

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

## Dataset:

Num of genes in input gene set: 7  
Total number of genes: 20834  
Prediction LLR threshold: 0

The CLIME PDF output two sections:

### 1) Overview of Evolutionarily Conserved Modules (ECMs)

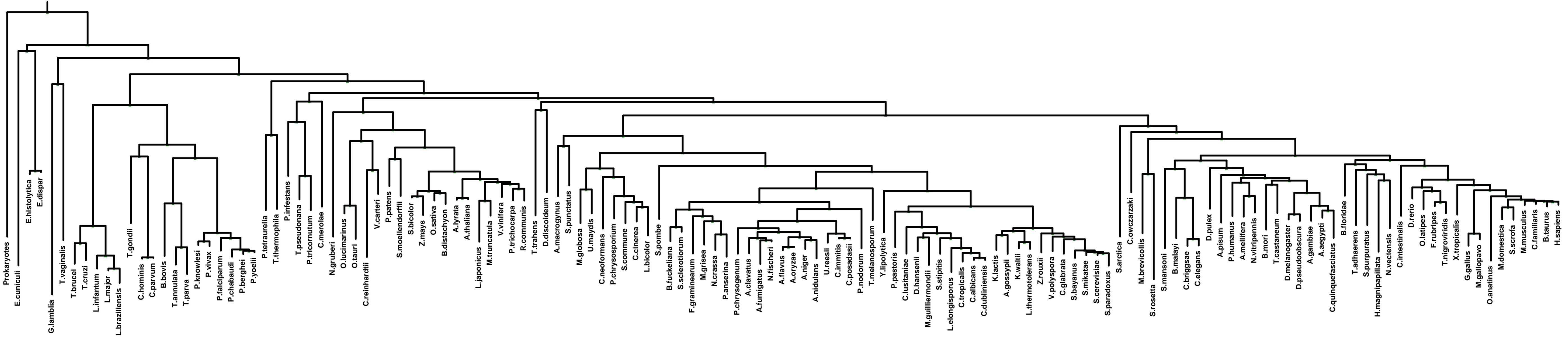
- Top panel shows the predefined species tree.
- Bottom panel shows the partition of input genes into Evolutionary Conserved Modules (ECMs), ordered by ECM strength (shown at right), and separated by horizontal lines.
- Each row show one gene, where the phylogenetic profile indicates presence (blue) 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)

