

Output results of CLIME (CLustering by Inferred Models of Evolution)

Dataset:

Num of genes in input gene set: 4
Total number of genes: 20834
Prediction LLR threshold: 0

The CLIME PDF output two sections:

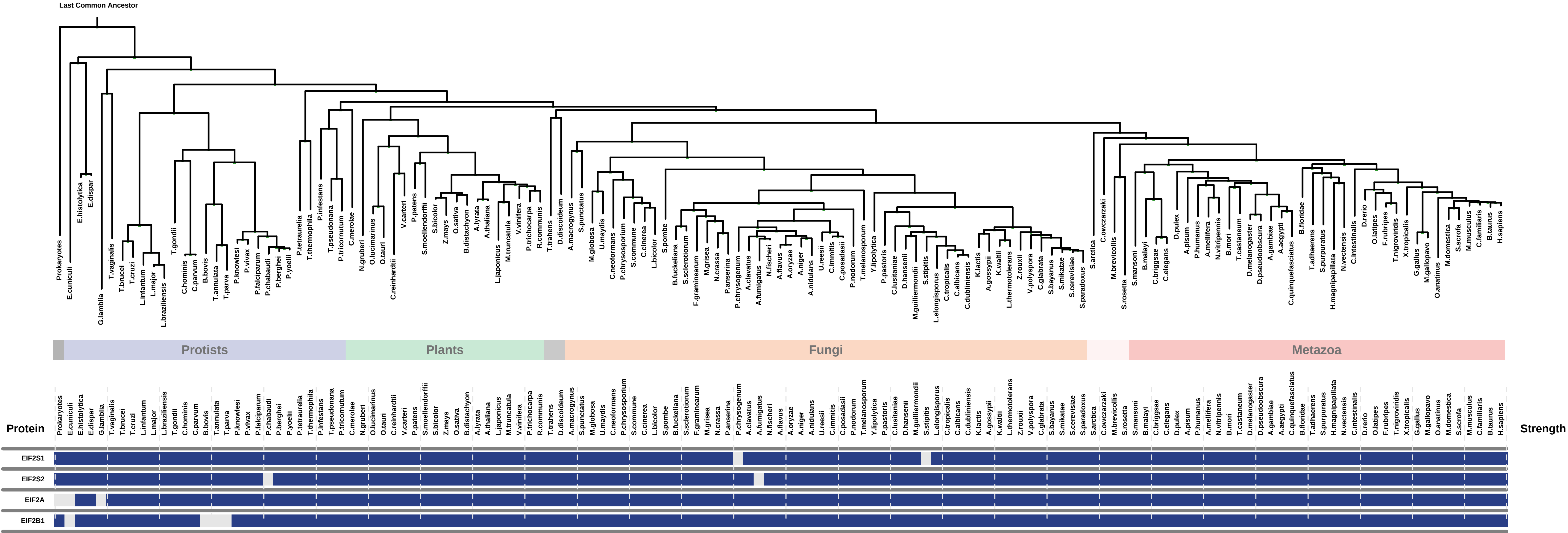
1) Overview of Evolutionarily Conserved Modules (ECMs)

- Top panel shows the predefined species tree.
- Bottom panel shows the partition of input genes into Evolutionary Conserved Modules (ECMs), ordered by ECM strength (shown at right), and separated by horizontal lines.
- Each row show one gene, where the phylogenetic profile indicates presence (blue) or absence (gray) of homologs in each species (column).
- Gene symbols are shown at left. Gray color indicates that the gene is a paralog to a higher scoring gene within the same ECM (based on BLASTP $E < 1e-3$).

2) Details of each ECM and its expansion ECM+

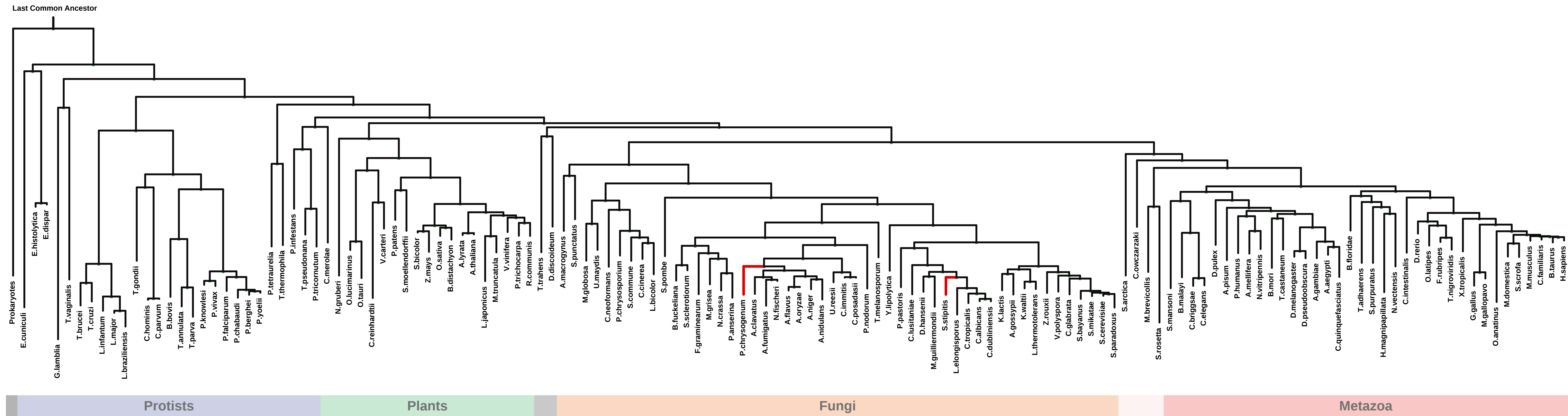
- Top panel shows the inferred evolutionary history on the predefined species tree. Branch color shows the gain event (blue) and loss events (red color, with brighter color indicating higher confidence in loss). Branches before the gain or after a loss are shown in gray.
- Bottom panel shows the input genes that are within the ECM (blue/white rows) as well as all genes in the expanded ECM+ (green/gray rows). The ECM+ includes genes likely to have arisen under the inferred model of evolution relative to a background model, and scored using a log likelihood ratio (LLR).
- PG indicates "paralog group" and are labeled alphabetically (i.e., A, B). The first gene within each paralog group is shown in black color. All other genes sharing sequence similarity (BLAST $E < 1e-3$) are assigned to the same PG label and displayed in gray.

Overview of Evolutionarily Conserved Modules (ECMs)



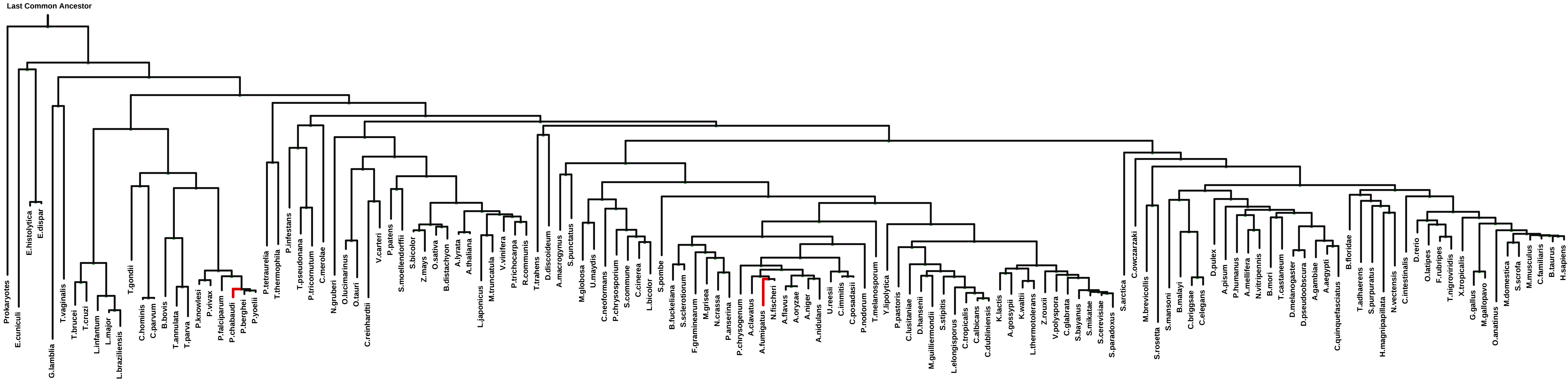
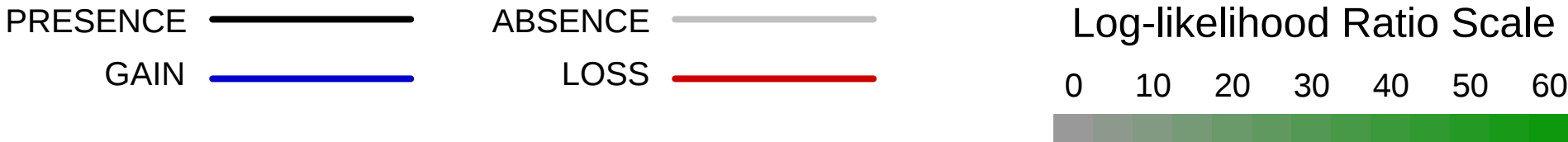
ECM 1, Gene set "eukaryotic translation initiation factor 2 complex", Page 1

Num of ECM Genes: 1. Num of Predicted Genes: 0

[illegible]

ECM 2, Gene set "eukaryotic translation initiation factor 2 complex", Page 1

Num of ECM Genes: 1. Num of Predicted Genes: 0



PG

Protein	EIF2S2
Prokaryotes	
E.cuniculi	
E.histolytica	
E.dispar	
G.lamblia	
T.vaginalis	
T.brucei	
T.cruzi	
L.infantum	
L.major	
L.brazilienis	
T.gondii	
C.hominis	
C.parvum	
B.bovis	
T.annulata	
T.parva	
P.knowlesi	
P.vivax	
P.falciparum	
P.chabaudi	
P.berghsi	
P.yoelli	
P.tetraurelia	
T.thermophila	
P.infestans	
T.pseudonana	
P.tricornutum	
C.merolae	
N.gruberi	
O.lucimarinus	
O.auri	
C.reinhardtii	
V.carteri	
P.patens	
S.moellendorffii	
S.bicolor	
Z.mays	
O.sativa	
B.distachyon	
A.lyrata	
A.thaliana	
L.japonicus	
M.truncatula	
V.vinifera	
P.trichocarpa	
R.communis	
T.trahens	
D.discoideum	
A.macrogynus	
S.punctatus	
M.globosa	
U.maydis	
C.neoformans	
P.chrysosporium	
S.commune	
C.cinerea	
L.bicolor	
S.pombe	
B.tuckeliana	
S.sclerotiorum	
F.graminearum	
M.grisea	
N.crassa	
P.anserina	
P.chrysogenum	
A.clavatus	
A.fumigatus	
N.fischeri	
A.flavus	
A.oryzae	
A.niger	
A.nidulans	
U.ressii	
C.immitis	
C.posadasii	
P.nodorum	
T.melanosporum	
Y.lipolytica	
P.pastoris	
C.lusitanae	
D.hansenii	
M.guilliermondii	
S.stipitidis	
L.elongisporus	
C.tropicalis	
C.albicans	
C.dubliniensis	
K.lactis	
A.gossypii	
K.waltii	
L.thermotolerans	
Z.rouxii	
V.polyspora	
C.glabrata	
S.bayanus	
S.mikatae	
S.cerevisiae	
S.paradoxus	
S.sarctica	
Cowczarzaki	
M.brevicollis	
S.rossetta	
S.mansoni	
B.malayii	
C.briggsae	
C.elegans	
D.pulex	
A.pisum	
P.humanus	
A.mellifera	
N.vitripennis	
B.mori	
T.castaneum	
D.melanogaster	
D.pseudoobscura	
A.gambiae	
A.aegypti	
C.quinquefasciatus	
B.floridae	
T.adhaerens	
S.purpuratus	
H.magnipapillata	
N.vectensis	
C.intestinalis	
D.erio	
O.laetipes	
F.rubripes	
T.nigroviridis	
X.tropicalis	
G.gallus	
M.gallopavo	
O.anatinus	
M.domestica	
S.scrofa	
M.musculus	
C.familiaris	
B.taurus	
H.sapiens	

