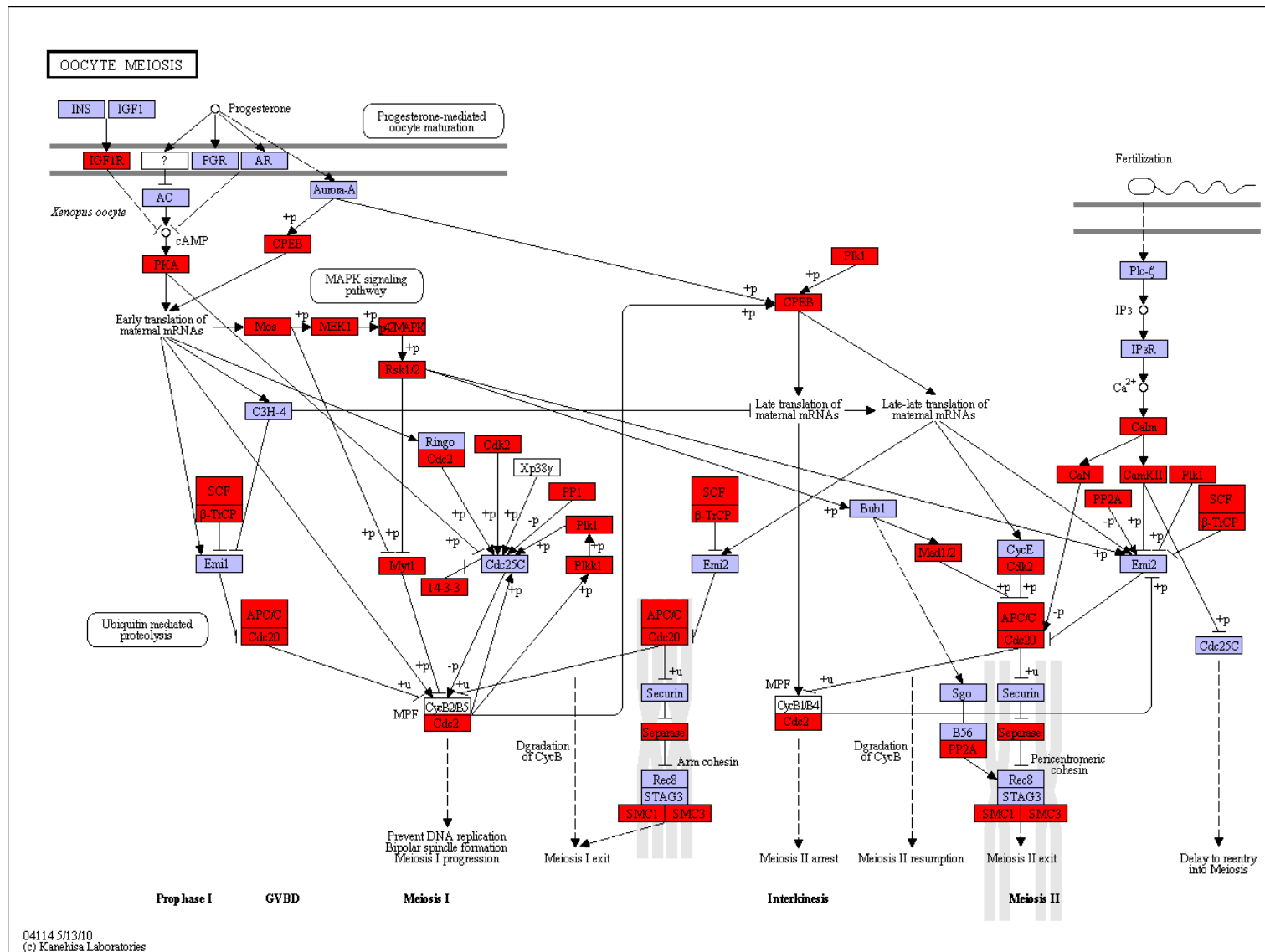


Figure 22: ko04114 Oocyte meiosis

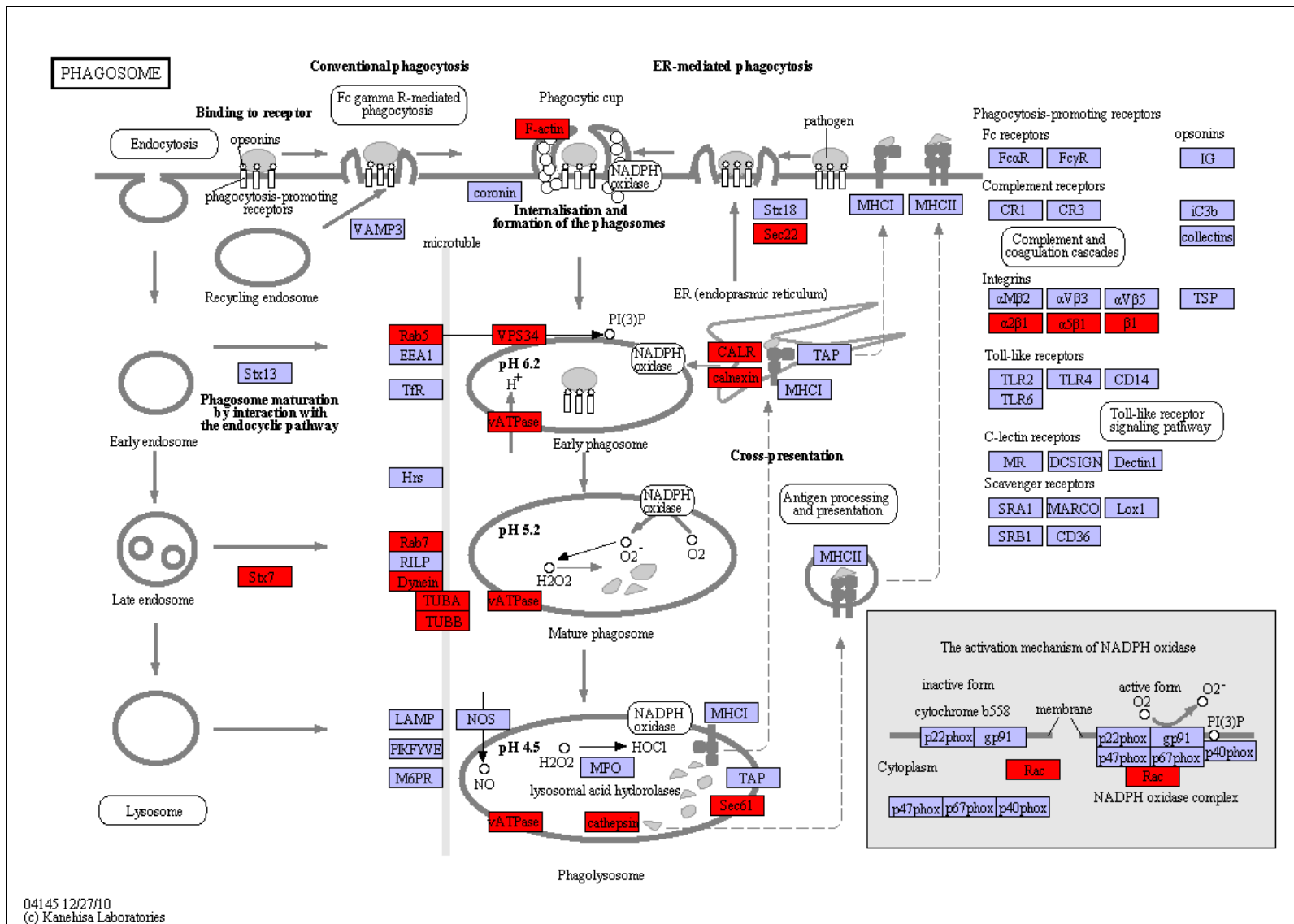


Figure 23: ko04145 Phagosome





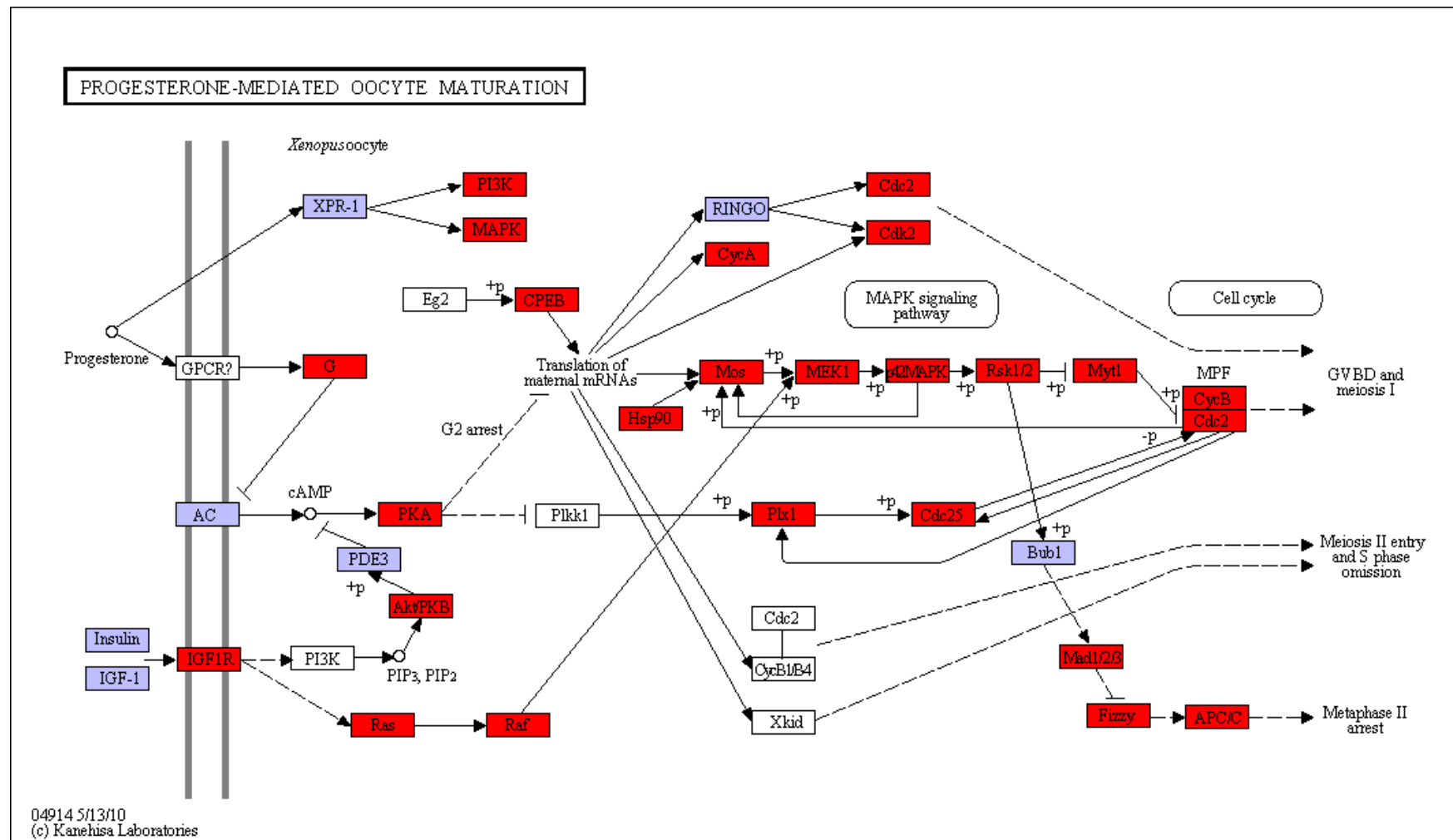


Figure 25: ko04914 Progesterone-mediated oocyte maturation

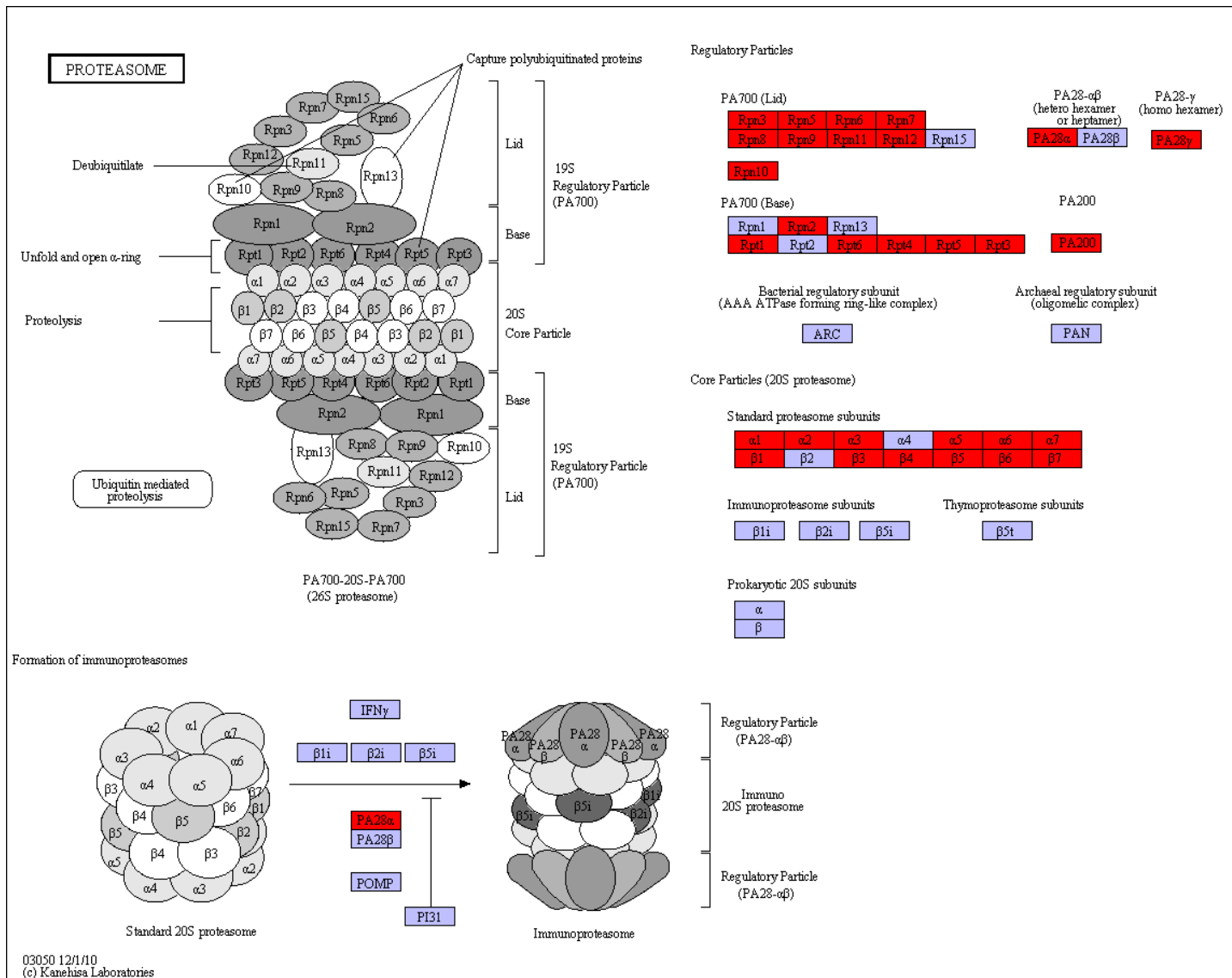


Figure 26: ko03050 Proteasome

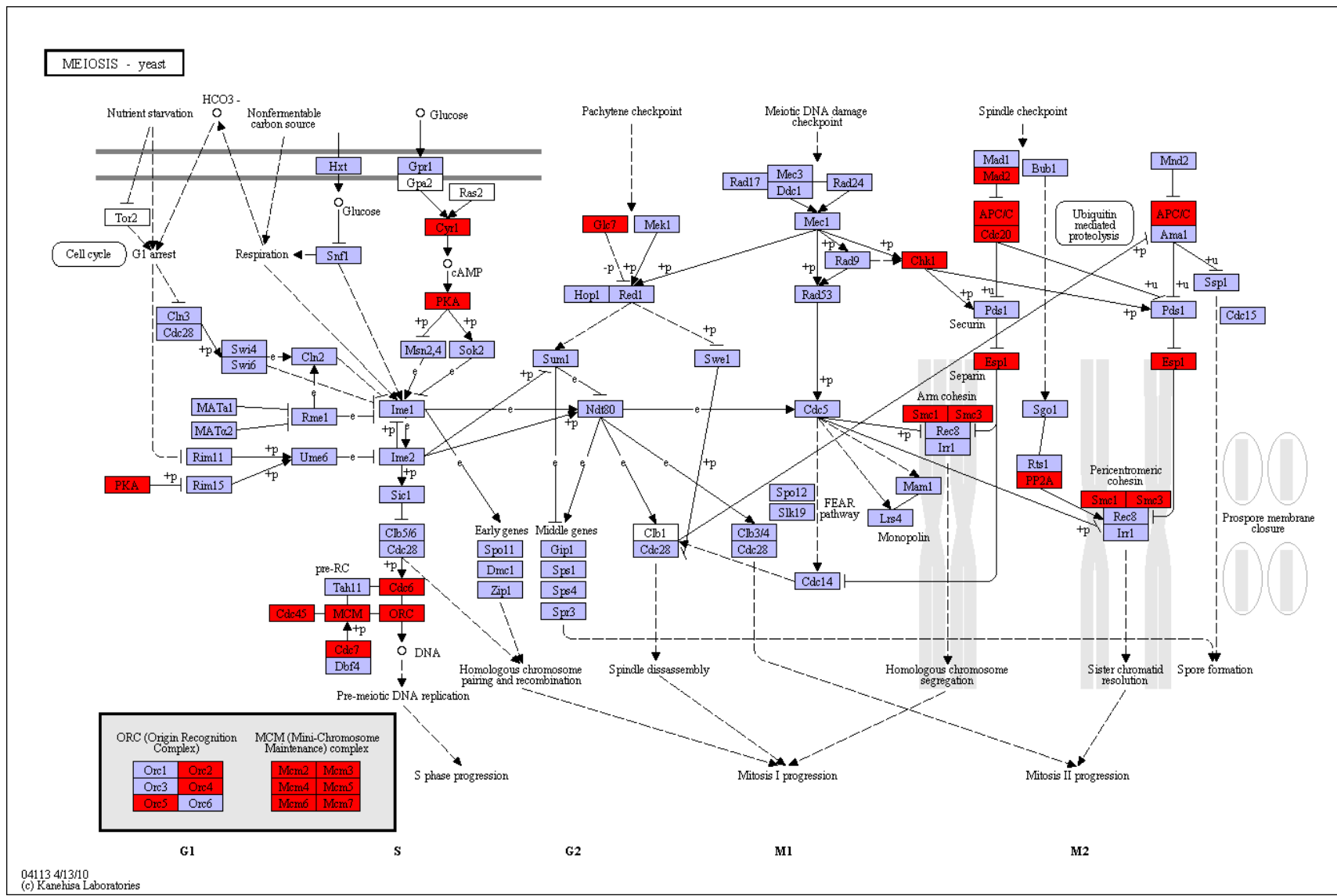


Figure 27: ko04113 Meiosis - yeast

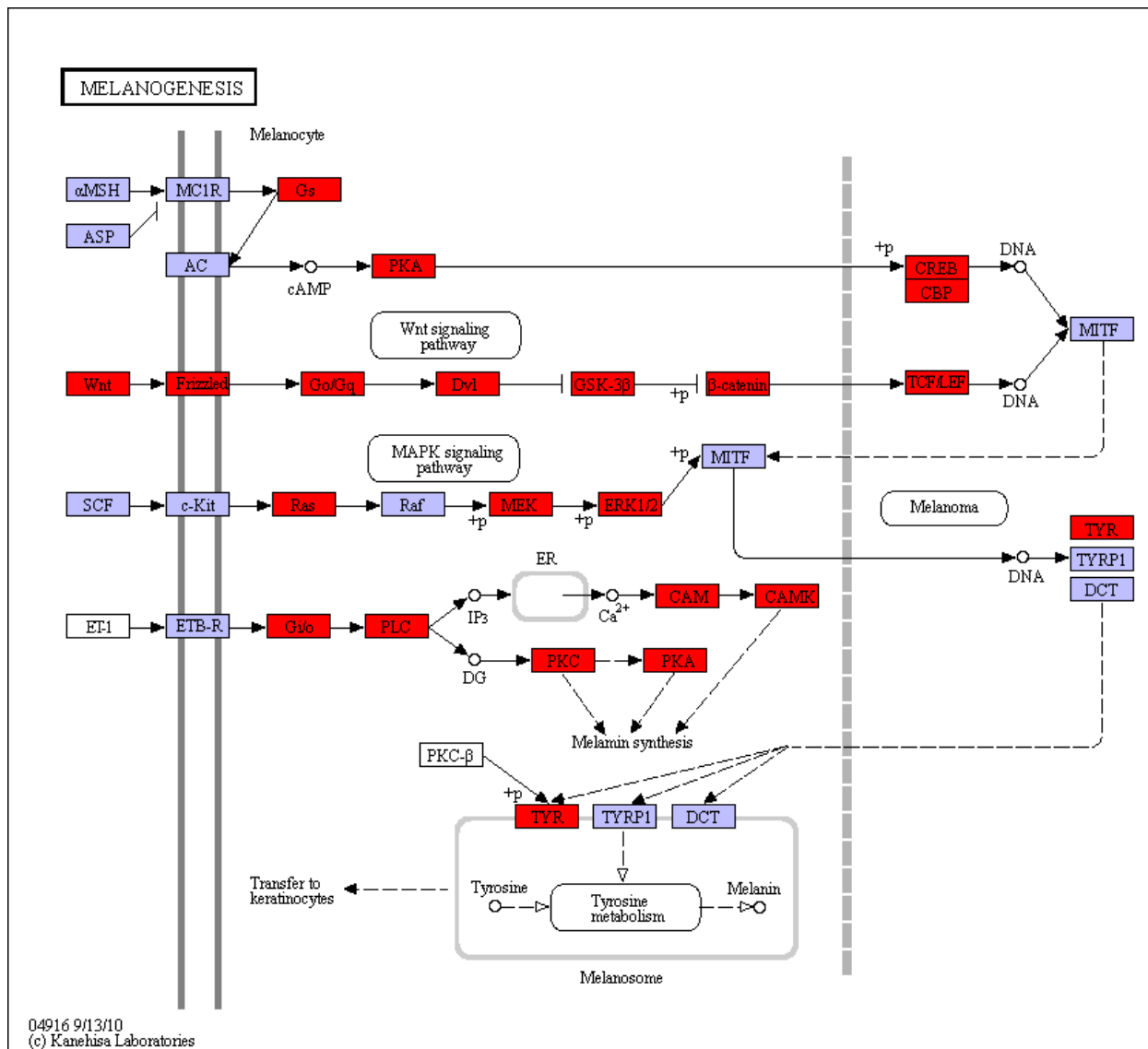


Figure 28: ko04916 Melanogenesis



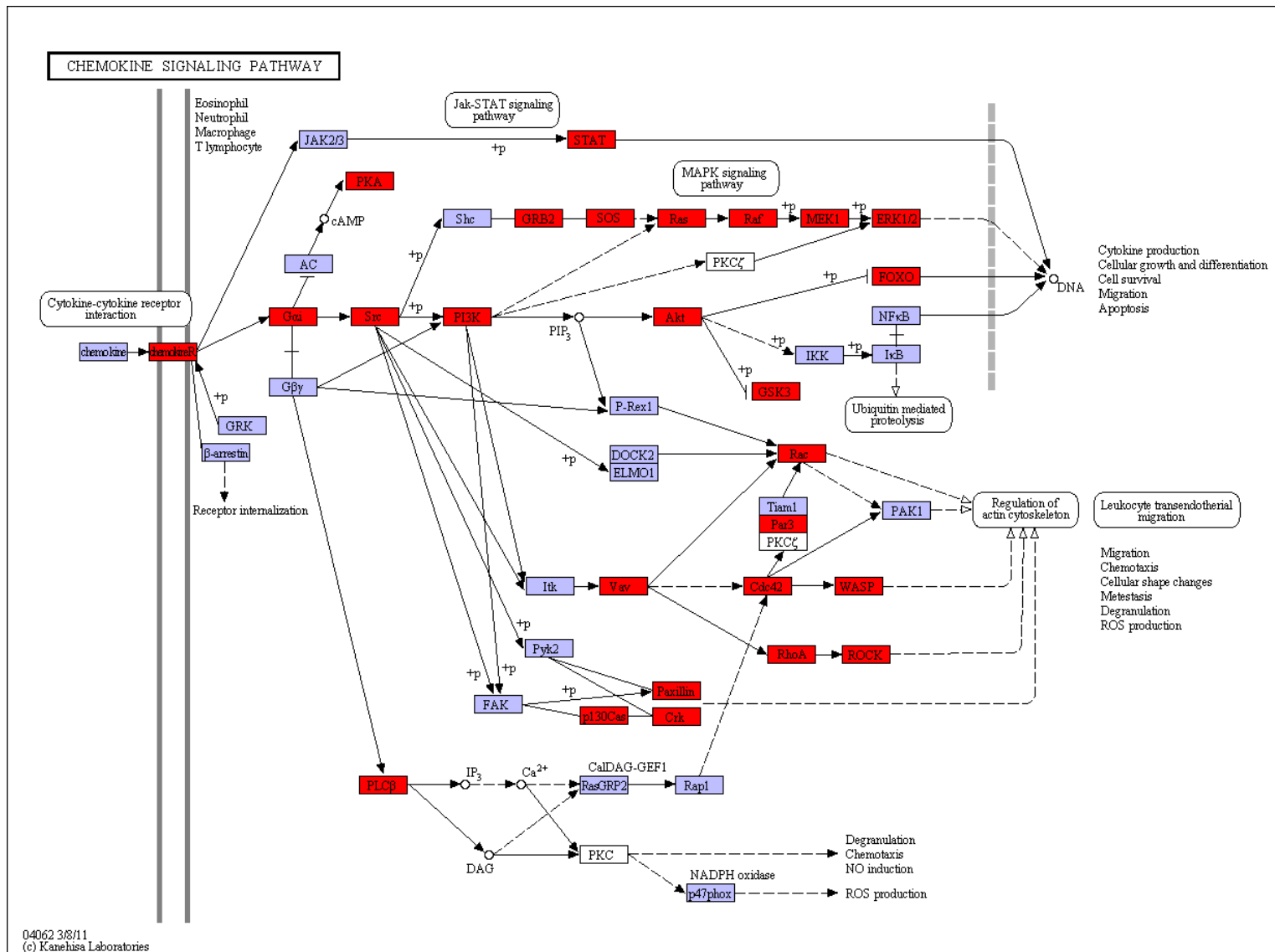


Figure 30: ko04062 Chemokine signaling pathway







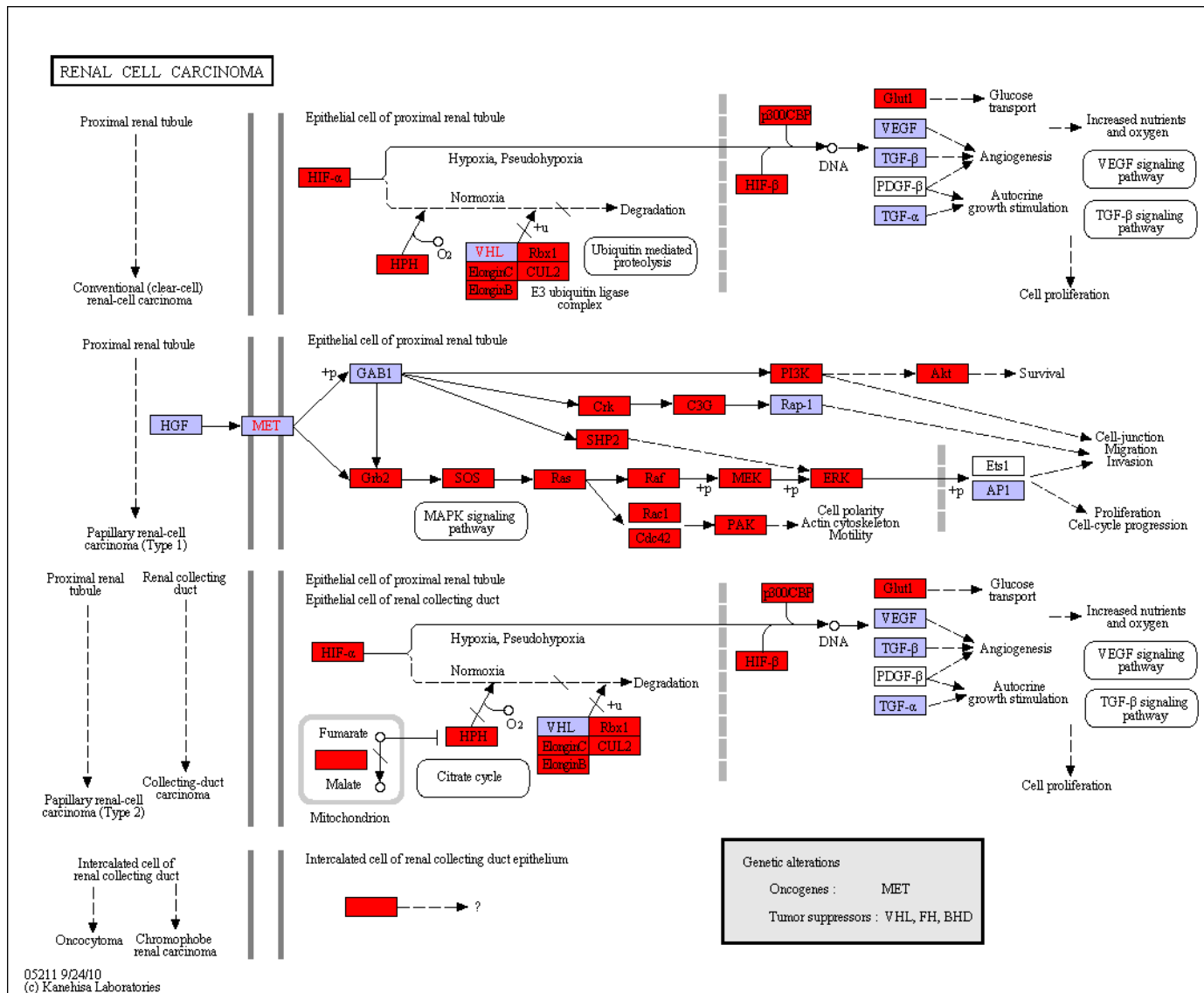


Figure 33: ko05211 Renal cell carcinoma

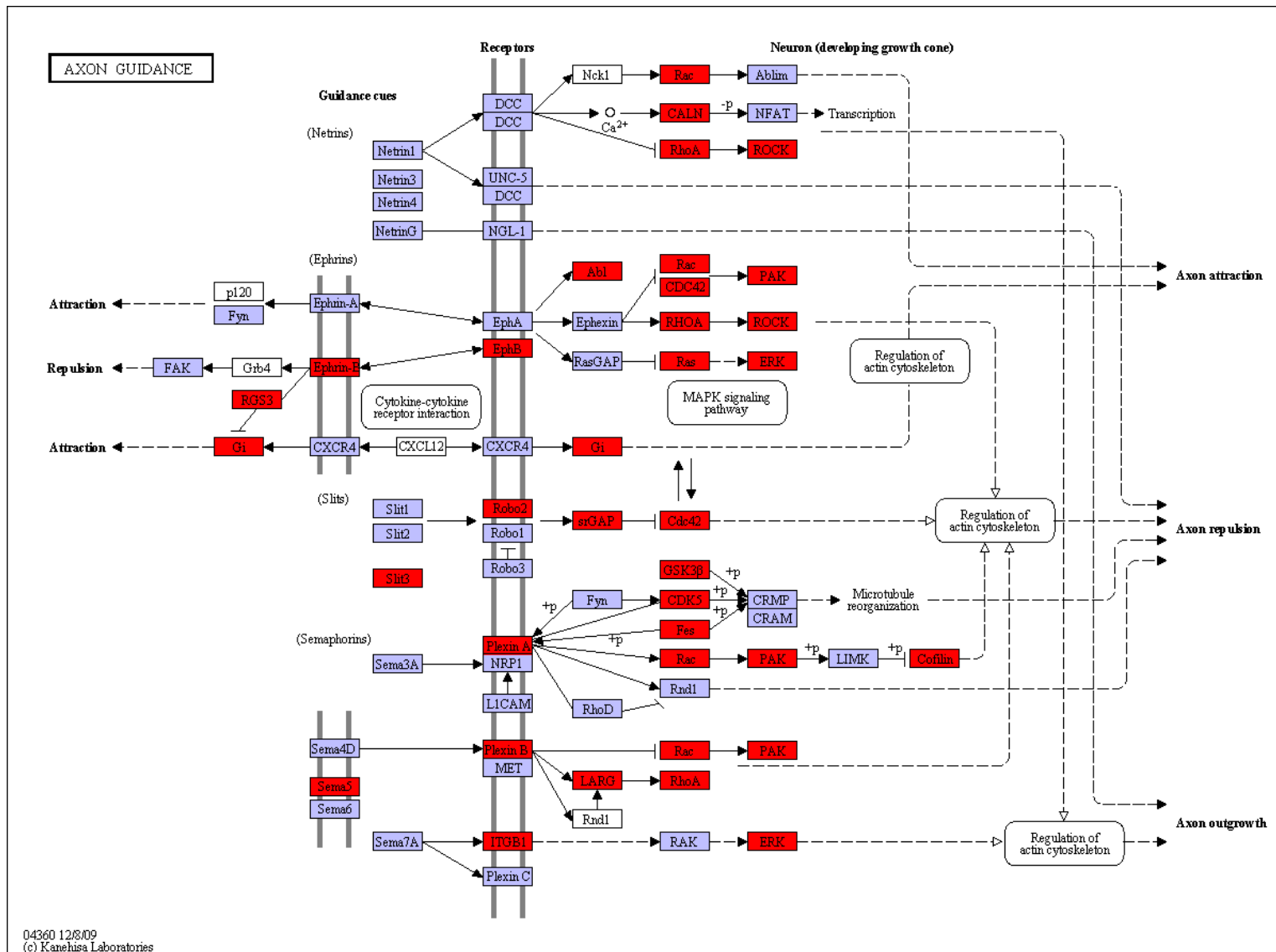


Figure 34: ko04360 Axon guidance

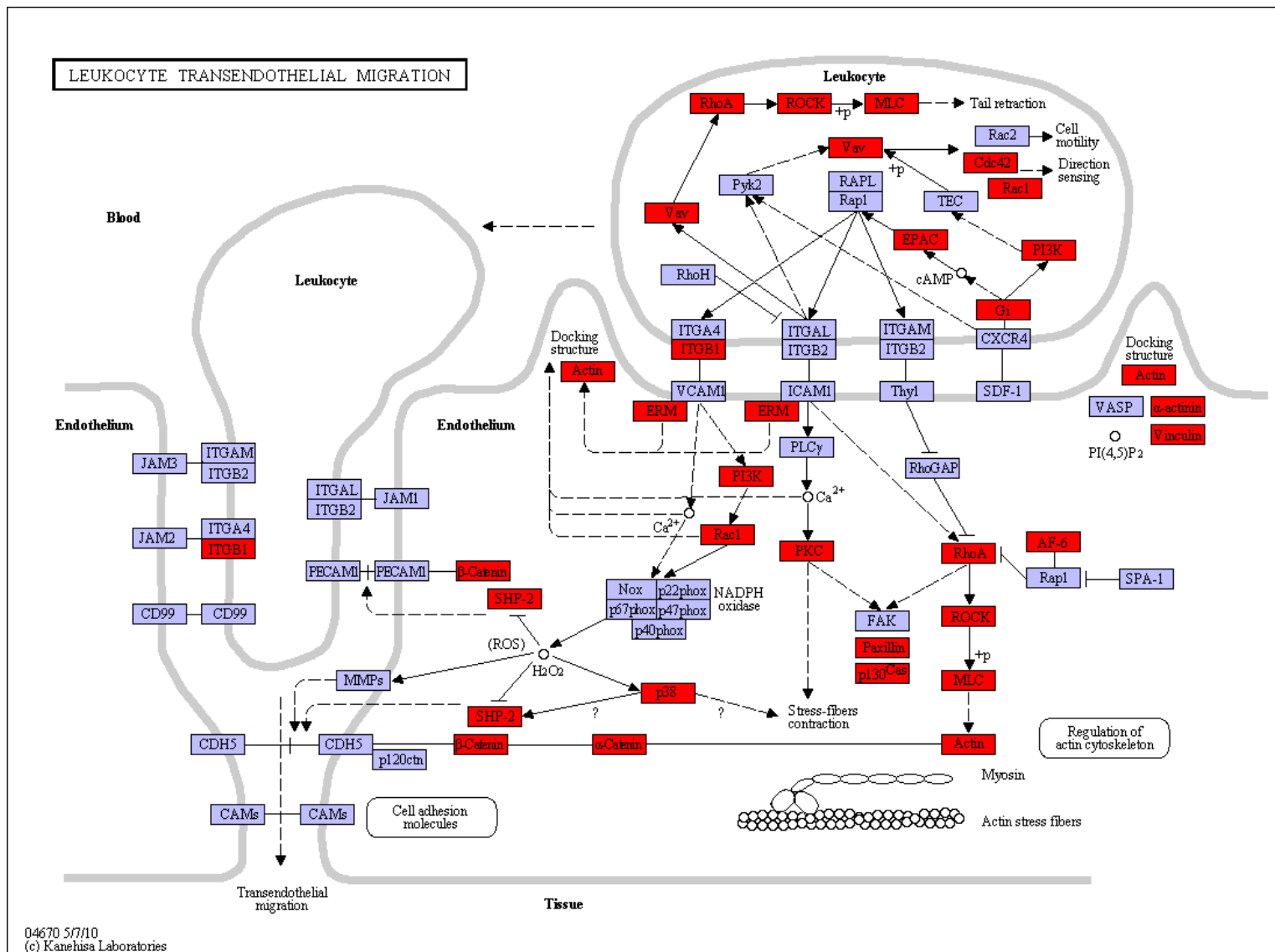


Figure 35: ko04670 Leukocyte transendothelial migration

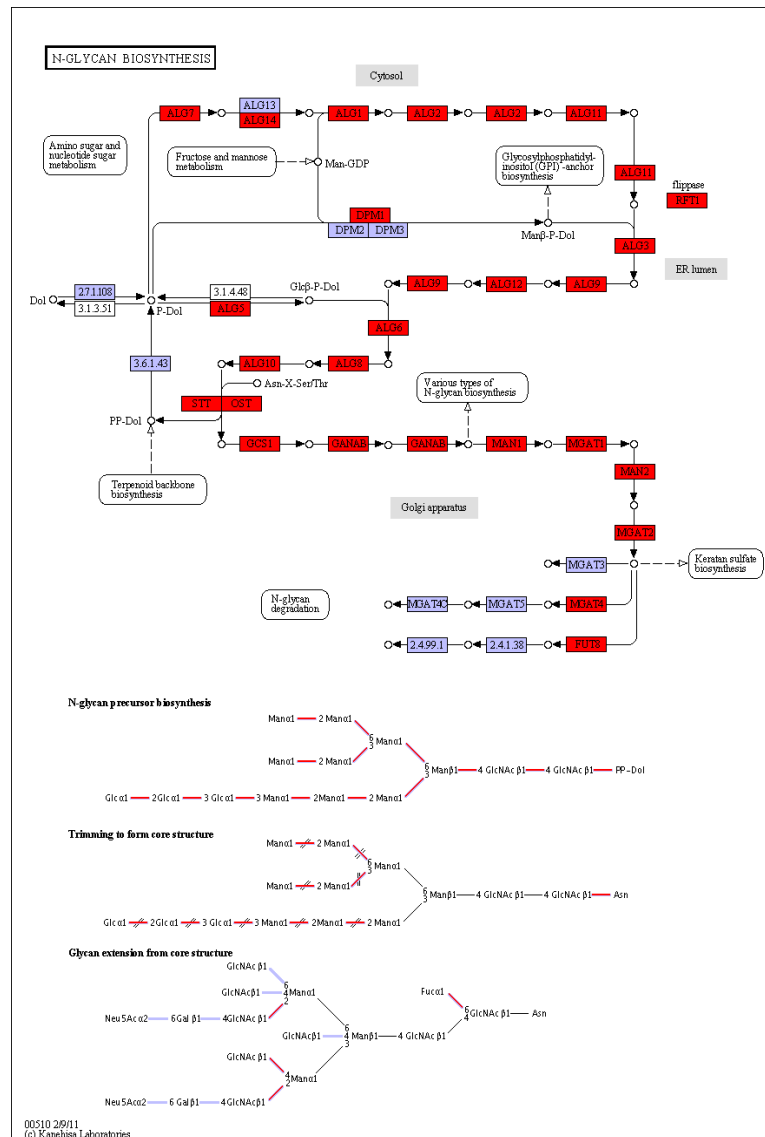


Figure 36: ko00510 N-Glycan biosynthesis

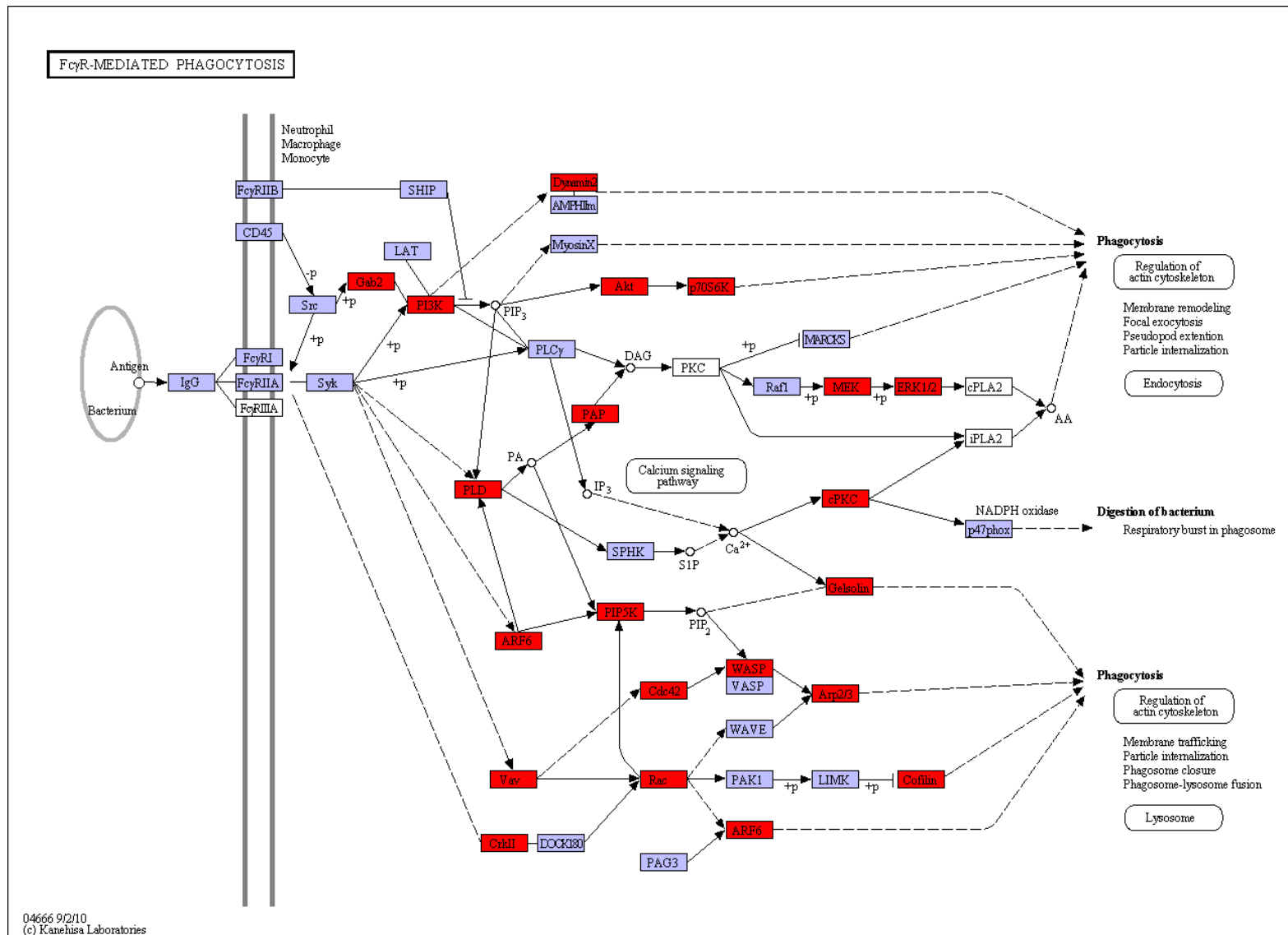


Figure 37: ko04666 Fc gamma R-mediated phagocytosis

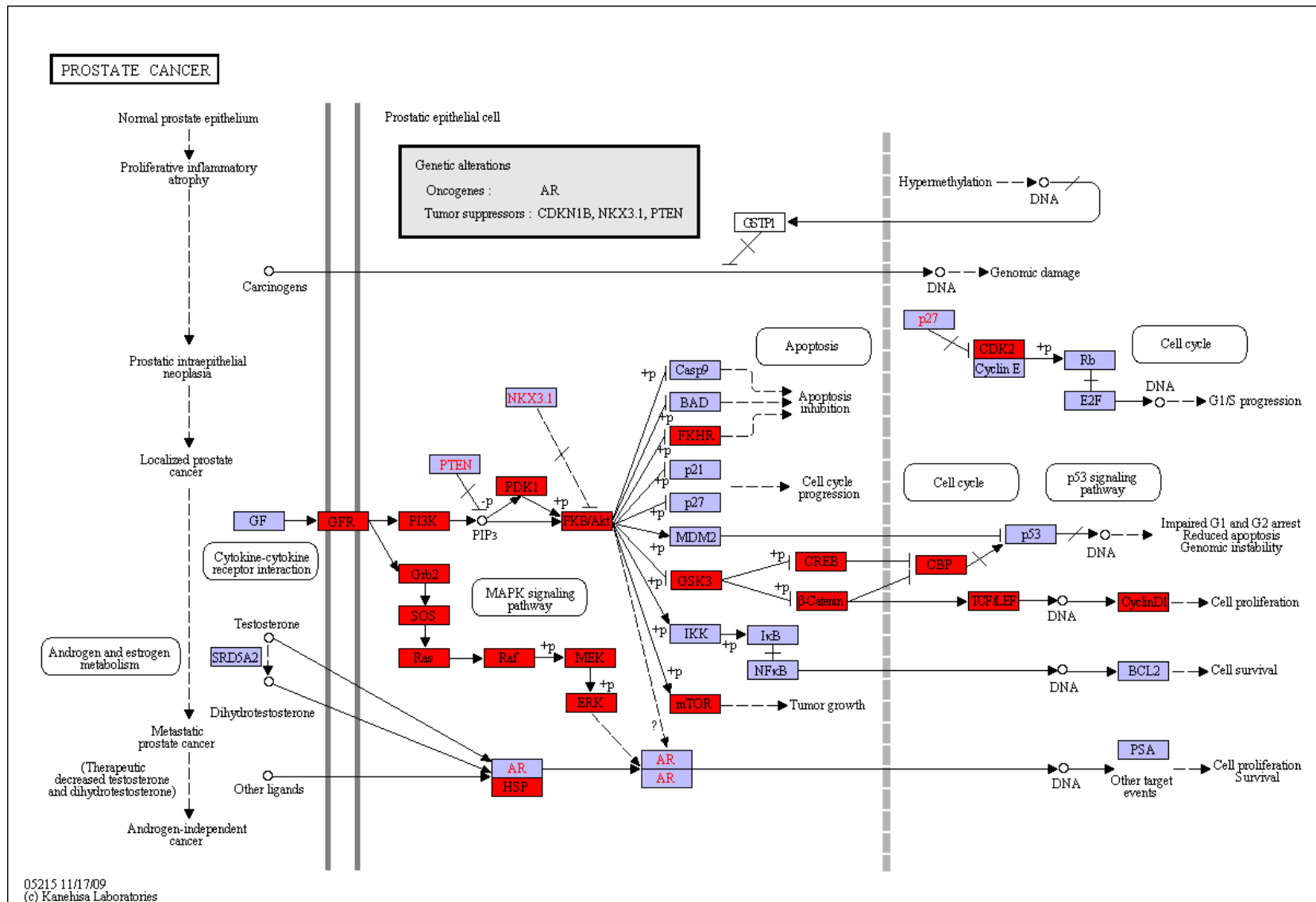


Figure 38: ko05215 Prostate cancer

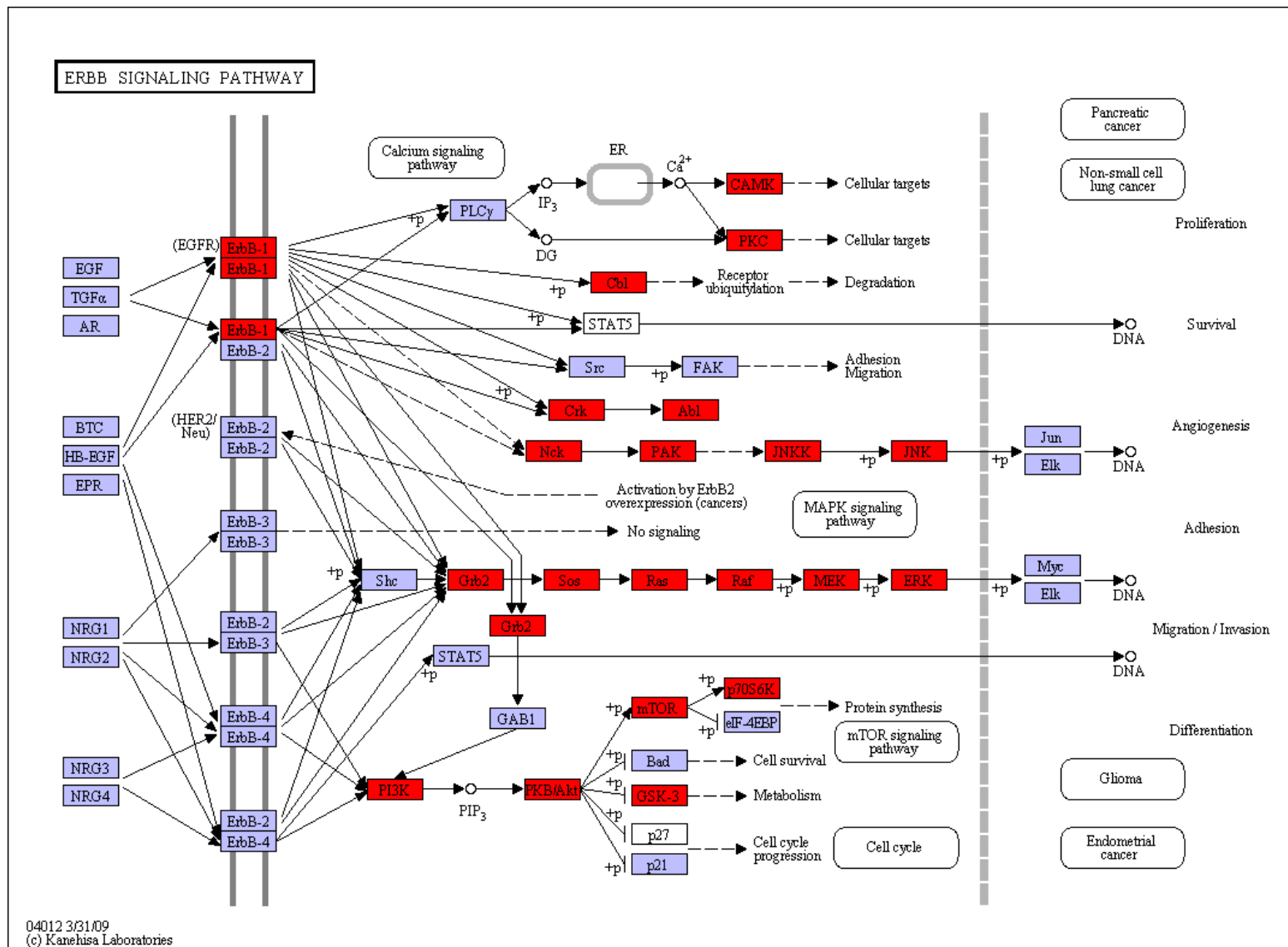


Figure 39: ko04012 ErbB signaling pathway



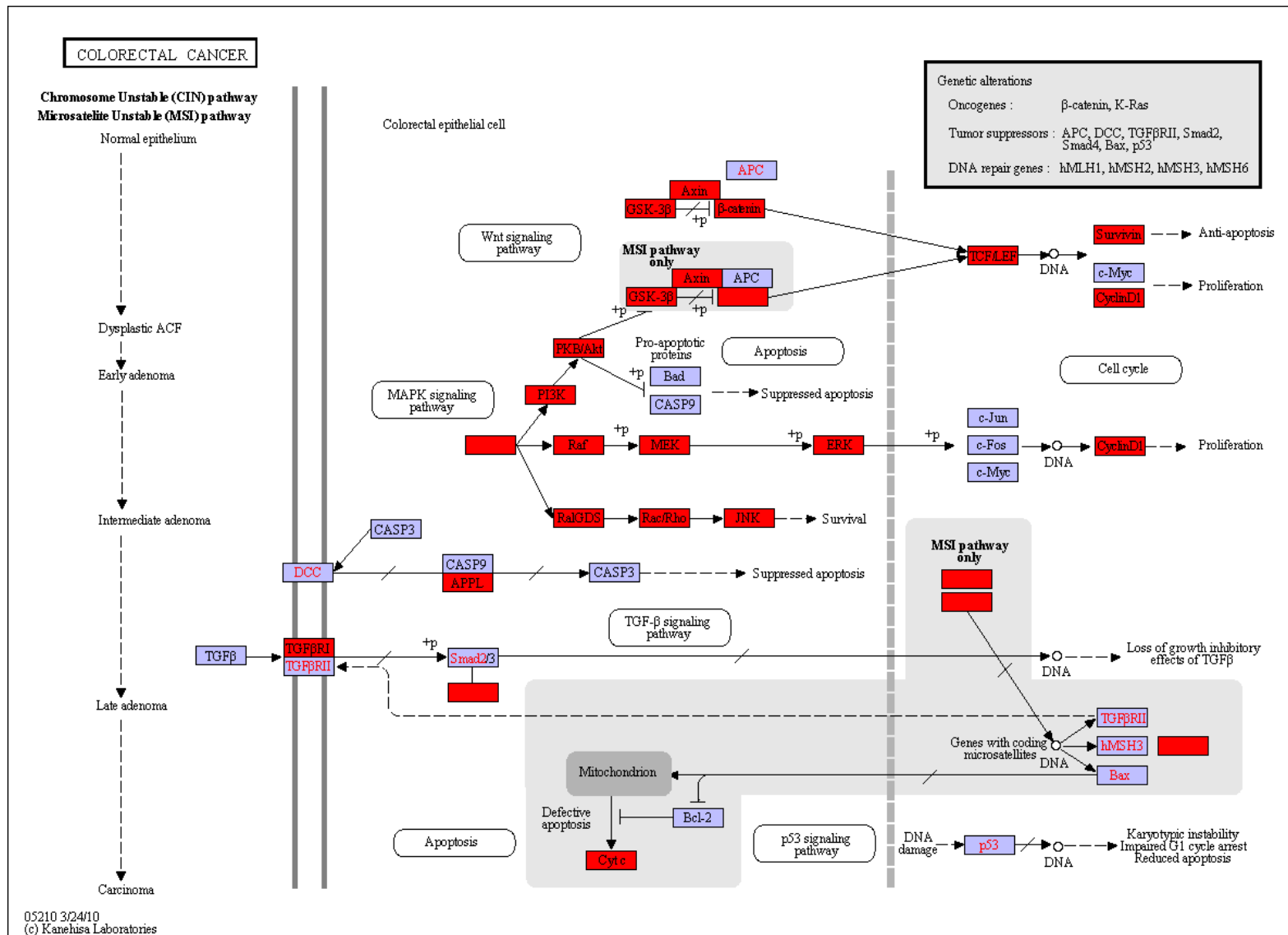


Figure 40: ko05210 Colorectal cancer

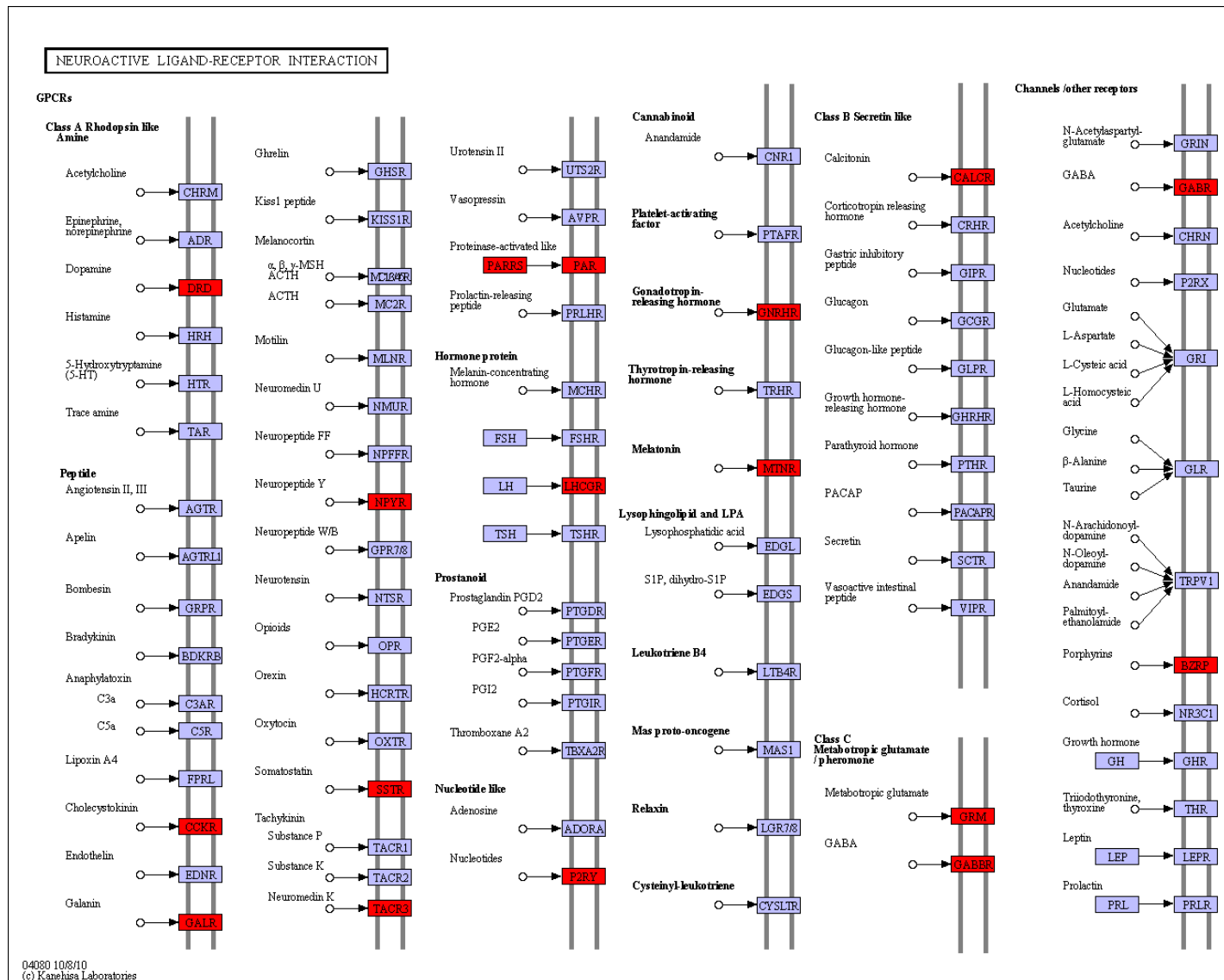


Figure 41: ko04080 Neuroactive ligand-receptor interaction



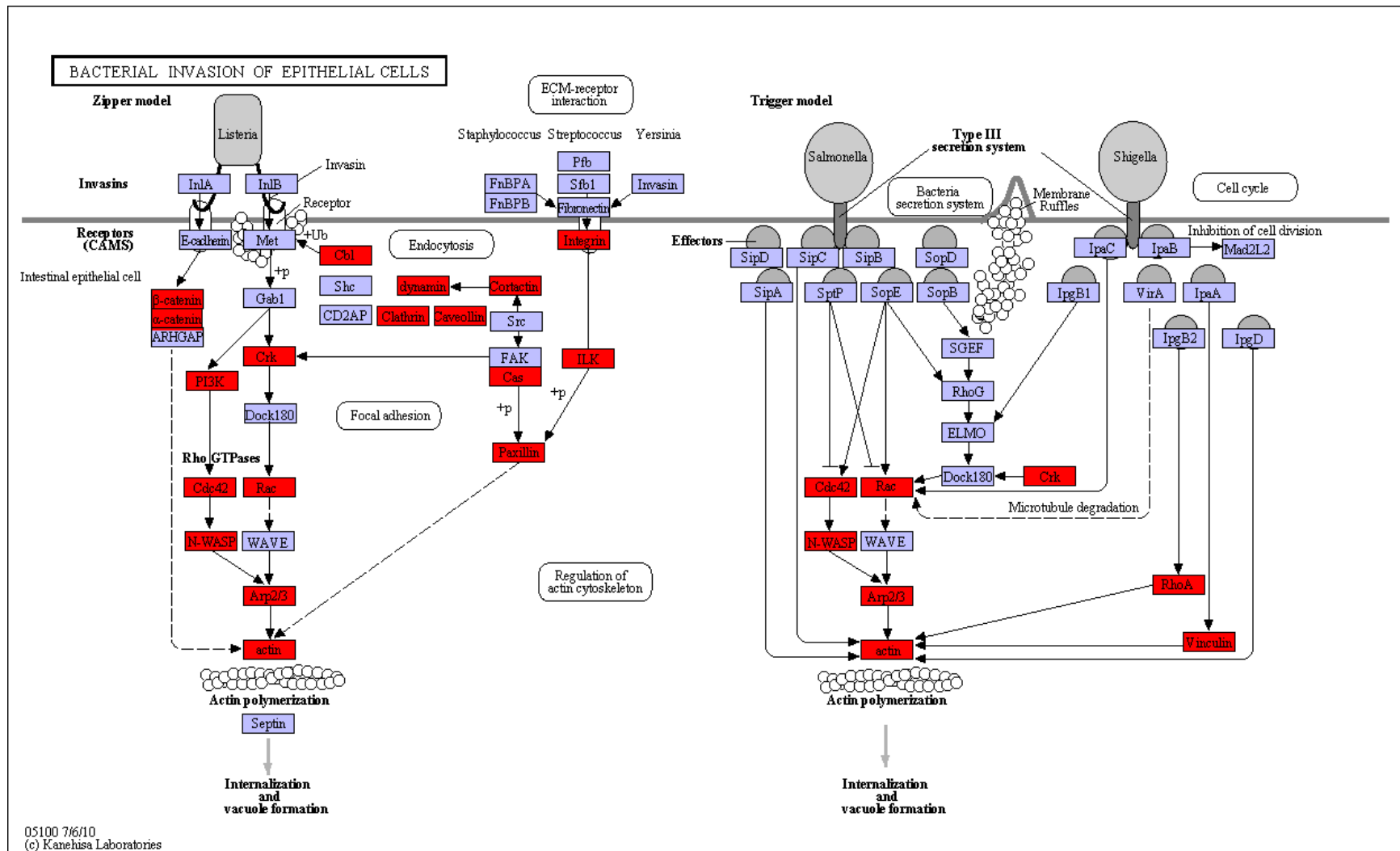


Figure 43: ko05100 Bacterial invasion of epithelial cells



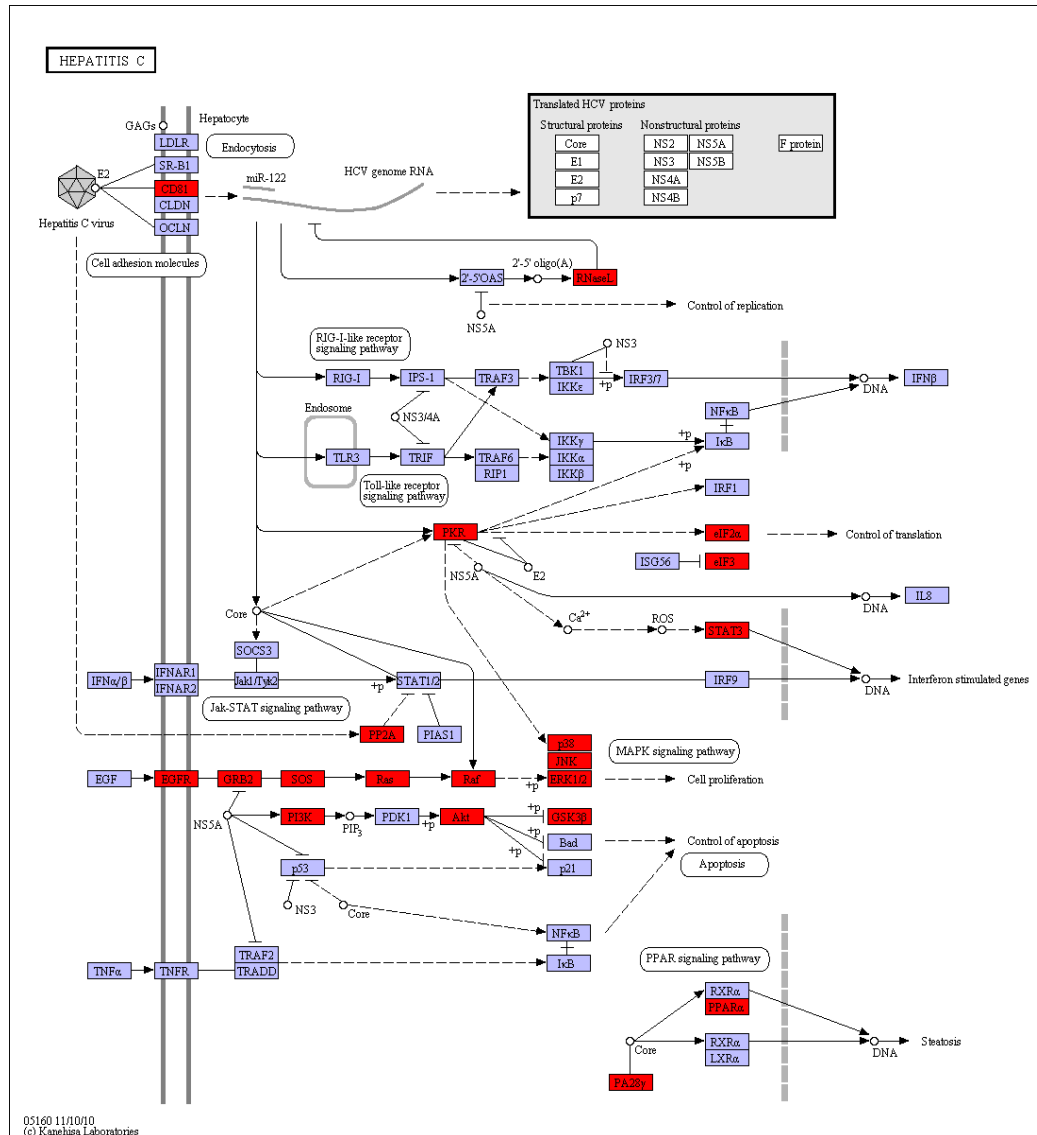


Figure 45: ko05160 Hepatitis C

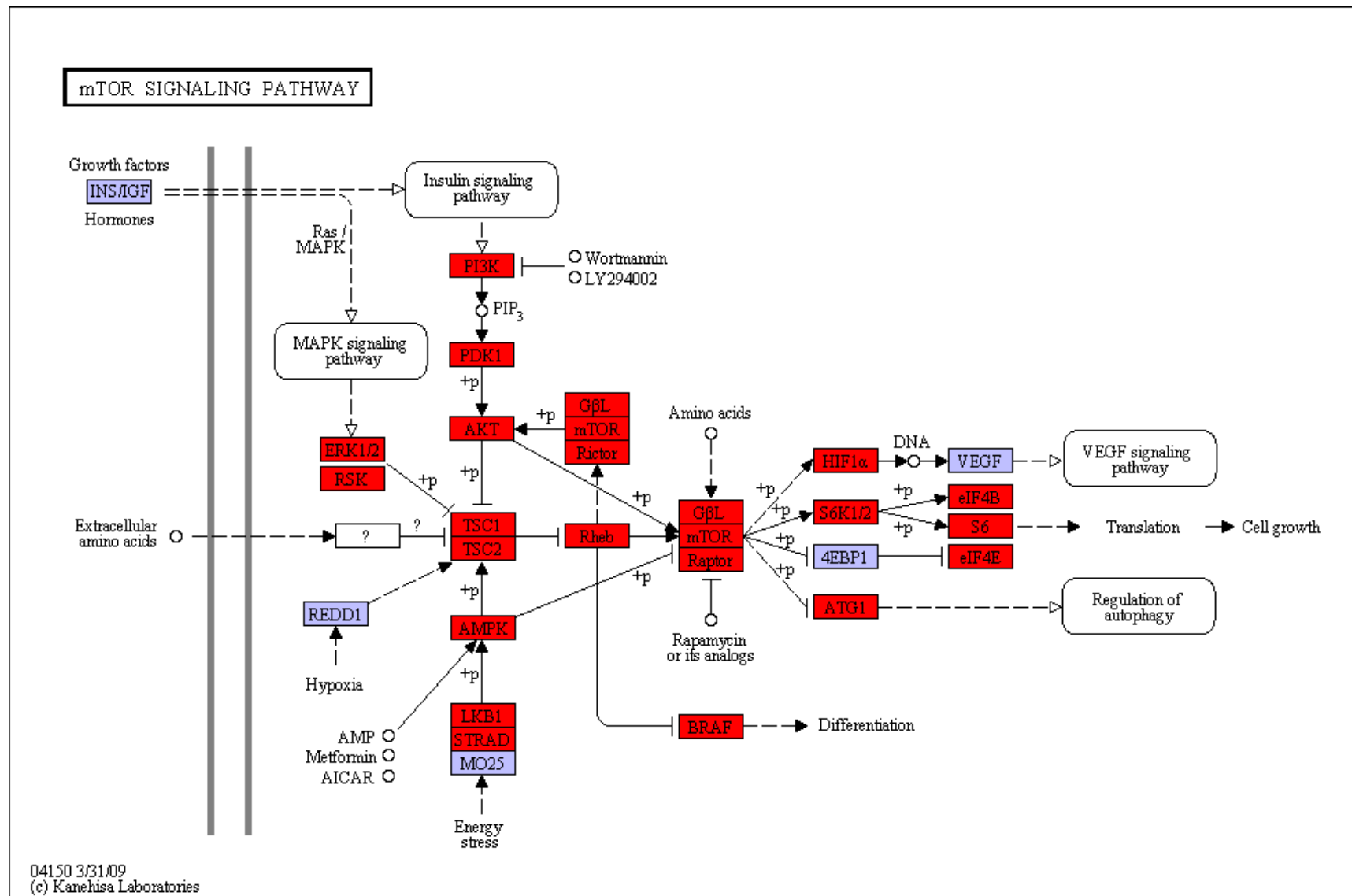


Figure 46: ko04150 mTOR signaling pathway

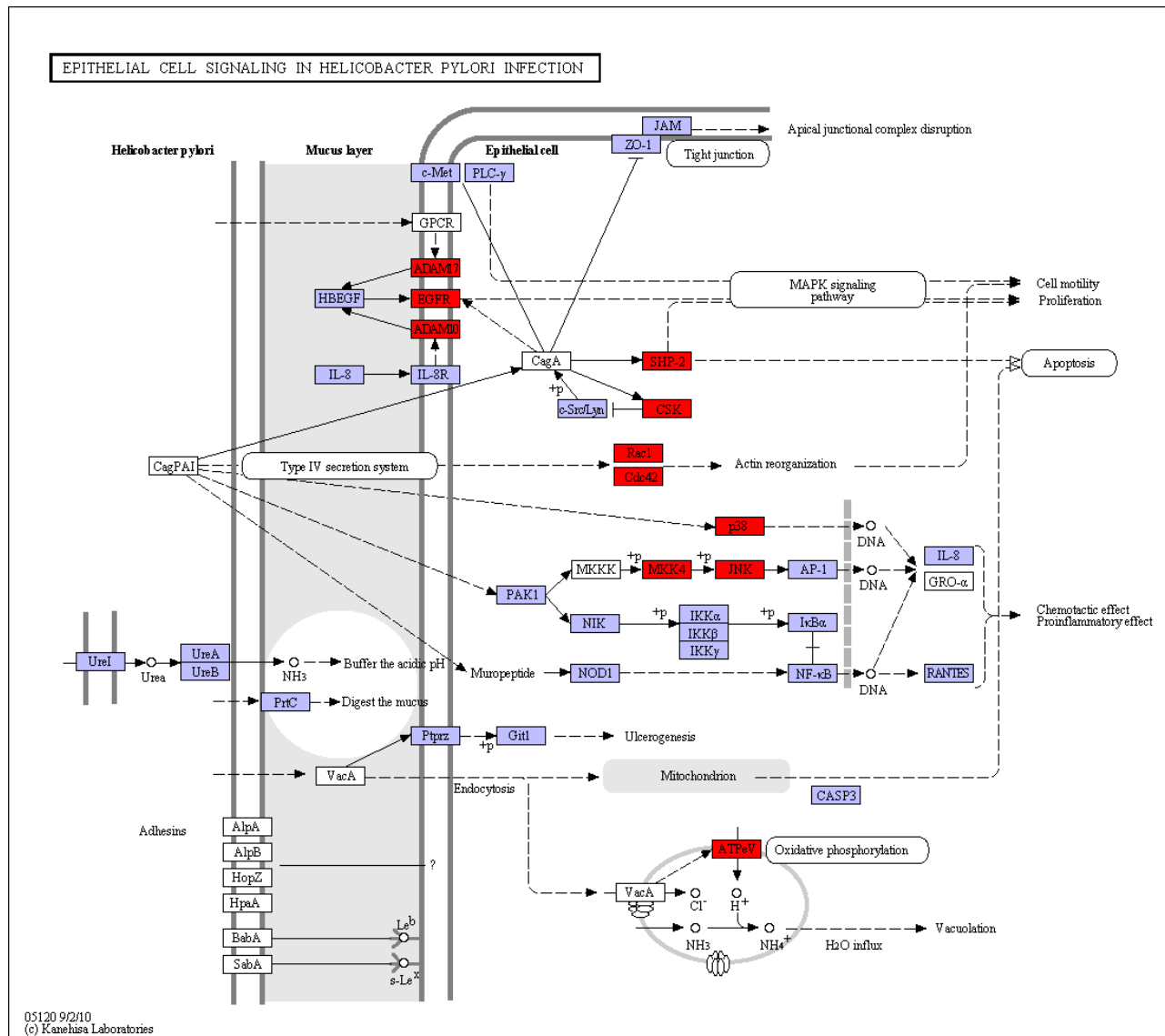


Figure 47: ko05120 Epithelial cell signaling in *Helicobacter pylori* infection



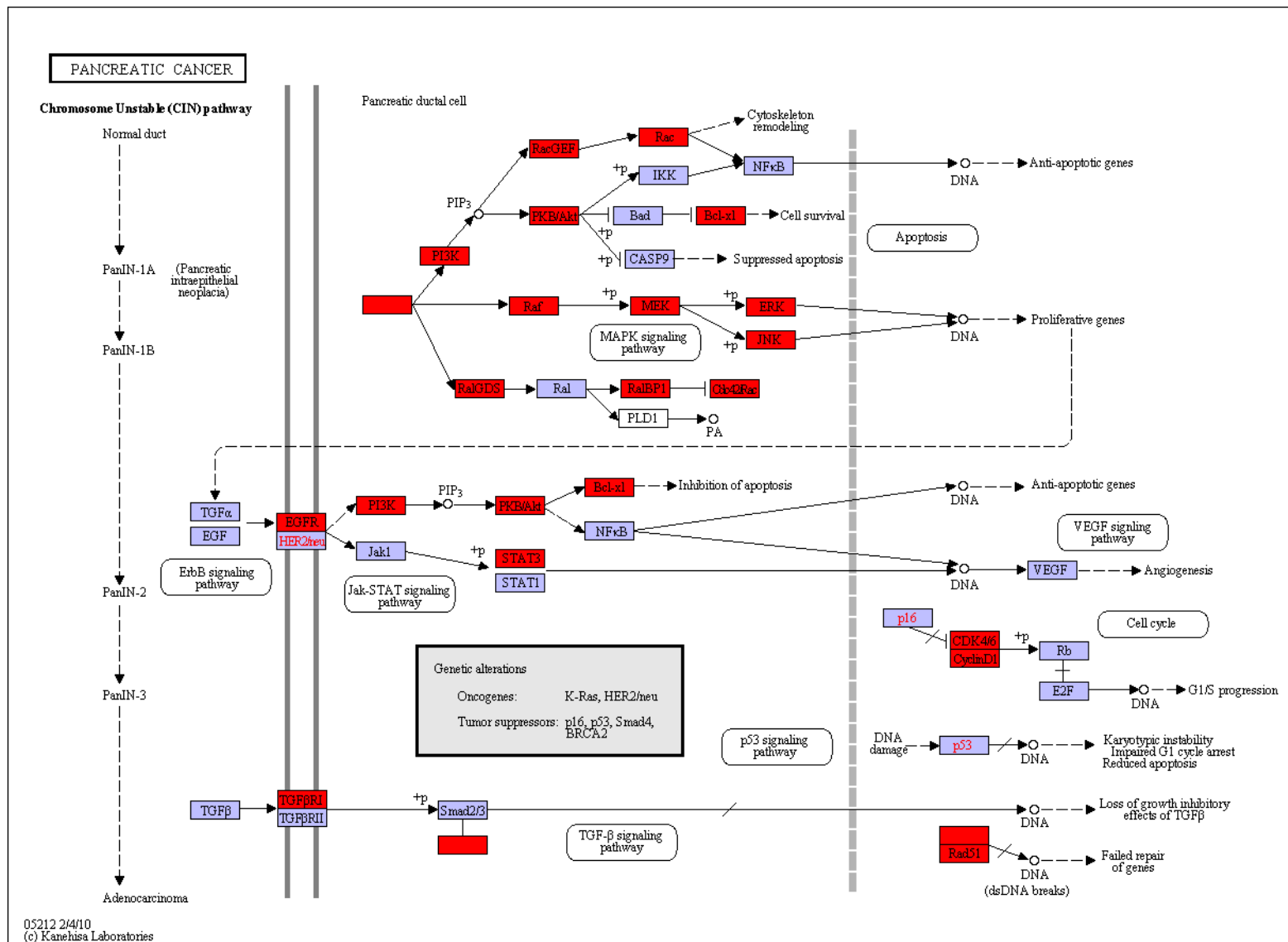


Figure 48: ko05212 Pancreatic cancer

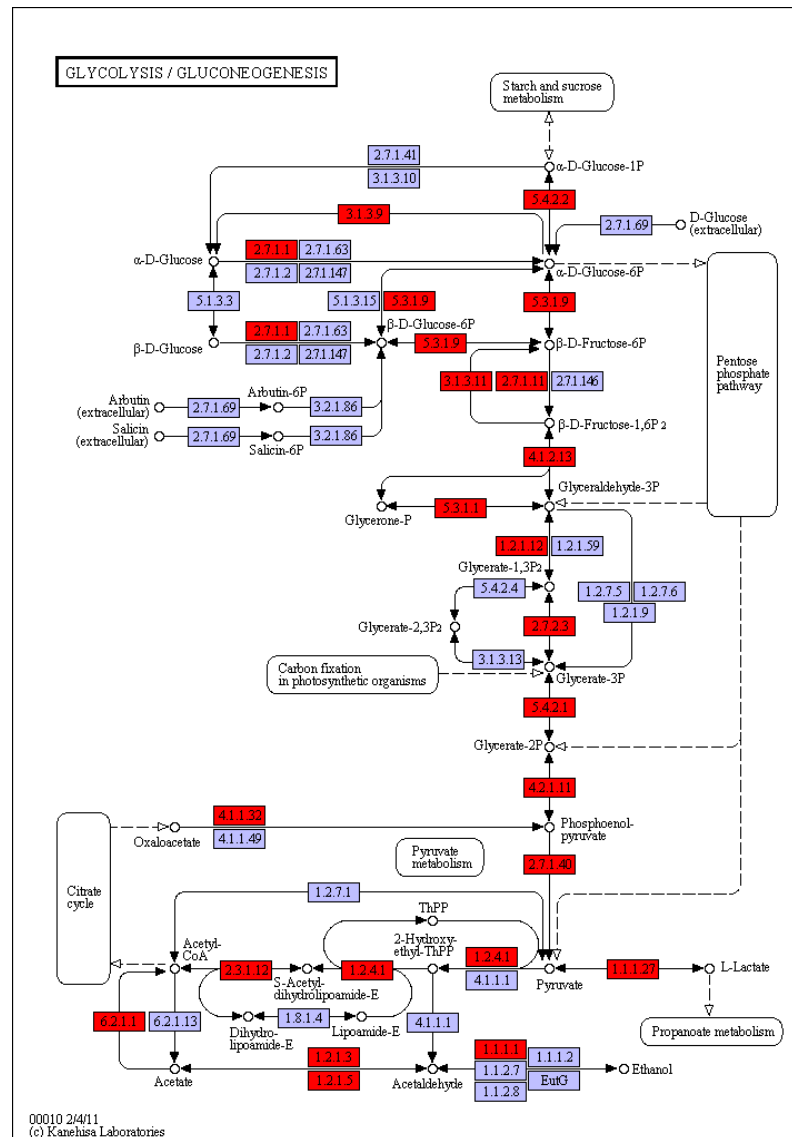


Figure 49: ko00010 Glycolysis / Gluconeogenesis

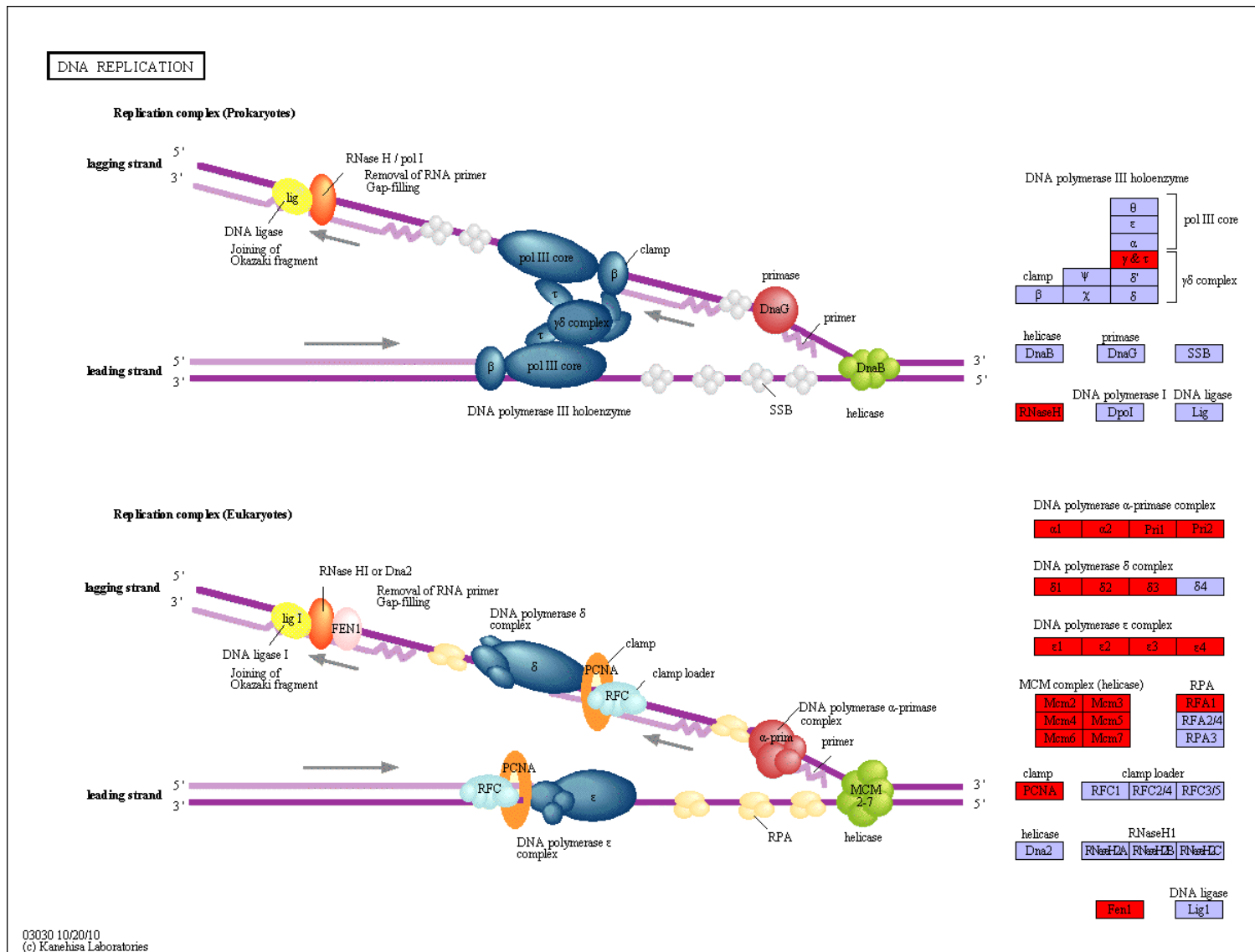


Figure 50: ko03030 DNA replication



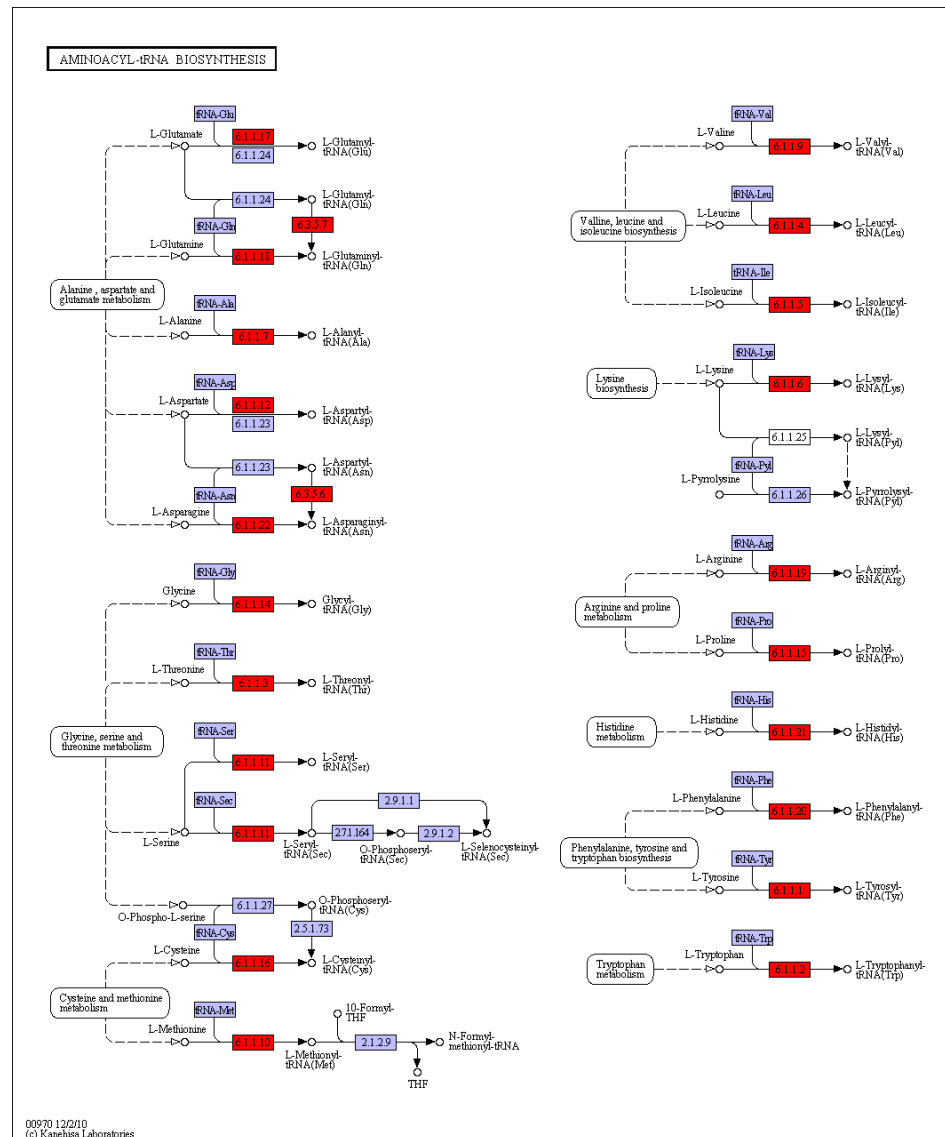


Figure 52: ko00970 Aminoacyl-tRNA biosynthesis

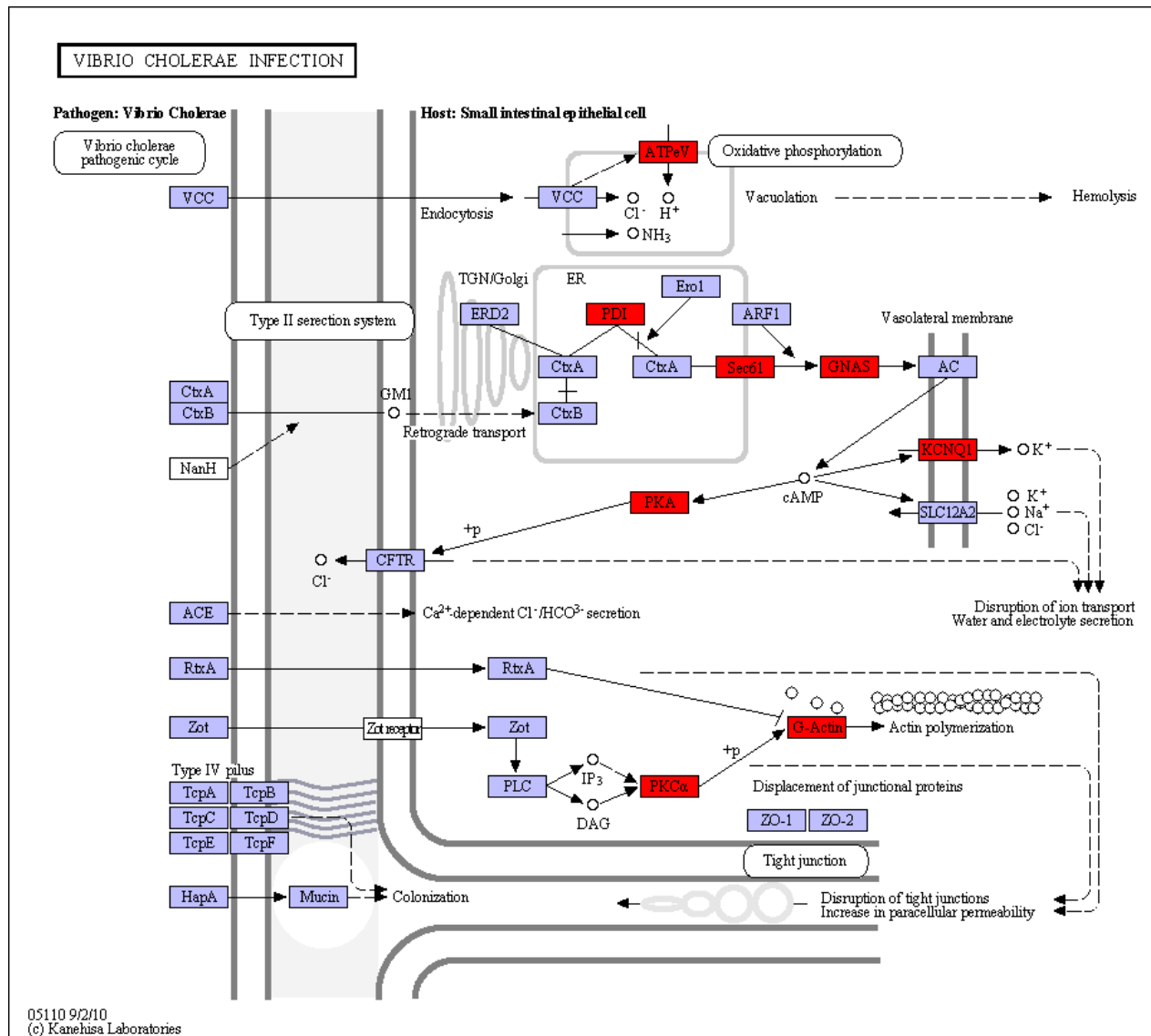


Figure 53: ko05110 *Vibrio cholerae* infection

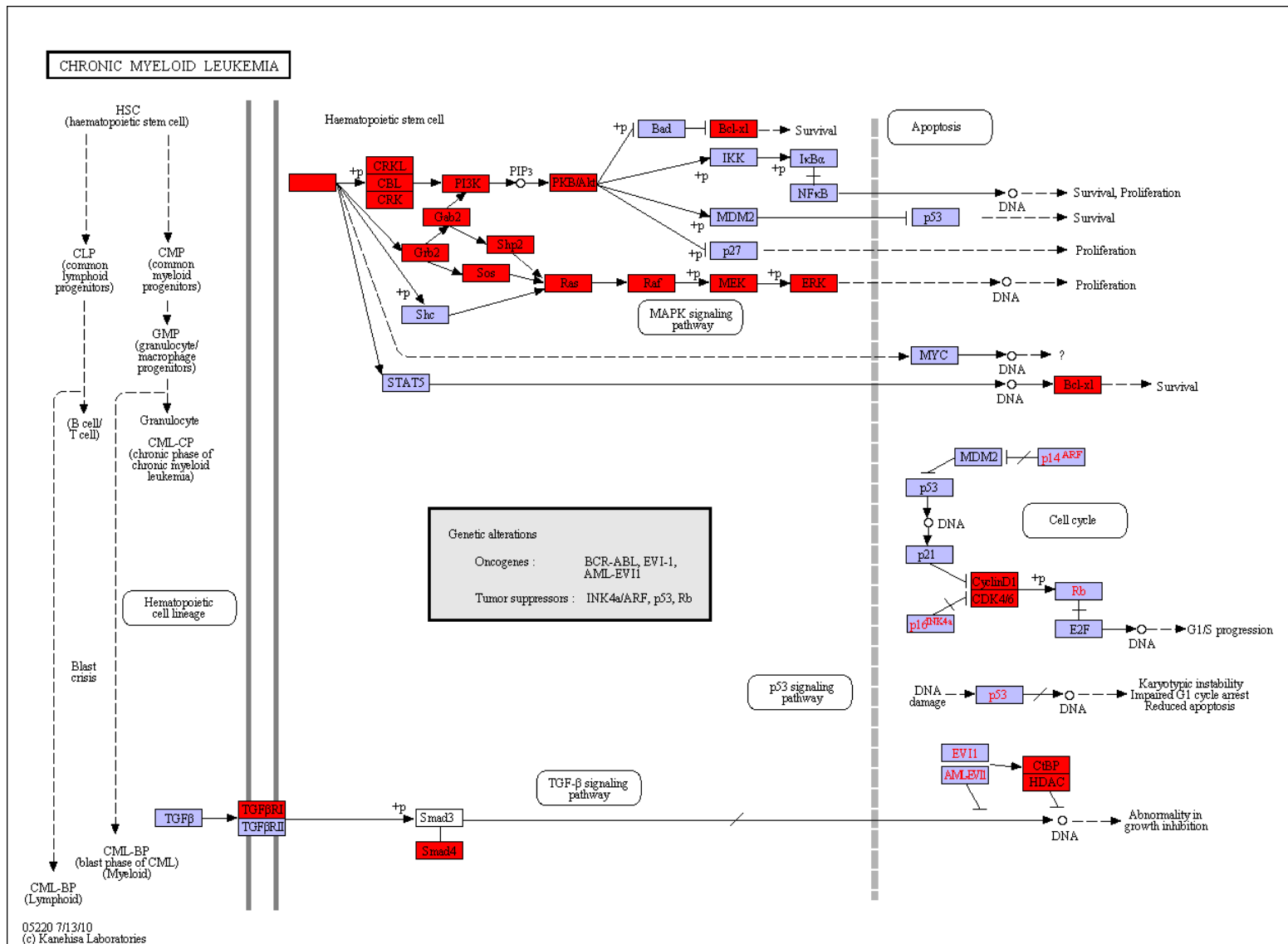


Figure 54: ko05220 Chronic myeloid leukemia

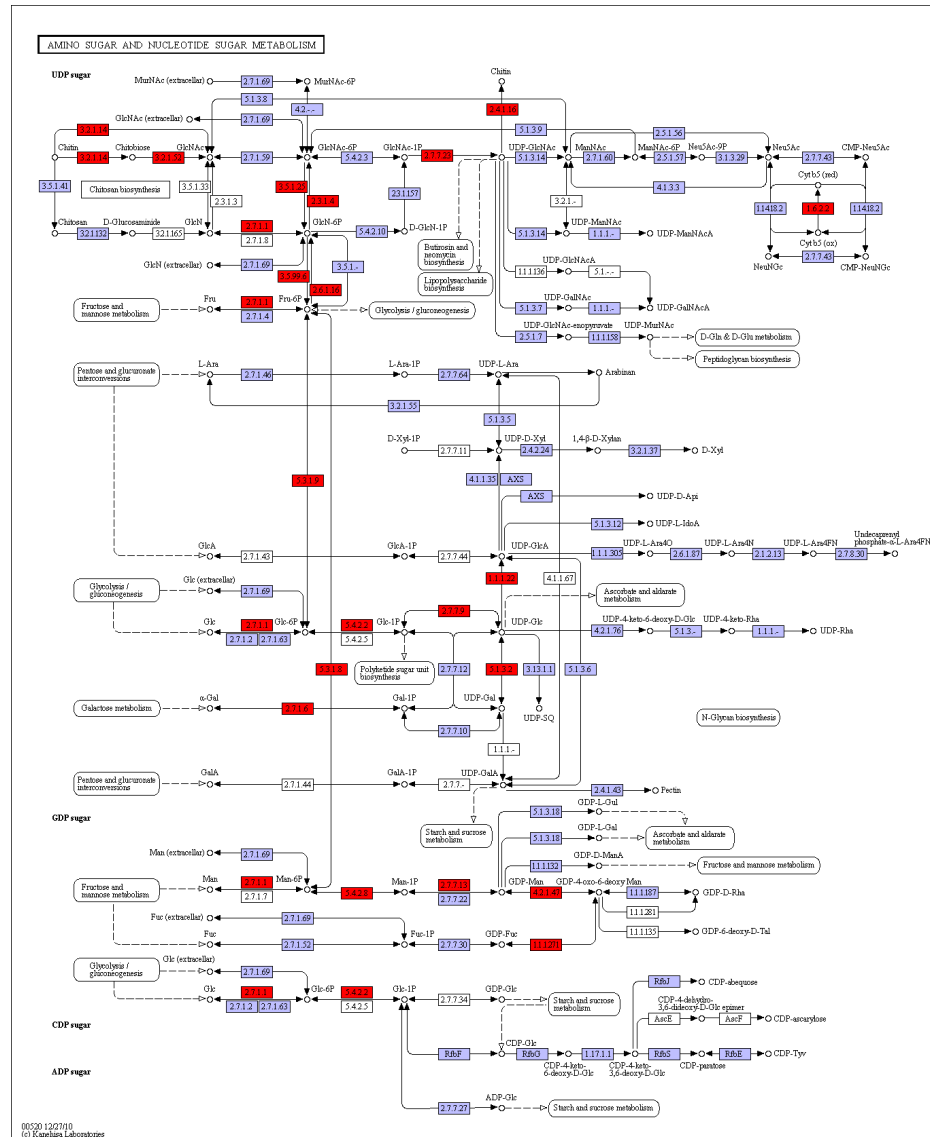


Figure 55: ko00520 Amino sugar and nucleotide sugar metabolism