Last Common Ancestor

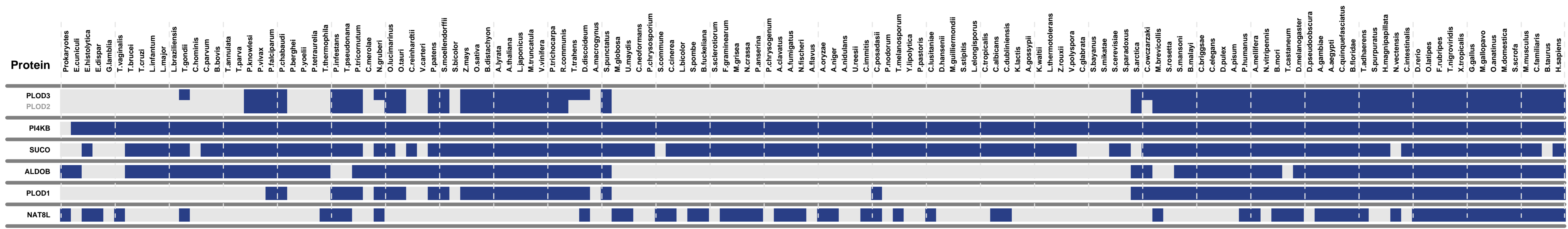


Protists

Plants

Fungi

Metazoa

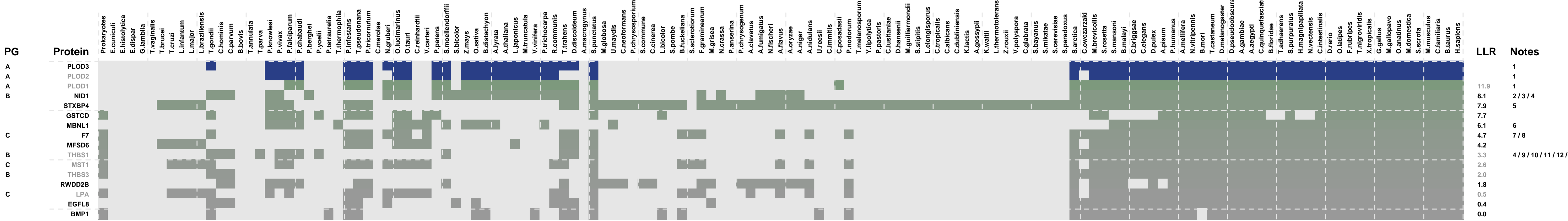
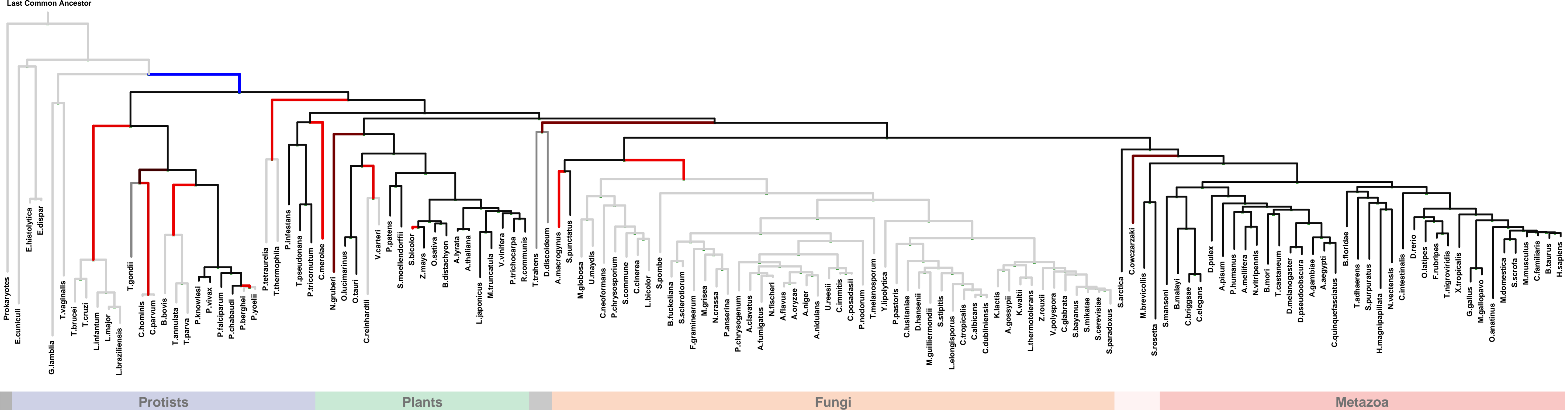