LLR

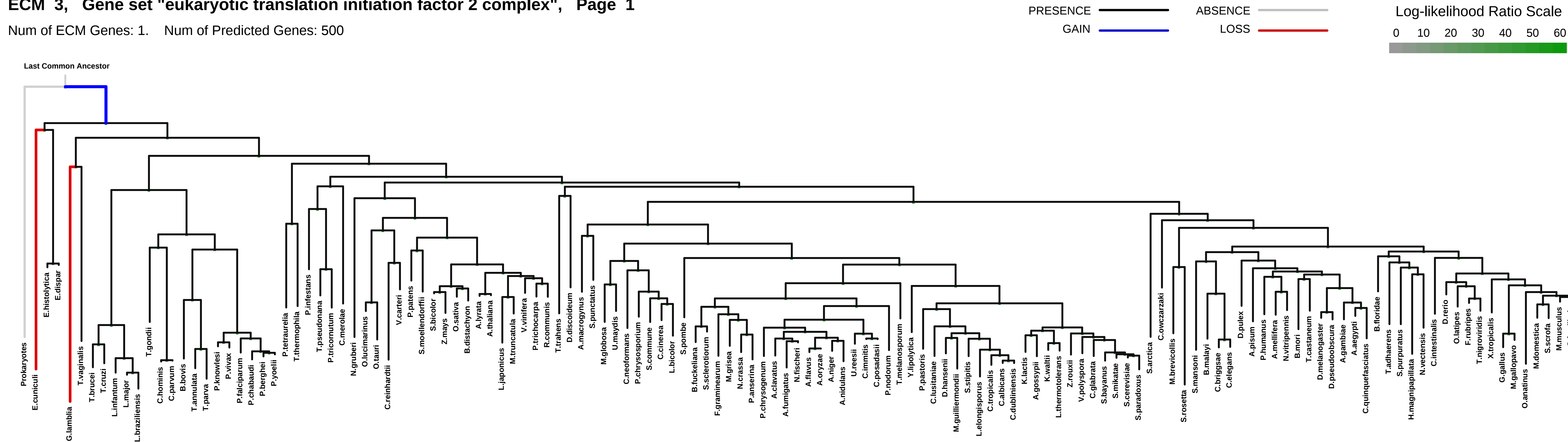
Notes

1

1: eukaryotic translation initiation factor 2 complex

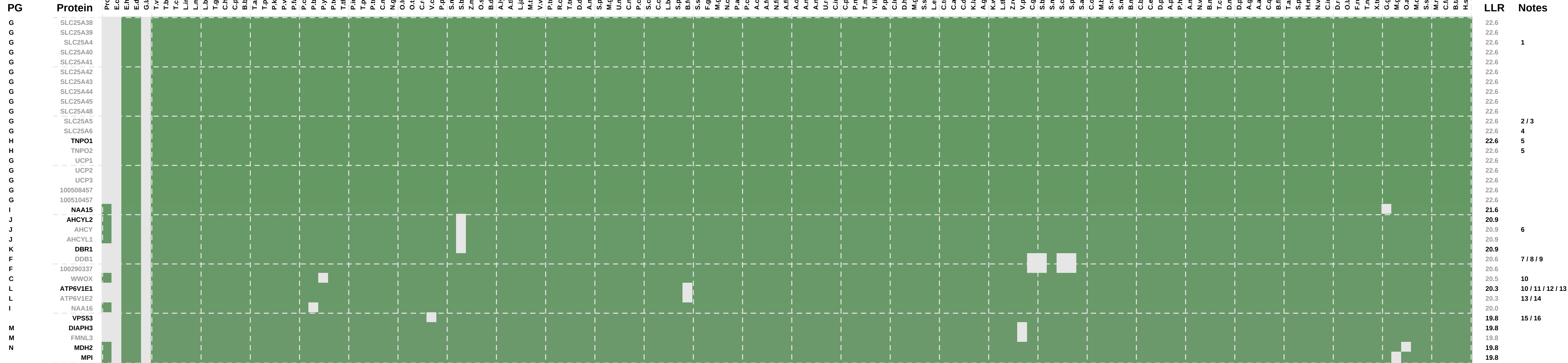
ECM 3, Gene set "eukaryotic translation initiation factor 2 complex", Page 1

Num of ECM Genes: 1. Num of Predicted Genes: 500

[illegible]

1: eukaryotic translation initiation factor 2 complex || 2: late endosome membrane || 3: peroxisome || 4: eukaryotic translation initiation factor 3 complex || 5: catalytic step 2 spliceosome || 6: small nuclear ribonucleoprotein complex || 7: spliceosomal complex || 8: U12-type spliceosomal complex || 9: integral to peroxisomal membrane || 10: peroxisomal membrane || 11: cilium || 12: flagellum

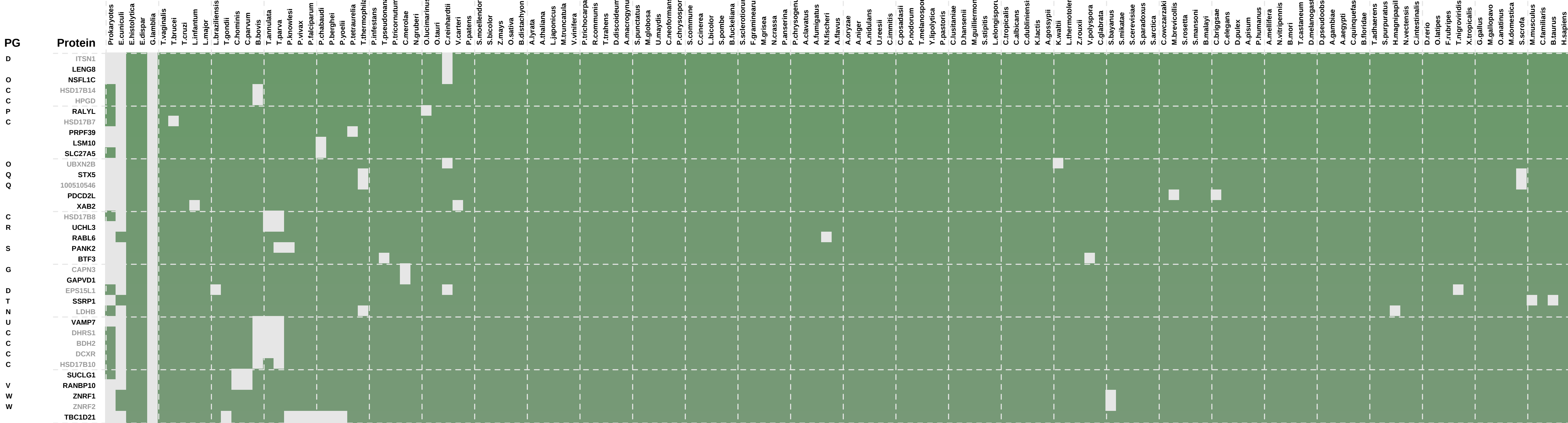
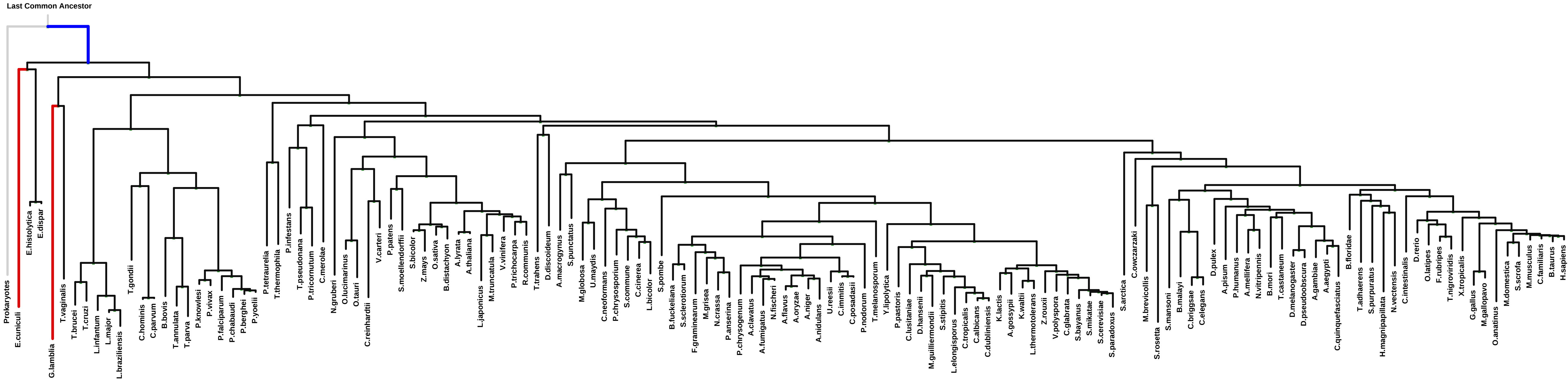
Num of ECM Genes: 1. Num of Predicted Genes: 500



1: mitochondrial outer membrane || 2: mitochondrial nucleoid || 3: MMXD complex || 4: mitochondrial inner membrane presequence translocase complex || 5: nuclear pore || 6: melanosome || 7: Cul4A-RING ubiquitin ligase complex || 8: Cul4B-RING ubiquitin ligase complex || 9: Cul4-RING ubiquitin ligase complex || 10: microvillus || 11: endosome || 12: proton-transporting two-sector ATPase complex || 13: proton-transporting two-sector ATPase complex, catalytic domain || 14: acrosomal vesicle || 15: endosome membrane || 16: GARP complex

ECM 3, Gene set "eukaryotic translation initiation factor 2 complex", Page 3

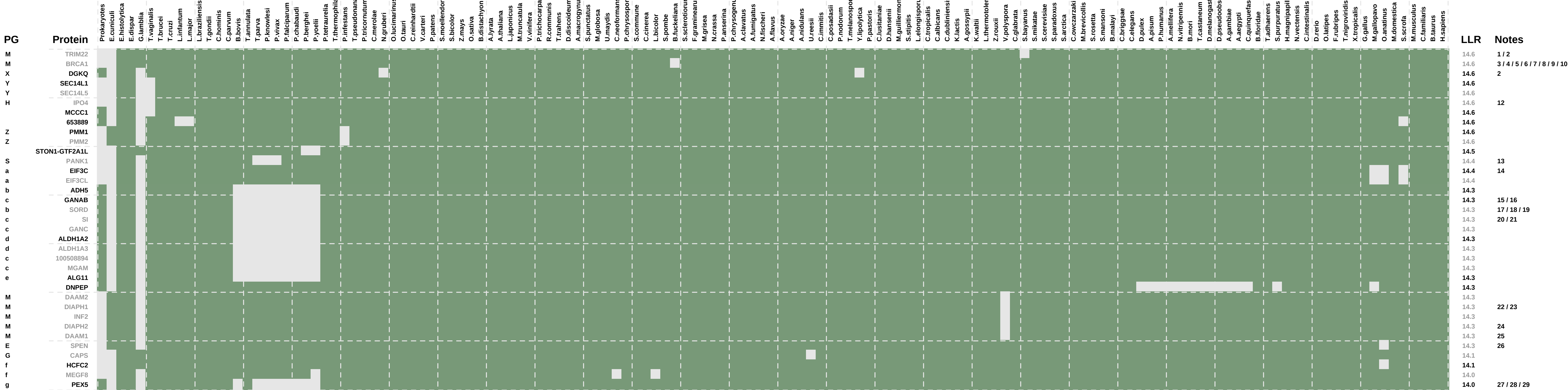
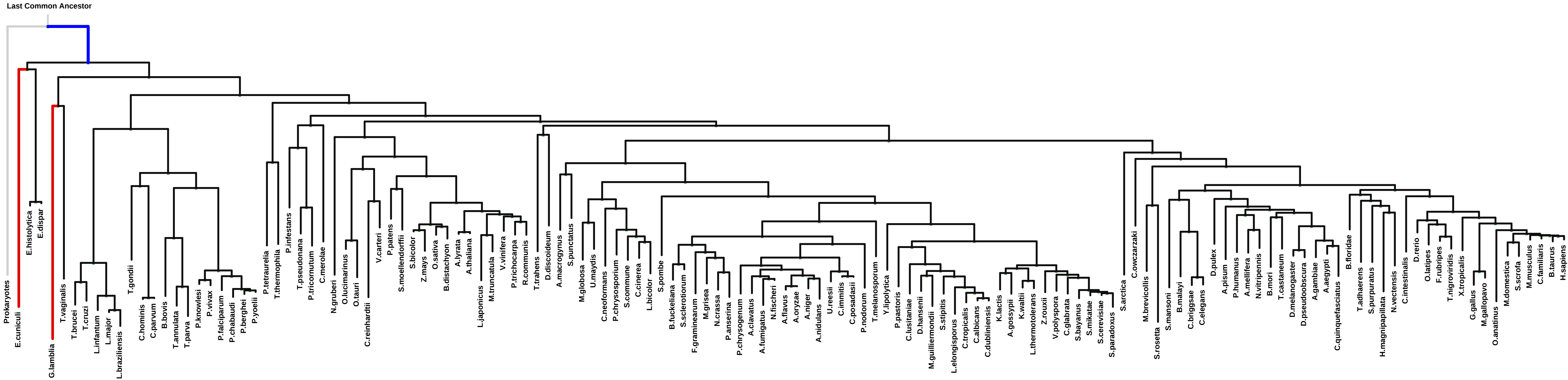
Num of ECM Genes: 1. Num of Predicted Genes: 500



LLR	Notes
19.5	1 / 2 / 3 / 4 / 5
19.5	
19.5	6 / 7
19.4	
19.4	
19.3	
19.3	
19.2	
18.8	8 / 9
18.8	10 / 11
17.4	
17.3	12 / 13
17.3	
17.2	
17.0	14
16.9	15
16.9	
16.6	
16.5	16
16.5	
16.4	17 / 18 / 19
16.4	20
16.0	1
15.8	6
15.5	
15.1	4 / 5 / 13 / 21 / 22 / 23 / 24
15.1	
15.1	
15.1	27 / 28
14.9	
14.9	
14.9	29
14.8	20 / 30 / 31
14.8	23 / 32 / 33
14.7	