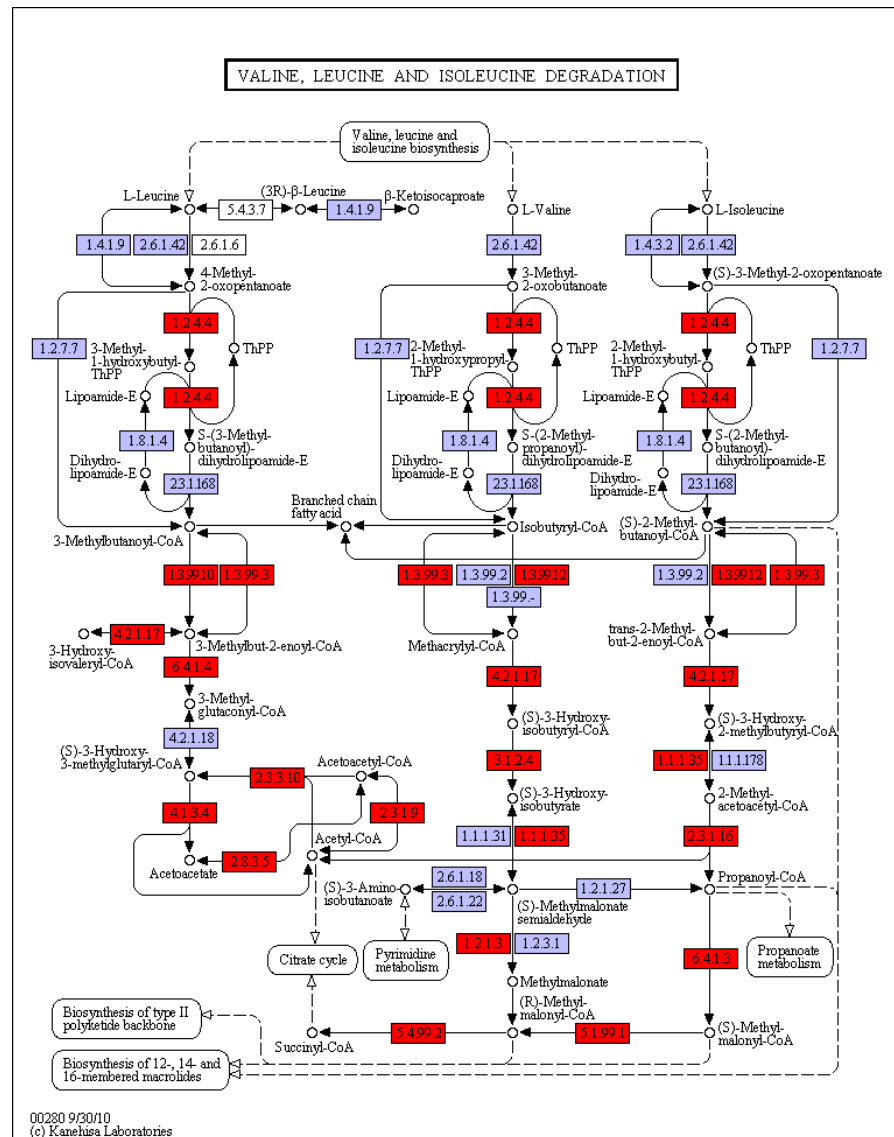


Figure 56: ko00280 Valine, leucine and isoleucine degradation

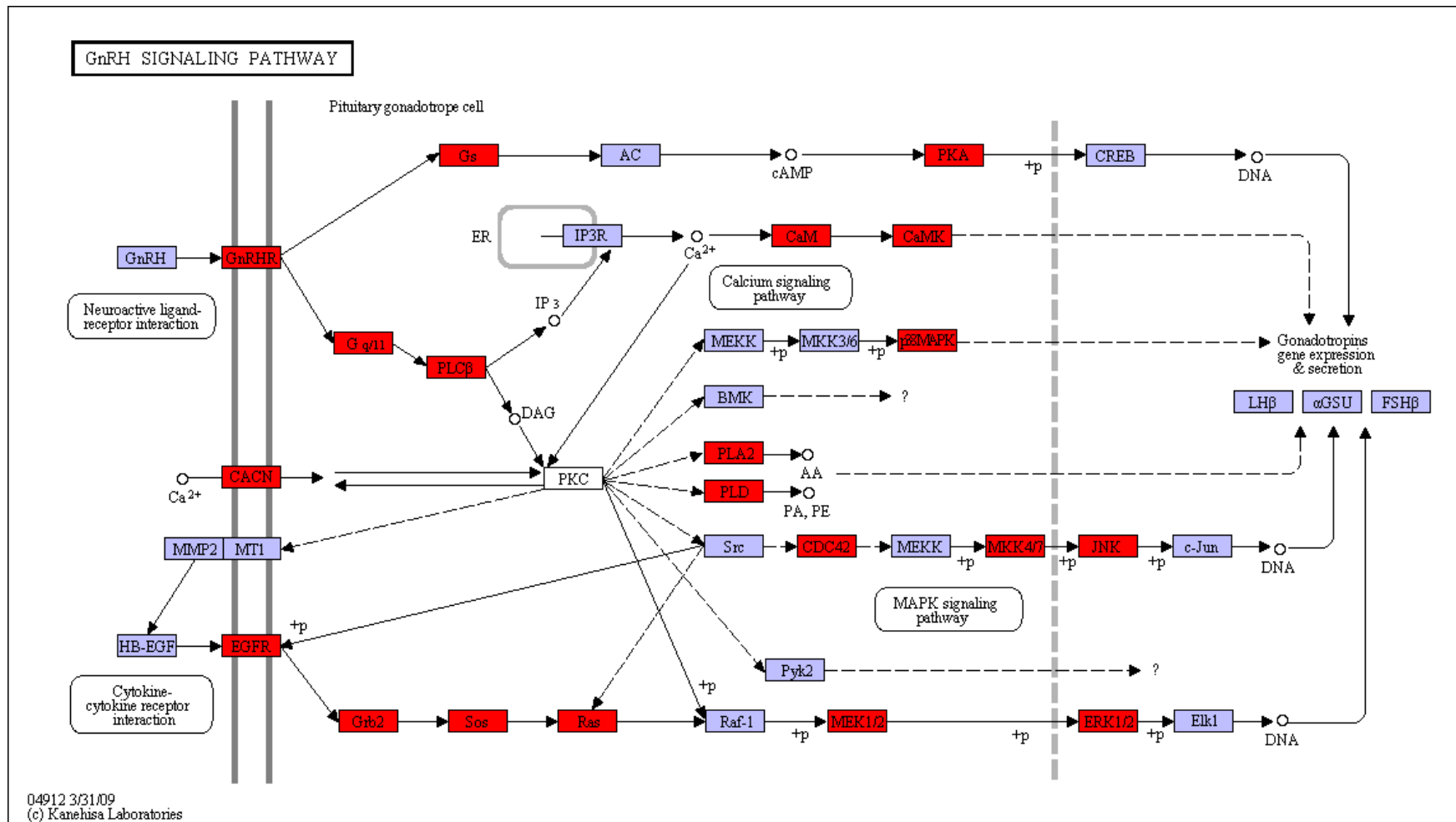


Figure 57: ko04912 GnRH signaling pathway

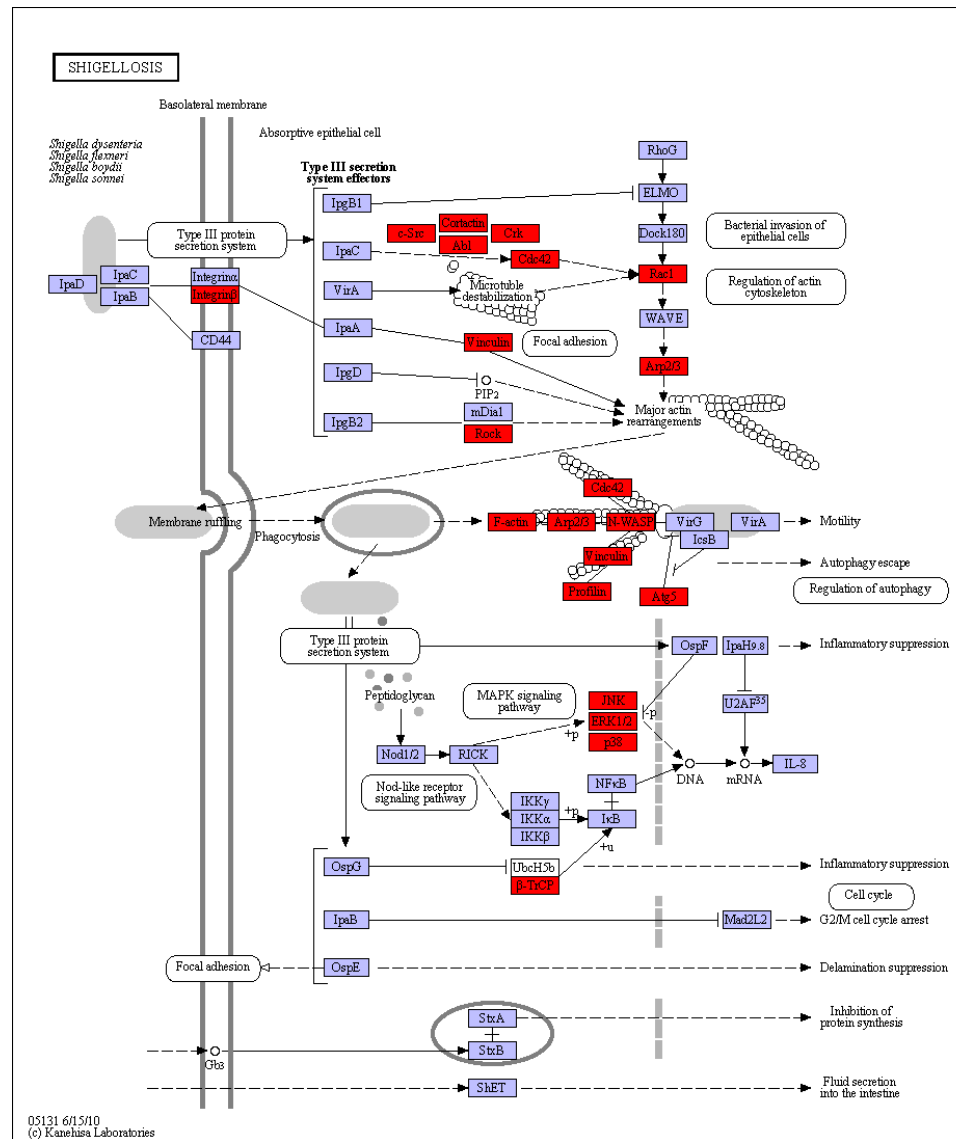


Figure 58: ko05131 Shigellosis

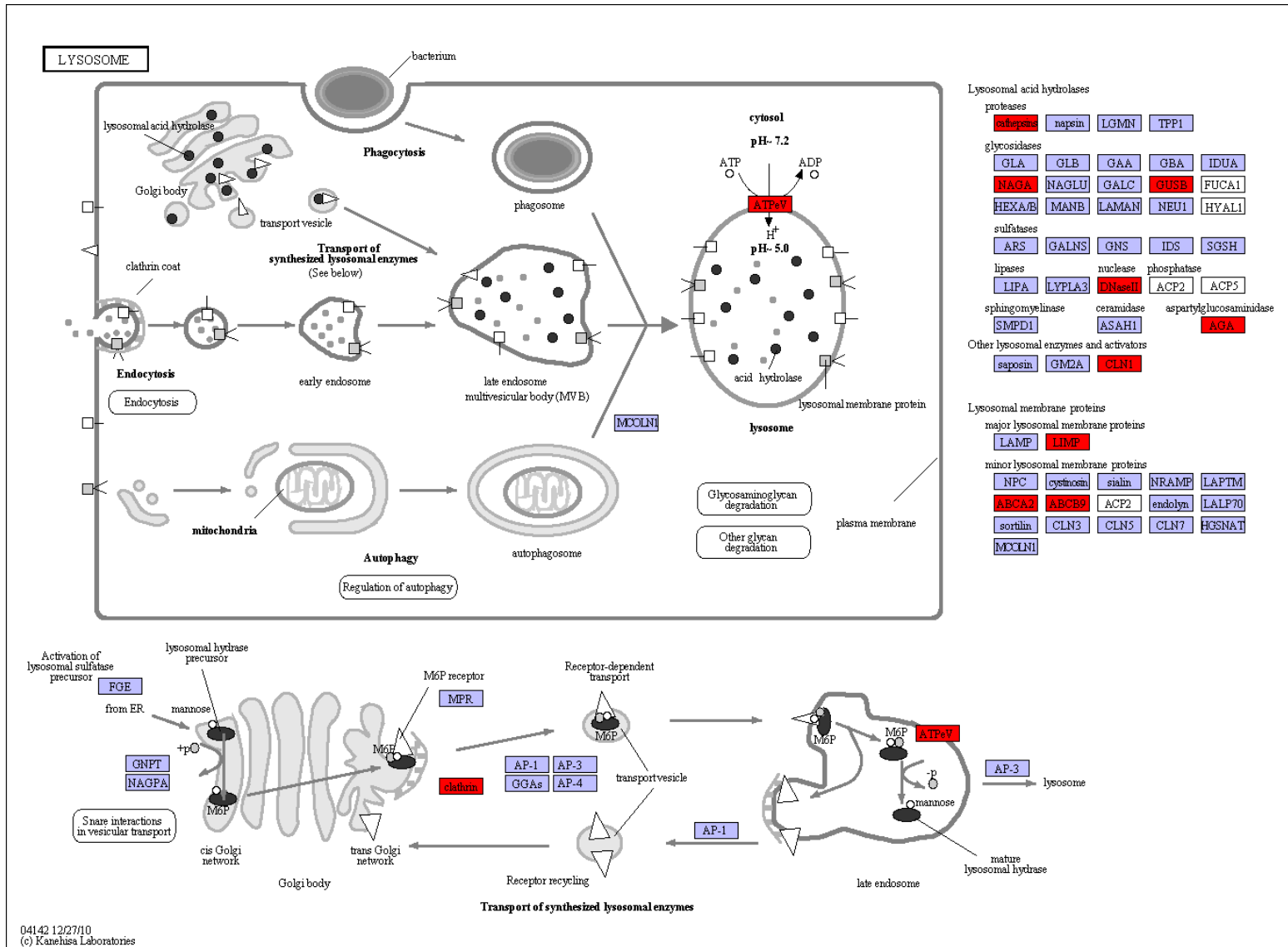


Figure 59: ko04142 Lysosome

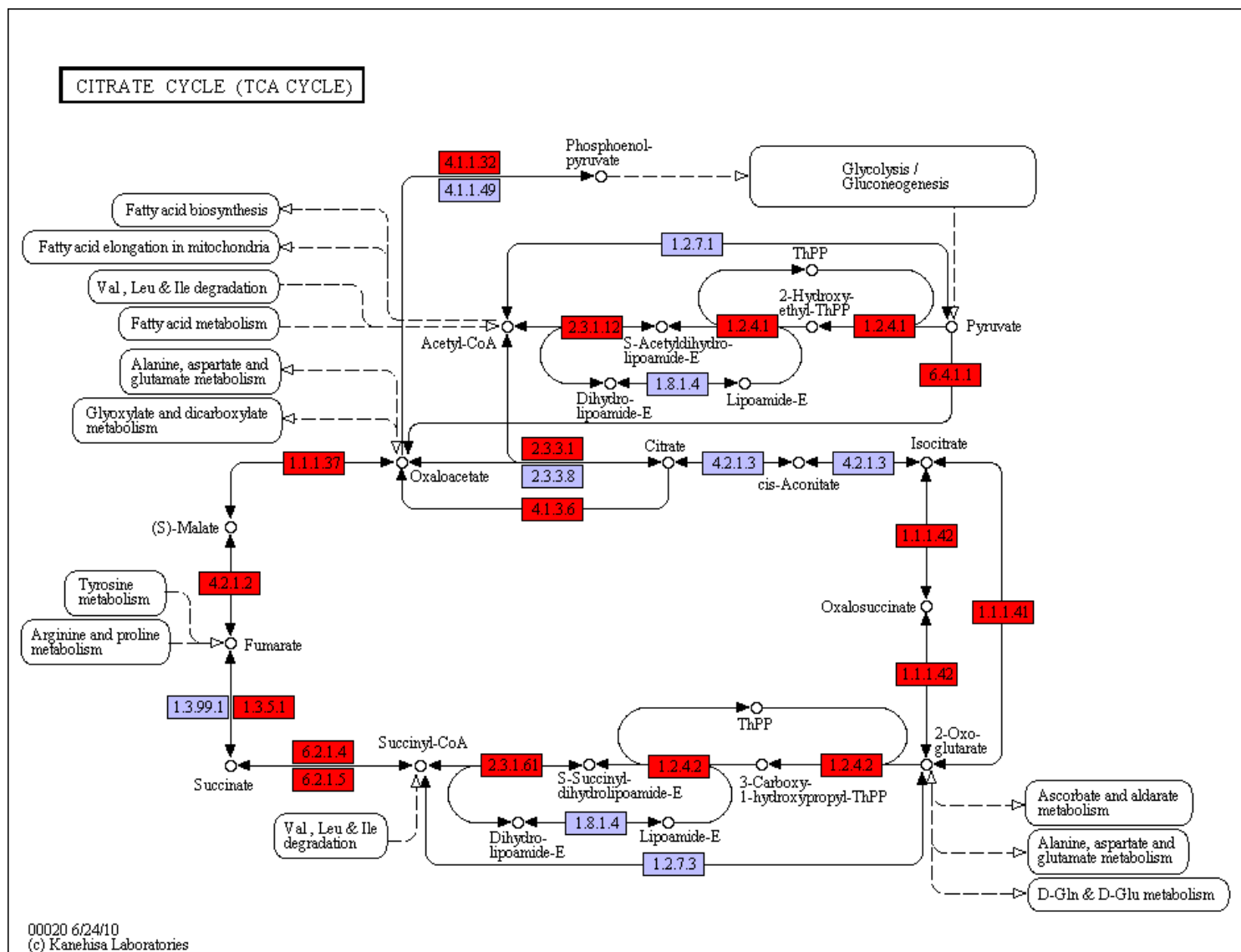


Figure 60: ko00020 Citrate cycle (TCA cycle)

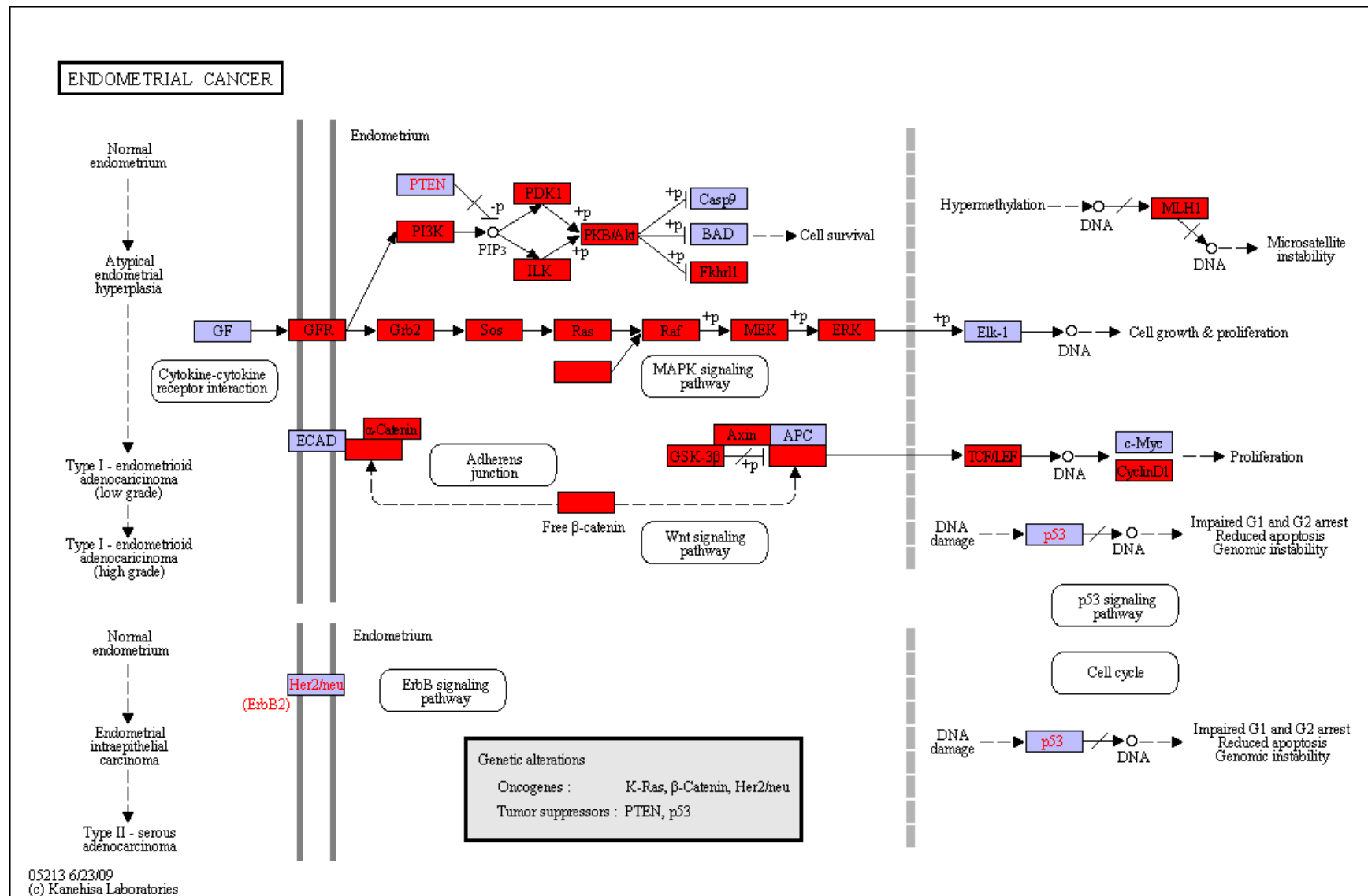
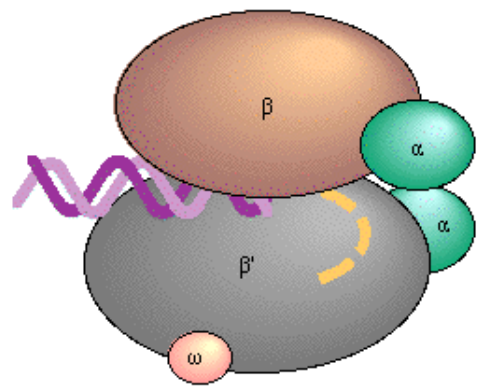
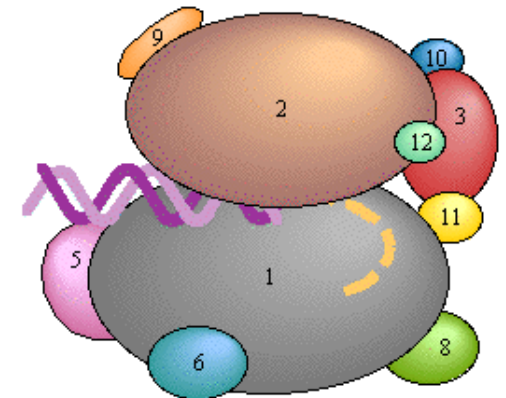


Figure 61: ko05213 Endometrial cancer

RNA POLYMERASE

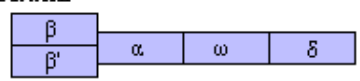


RNA polymerase (*Thermus aquaticus*)

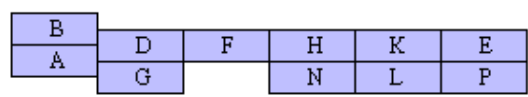


RNA polymerase II (*Saccharomyces cerevisiae*)

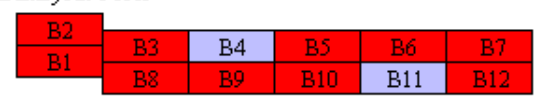
Bacterial



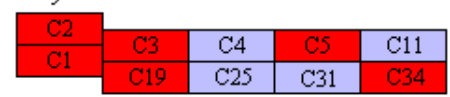
Archaeal



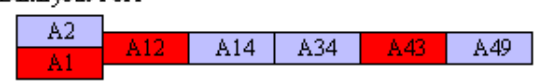
Eukaryotic Pol II



Eukaryotic Pol III



Eukaryotic Pol I



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Figure 62: ko03020 RNA polymerase

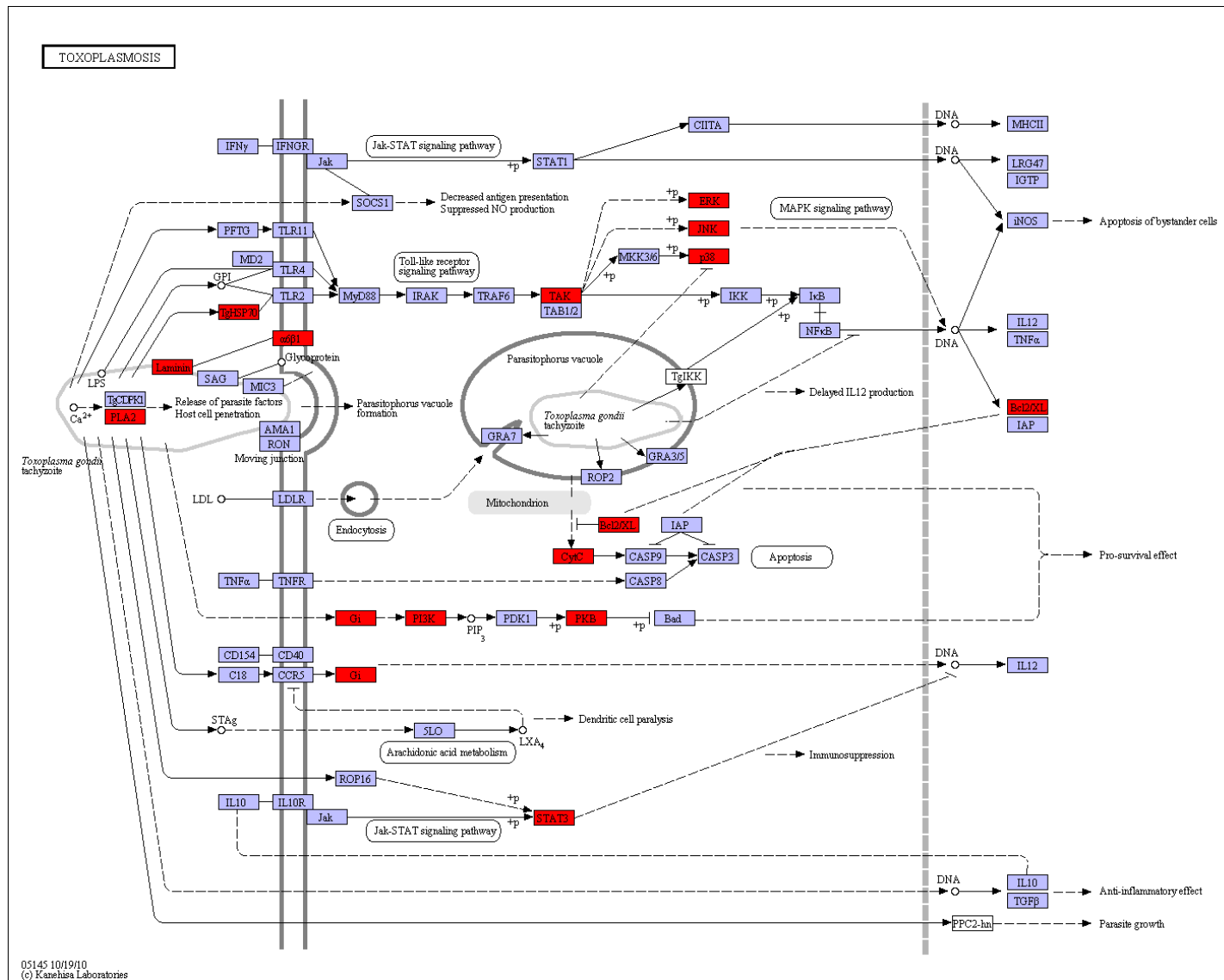


Figure 63: ko05145 Toxoplasmosis



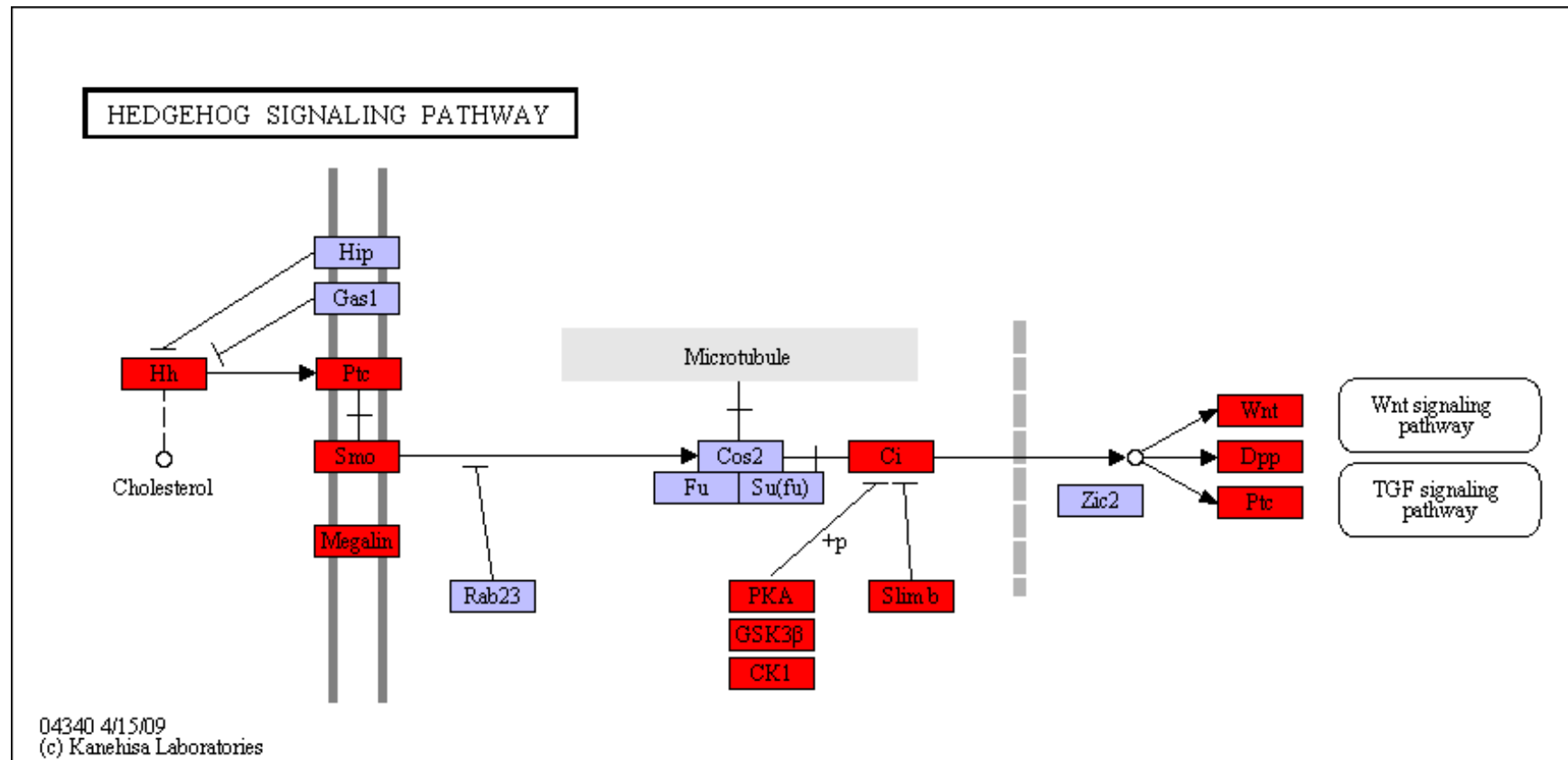


Figure 64: ko04340 Hedgehog signaling pathway

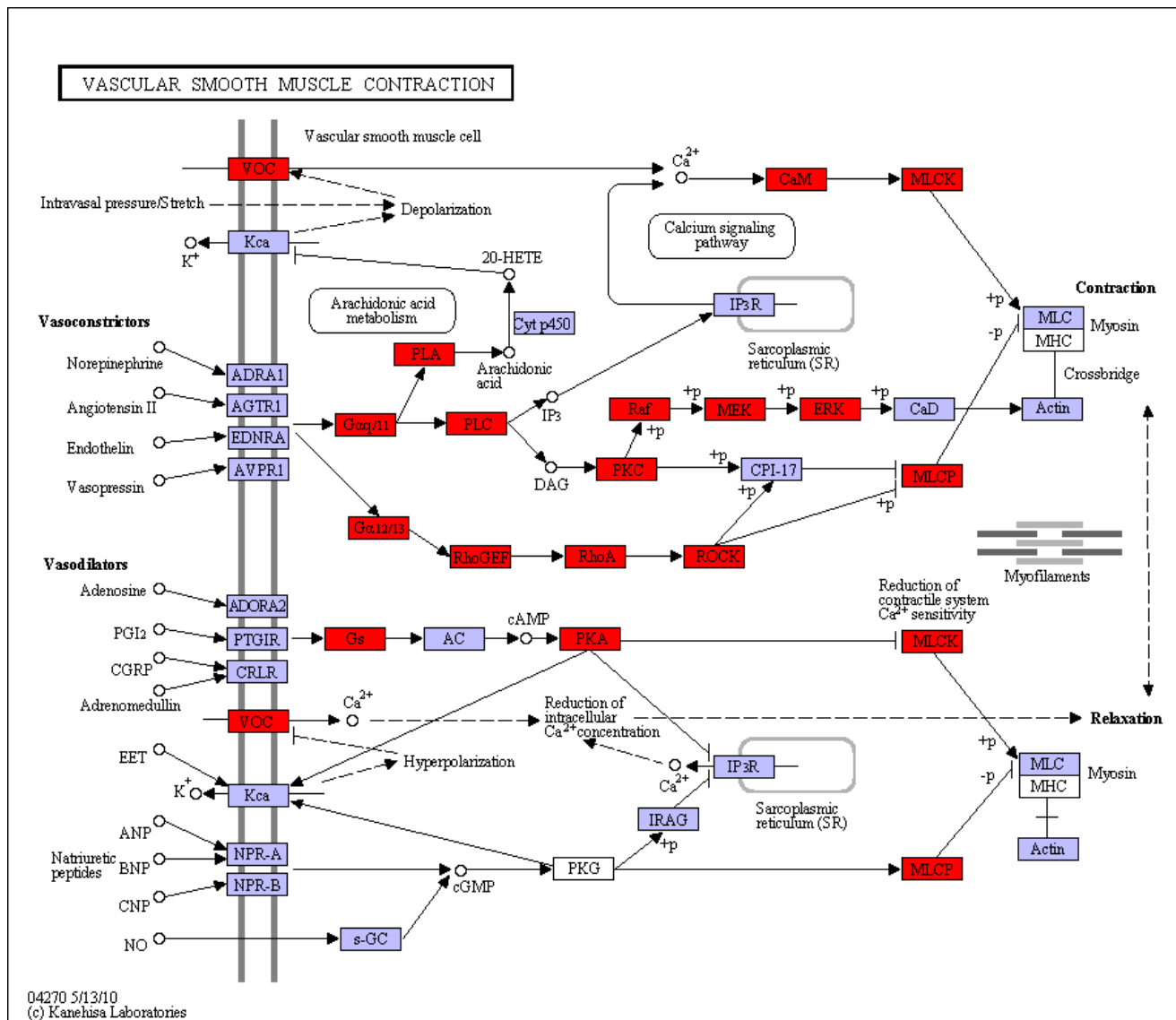


Figure 65: ko04270 Vascular smooth muscle contraction

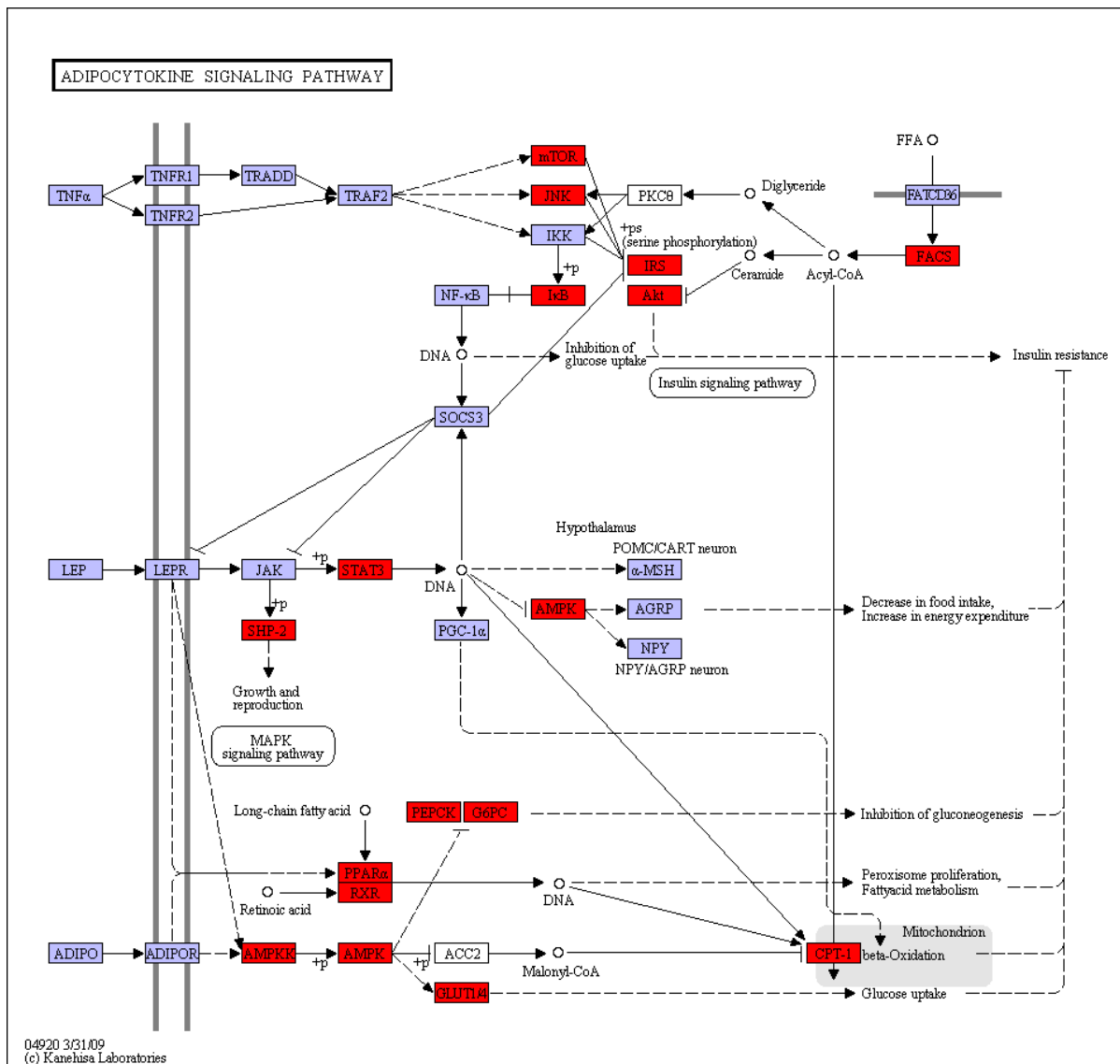


Figure 66: ko04920 Adipocytokine signaling pathway

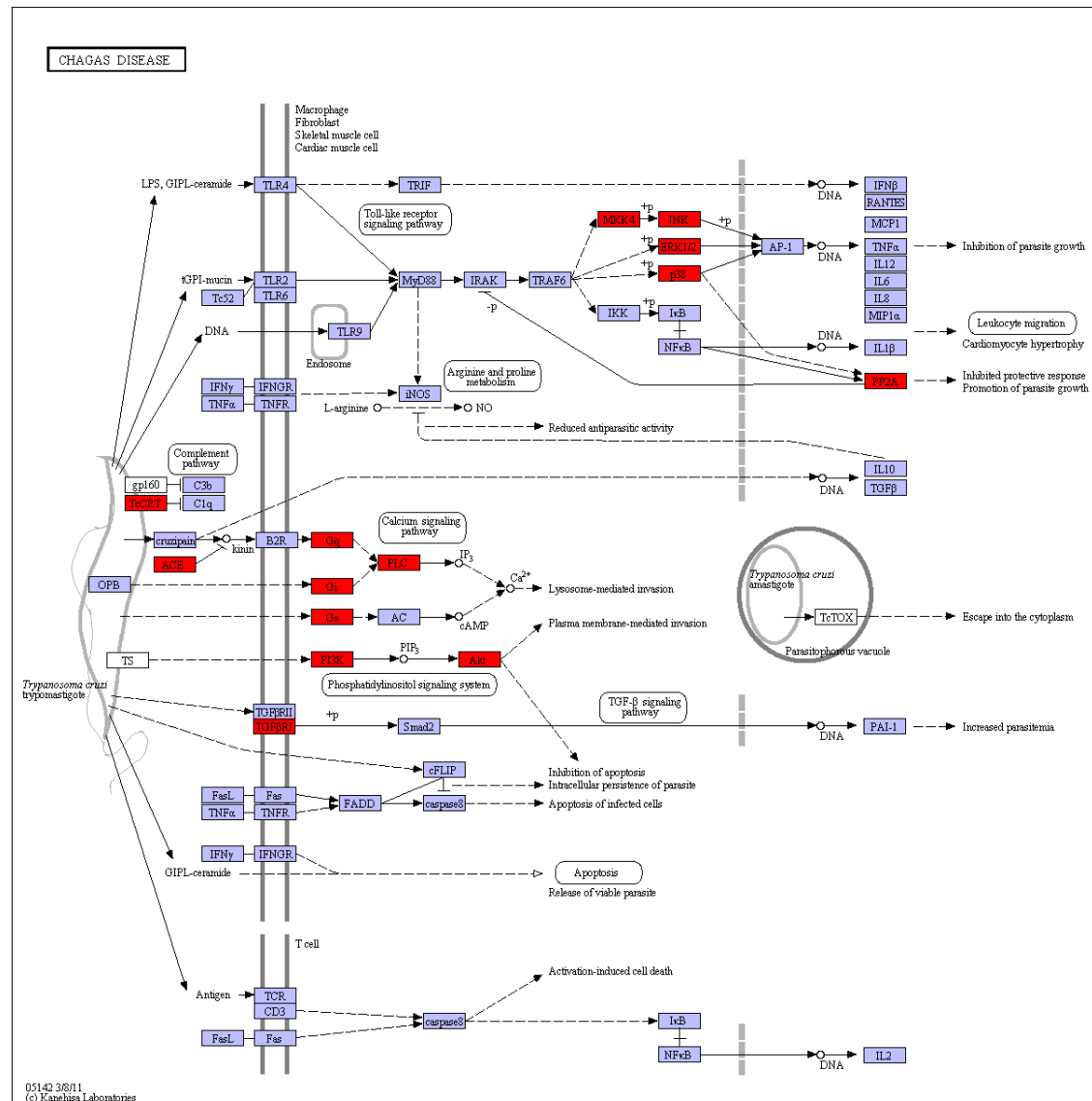


Figure 67: ko05142 Chagas disease (American trypanosomiasis)

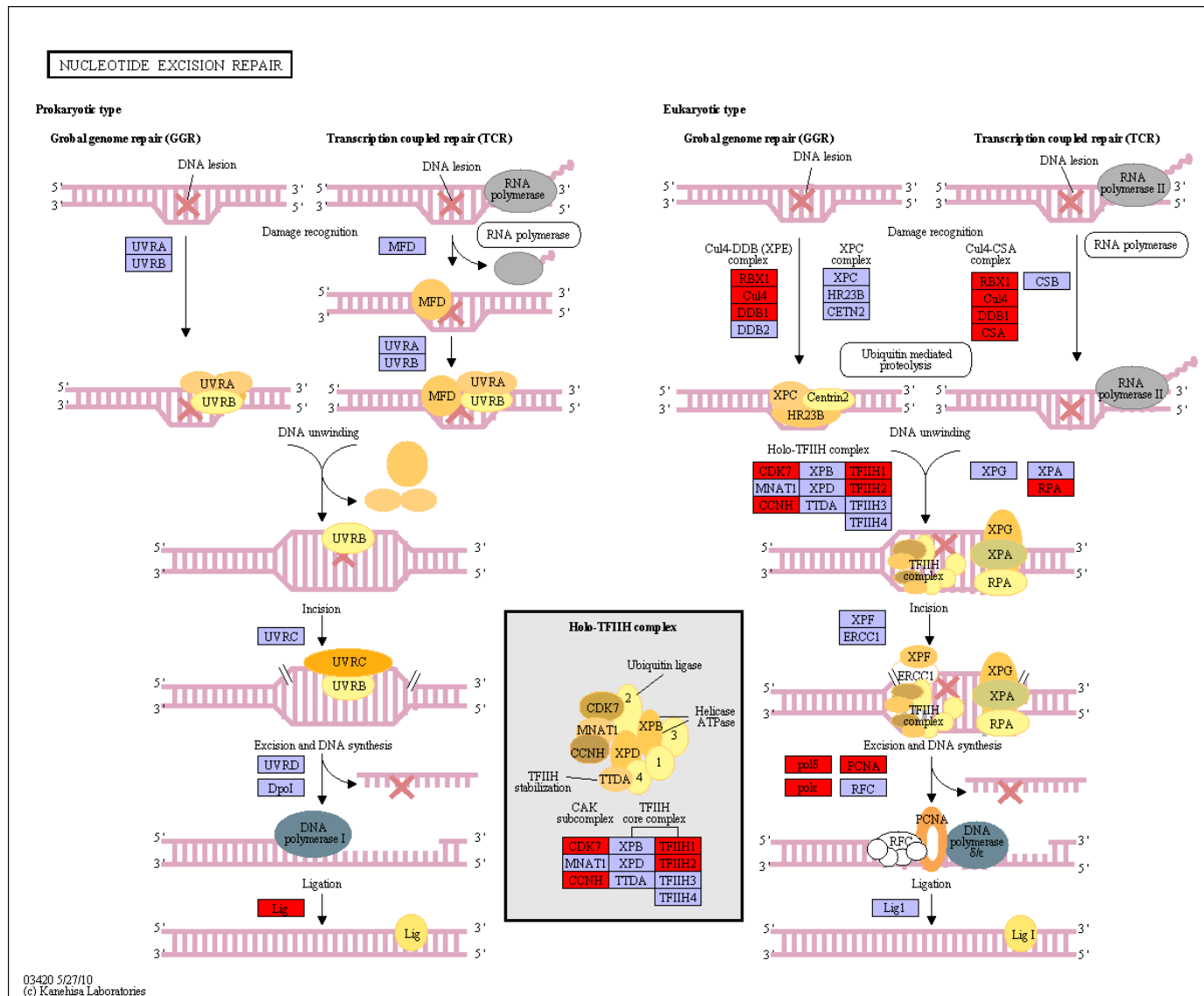


Figure 68: ko03420 Nucleotide excision repair

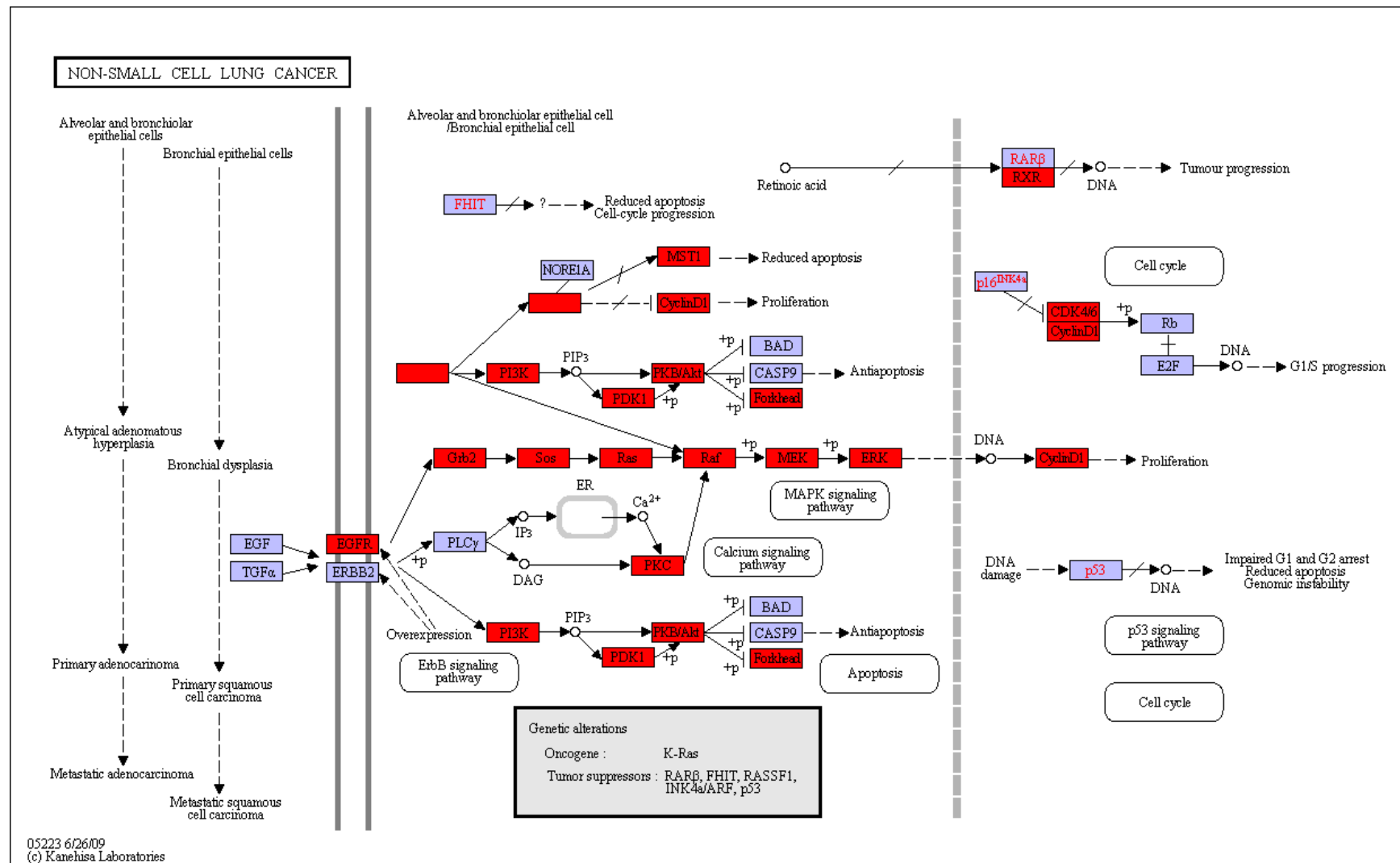


Figure 69: ko05223 Non-small cell lung cancer

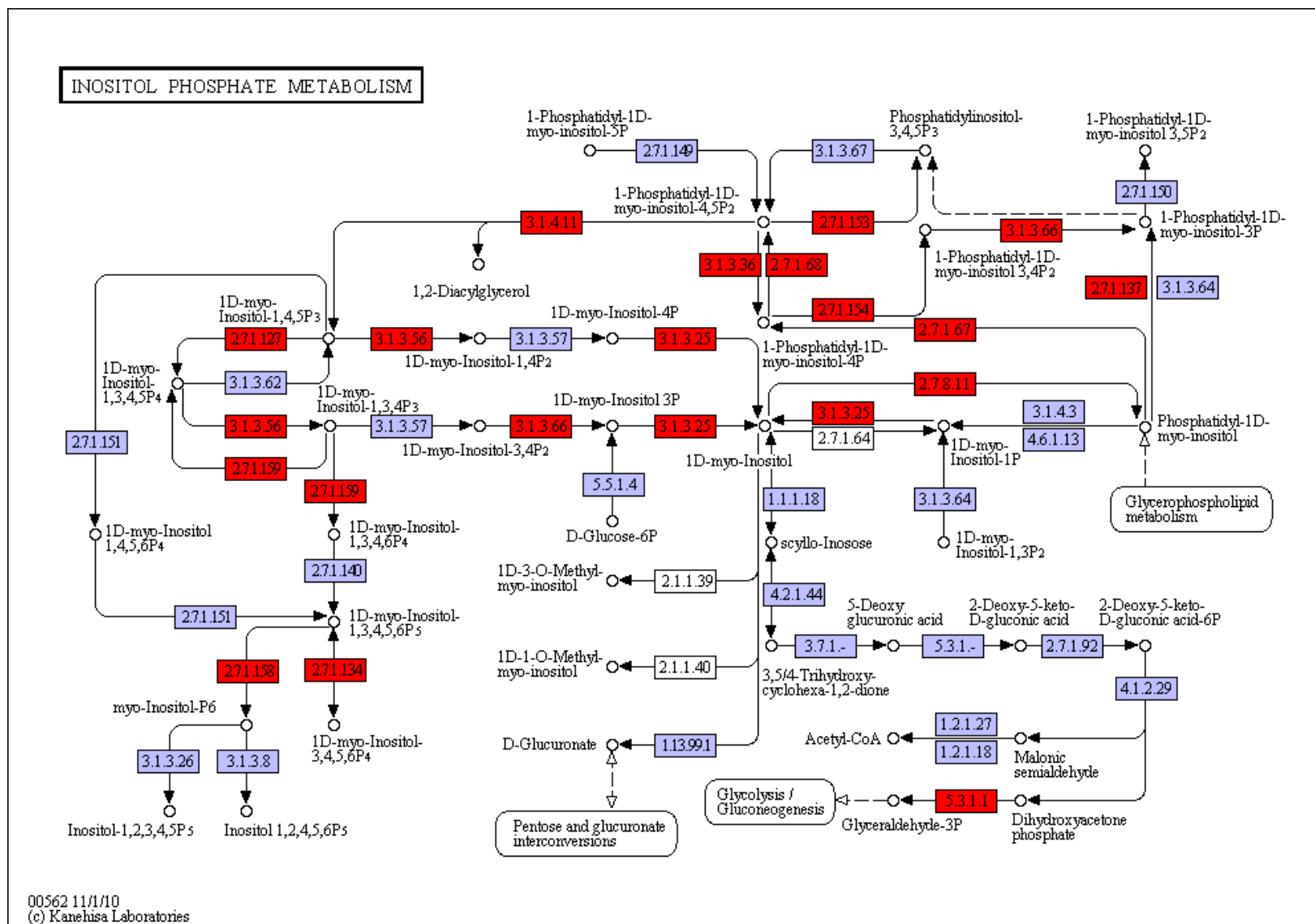


Figure 70: ko00562 Inositol phosphate metabolism

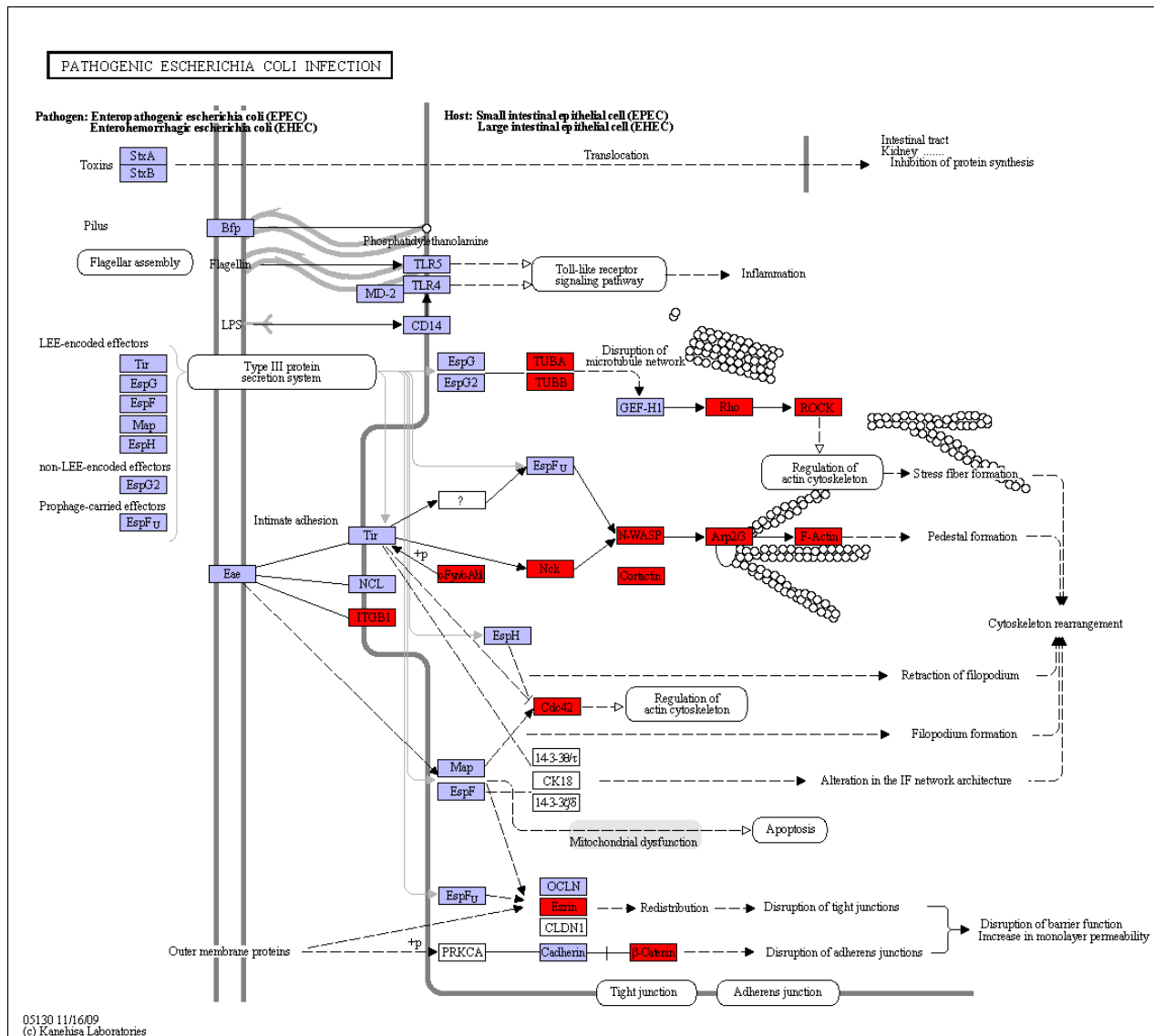


Figure 71: ko05130 Pathogenic *Escherichia coli* infection



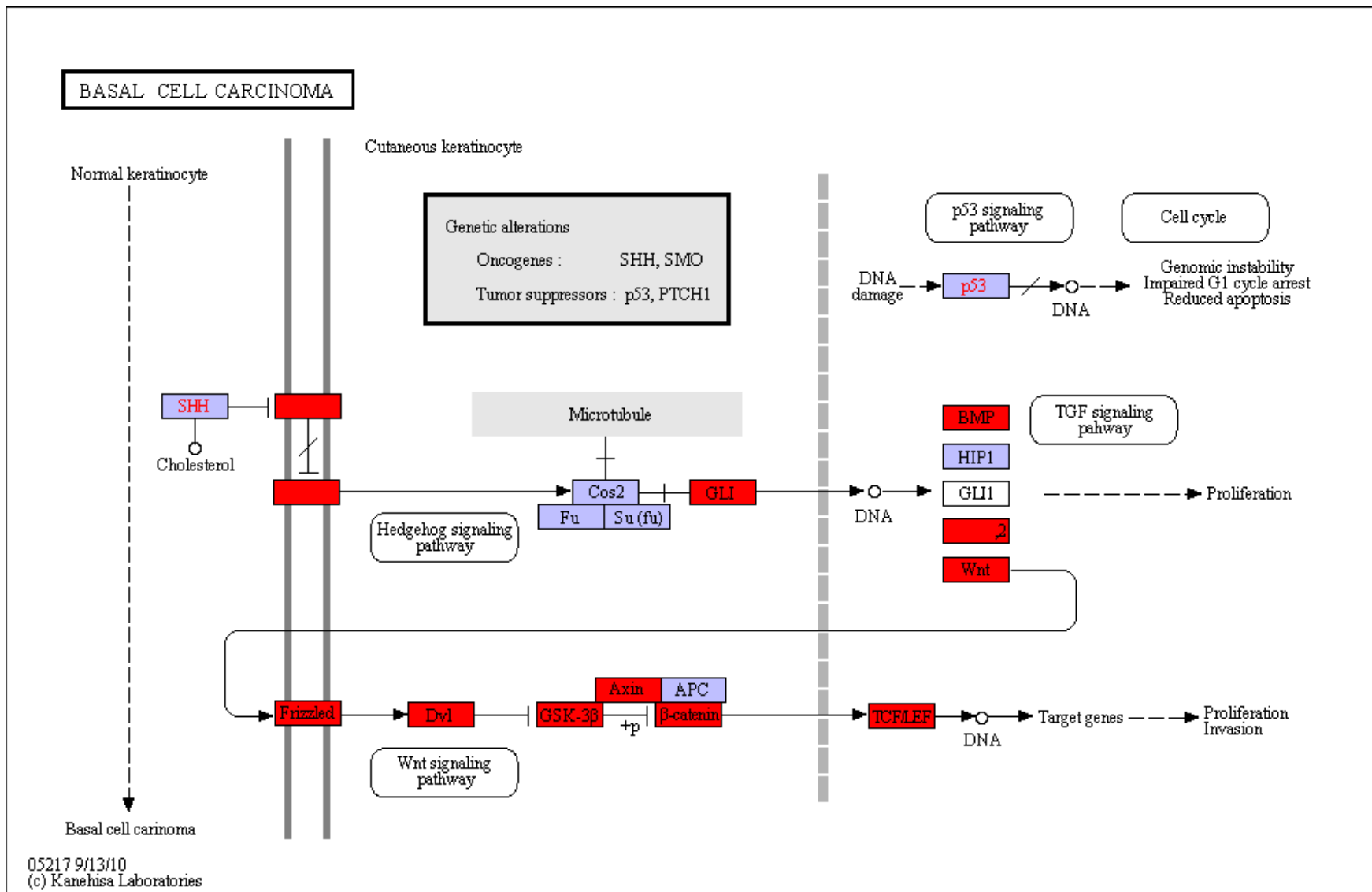
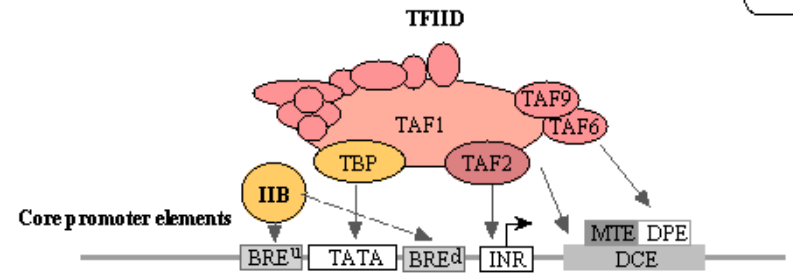
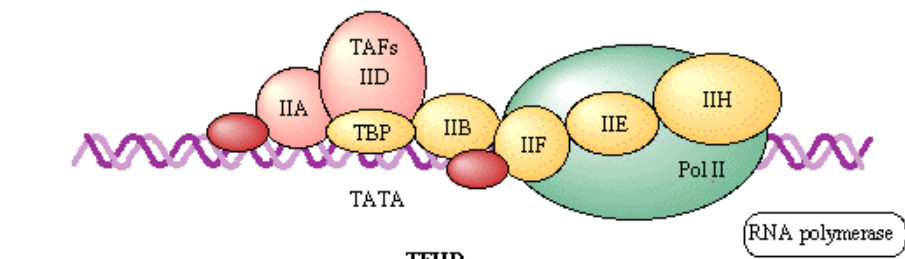


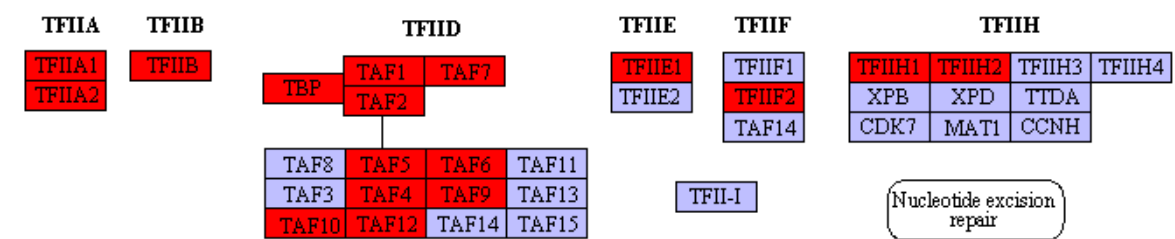
Figure 72: ko05217 Basal cell carcinoma



**BASAL TRANSCRIPTION FACTORS (EUKARYOTES)**



**General transcription factors for RNA polymerase II**



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Figure 74: ko03022 Basal transcription factors