Strength

3.3

ECM 1, Gene set "rough endoplasmic reticulum membrane", Page 1

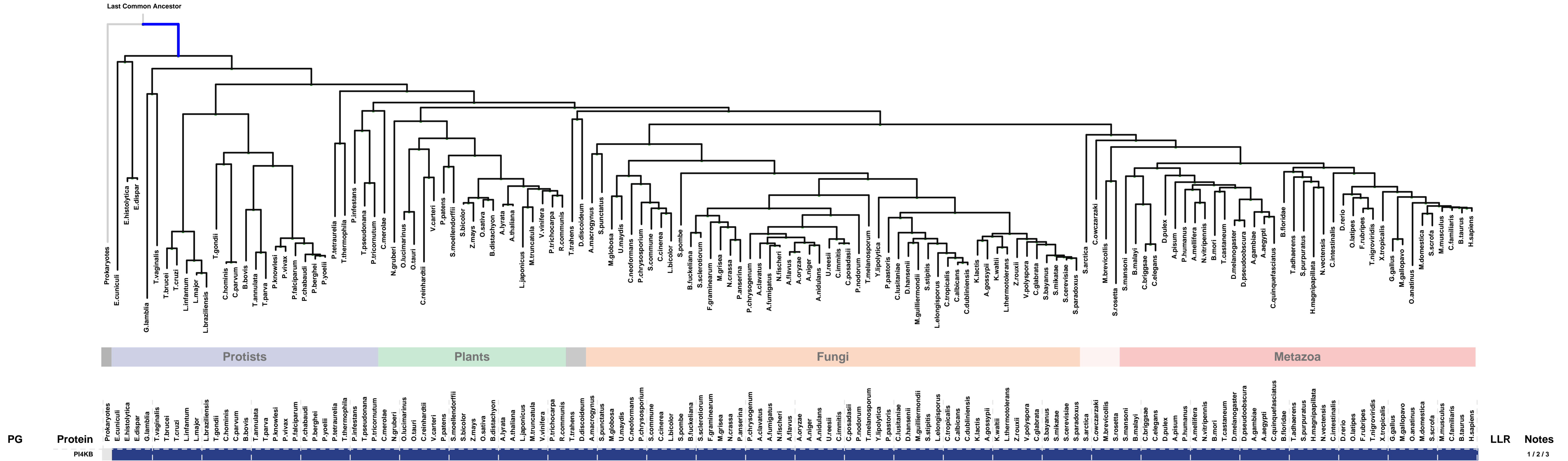
Num of ECM Genes: 2. Num of Predicted Genes: 14. ECM Strength: 3.3



1: rough endoplasmic reticulum membrane || 2: basal lamina || 3: cell periphery || 4: extracellular matrix || 5: intermediate filament cytoskeleton || 6: cytoplasmic stress granule || 7: endoplasmic reticulum lumen || 8: Golgi lumen || 9: external side of plasma membrane || 10: fibrinogen complex || 11: platelet alpha granule || 12: platelet alpha granule lumen || 13: secretory granule