ECM 3, Gene set "eukaryotic translation initiation factor 2 complex", Page 4

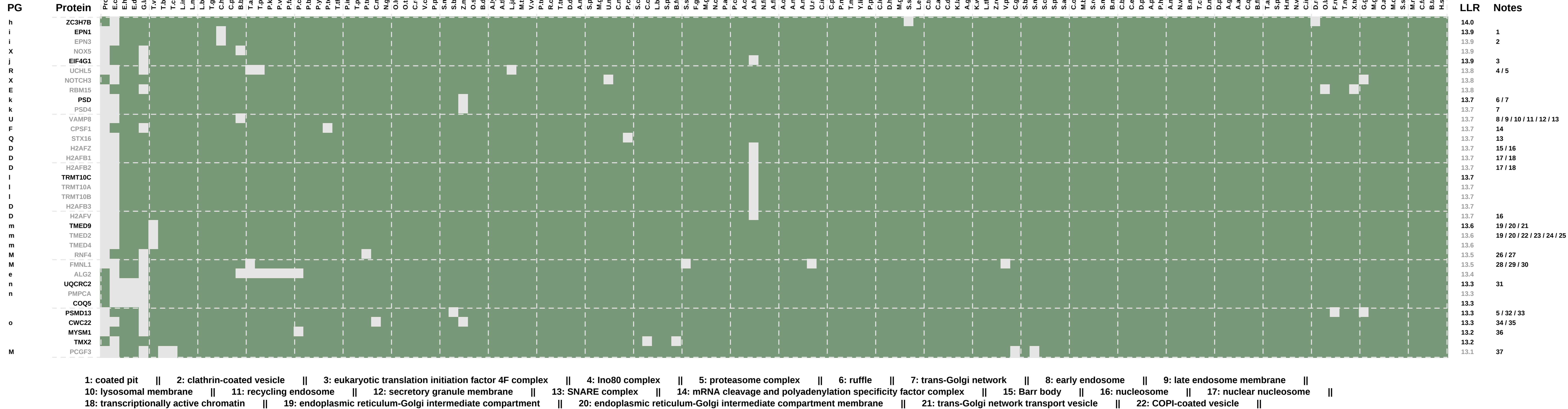
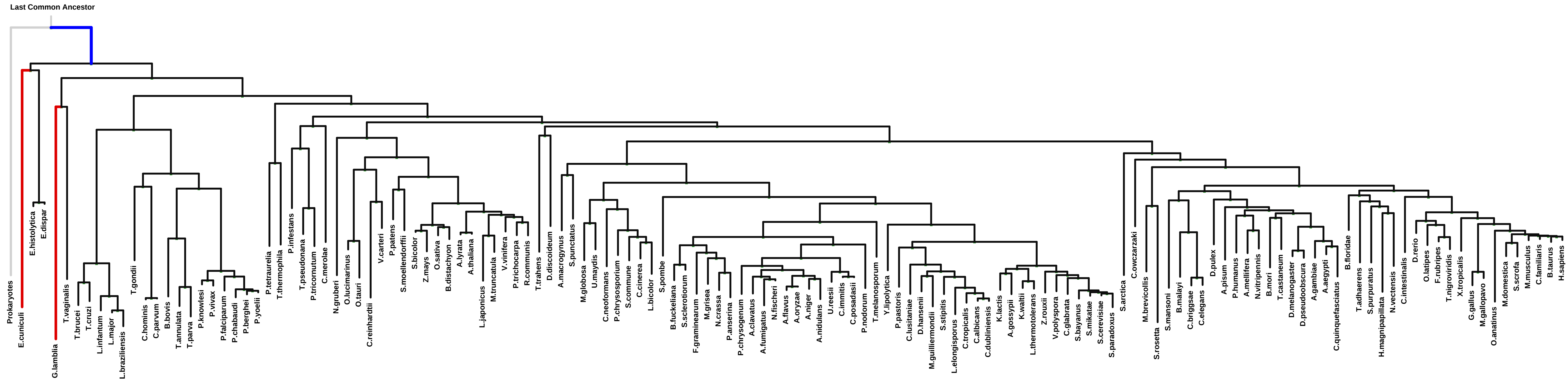
Num of ECM Genes: 1. Num of Predicted Genes: 500



1: Cajal body || 2: nuclear speck || 3: BRCA1-A complex || 4: BRCA1-BARD1 complex || 5: chromosome || 6: filamentous actin || 7: focal adhesion || 8: gamma-tubulin ring complex || 9: ribonucleoprotein complex || 10: ruffle || 11: ubiquitin ligase complex || 12: nuclear pore || 13: cell periphery || 14: eukaryotic translation initiation factor 3 complex || 15: endoplasmic reticulum lumen || 16: melanosome || 17: cilium || 18: flagellum || 19: mitochondrial membrane || 20: brush border || 21: membrane raft || 22: mitotic spindle || 23: ruffle membrane || 24: early endosome || 25: stress fiber || 26: transcriptional repressor complex || 27: peroxisomal matrix ||

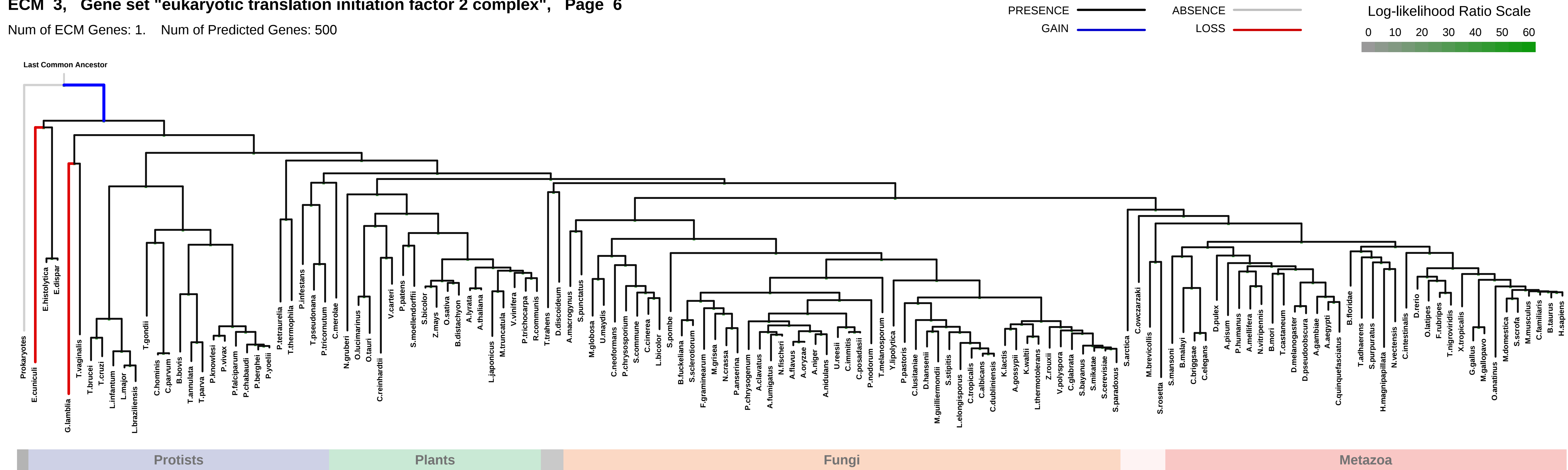
ECM 3, Gene set "eukaryotic translation initiation factor 2 complex", Page 5

Num of ECM Genes: 1. Num of Predicted Genes: 500



ECM 3, Gene set "eukaryotic translation initiation factor 2 complex", Page 6

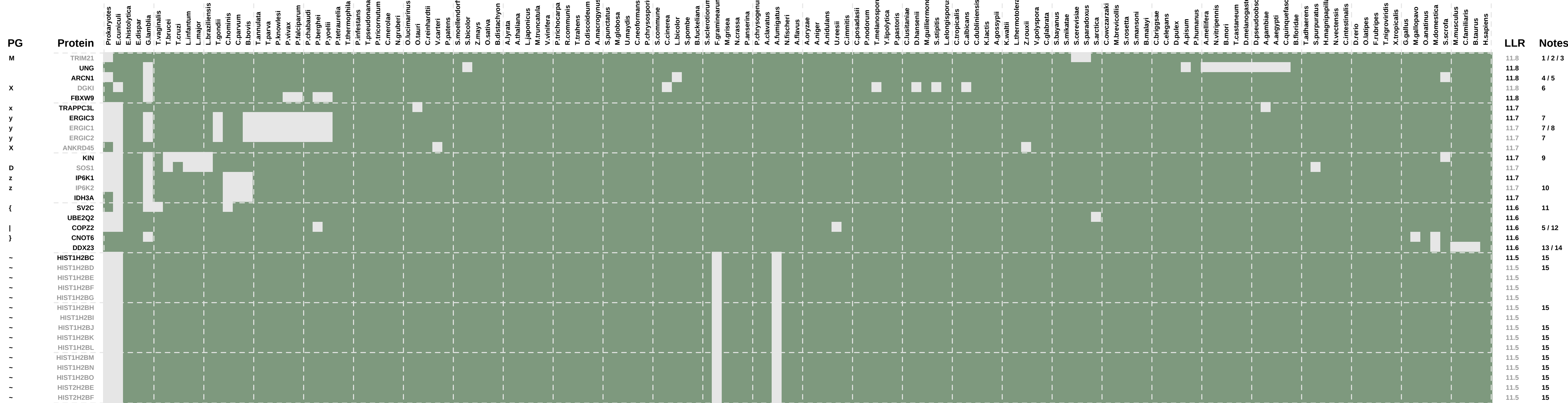
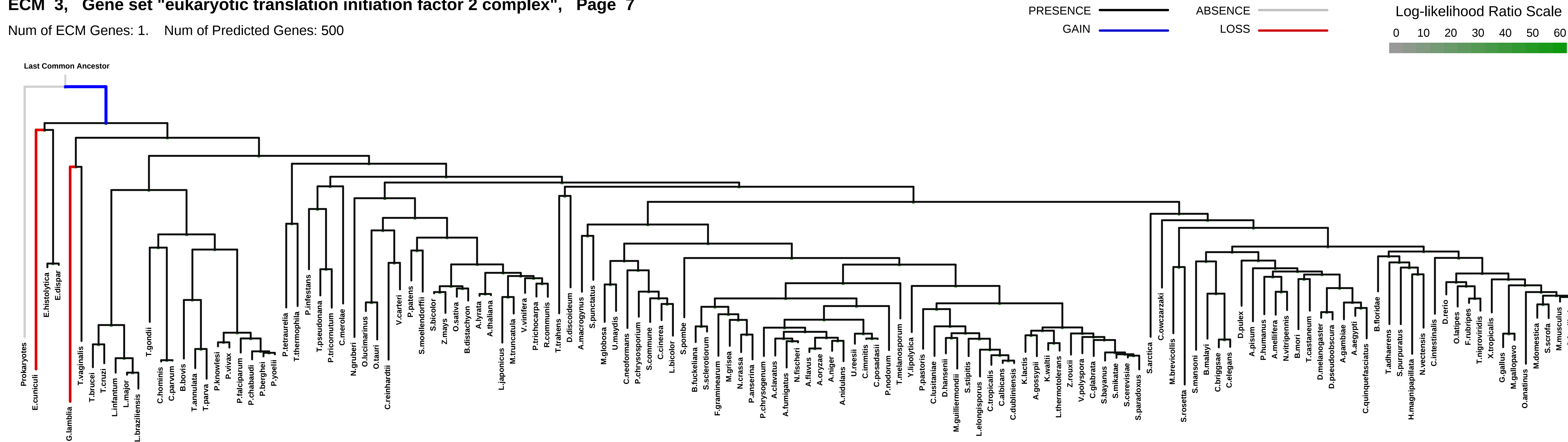
Num of ECM Genes: 1. Num of Predicted Genes: 500

[illegible]

1: cell tip || 2: dendrite || 3: intracellular cyclic nucleotide activated cation channel complex || 4: peroxisomal membrane || 5: extrinsic to internal side of plasma membrane || 6: heterotrimeric G-protein complex || 7: membrane raft || 8: midbody || 9: zymogen granule || 10: ubiquitin ligase complex || 11: nuclear envelope || 12: COPI vesicle coat || 13: nuclear pore || 14: 6-phosphofructokinase complex || 15: Cul2-RING ubiquitin ligase complex || 16: Cul4A-RING ubiquitin ligase complex || 17: Cul4-RING ubiquitin ligase complex || 18: lamellipodium || 19: neuron projection || 20: ruffle || 21: signalosome || 22: mitochondrial outer membrane || 23: spliceosomal complex || 24: endosome || 25: endosome membrane ||

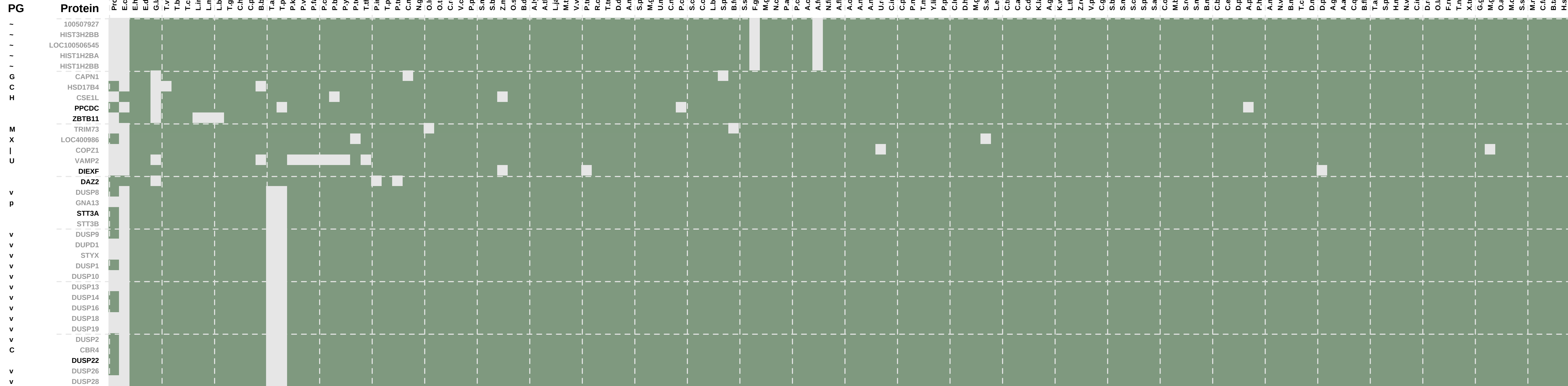
ECM 3, Gene set "eukaryotic translation initiation factor 2 complex", Page 7

Num of ECM Genes: 1. Num of Predicted Genes: 500



1: cytoplasmic mRNA processing body || 2: ribonucleoprotein complex || 3: SCF ubiquitin ligase complex || 4: clathrin adaptor complex || 5: COPI vesicle coat || 6: guanyl-nucleotide exchange factor complex || 7: endoplasmic reticulum-Golgi intermediate compartment membrane || 8: endoplasmic reticulum-Golgi intermediate compartment || 9: nuclear matrix || 10: intermediate filament cytoskeleton || 11: synaptic vesicle membrane || 12: cis-Golgi network || 13: catalytic step 2 spliceosome || 14: U5 snRNP || 15: nucleosome