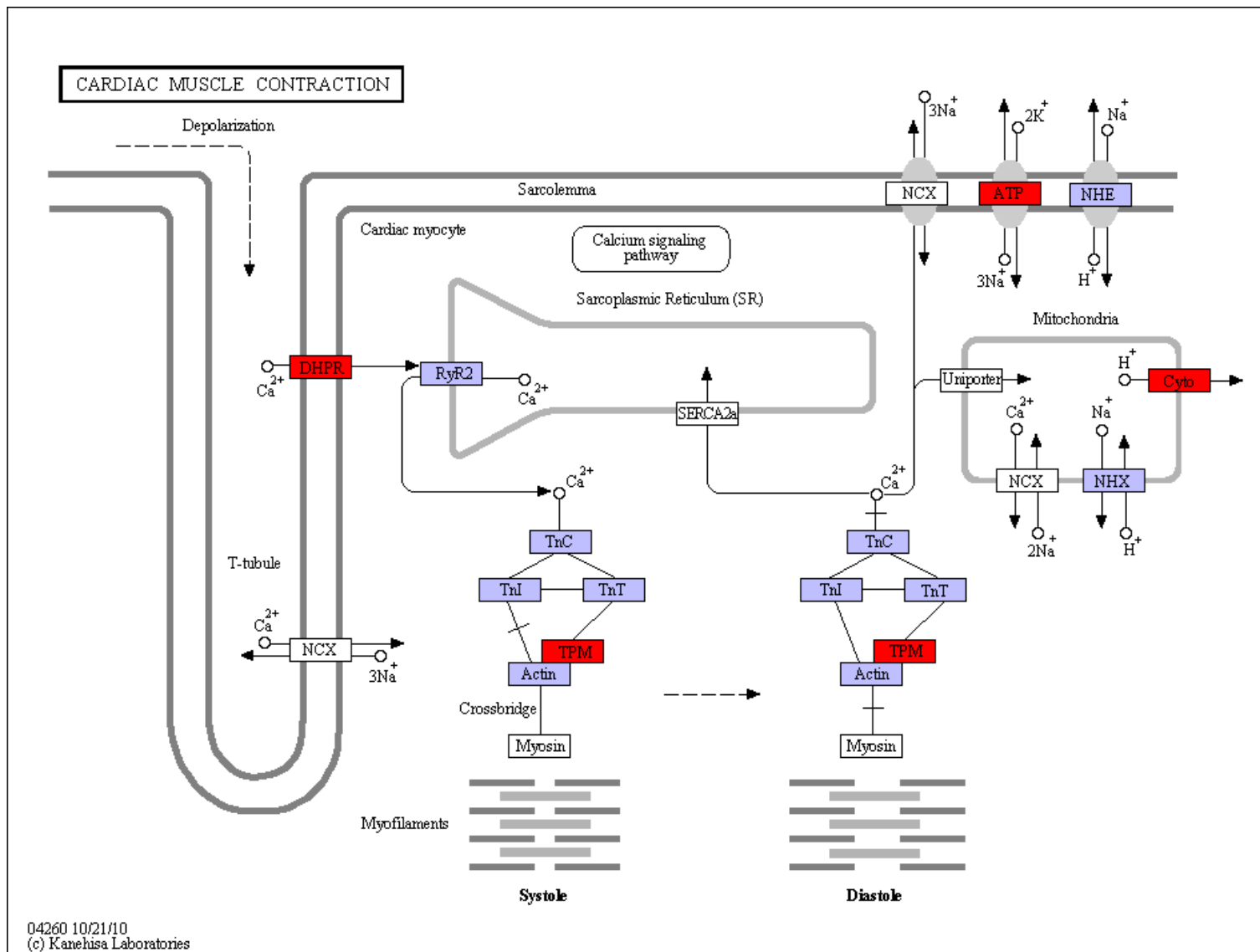


Figure 75: ko04260 Cardiac muscle contraction

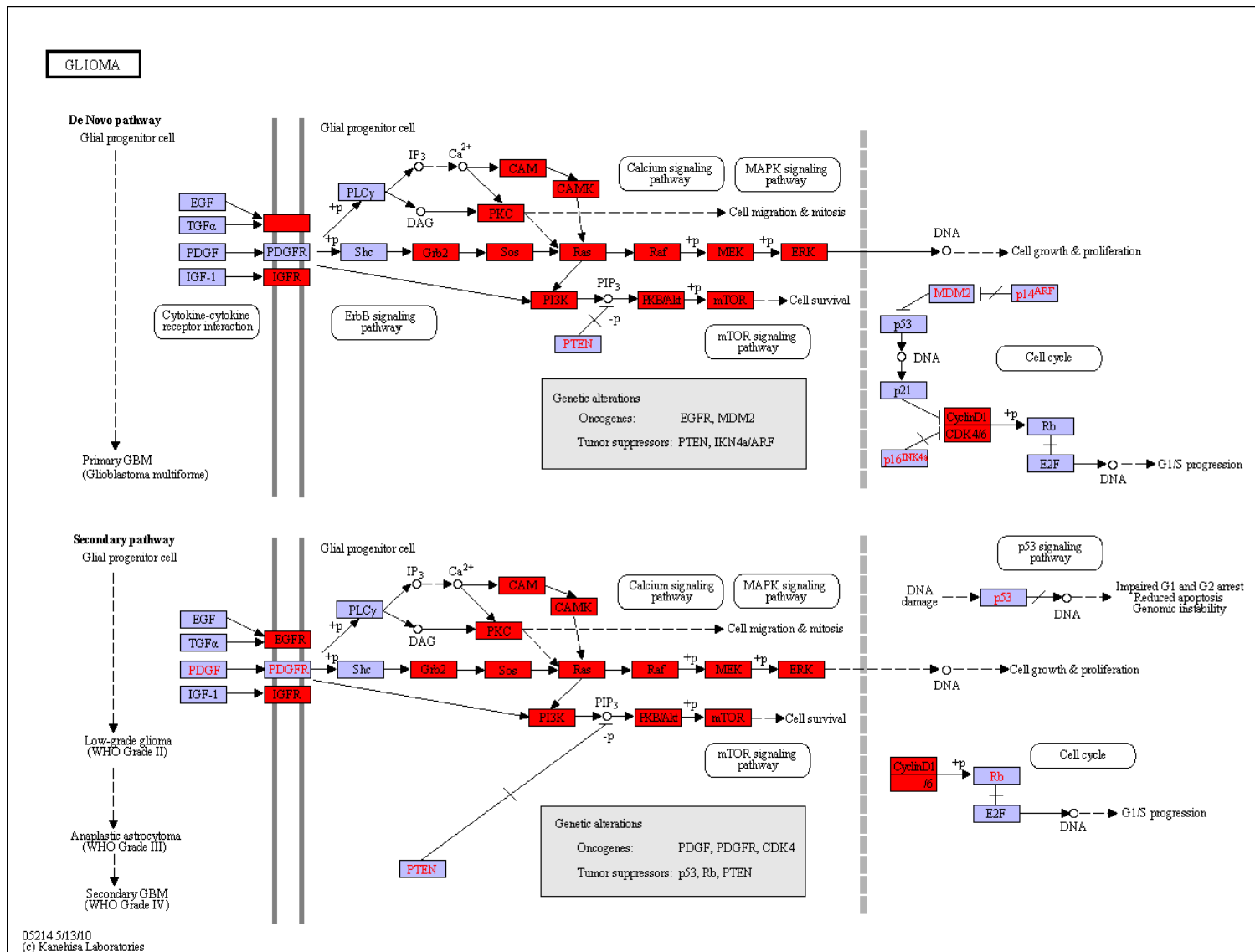


Figure 76: ko05214 Glioma

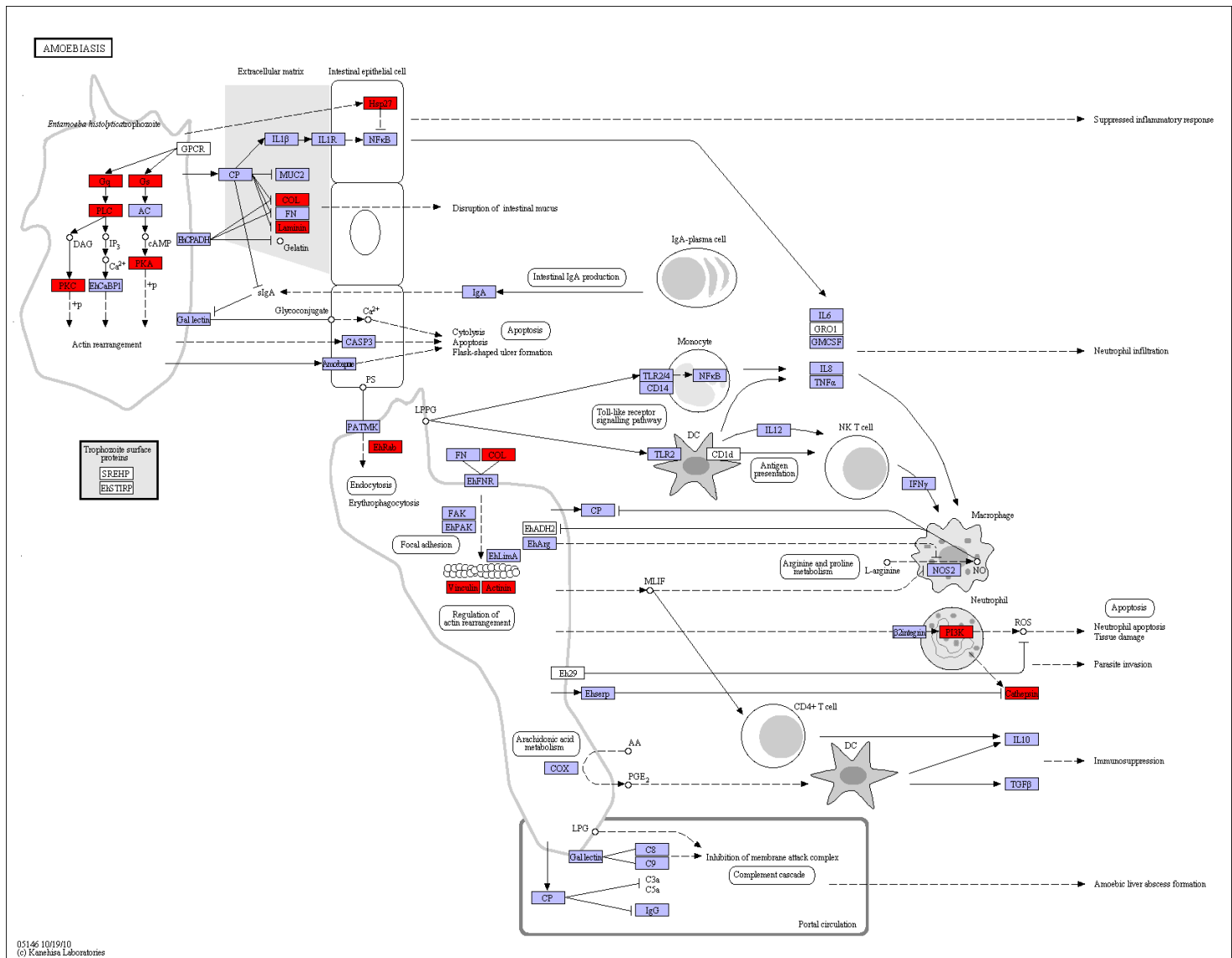


Figure 77: ko05146 Amoebiasis

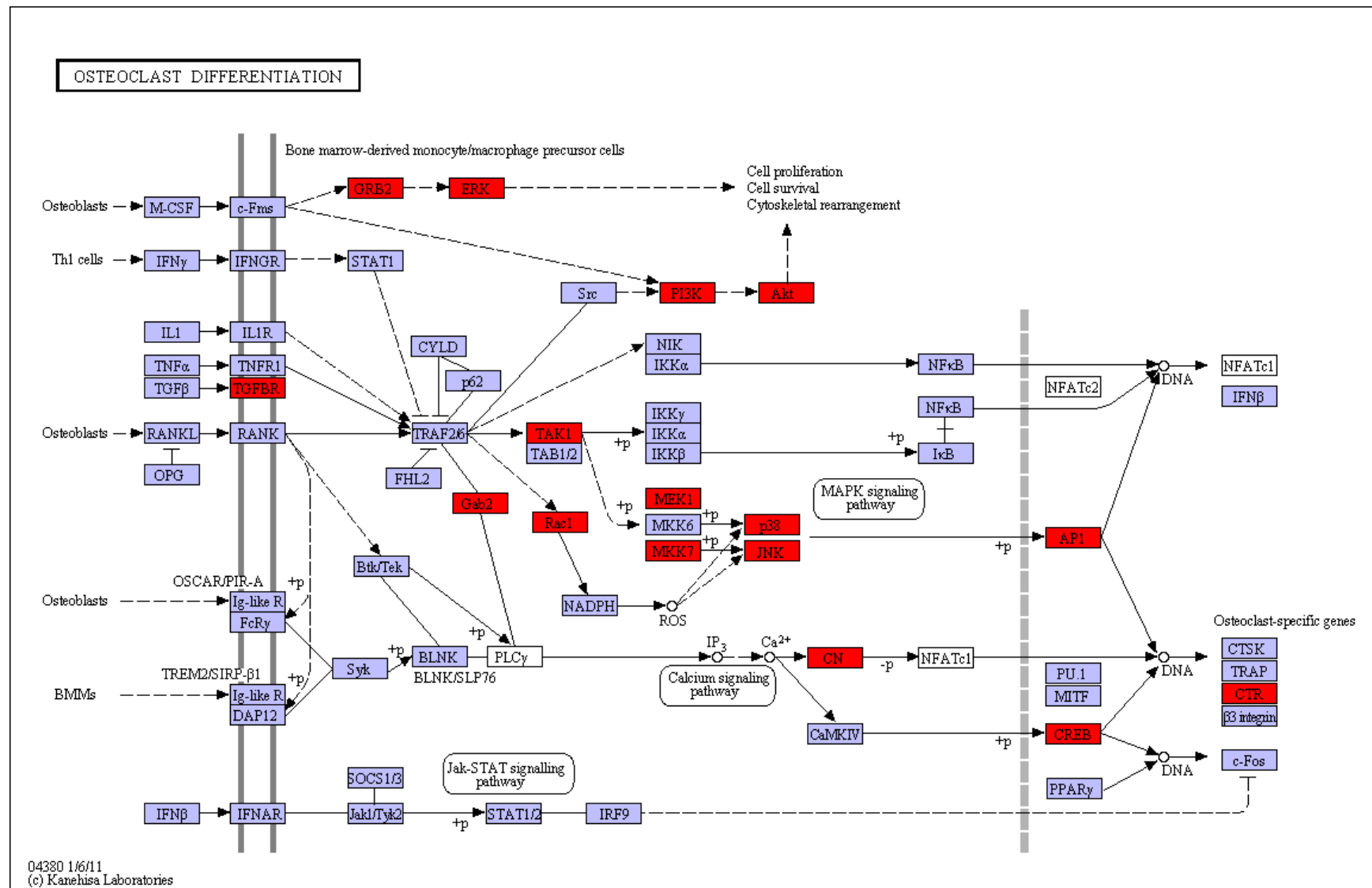


Figure 78: ko04380 Osteoclast differentiation

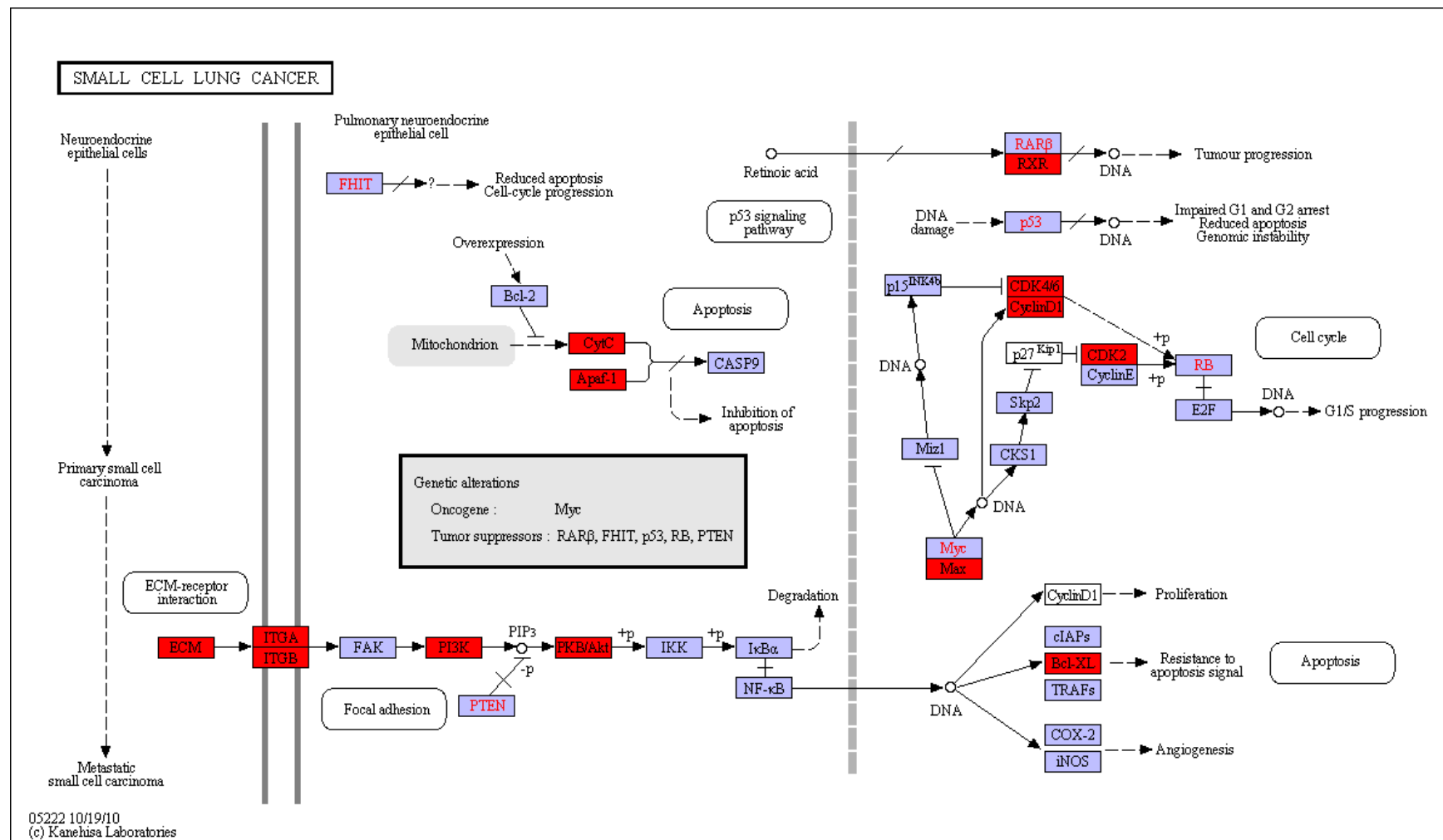


Figure 79: ko05222 Small cell lung cancer



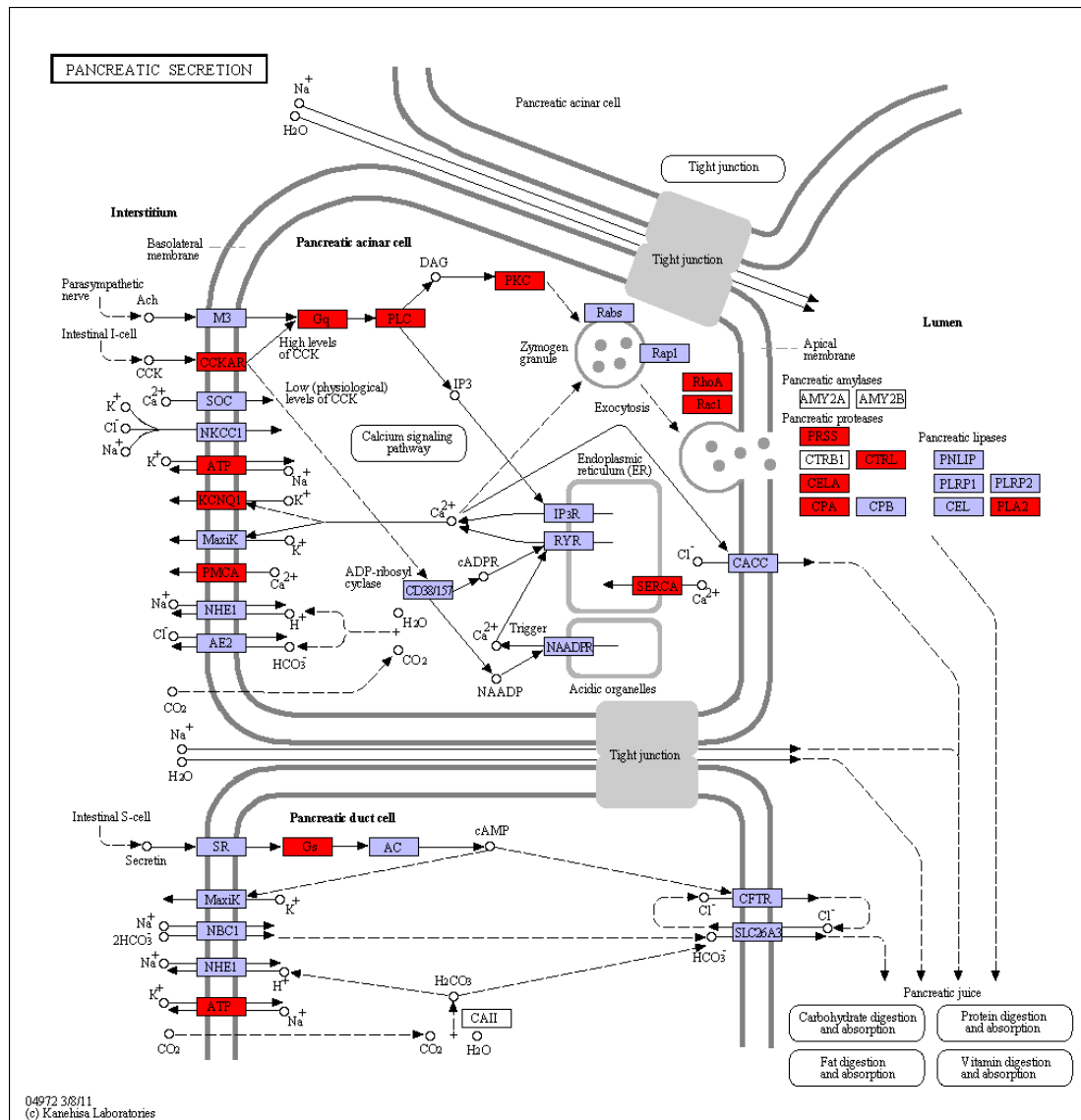


Figure 80: ko04972 Pancreatic secretion

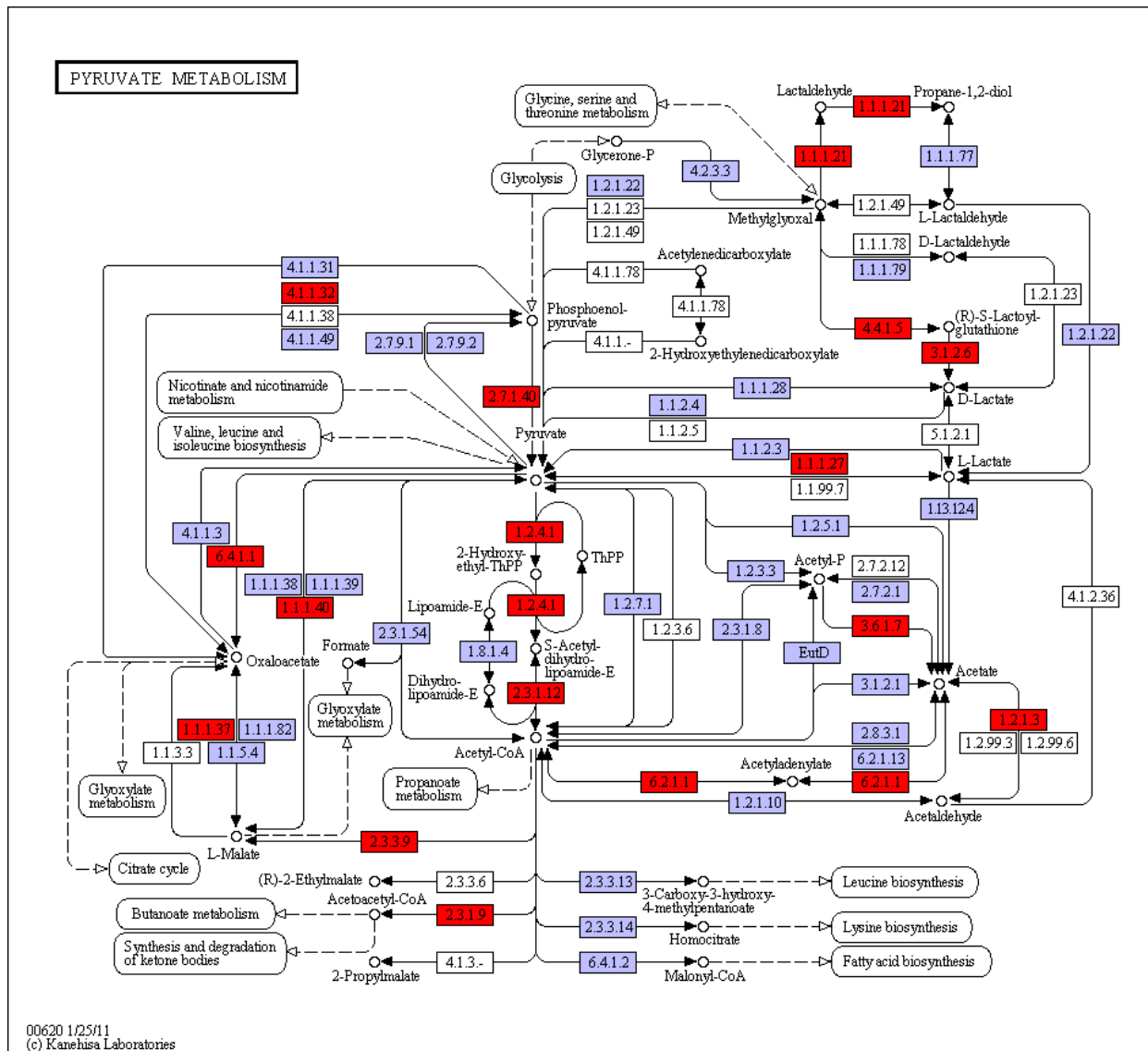


Figure 81: ko00620 Pyruvate metabolism



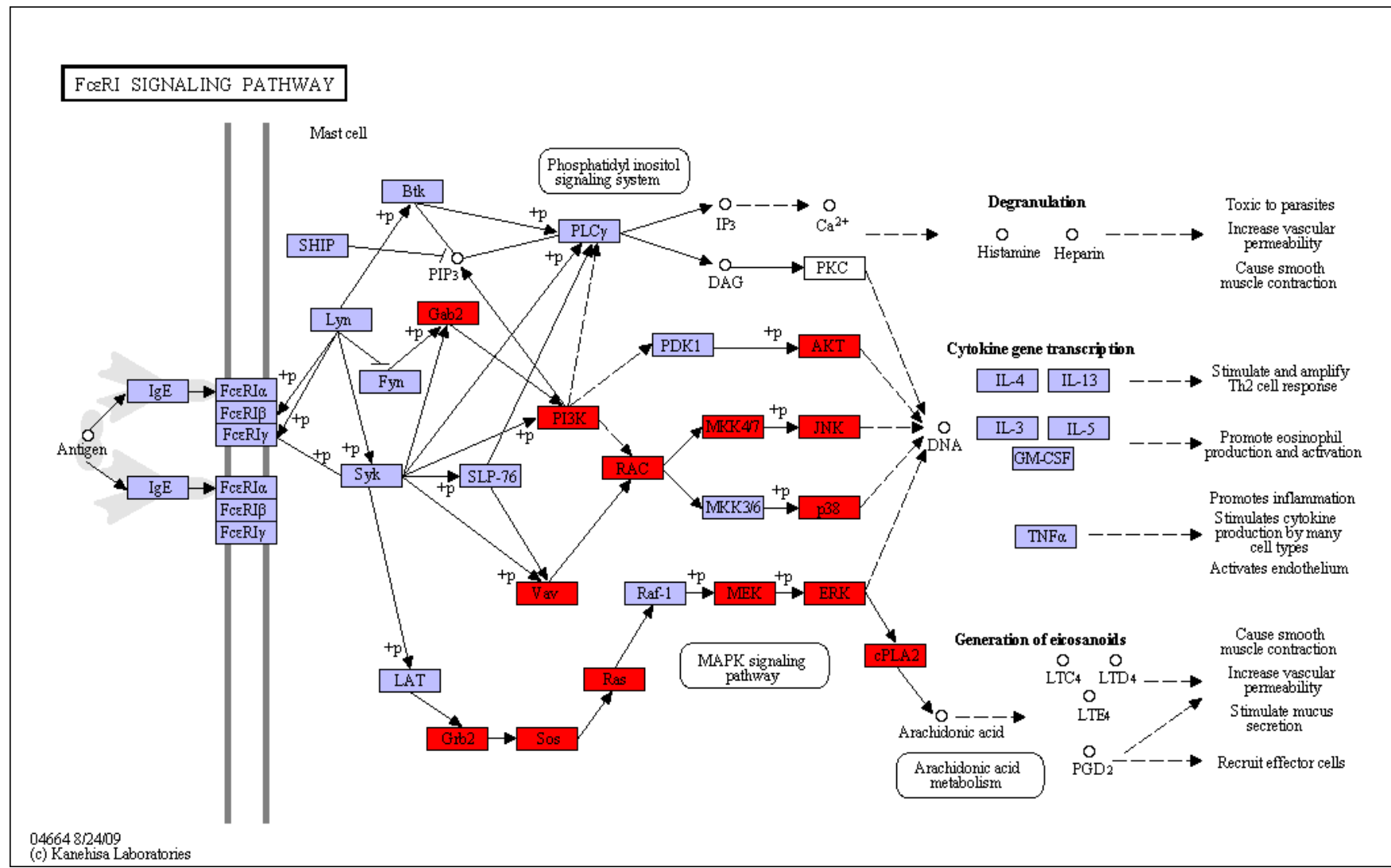


Figure 83: ko04664 Fc epsilon RI signaling pathway

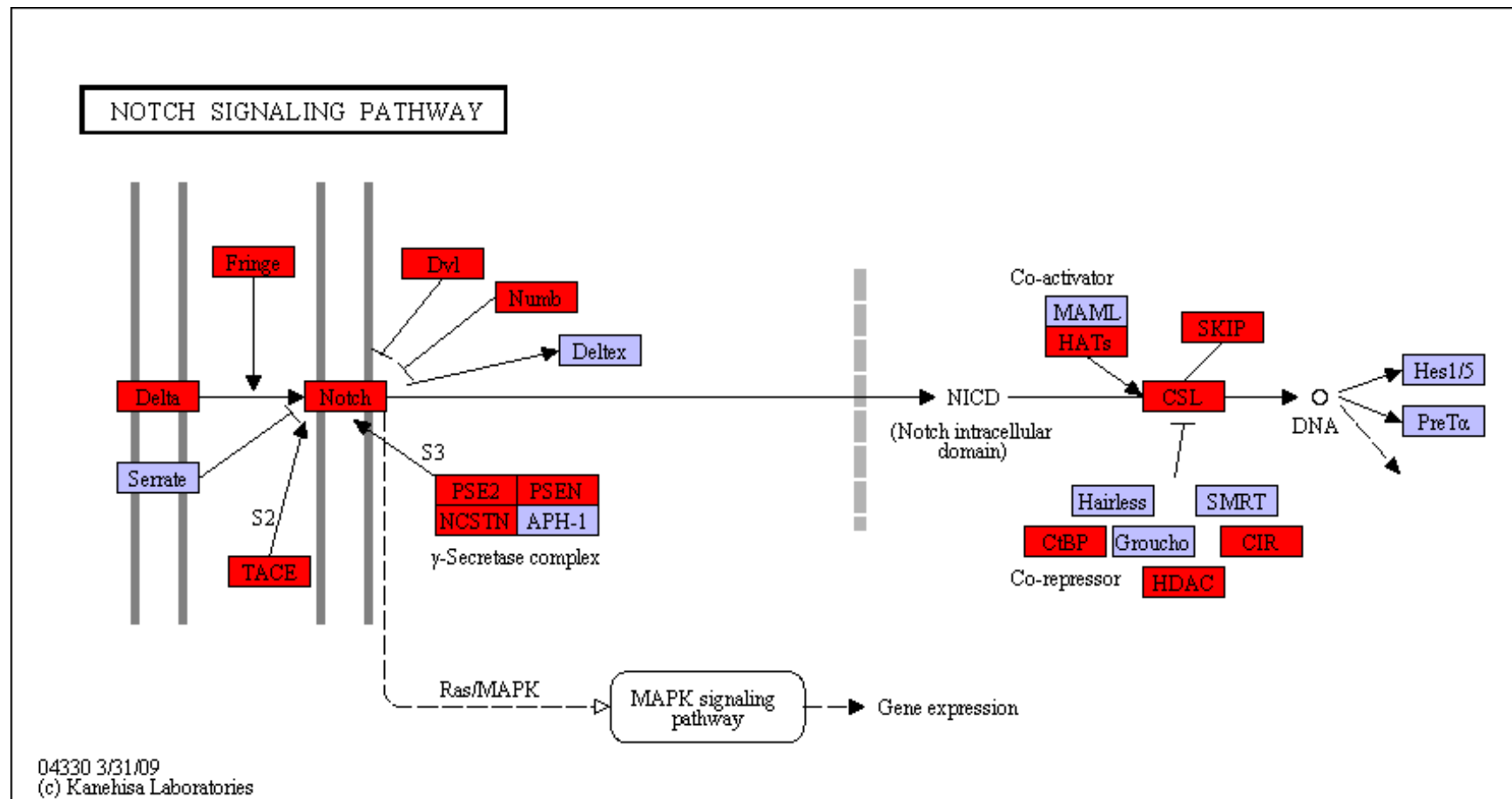


Figure 84: ko04330 Notch signaling pathway

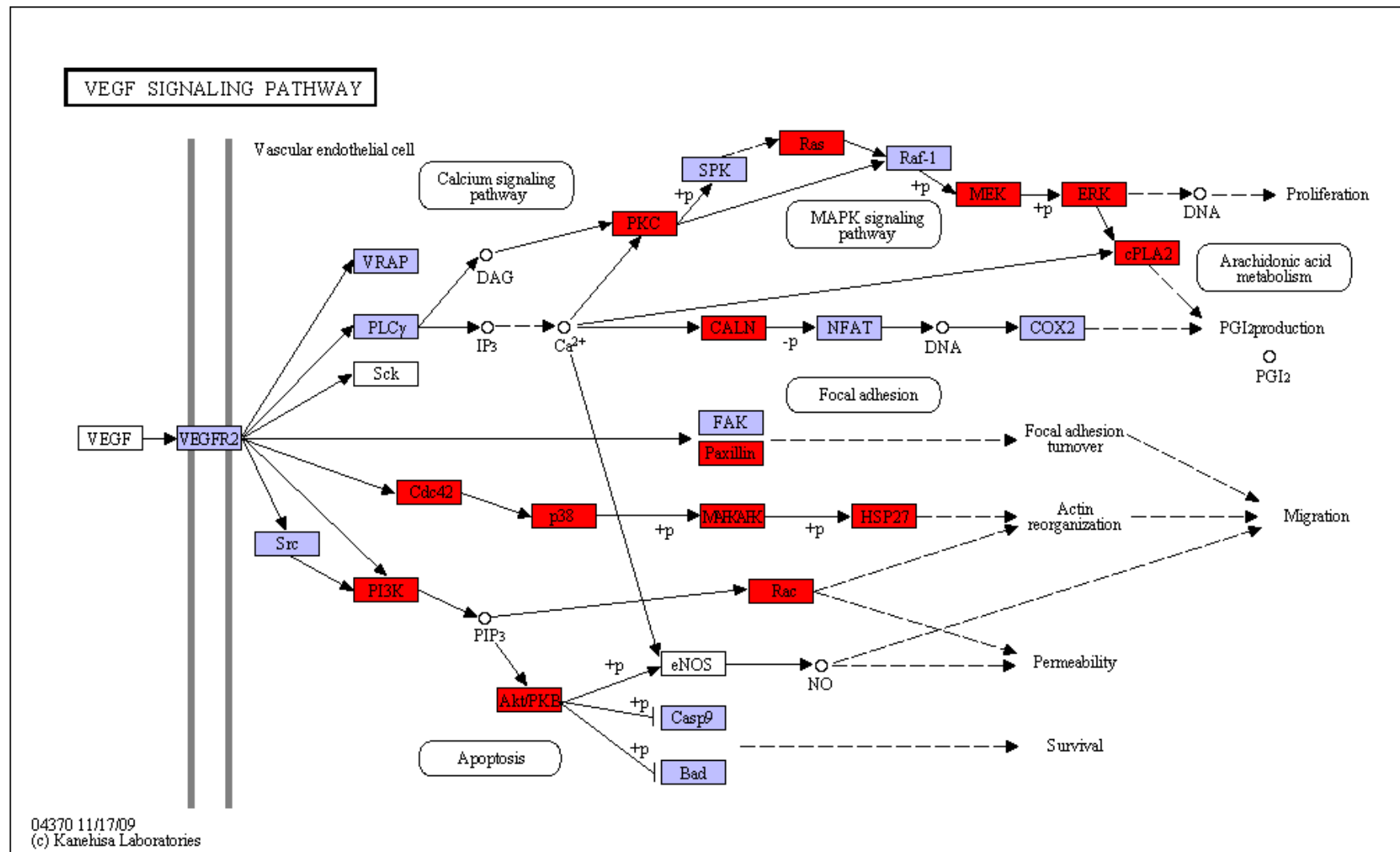


Figure 85: ko04370 VEGF signaling pathway

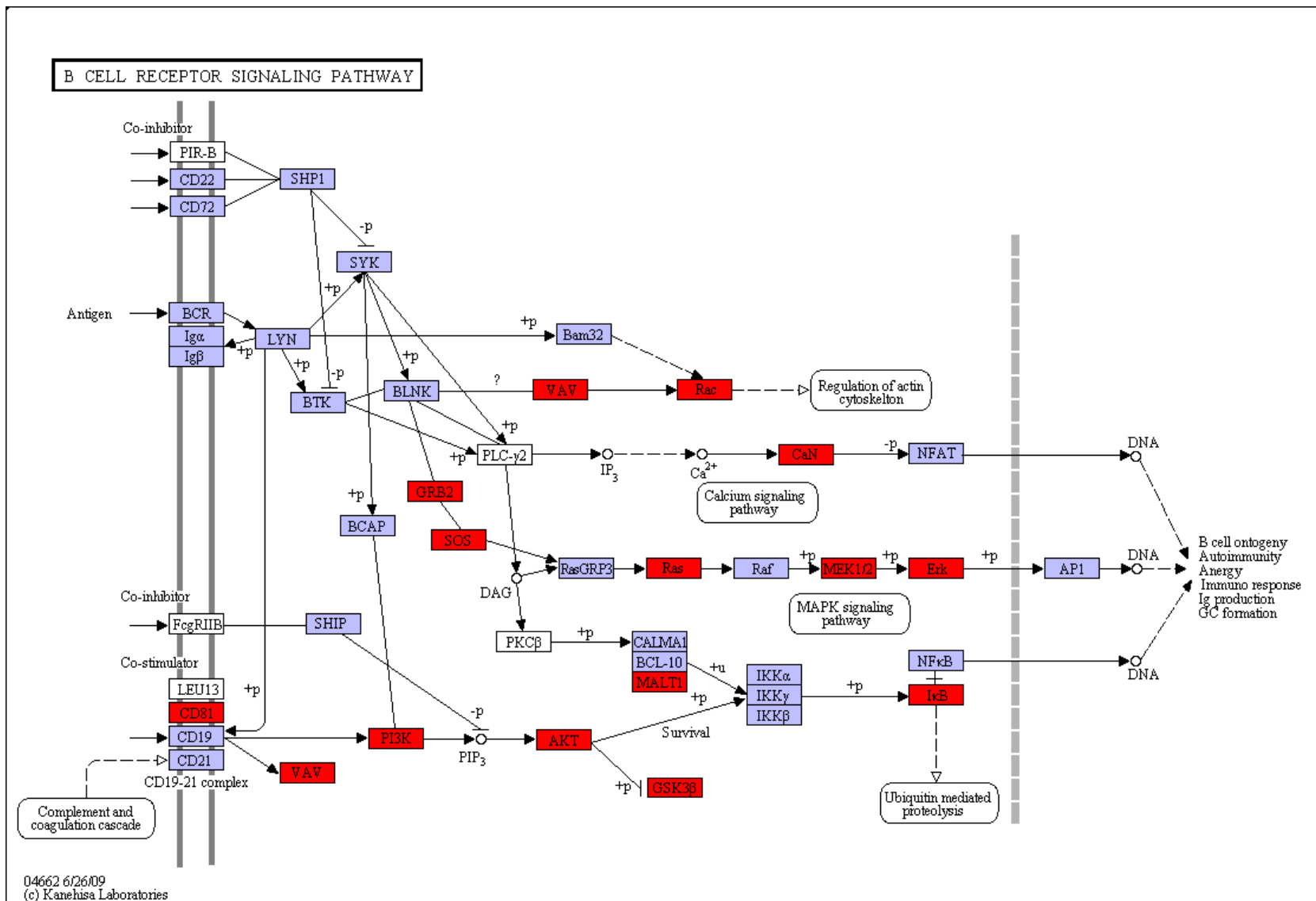


Figure 86: ko04662 B cell receptor signaling pathway

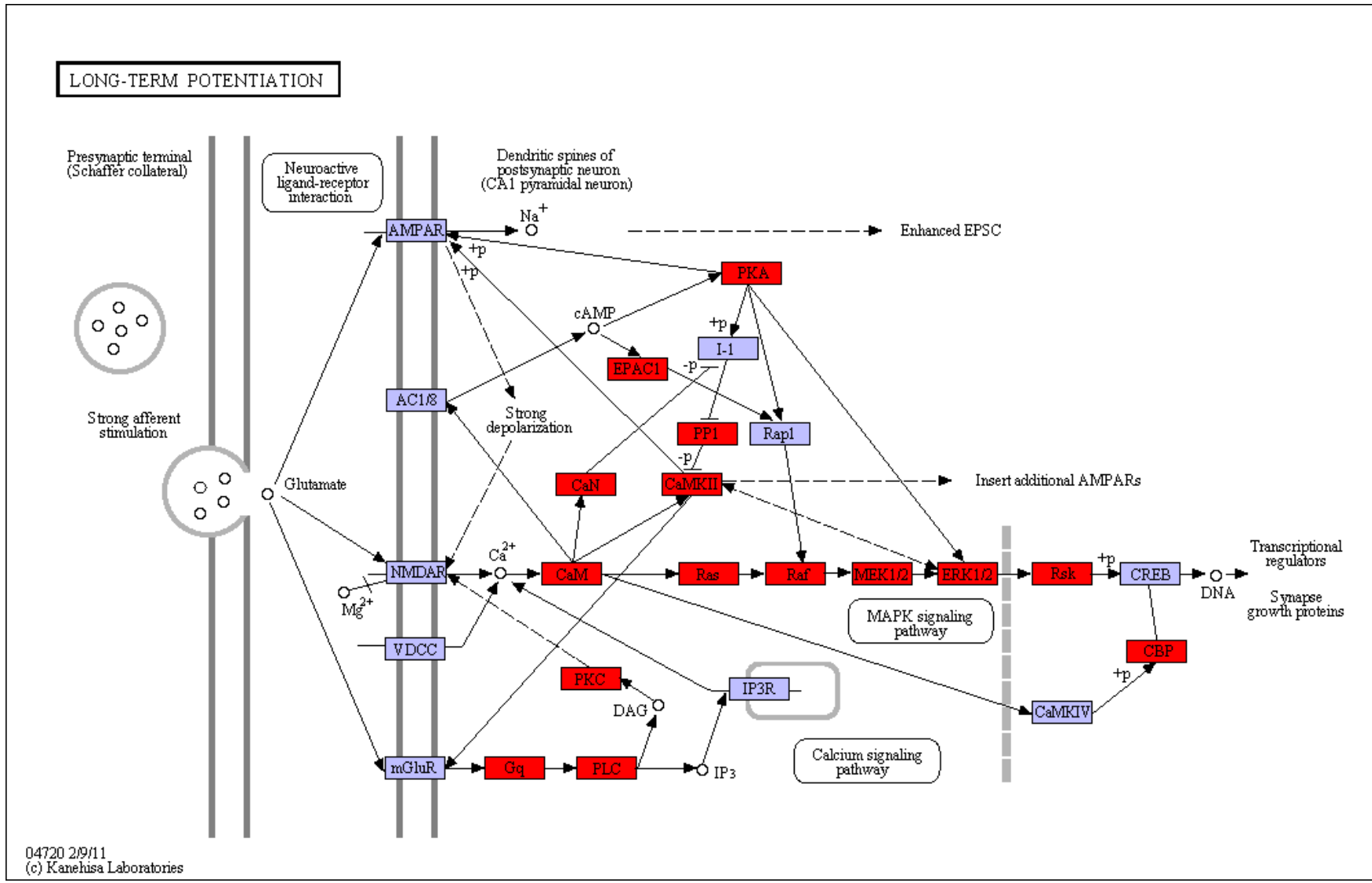


Figure 87: ko04720 Long-term potentiation



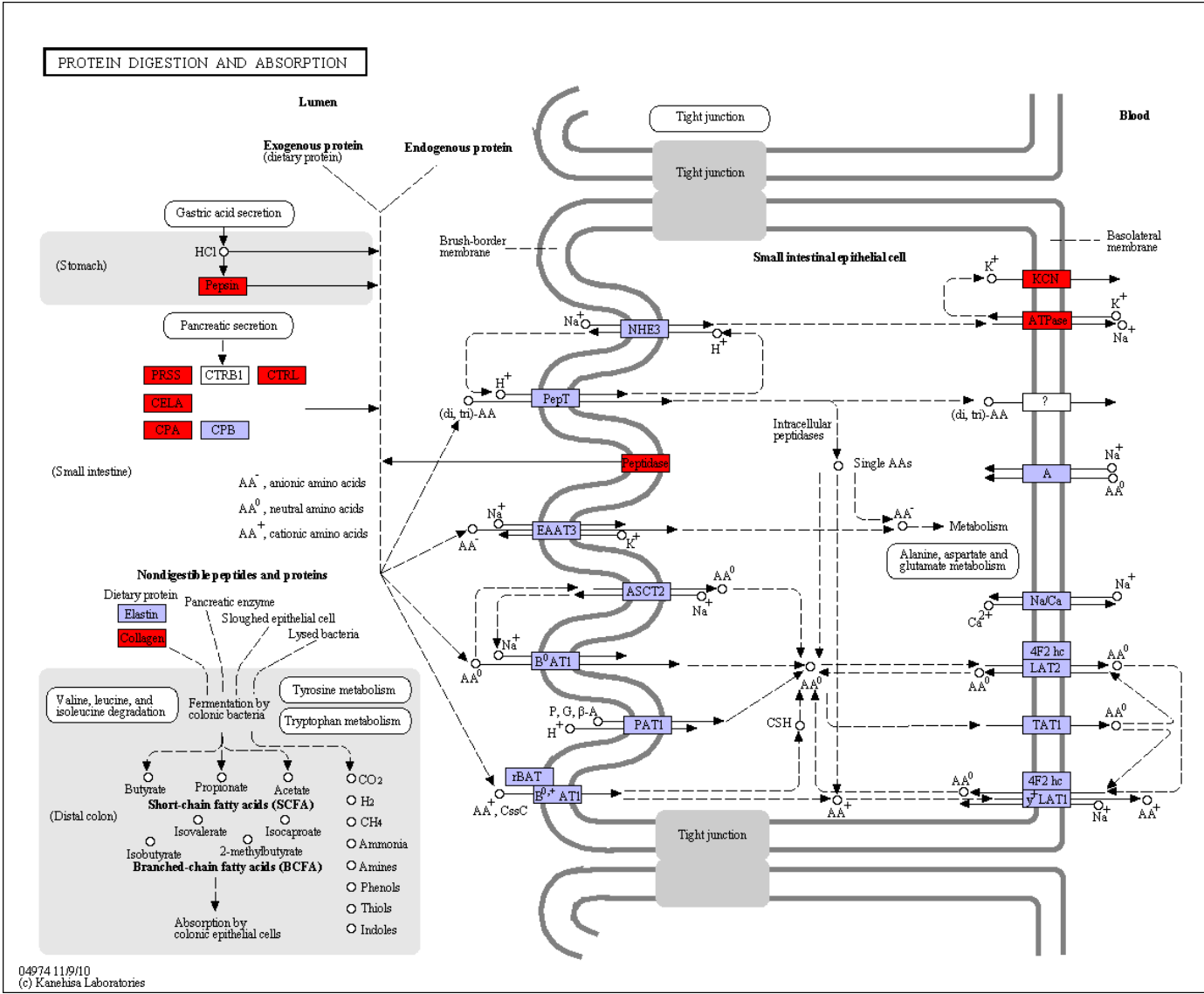


Figure 88: ko04974 Protein digestion and absorption



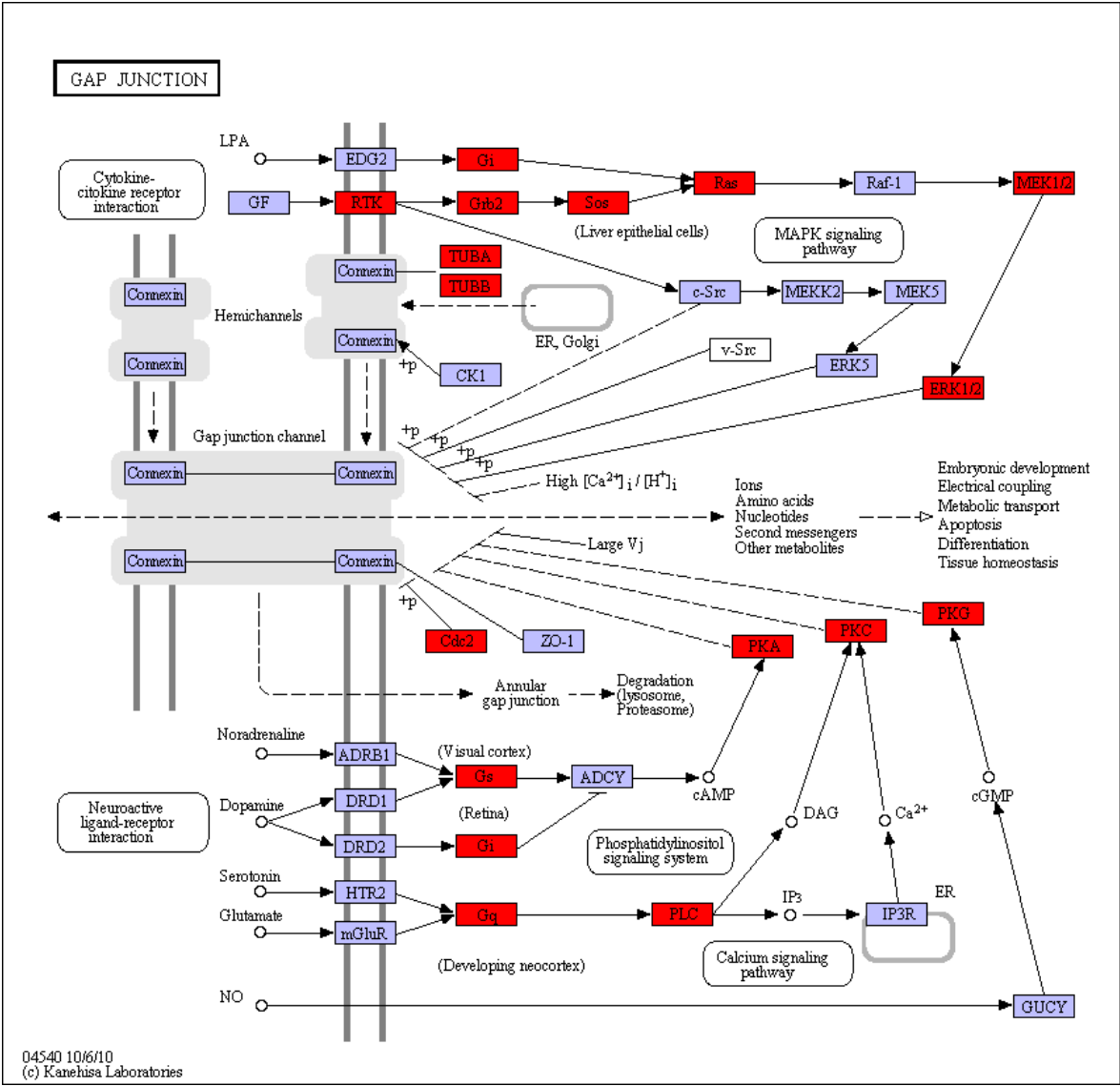


Figure 90: ko04540 Gap junction

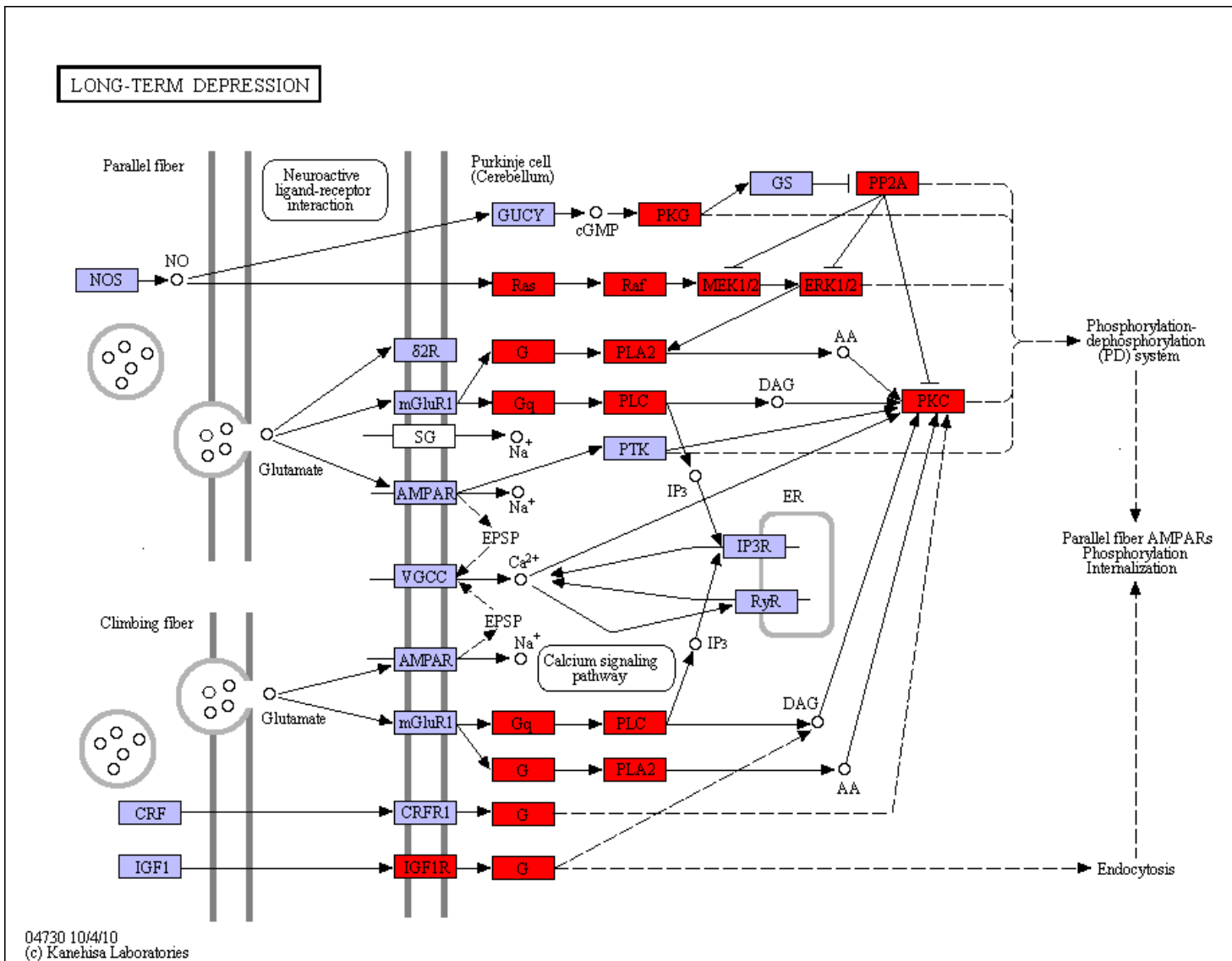


Figure 91: ko04730 Long-term depression

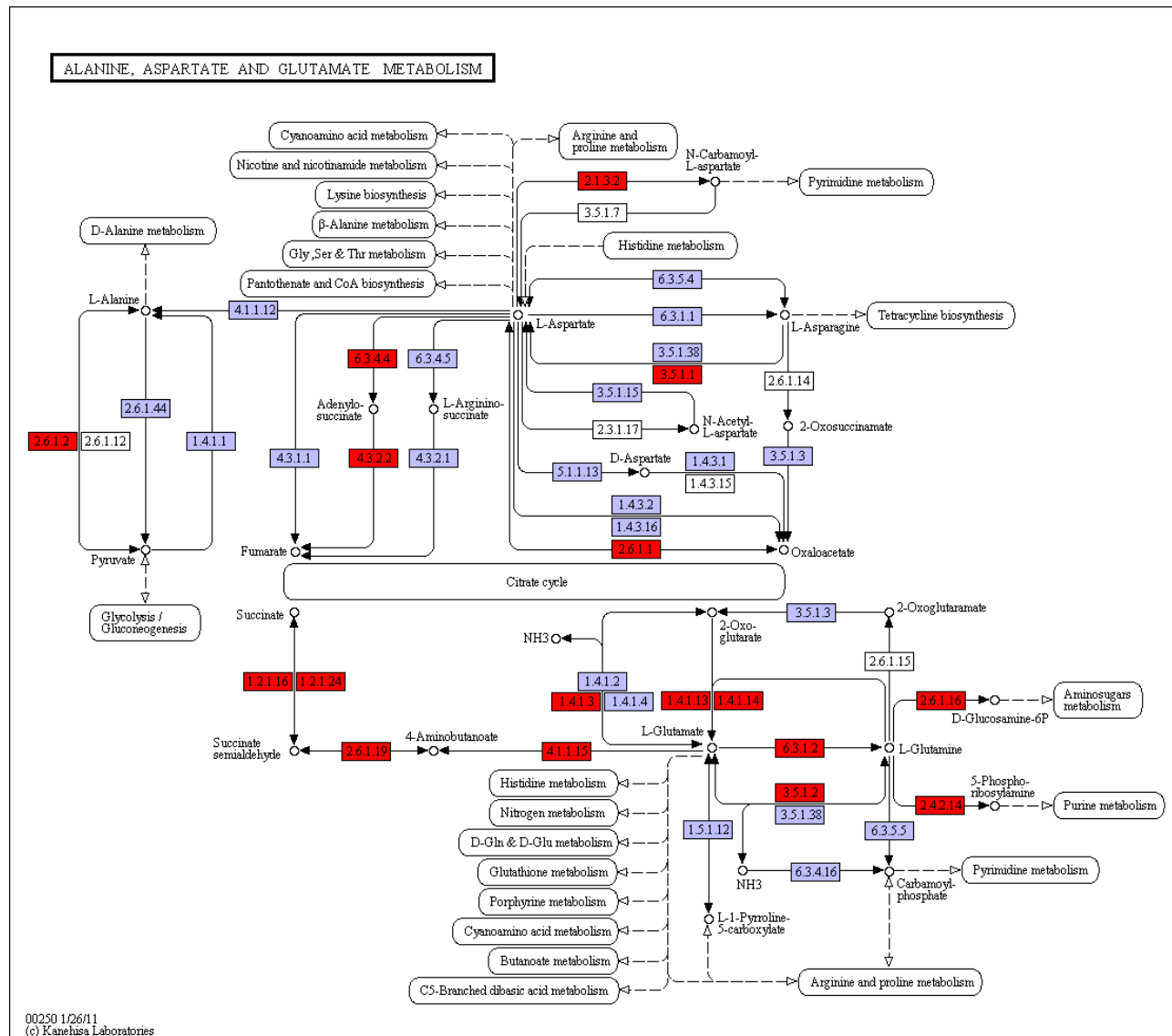


Figure 92: ko00250 Alanine, aspartate and glutamate metabolism

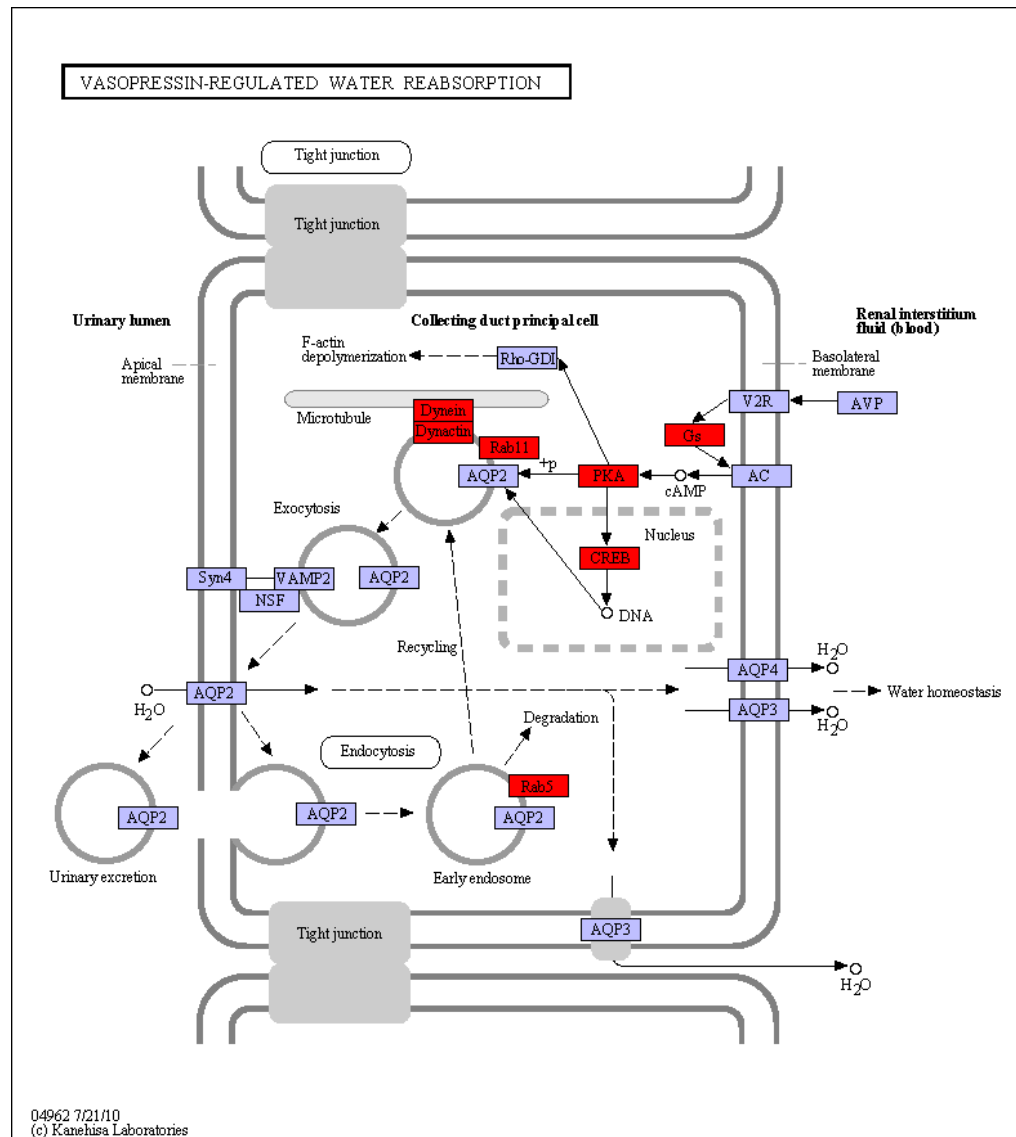


Figure 93: ko04962 Vasopressin-regulated water reabsorption

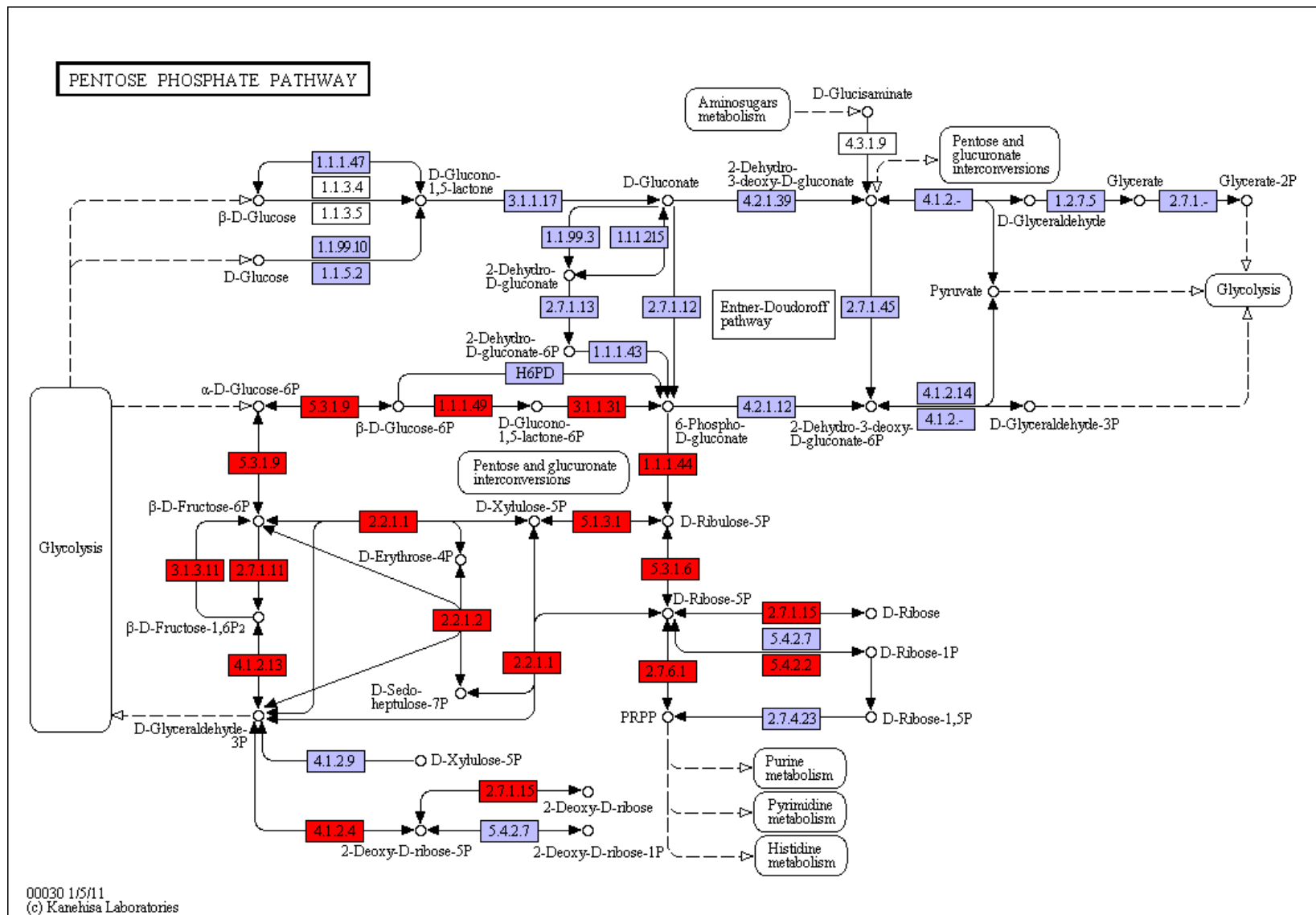


Figure 94: ko00030 Pentose phosphate pathway







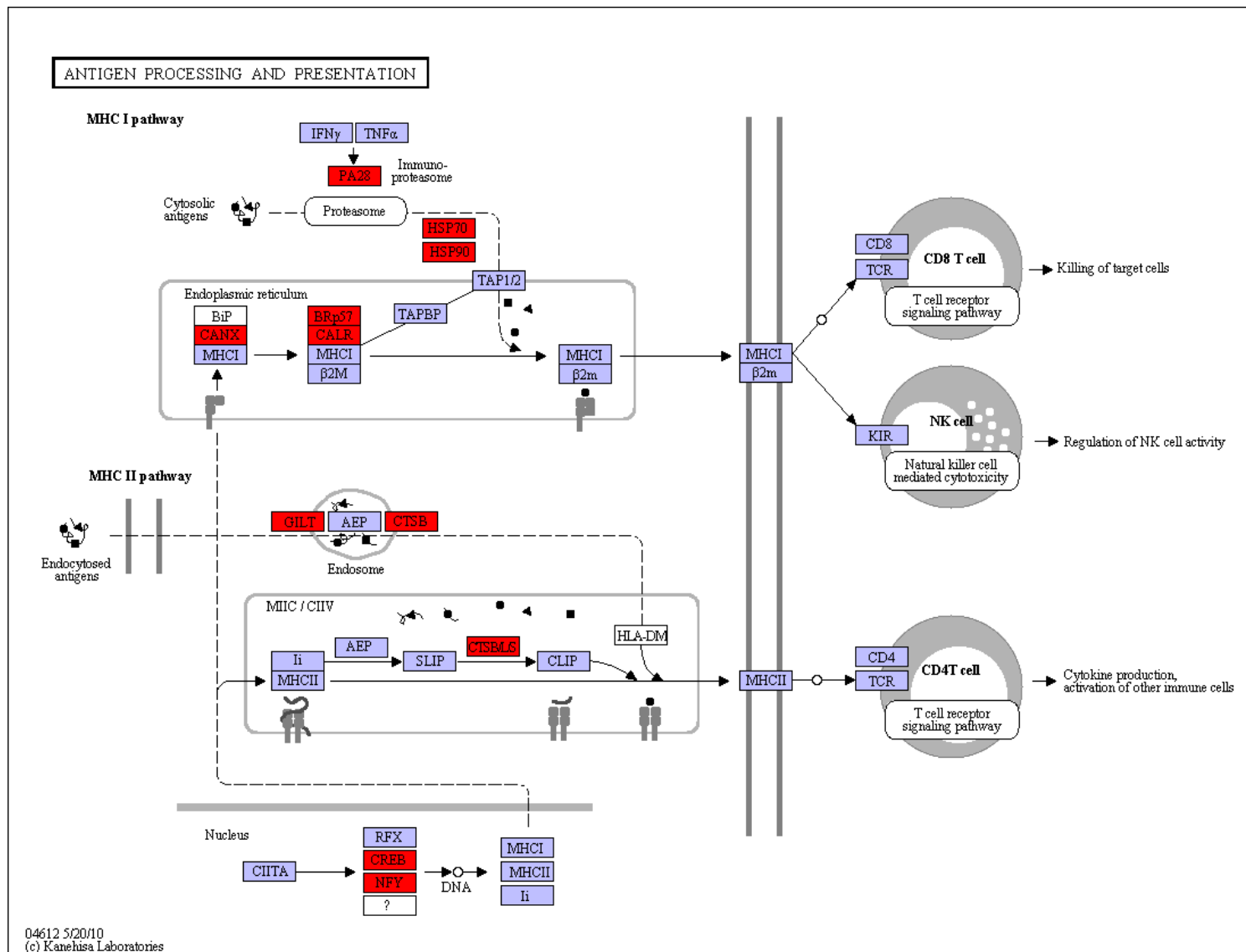


Figure 97: ko04612 Antigen processing and presentation

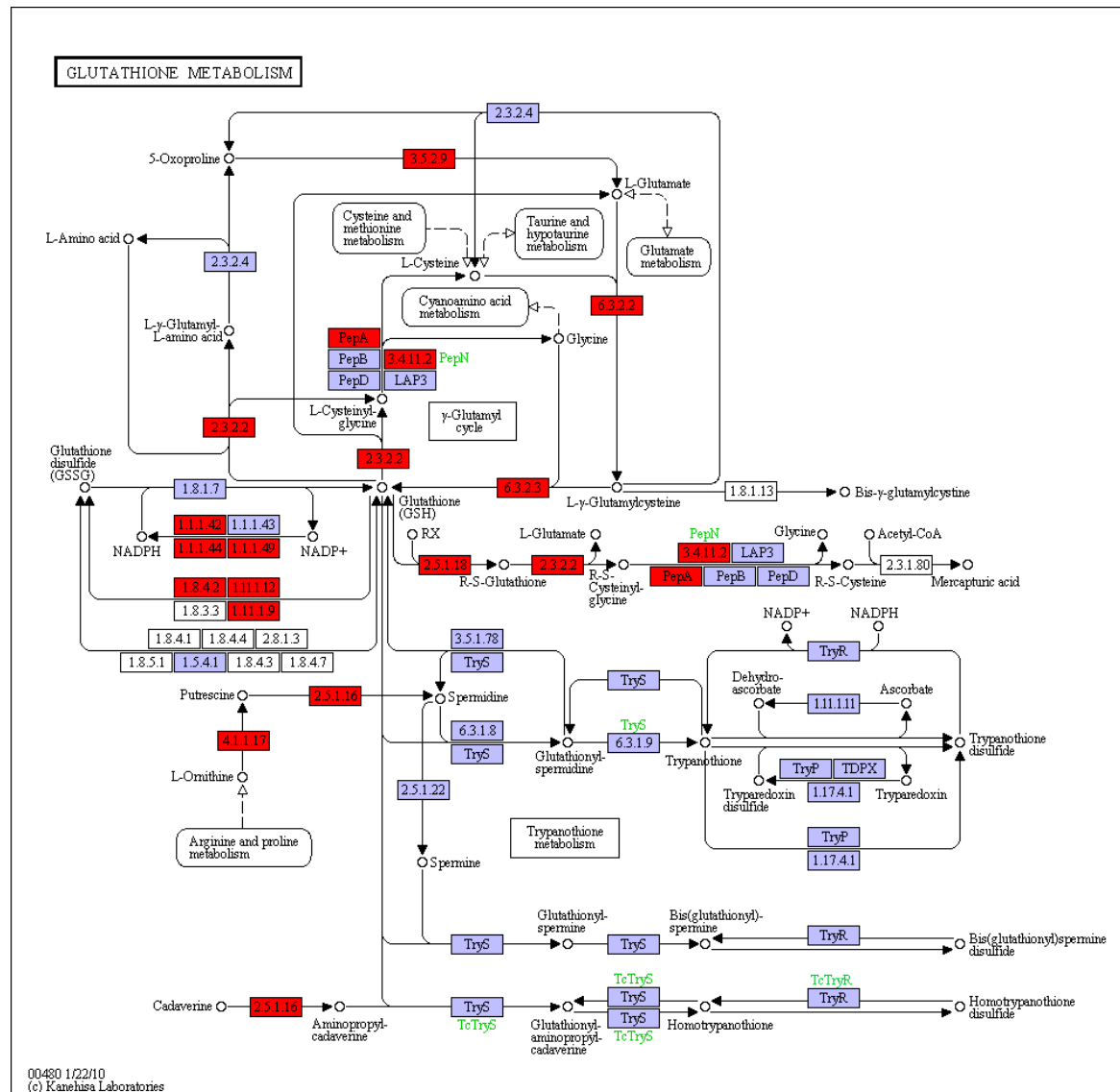


Figure 98: ko00480 Glutathione metabolism

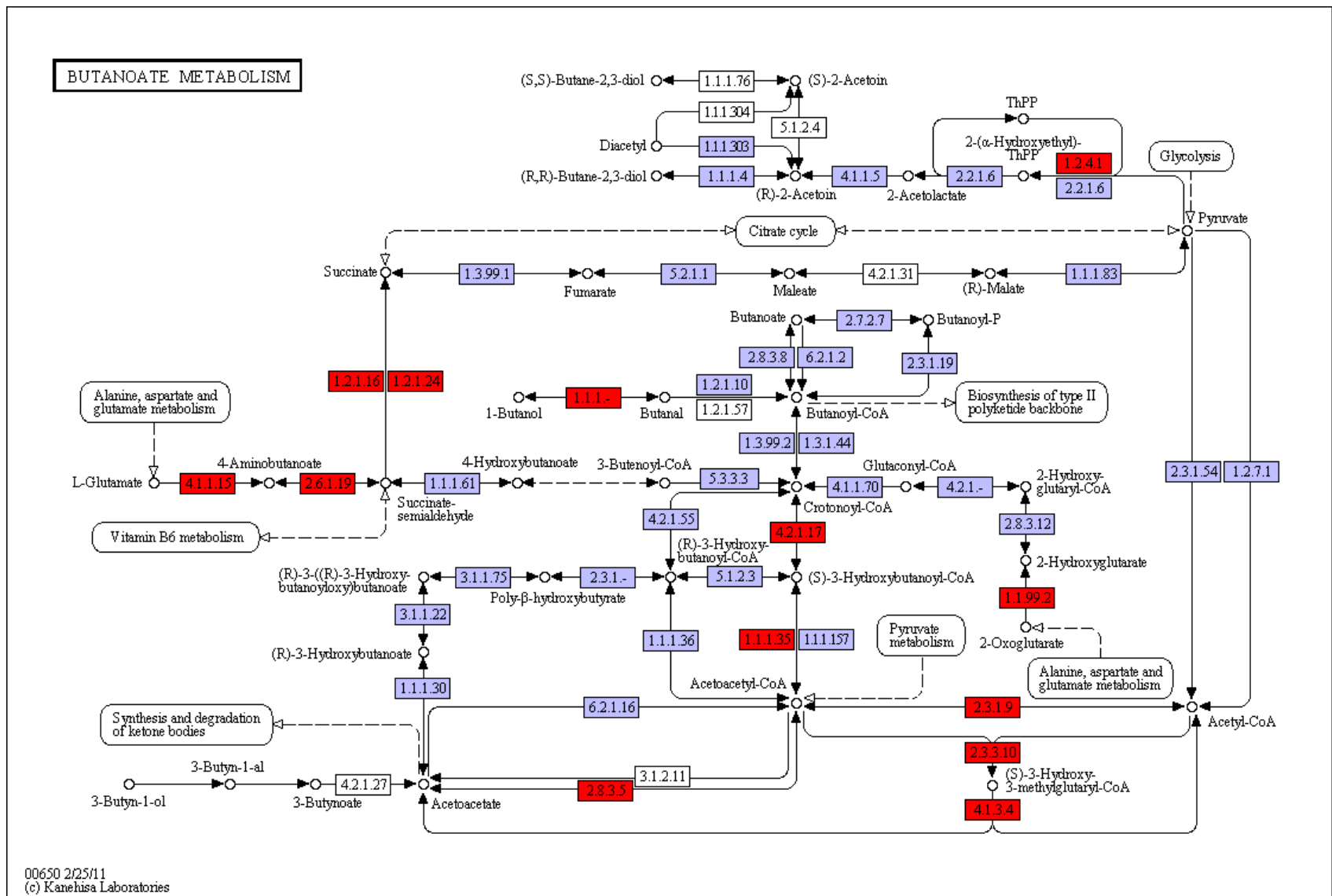


Figure 99: ko00650 Butanoate metabolism

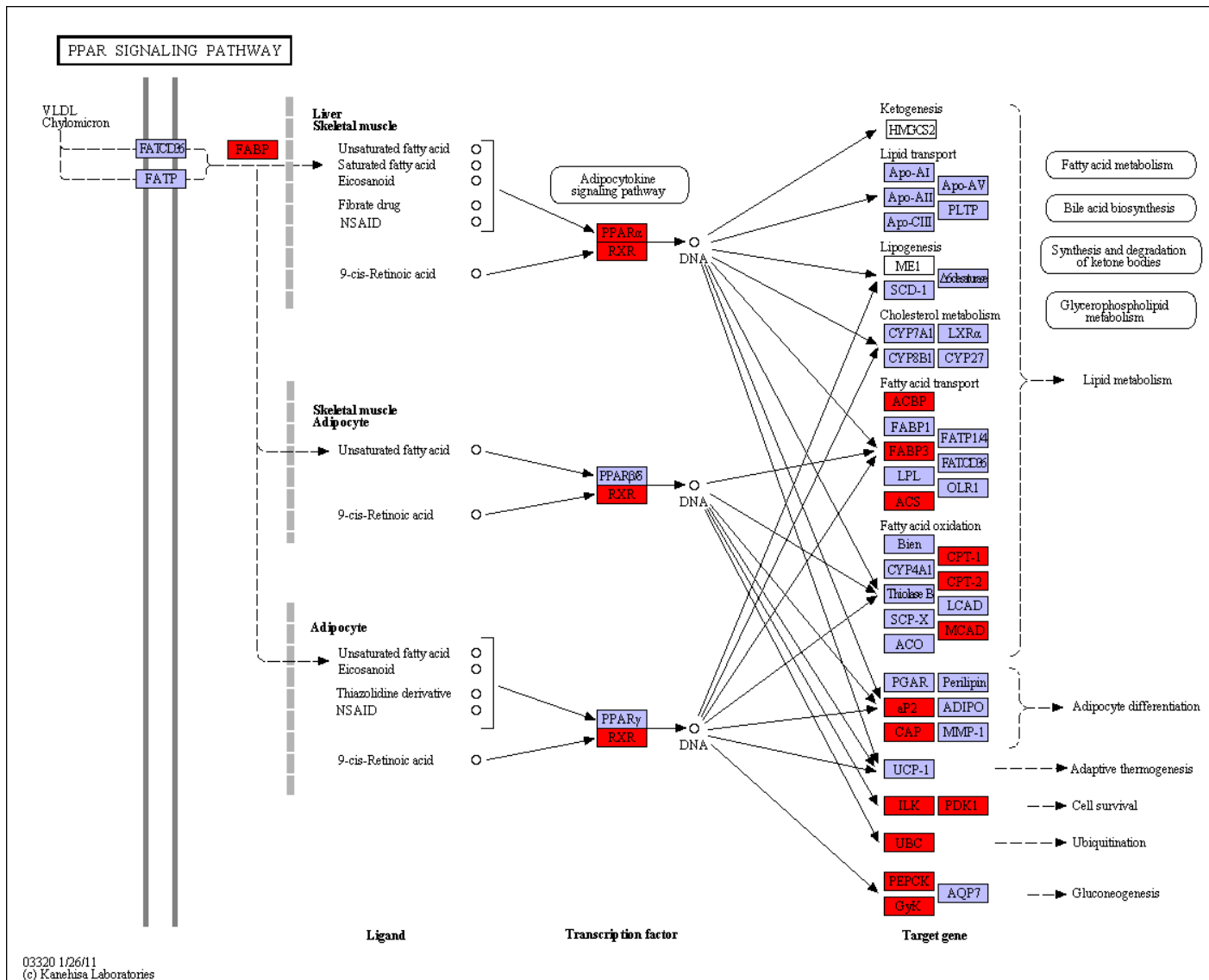


Figure 100: ko03320 PPAR signaling pathway

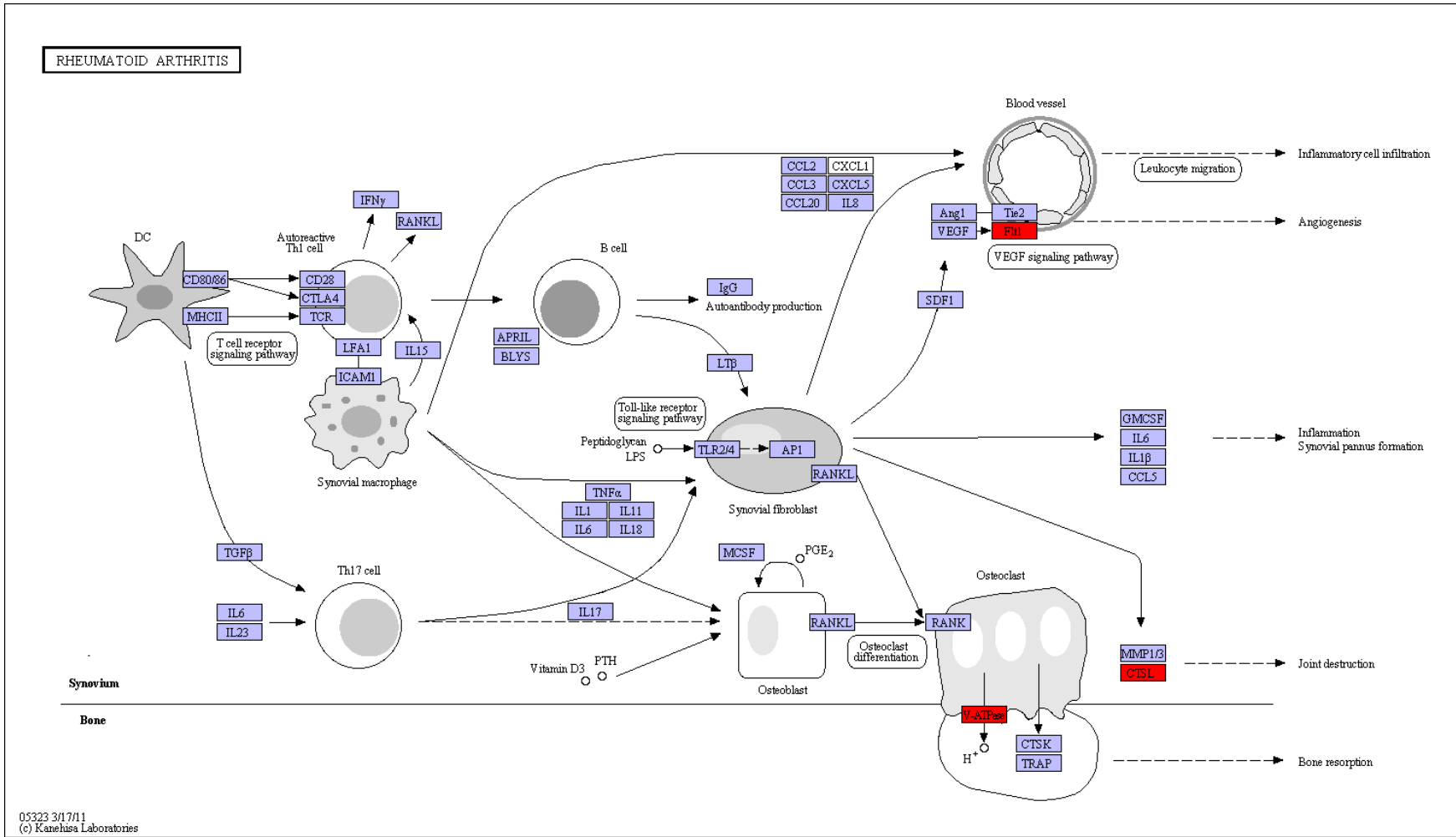


Figure 101: ko05323 Rheumatoid arthritis

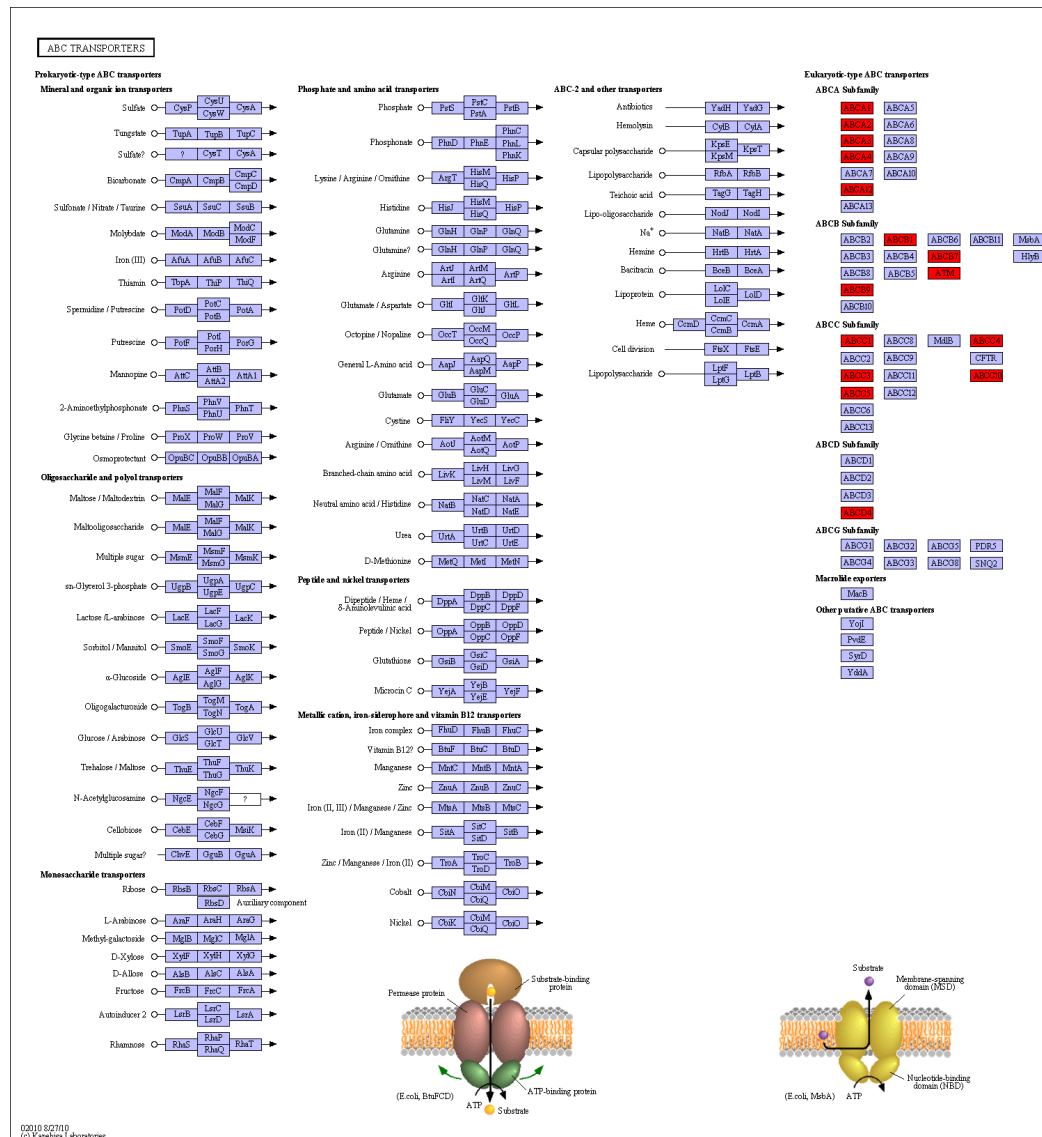


Figure 102: ko02010 ABC transporters

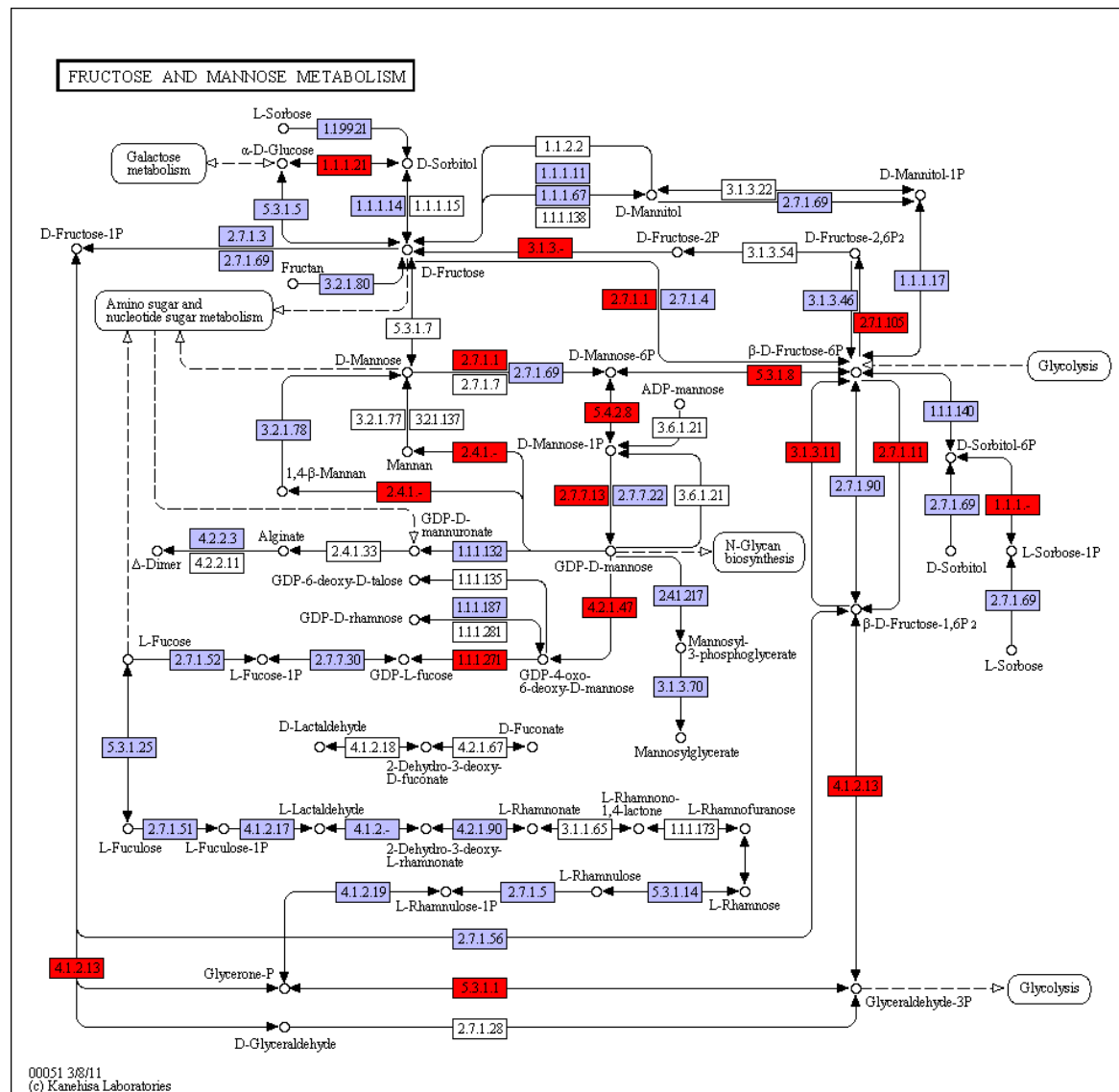


Figure 103: ko00051 Fructose and mannose metabolism



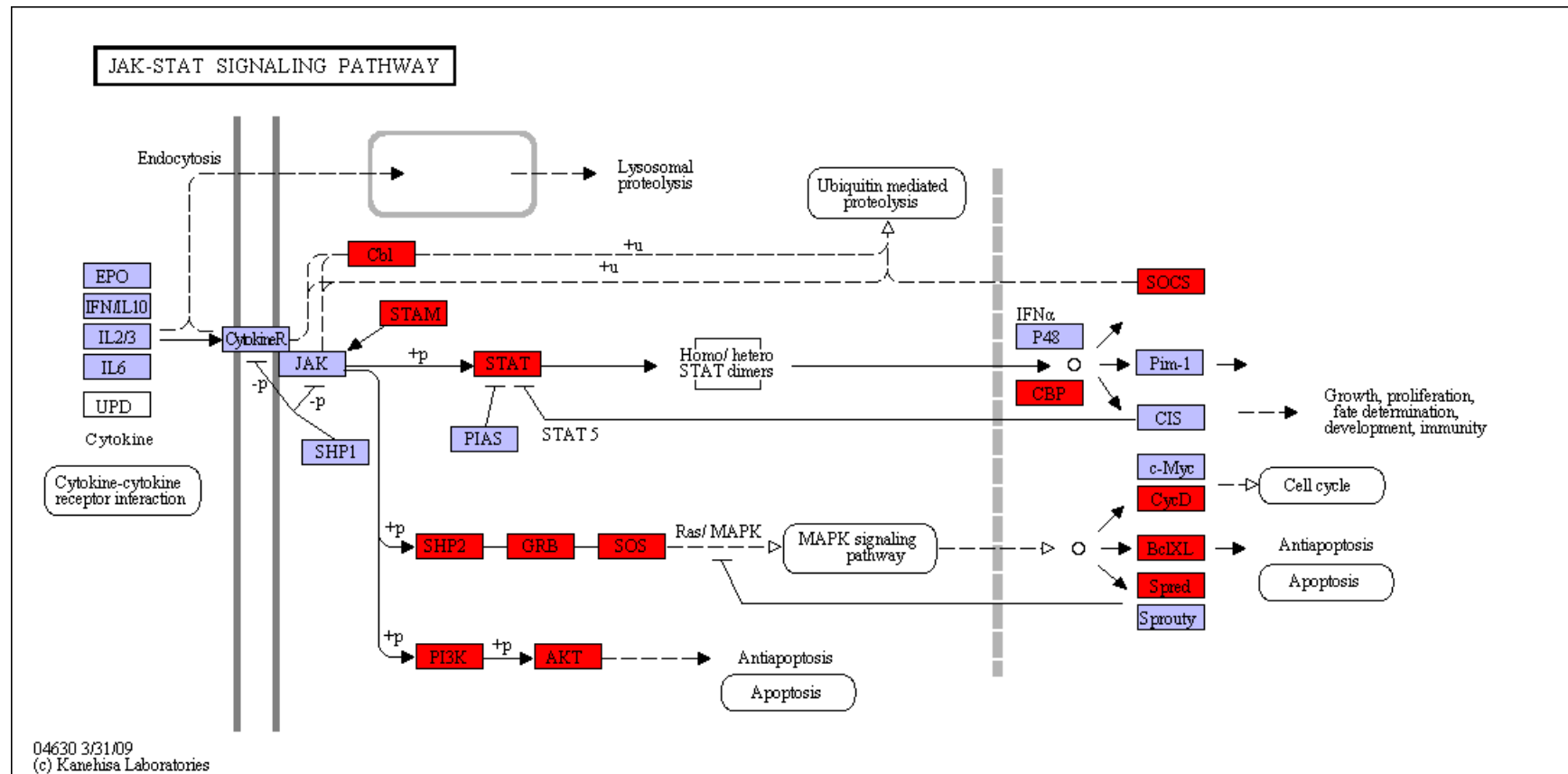


Figure 104: ko04630 Jak-STAT signaling pathway

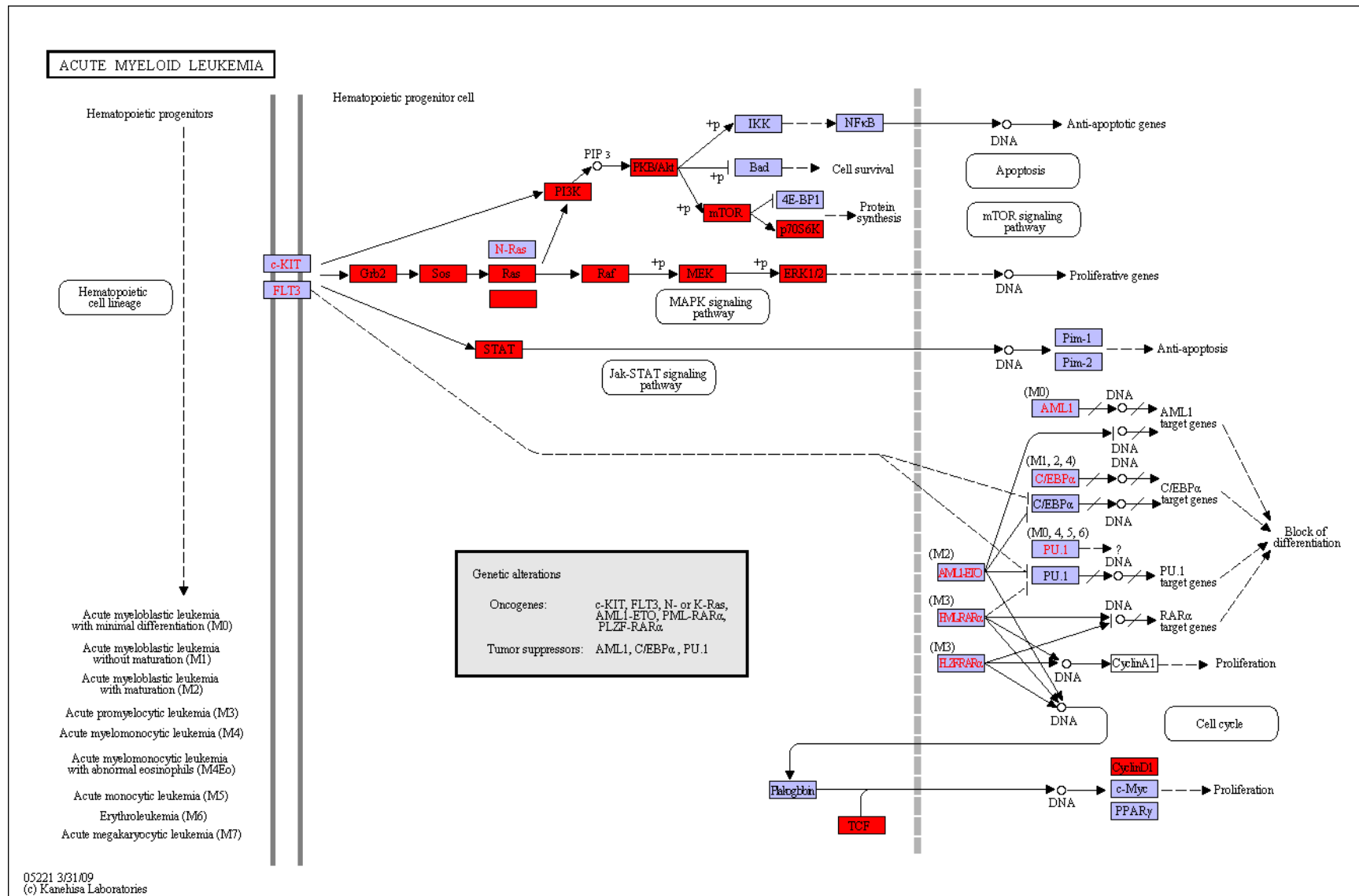