ECM 2, Gene set "rough endoplasmic reticulum membrane", Page 1

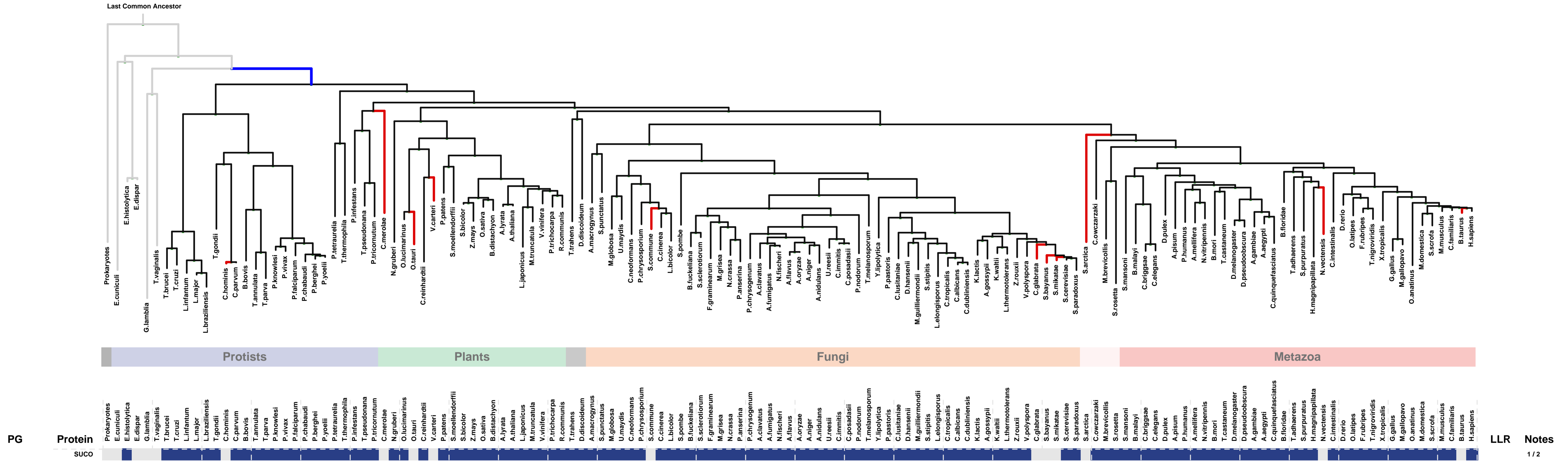
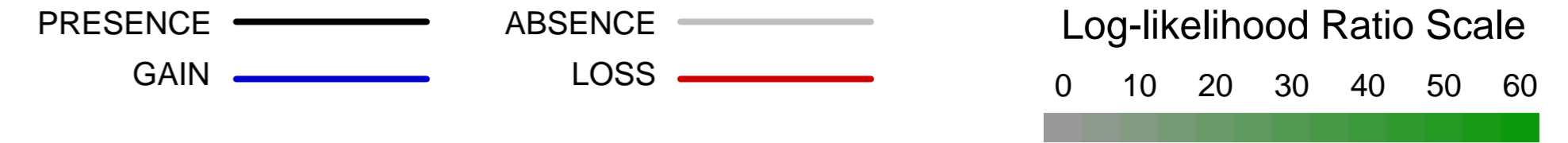
Num of ECM Genes: 1. Num of Predicted Genes: 0



1: endosome || 2: mitochondrial outer membrane || 3: rough endoplasmic reticulum membrane

ECM 3, Gene set "rough endoplasmic reticulum membrane", Page 1

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



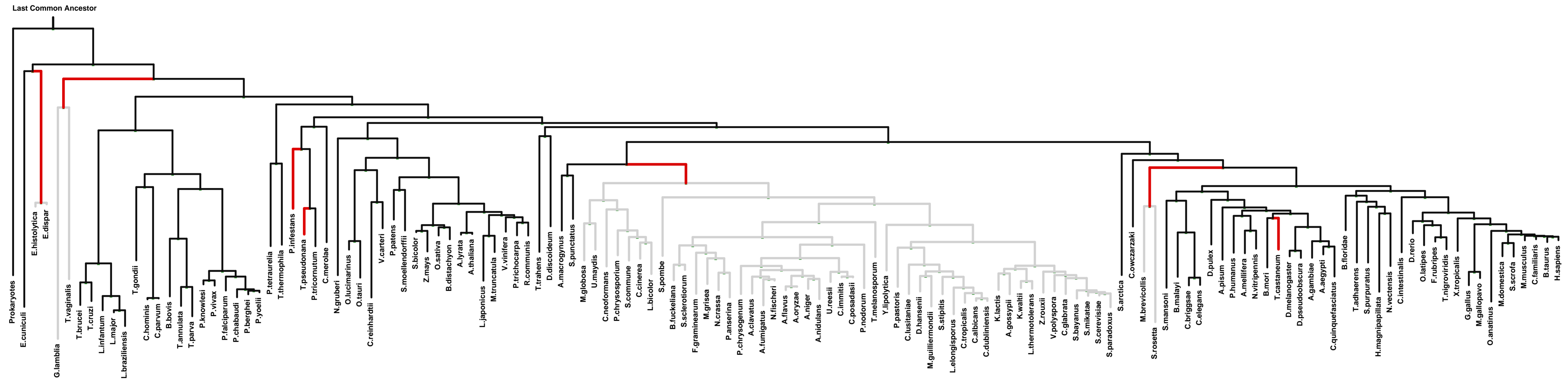
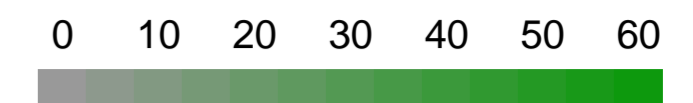
1: rough endoplasmic reticulum || 2: rough endoplasmic reticulum membrane