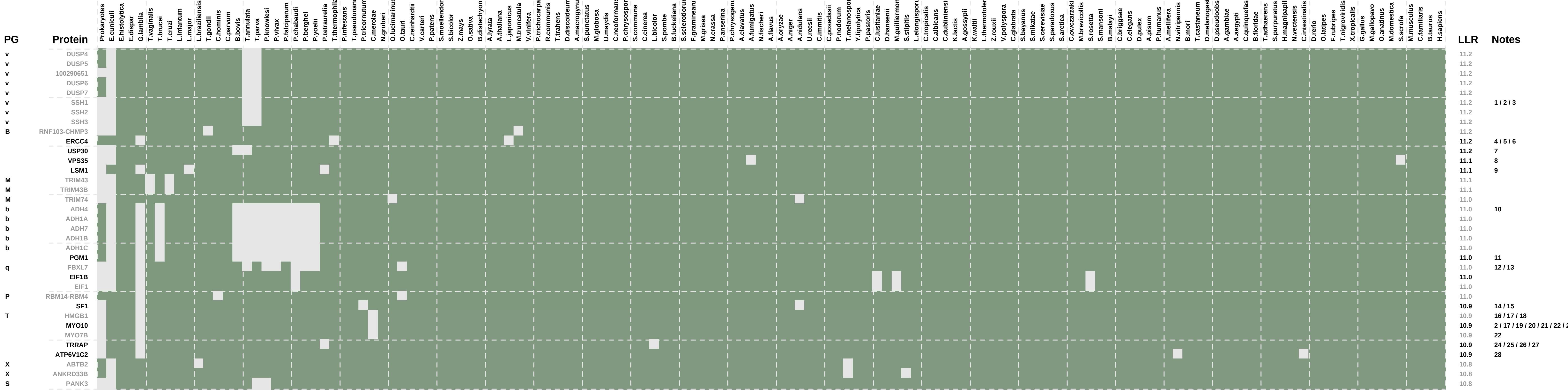
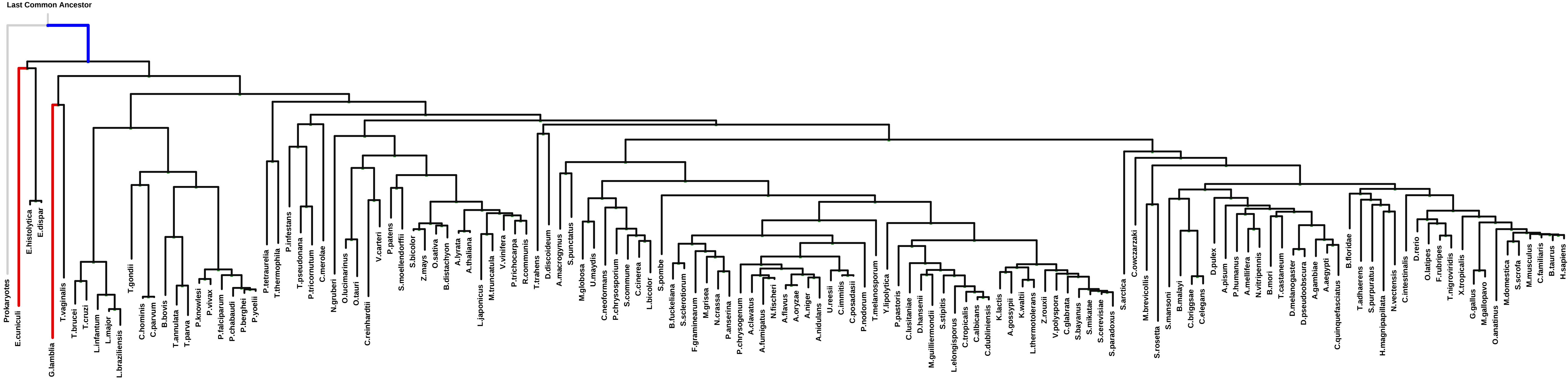
Num of ECM Genes: 1. Num of Predicted Genes: 500



1: nucleosome || 2: extrinsic to plasma membrane || 3: peroxisomal matrix || 4: peroxisomal membrane || 5: peroxisome || 6: nuclear pore || 7: COPI vesicle coat || 8: clathrin-coated vesicle || 9: clathrin-sculpted gamma-aminobutyric acid transport vesicle membrane || 10: clathrin-sculpted glutamate transport vesicle membrane || 11: clathrin-sculpted monoamine transport vesicle membrane || 12: endocytic vesicle membrane || 13: neuron projection || 14: secretory granule membrane || 15: SNARE complex || 16: synaptic vesicle membrane || 17: brush border membrane || 18: extrinsic to internal side of plasma membrane || 19: heterotrimeric G-protein complex || 20: melanosome || 21: oligosaccharyltransferase complex || 22: cytoplasmic membrane-bounded vesicle

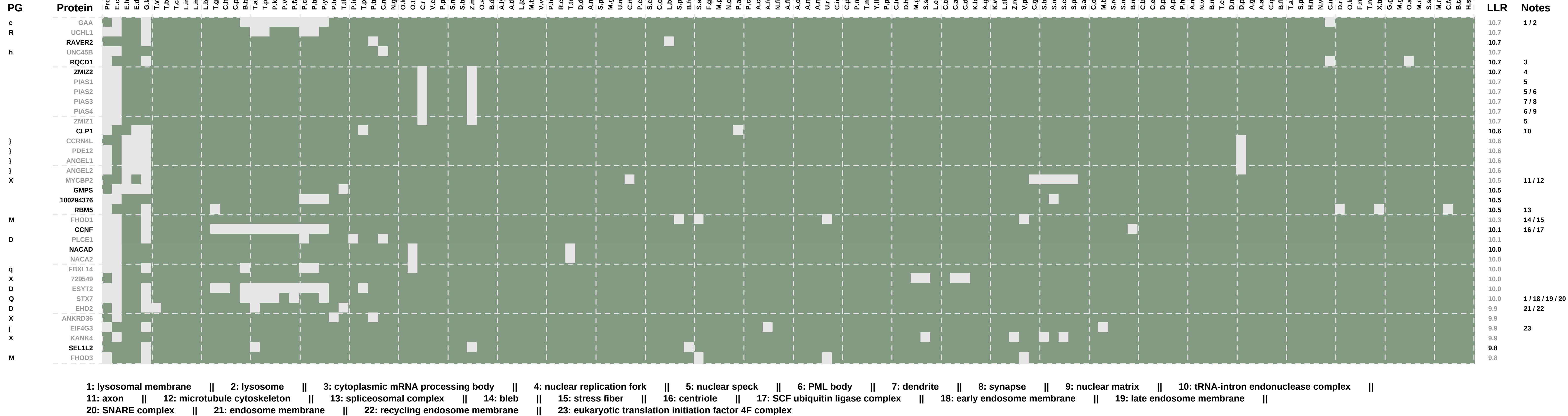
ECM 3, Gene set "eukaryotic translation initiation factor 2 complex", Page 9

Num of ECM Genes: 1. Num of Predicted Genes: 500

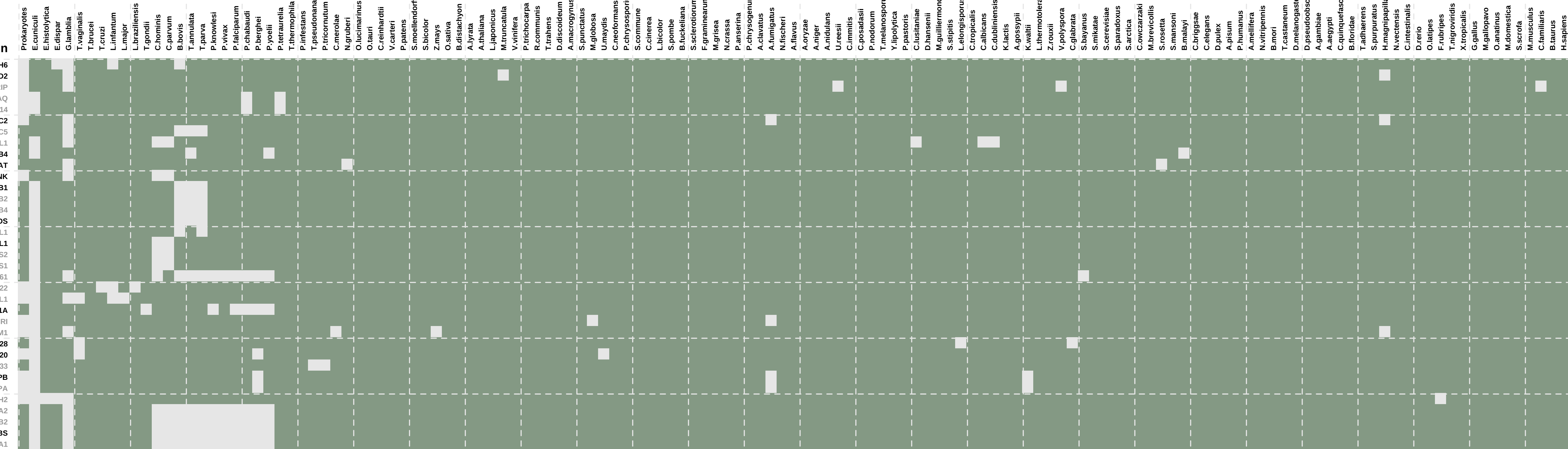


1: cleavage furrow 2: lamellipodium 3: midbody 4: chromosome, telomeric region 5: nuclear chromosome, telomeric region 6: nucleotide-excision repair complex 7: mitochondrial outer membrane 8: endosome 9: ribonucleoprotein complex 10: microtubule cytoskeleton 11: actin cytoskeleton 12: SCF ubiquitin ligase complex 13: ubiquitin ligase complex 14: ribosome 15: spliceosomal complex 16: condensed chromosome 17: neuron projection 18: transcriptional repressor complex 19: cell cortex 20: filopodium membrane 21: filopodium tip 22: myosin complex 23: ruffle 24: NuA4 histone acetyltransferase complex 25: PCAF complex

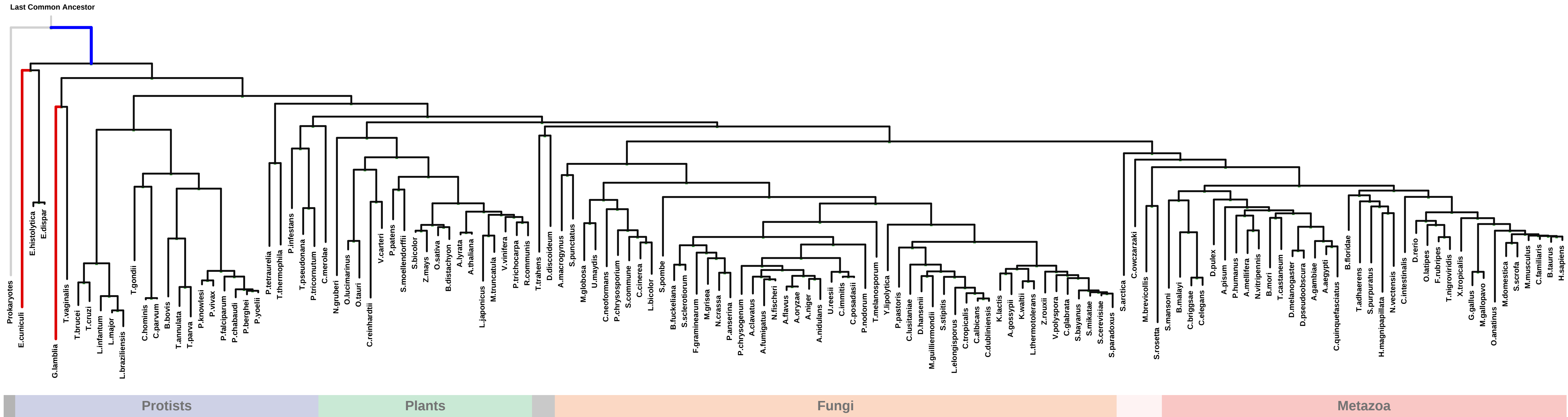
Num of ECM Genes: 1. Num of Predicted Genes: 500