Figure 105: ko05221 Acute myeloid leukemia

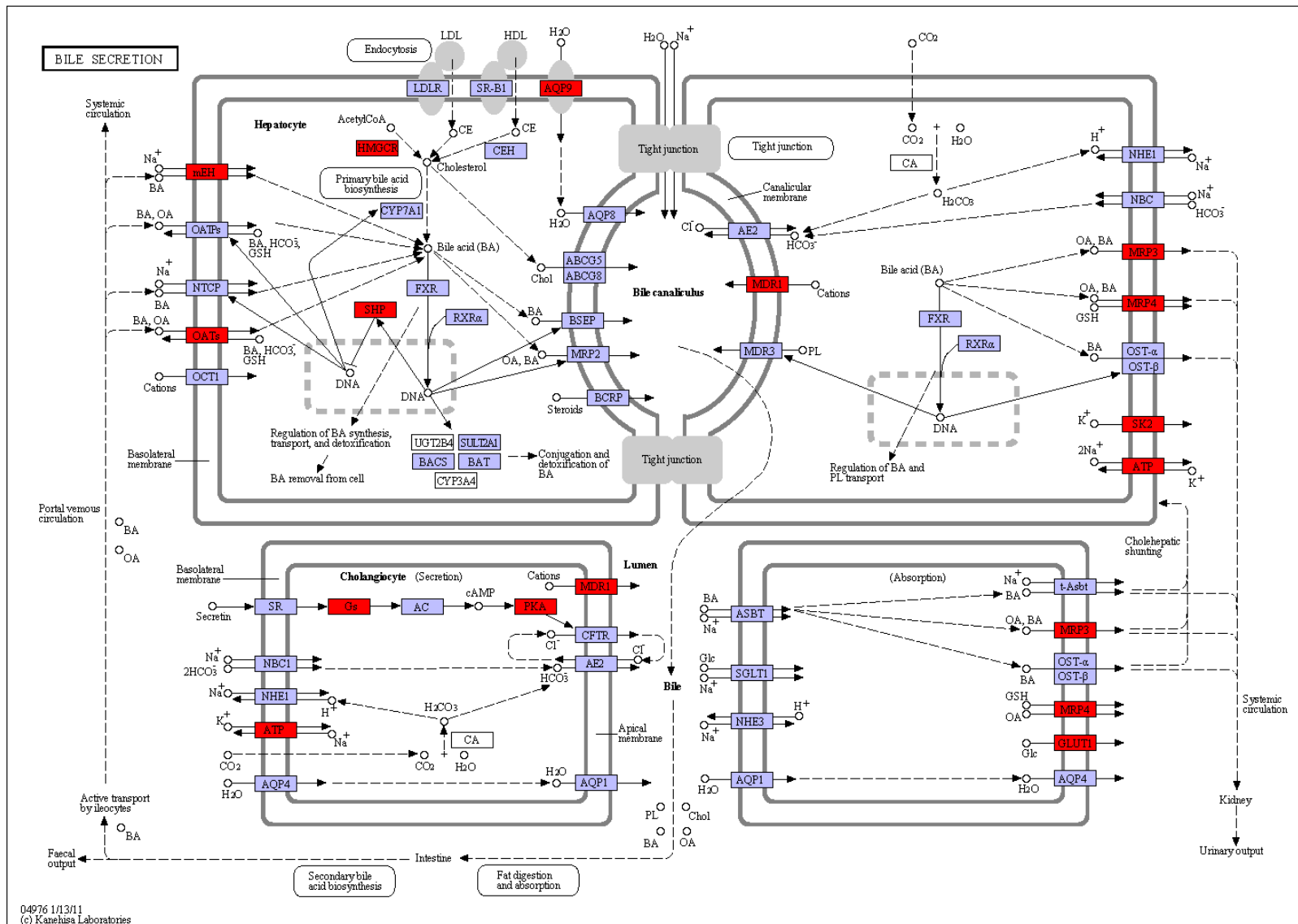


Figure 106: ko04976 Bile secretion

**PROTEIN EXPORT**

**Sec dependent pathway**

Prokaryotic type

Translocation channel and related proteins

SecY SecE SecG

SecD/F YajC

YidC

SecA SecB SecM

SRP

Ffh Ffs

SRP receptor

FtsY

Eukaryotic type

SEC61 $\alpha$  SEC61 $\beta$  SEC61 $\gamma$

SEC62 SEC63

BiP

SRP9 SRP72 SRP19 RN7SL

SRP14 SRP68 SRP54

SRPR

SRPRB

**Tat (twin-arginine translocation) system**

Prokaryotic type

TatA TatB TatC

TatE

**Signal peptidase**

Prokaryotic type

SPase I SPase II

Eukaryotic type

SPCS1 SPCS2 SPCS3 SEC11

IMP1 IMP2

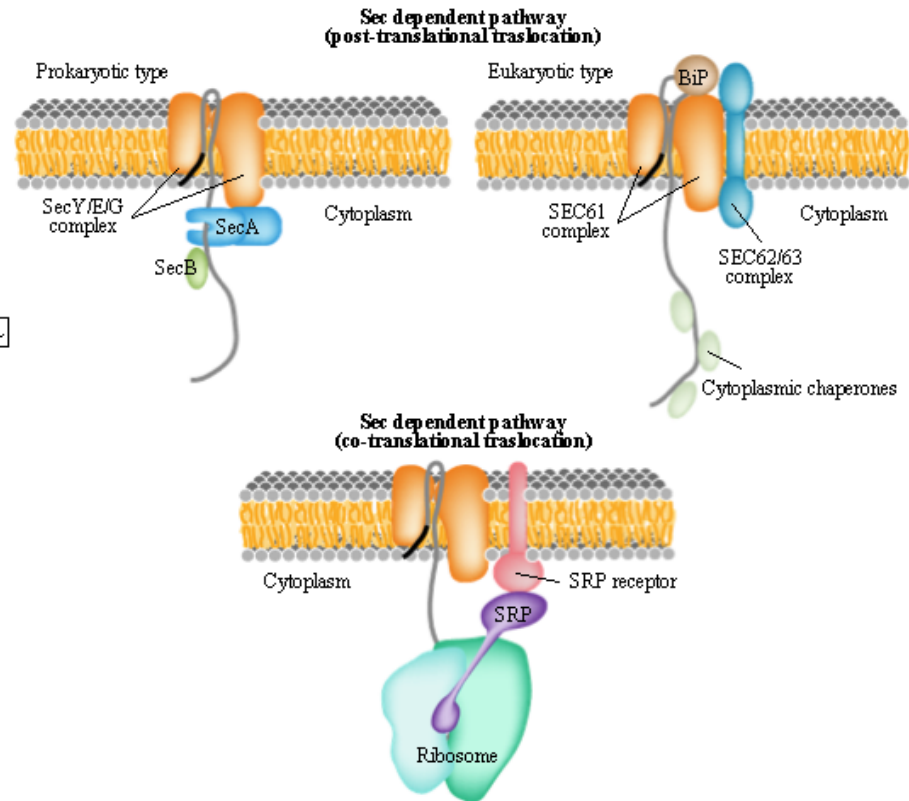


Figure 107: ko03060 Protein export

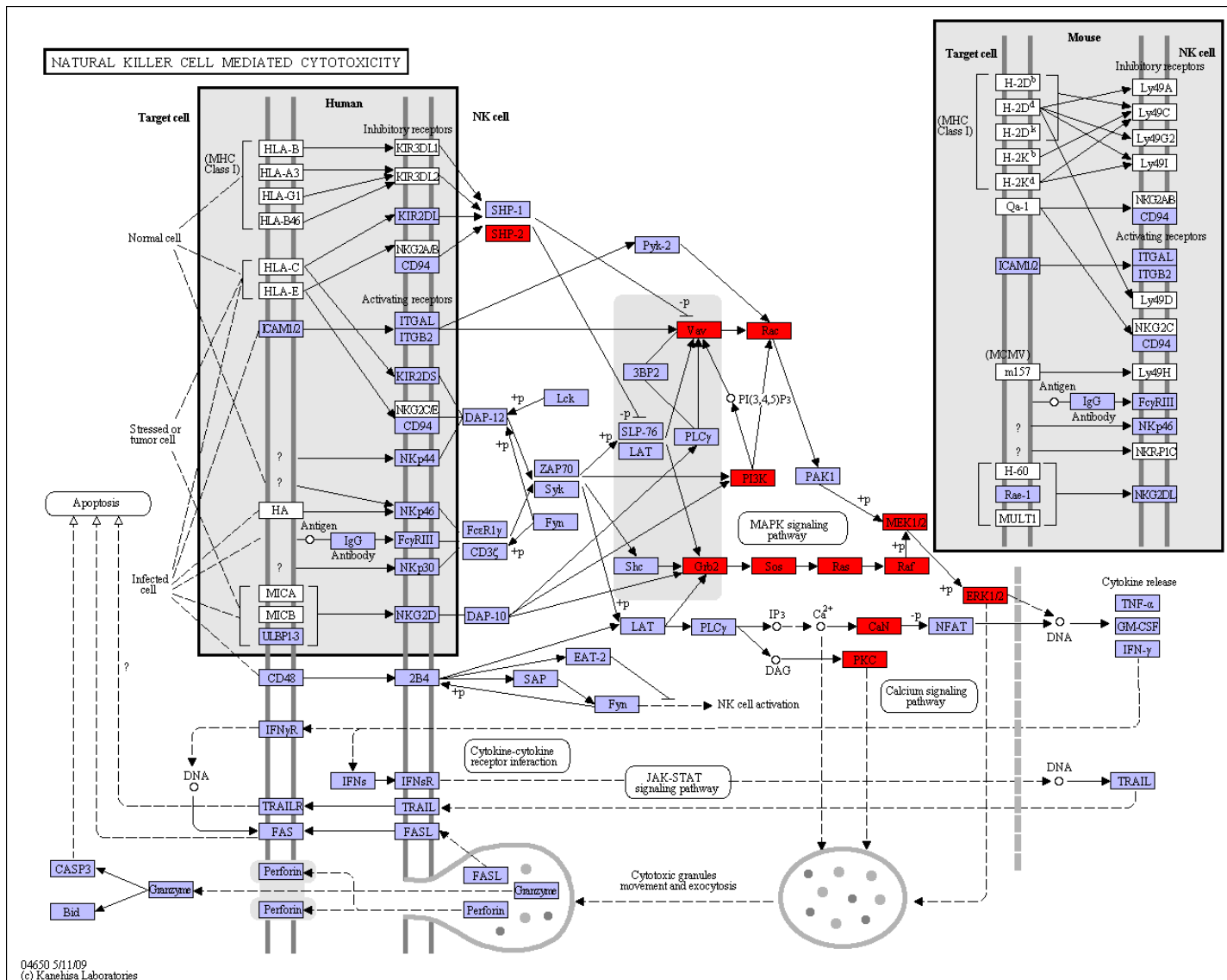


Figure 108: ko04650 Natural killer cell mediated cytotoxicity

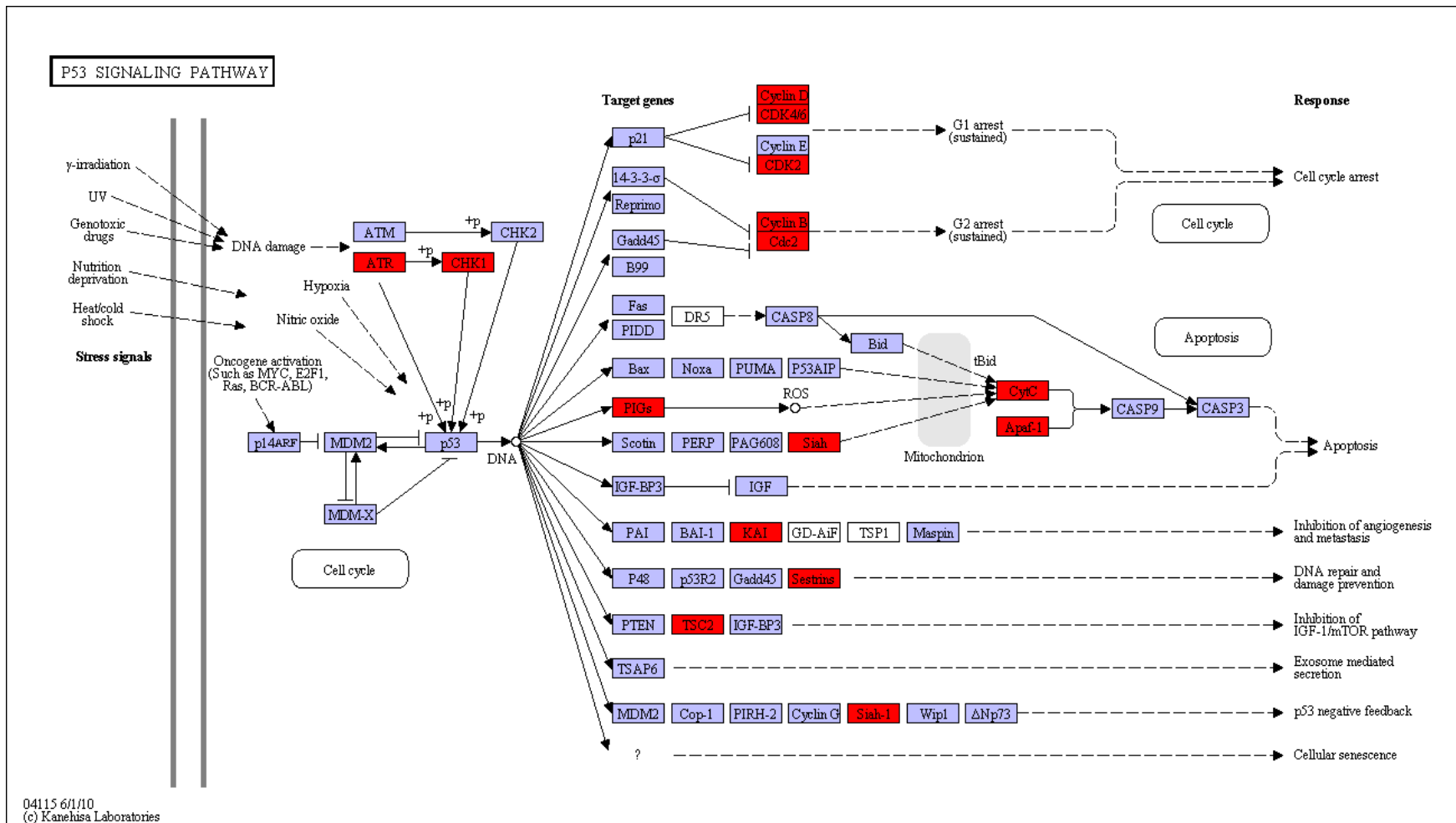


Figure 109: ko04115 p53 signaling pathway



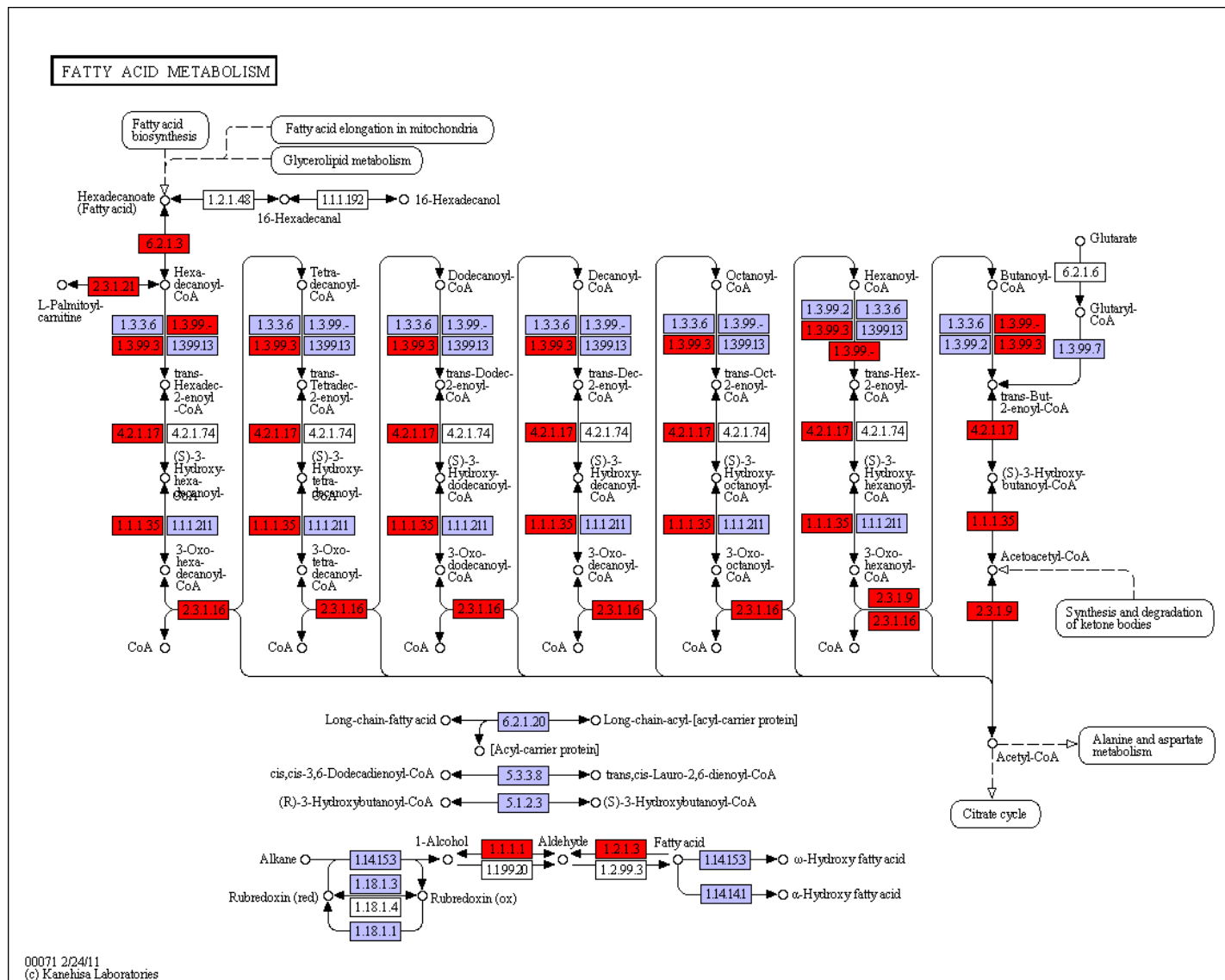


Figure 111: ko00071 Fatty acid metabolism





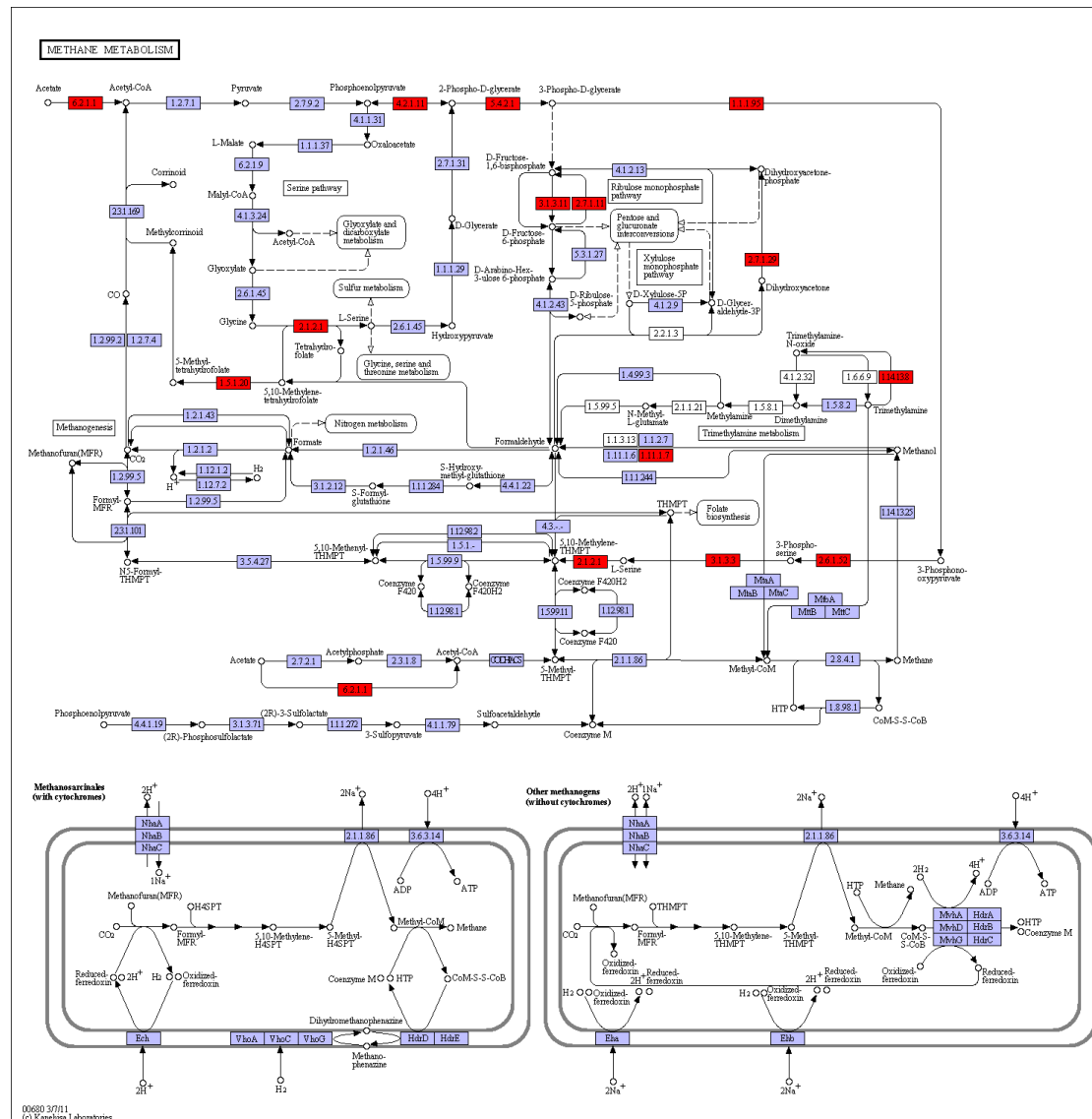


Figure 113: ko00680 Methane metabolism

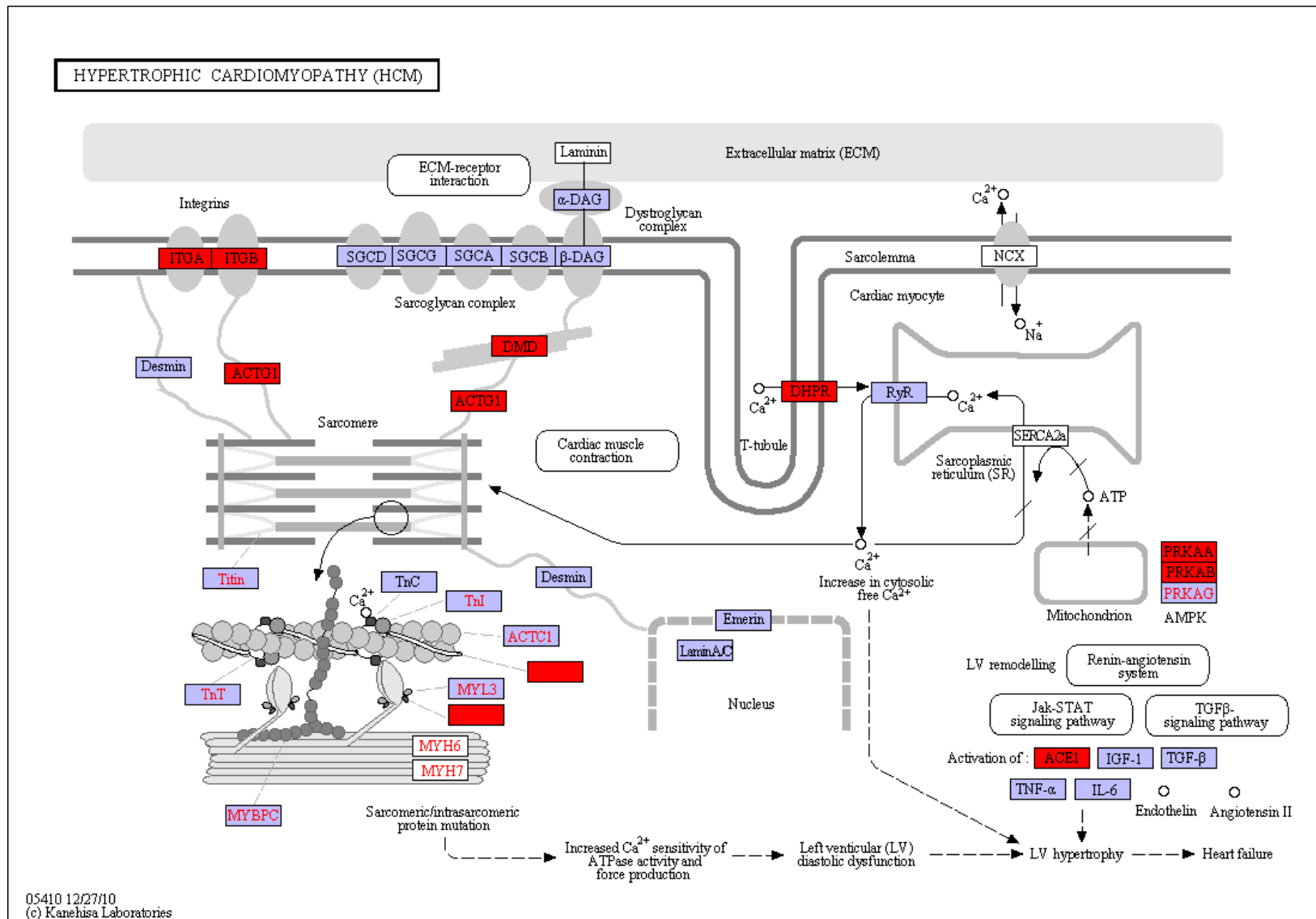


Figure 114: ko05410 Hypertrophic cardiomyopathy (HCM)

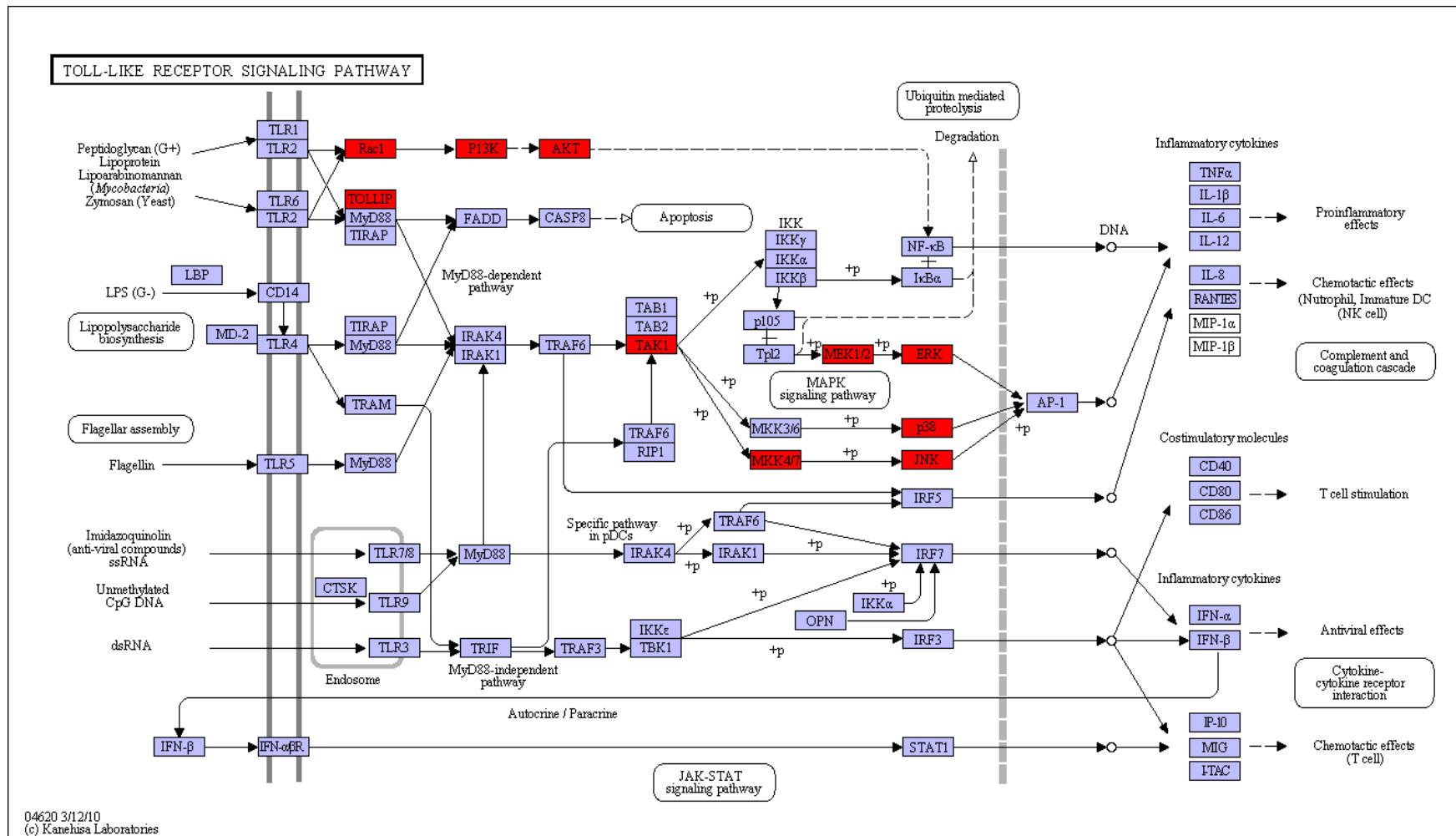


Figure 115: ko04620 Toll-like receptor signaling pathway

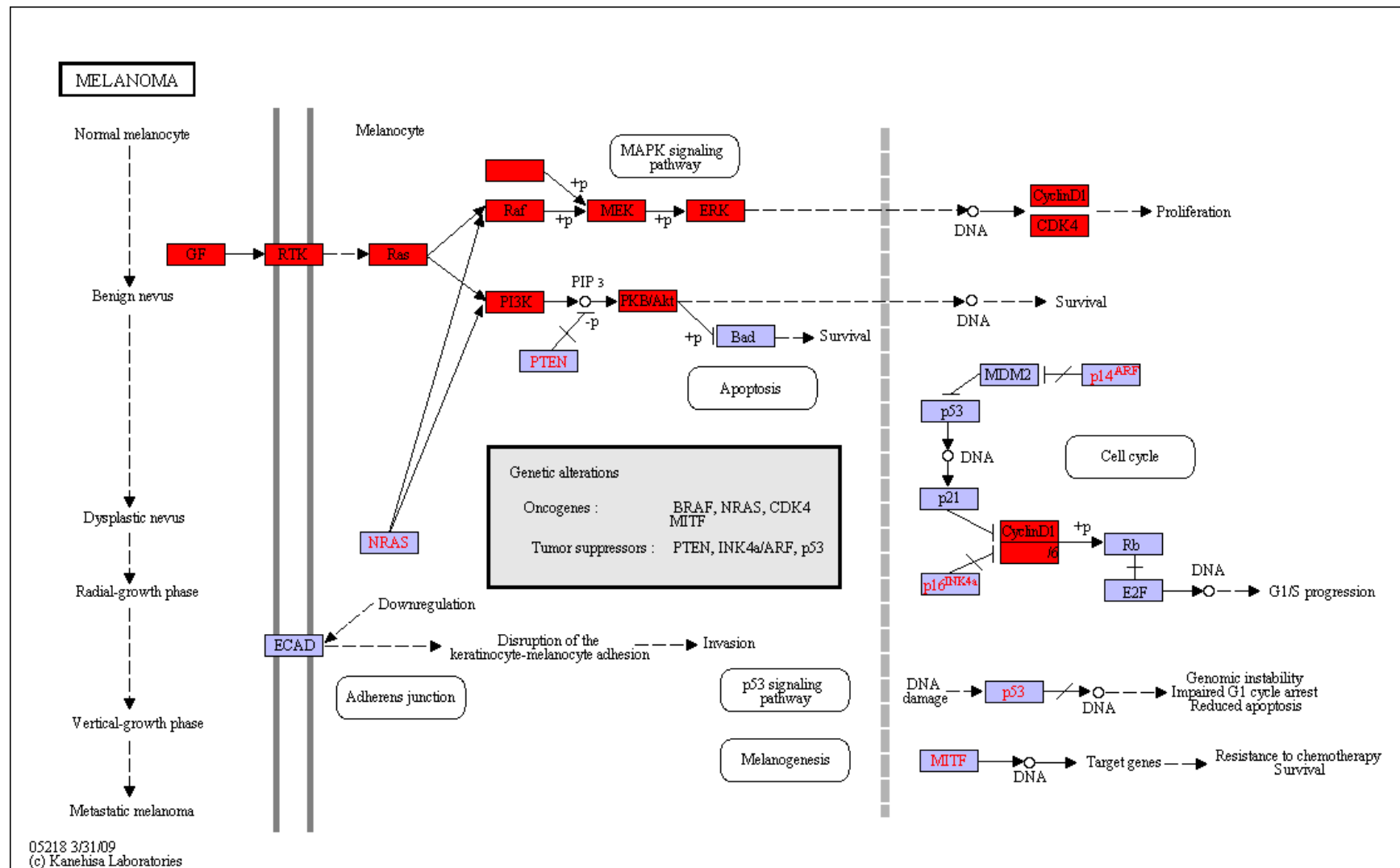


Figure 116: ko05218 Melanoma

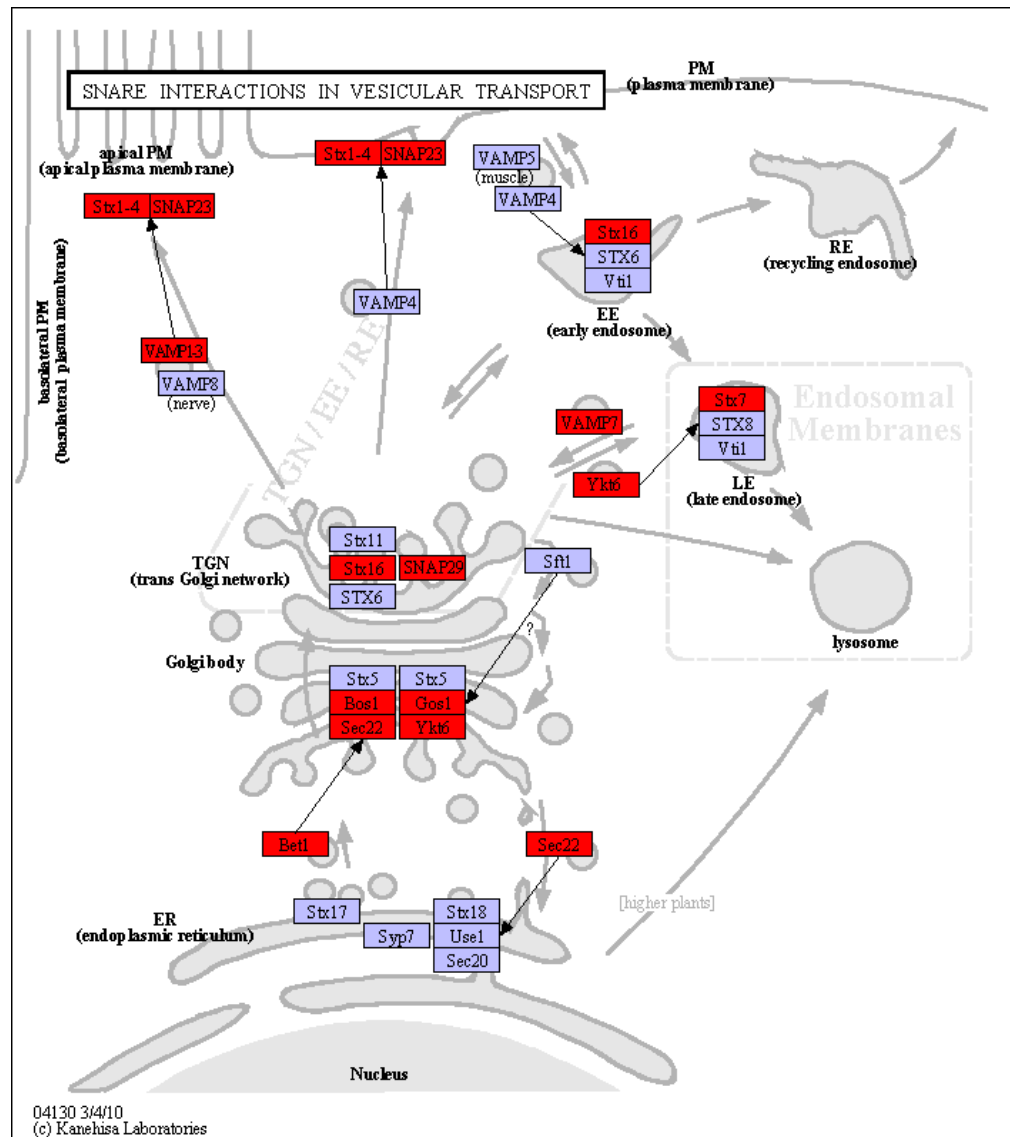


Figure 117: ko04130 SNARE interactions in vesicular transport

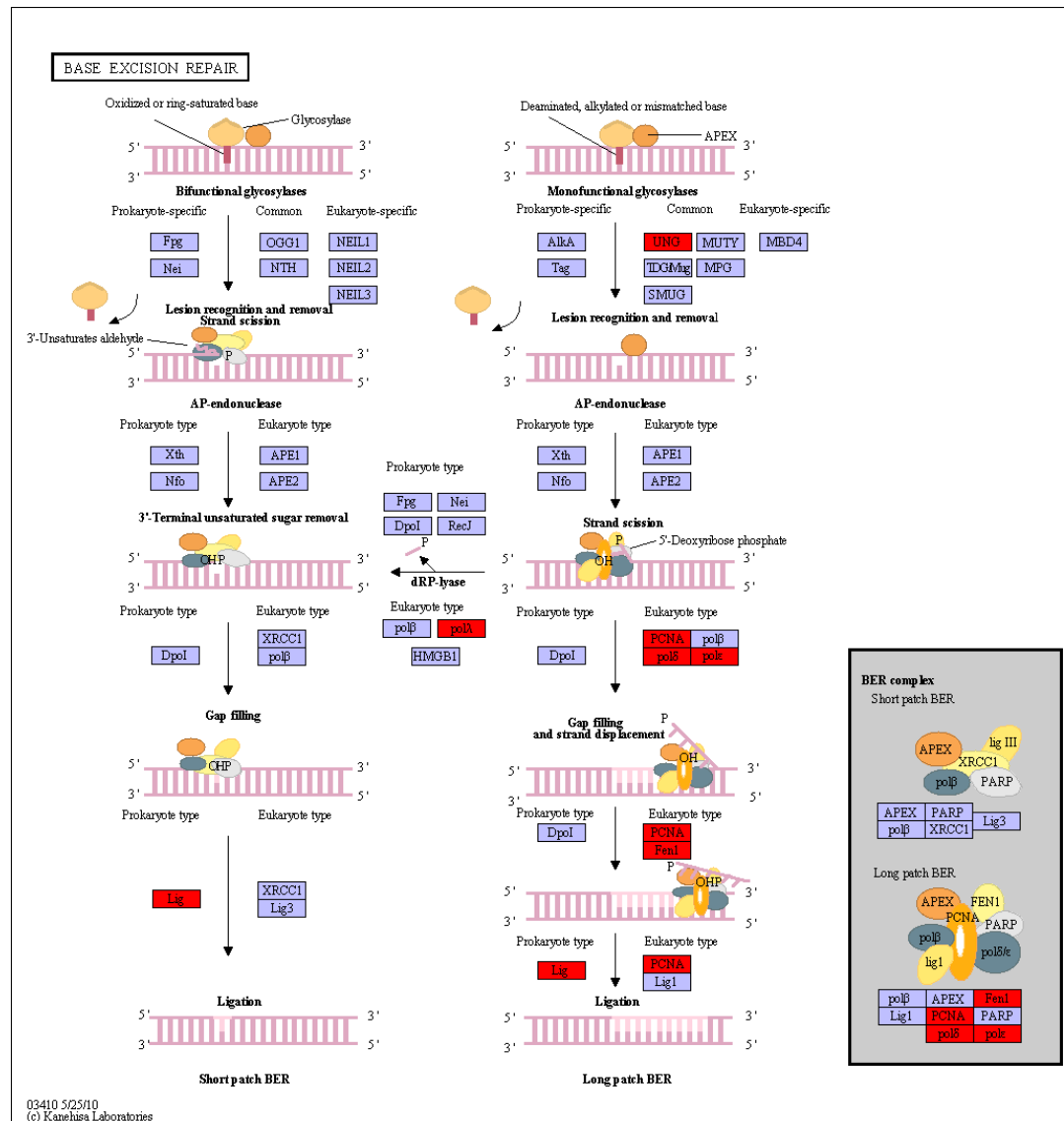


Figure 118: ko03410 Base excision repair

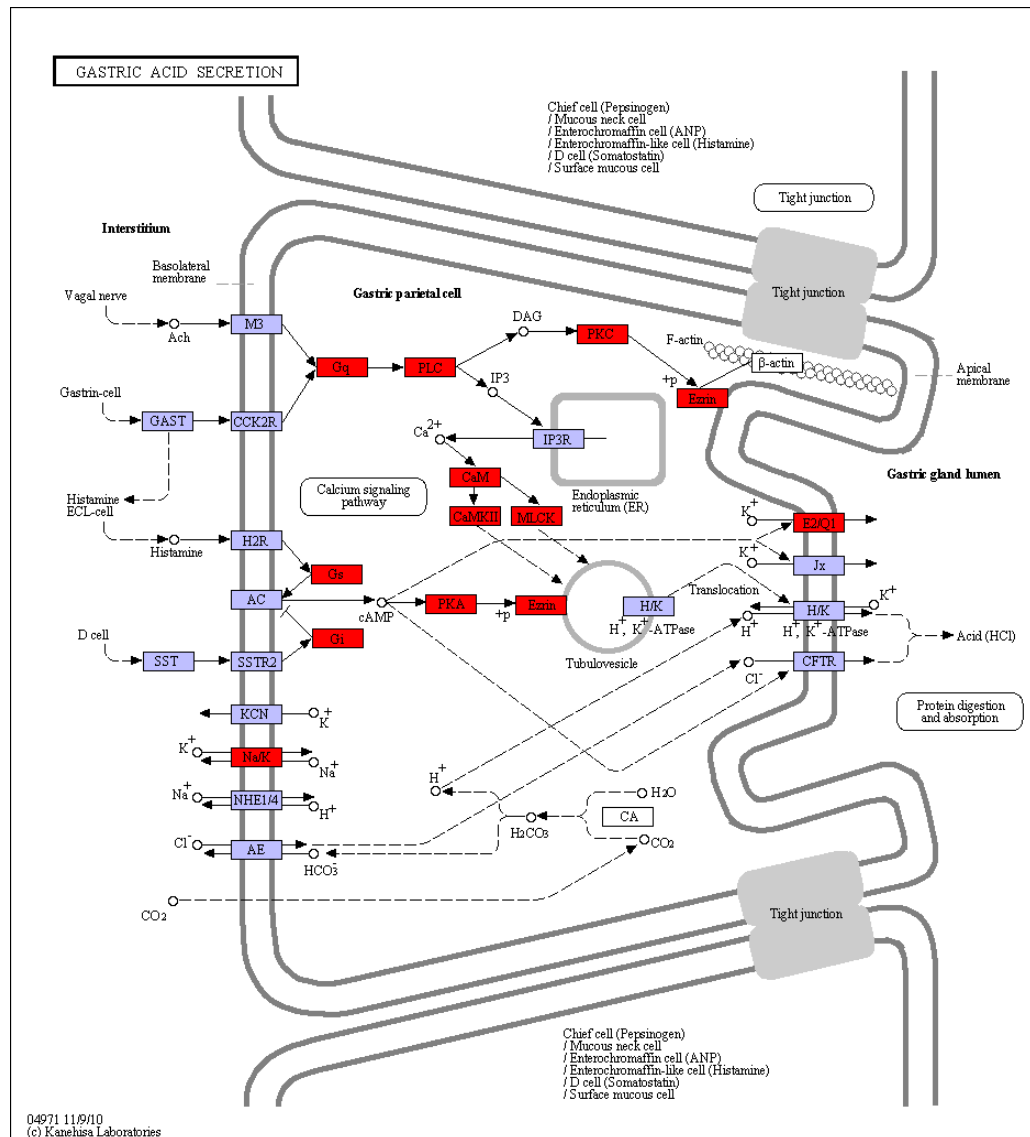
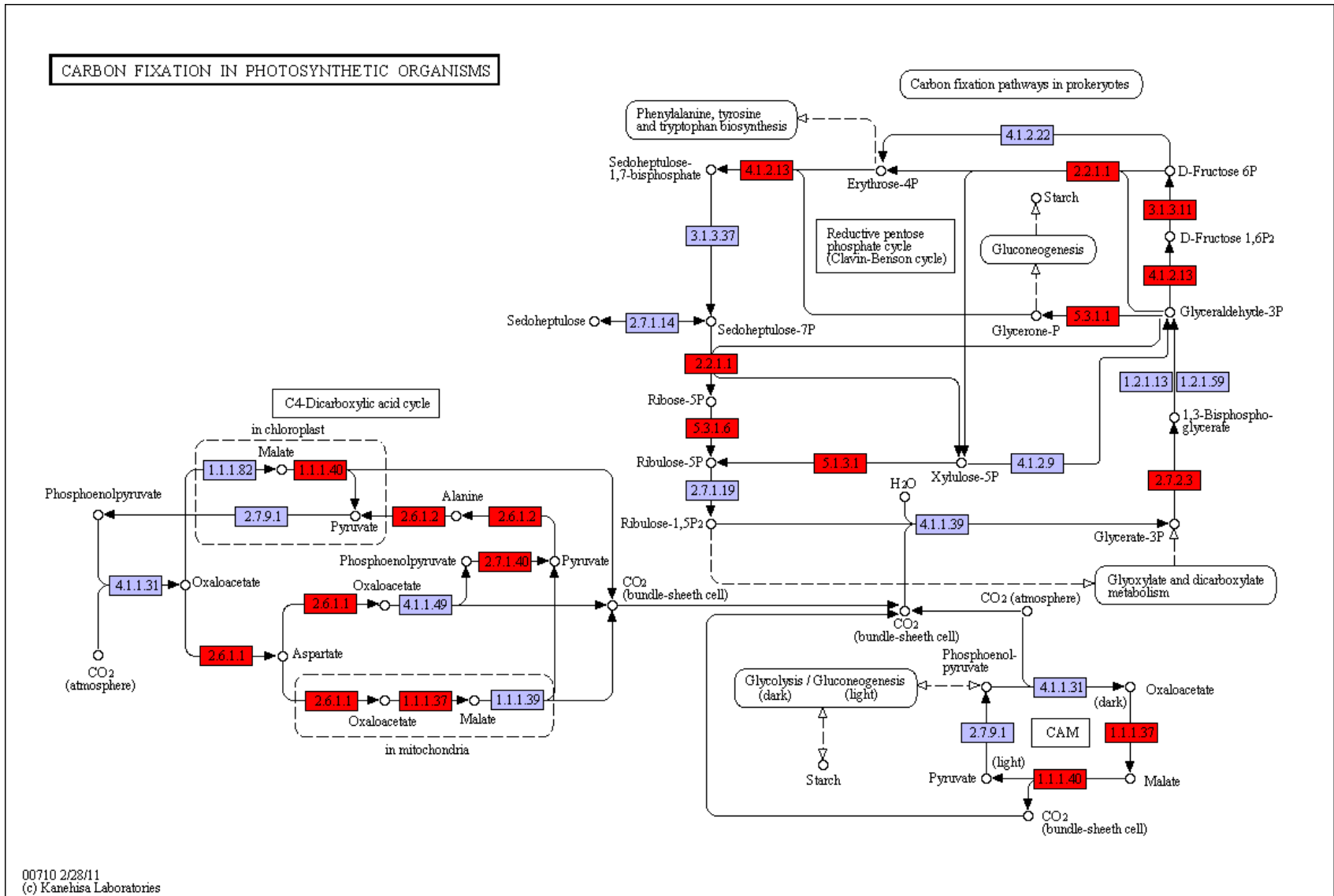


Figure 119: ko04971 Gastric acid secretion





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Figure 120: ko00710 Carbon fixation in photosynthetic organisms

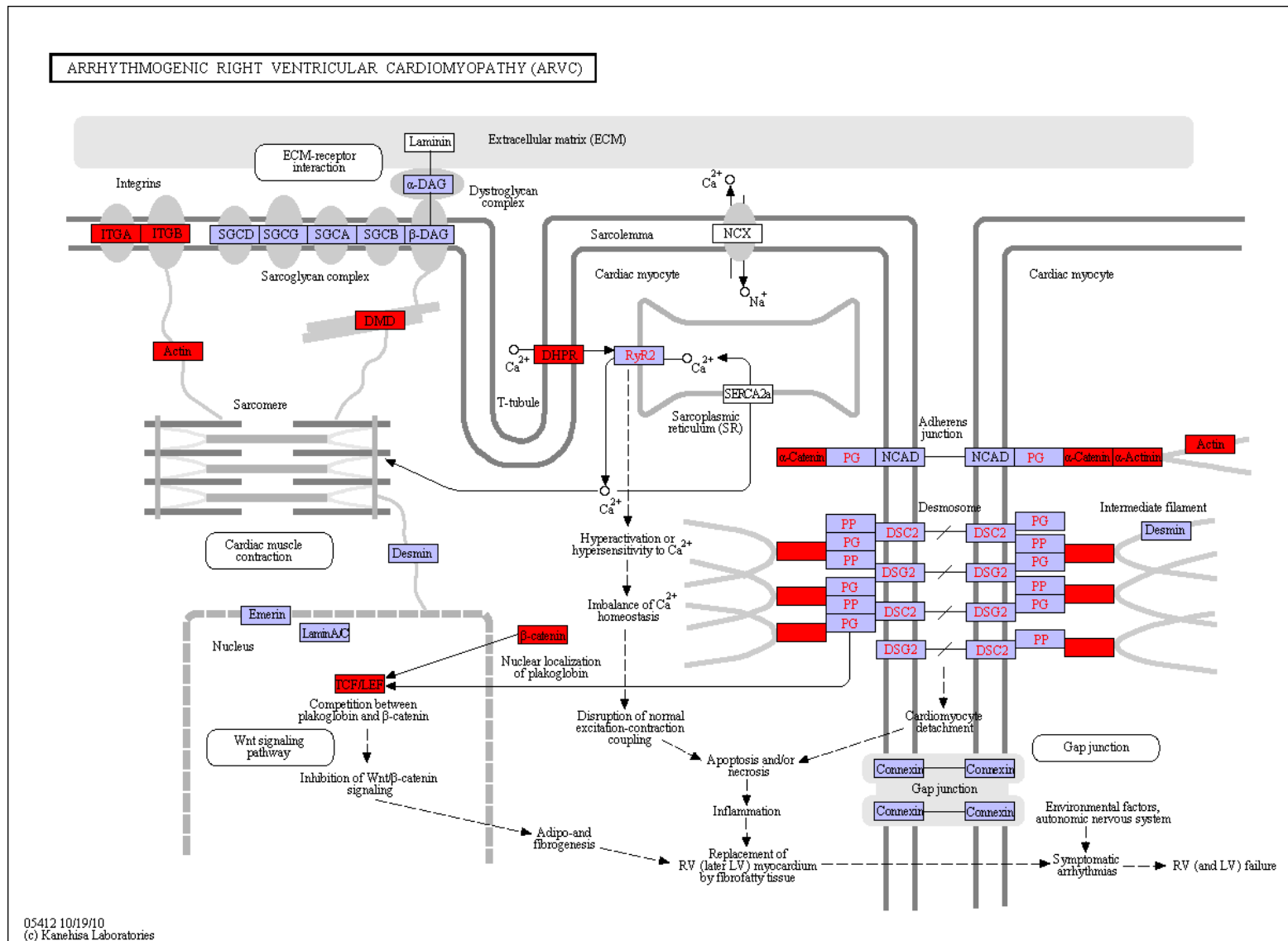


Figure 121: ko05412 Arrhythmogenic right ventricular cardiomyopathy (ARVC)



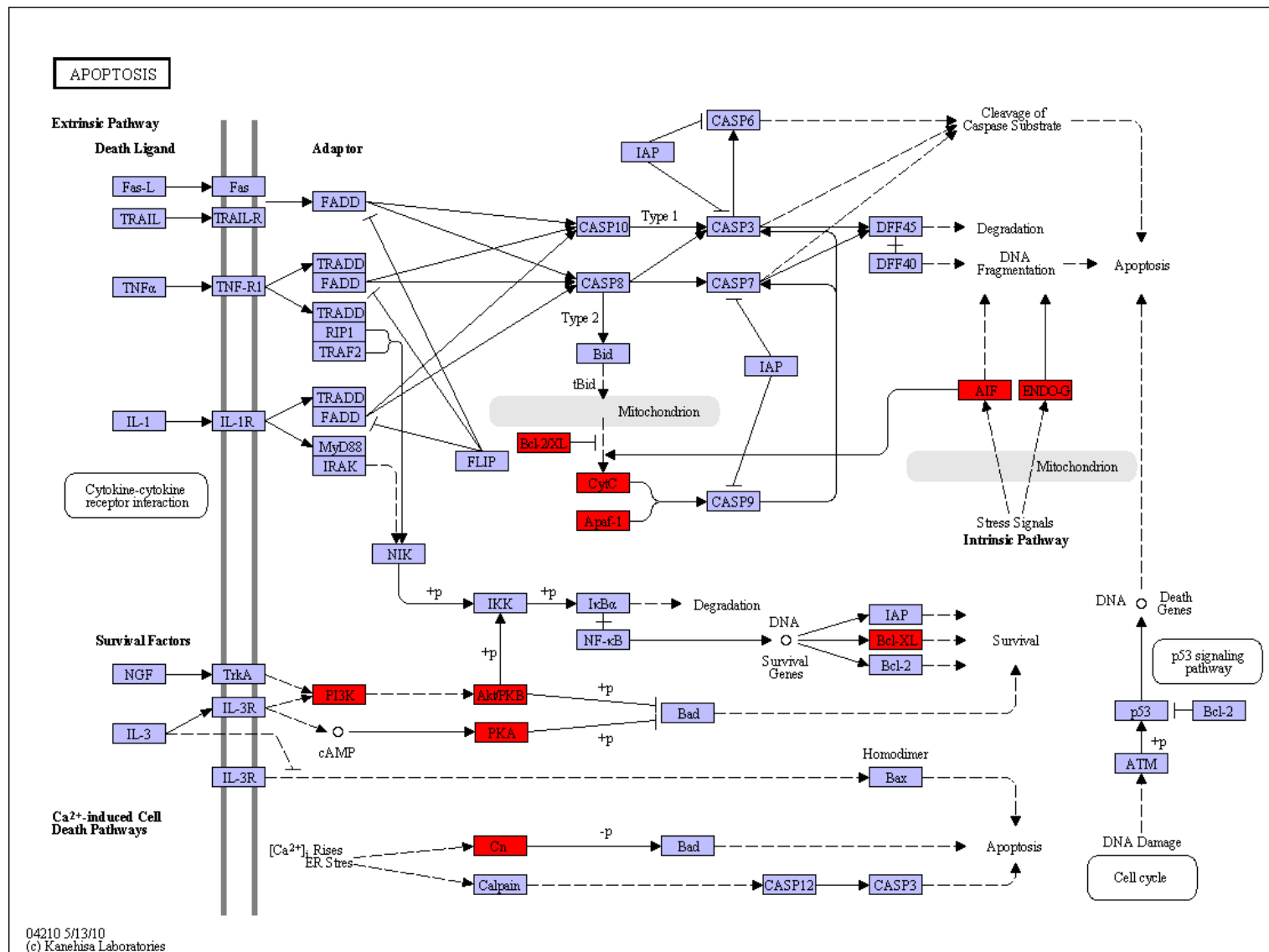


Figure 123: ko04210 Apoptosis

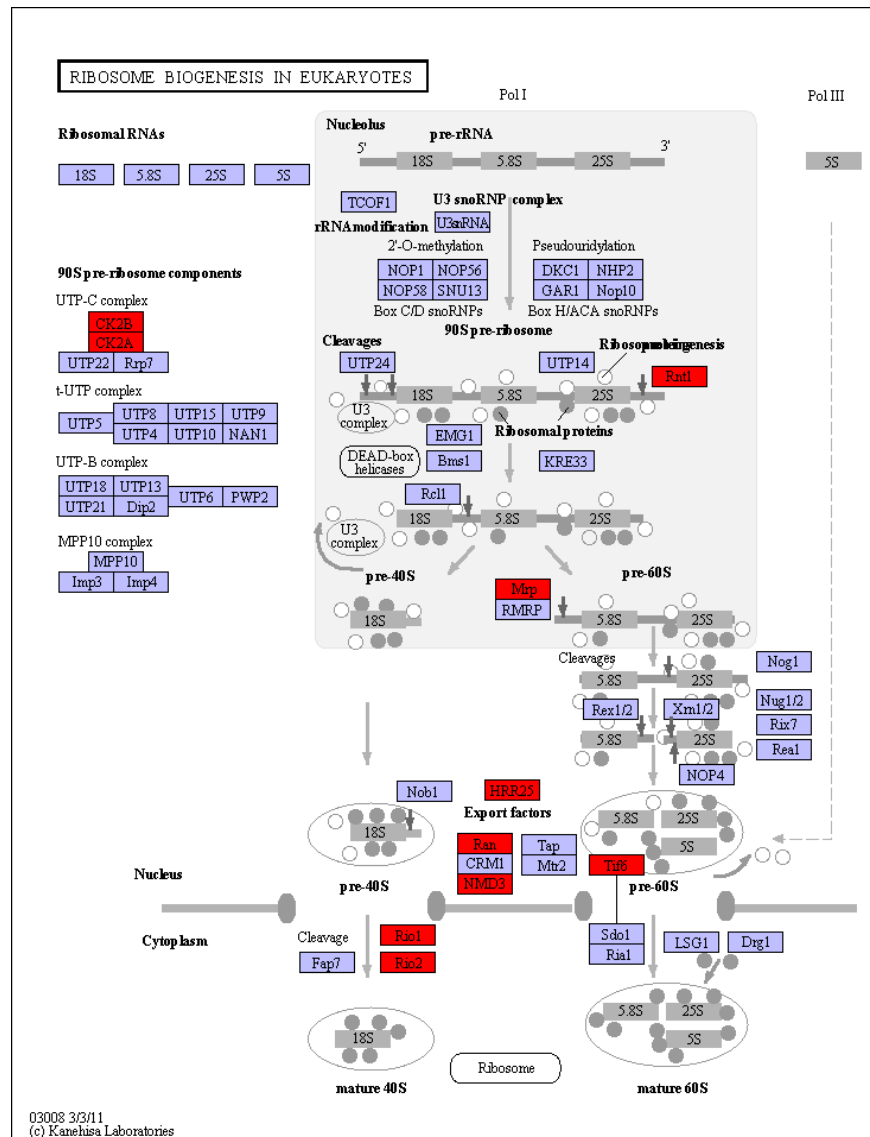


Figure 124: ko03008 Ribosome biogenesis in eukaryotes





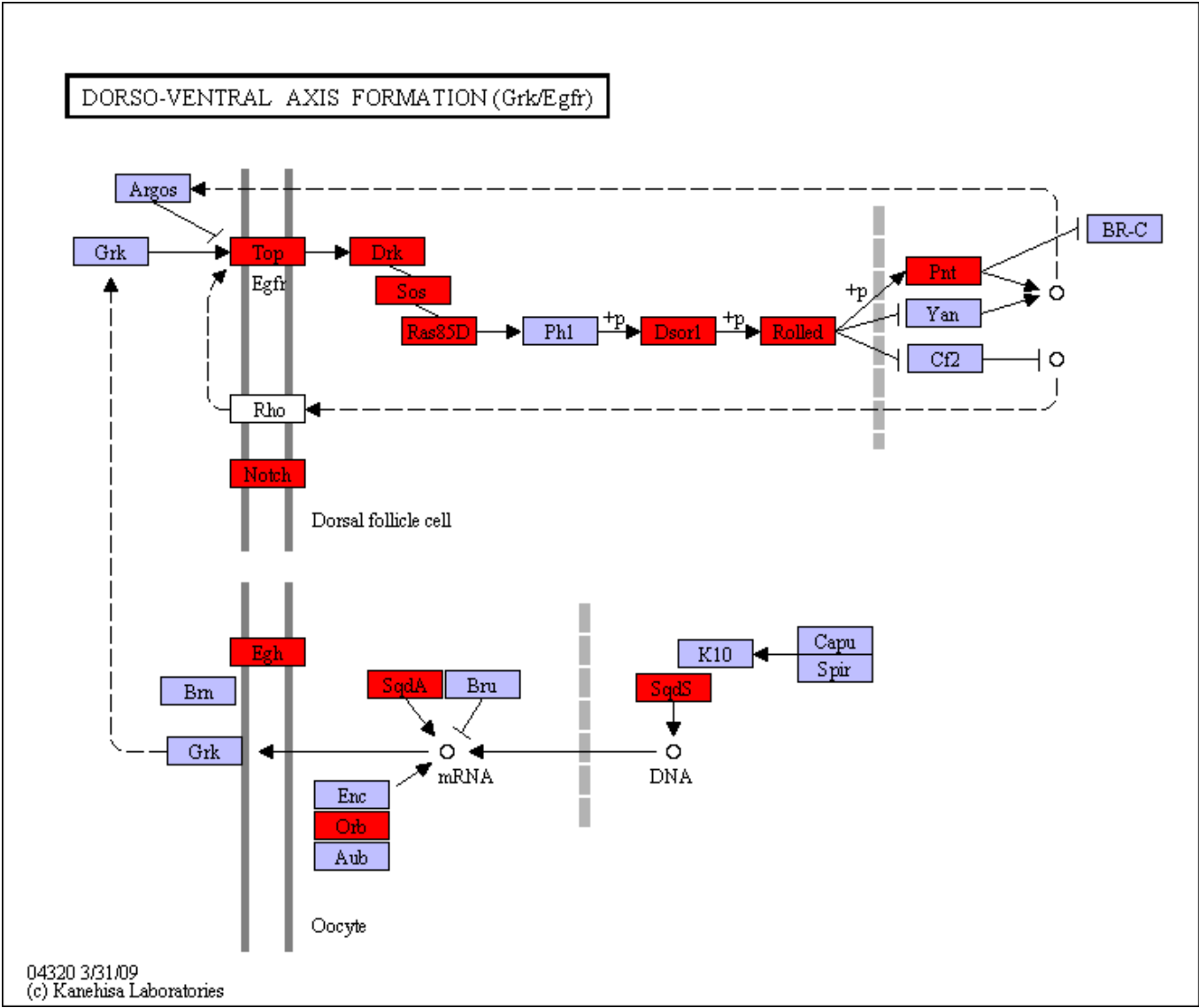


Figure 127: ko04320 Dorso-ventral axis formation



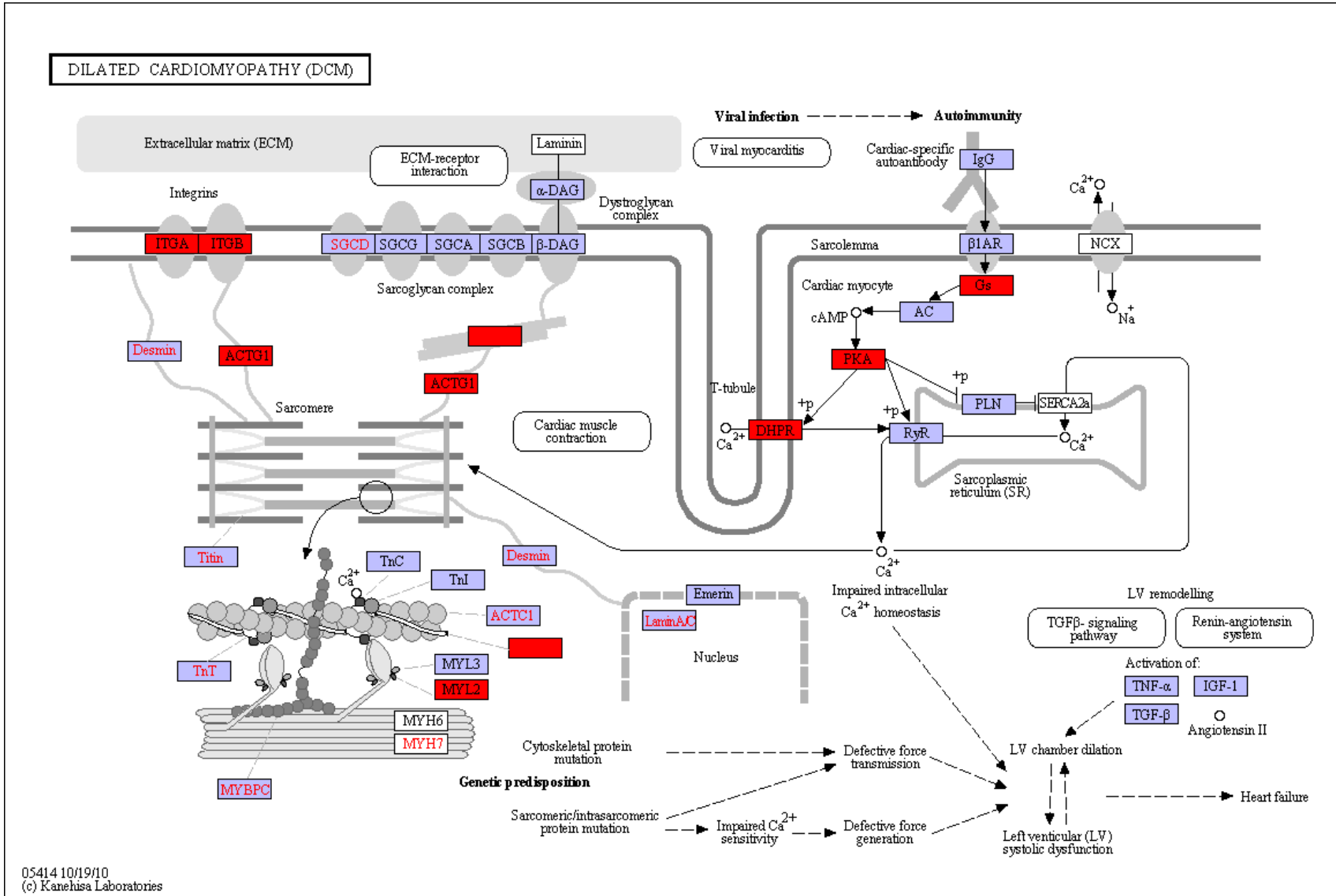


Figure 128: ko05414 Dilated cardiomyopathy

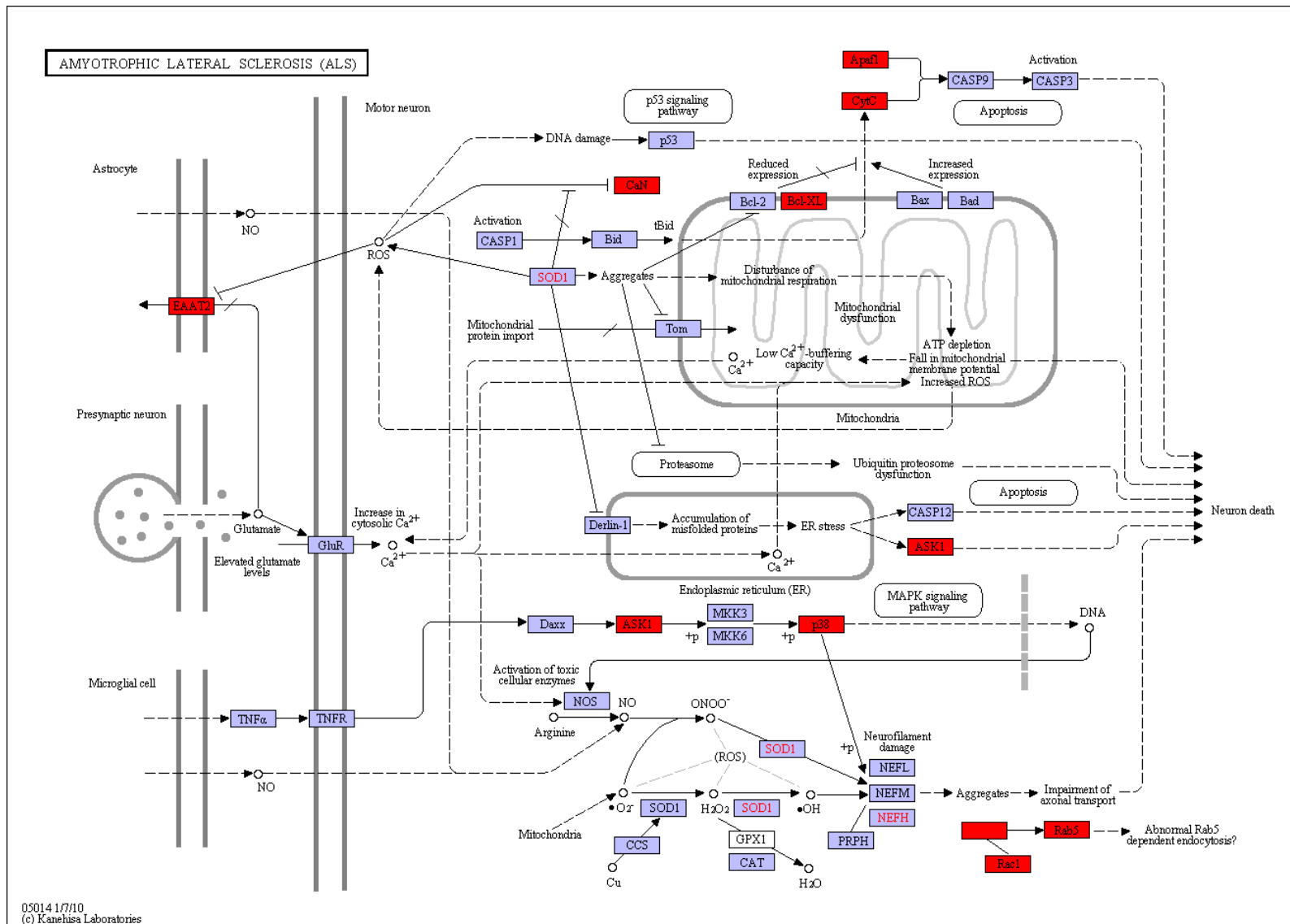


Figure 129: ko05014 Amyotrophic lateral sclerosis (ALS)