ECM 4, Gene set "rough endoplasmic reticulum membrane", Page 1

Num of ECM Genes: 1. Num of Predicted Genes: 10

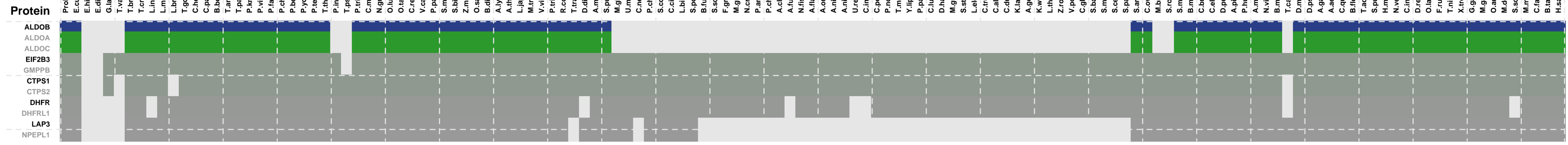
PRESENCE ——— ABSENCE ———  
GAIN ——— LOSS ———

Log-likelihood Ratio Scale



Protists Plants Fungi Metazoa

PG A A A B B C C D D E E

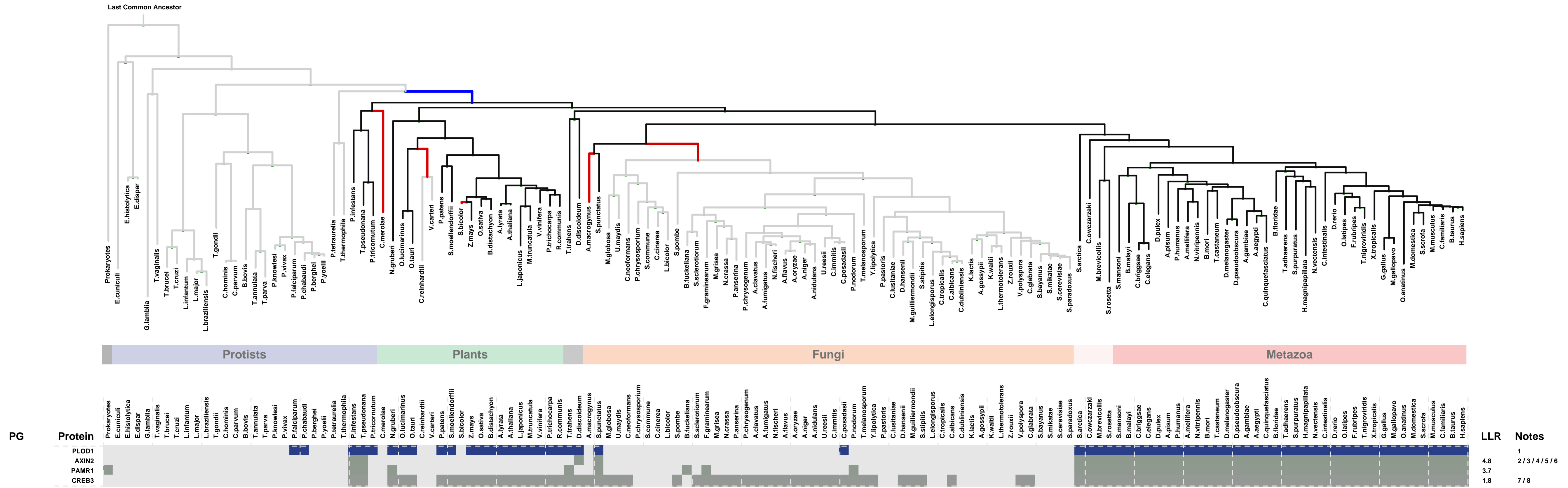


LLR Notes  
1 1/2/3/4/5  
46.5 6/7/8/9  
46.5 10  
4.5 11  
4.5  
4.3  
1.0  
1.0  
0.1  
0.1