Num of ECM Genes: 1. Num of Predicted Genes: 500

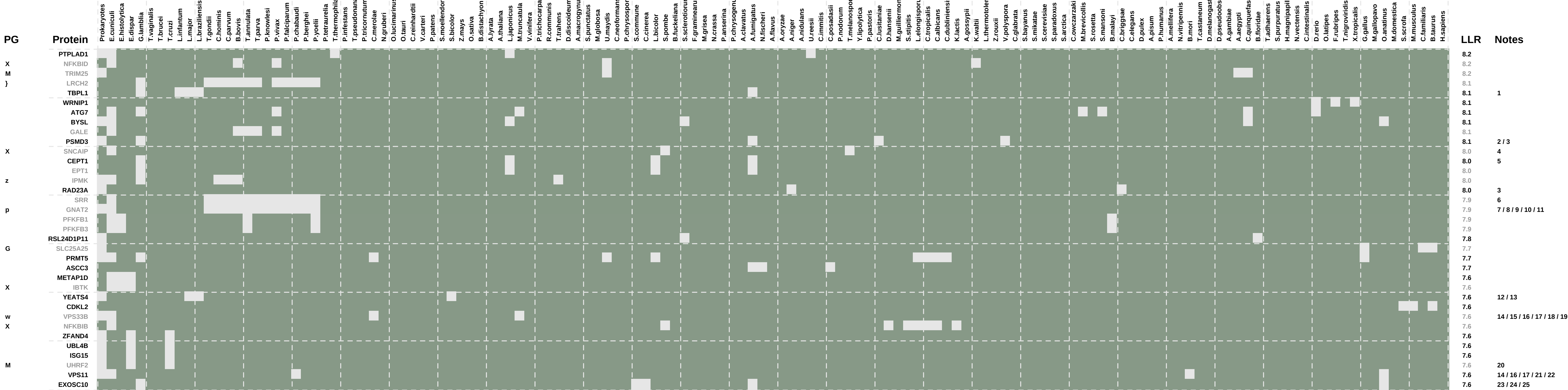
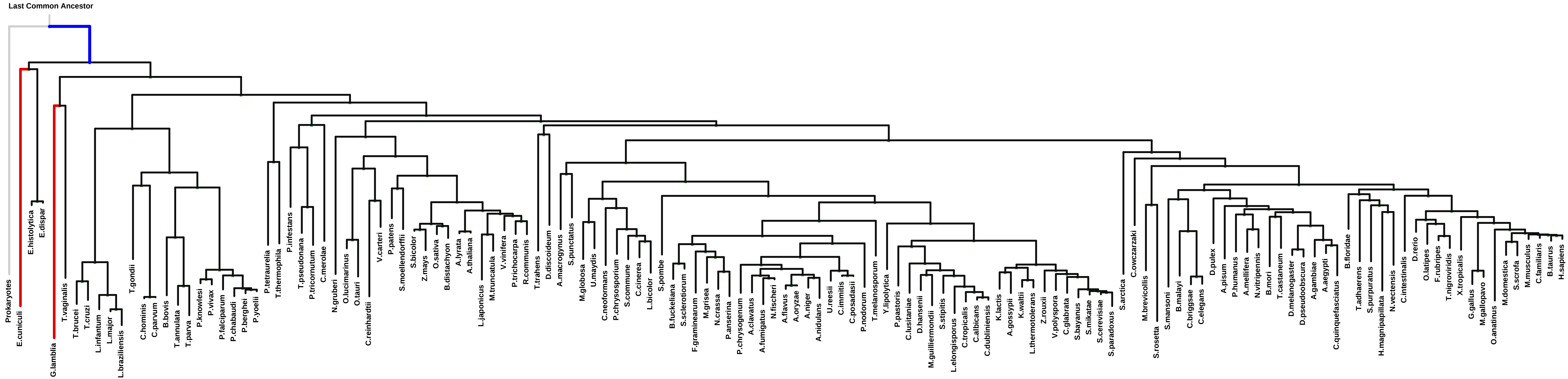


Num of ECM Genes: 1. Num of Predicted Genes: 500



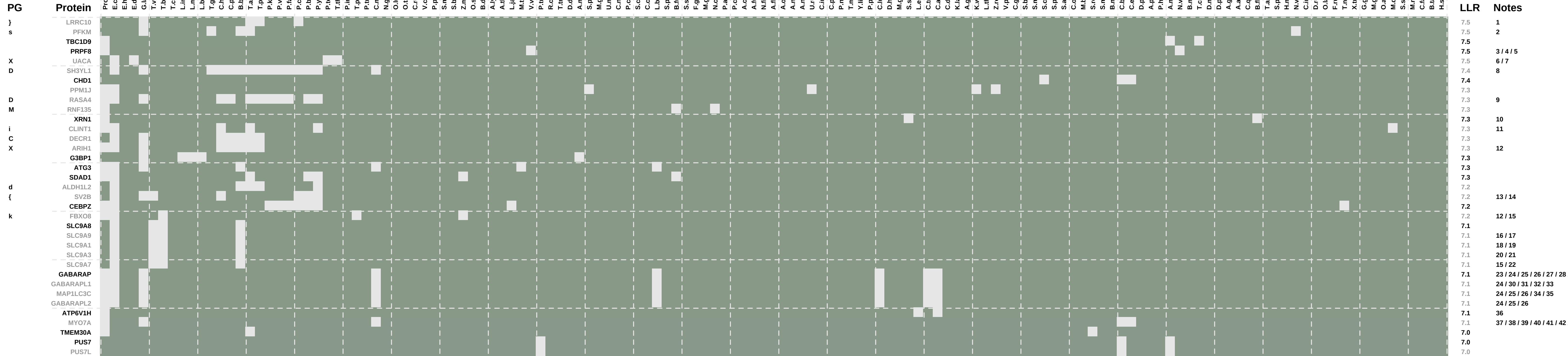
ECM 3, Gene set "eukaryotic translation initiation factor 2 complex", Page 13

Num of ECM Genes: 1. Num of Predicted Genes: 500



1: transcription factor TFIIA complex || 2: proteasome accessory complex || 3: proteasome complex || 4: presynaptic membrane || 5: nuclear membrane || 6: apical part of cell || 7: extrinsic to internal side of plasma membrane || 8: heterotrimeric G-protein complex || 9: photoreceptor inner segment || 10: photoreceptor outer segment || 11: photoreceptor outer segment membrane || 12: NuA4 histone acetyltransferase complex || 13: nuclear matrix || 14: HOPS complex || 15: late endosome || 16: late endosome membrane || 17: lysosomal membrane || 18: lysosome || 19: platelet alpha granule || 20: nuclear heterochromatin || 21: endocytic vesicle || 22: endosome || 23: exosome (RNase complex) ||

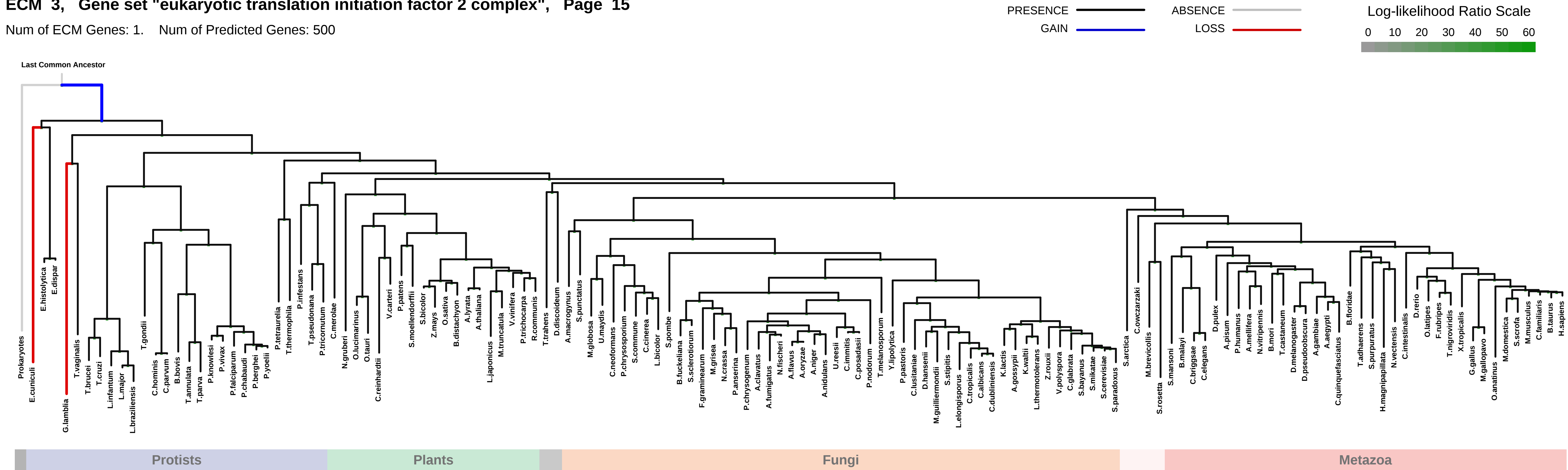
Num of ECM Genes: 1. Num of Predicted Genes: 500



1: myofibril 2: 6-phosphofructokinase complex 3: catalytic step 2 spliceosome 4: nuclear speck 5: U5 snRNP 6: apoptosome 7: nuclear envelope 8: ruffle membrane 9: intrinsic to internal side of plasma membrane 10: intermediate filament cytoskeleton 11: clathrin-coated vesicle 12: ubiquitin ligase complex 13: acrosomal vesicle 14: synaptic vesicle membrane 15: trans-Golgi network 16: late endosome membrane 17: recycling endosome 18: basolateral plasma membrane 19: membrane raft 20: brush border 21: brush border membrane 22: recycling endosome membrane 23: actin cytoskeleton 24: autophagic vacuole 25: autophagic vacuole membrane

ECM 3, Gene set "eukaryotic translation initiation factor 2 complex", Page 15

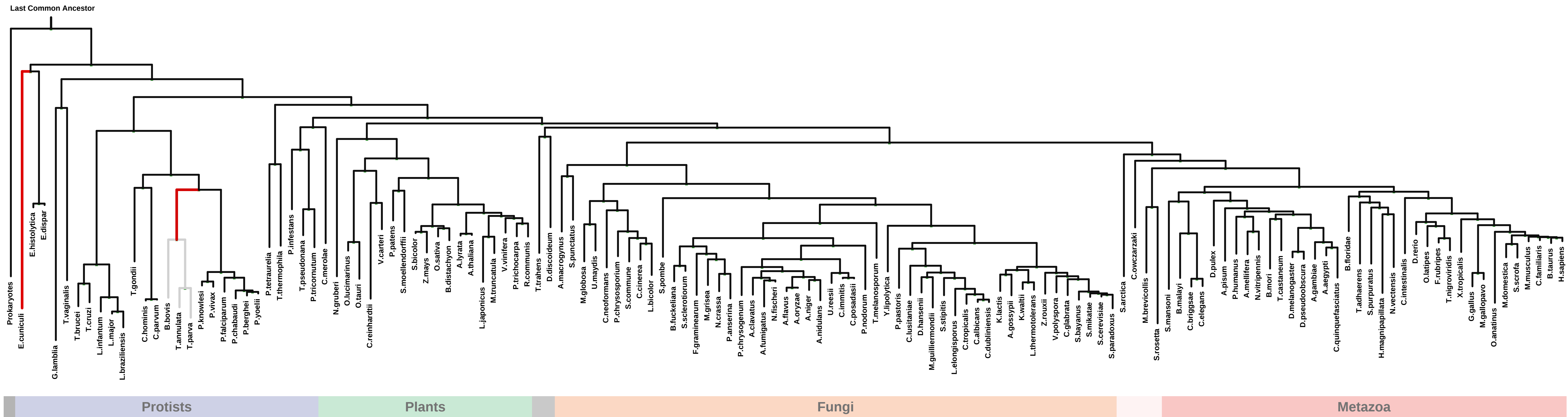
Num of ECM Genes: 1. Num of Predicted Genes: 500

[illegible]

1: epsilon DNA polymerase complex 2: microtubule associated complex 3: nuclear pore 4: prefoldin complex 5: endoplasmic reticulum-Golgi intermediate compartment 6: endoplasmic reticulum-Golgi intermediate compartment membrane 7: melanosome 8: condensed chromosome 9: condensin complex 10: nuclear chromosome 11: pronucleus 12: mitochondrial outer membrane

ECM 4, Gene set "eukaryotic translation initiation factor 2 complex", Page 1

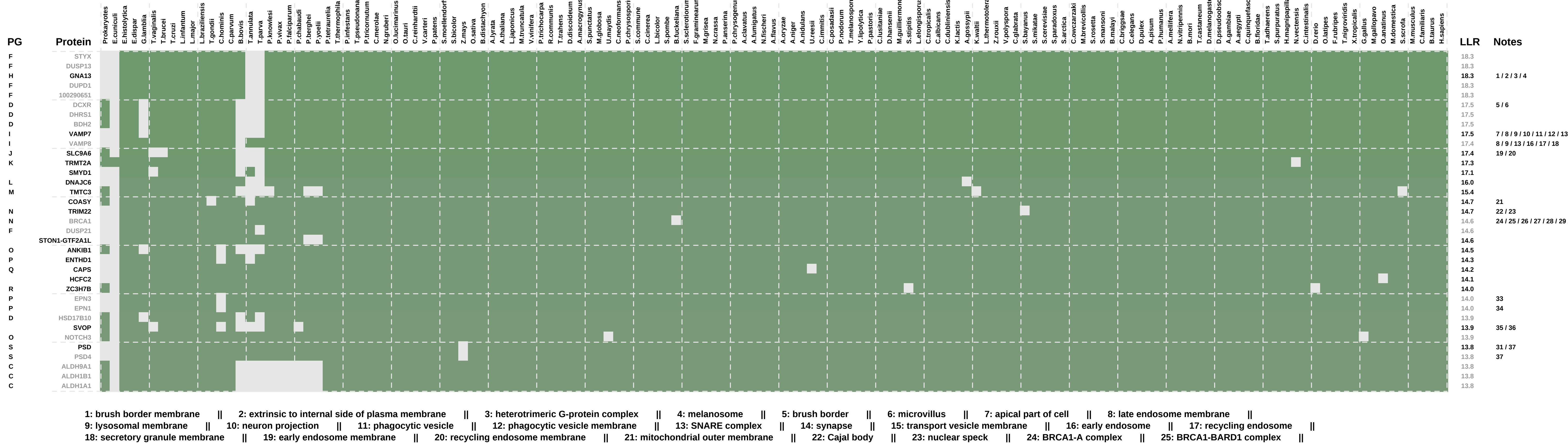
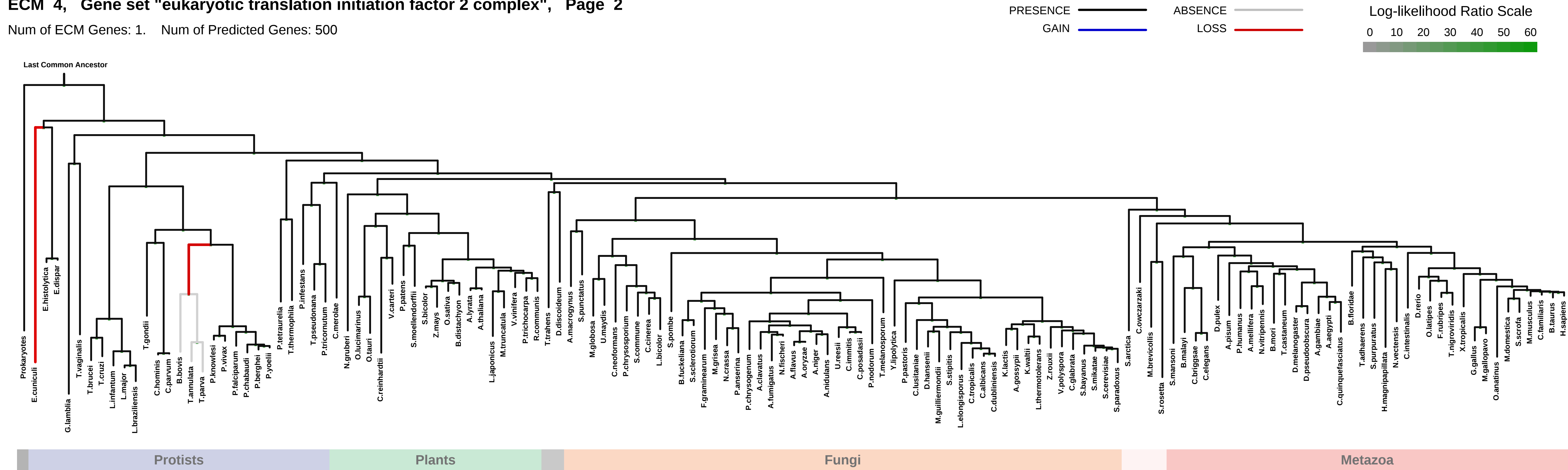
Num of ECM Genes: 1. Num of Predicted Genes: 500