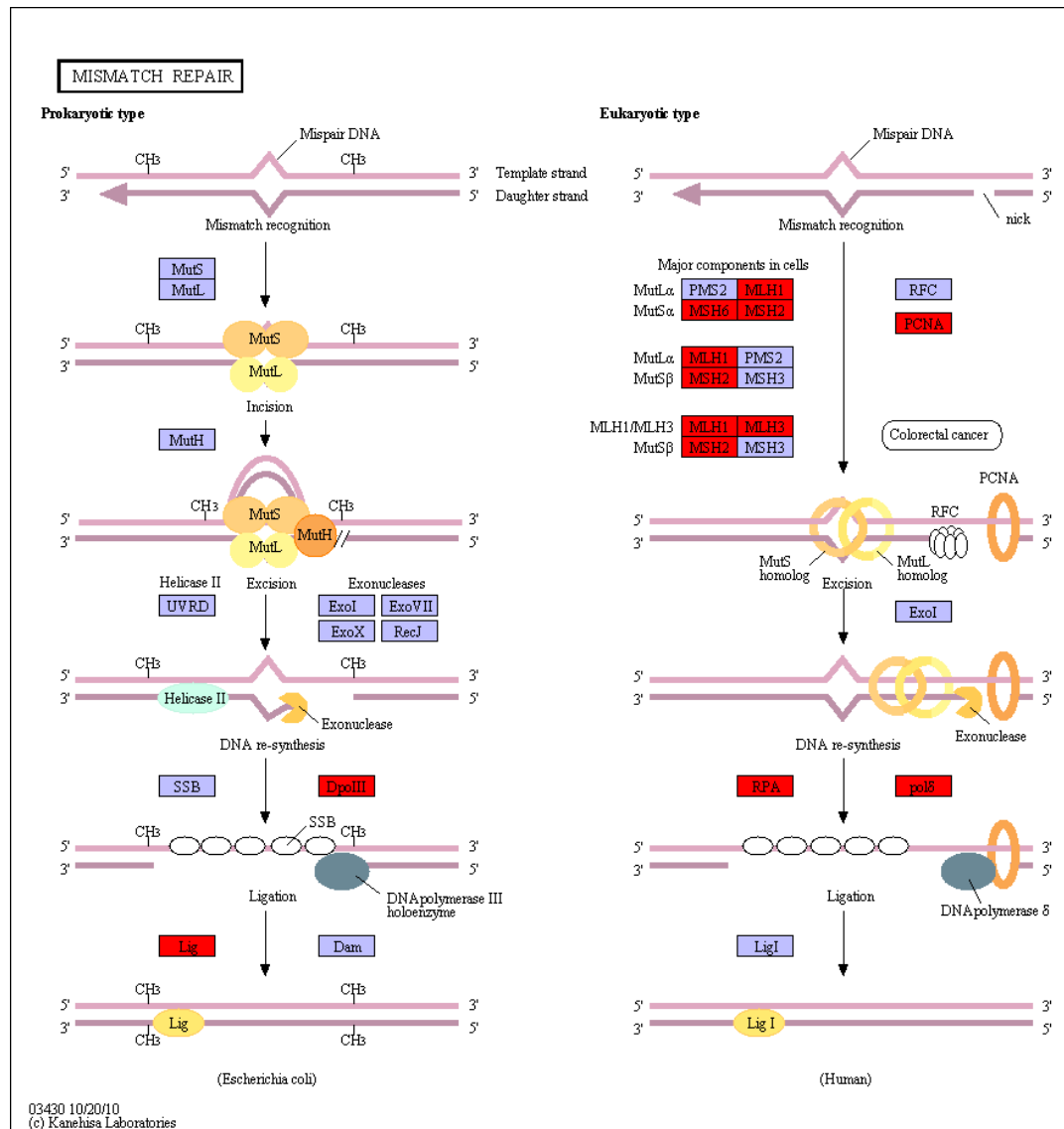


Figure 130: ko03430 Mismatch repair



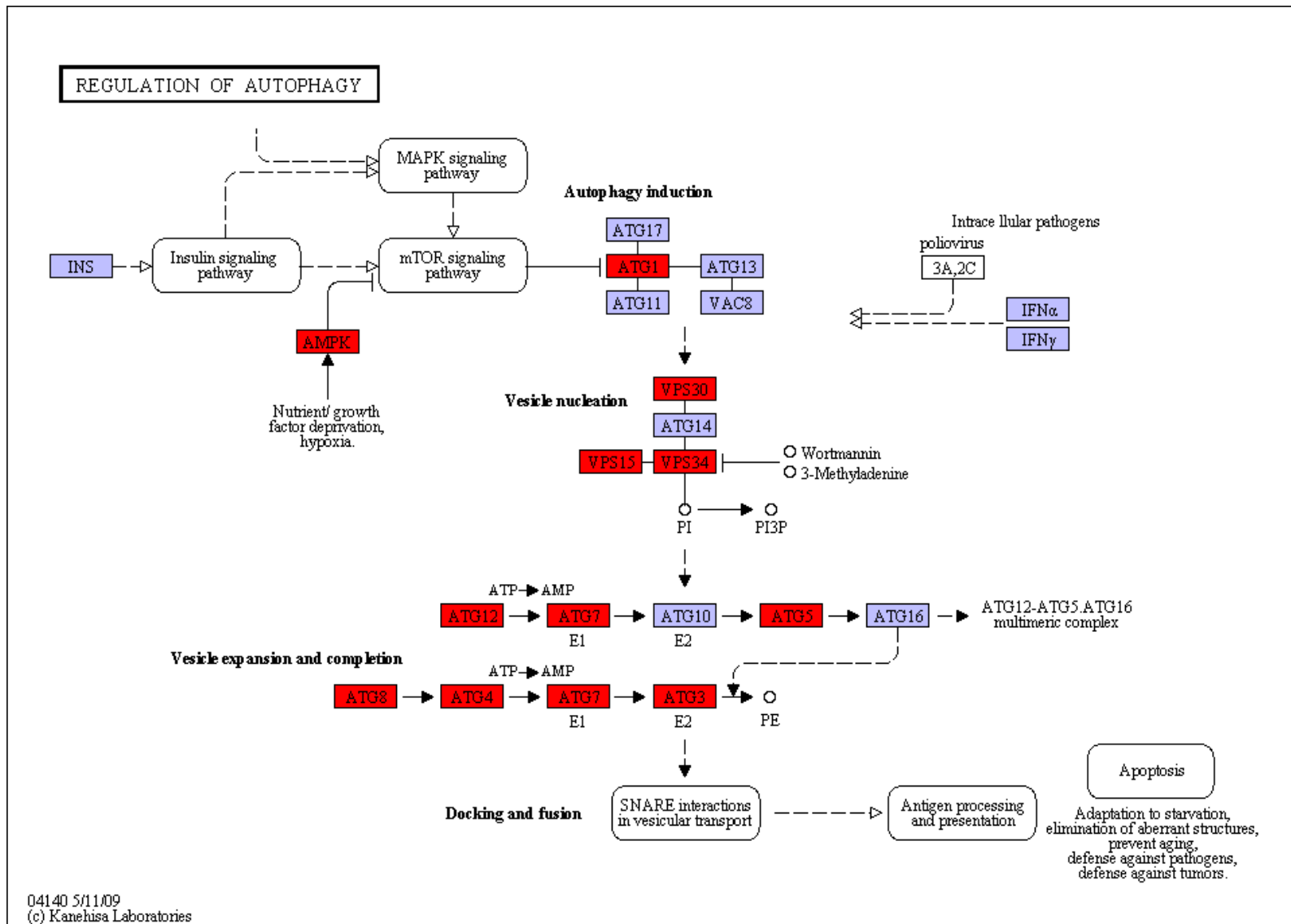


Figure 132: ko04140 Regulation of autophagy



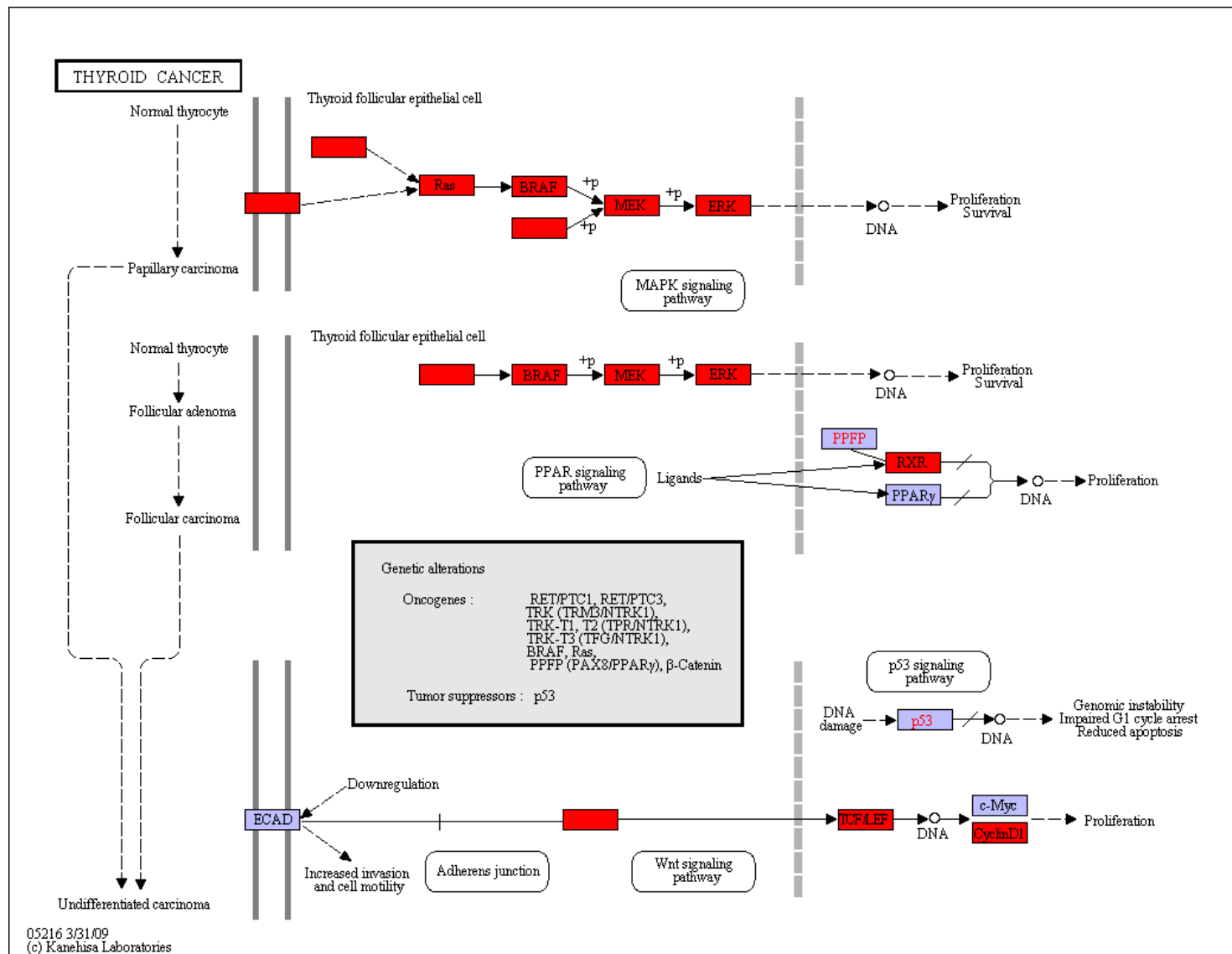


Figure 134: ko05216 Thyroid cancer

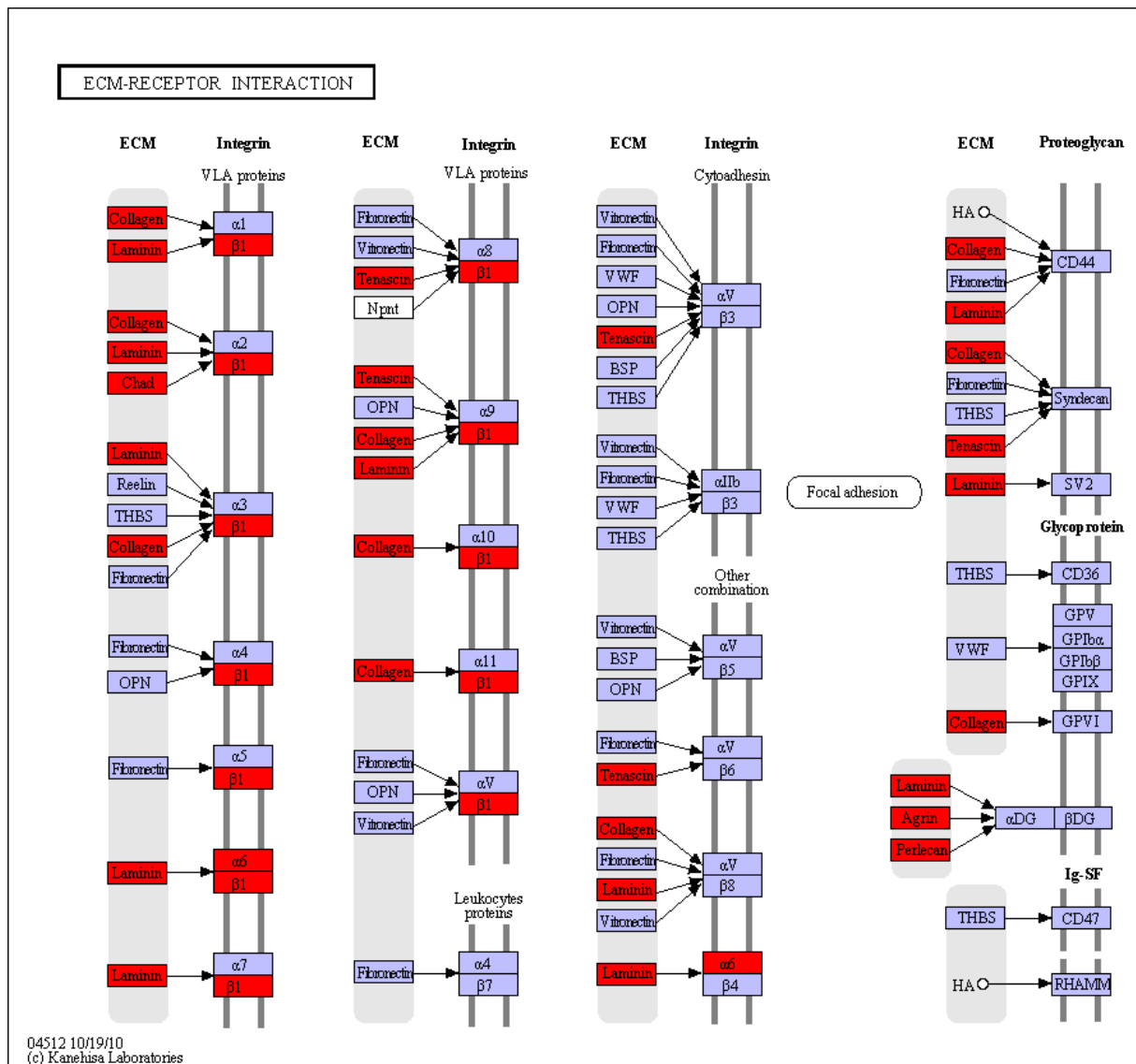


Figure 135: ko04512 ECM-receptor interaction



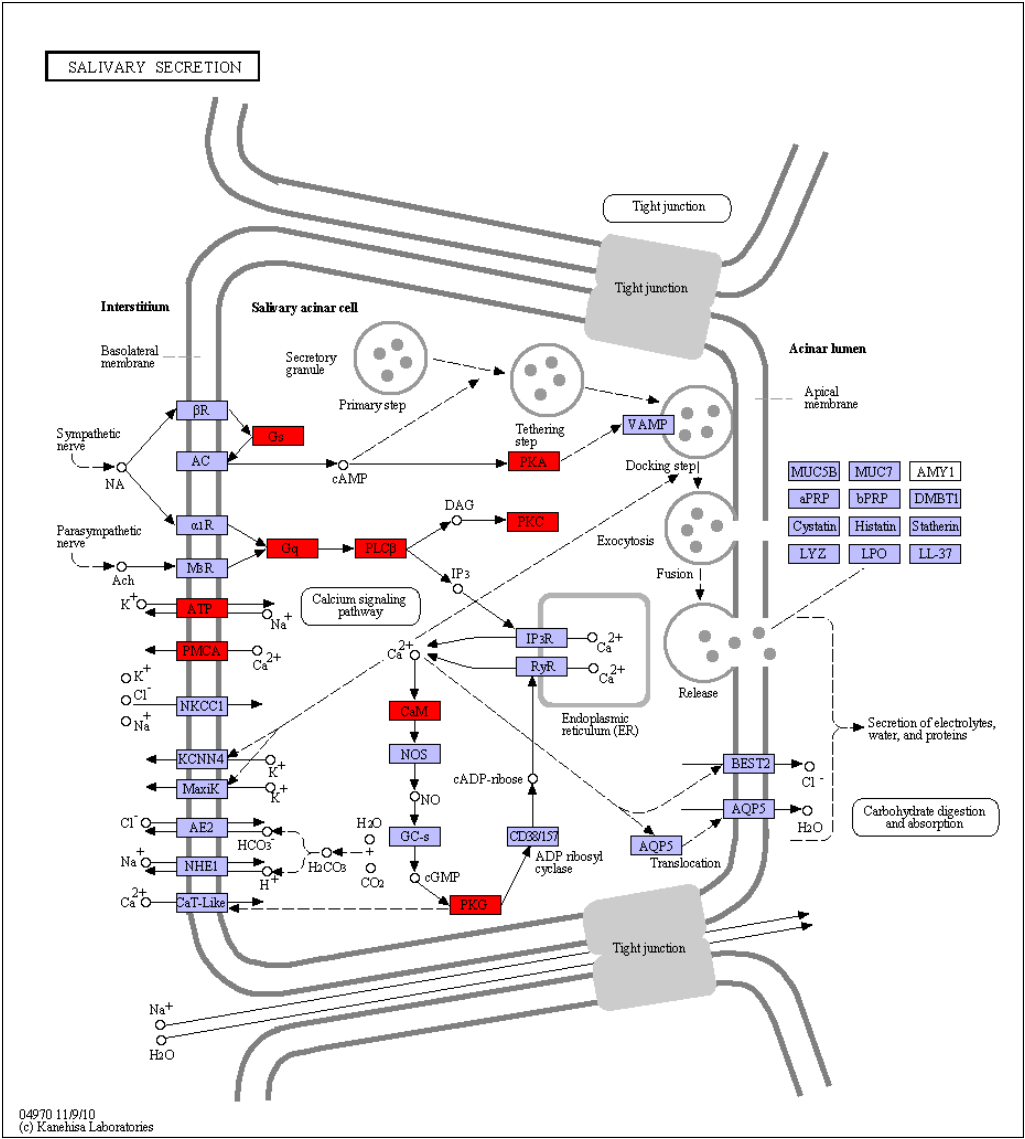


Figure 136: ko04970 Salivary secretion



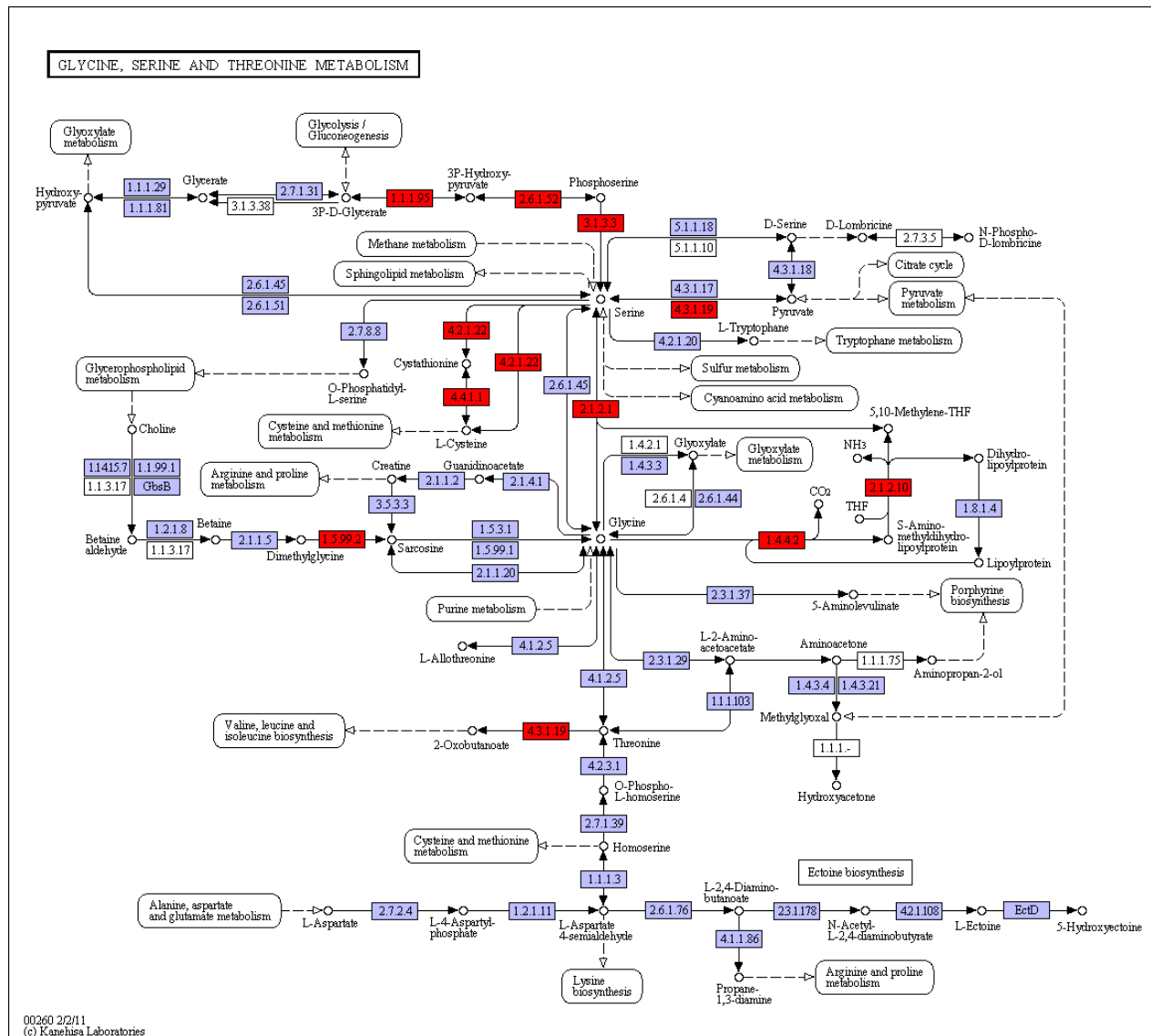


Figure 138: ko00260 Glycine, serine and threonine metabolism

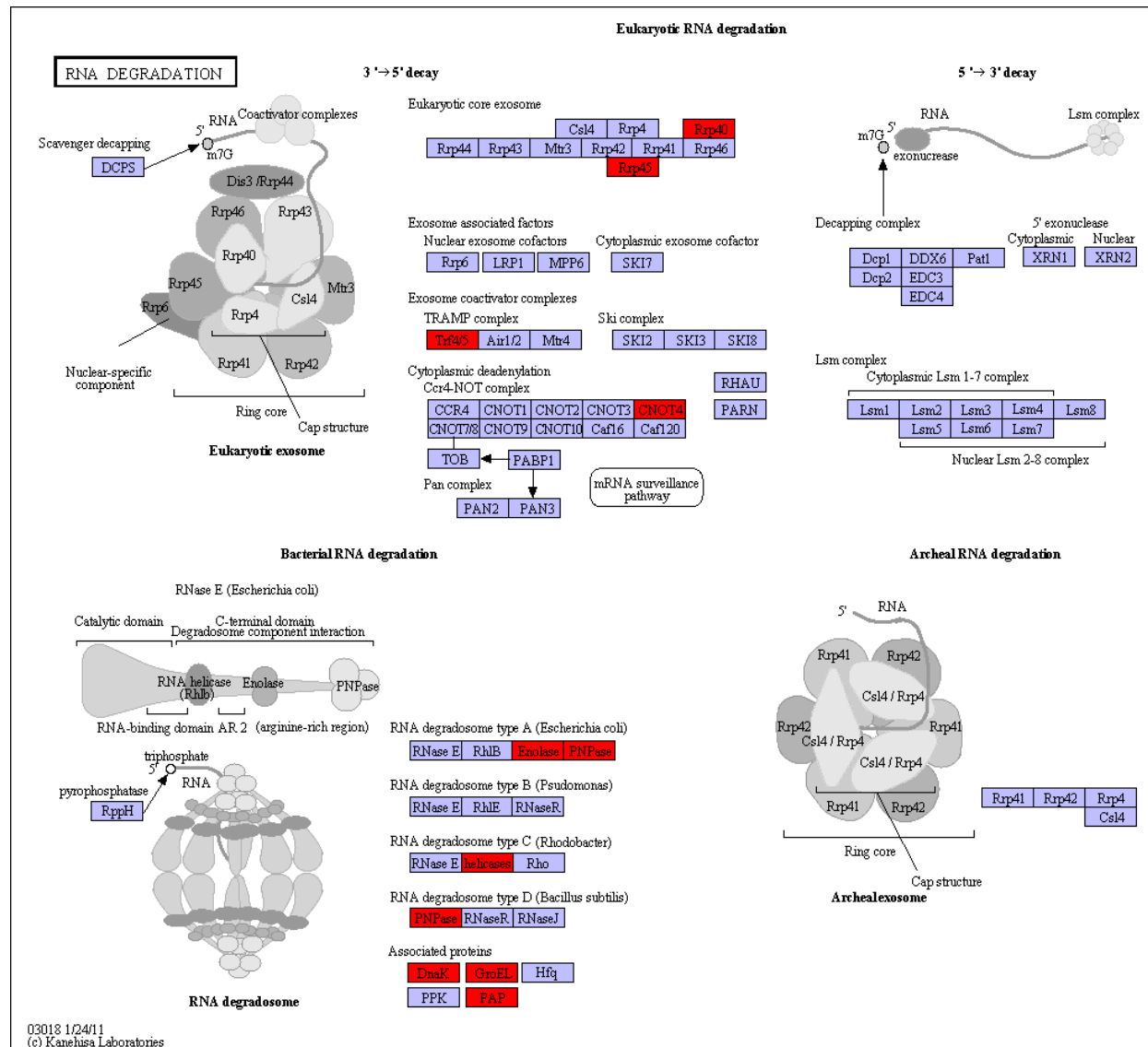


Figure 139: ko03018 RNA degradation

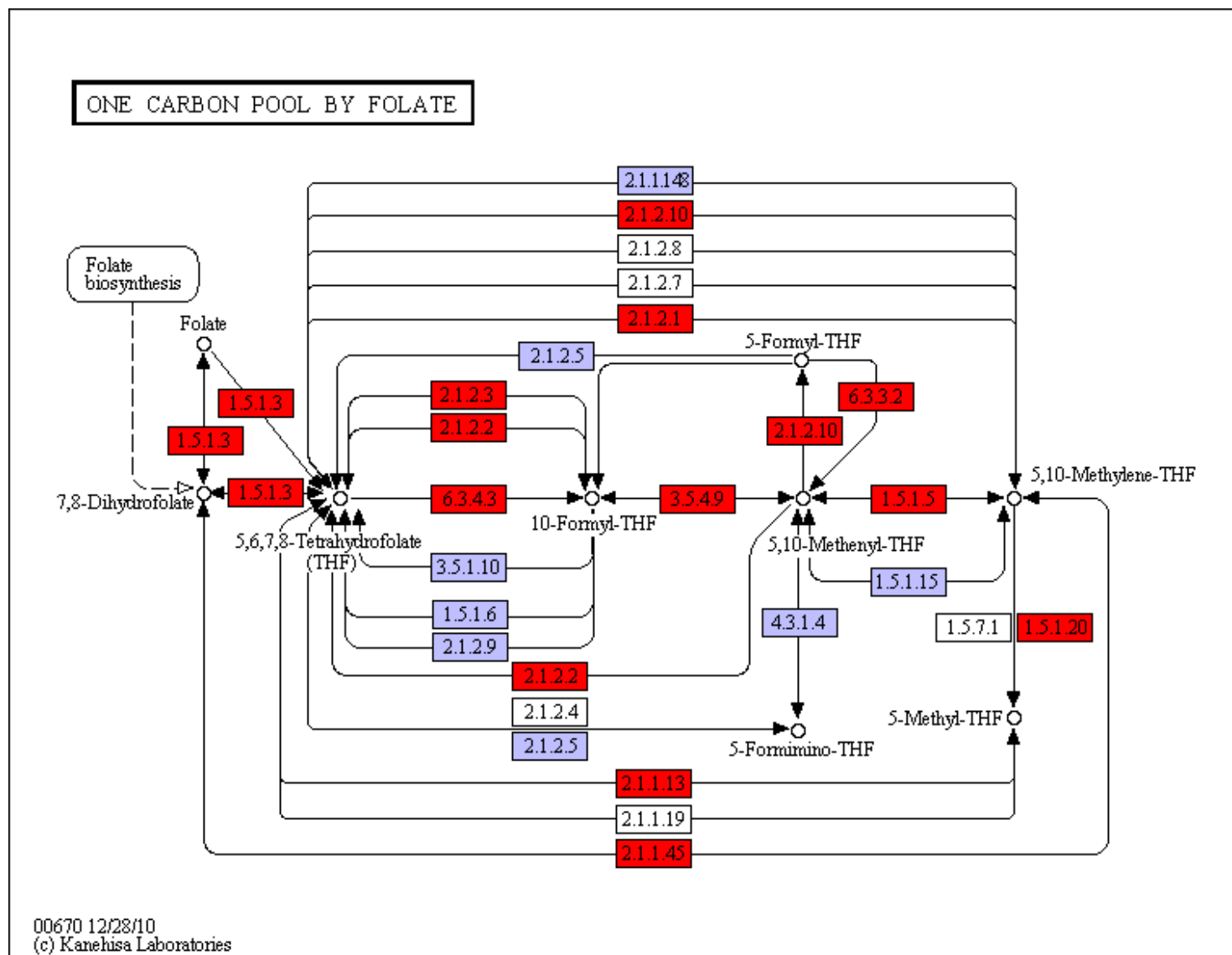


Figure 140: ko00670 One carbon pool by folate

GLYCOSAMINOGLYCAN BIOSYNTHESIS - HEPARAN SULFATE

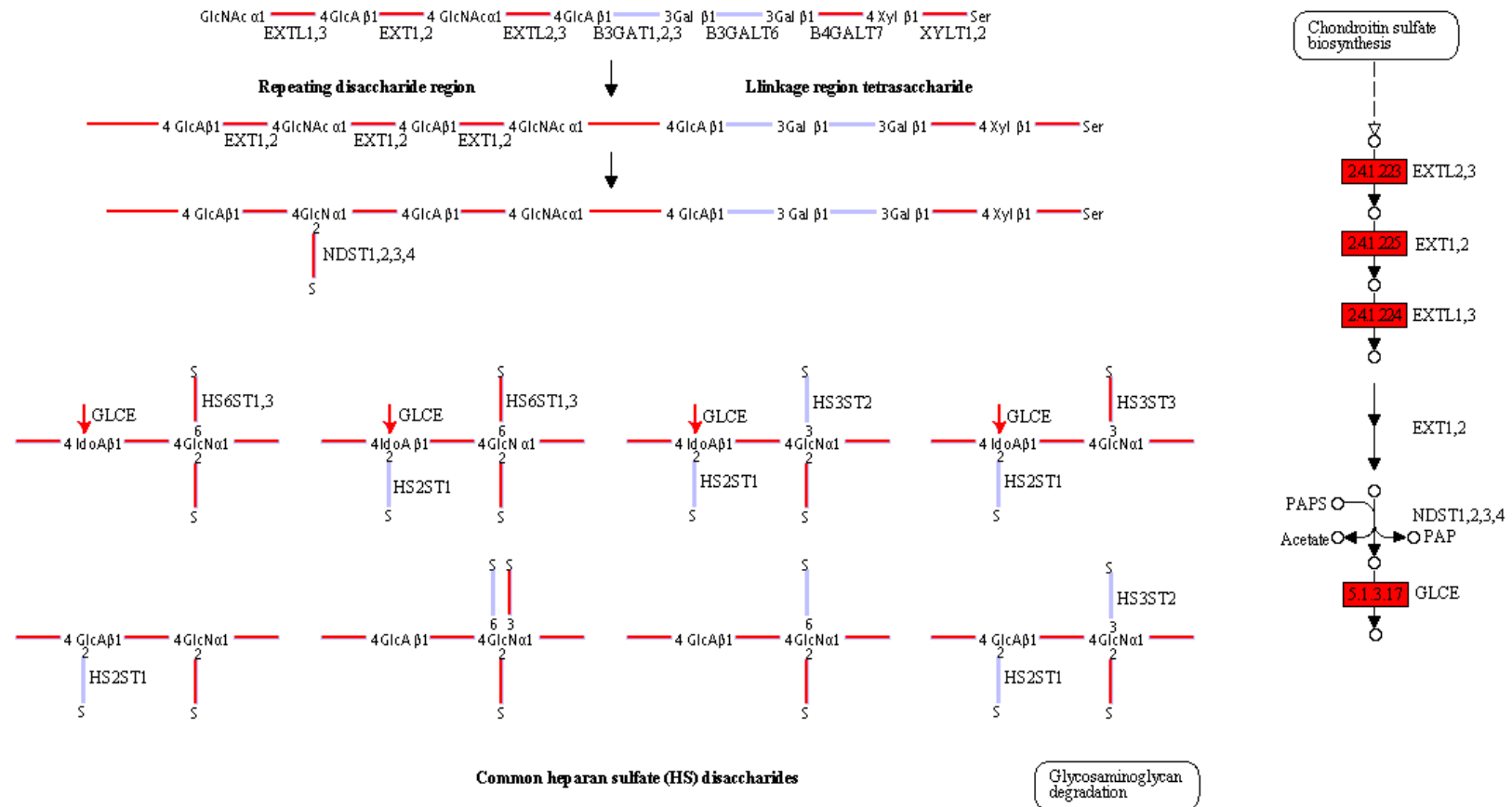


Figure 141: ko00534 Glycosaminoglycan biosynthesis - heparan sulfate



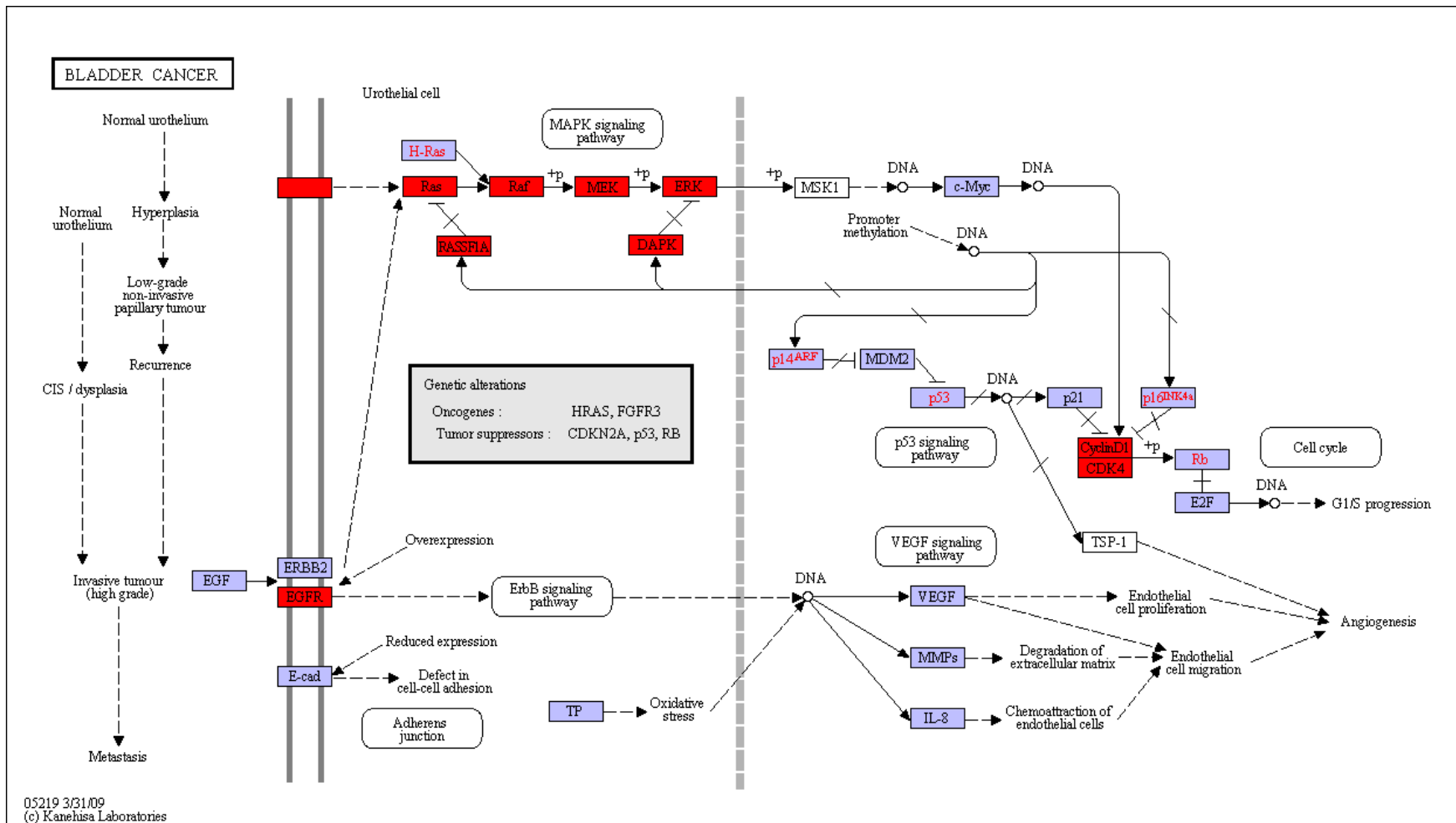


Figure 143: ko05219 Bladder cancer



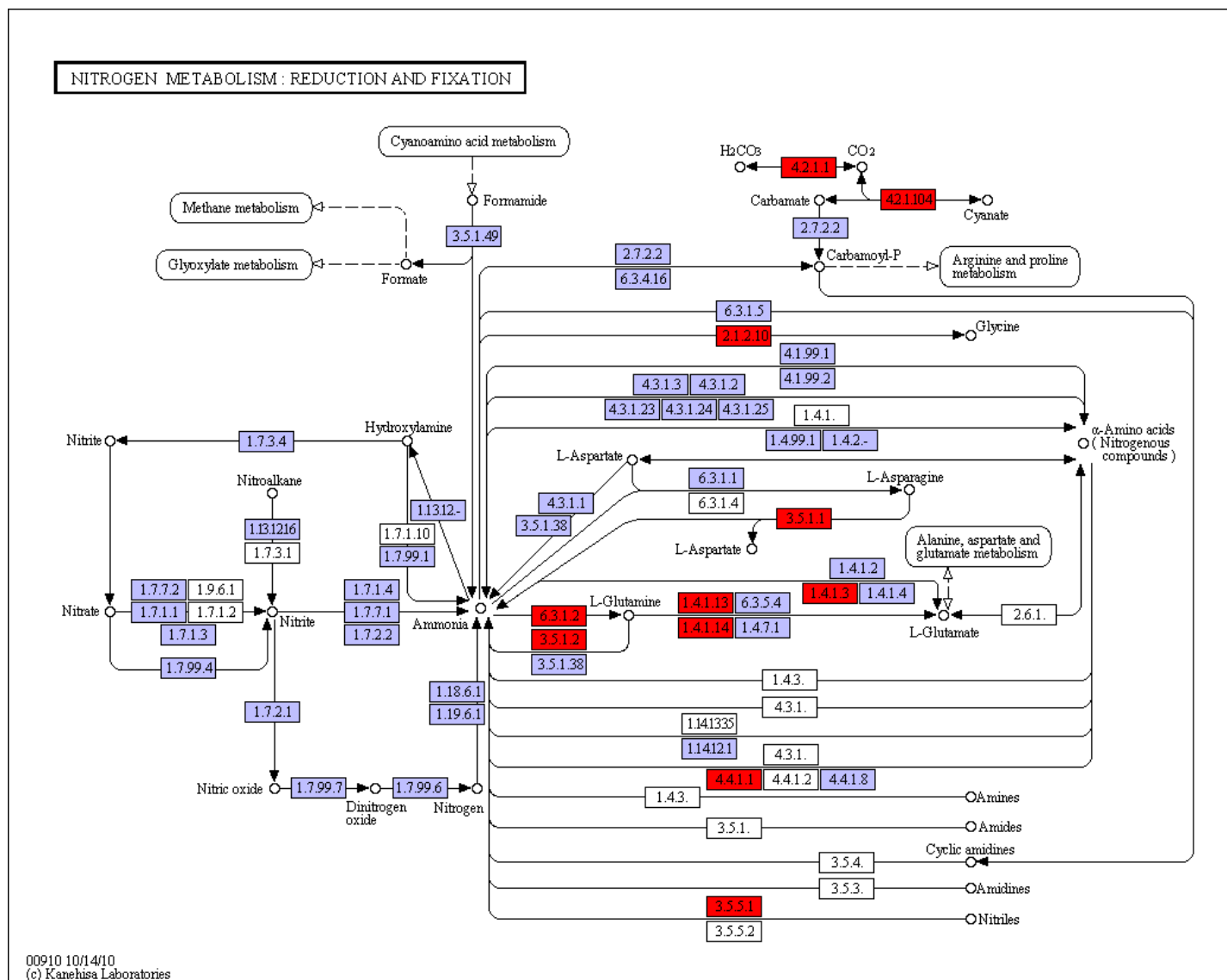


Figure 144: ko00910 Nitrogen metabolism

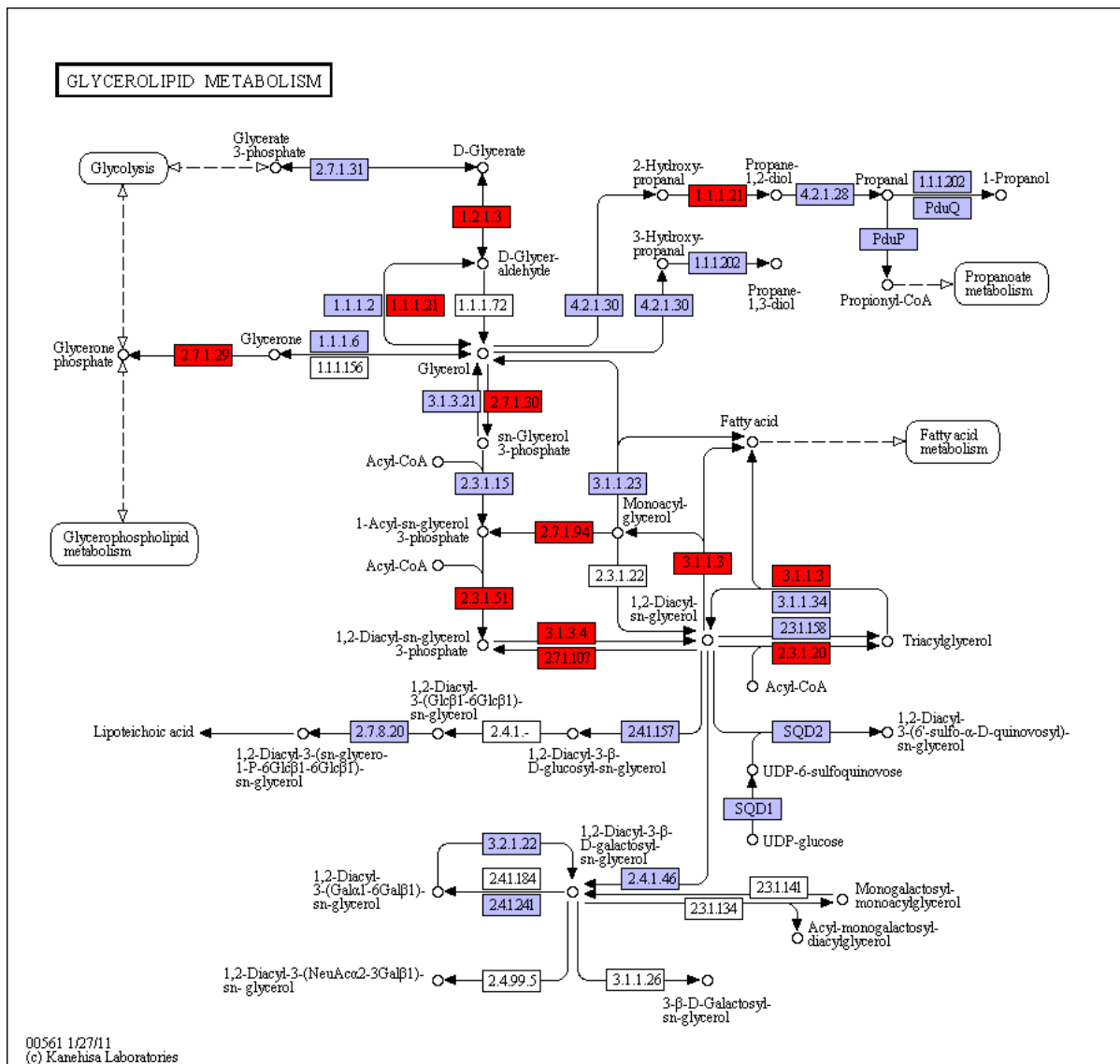


Figure 145: ko00561 Glycerolipid metabolism

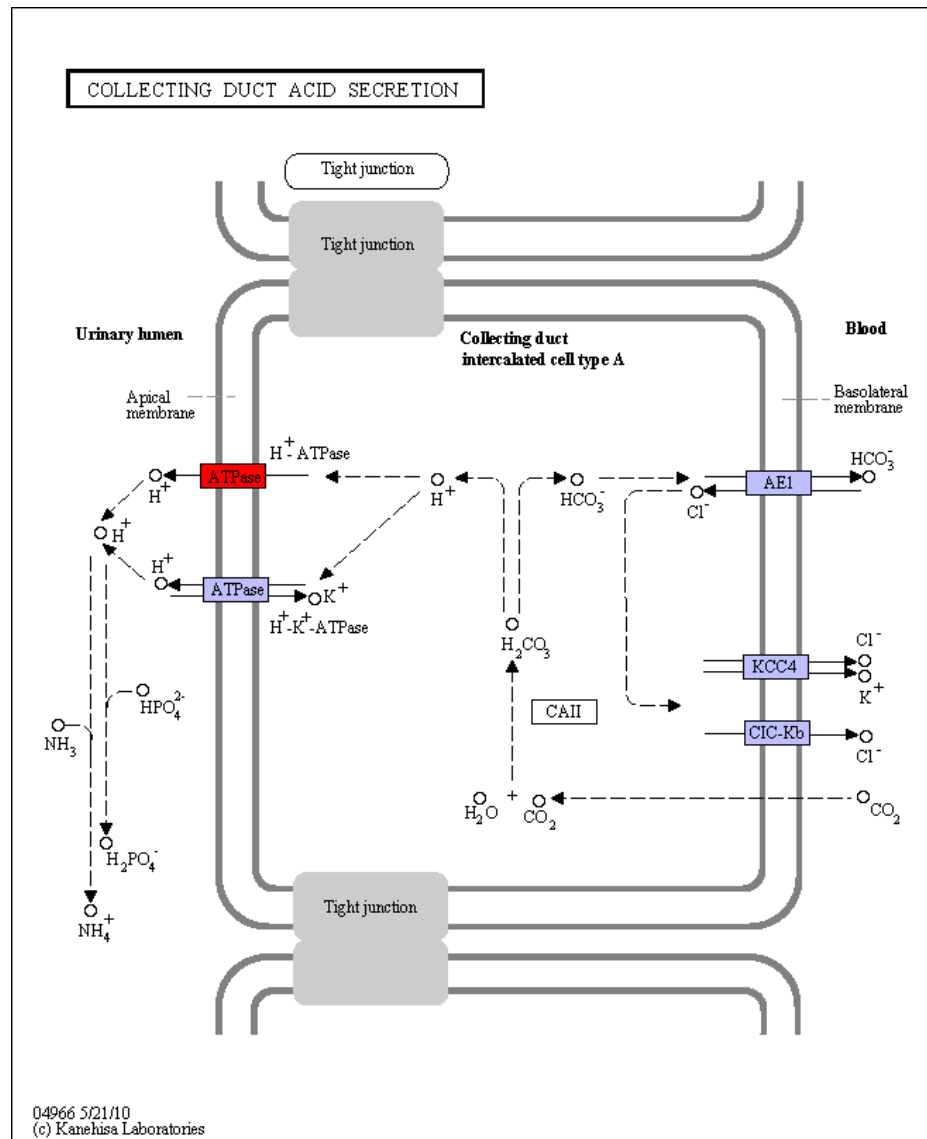


Figure 146: ko04966 Collecting duct acid secretion



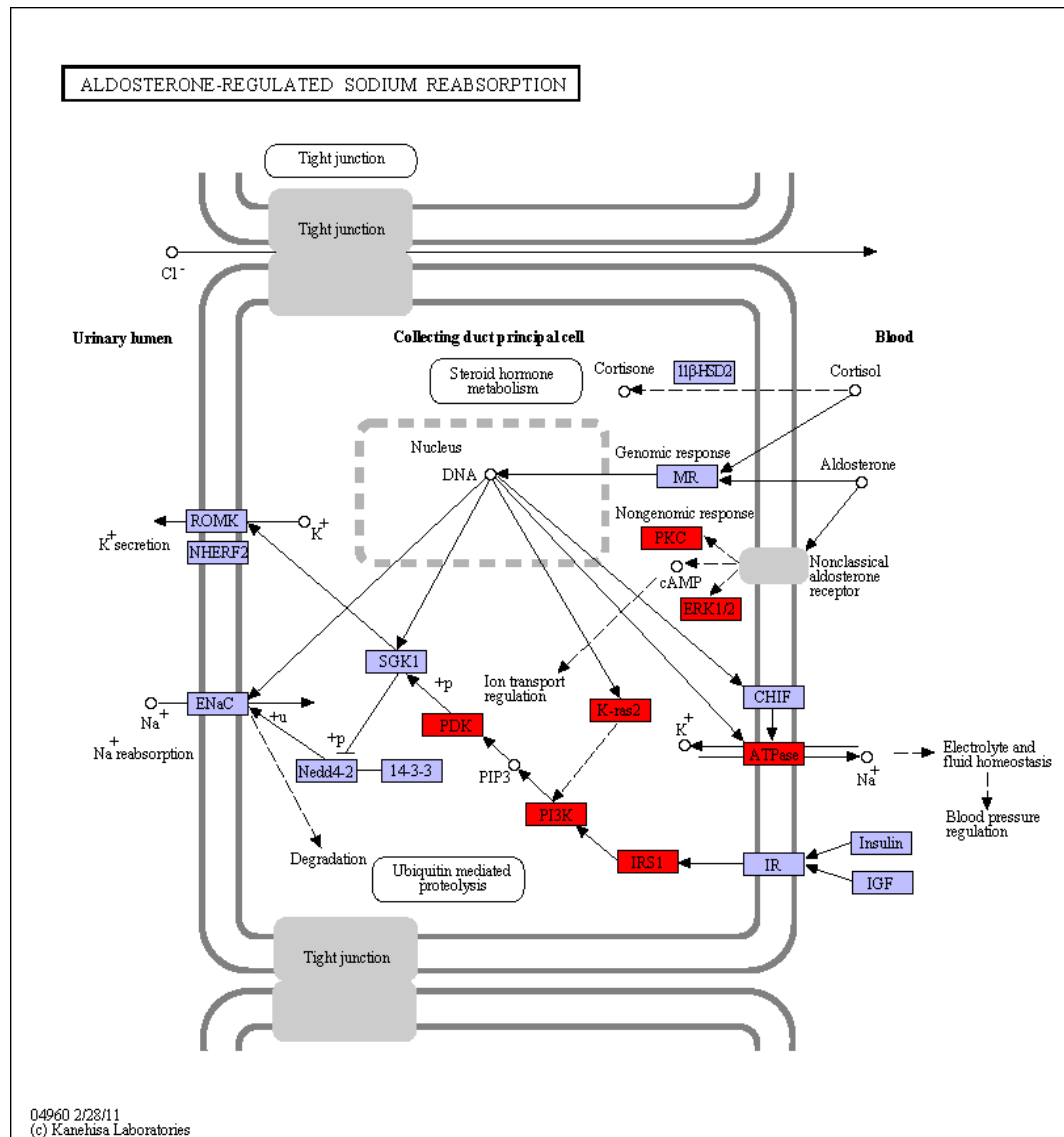


Figure 148: ko04960 Aldosterone-regulated sodium reabsorption

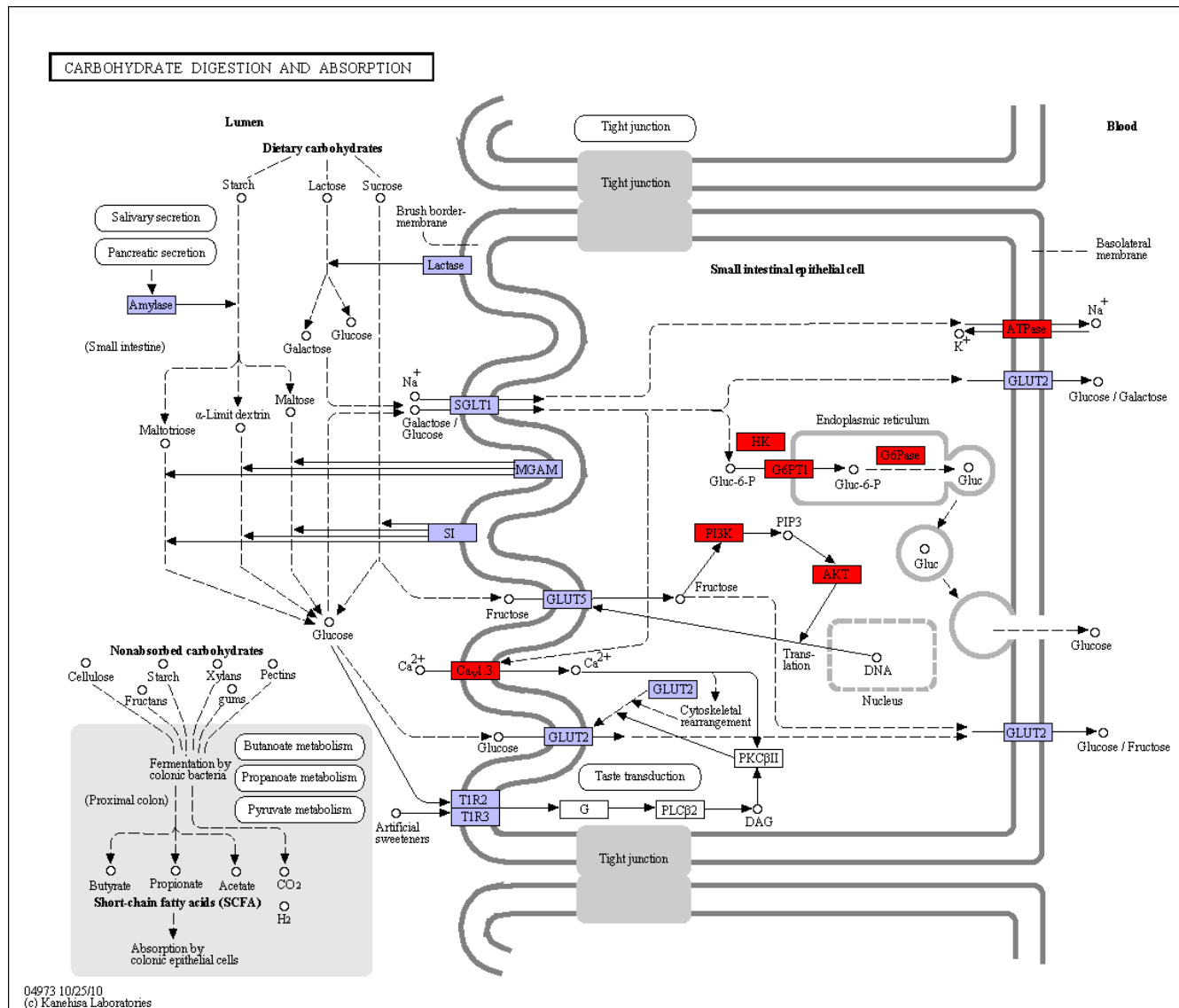


Figure 149: ko04973 Carbohydrate digestion and absorption

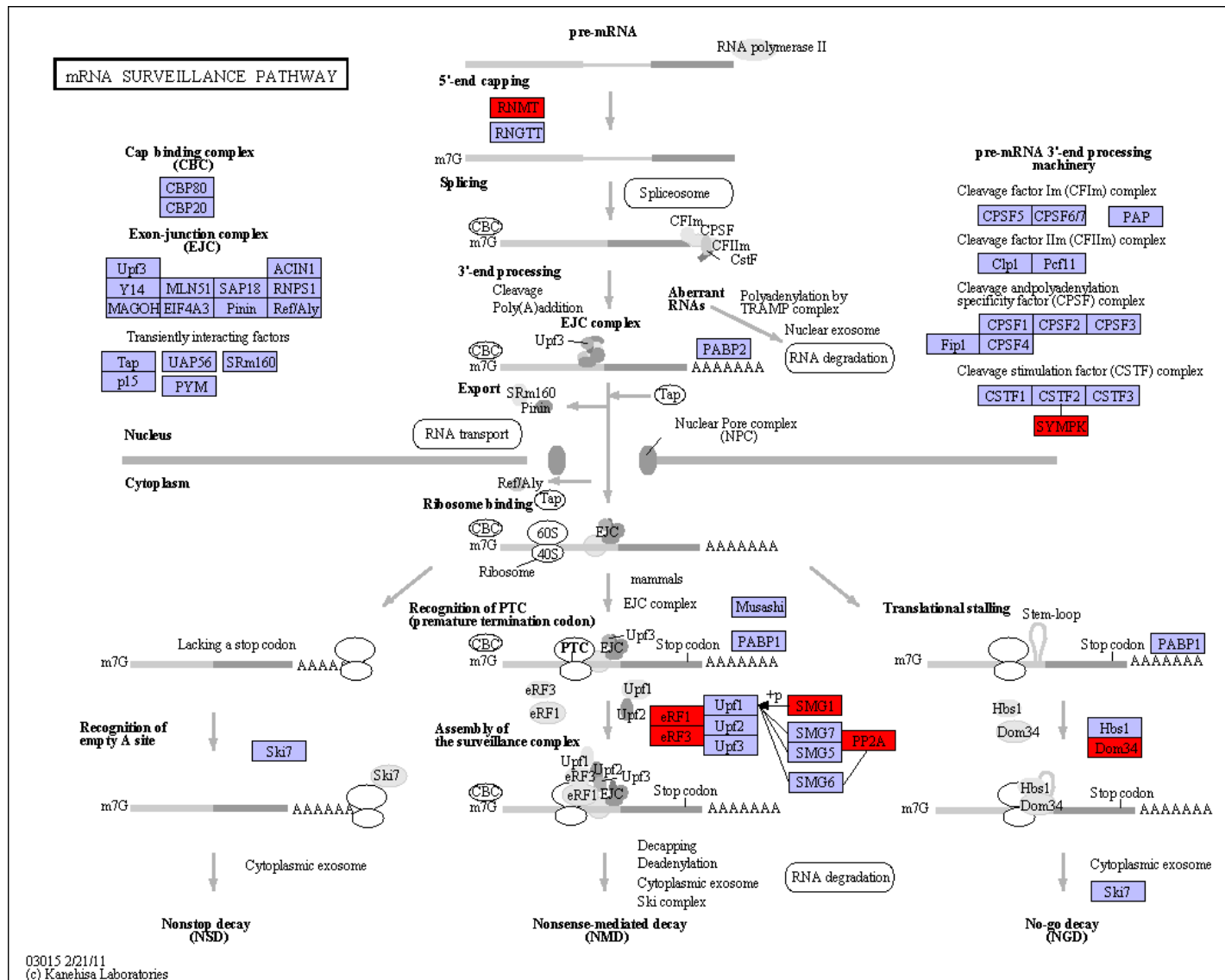


Figure 150: ko03015 mRNA surveillance pathway





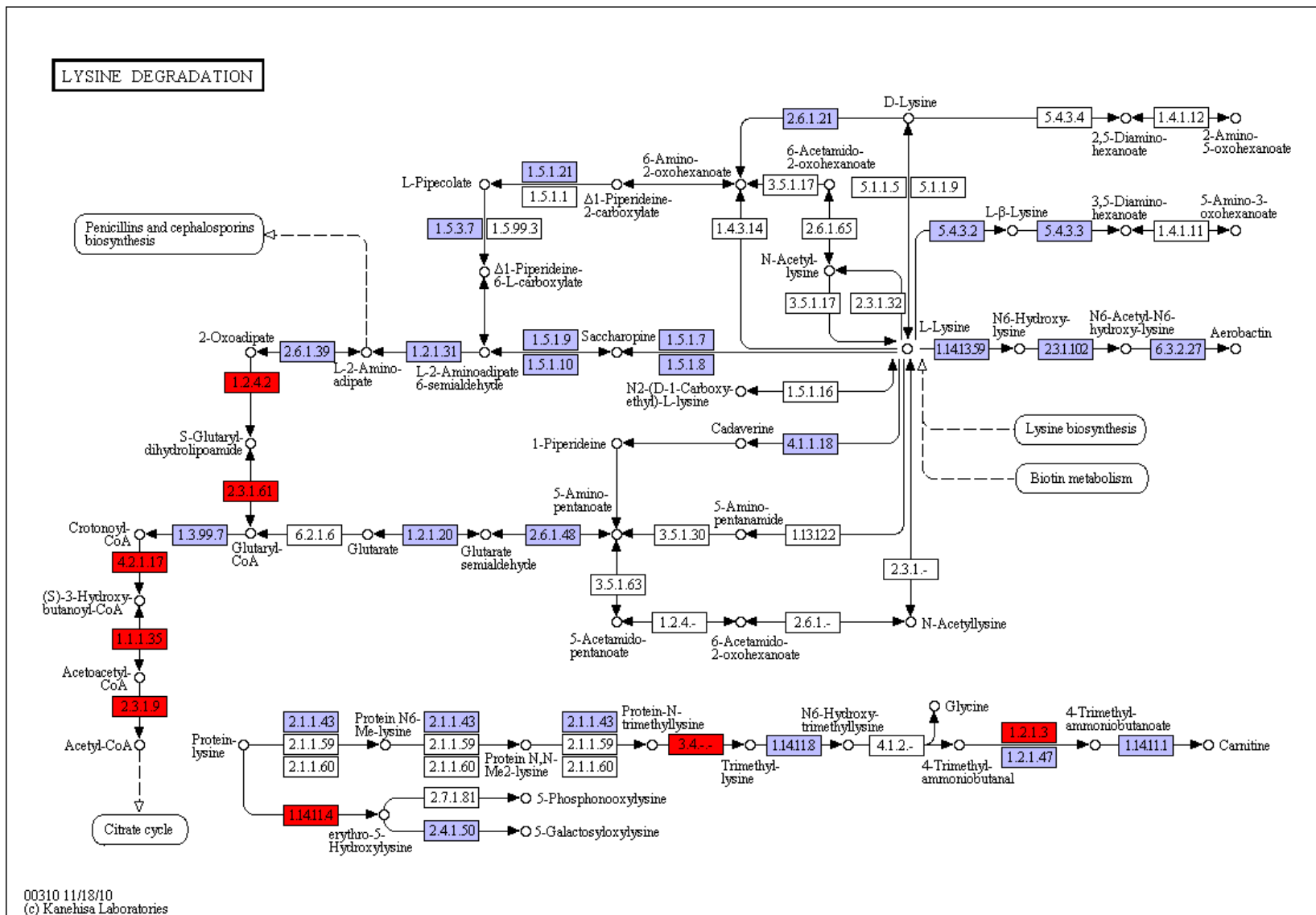


Figure 152: ko00310 Lysine degradation

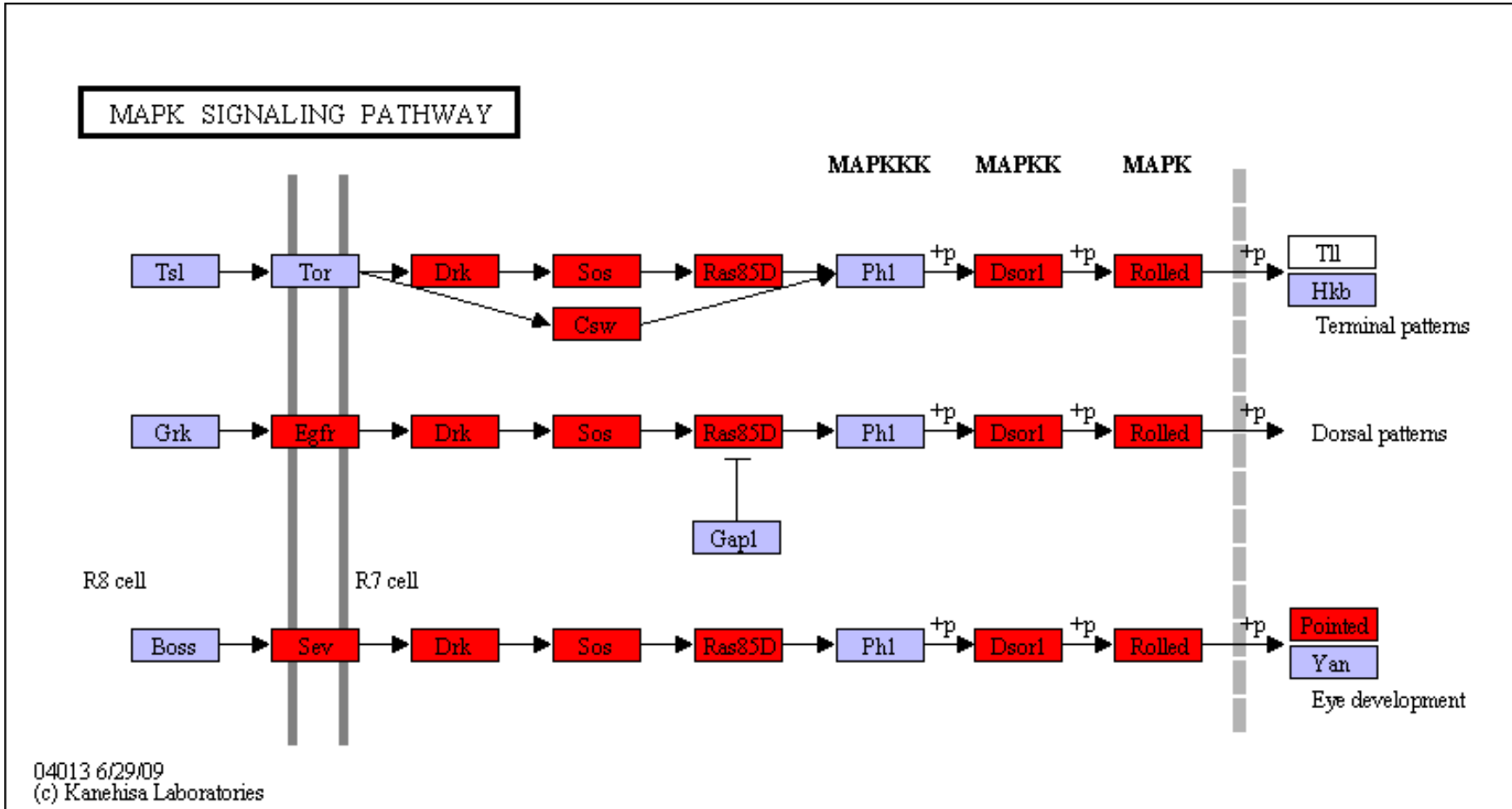
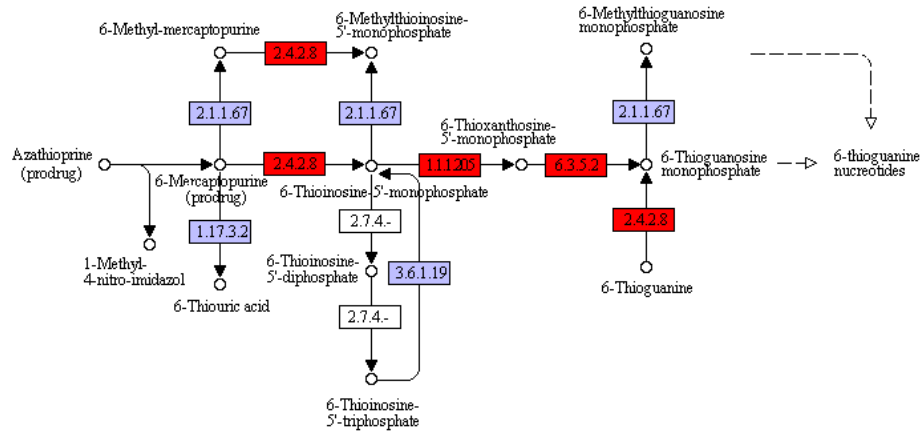


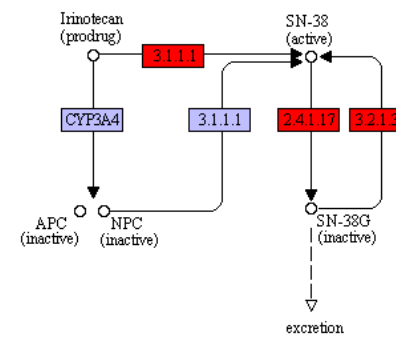
Figure 153: ko04013 MAPK signaling pathway - fly

DRUG METABOLISM - OTHER ENZYMES

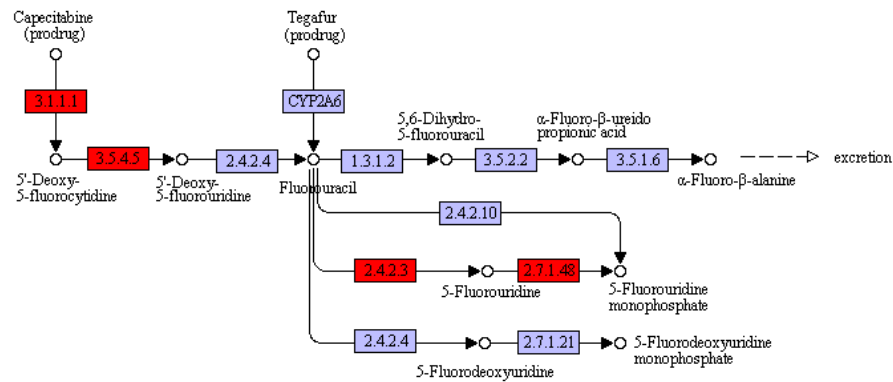
Azathioprine & 6-Mercaptopurine



Irinotecan



Fluorouracil



Isoniazid

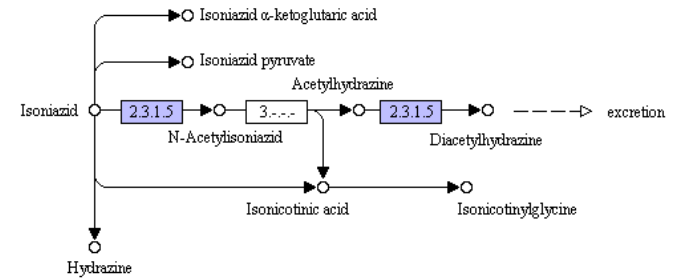


Figure 154: ko00983 Drug metabolism - other enzymes

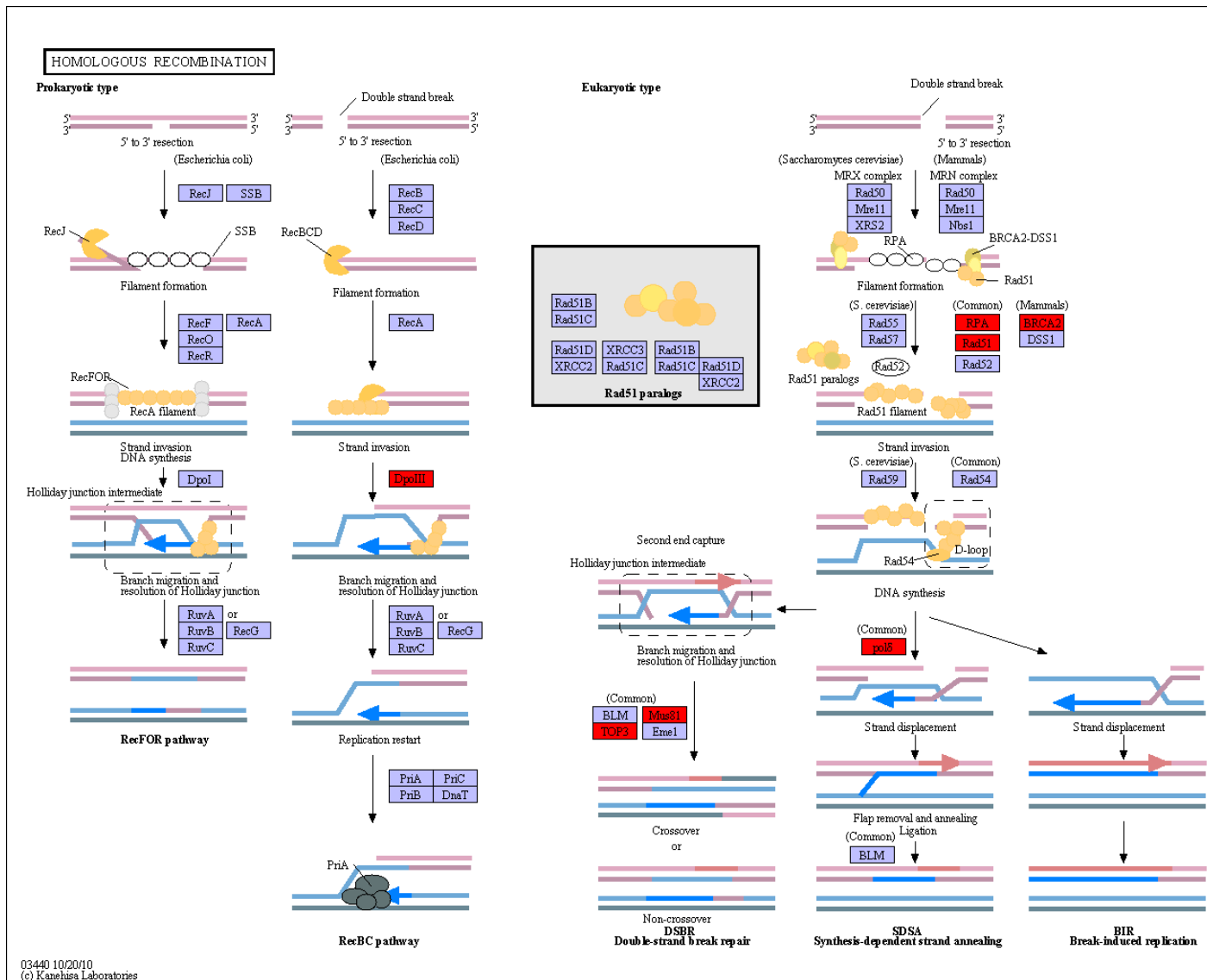


Figure 155: ko03440 Homologous recombination



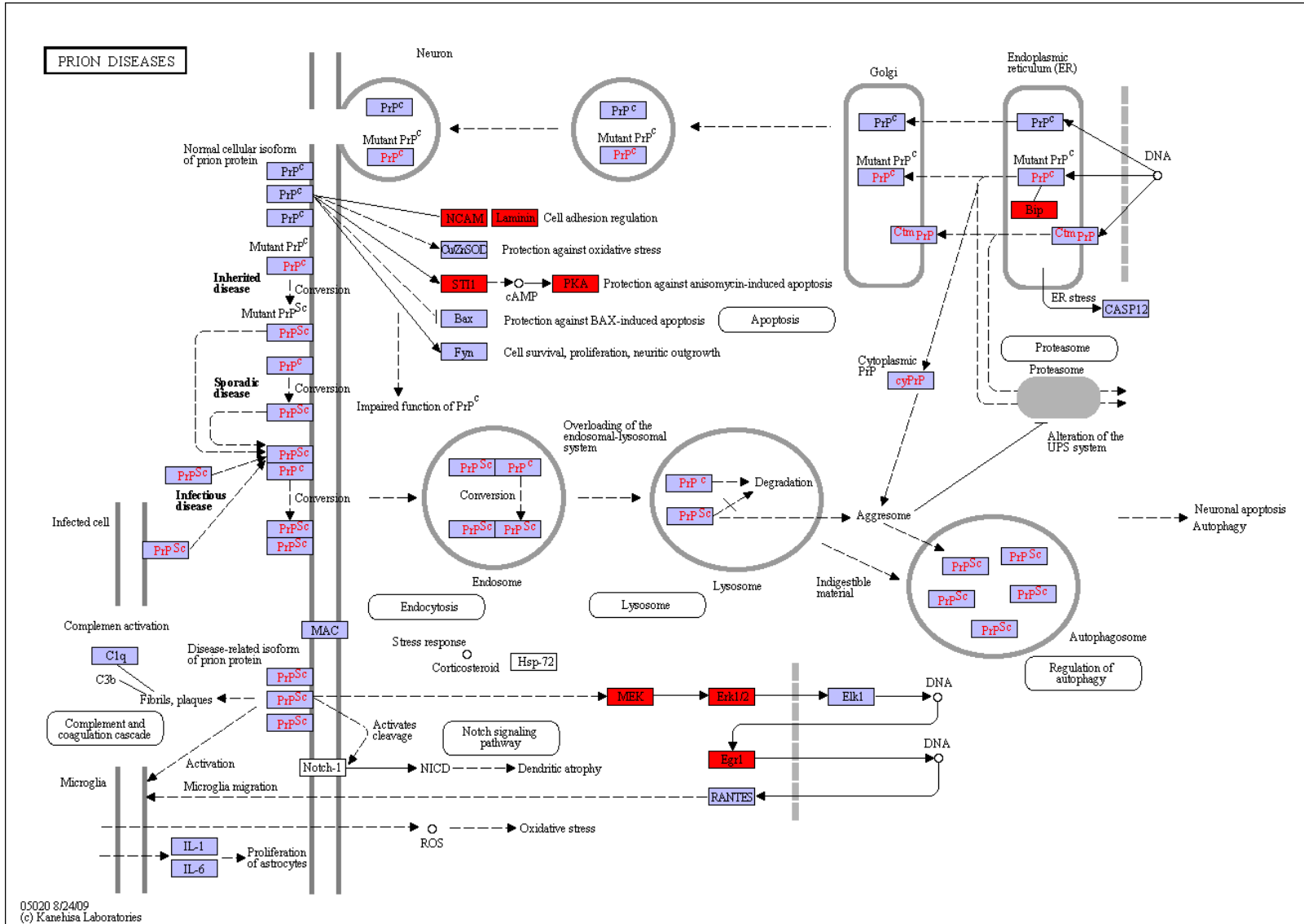


Figure 157: ko05020 Prion diseases



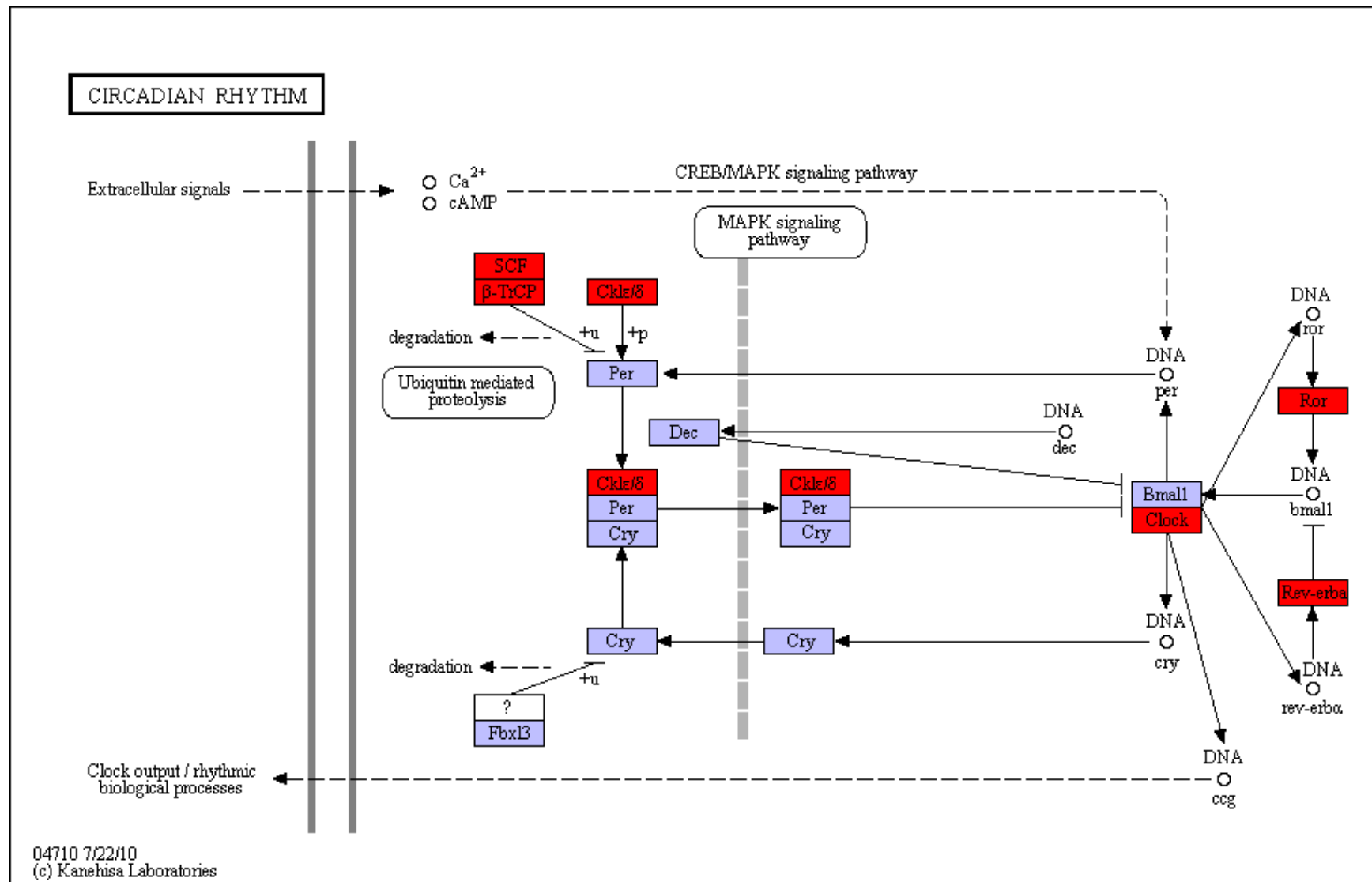


Figure 159: ko04710 Circadian rhythm - mammal



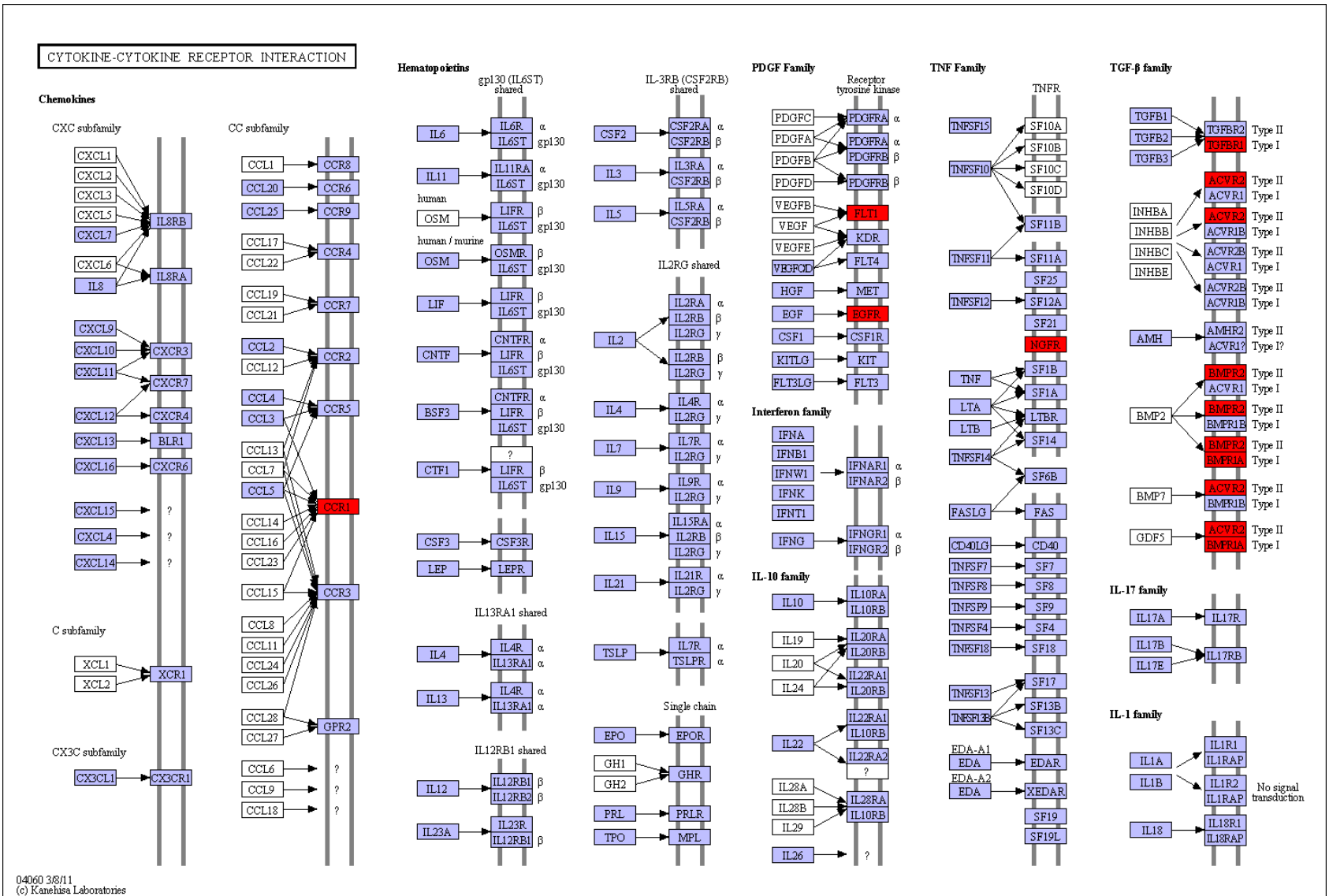


Figure 160: ko04060 Cytokine-cytokine receptor interaction

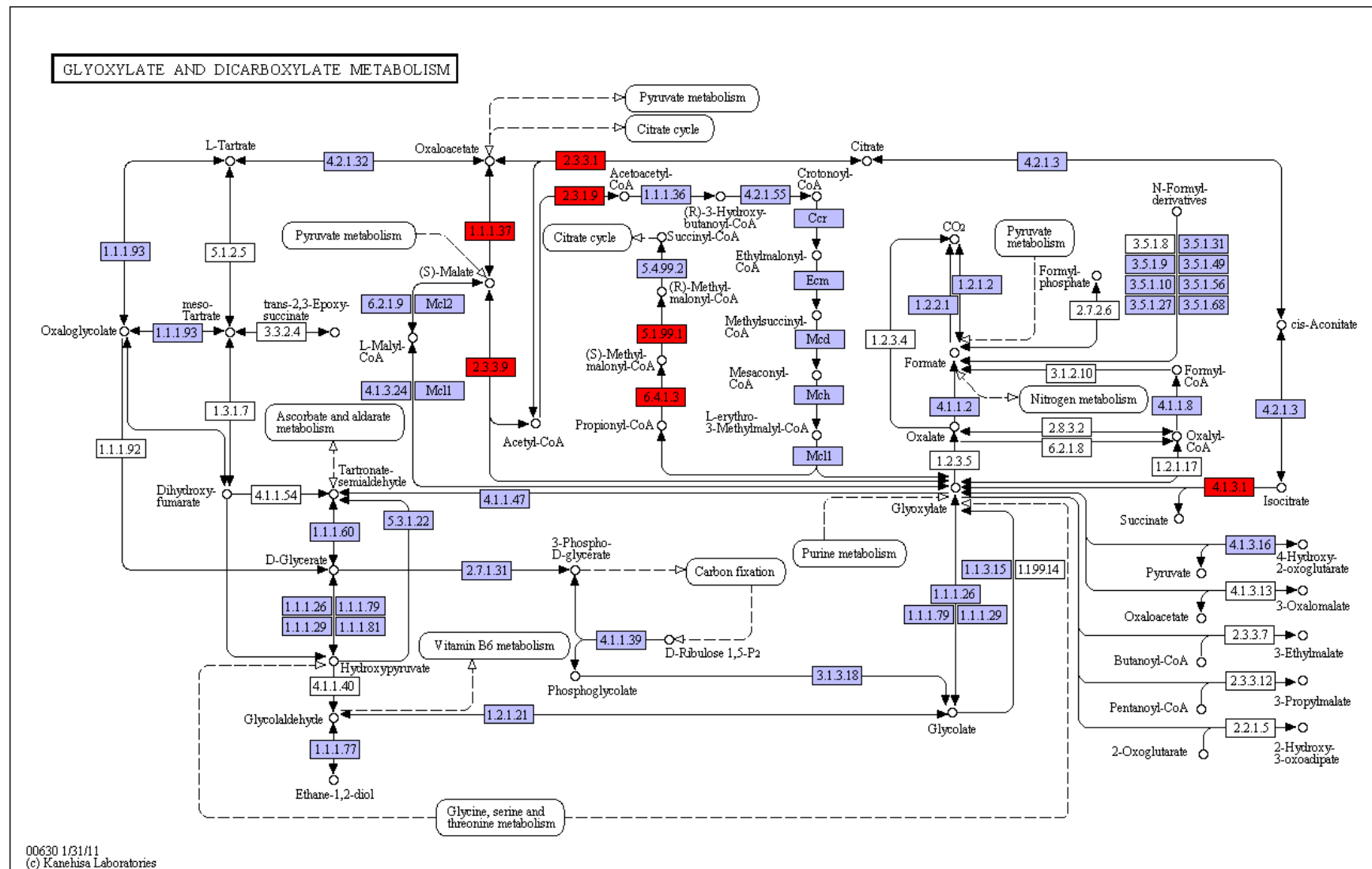


Figure 161: ko00630 Glyoxylate and dicarboxylate metabolism



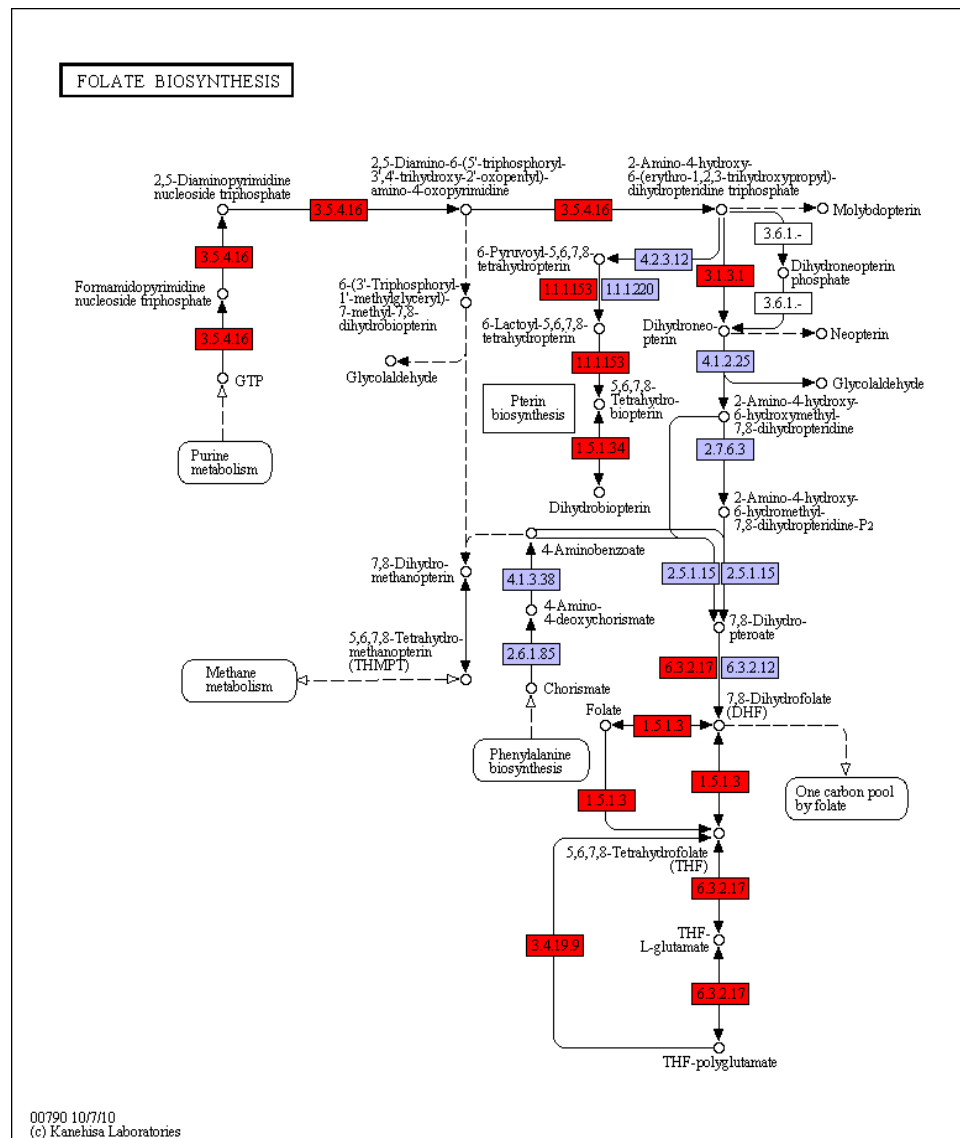


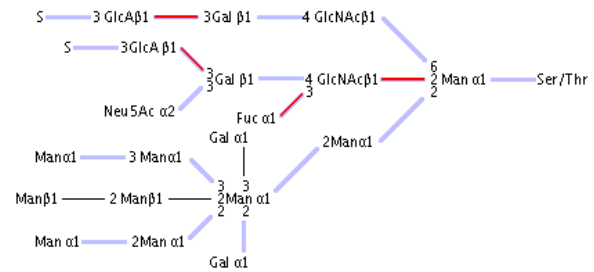
Figure 163: ko00790 Folate biosynthesis

OTHER TYPES OF O-GLYCAN BIOSYNTHESIS

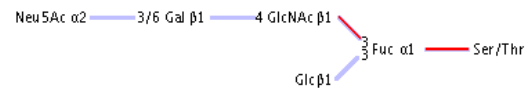
**O-linked GlcNAc type**



**O-linked Man type**



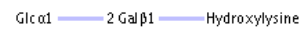
**O-linked Fuc type**



**O-linked Glc type**



**O-linked Gal type**



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Figure 164: ko00514 Other types of O-glycan biosynthesis

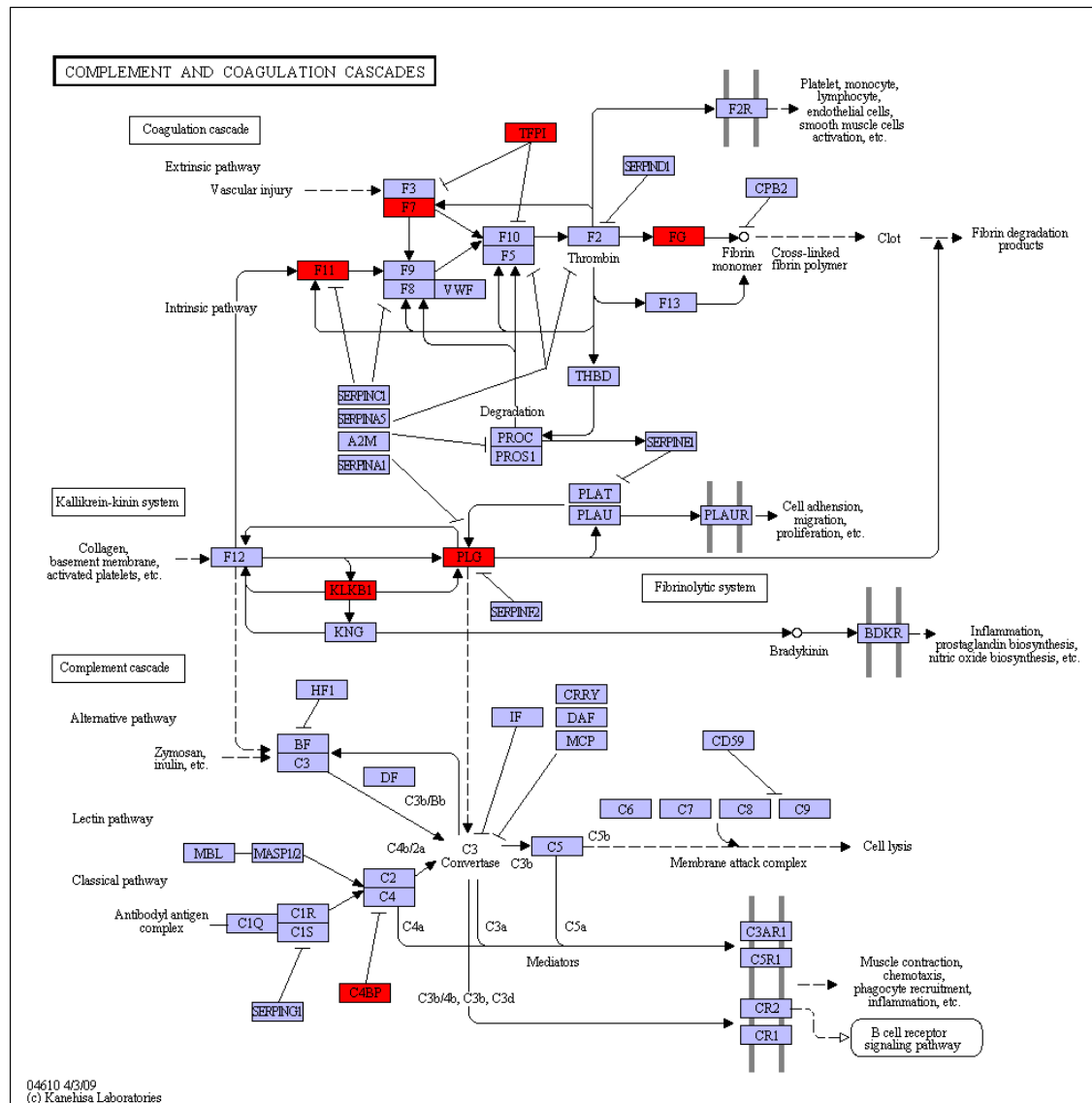


Figure 165: ko04610 Complement and coagulation cascades

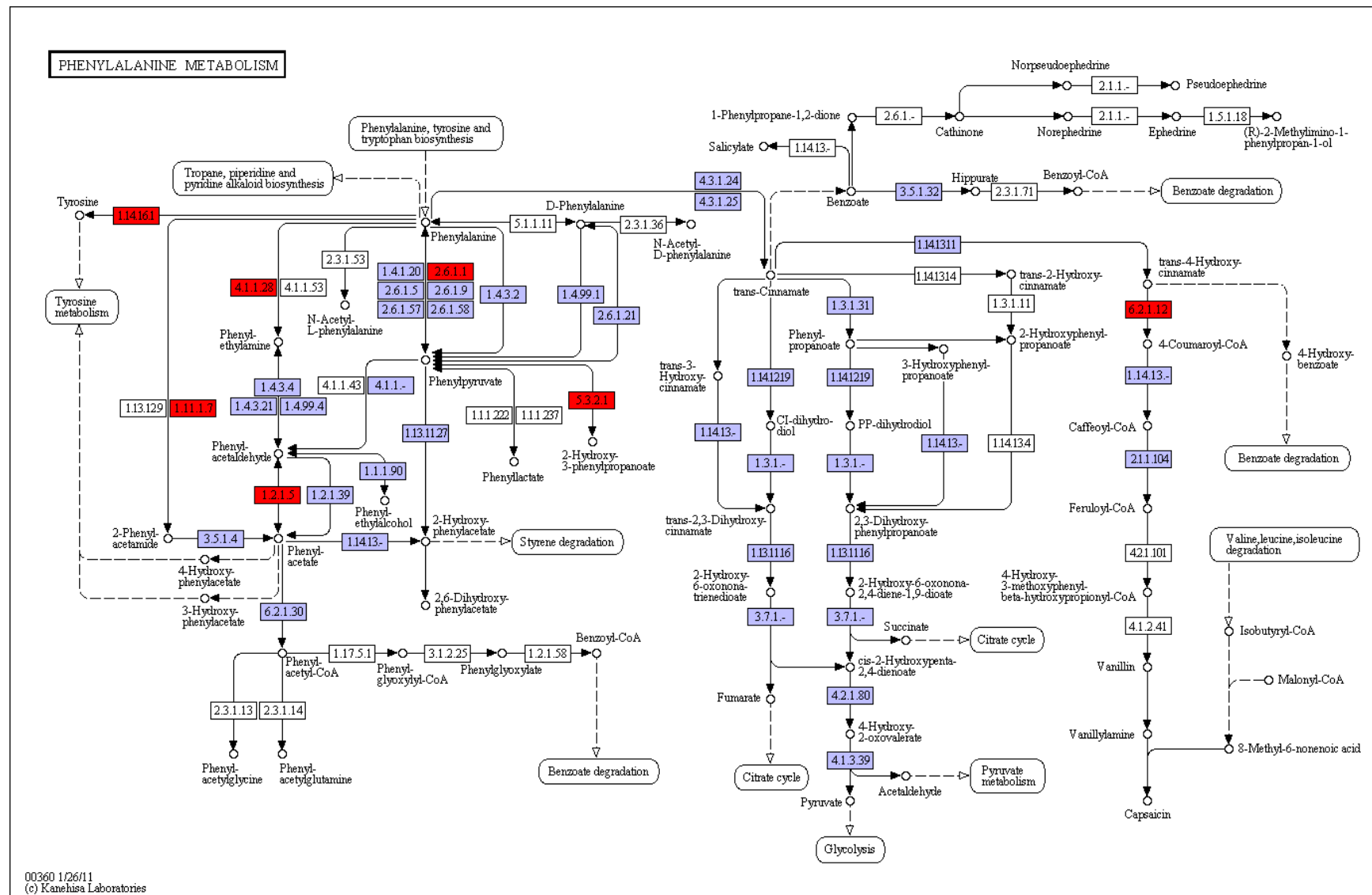


Figure 166: ko00360 Phenylalanine metabolism

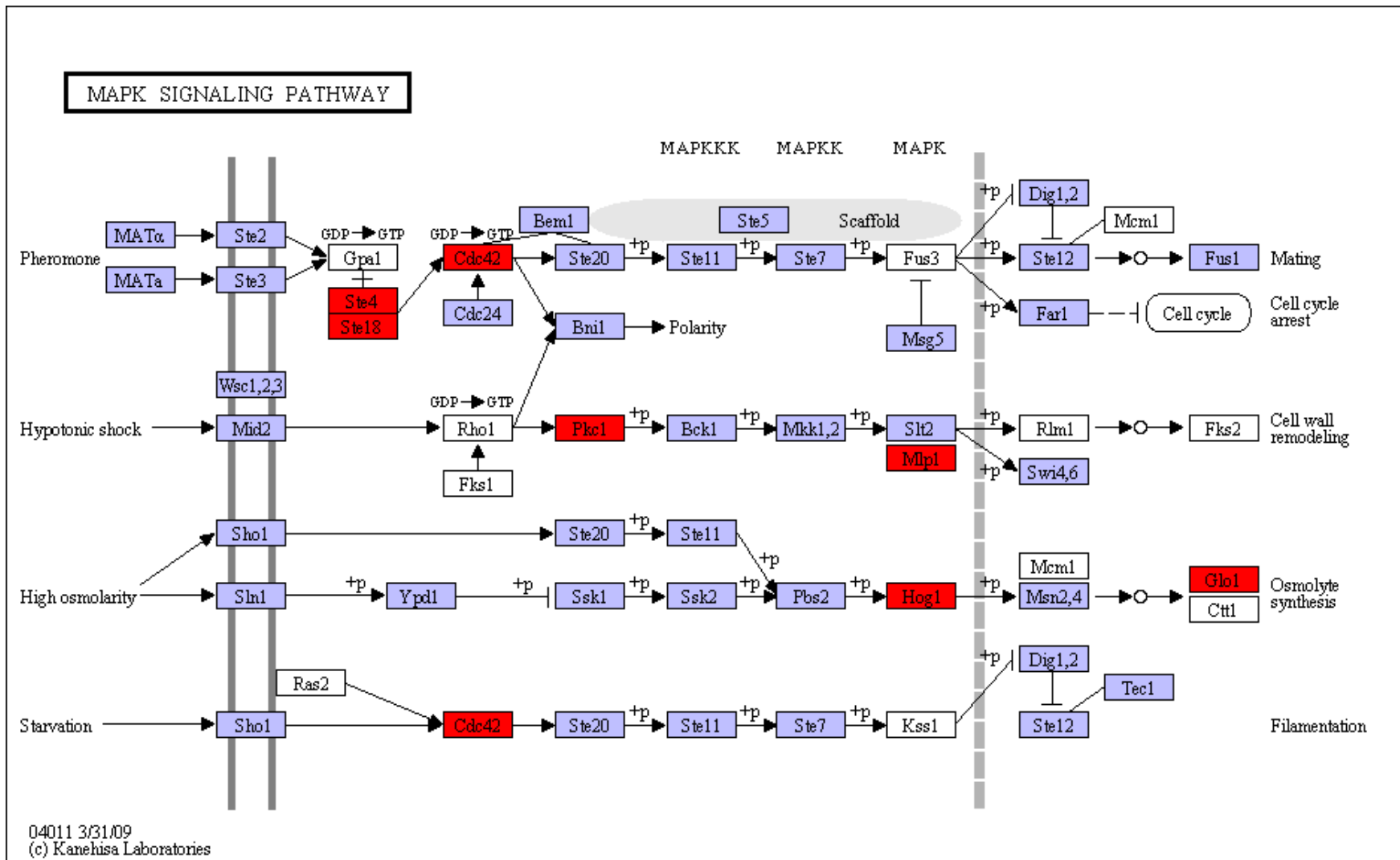


Figure 167: ko04011 MAPK signaling pathway - yeast



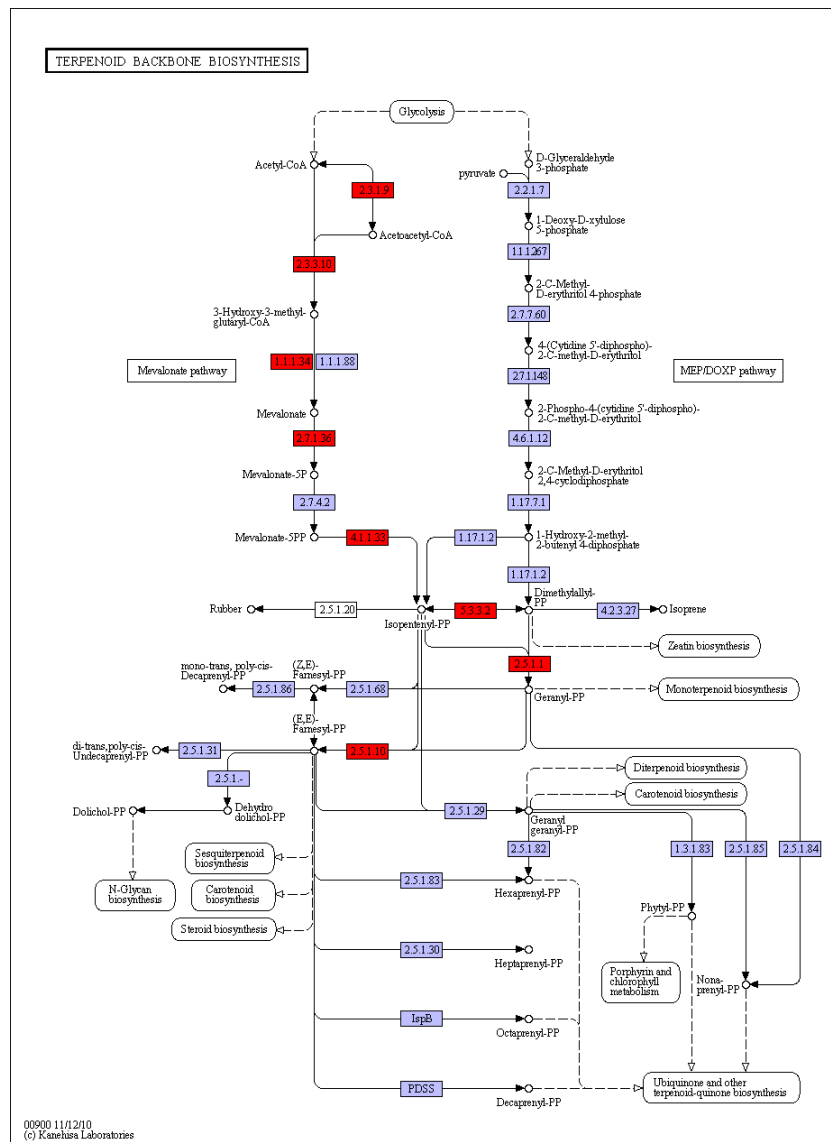


Figure 168: ko00900 Terpenoid backbone biosynthesis

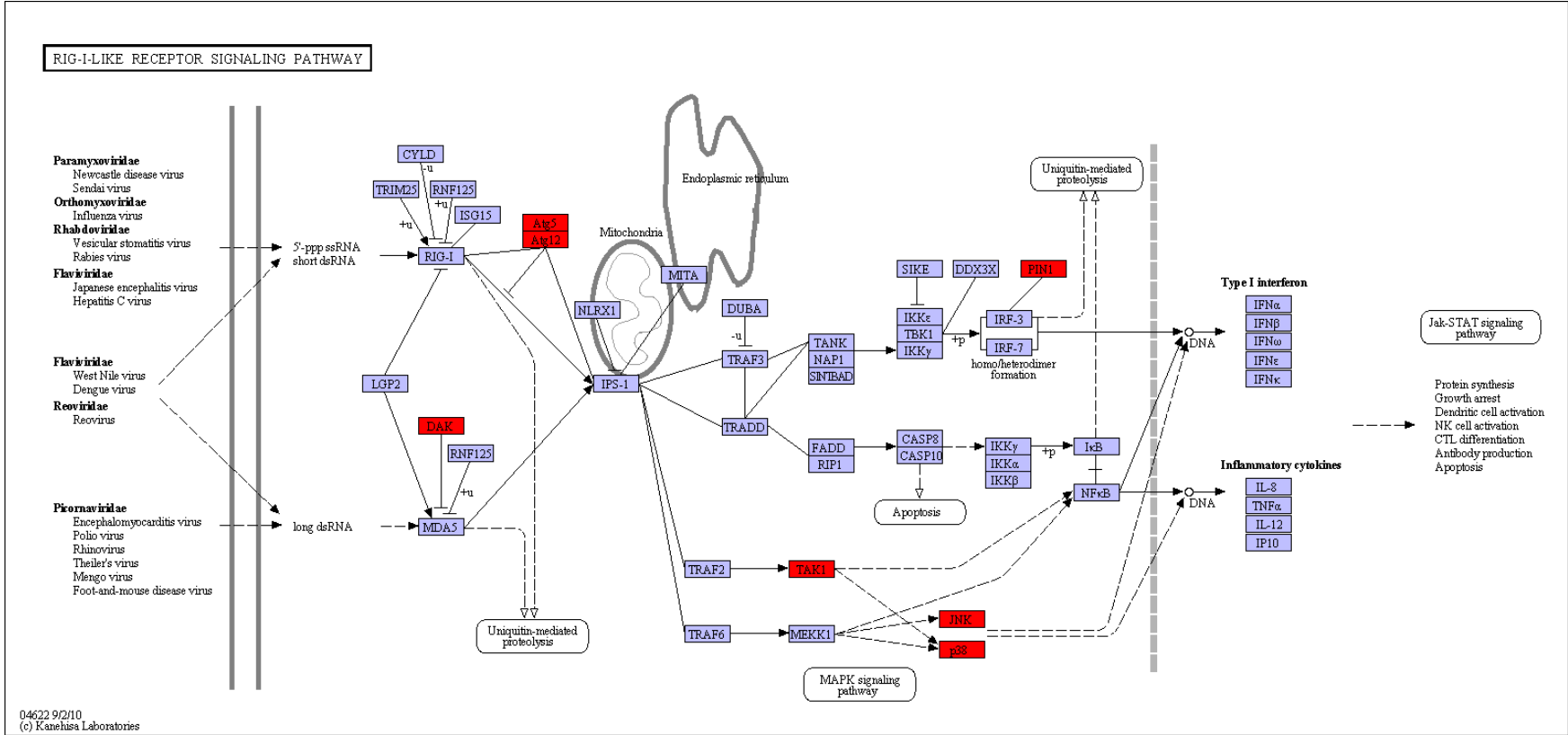


Figure 169: ko04622 RIG-I-like receptor signaling pathway

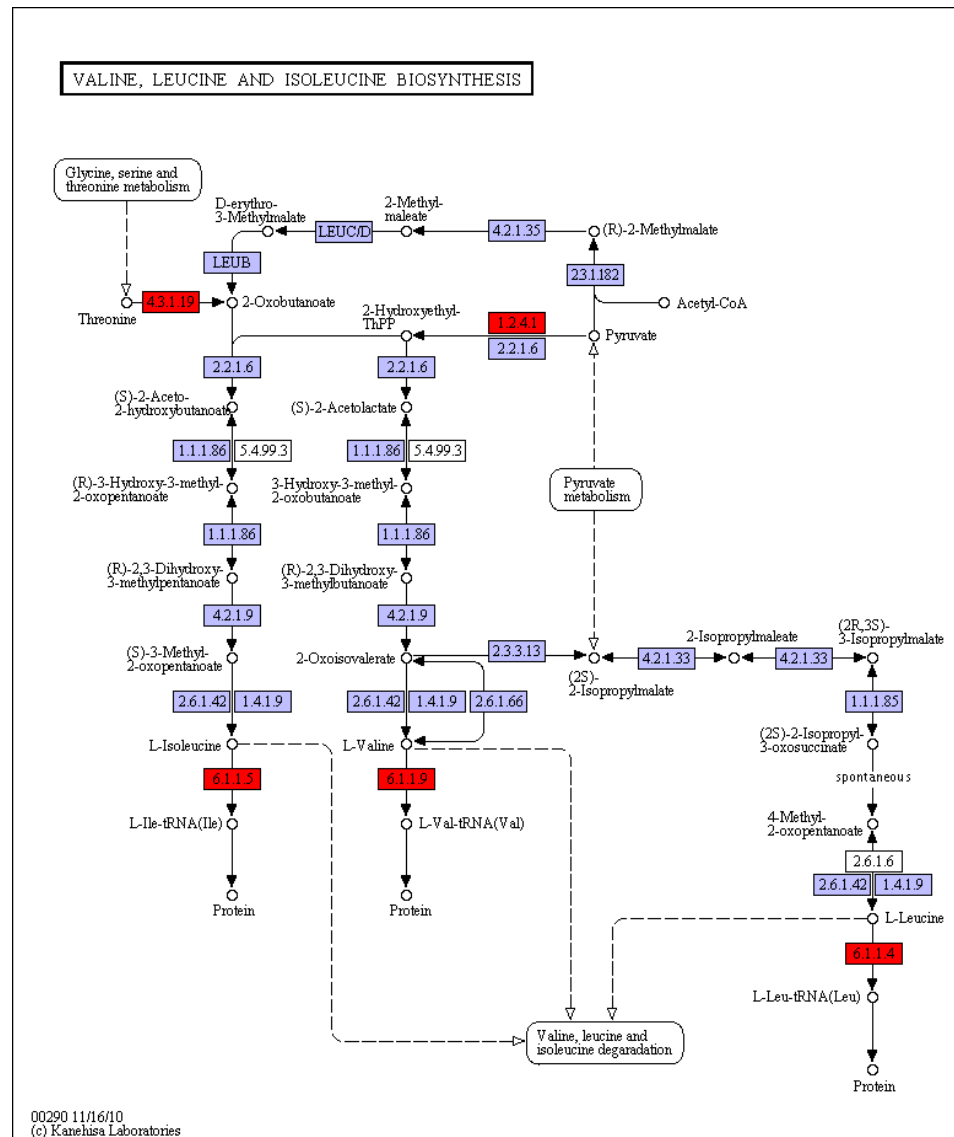


Figure 170: ko00290 Valine, leucine and isoleucine biosynthesis

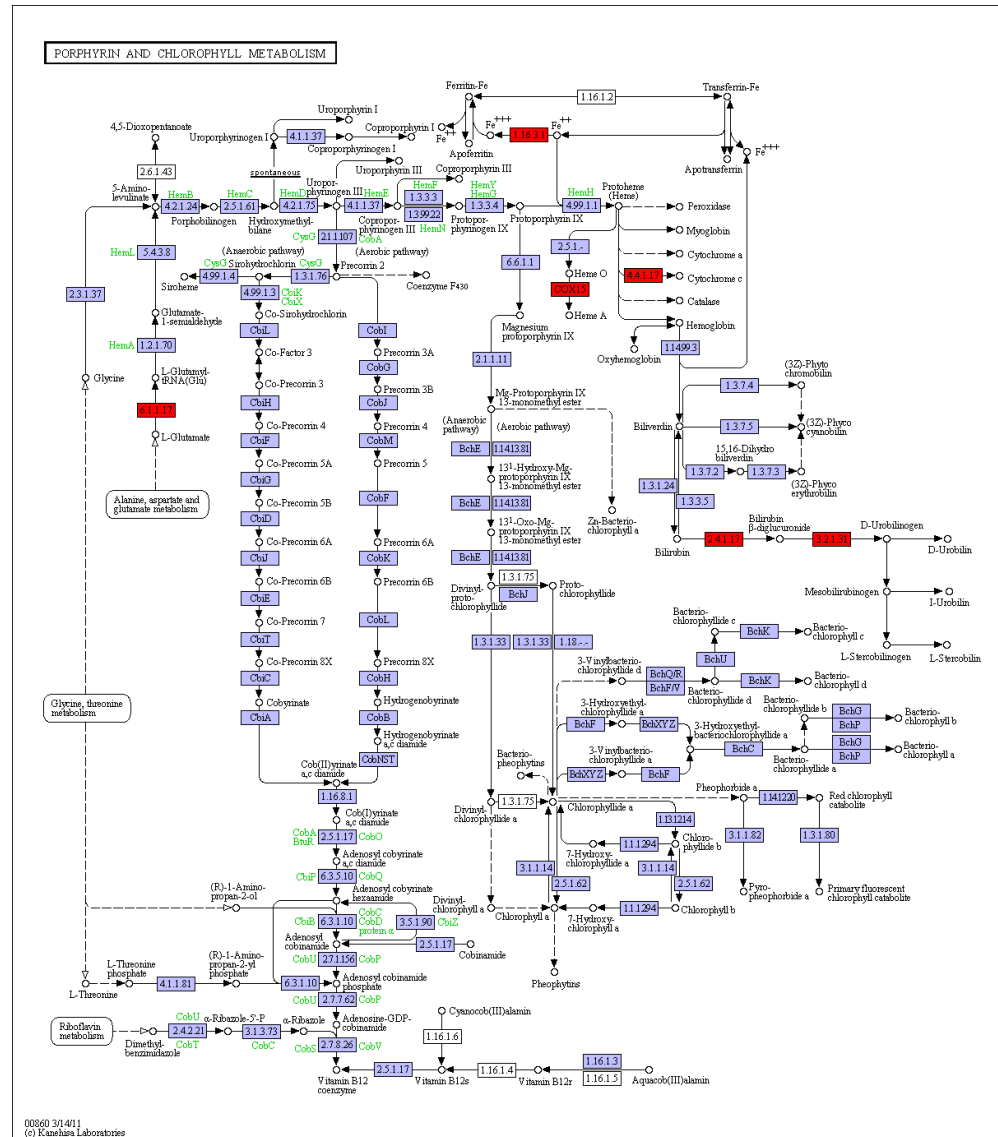


Figure 171: ko00860 Porphyrin and chlorophyll metabolism



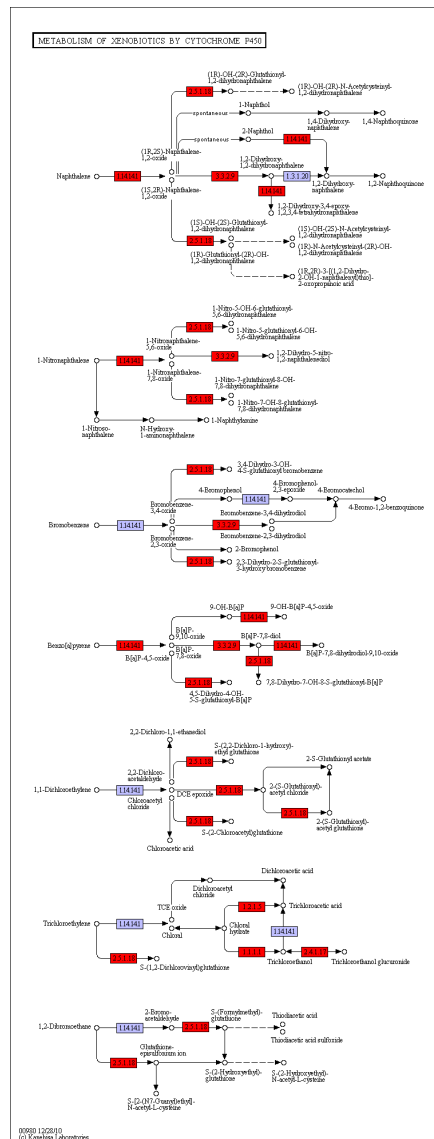


Figure 173: ko00980 Metabolism of xenobiotics by cytochrome P450



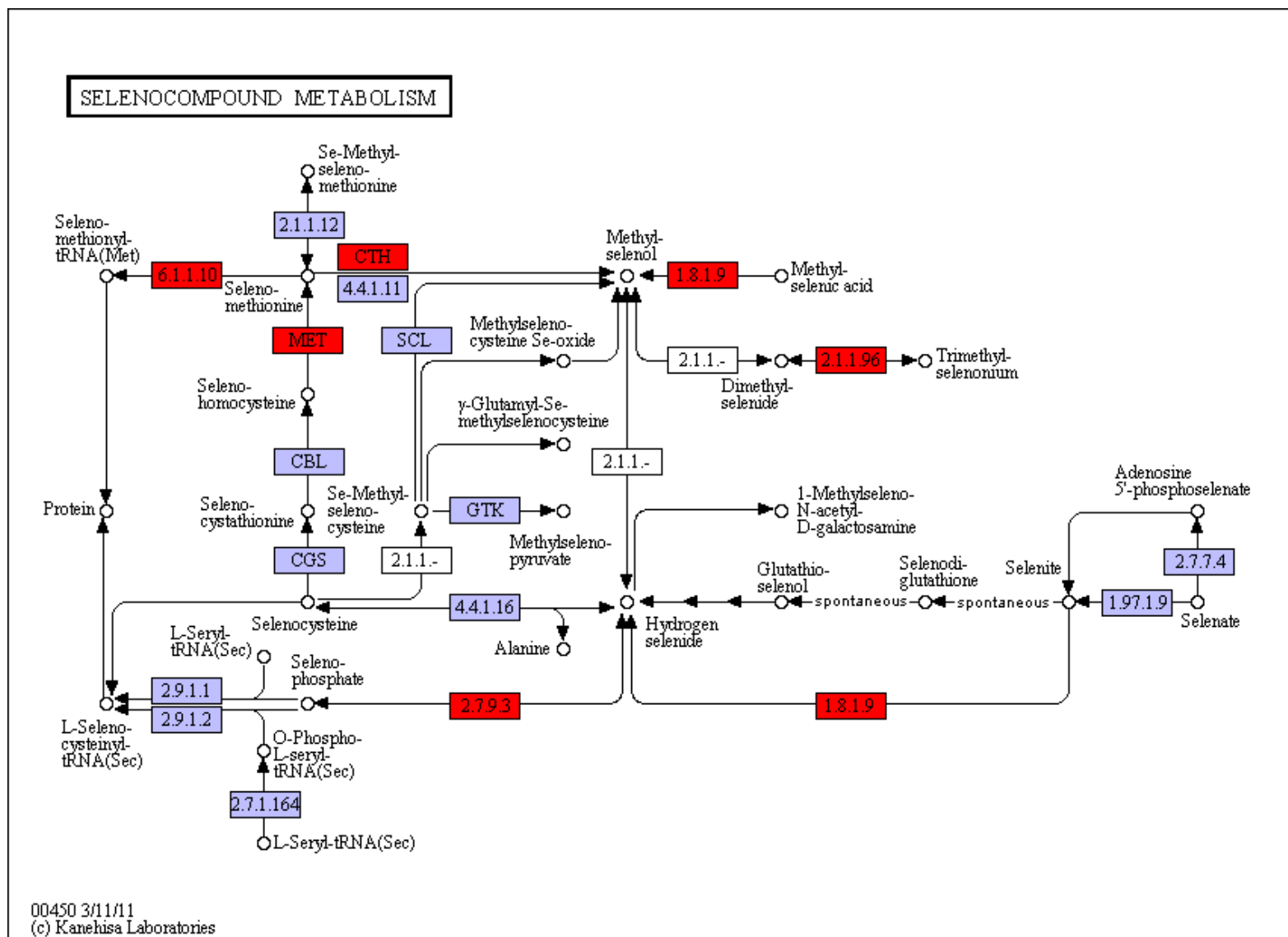


Figure 175: ko00450 Selenocompound metabolism



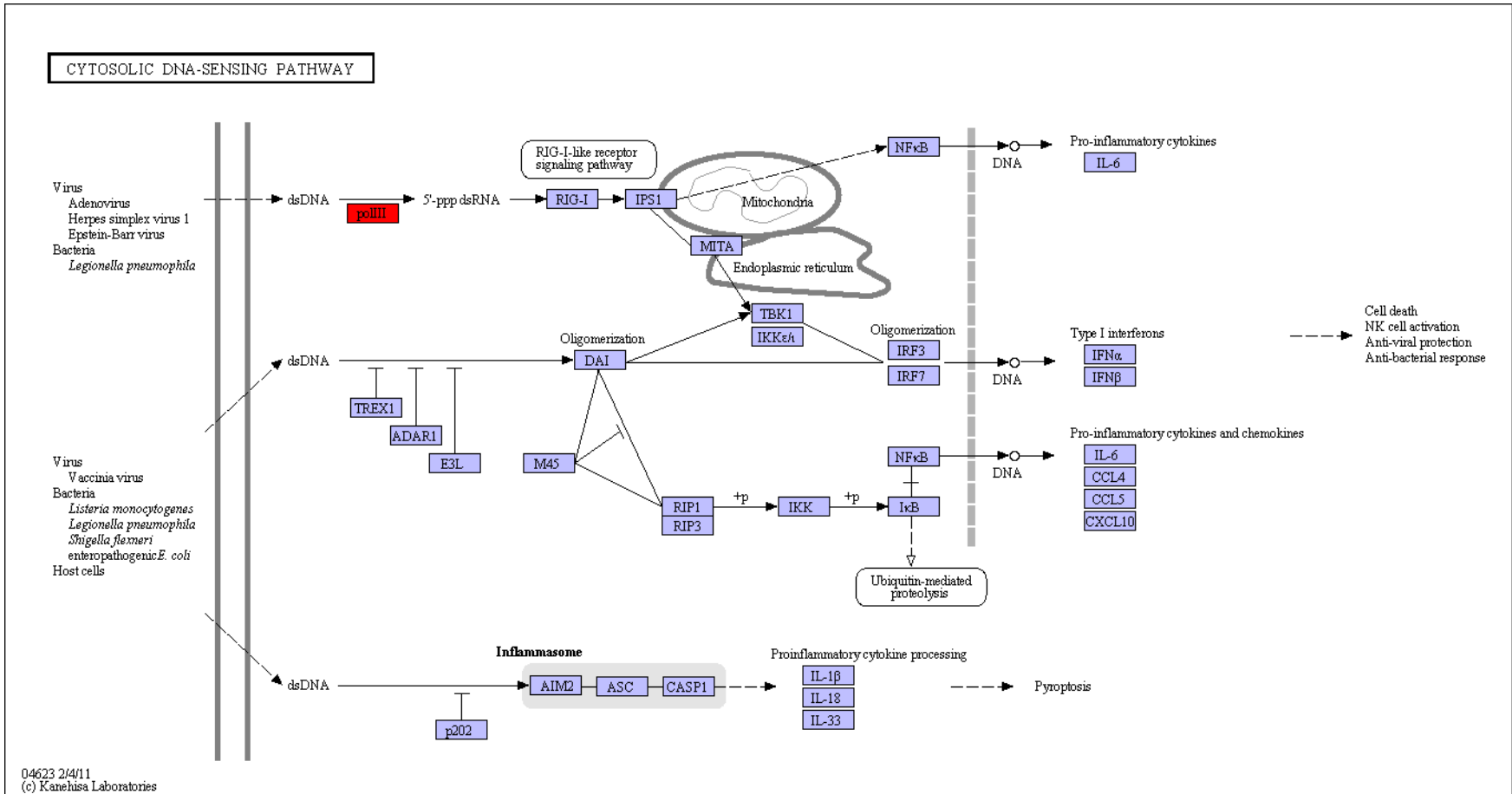


Figure 176: ko04623 Cytosolic DNA-sensing pathway

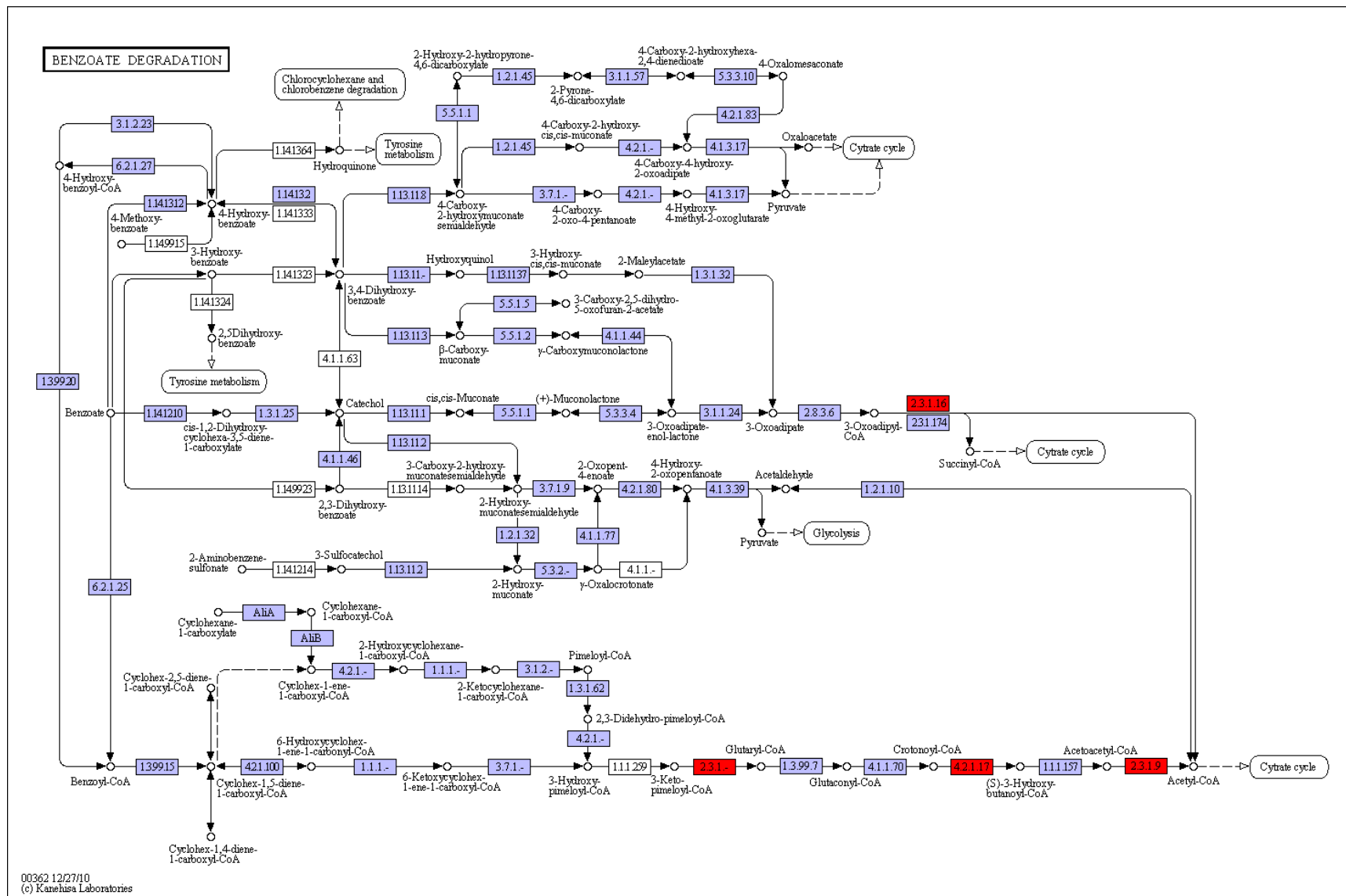
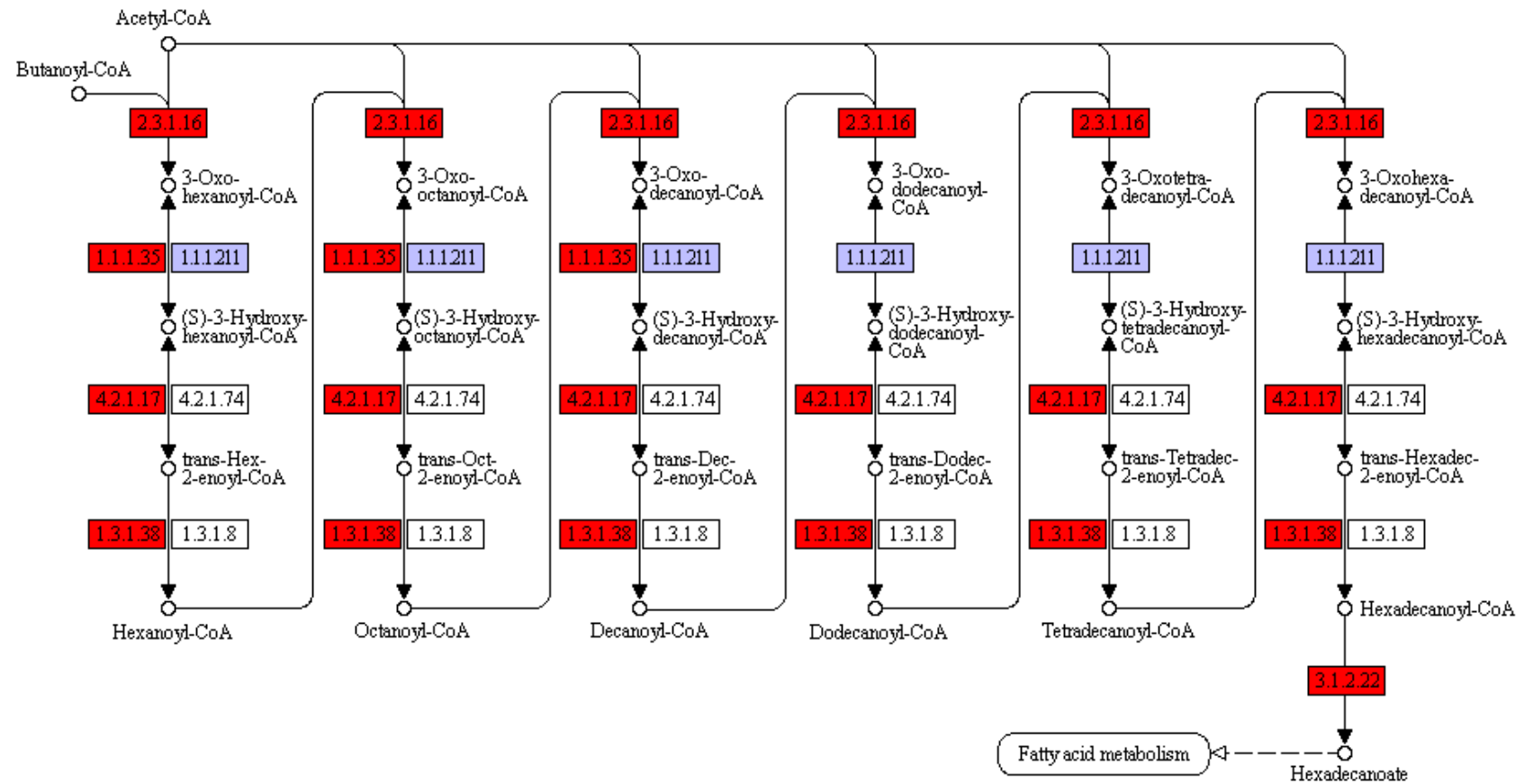


Figure 177: ko00362 Benzoate degradation

FATTY ACID ELONGATION IN MITOCHONDRIA



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Figure 178: ko00062 Fatty acid elongation in mitochondria

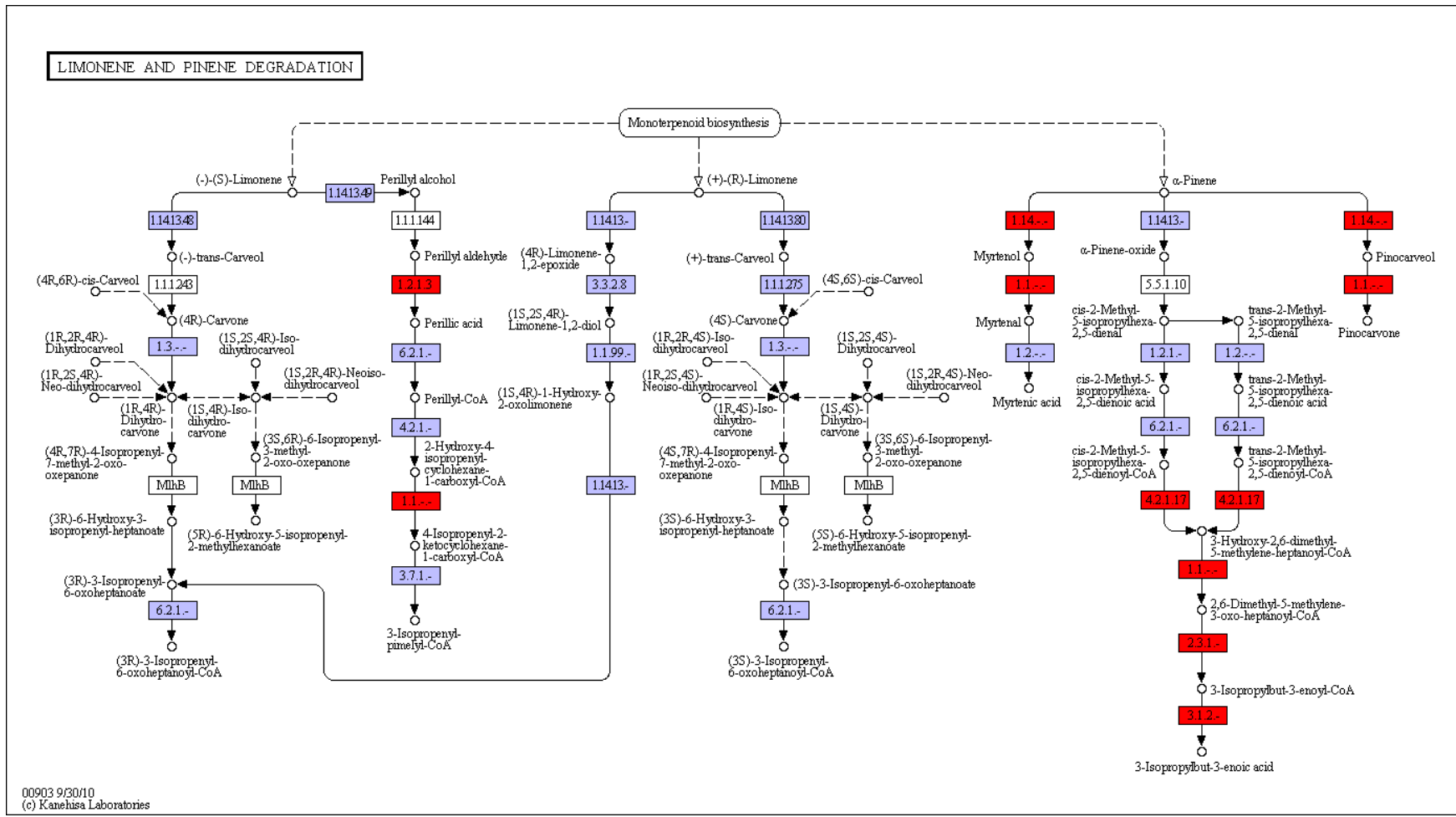


Figure 179: ko00903 Limonene and pinene degradation

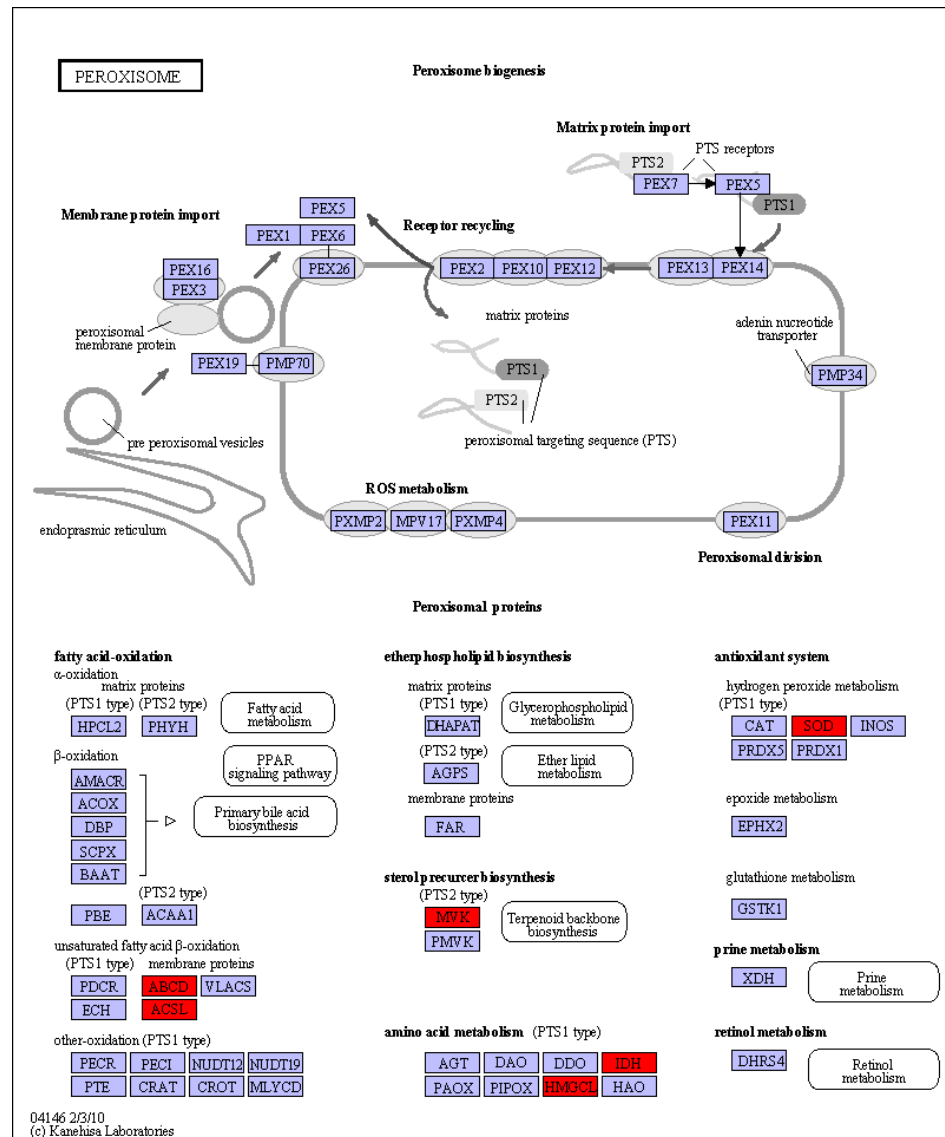


Figure 180: ko04146 Peroxisome

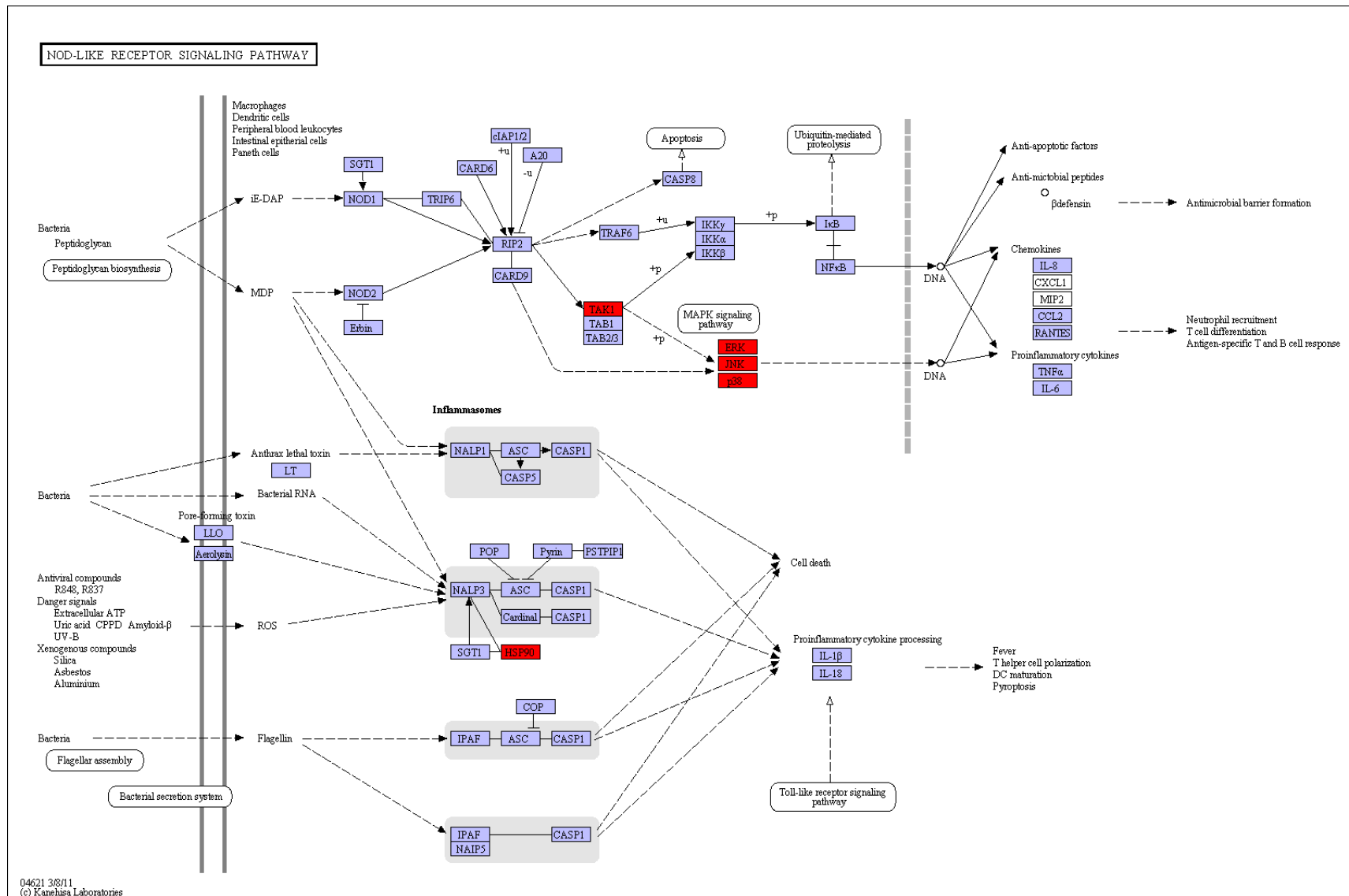


Figure 181: ko04621 NOD-like receptor signaling pathway

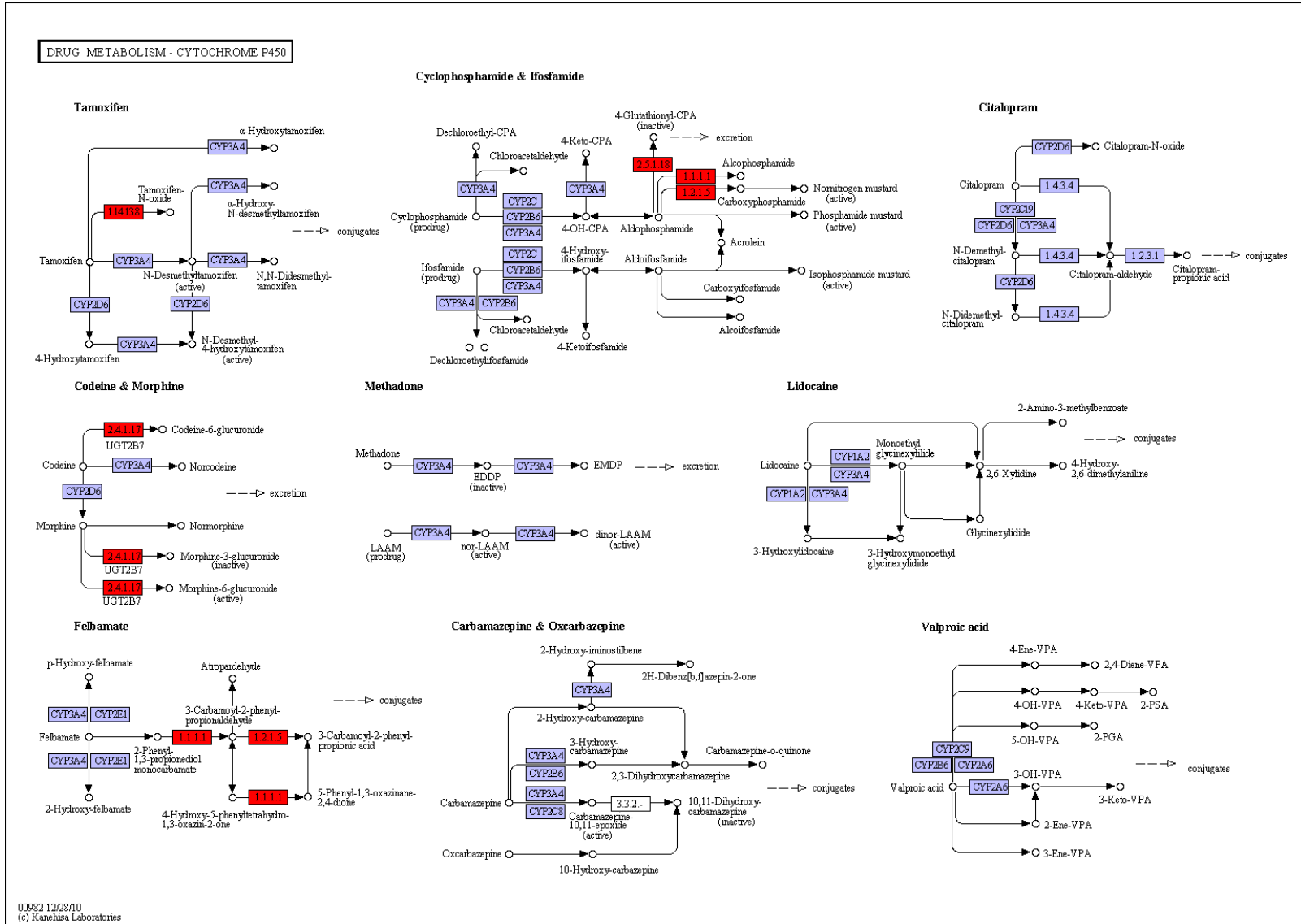


Figure 182: ko00982 Drug metabolism - cytochrome P450











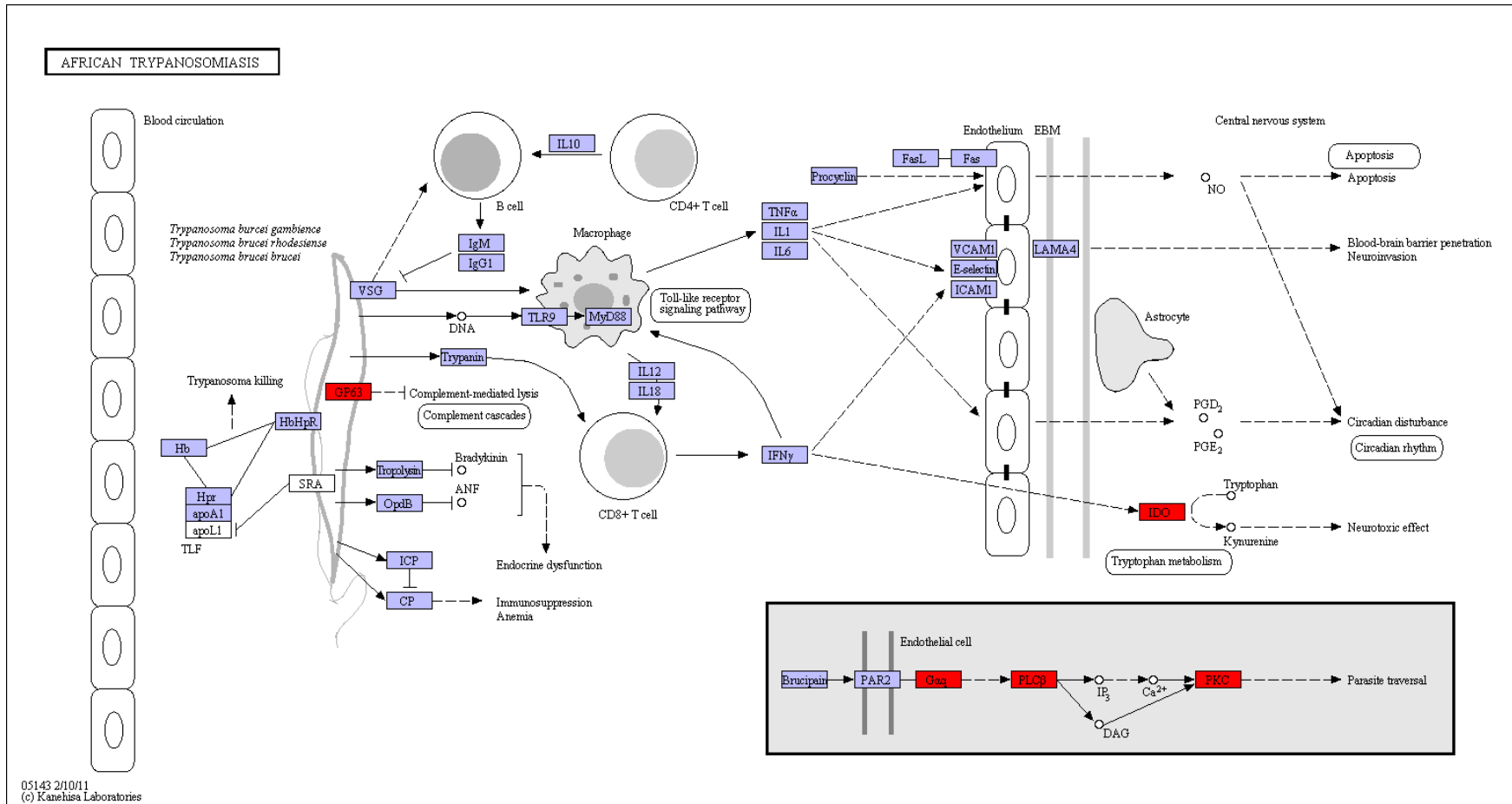


Figure 187: ko05143 African trypanosomiasis

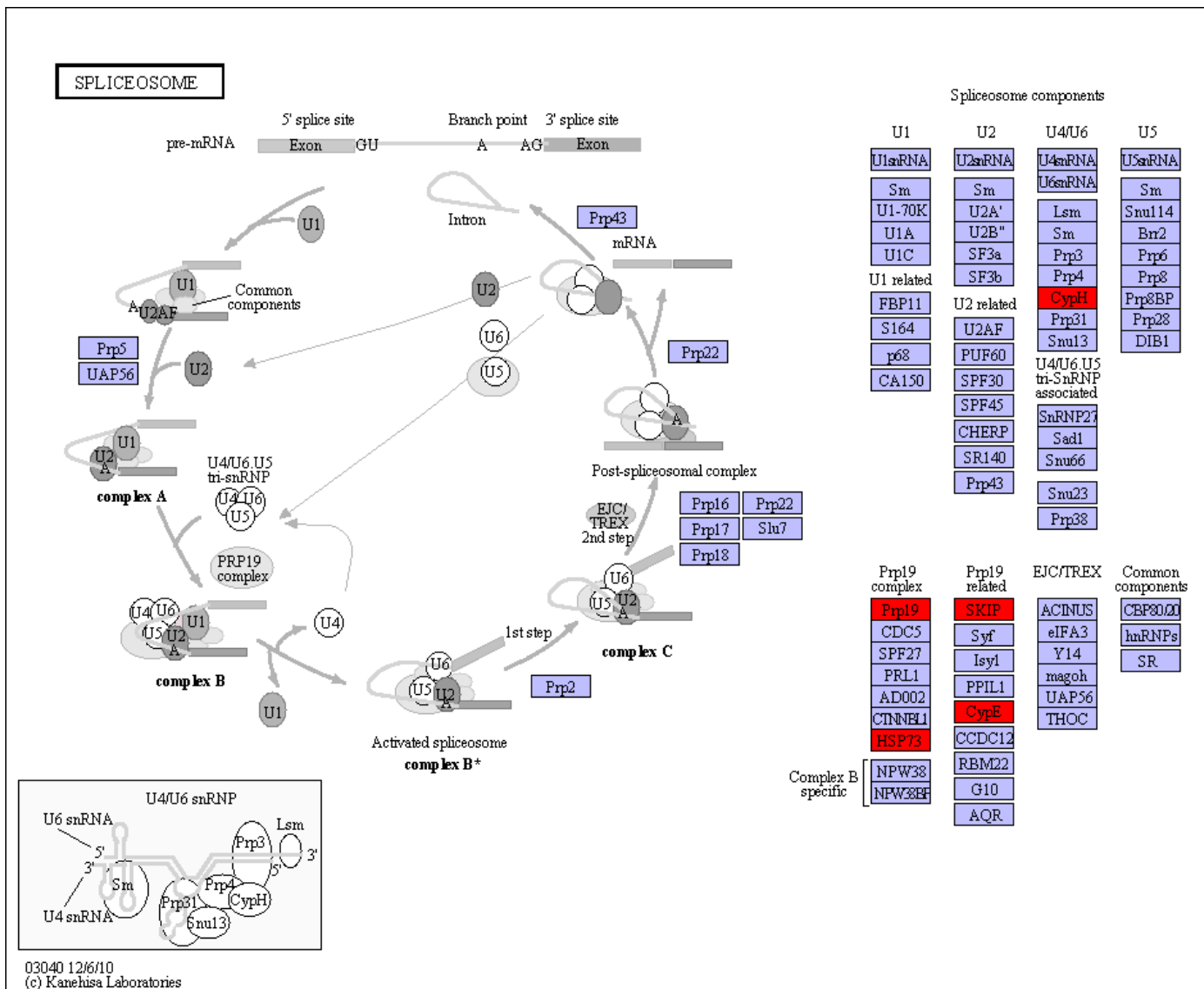


Figure 188: ko03040 Spliceosome

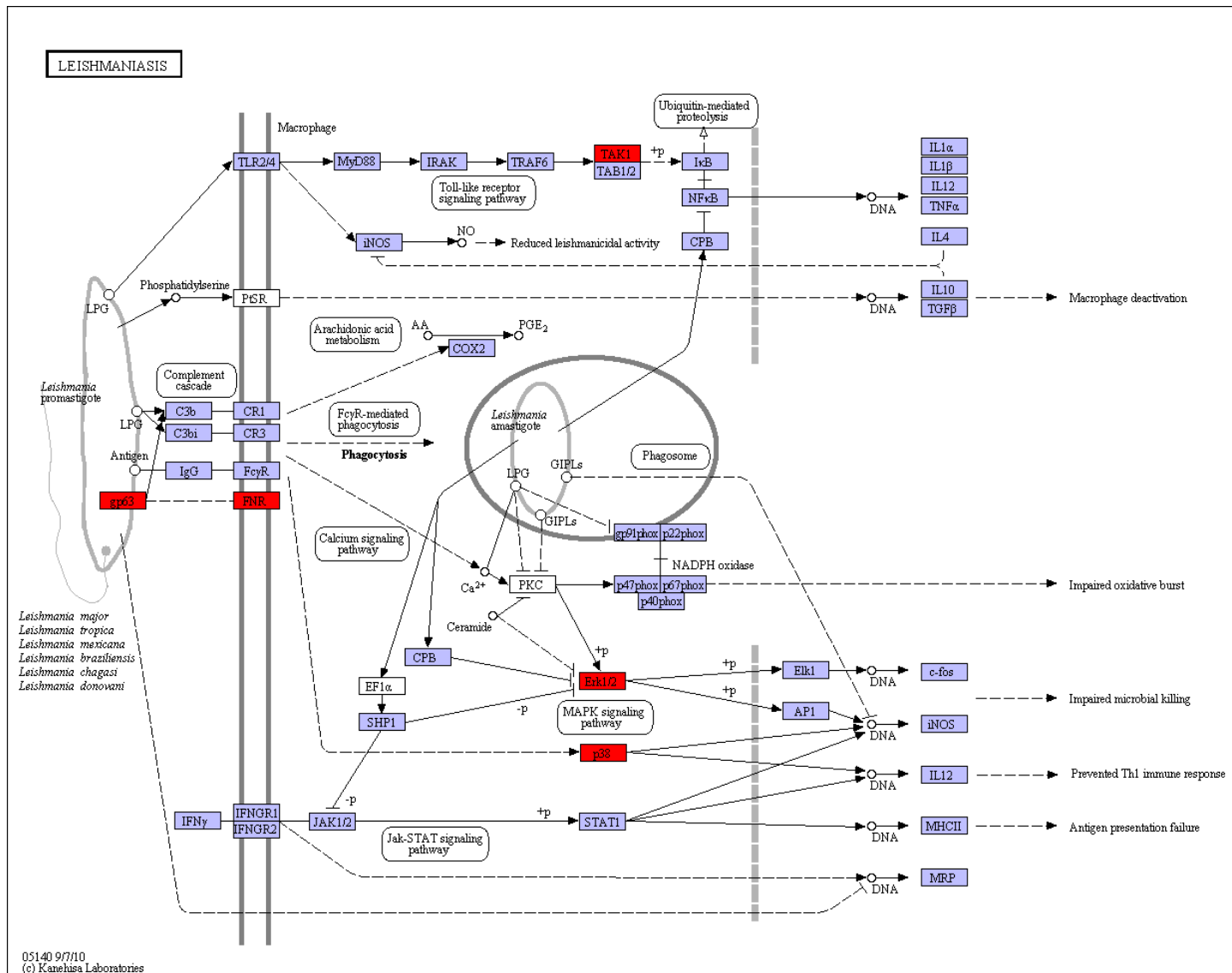


Figure 189: ko05140 Leishmaniasis

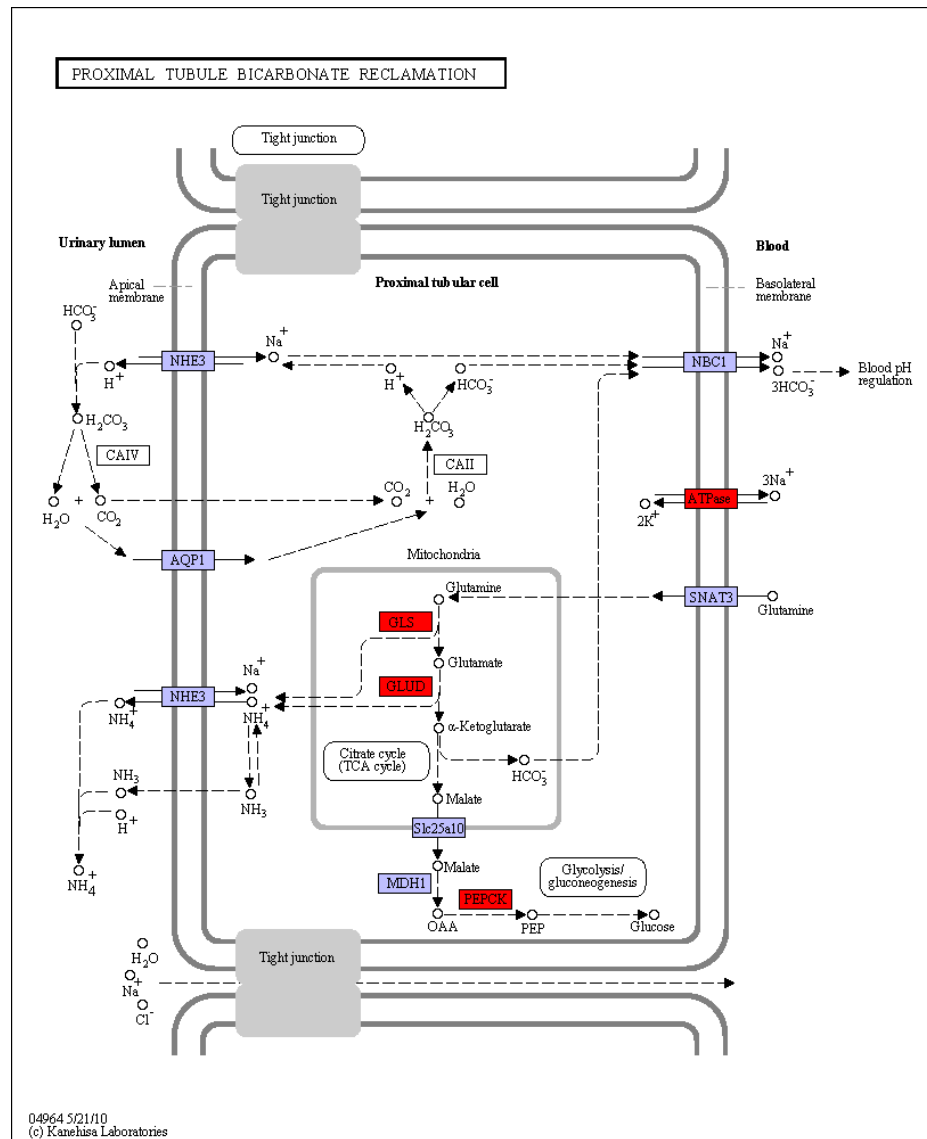
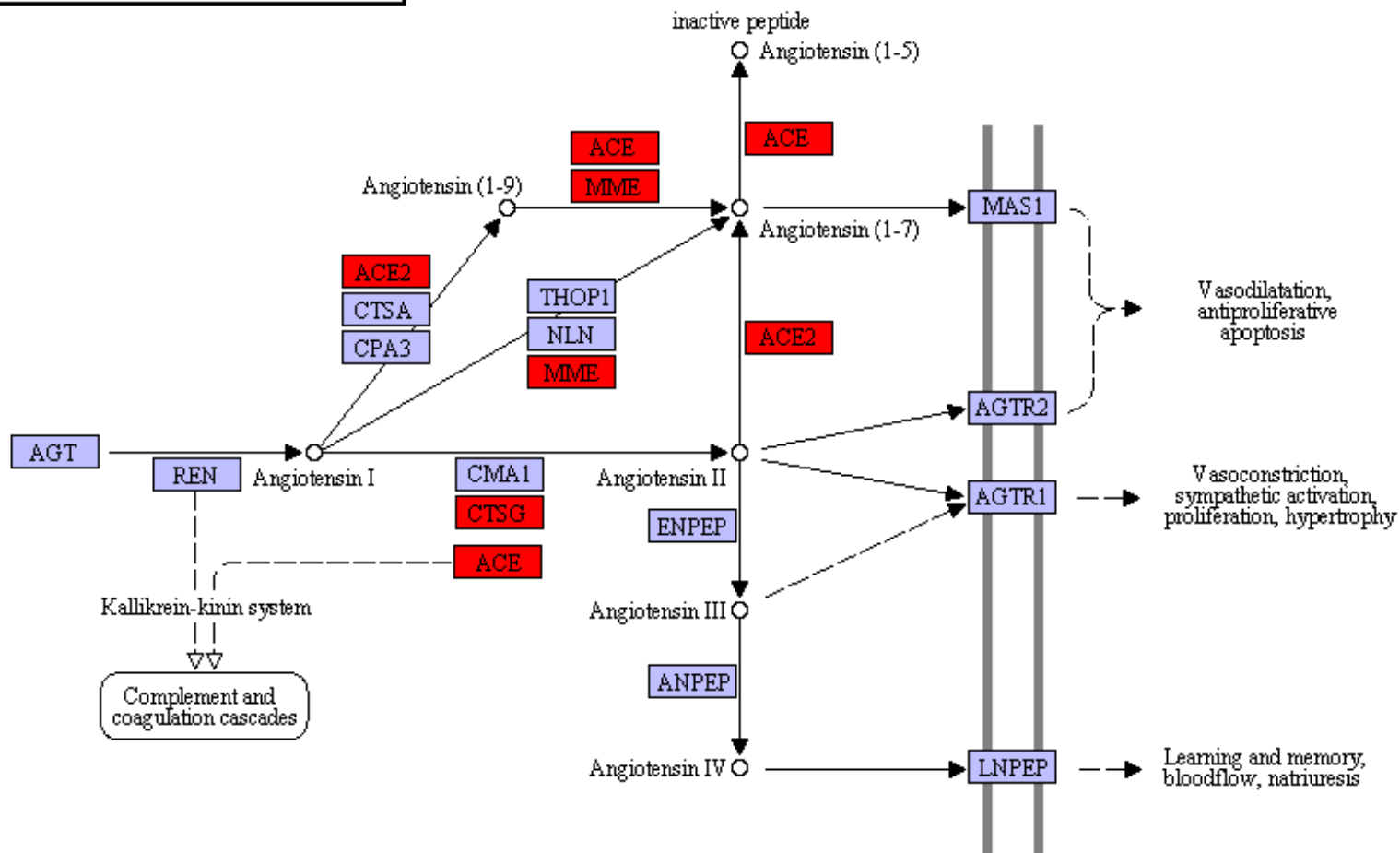


Figure 190: ko04964 Proximal tubule bicarbonate reclamation

RENIN - ANGIOTENSIN SYSTEM



04614 1/15/10  
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Figure 191: ko04614 Renin-angiotensin system