[illegible]

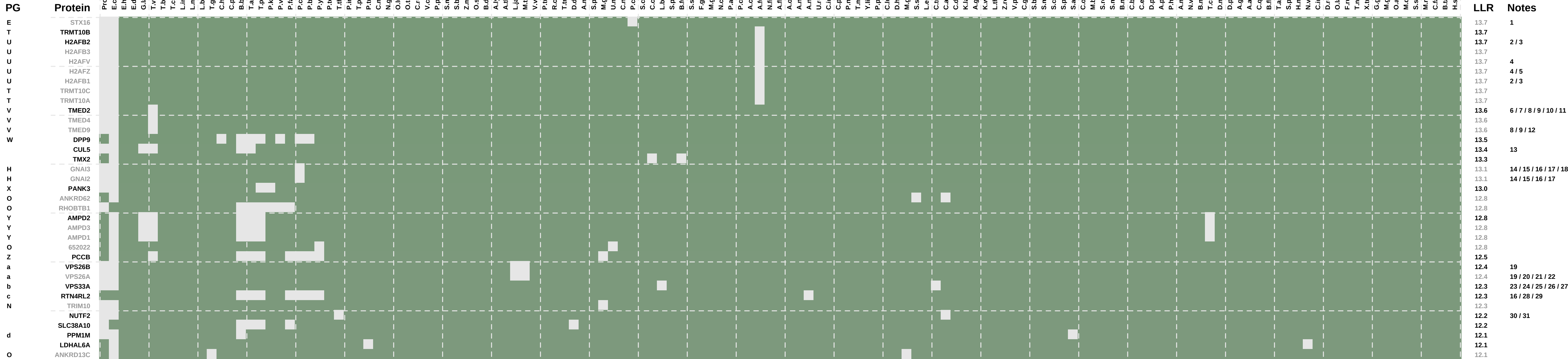
1: eukaryotic translation initiation factor 2 complex || 2: eukaryotic translation initiation factor 2B complex || 3: mitochondrial outer membrane || 4: peroxisomal membrane || 5: peroxisome || 6: BLOC-1 complex || 7: endosome membrane || 8: membrane raft || 9: phagocytic vesicle || 10: SNARE complex || 11: Golgi cisterna membrane || 12: dendrite || 13: lysosome || 14: TORC1 complex || 15: cytoplasmic membrane-bounded vesicle || 16: oligosaccharyltransferase complex || 17: cleavage furrow || 18: lamellipodium || 19: midbody

ECM 4, Gene set "eukaryotic translation initiation factor 2 complex", Page 2

Num of ECM Genes: 1. Num of Predicted Genes: 500



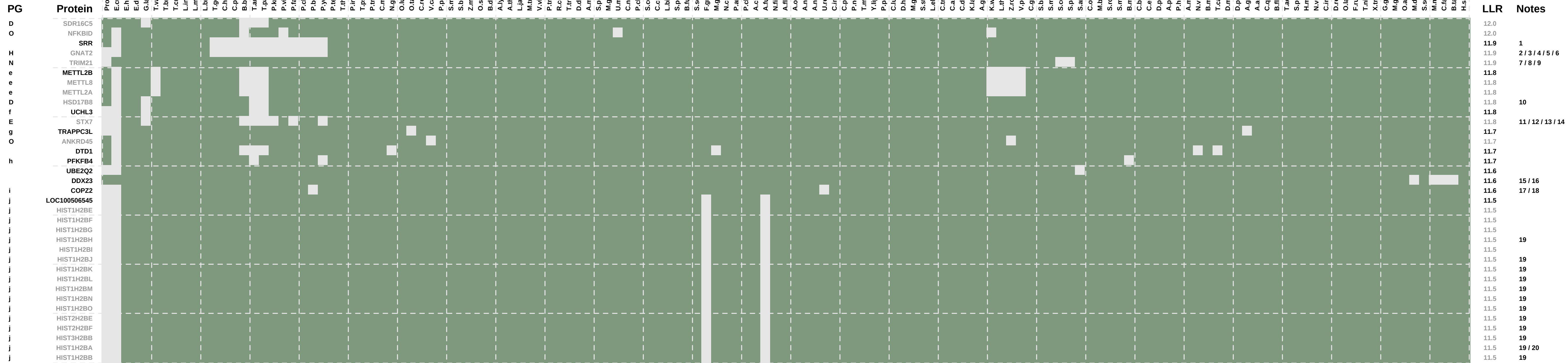
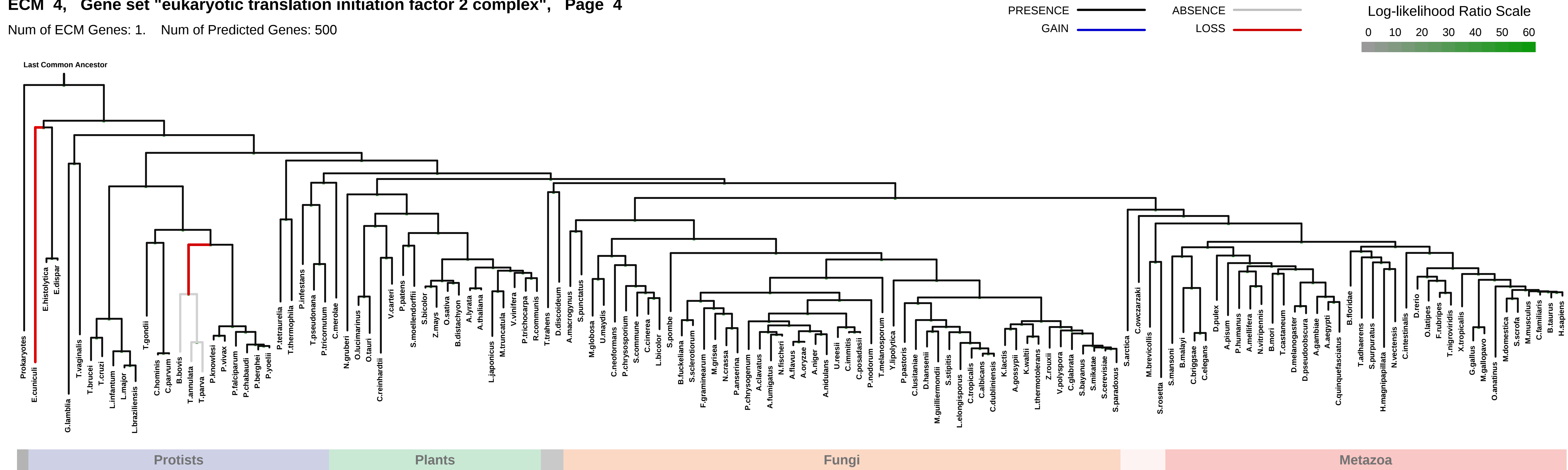
Num of ECM Genes: 1. Num of Predicted Genes: 500



1: SNARE complex || 2: nuclear nucleosome || 3: transcriptionally active chromatin || 4: nucleosome || 5: Barr body || 6: COPI-coated vesicle || 7: COPI-coated vesicle membrane || 8: endoplasmic reticulum-Golgi intermediate compartment || 9: endoplasmic reticulum-Golgi intermediate compartment membrane || 10: Golgi cisterna membrane || 11: zymogen granule membrane || 12: trans-Golgi network transport vesicle || 13: Cul5-RING ubiquitin ligase complex || 14: extrinsic to internal side of plasma membrane || 15: heterotrimeric G-protein complex || 16: membrane raft || 17: midbody || 18: zymogen granule || 19: retromer complex || 20: endosome || 21: endosome membrane || 22: vesicle || 23: early endosome || 24: HOPS complex ||

ECM 4, Gene set "eukaryotic translation initiation factor 2 complex", Page 4

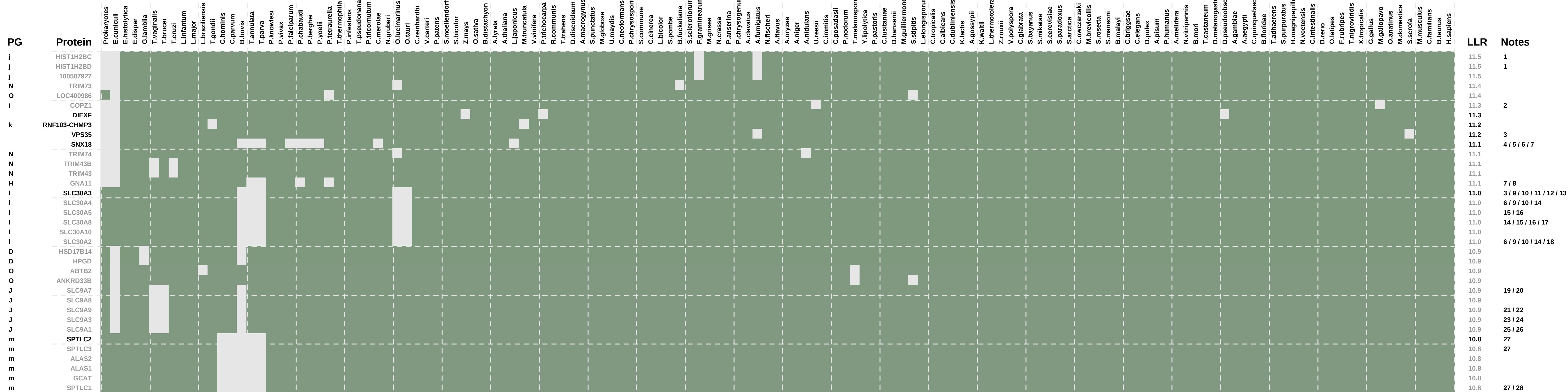
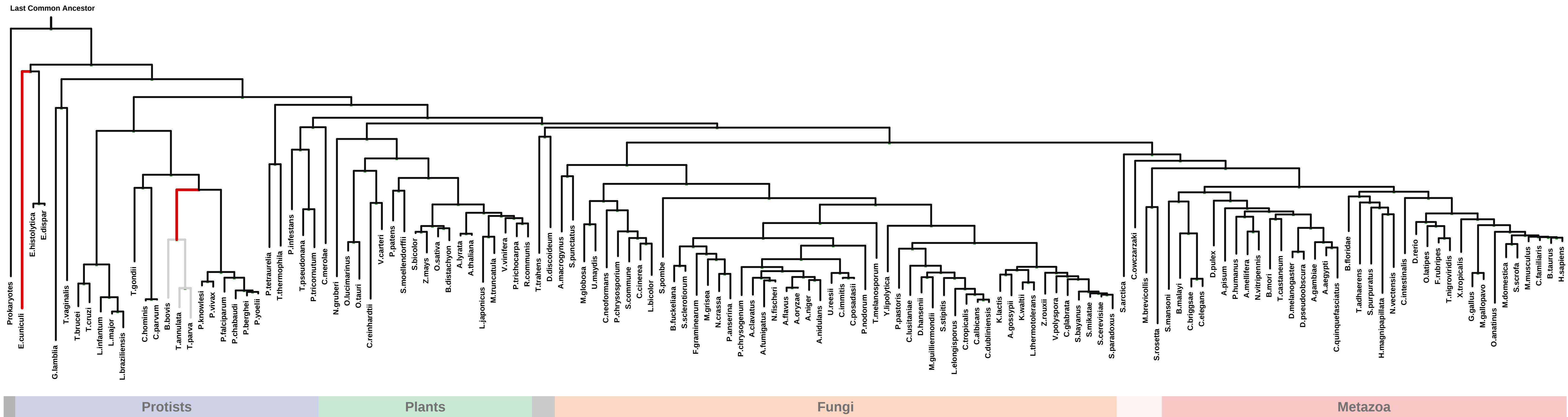
Num of ECM Genes: 1. Num of Predicted Genes: 500