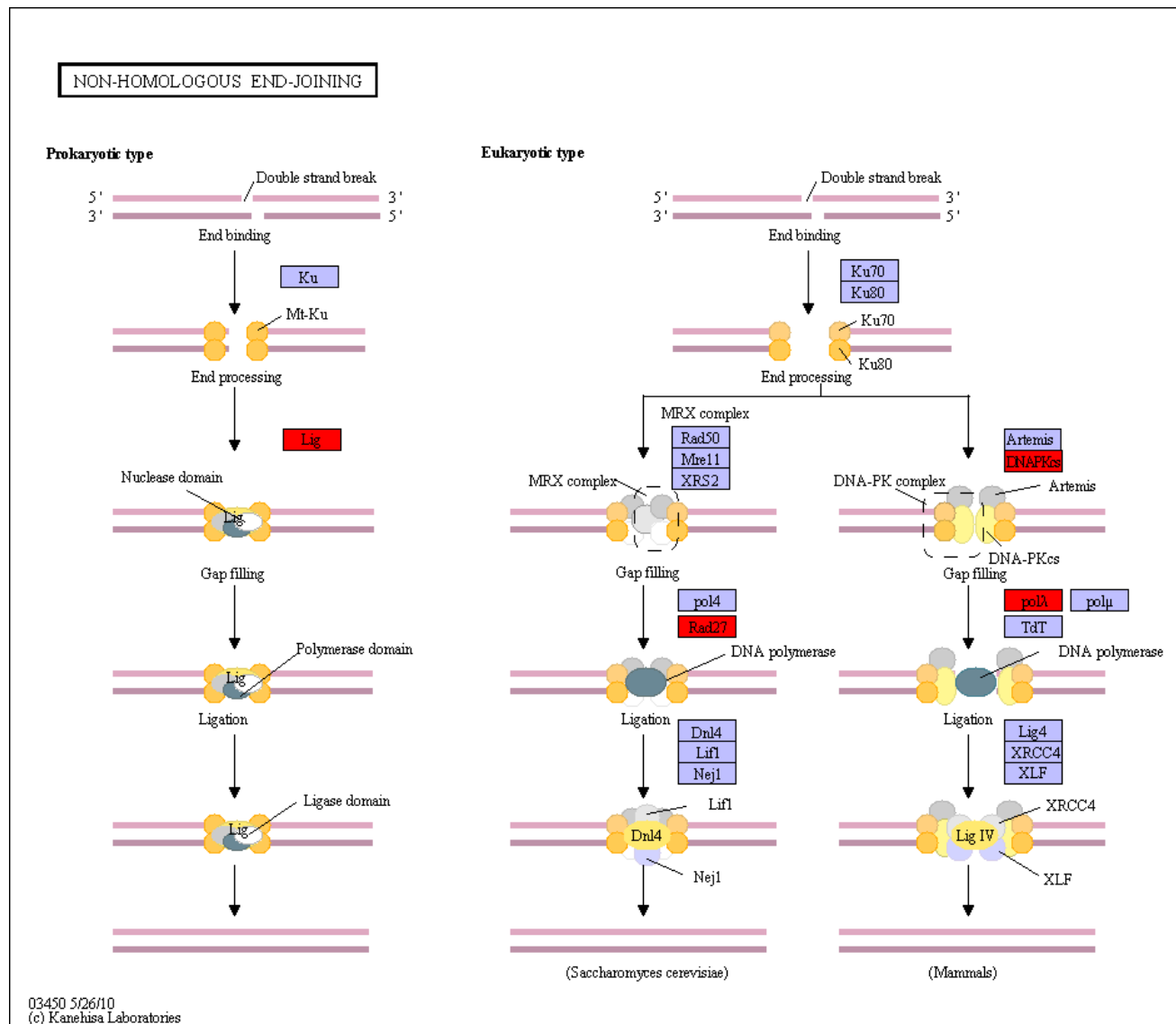


Figure 192: ko03450 Non-homologous end-joining

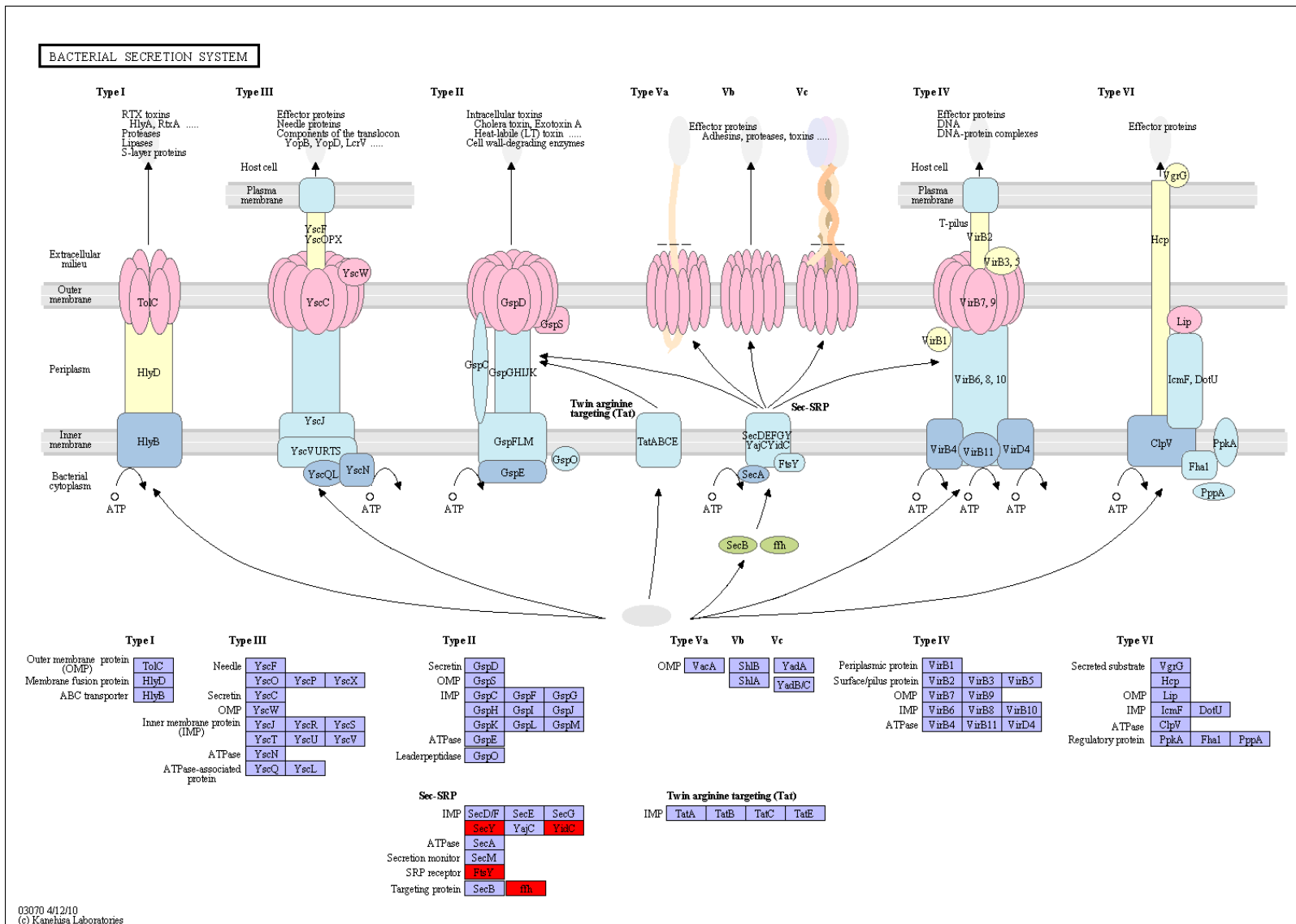


Figure 193: ko03070 Bacterial secretion system

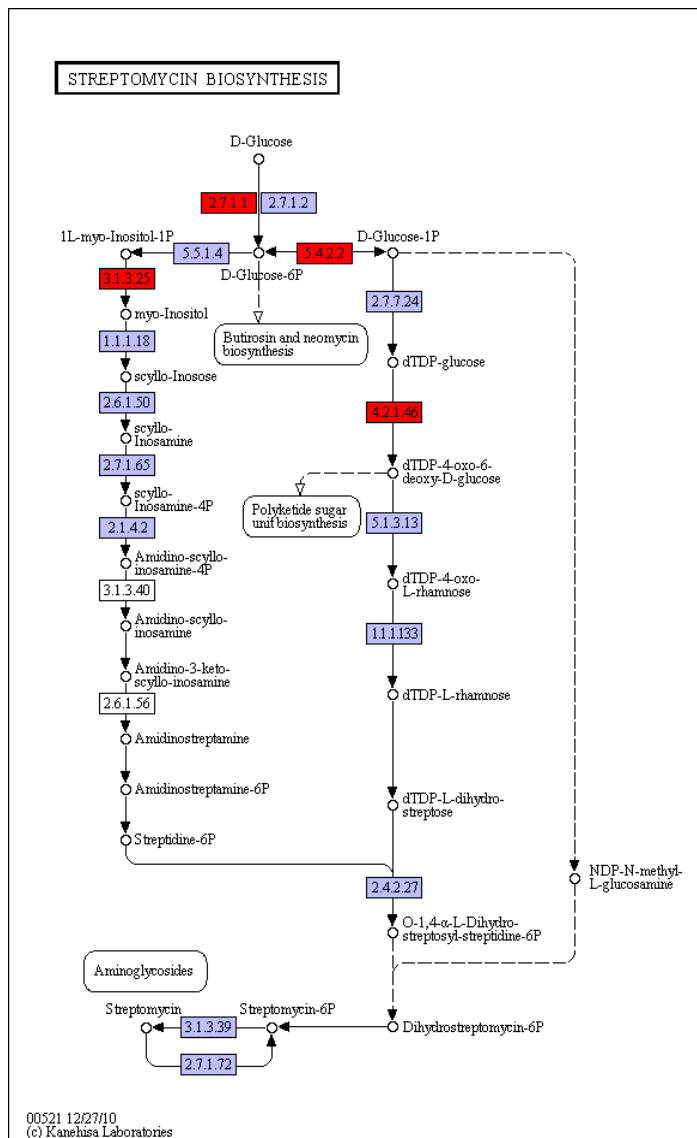


Figure 194: ko00521 Streptomycin biosynthesis

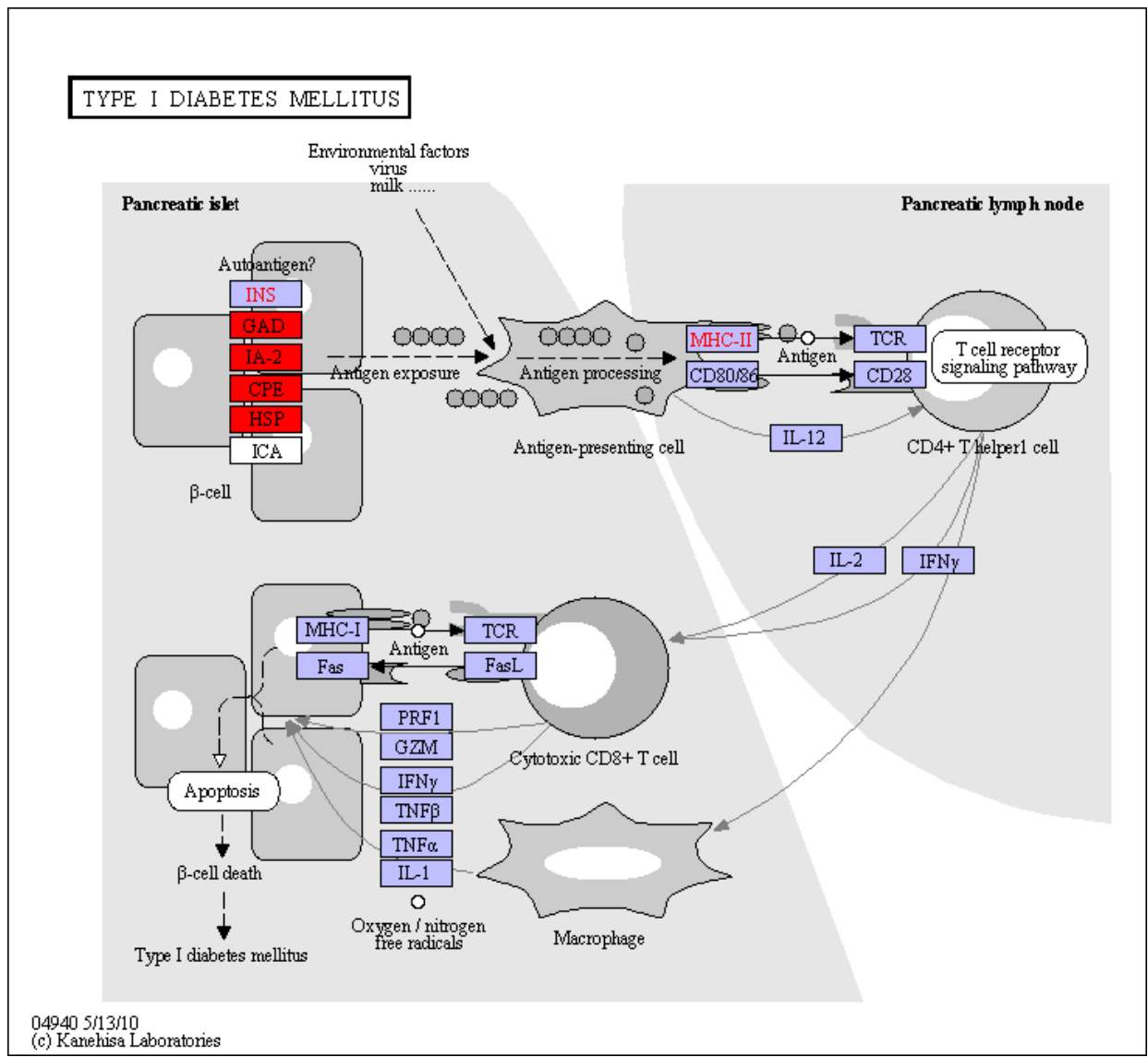


Figure 195: ko04940 Type I diabetes mellitus



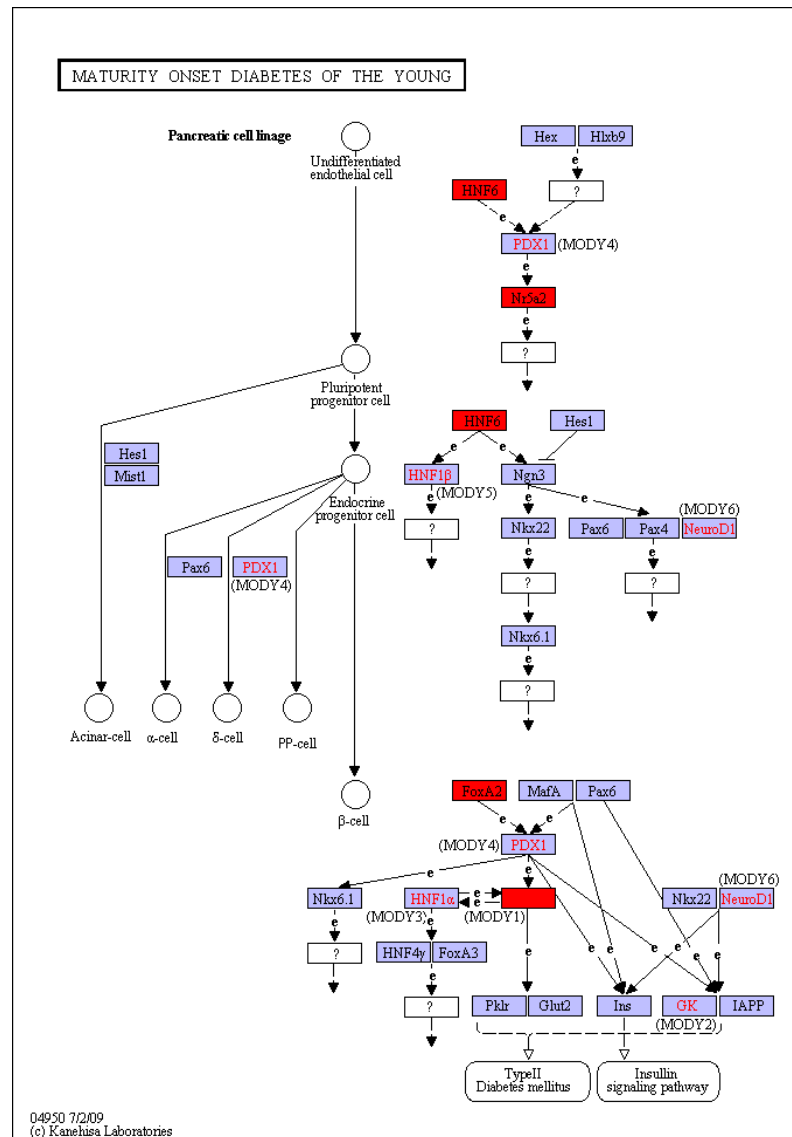


Figure 197: ko04950 Maturity onset diabetes of the young

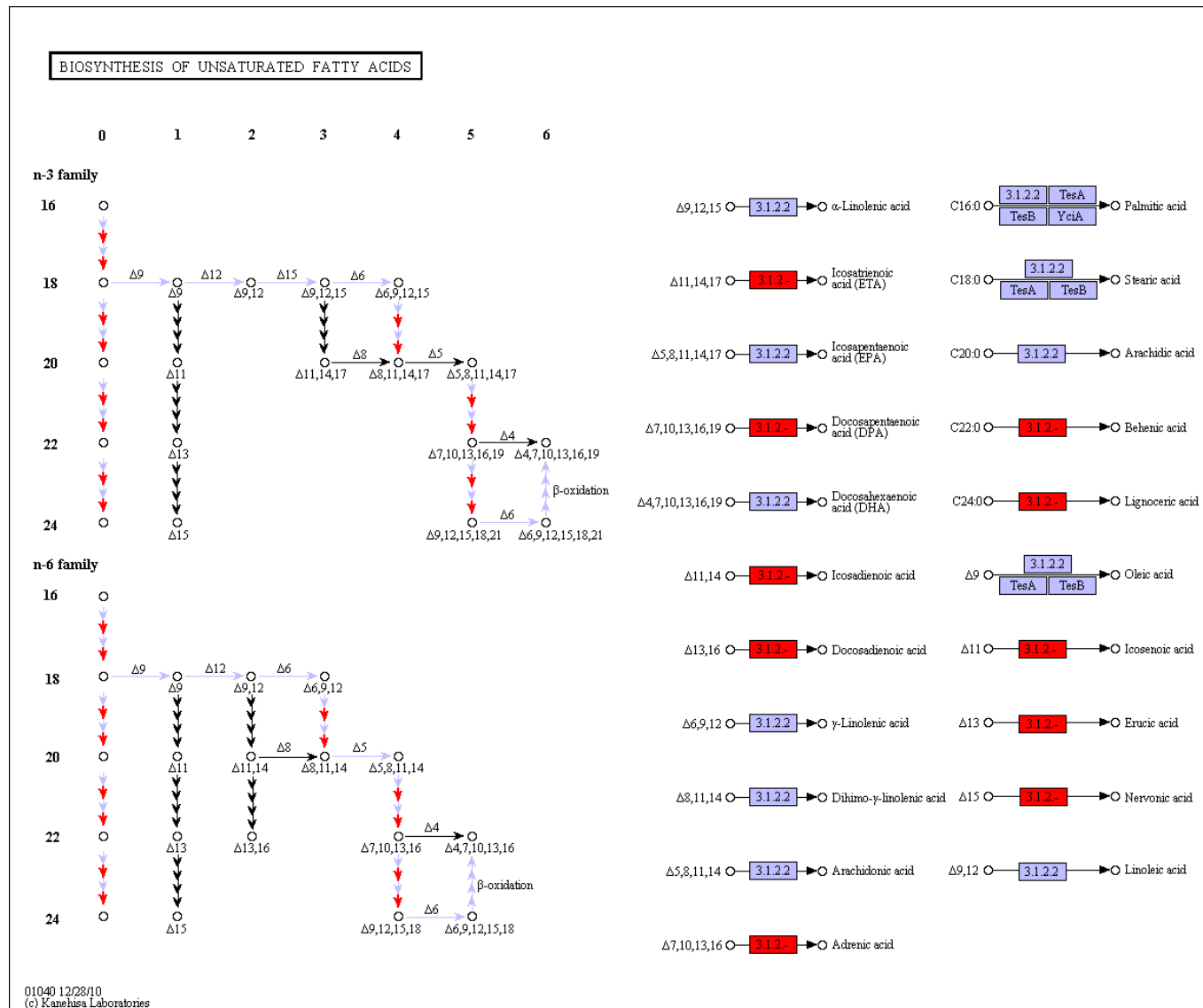


Figure 198: ko01040 Biosynthesis of unsaturated fatty acids

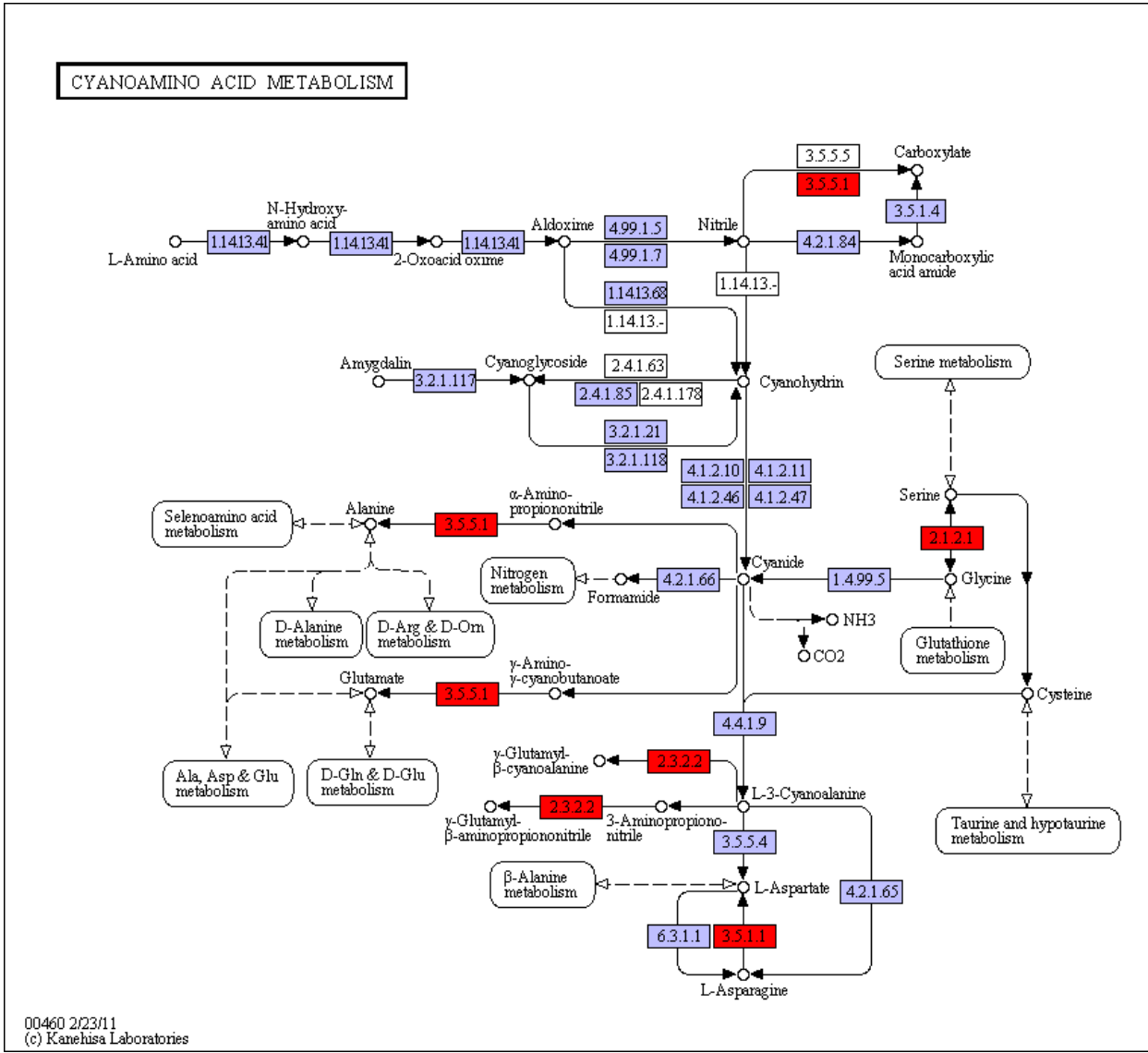


Figure 199: ko00460 Cyanoamino acid metabolism





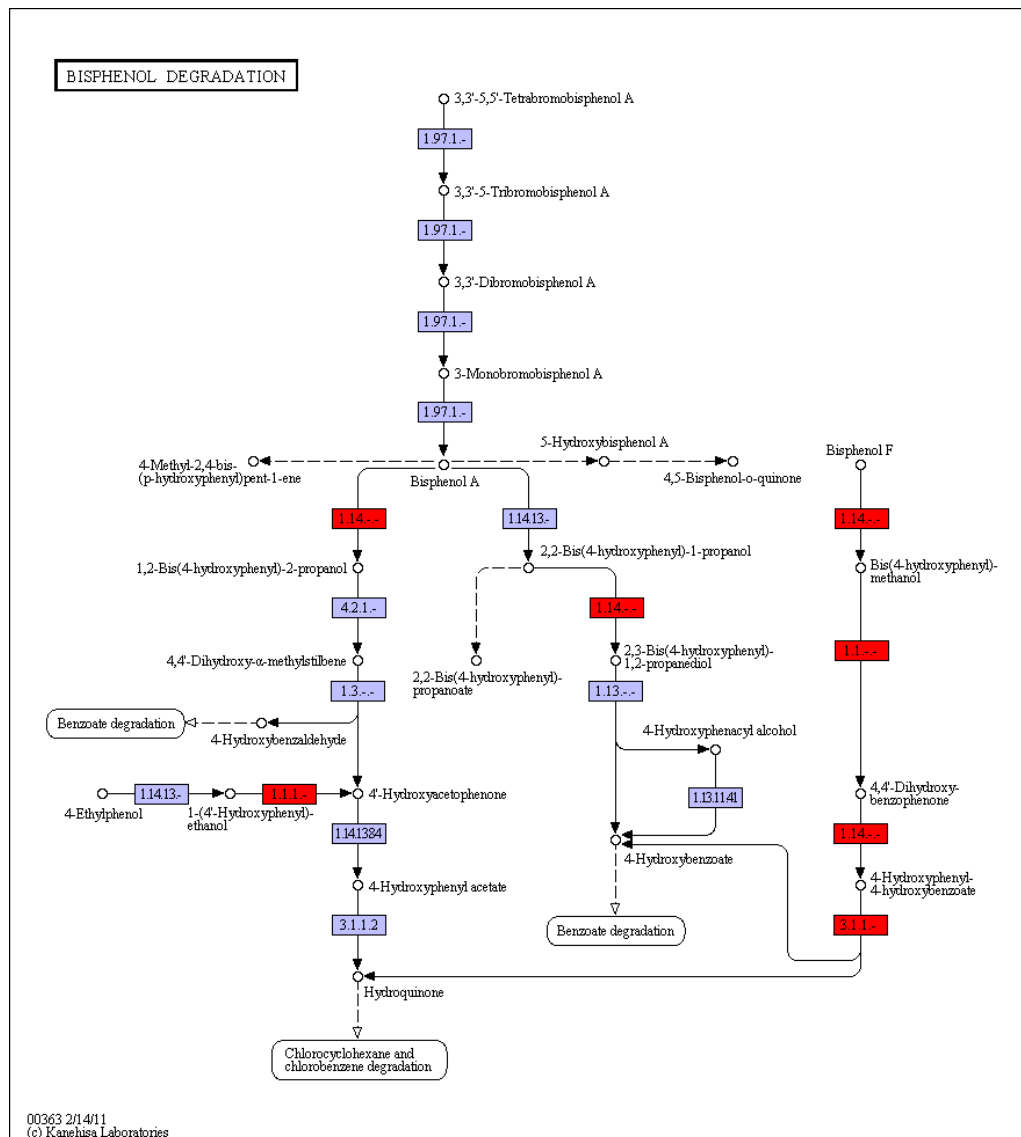


Figure 201: ko00363 Bisphenol degradation

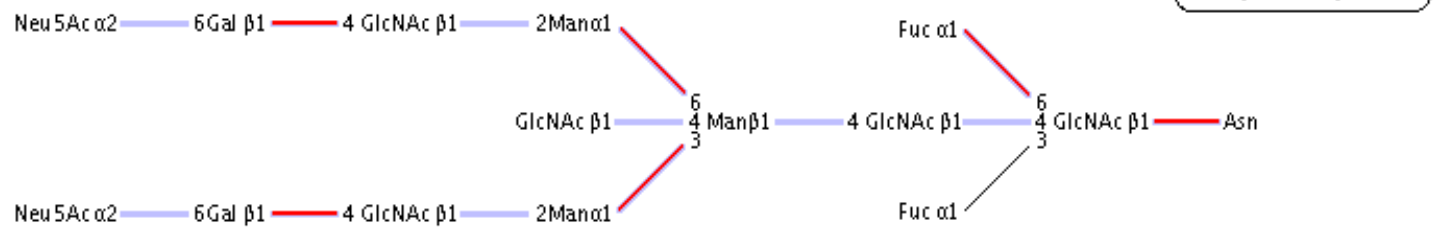




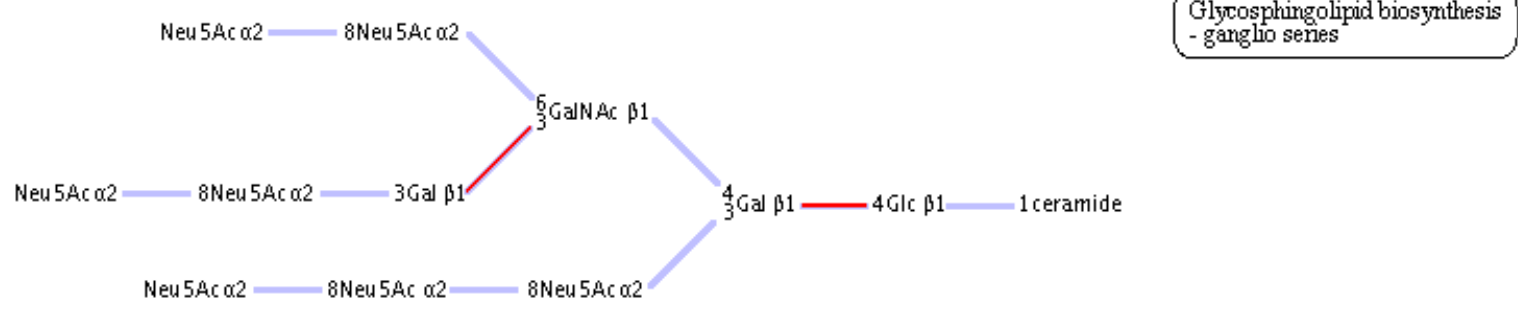


**OTHER GLYCAN DEGRADATION**

**N-glycan**



**Ganglioside**



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Figure 205: ko00511 Other glycan degradation

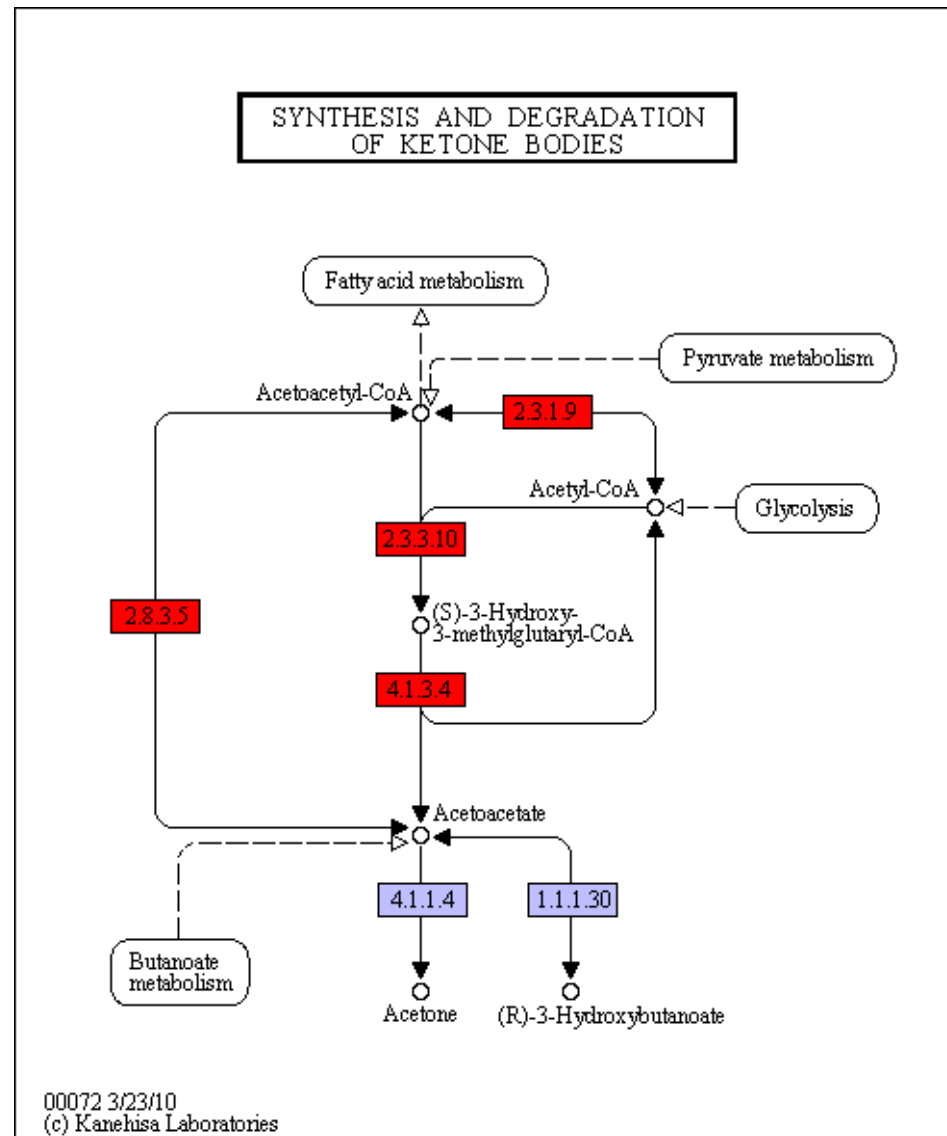
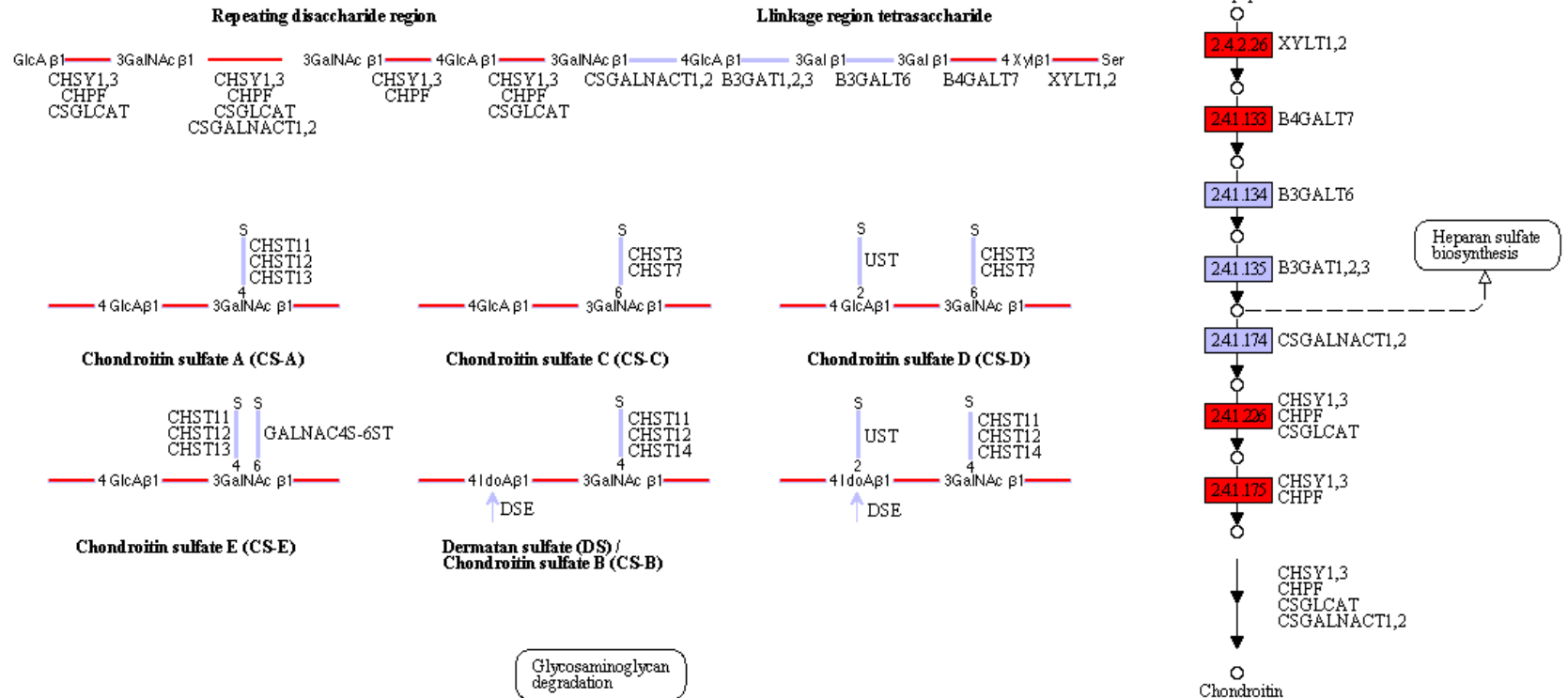


Figure 206: ko00072 Synthesis and degradation of ketone bodies





GLYCOSAMINOGLYCAN BIOSYNTHESIS - CHONDROITIN SULFATE



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Figure 208: ko00532 Glycosaminoglycan biosynthesis - chondroitin sulfate

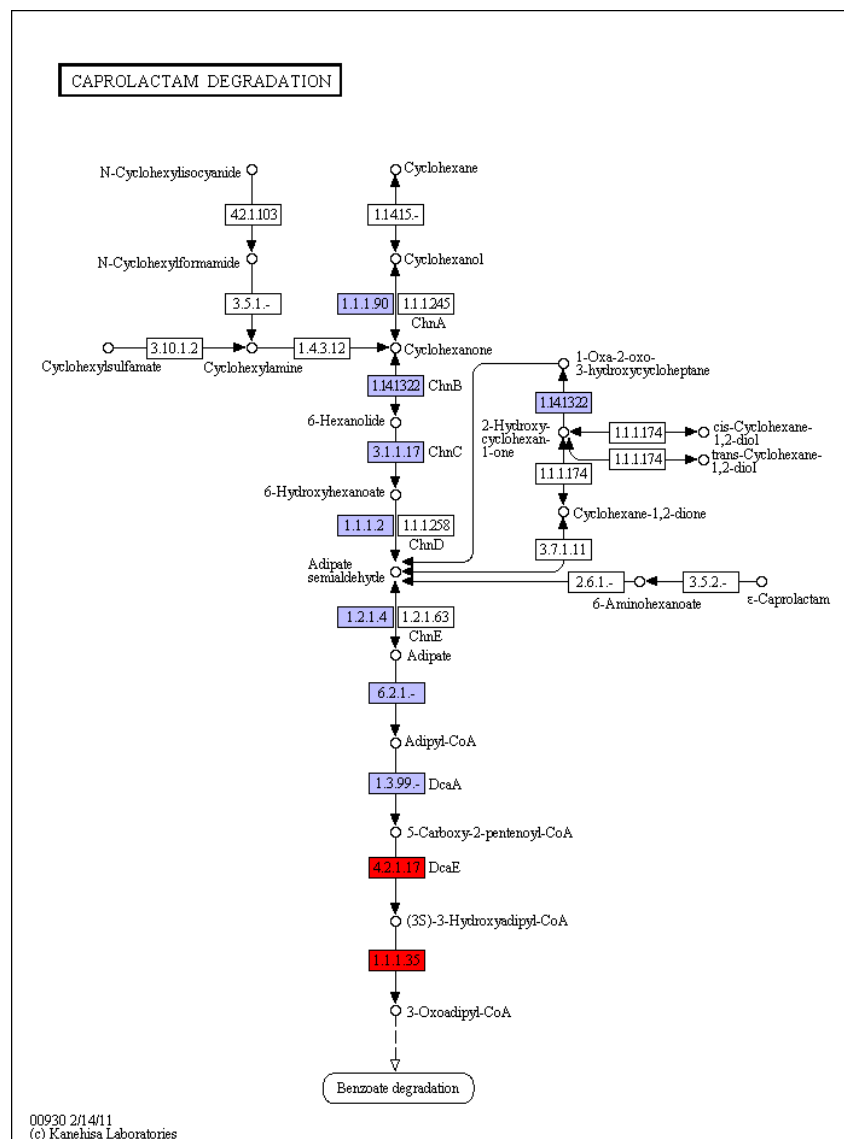


Figure 209: ko00930 Caprolactam degradation





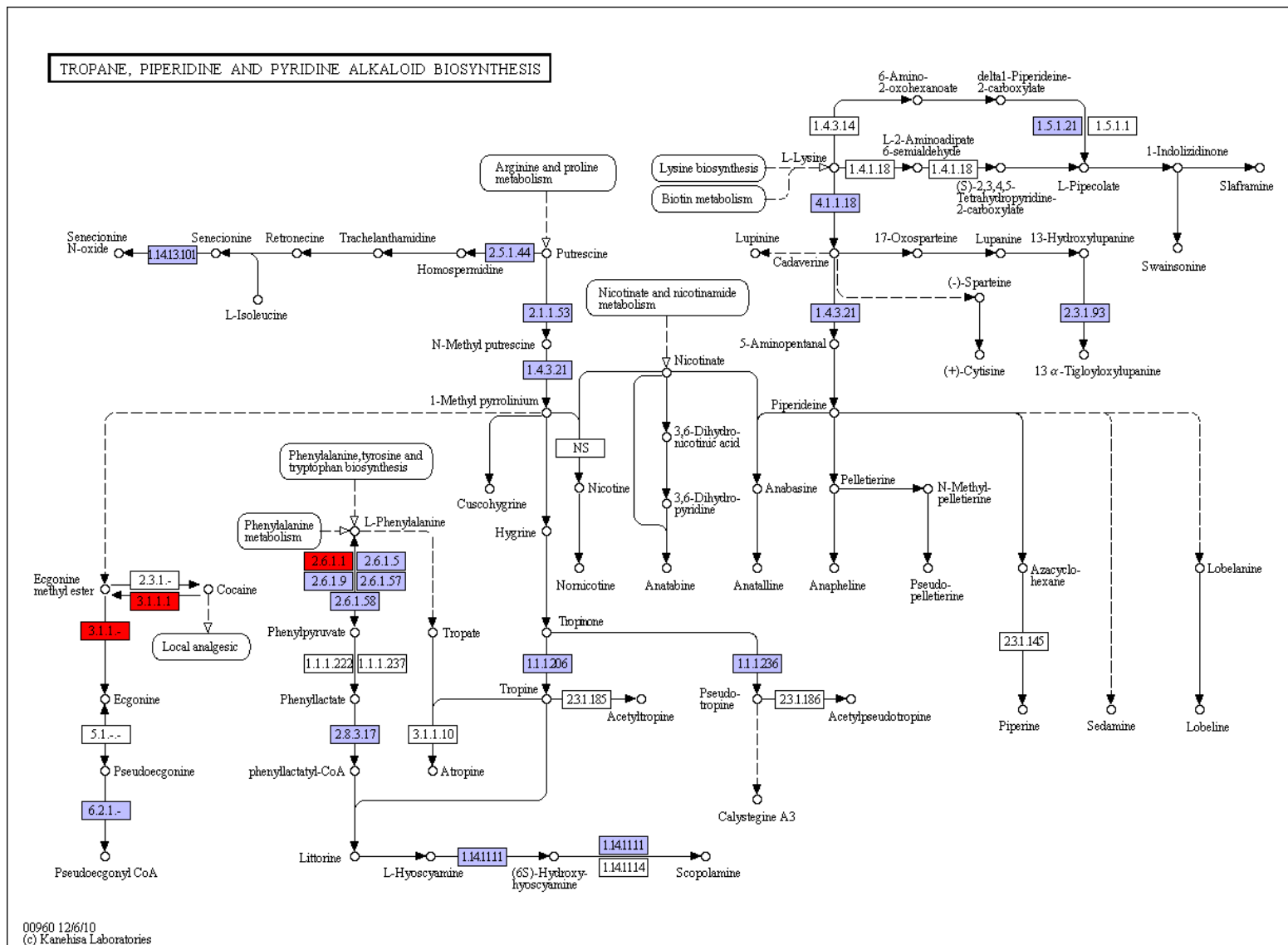
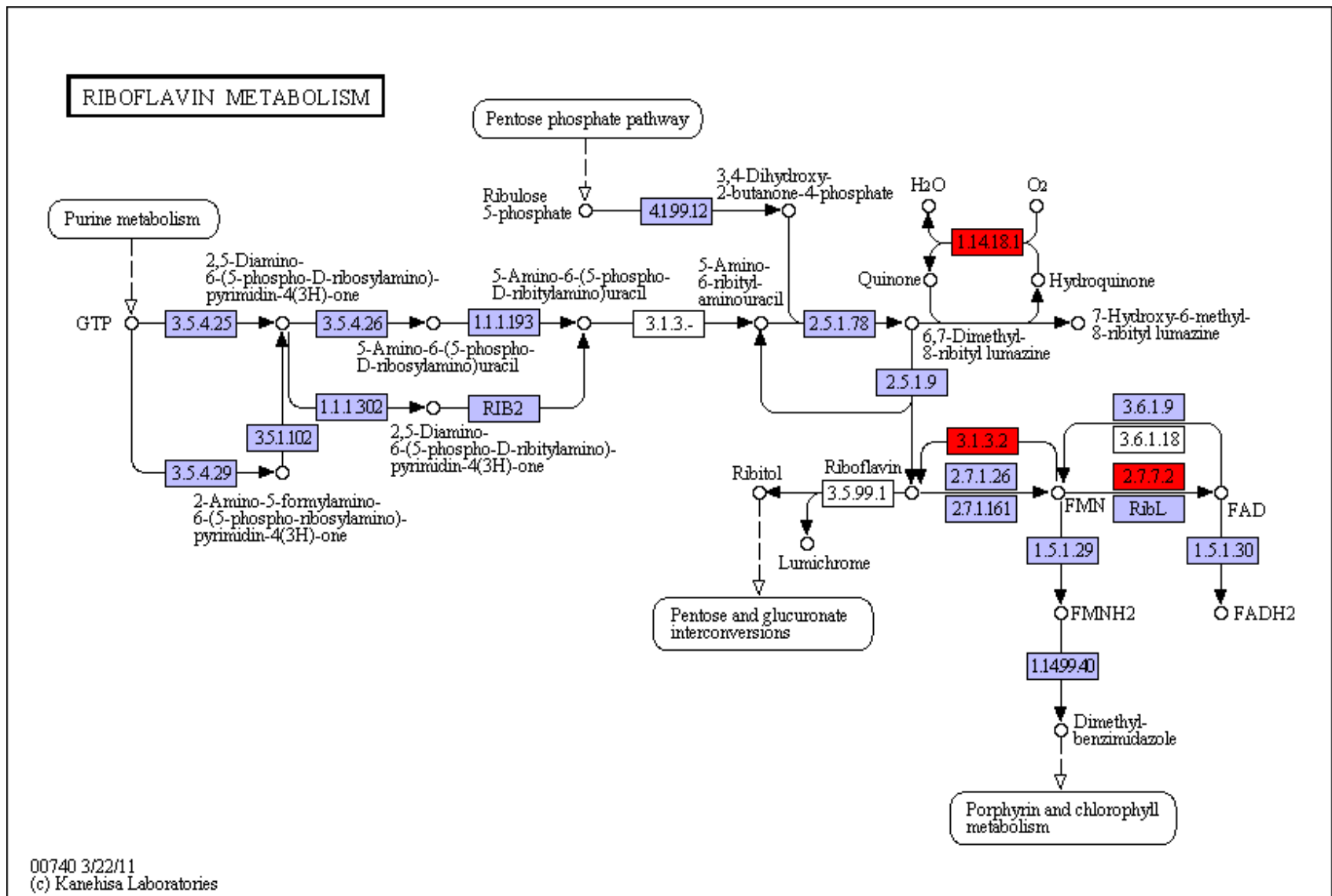


Figure 212: ko00960 Tropane, piperidine and pyridine alkaloid biosynthesis



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Figure 213: ko00740 Riboflavin metabolism

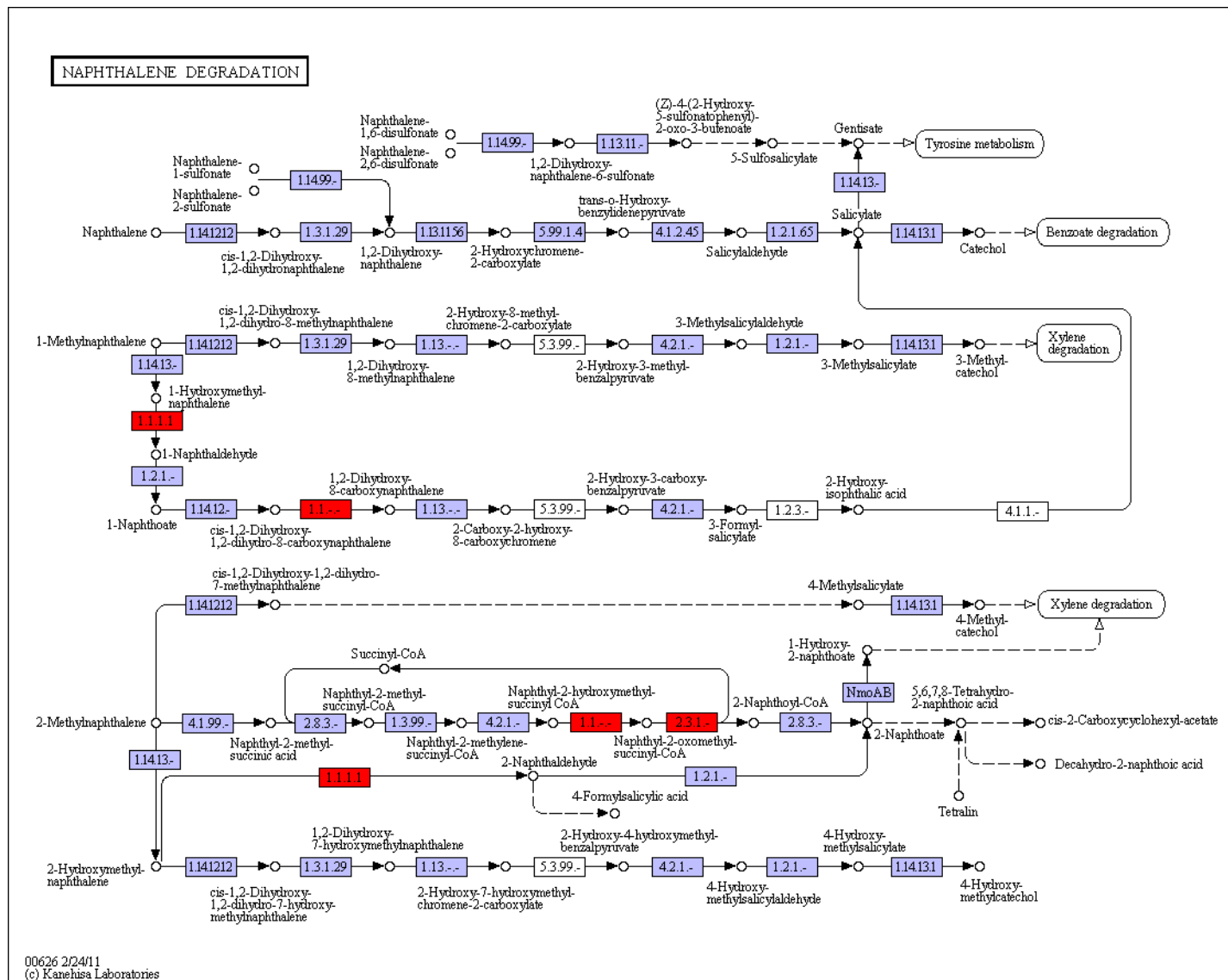


Figure 214: ko00626 Naphthalene degradation







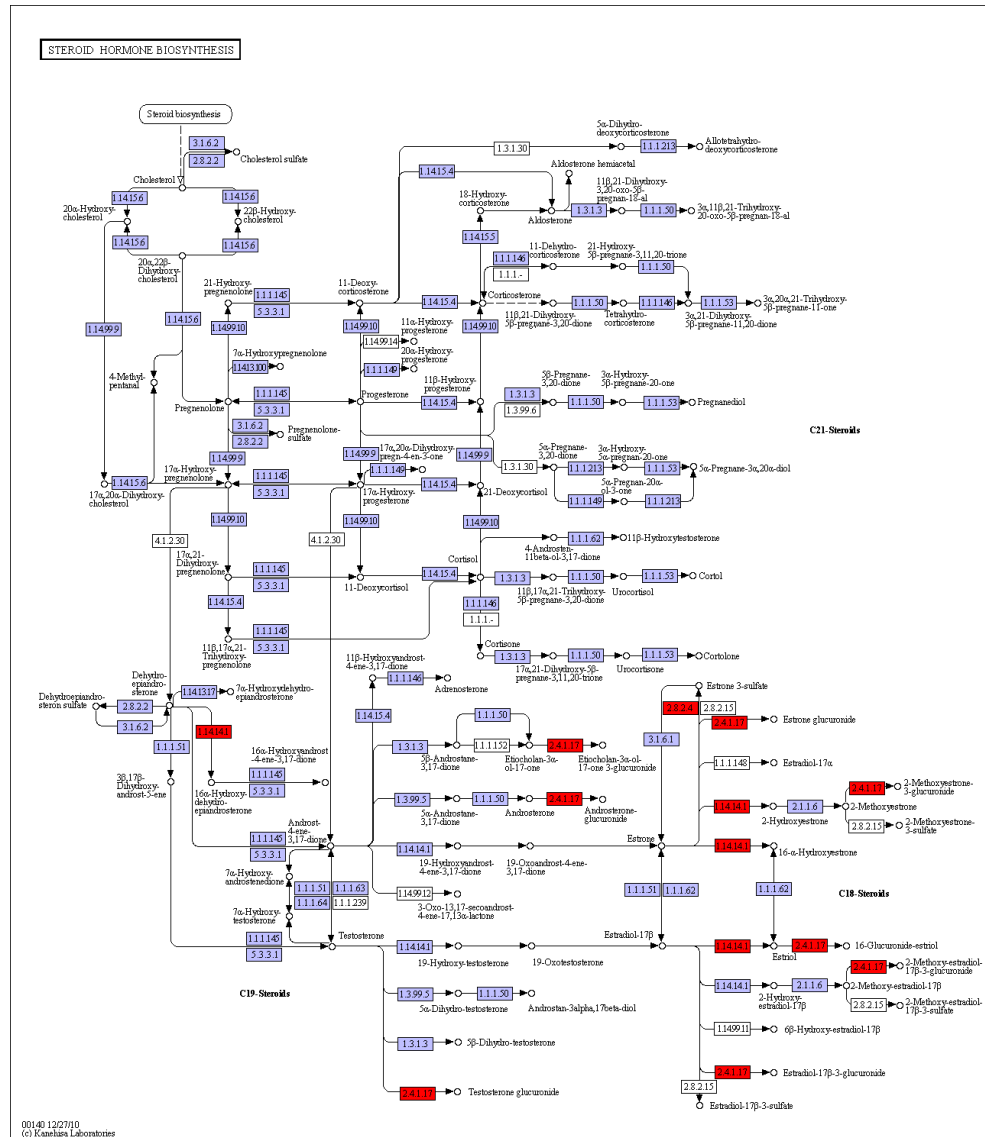


Figure 217: ko00140 Steroid hormone biosynthesis

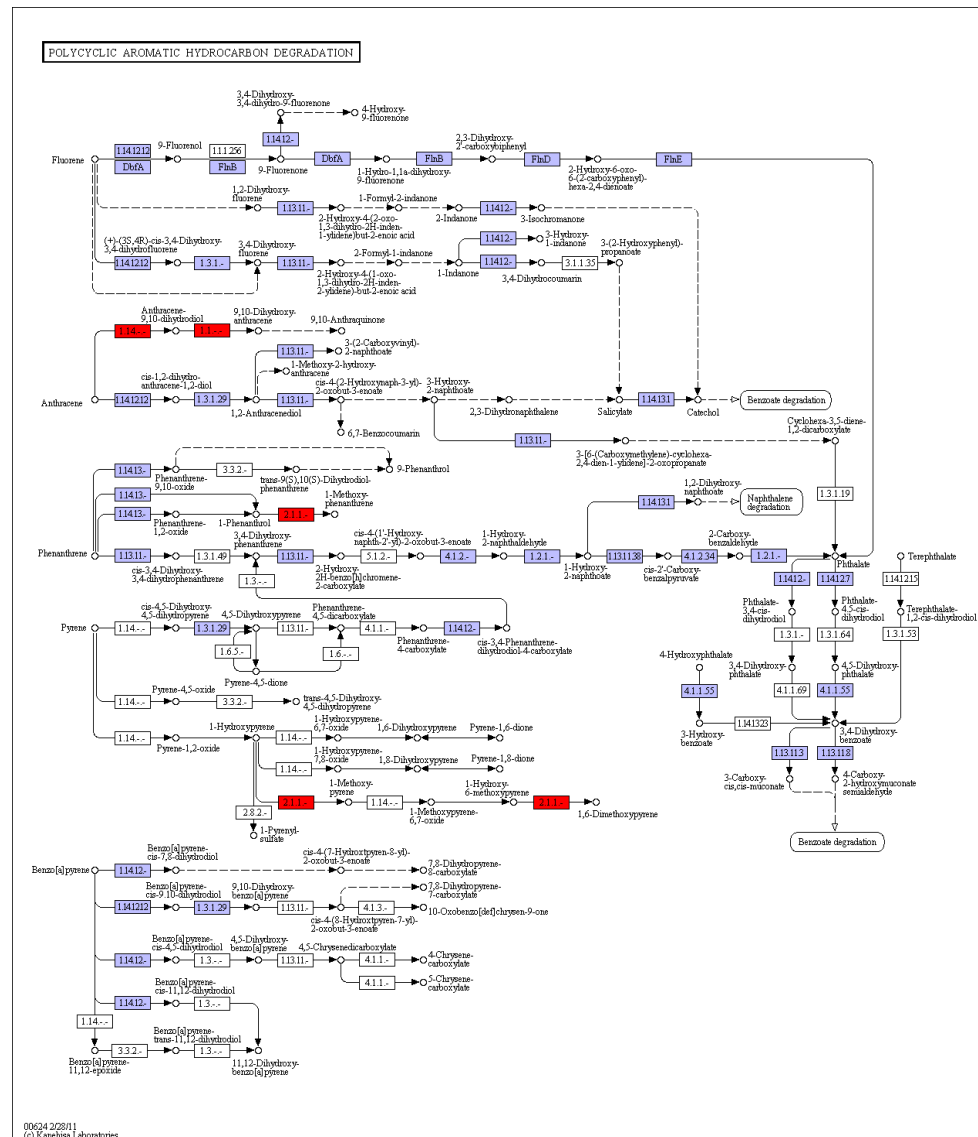


Figure 218: ko00624 Polycyclic aromatic hydrocarbon degradation

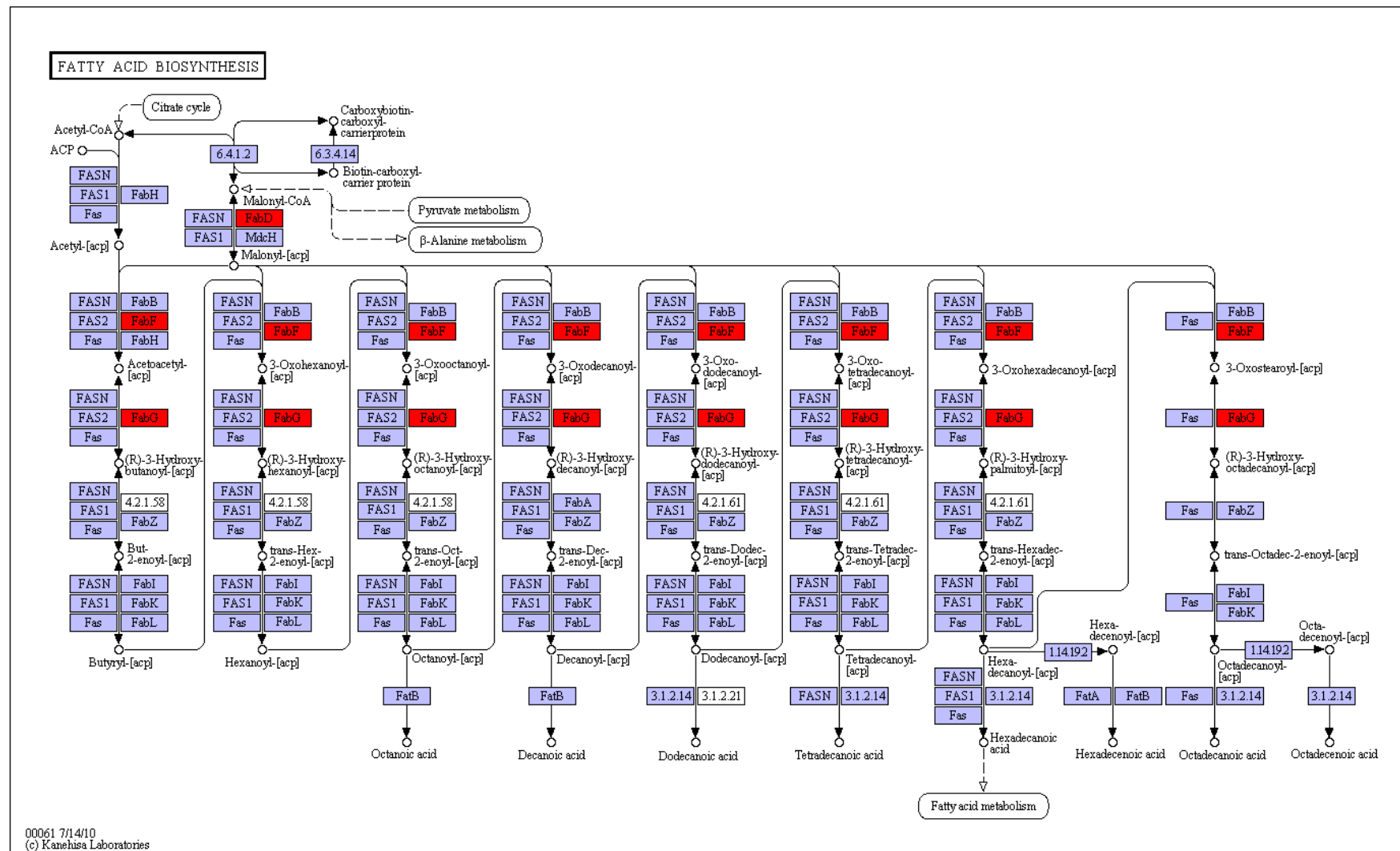


Figure 219: ko00061 Fatty acid biosynthesis

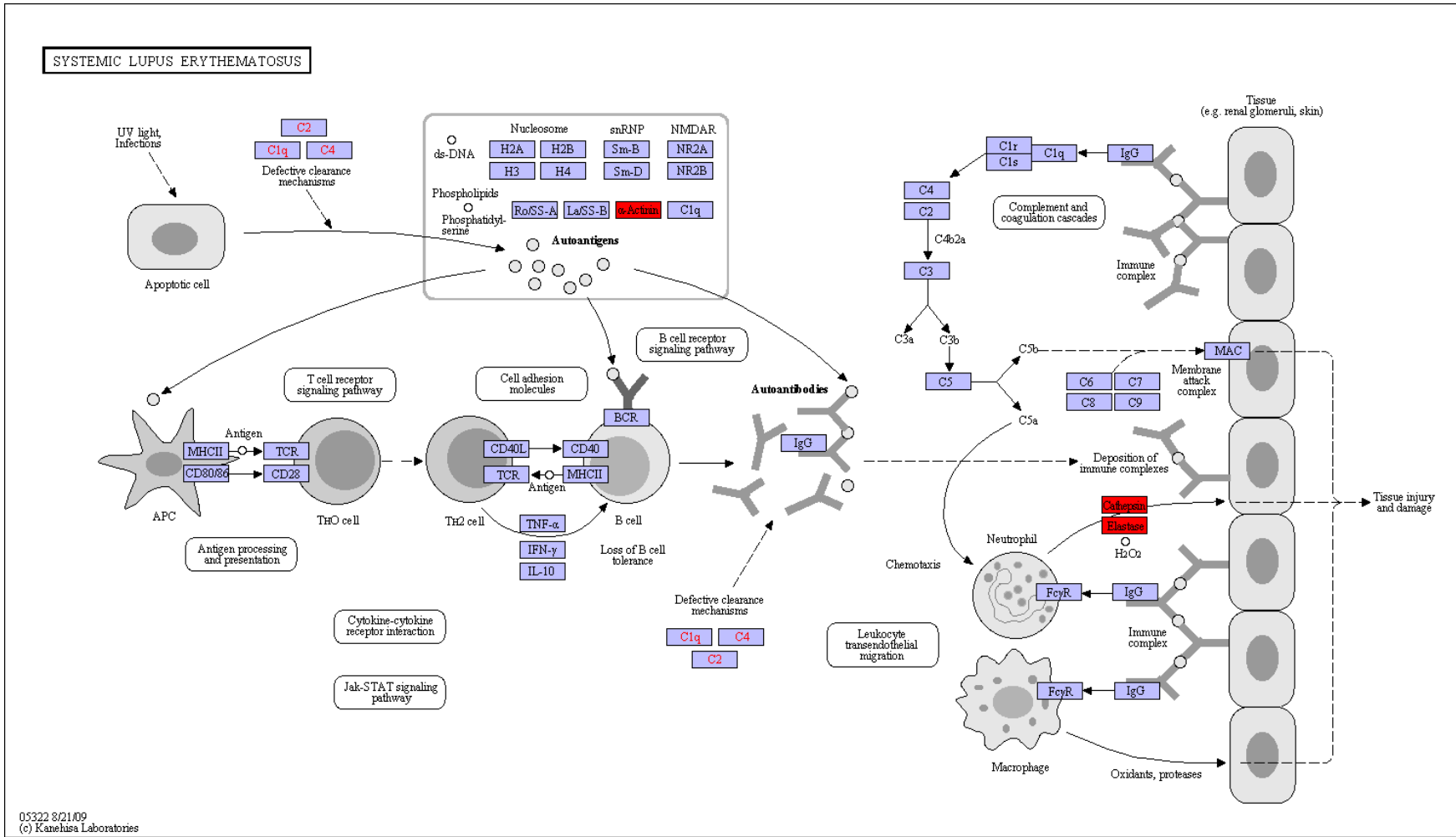


Figure 220: ko5322 Systemic lupus erythematosus

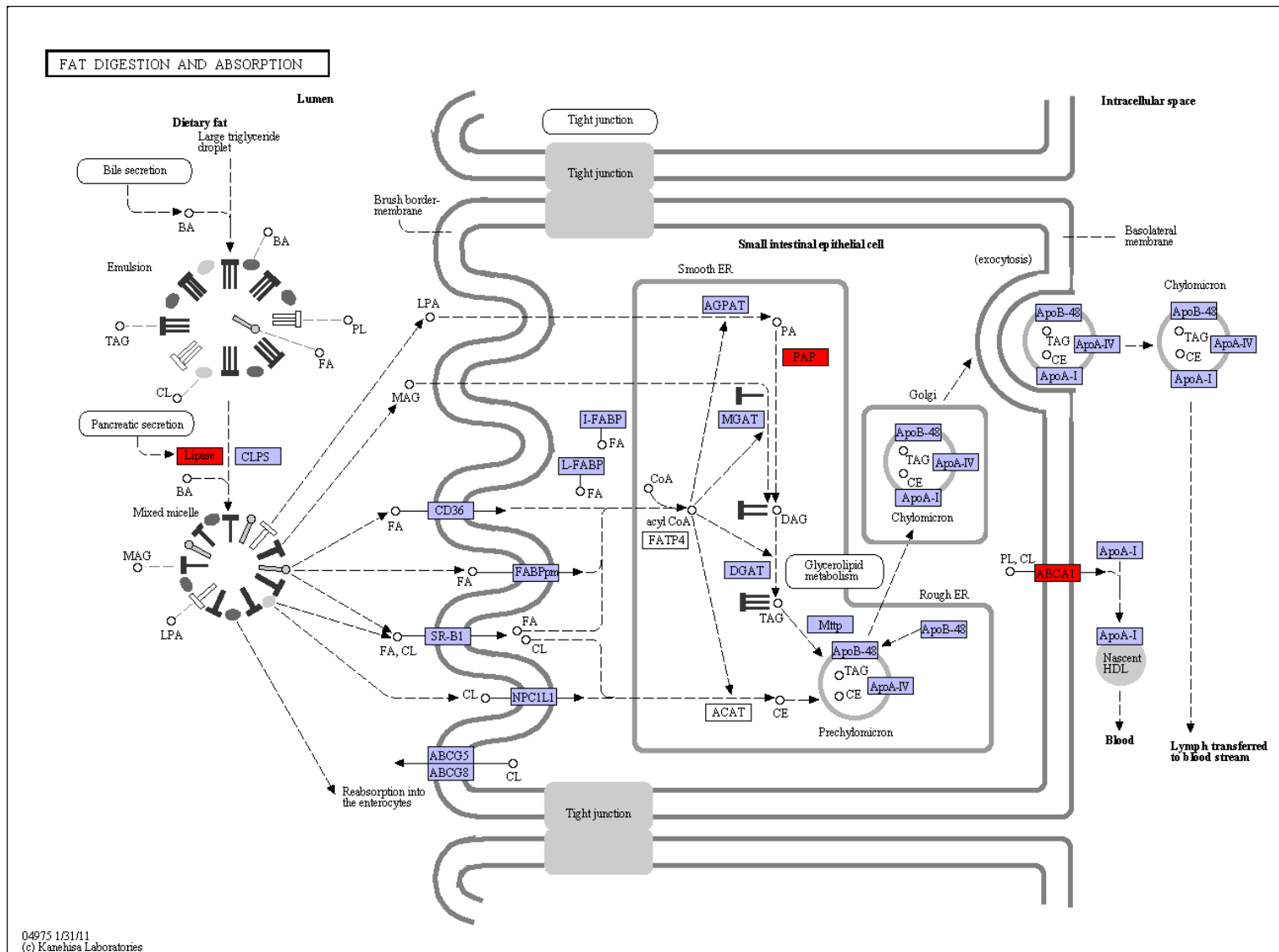


Figure 221: ko04975 Fat digestion and absorption

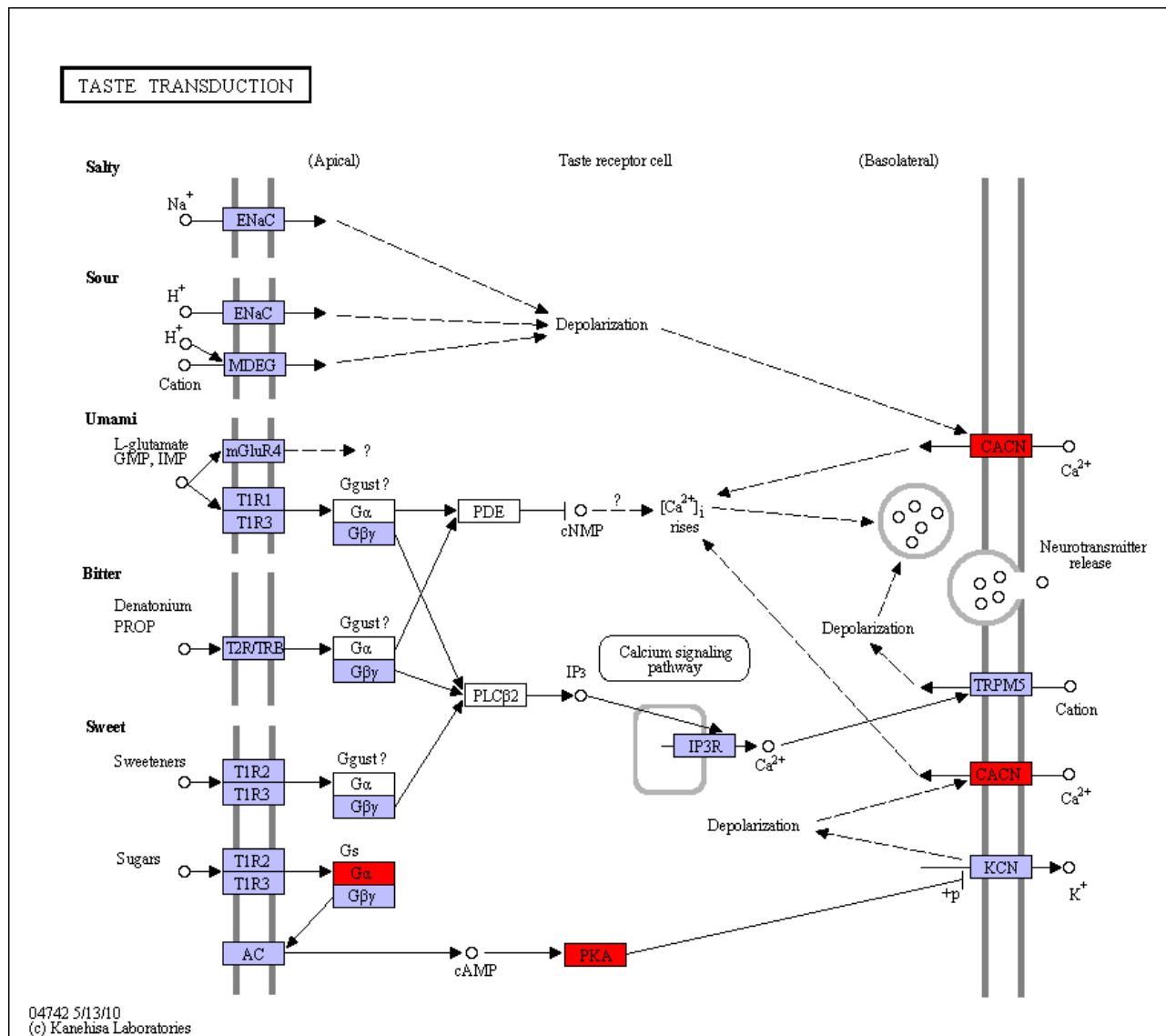


Figure 222: ko04742 Taste transduction

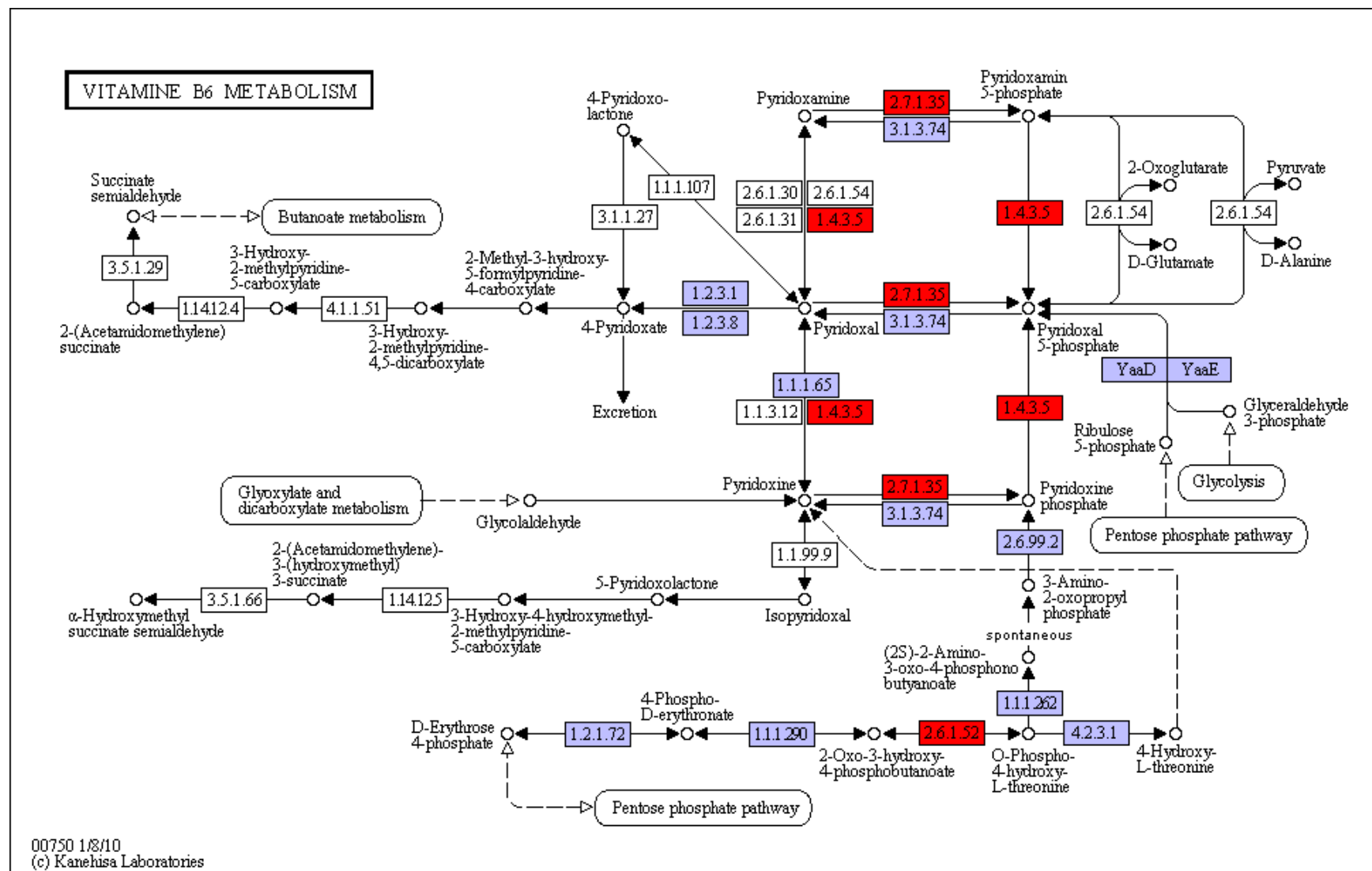


Figure 223: ko00750 Vitamin B6 metabolism



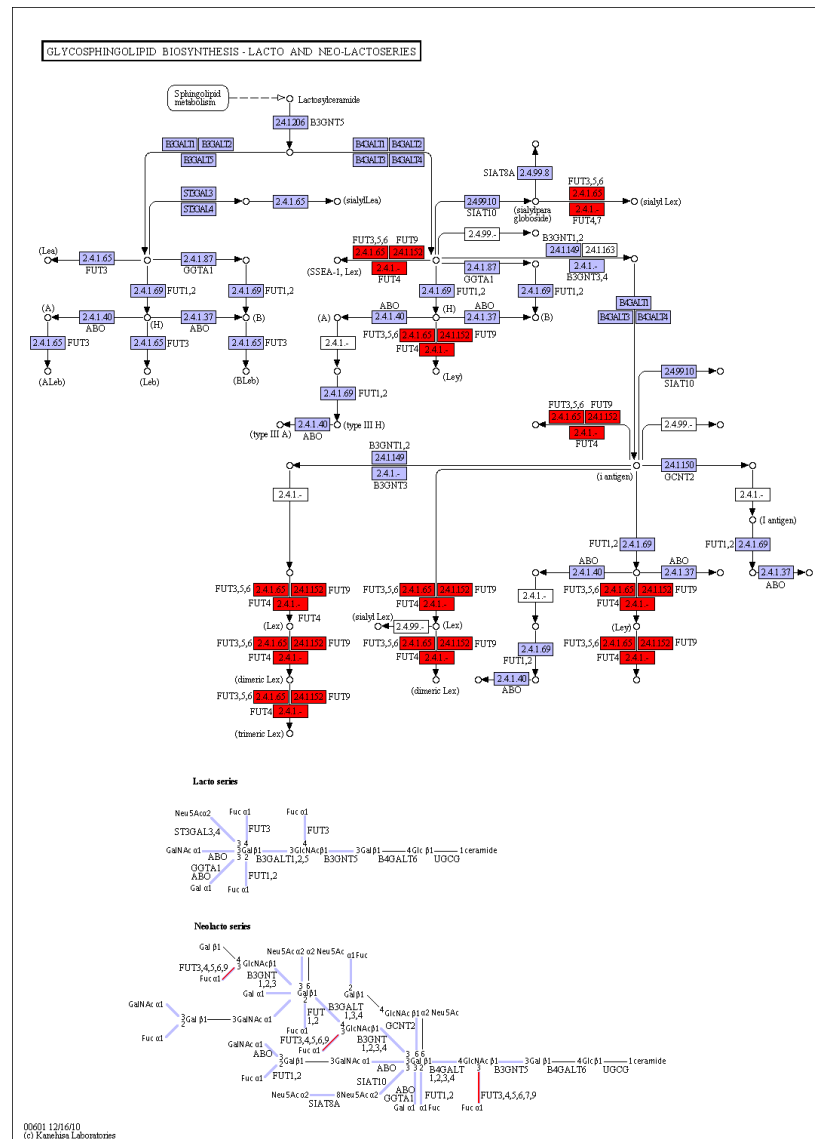


Figure 224: ko00601 Glycosphingolipid biosynthesis - lacto and neolacto series



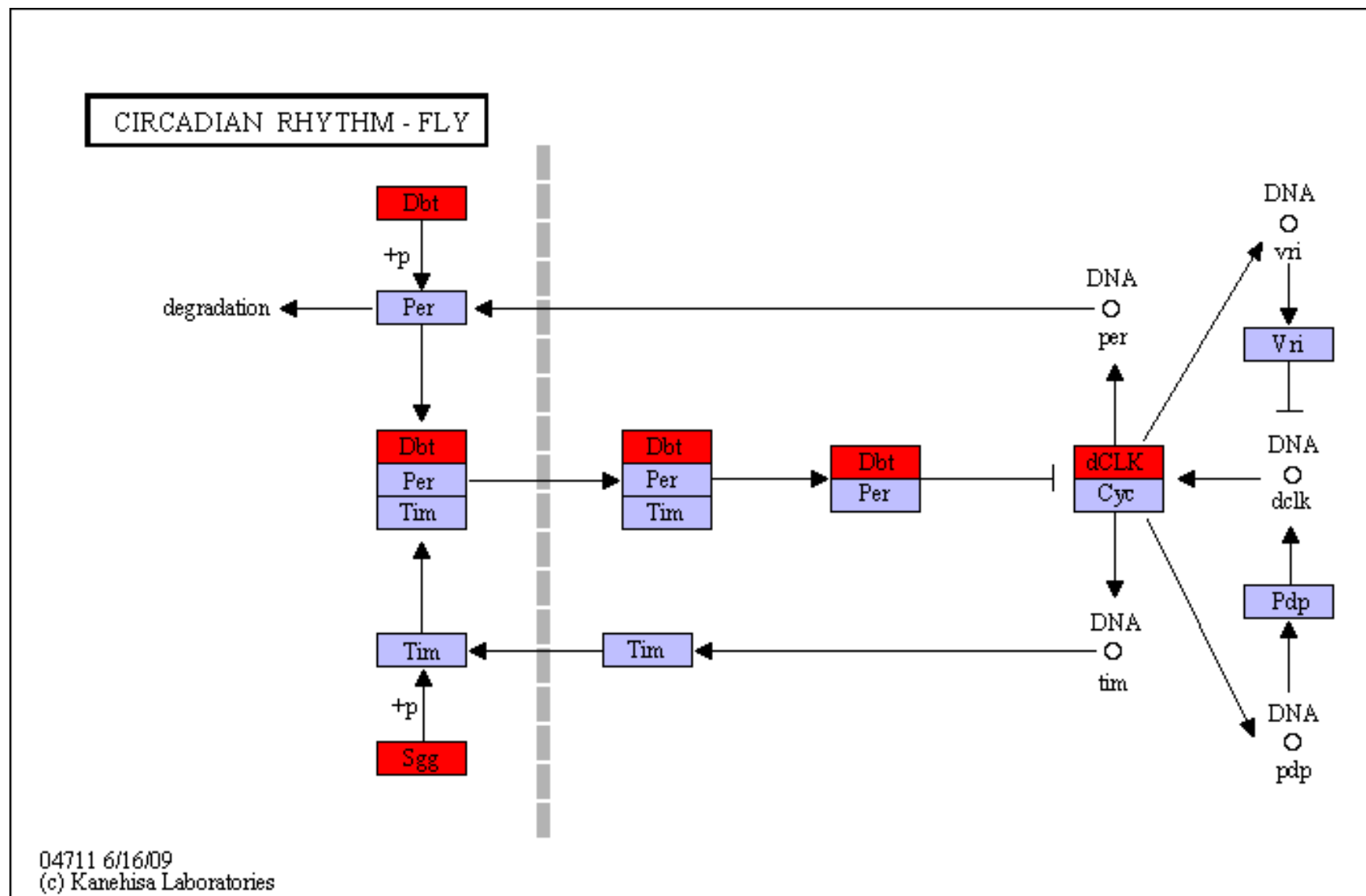
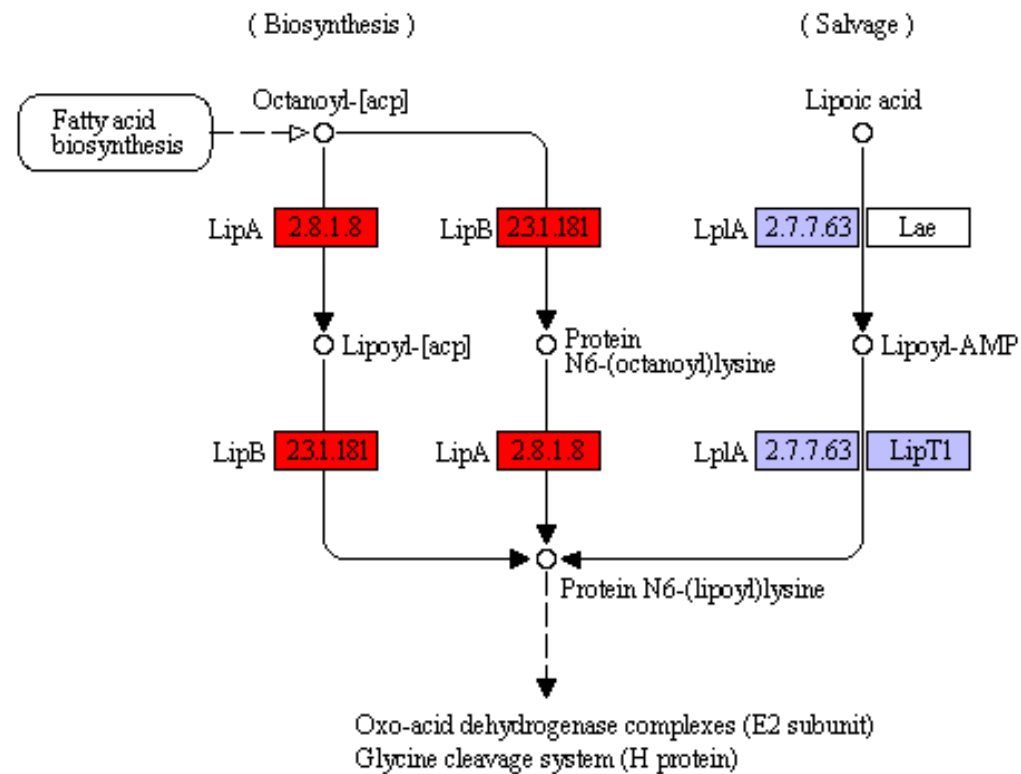


Figure 226: ko04711 Circadian rhythm - fly

## LIPOIC ACID METABOLISM



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Figure 227: ko00785 Lipoic acid metabolism