1: apical part of cell || 2: extrinsic to internal side of plasma membrane || 3: heterotrimeric G-protein complex || 4: photoreceptor inner segment || 5: photoreceptor outer segment || 6: photoreceptor outer segment membrane || 7: cytoplasmic mRNA processing body || 8: ribonucleoprotein complex || 9: SCF ubiquitin ligase complex || 10: mitochondrial envelope || 11: early endosome membrane || 12: late endosome membrane || 13: lysosomal membrane || 14: SNARE complex || 15: catalytic step 2 spliceosome || 16: U5 snRNP || 17: cis-Golgi network || 18: COPI vesicle coat || 19: nucleosome || 20: extrinsic to plasma membrane

ECM 4, Gene set "eukaryotic translation initiation factor 2 complex", Page 5

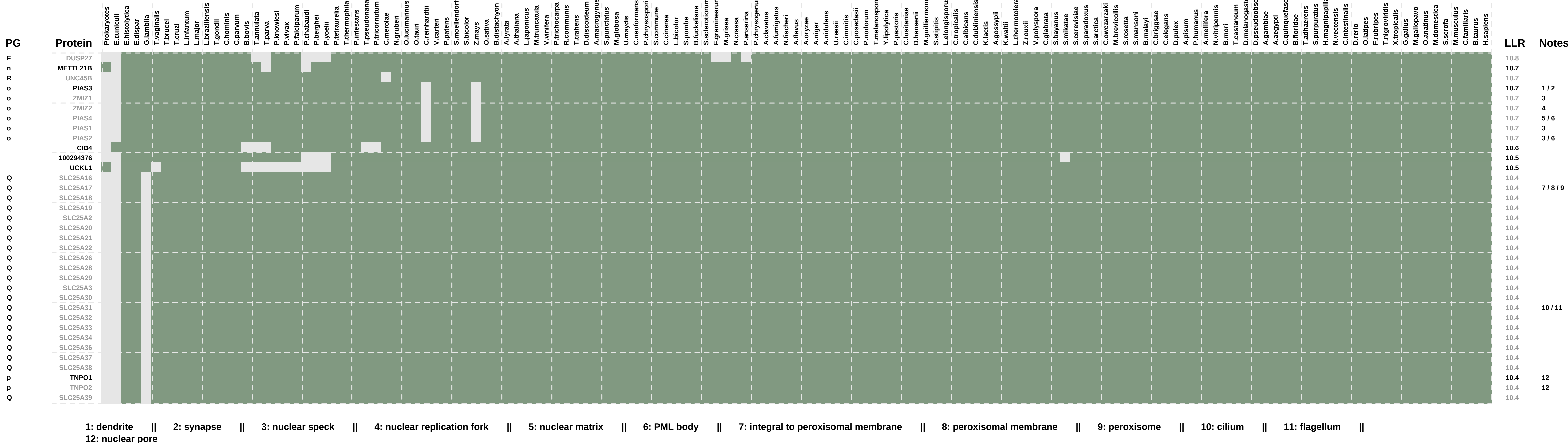
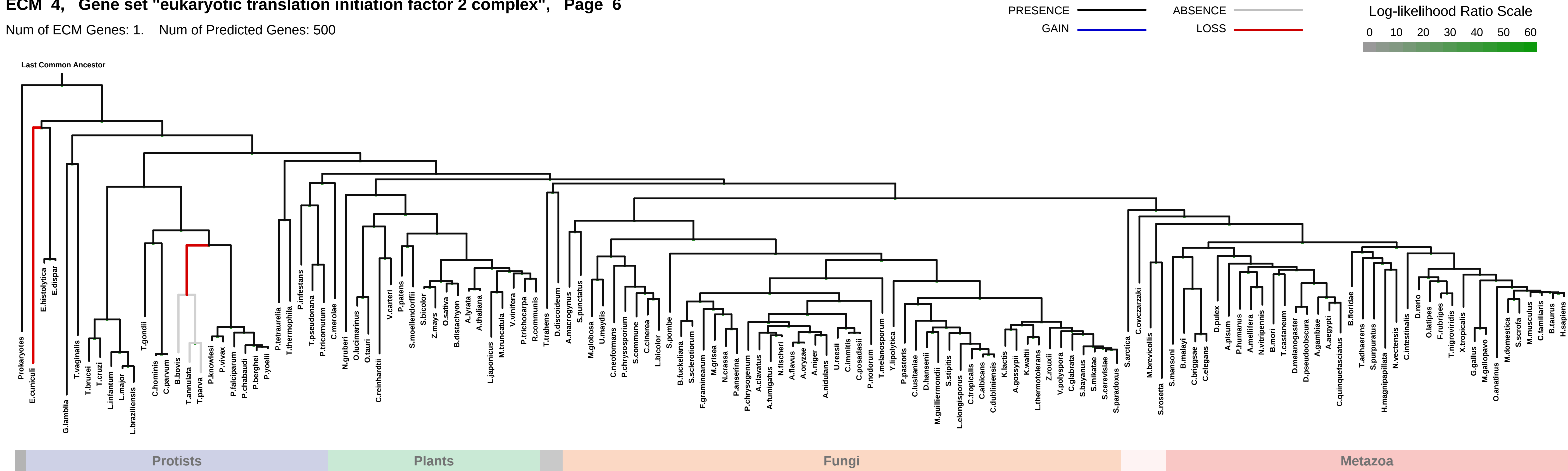
Num of ECM Genes: 1. Num of Predicted Genes: 500



1: nucleosome || 2: COPI vesicle coat || 3: endosome || 4: clathrin-coated vesicle || 5: endomembrane system || 6: endosome membrane || 7: extrinsic to internal side of plasma membrane || 8: heterotrimeric G-protein complex || 9: cytoplasmic part || 10: late endosome || 11: neuron projection || 12: synaptic vesicle || 13: synaptic vesicle membrane || 14: cytoplasmic membrane-bounded vesicle || 15: secretory granule || 16: secretory granule membrane || 17: transport vesicle membrane || 18: lysosomal membrane || 19: recycling endosome membrane || 20: trans-Golgi network || 21: late endosome membrane || 22: recycling endosome || 23: brush border || 24: brush border membrane ||

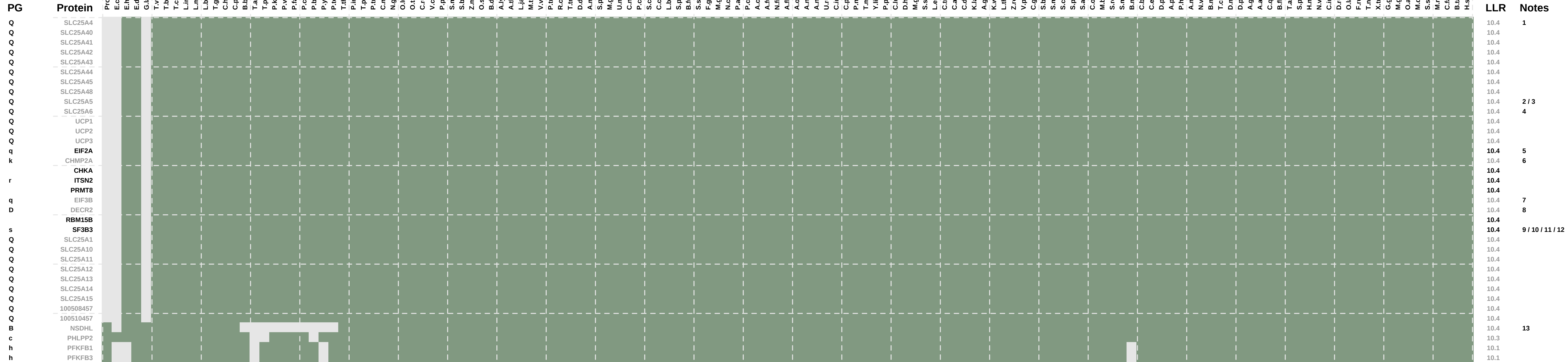
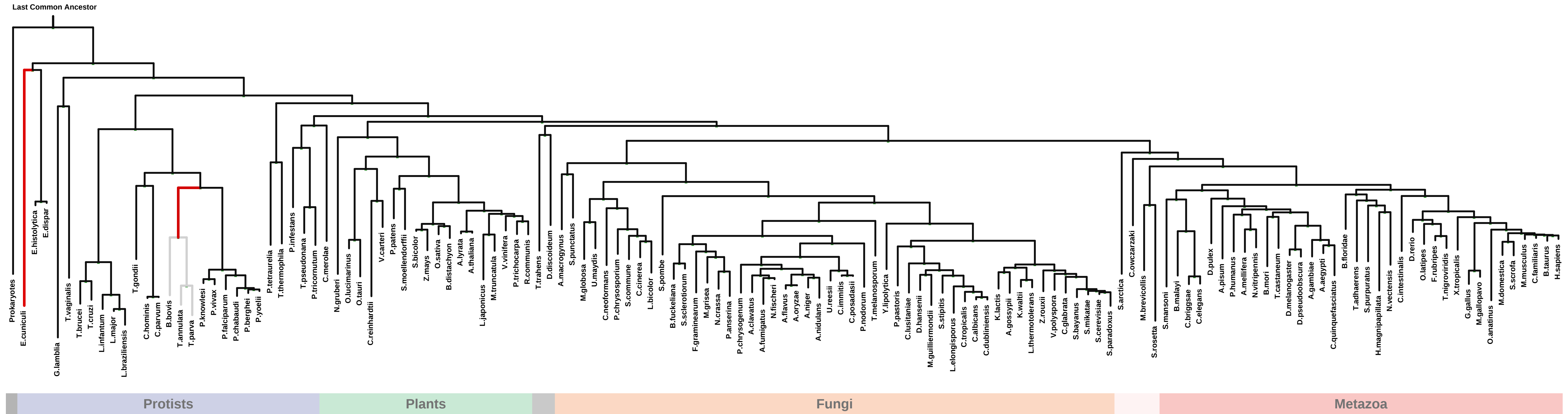
ECM 4, Gene set "eukaryotic translation initiation factor 2 complex", Page 6

Num of ECM Genes: 1. Num of Predicted Genes: 500



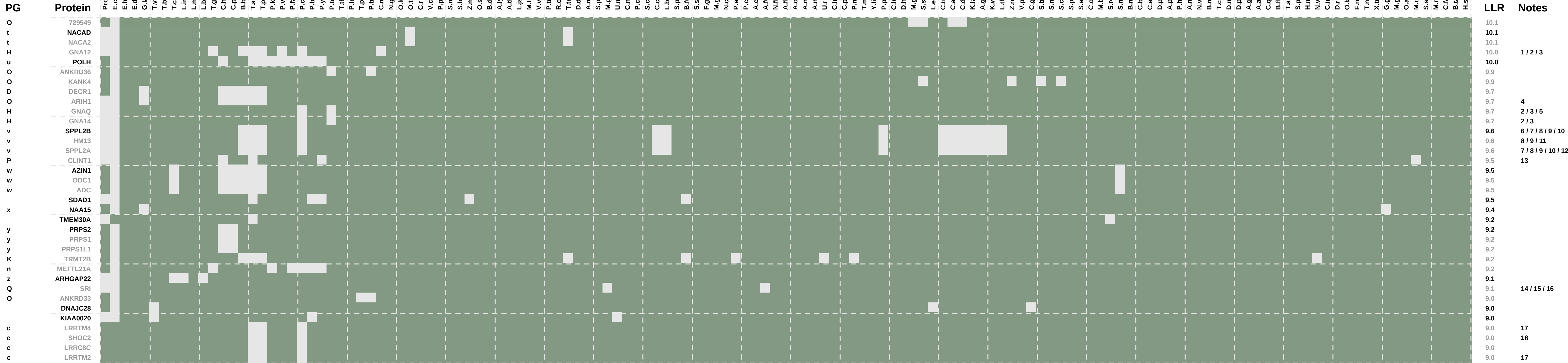
ECM 4, Gene set "eukaryotic translation initiation factor 2 complex", Page 7

Num of ECM Genes: 1. Num of Predicted Genes: 500



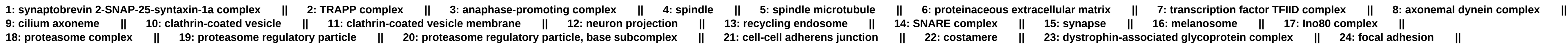
1: mitochondrial outer membrane || 2: mitochondrial nucleoid || 3: MMXD complex || 4: mitochondrial inner membrane presequence translocase complex || 5: eukaryotic translation initiation factor 2 complex || 6: late endosome membrane || 7: eukaryotic translation initiation factor 3 complex || 8: peroxisome || 9: catalytic step 2 spliceosome || 10: small nuclear ribonucleoprotein complex || 11: spliceosomal complex || 12: U12-type spliceosomal complex || 13: lipid particle

Num of ECM Genes: 1. Num of Predicted Genes: 500

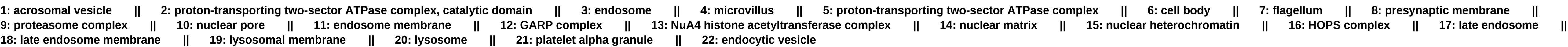
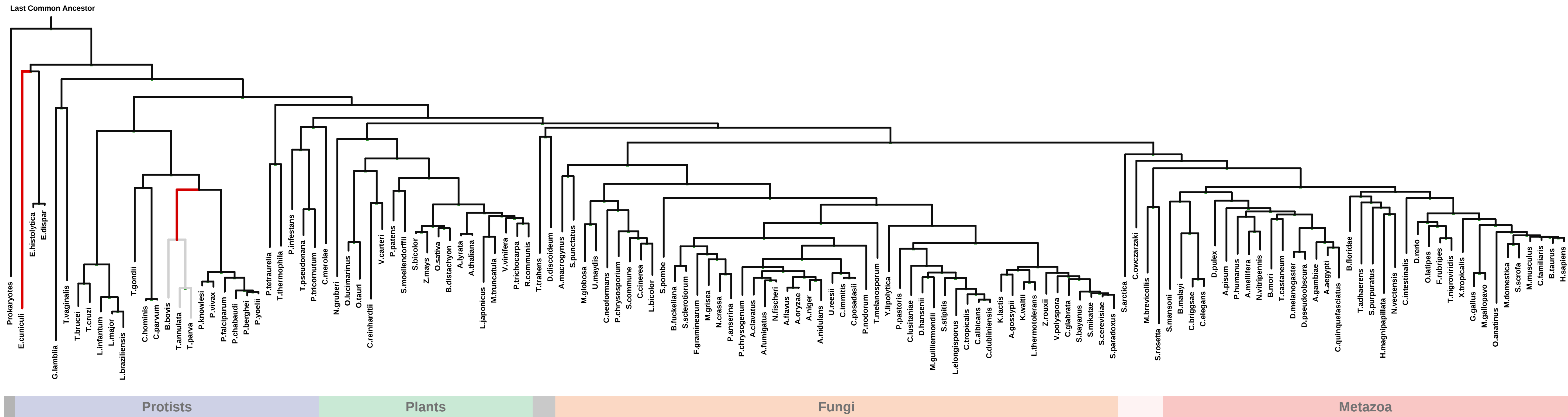