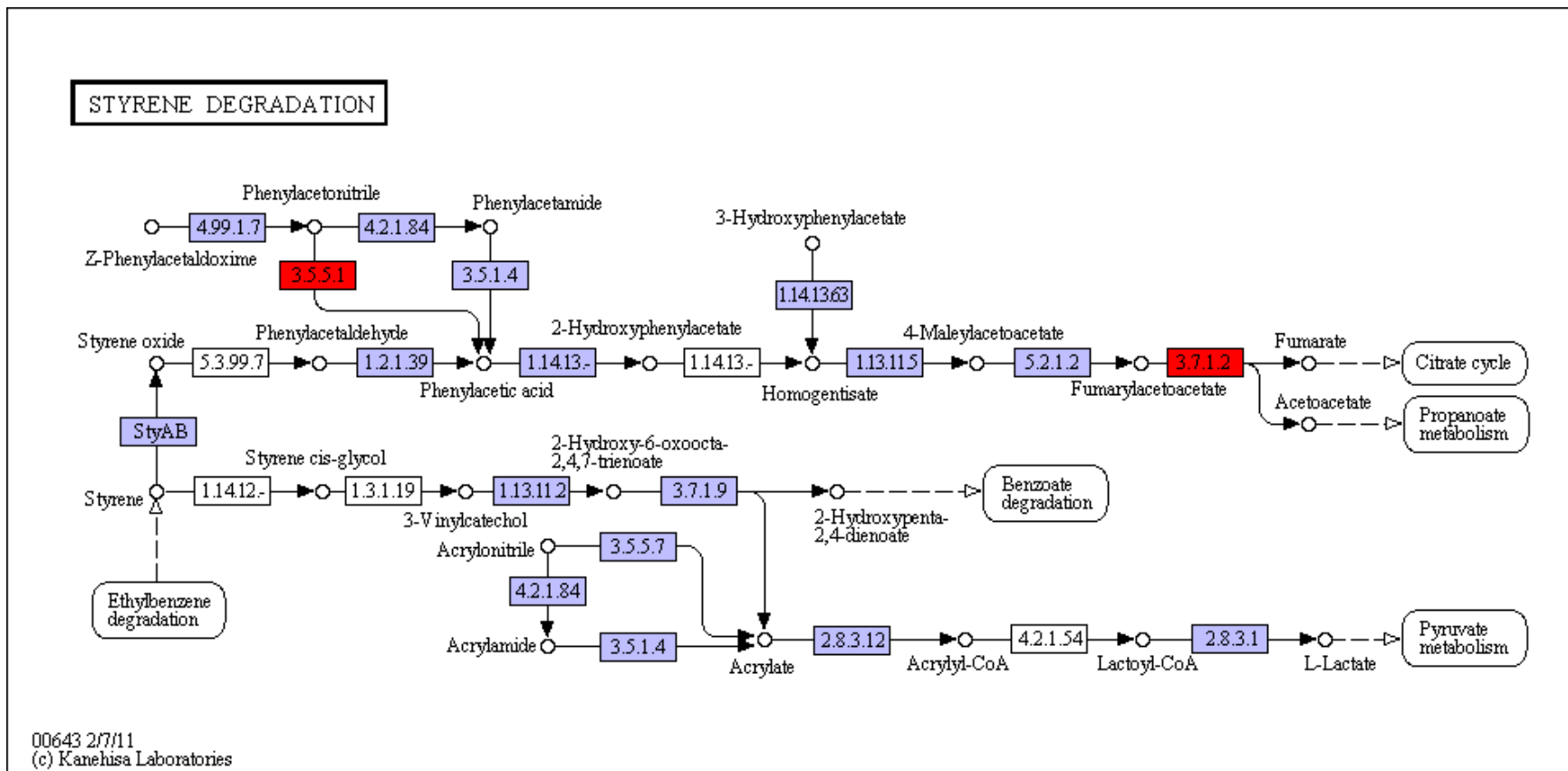


Figure 229: ko00643 Styrene degradation

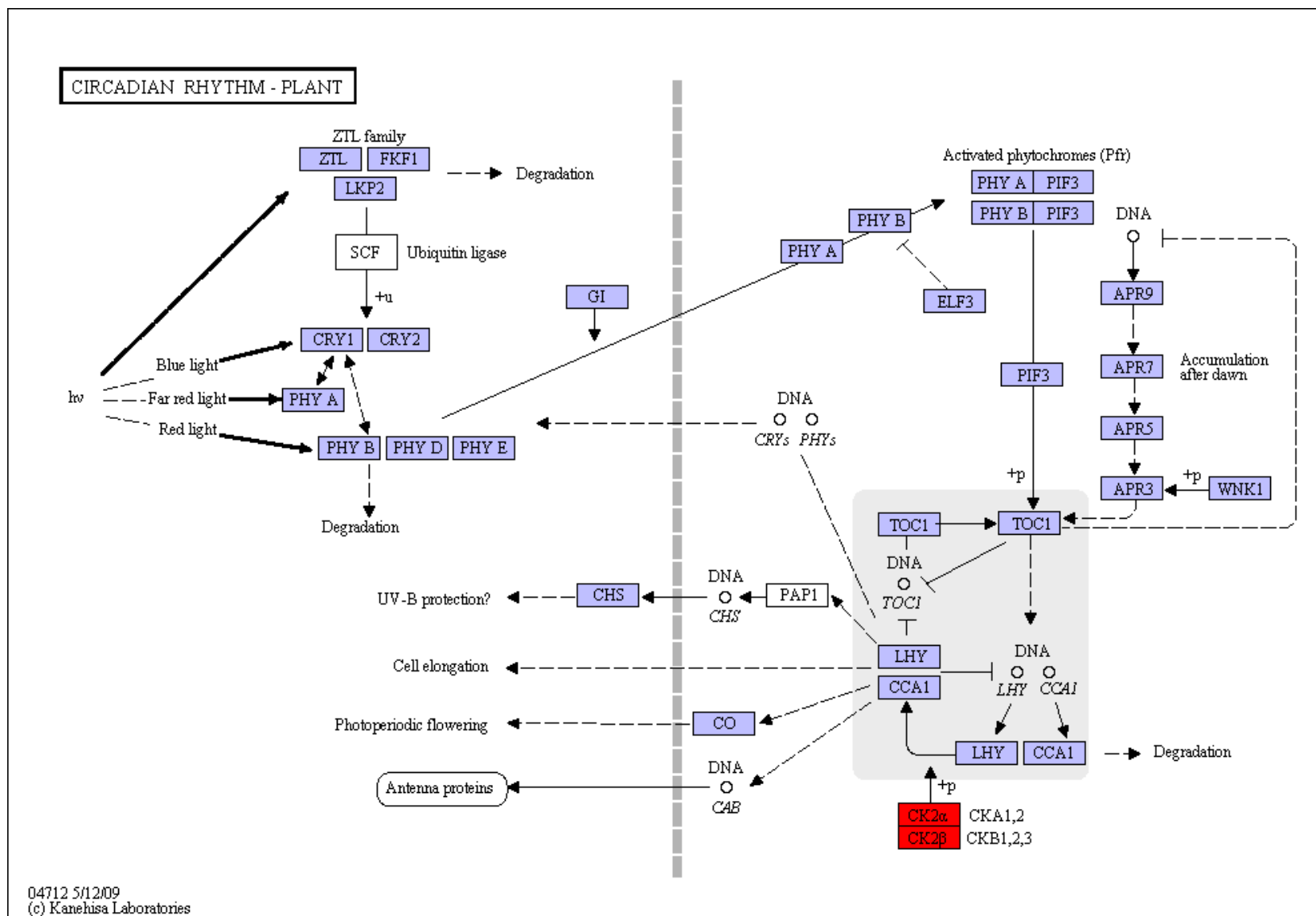


Figure 230: ko04712 Circadian rhythm - plant

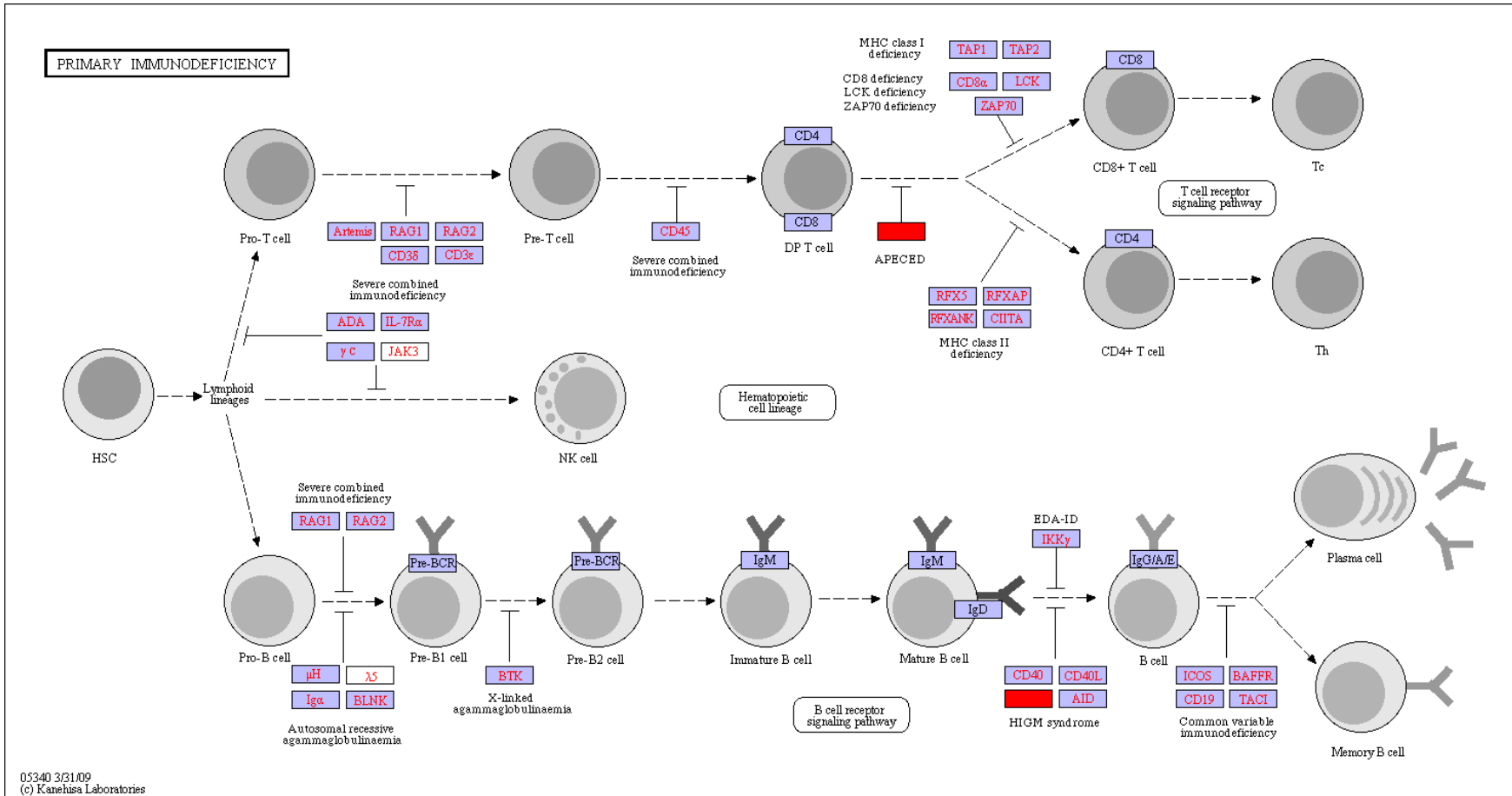


Figure 231: ko05340 Primary immunodeficiency



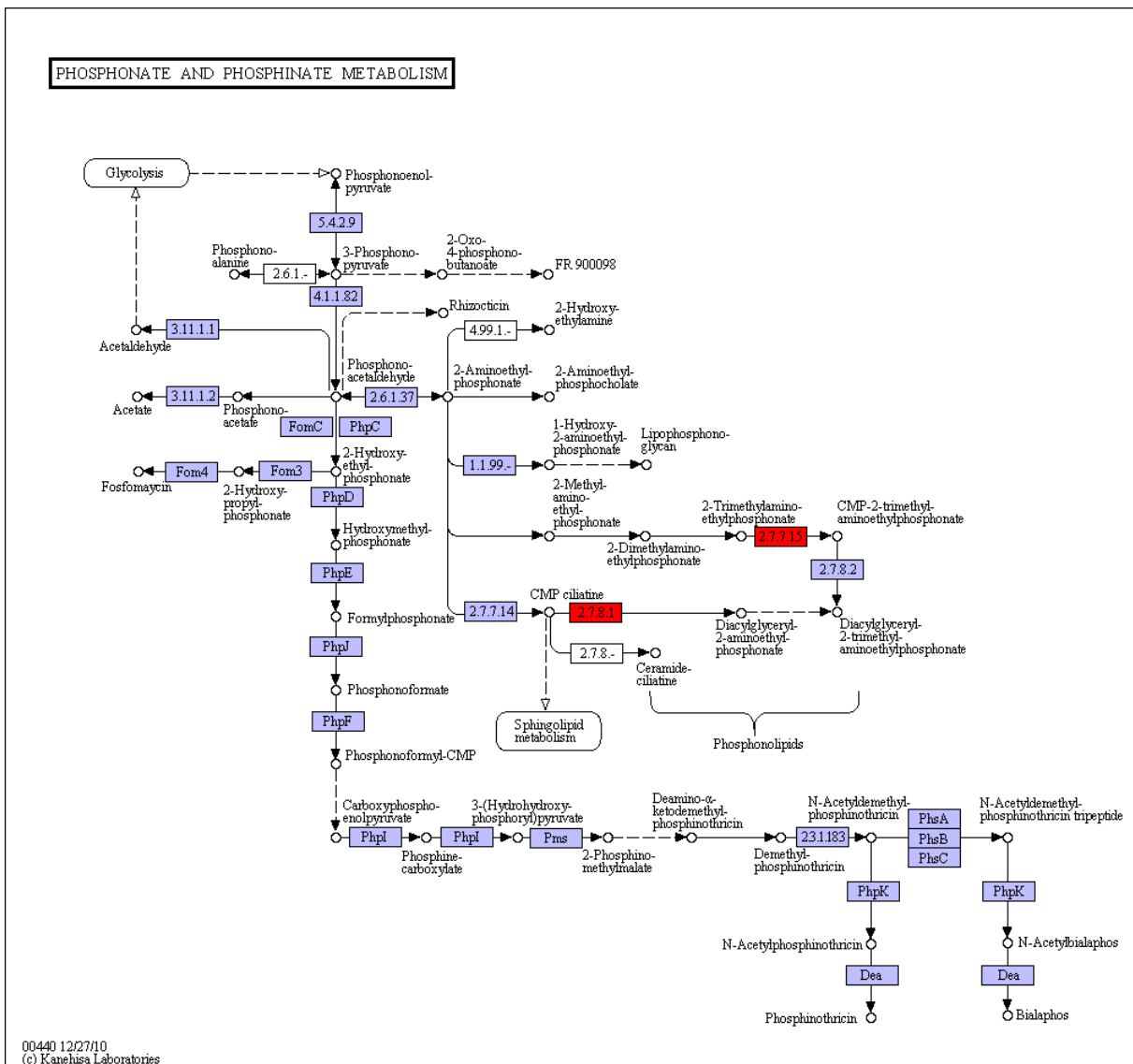
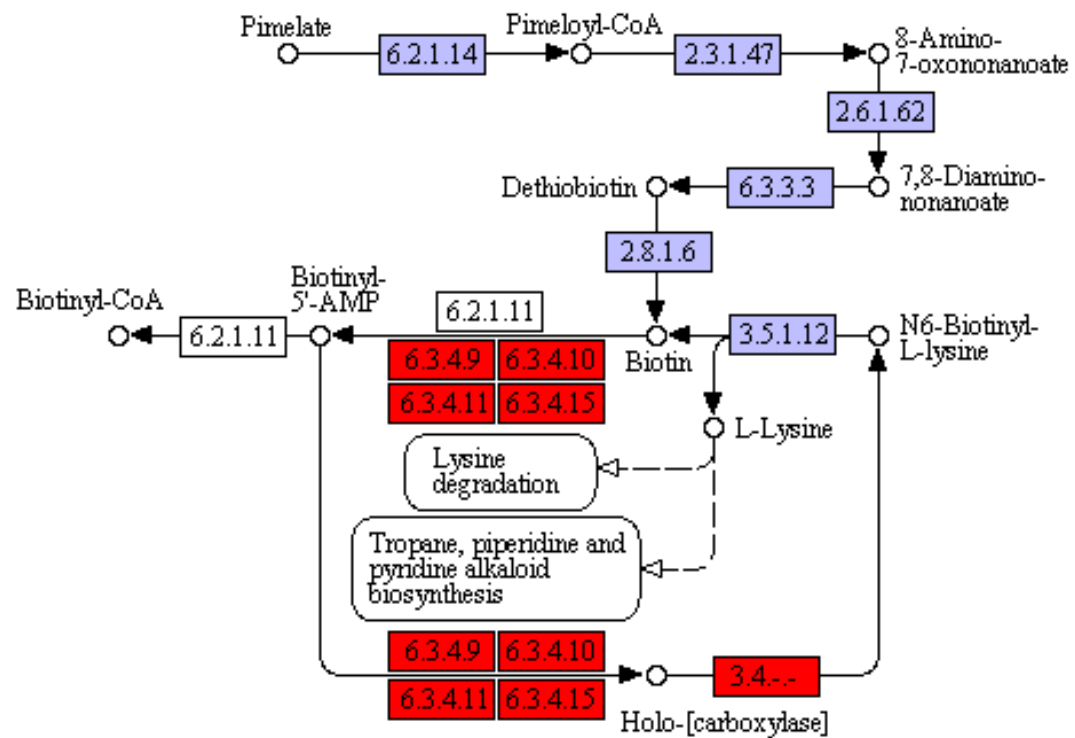


Figure 232: ko00440 Phosphonate and phosphinate metabolism



# BIOTIN METABOLISM



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Figure 234: ko00780 Biotin metabolism

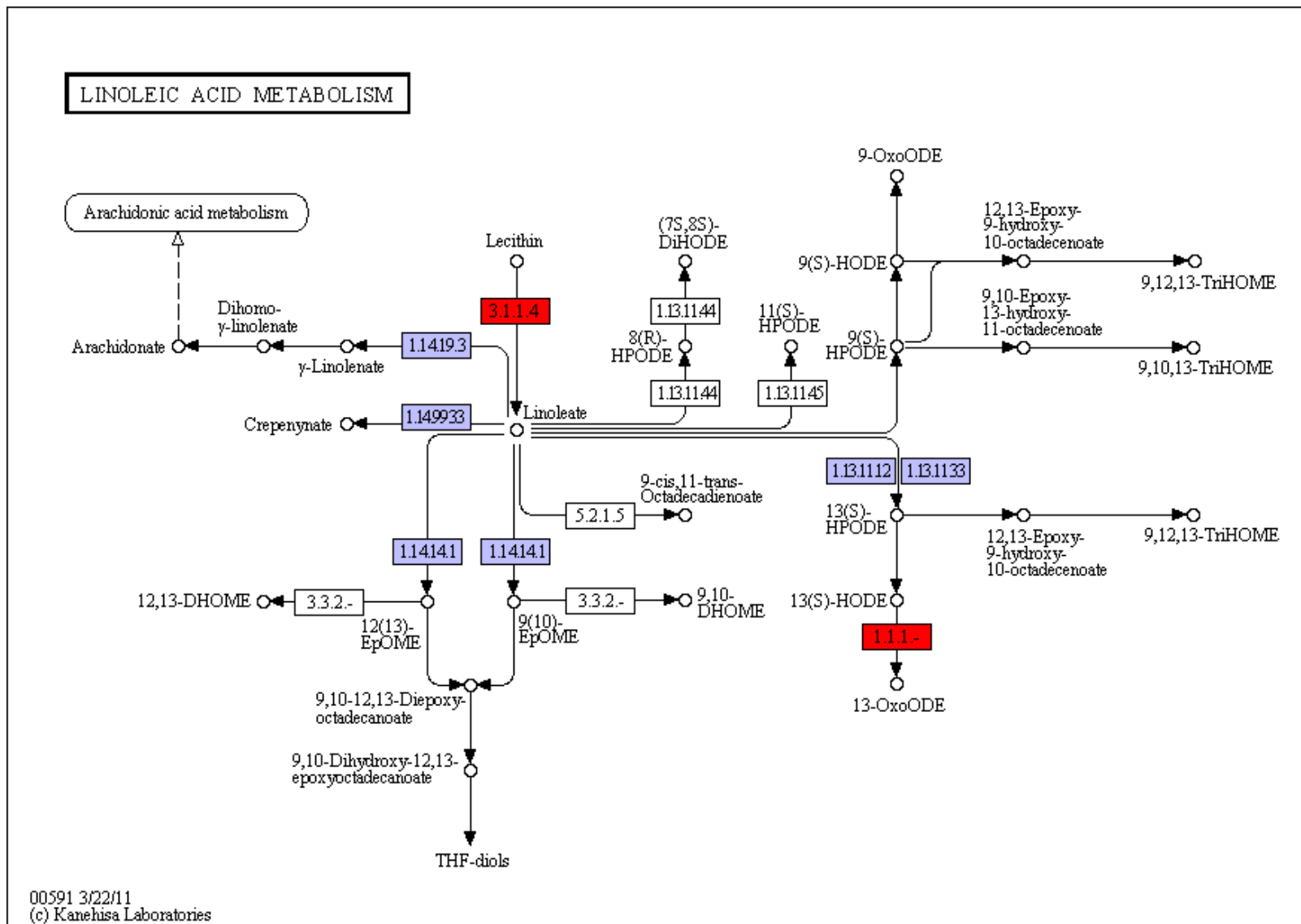


Figure 235: ko00591 Linoleic acid metabolism

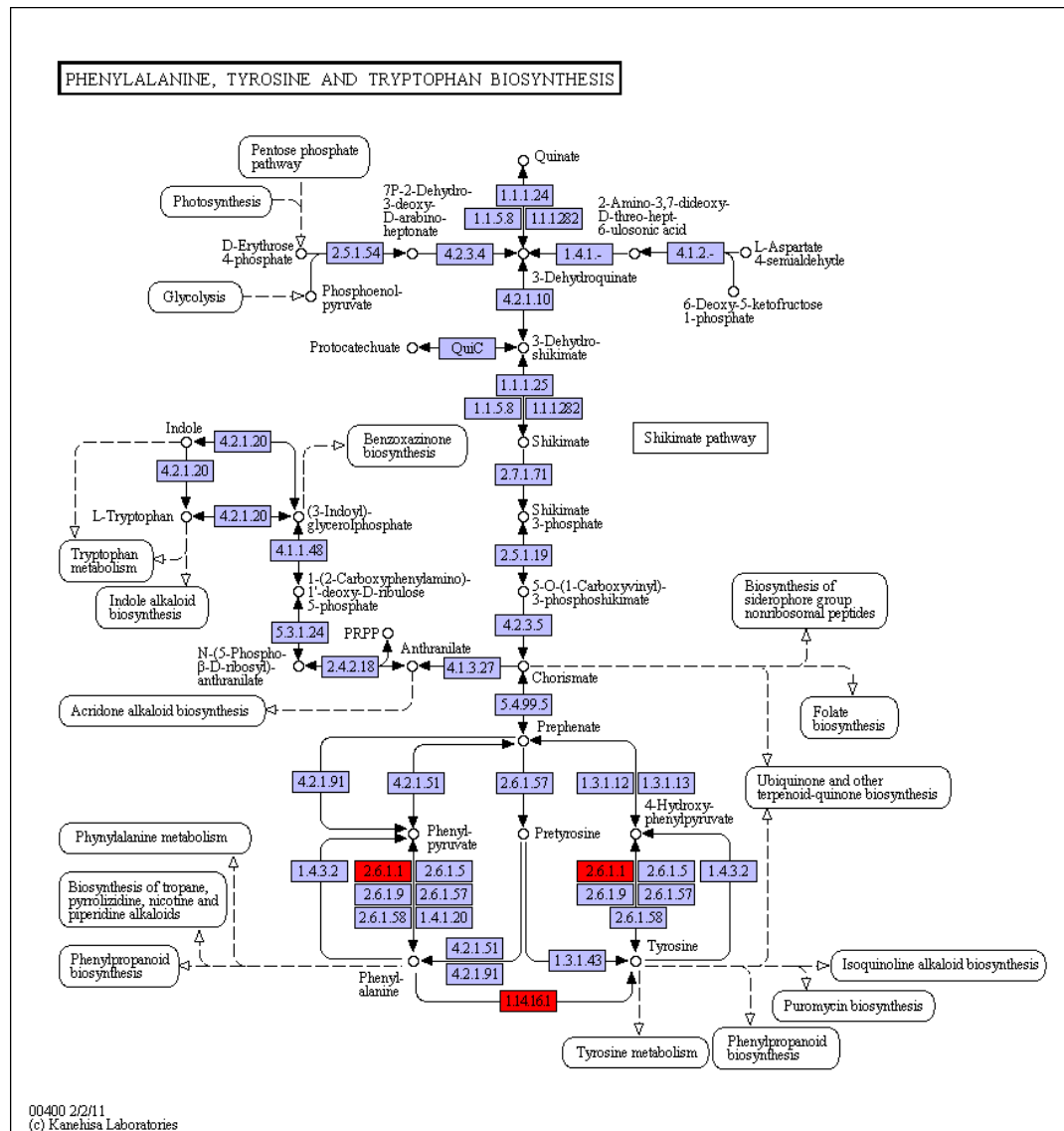
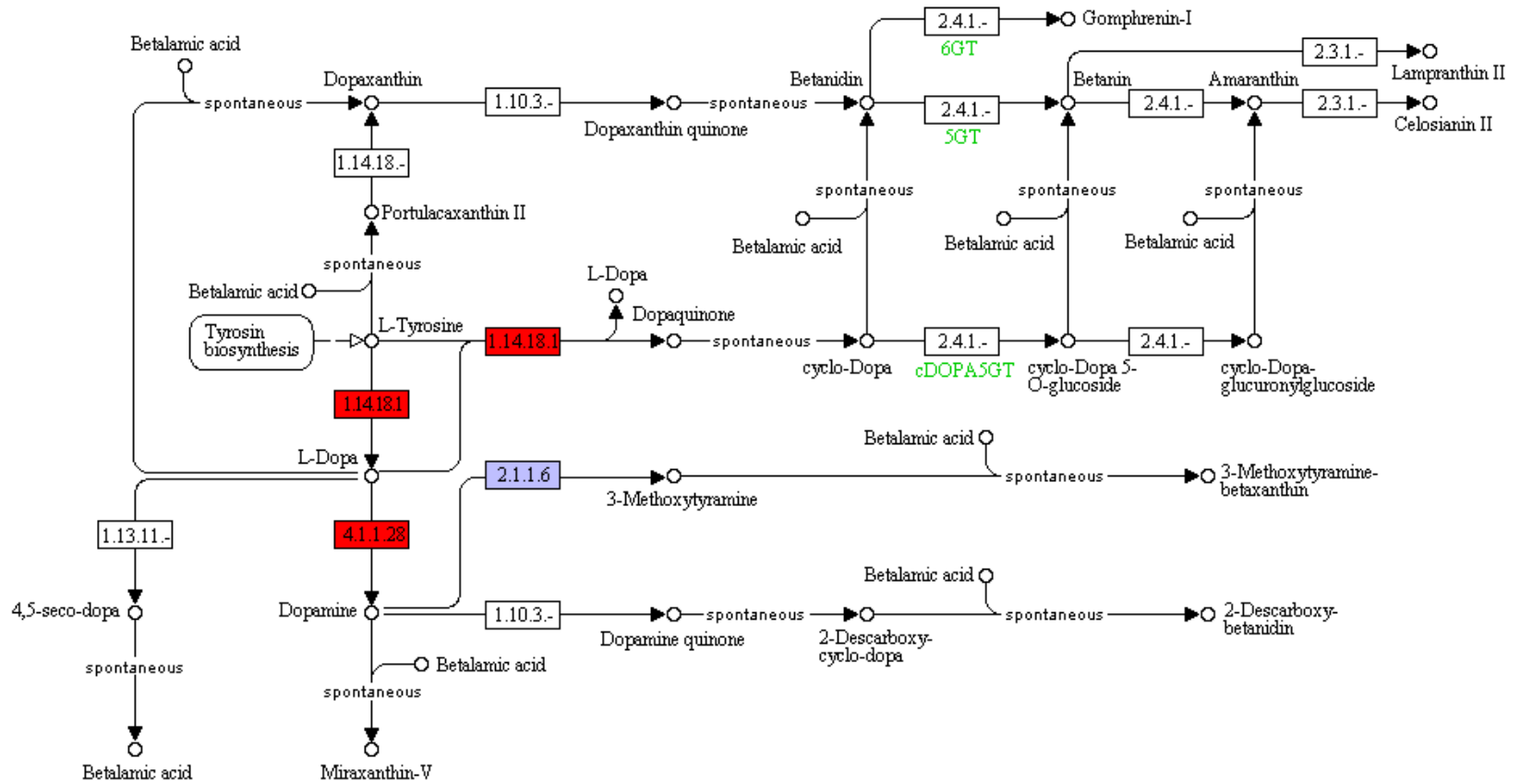


Figure 236: ko00400 Phenylalanine, tyrosine and tryptophan biosynthesis

# BETALAIN BIOSYNTHESIS



00965 9/3/09  
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Figure 237: ko00965 Betalain biosynthesis

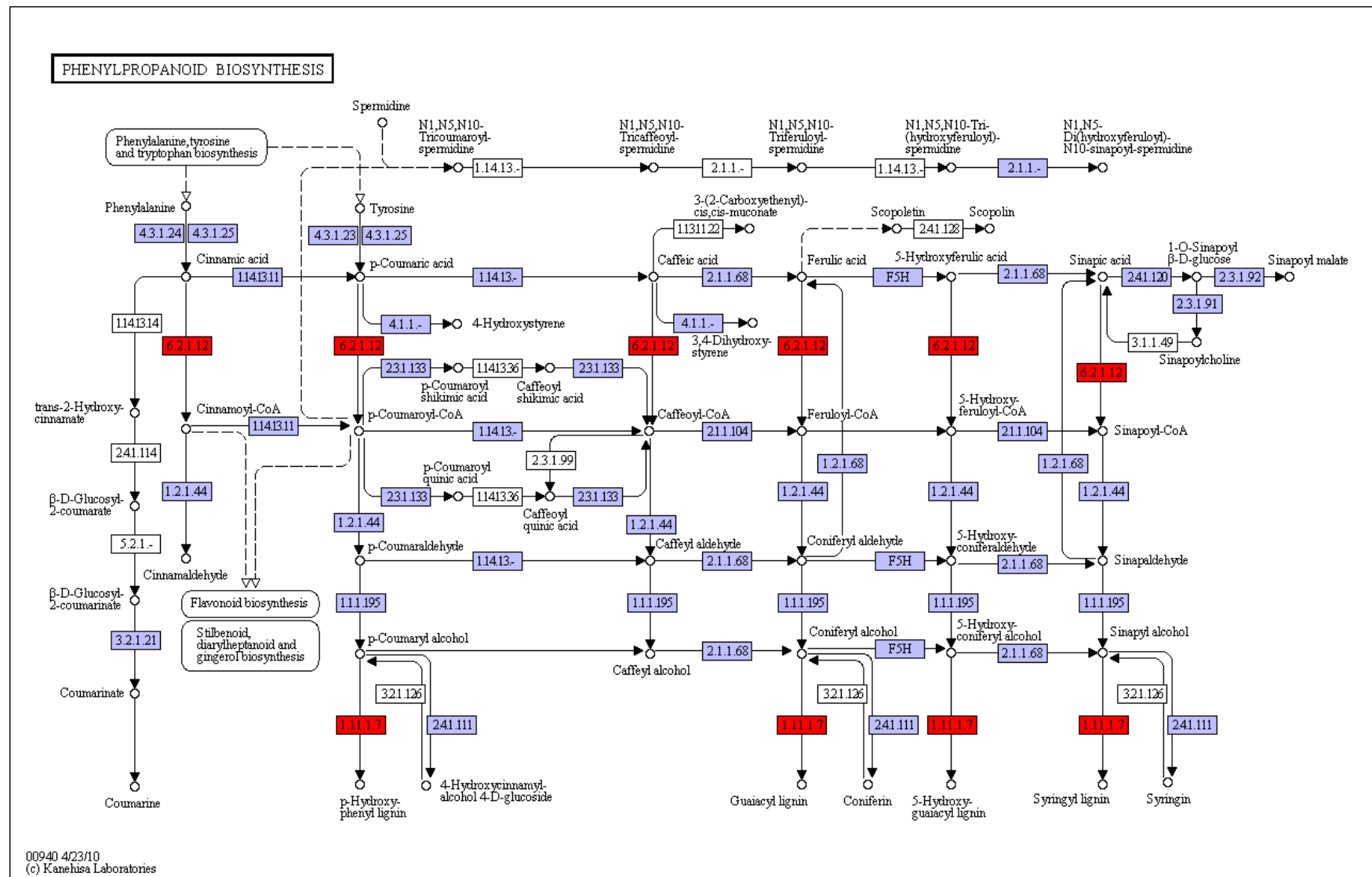


Figure 238: ko00940 Phenylpropanoid biosynthesis

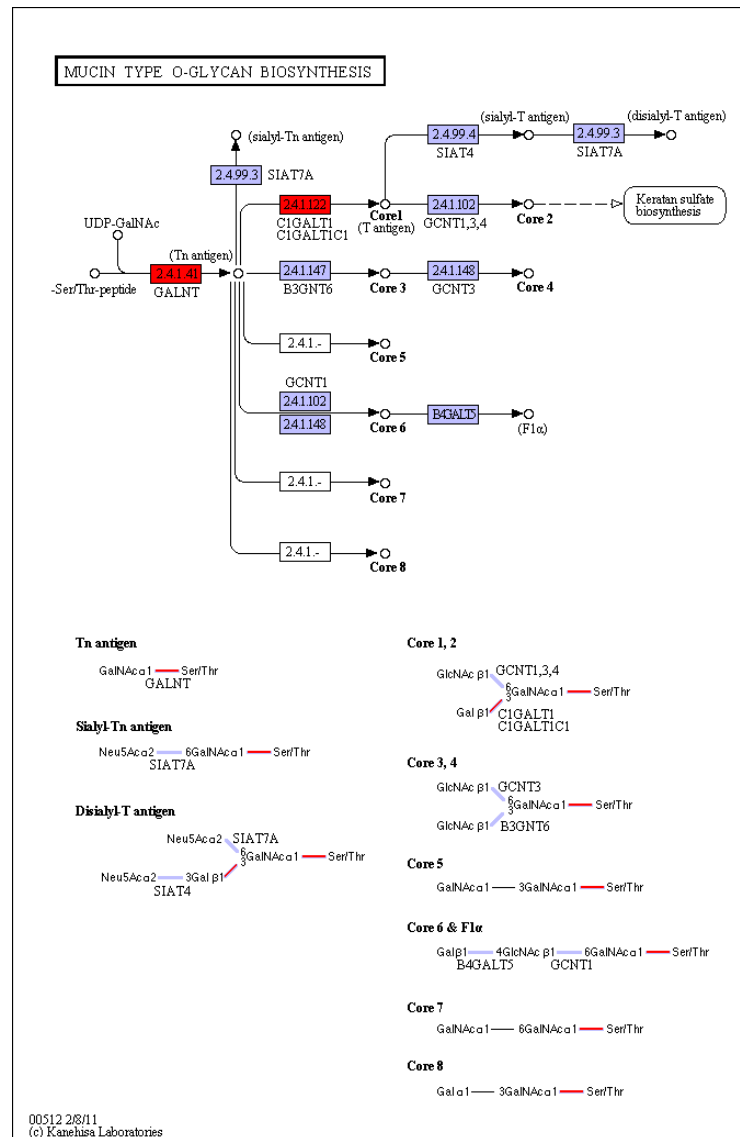


Figure 239: ko00512 Mucin type O-Glycan biosynthesis



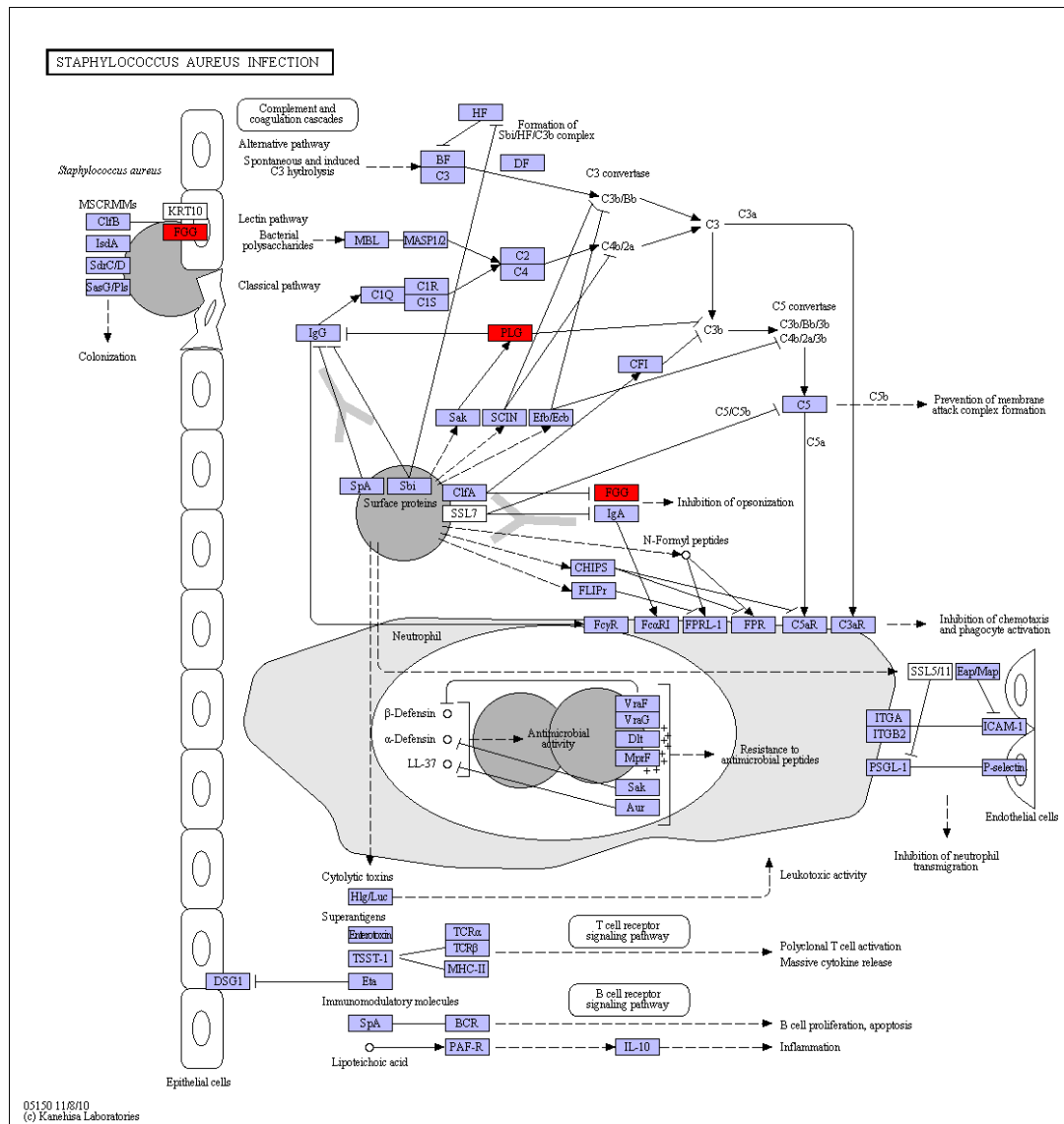
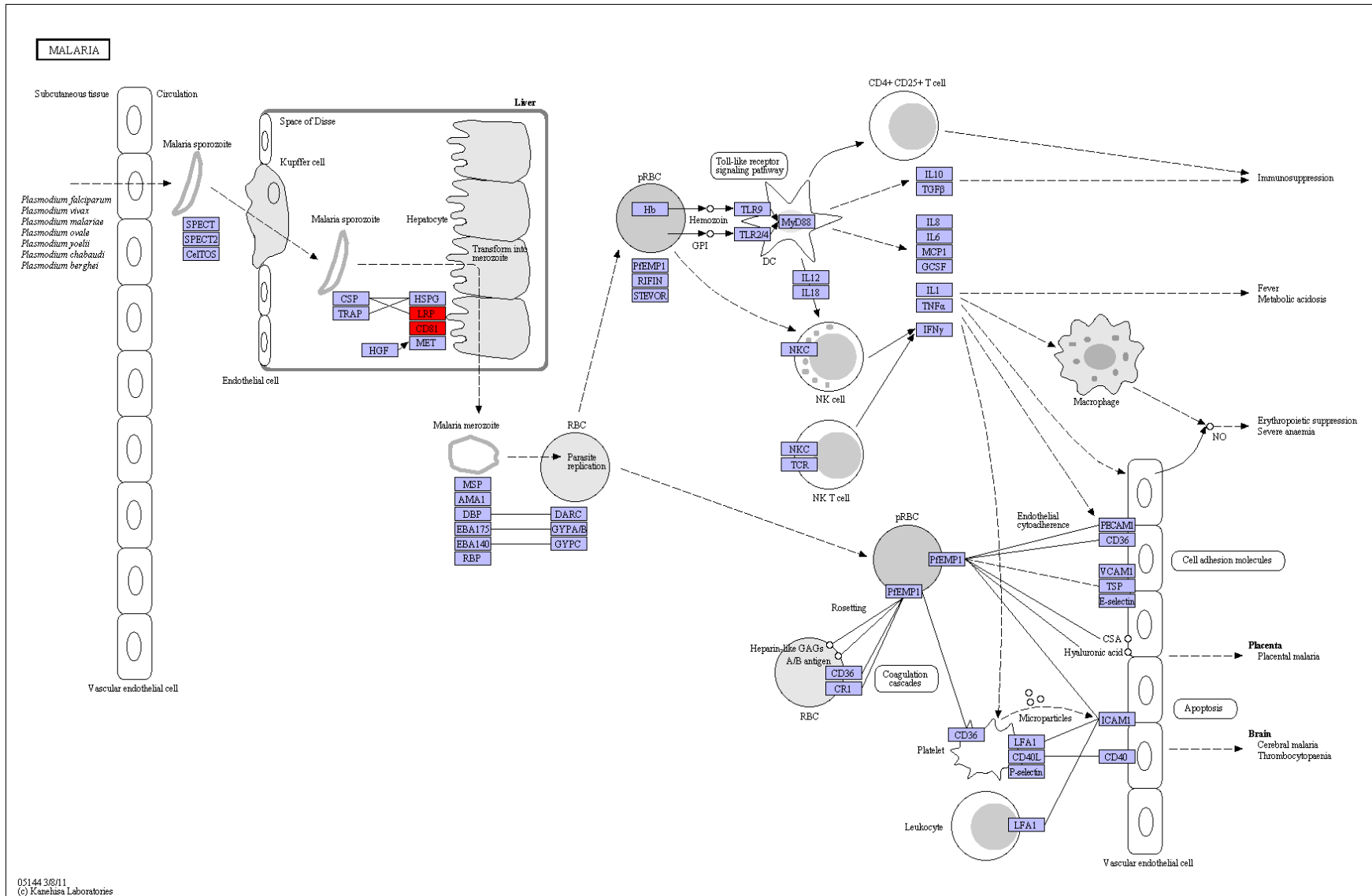


Figure 240: ko05150 Staphylococcus aureus infection

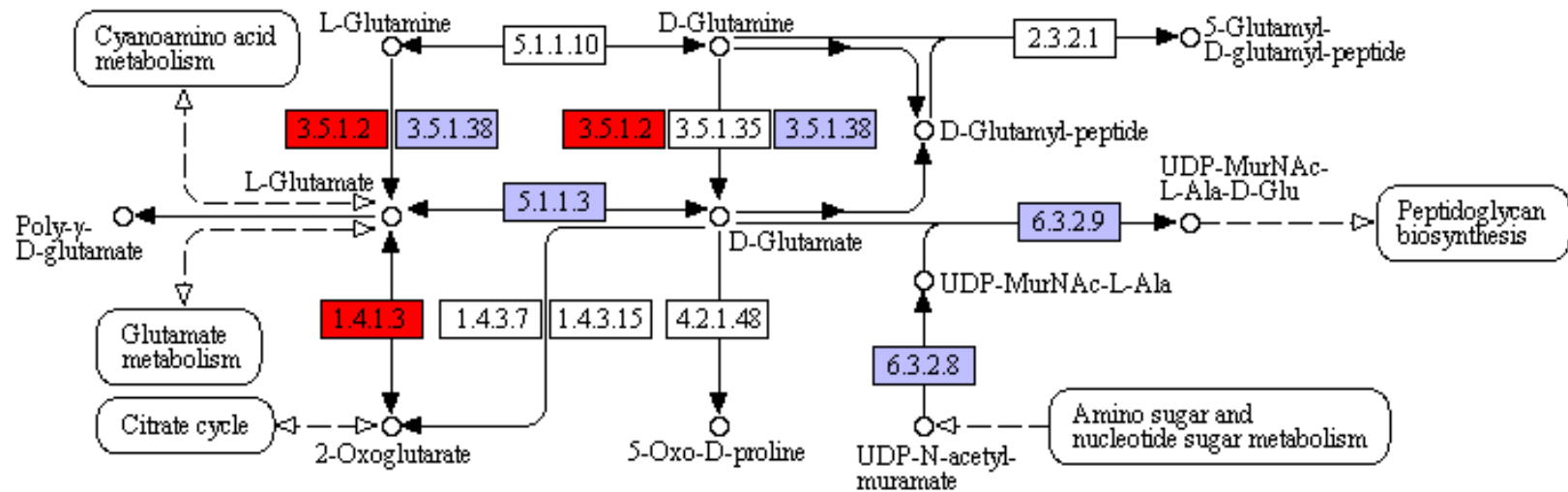


05144 3/8/11  
 (c) Kanehisa Laboratories

Figure 241: ko05144 Malaria



## D-GLUTAMINE AND D-GLUTAMATE METABOLISM



00471 3/14/11  
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Figure 243: ko00471 D-Glutamine and D-glutamate metabolism



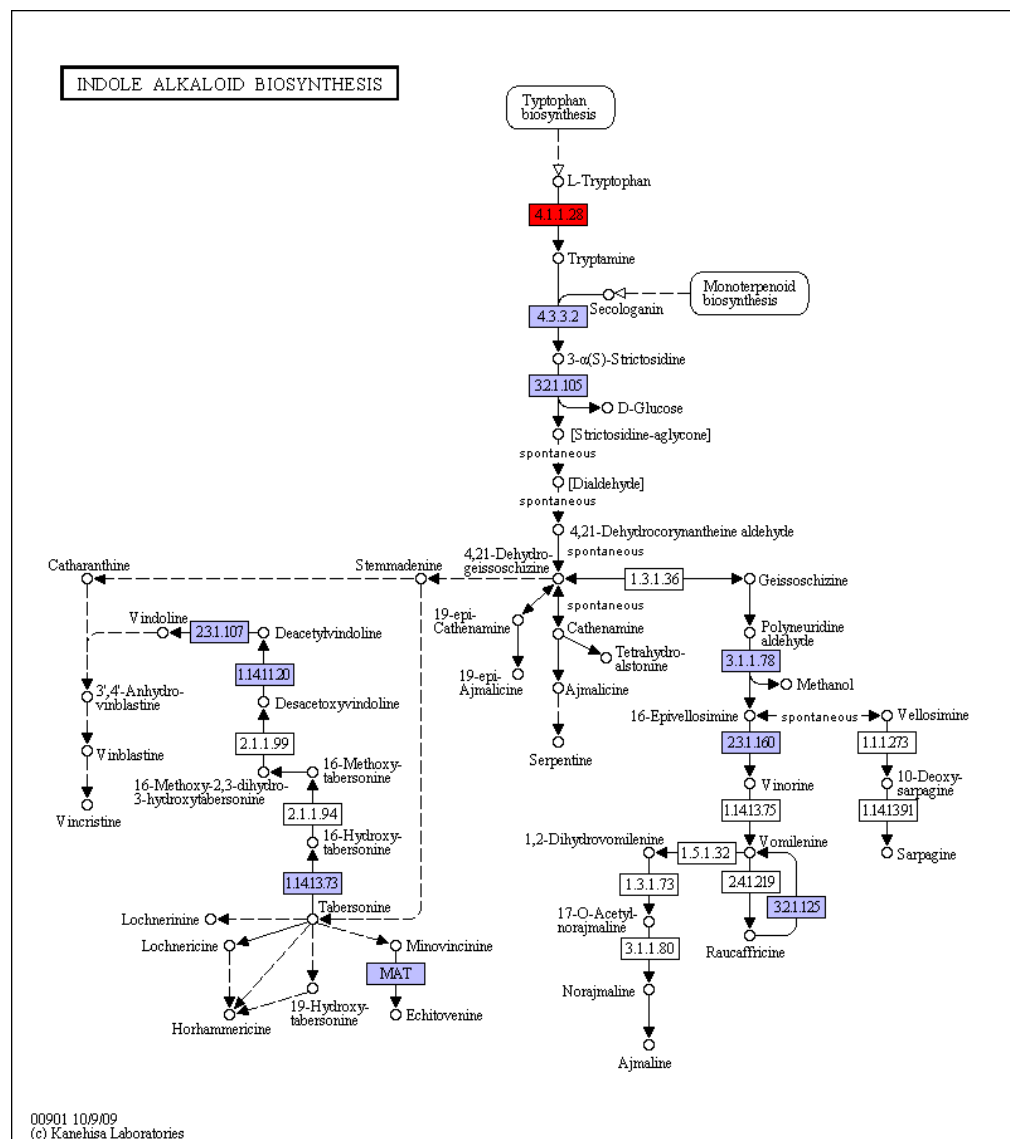


Figure 245: ko00901 Indole alkaloid biosynthesis

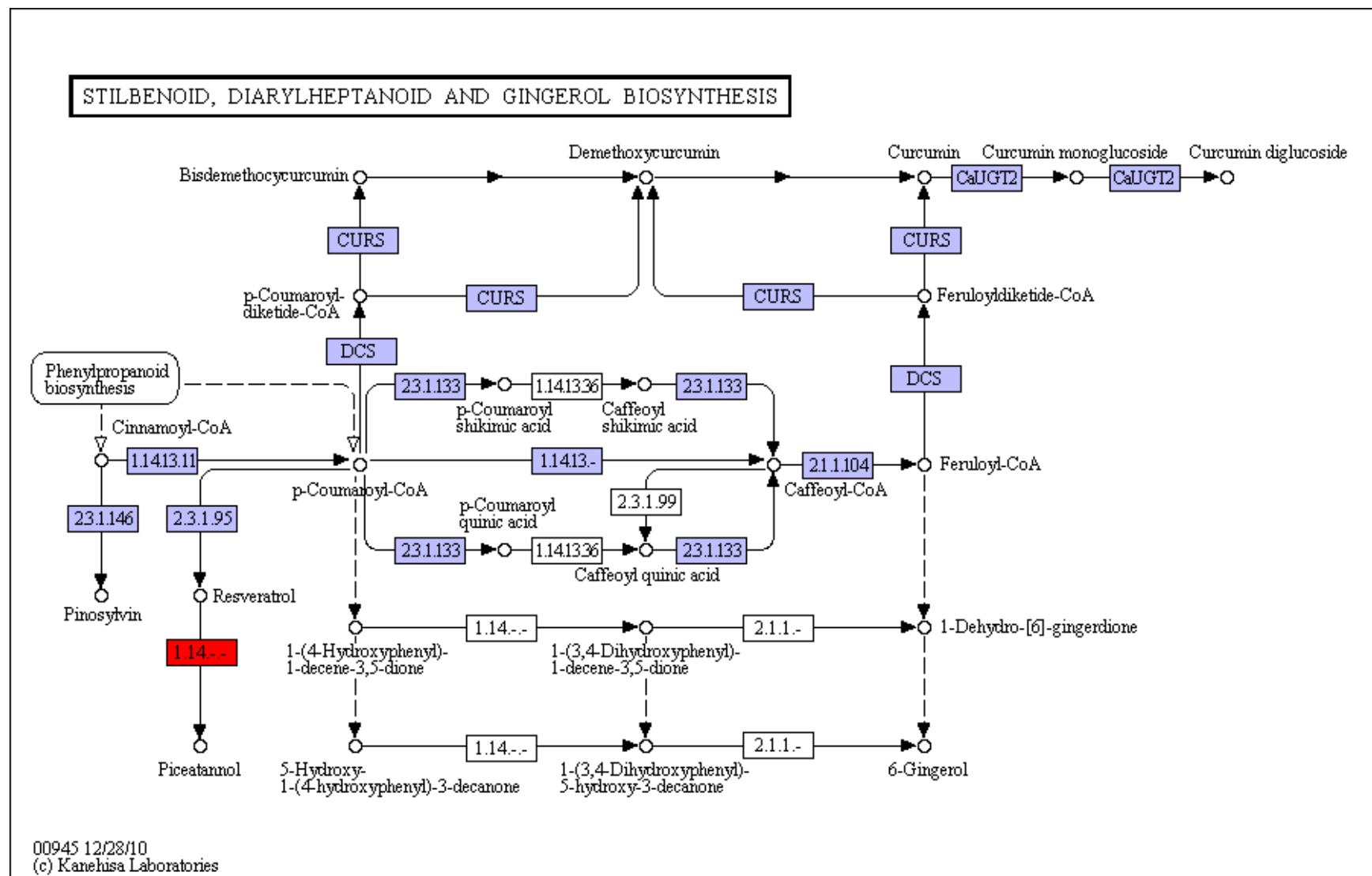


Figure 246: ko00945 Stilbenoid, diarylheptanoid and gingerol biosynthesis

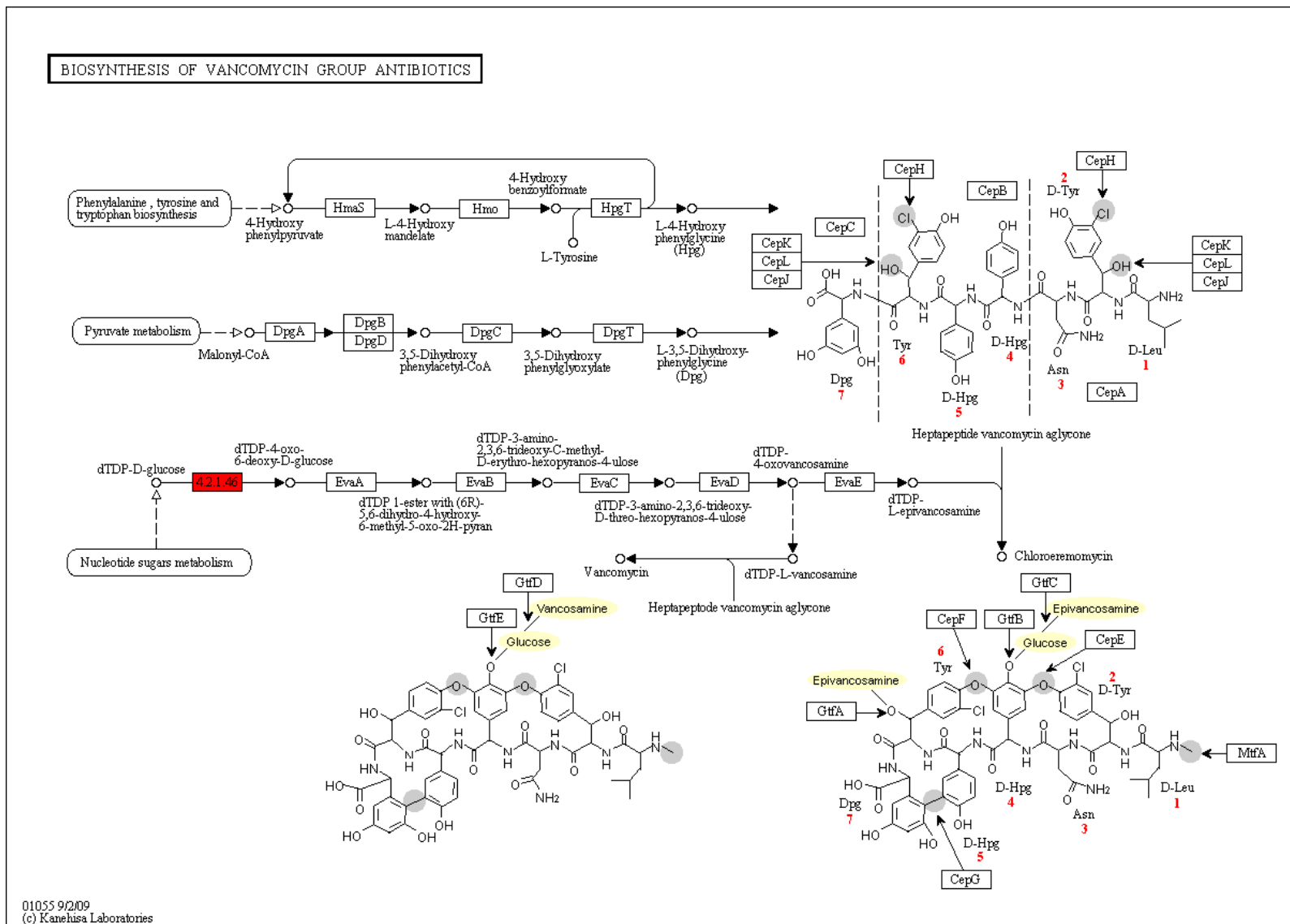


Figure 247: ko01055 Biosynthesis of vancomycin group antibiotics



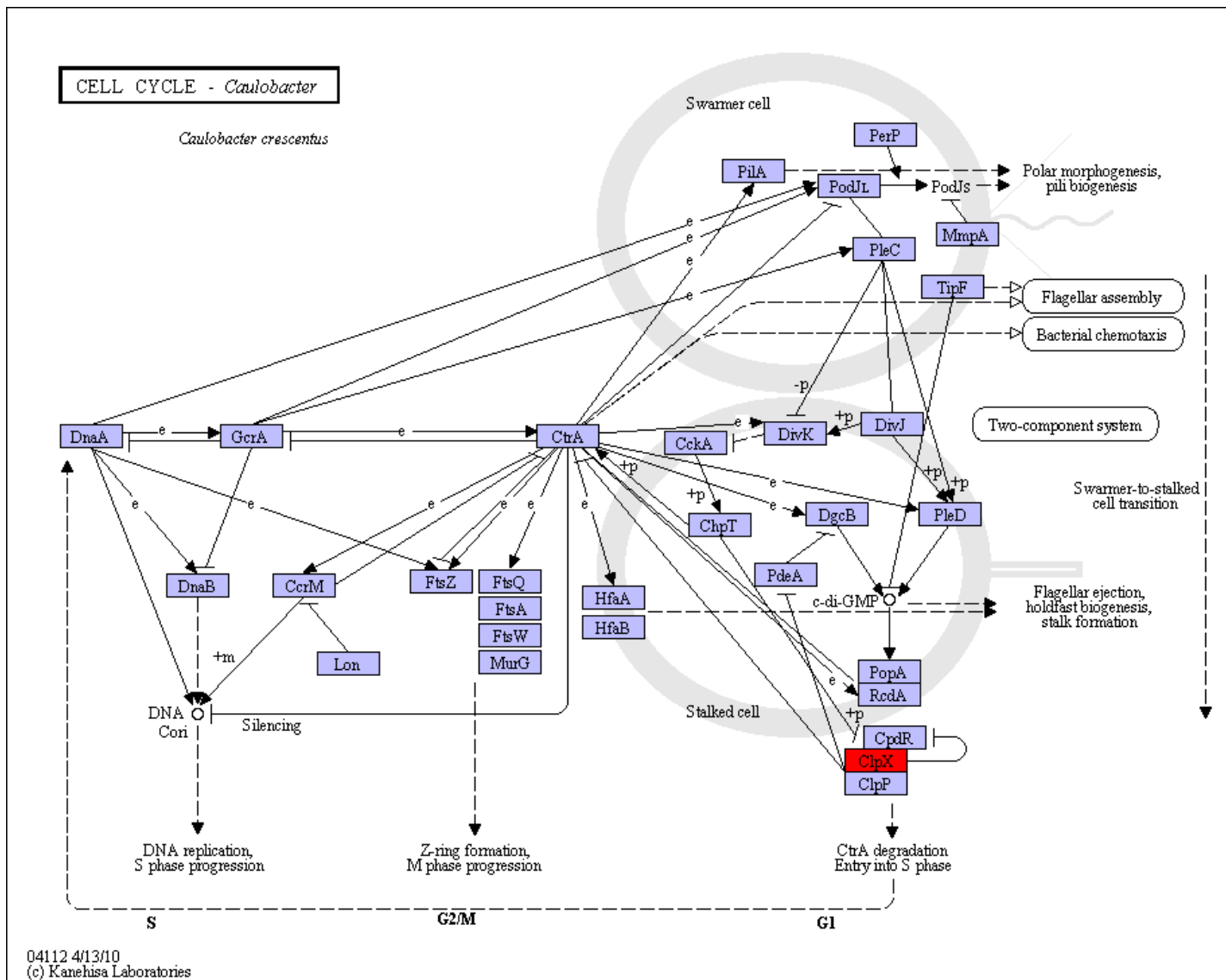


Figure 248: ko04112 Cell cycle - *Caulobacter*

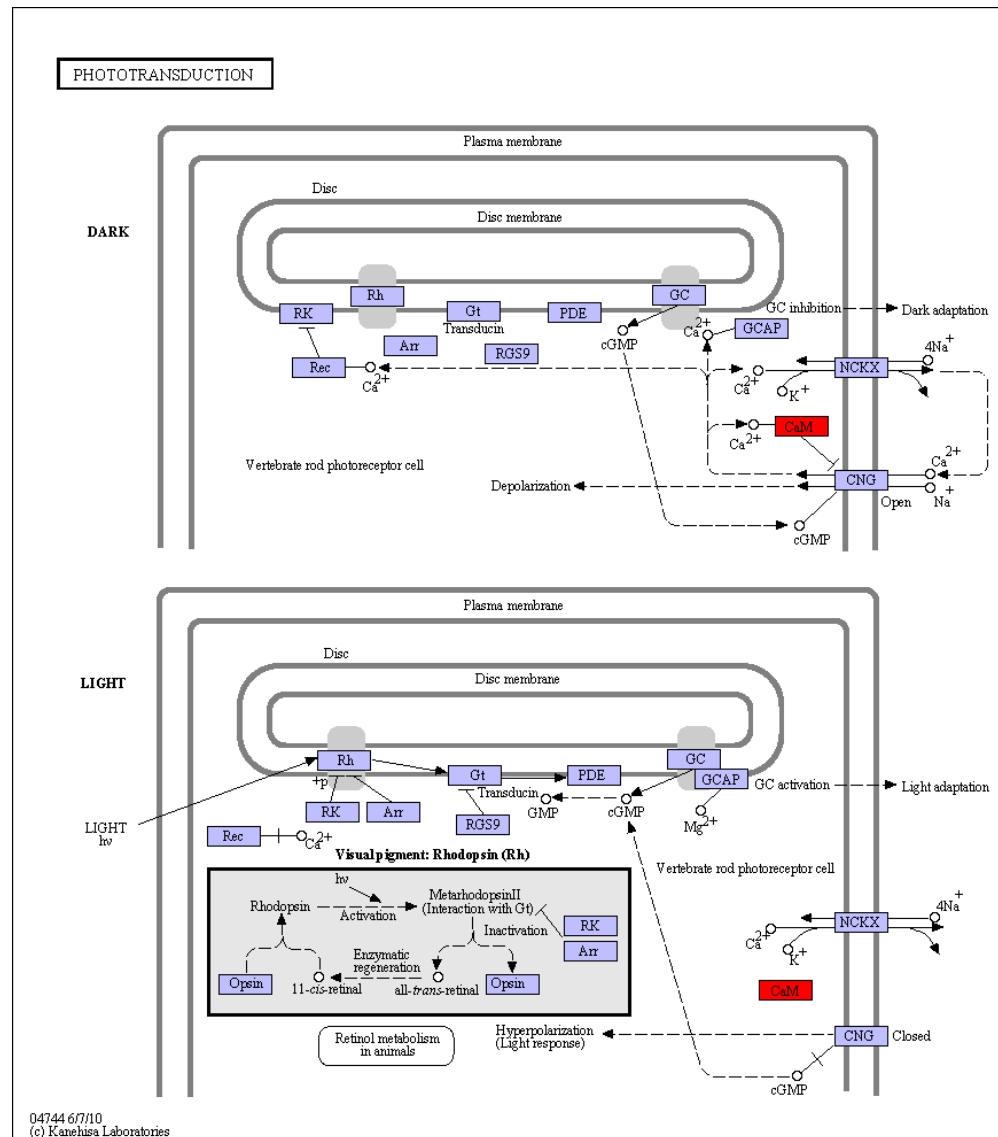


Figure 249: ko04744 Phototransduction

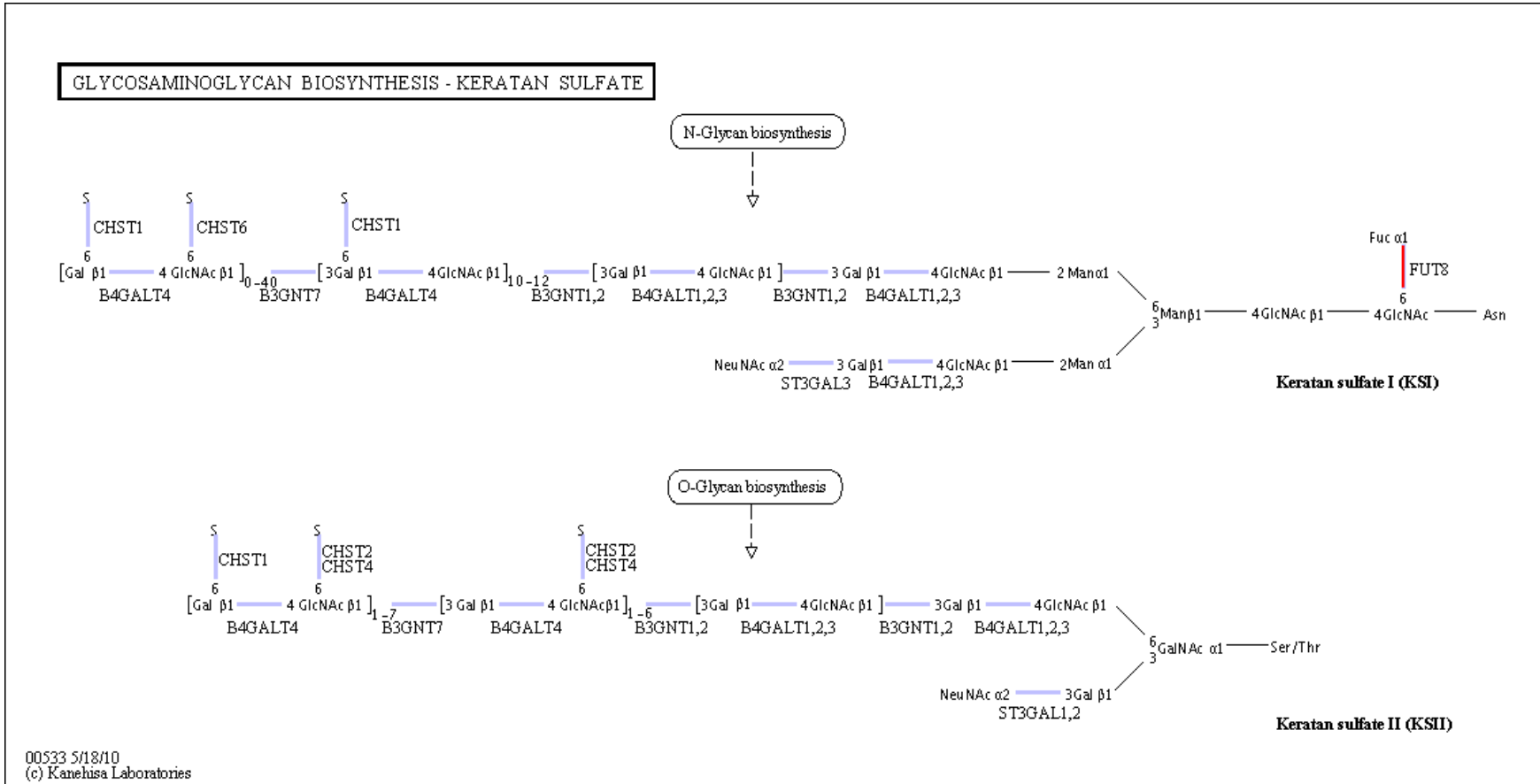


Figure 250: ko00533 Glycosaminoglycan biosynthesis - keratan sulfate

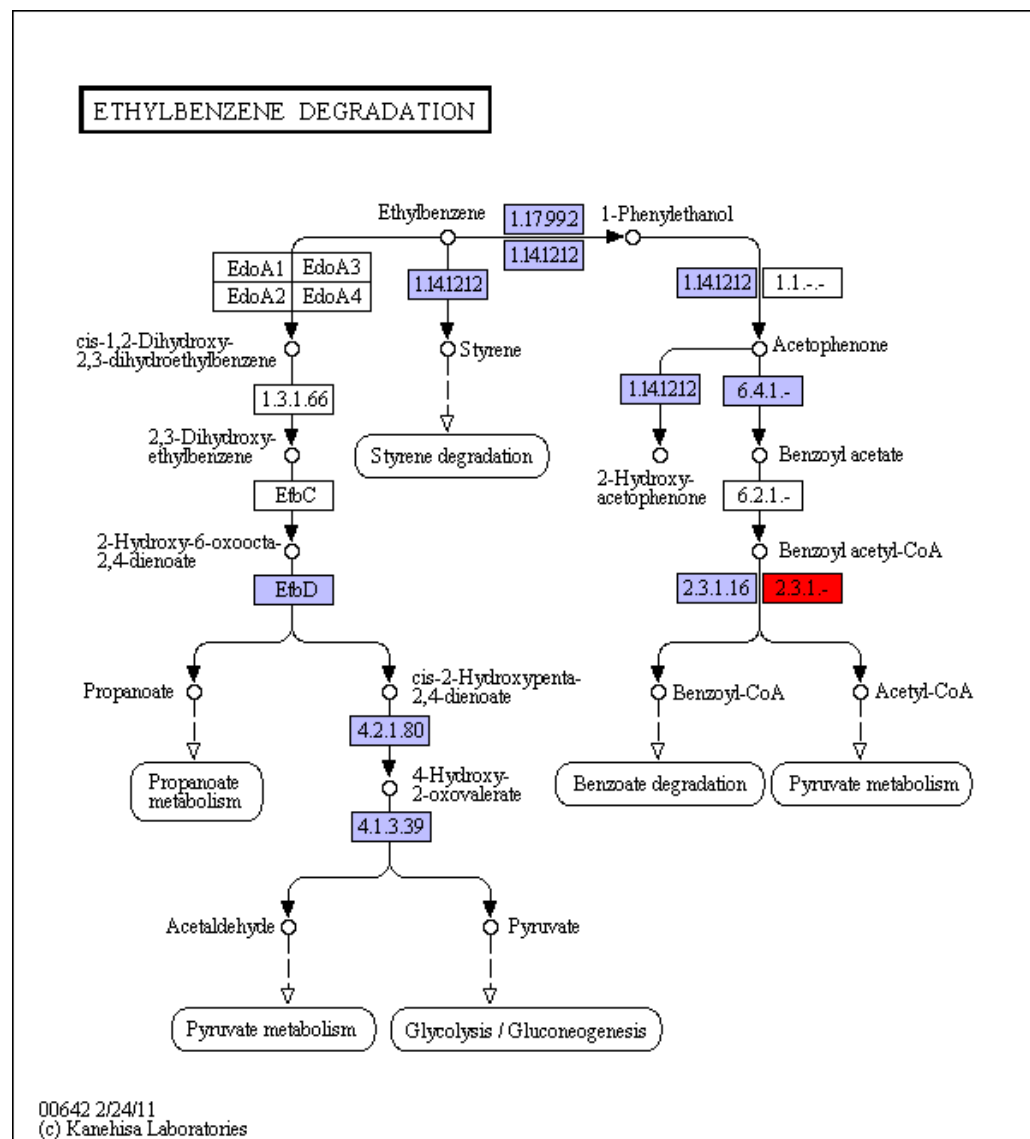


Figure 251: ko00642 Ethylbenzene degradation





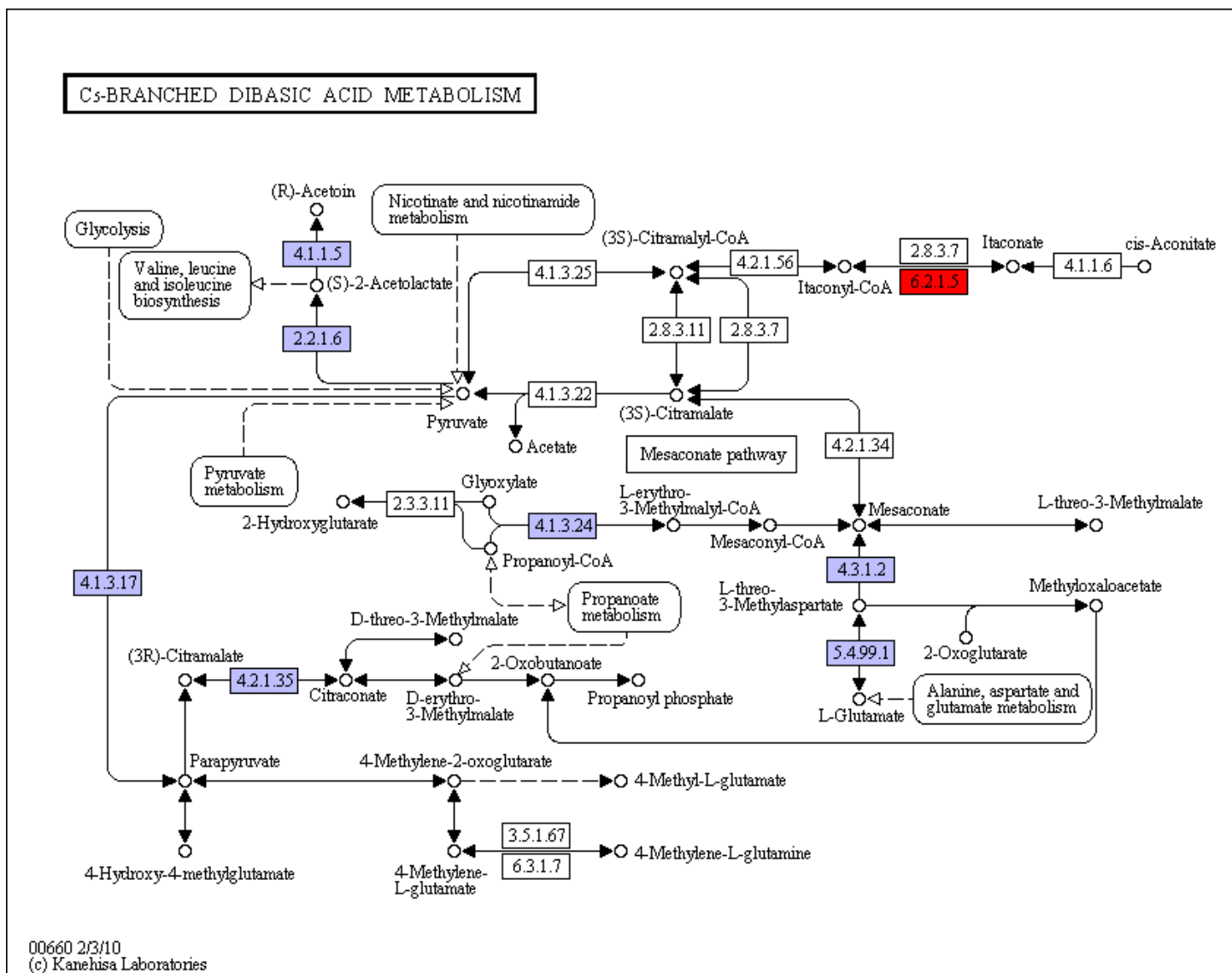


Figure 254: ko00660 C5-Branched dibasic acid metabolism

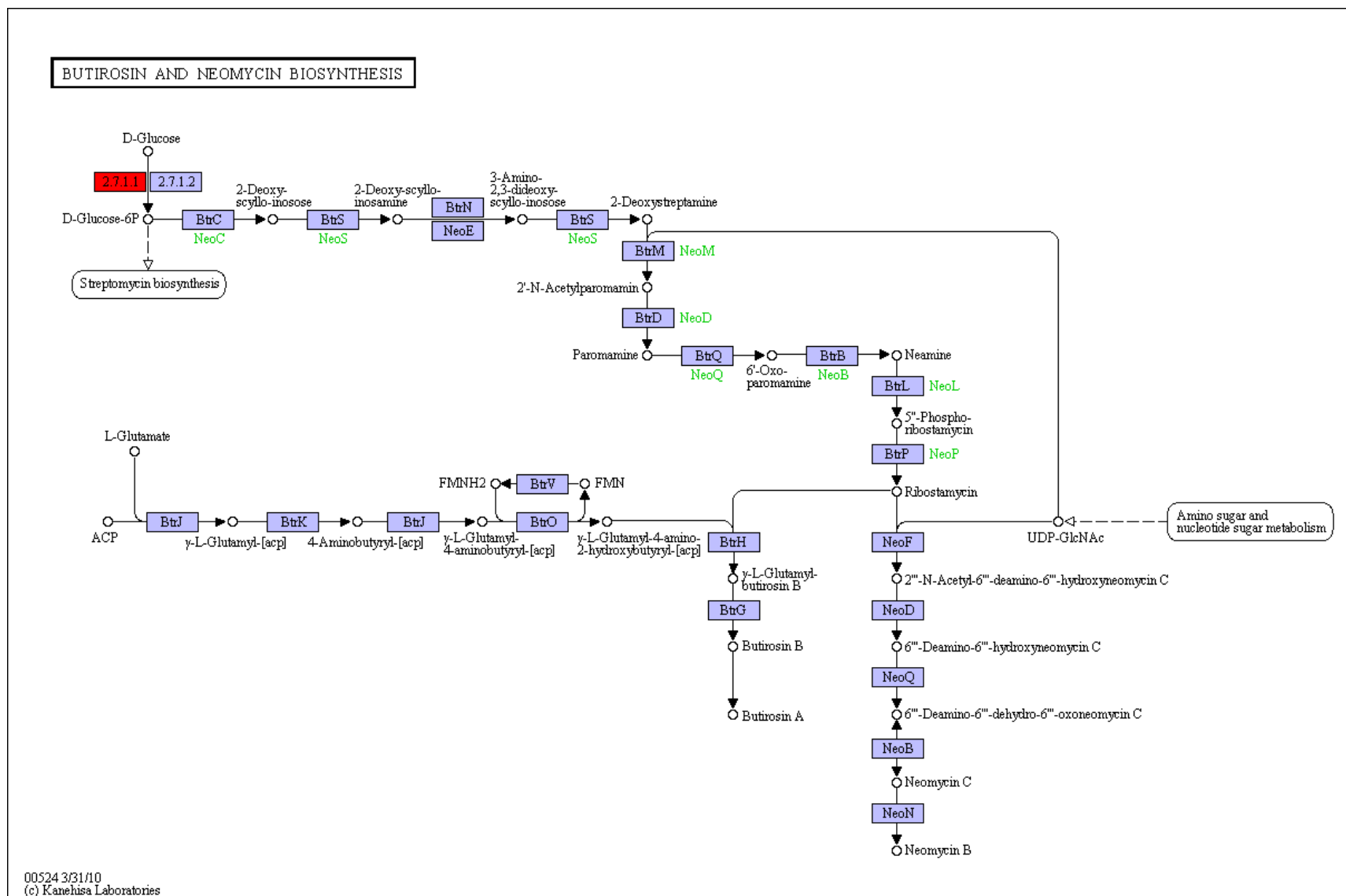


Figure 255: ko00524 Butirosin and neomycin biosynthesis



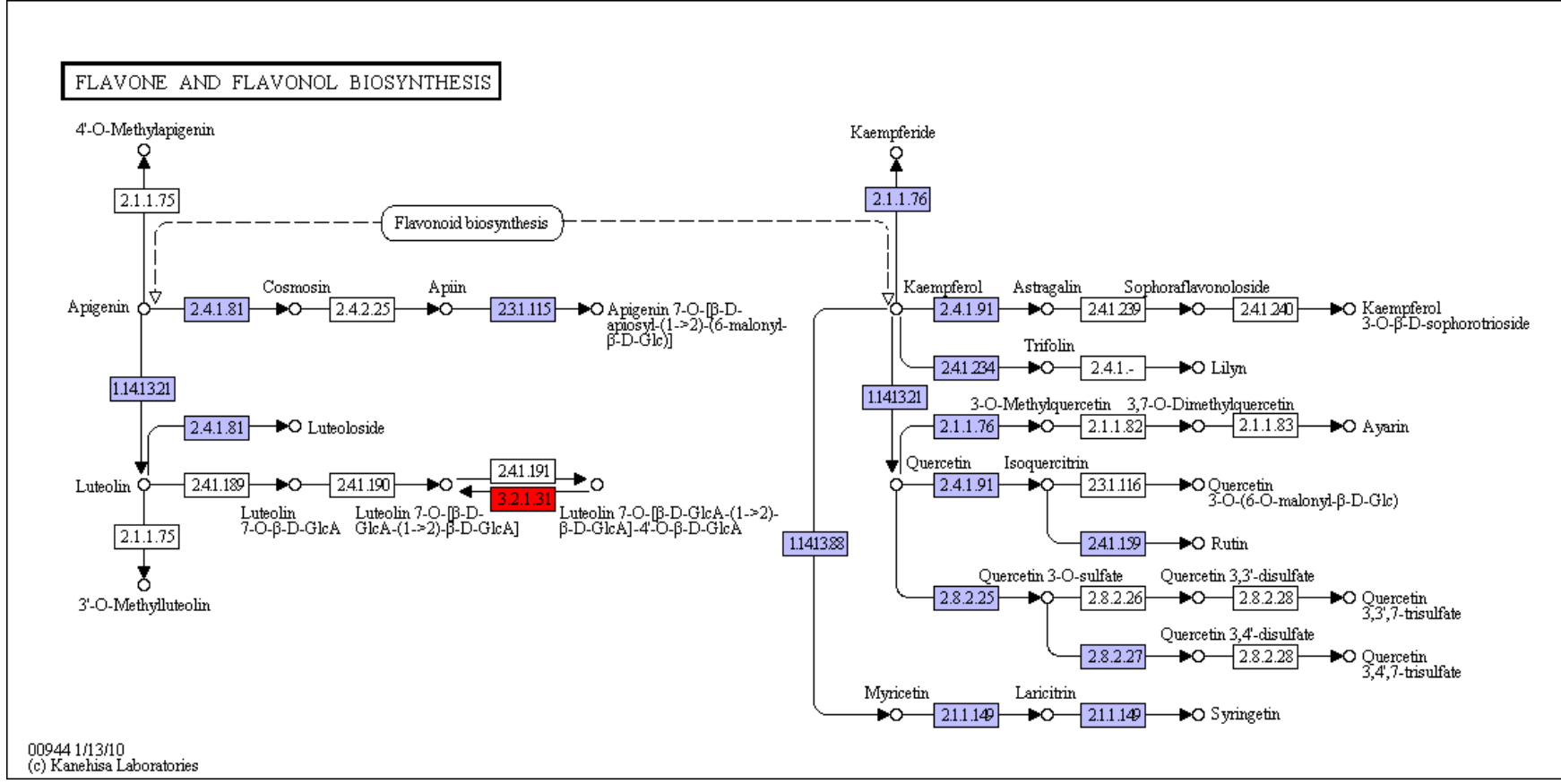


Figure 256: ko00944 Flavone and flavonol biosynthesis

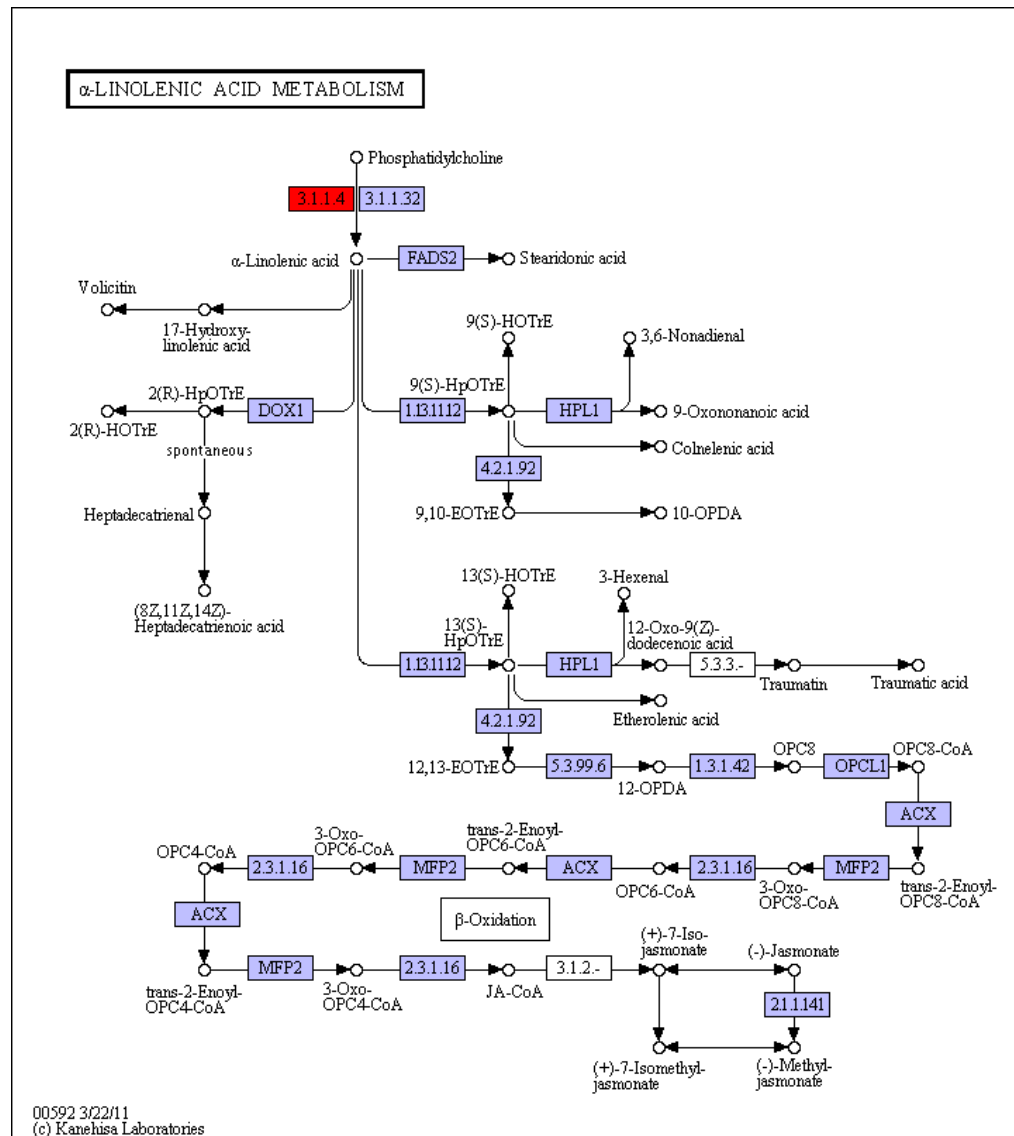


Figure 257: ko00592 alpha-Linolenic acid metabolism









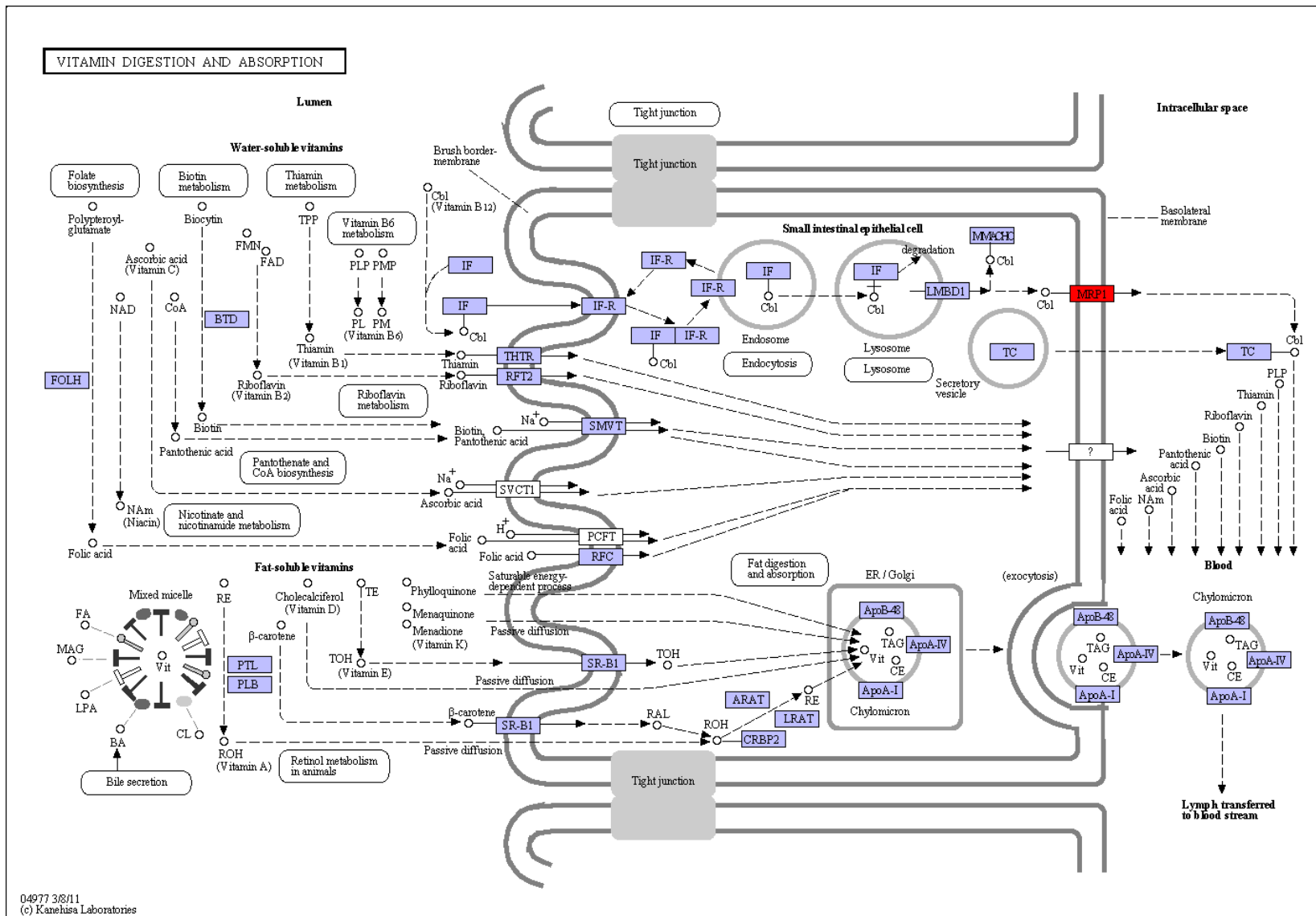


Figure 262: ko04977 Vitamin digestion and absorption