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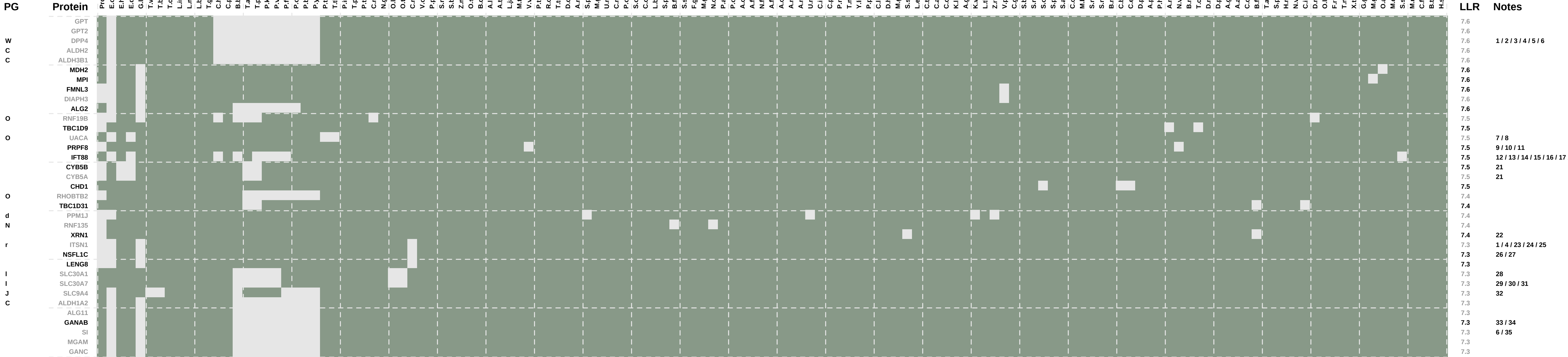
Num of ECM Genes: 1. Num of Predicted Genes: 500



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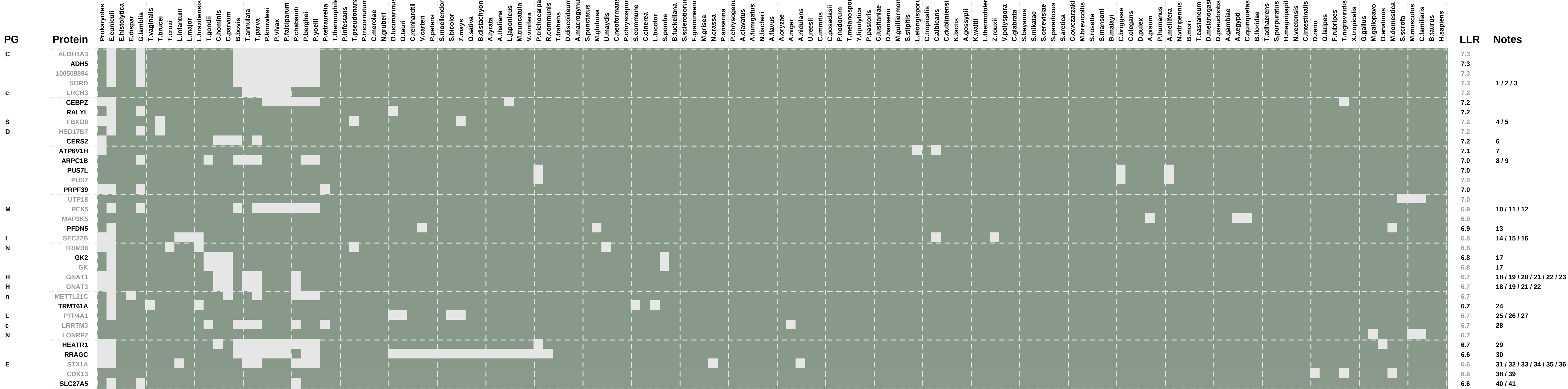
Num of ECM Genes: 1. Num of Predicted Genes: 500



1: endocytic vesicle || 2: intercellular canaliculus || 3: invadopodium membrane || 4: lamellipodium || 5: lamellipodium membrane || 6: membrane raft || 7: apoptosome || 8: nuclear envelope || 9: catalytic step 2 spliceosome ||
10: nuclear speck || 11: U5 snRNP || 12: apical part of cell || 13: centriole || 14: cilium || 15: cilium axoneme || 16: intraflagellar transport particle B || 17: microtubule basal body || 18: microtubule-based flagellum || 19: motile primary cilium ||
20: photoreceptor connecting cilium || 21: mitochondrial outer membrane || 22: intermediate filament cytoskeleton || 23: coated pit || 24: neuron projection || 25: synapse || 26: chromosome || 27: Golgi stack || 28: T-tubule ||

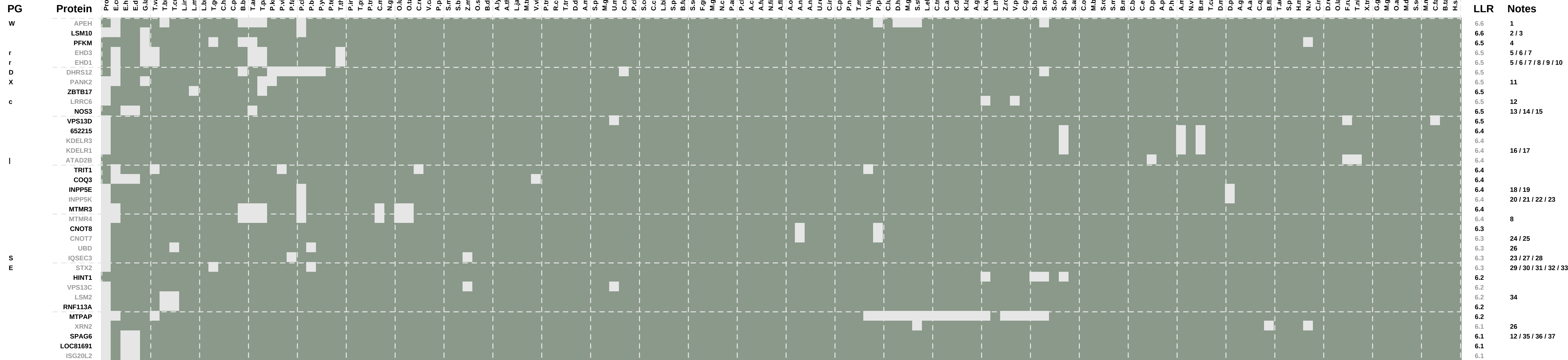
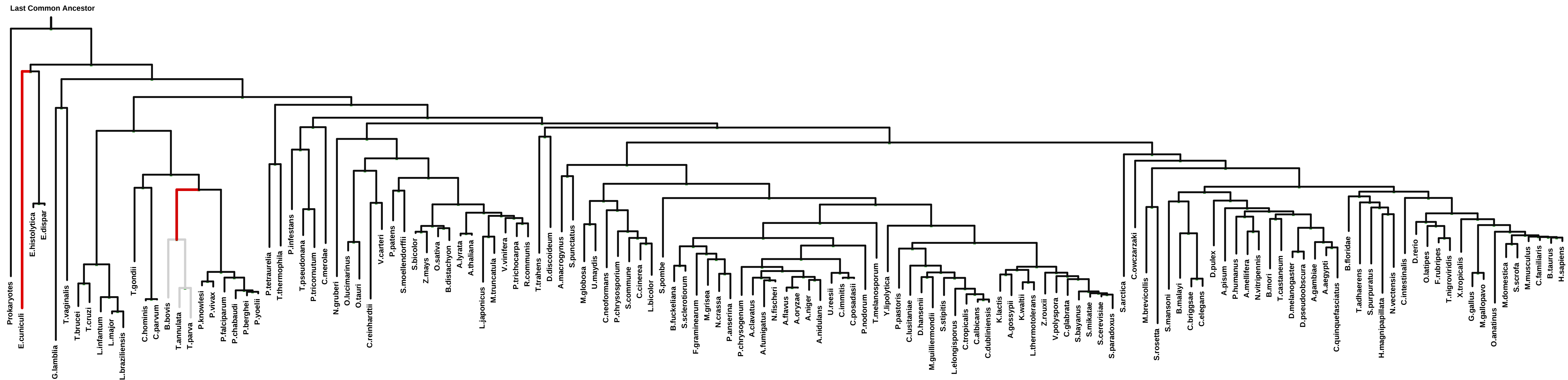
ECM 4, Gene set "eukaryotic translation initiation factor 2 complex", Page 12

Num of ECM Genes: 1. Num of Predicted Genes: 500



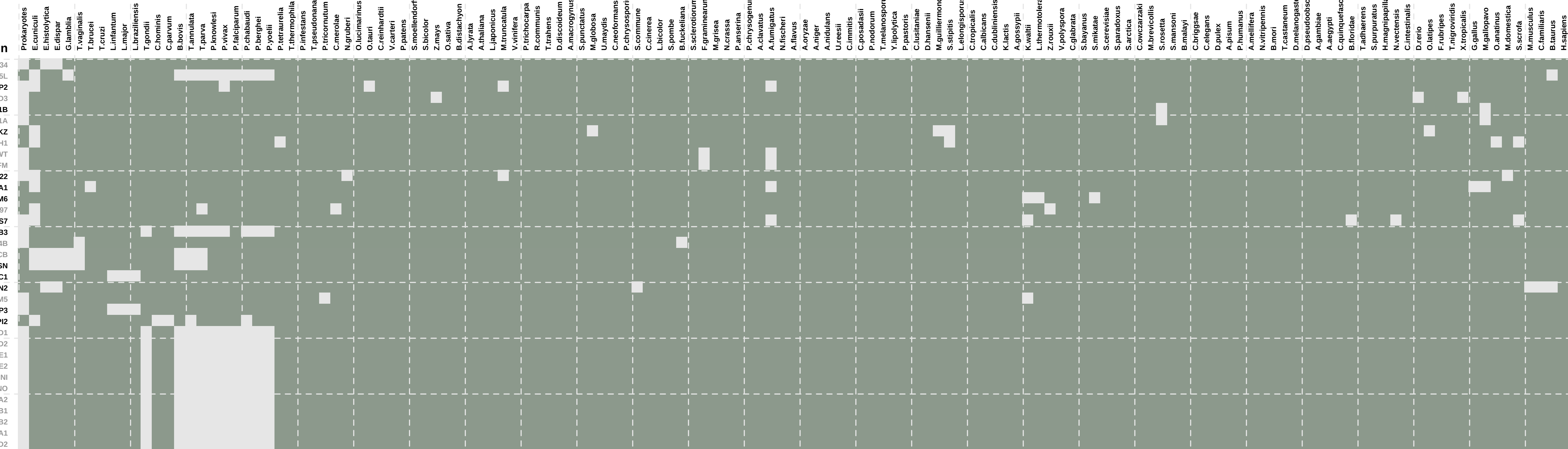
ECM 4, Gene set "eukaryotic translation initiation factor 2 complex", Page 13

Num of ECM Genes: 1. Num of Predicted Genes: 500



1: nuclear membrane || 2: Cajal body || 3: U7 snRNP || 4: 6-phosphofructokinase complex || 5: endocytic vesicle || 6: endosome membrane || 7: recycling endosome membrane || 8: early endosome membrane || 9: lipid particle || 10: platelet dense tubular network membrane || 11: mitochondrial intermembrane space || 12: cilium || 13: apical part of cell || 14: caveola || 15: endocytic vesicle membrane || 16: cis-Golgi network || 17: endoplasmic reticulum-Golgi intermediate compartment || 18: cilium axoneme || 19: Golgi cisterna membrane || 20: neuron projection || 21: ruffle || 22: ruffle membrane || 23: trans-Golgi network || 24: CCR4-NOT complex || 25: cytoplasmic mRNA processing body || 26: aggresome ||

Num of ECM Genes: 1. Num of Predicted Genes: 500



1: cell tip || 2: dendrite || 3: intracellular cyclic nucleotide activated cation channel complex || 4: peroxisomal membrane || 5: cytosolic large ribosomal subunit || 6: postsynaptic density || 7: postsynaptic membrane || 8: trans-Golgi network || 9: chromatin || 10: chromatin remodeling complex || 11: lamellipodium || 12: acrosomal vesicle || 13: MAML1-RBP-Jkappa- ICN1 complex || 14: nuclear membrane || 15: nucleosome || 16: MCM complex || 17: 90S preribosome || 18: cytosolic small ribosomal subunit || 19: microtubule organizing center || 20: ribonucleoprotein complex || 21: ribosome || 22: small-subunit processome || 23: endomembrane system || 24: glycogen granule || 25: melanosome ||

ECM 4, Gene set "eukaryotic translation initiation factor 2 complex", Page 15

Num of ECM Genes: 1. Num of Predicted Genes: 500