1: centriolar satellite || 2: lysosome || 3: microtubule organizing center || 4: rough endoplasmic reticulum membrane || 5: smooth endoplasmic reticulum membrane || 6: actin cytoskeleton || 7: extracellular vesicular exosome ||  
8: I band || 9: platelet alpha granule lumen || 10: axon || 11: eukaryotic translation initiation factor 2B complex

ECM 5, Gene set "rough endoplasmic reticulum membrane", Page 1

Num of ECM Genes: 1. Num of Predicted Genes: 3



1: rough endoplasmic reticulum membrane || 2: beta-catenin destruction complex || 3: cell cortex || 4: cytoplasmic membrane-bounded vesicle || 5: cytoplasmic microtubule || 6: postsynaptic density || 7: integral to endoplasmic reticulum membrane || 8: nuclear body

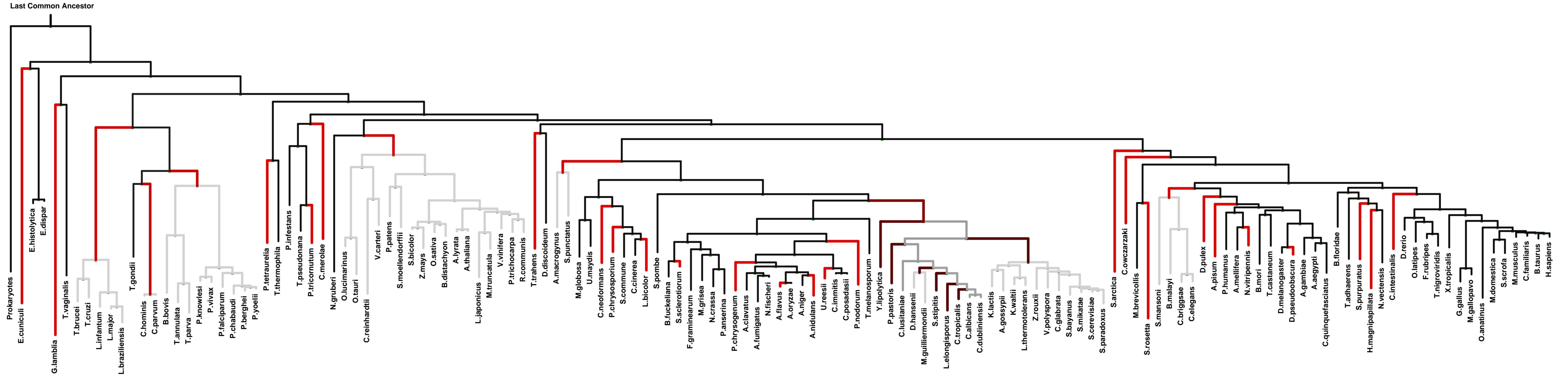
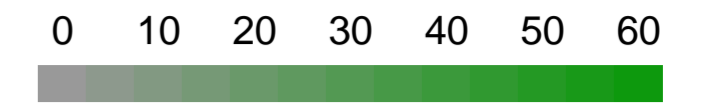
Protein	LLR	Notes
PLOD1	1	
AXIN2	4.8	2/3/4/5/6
PAMR1	3.7	
CREB3	1.8	7/8

ECM 6, Gene set "rough endoplasmic reticulum membrane", Page 1

Num of ECM Genes: 1. Num of Predicted Genes: 4

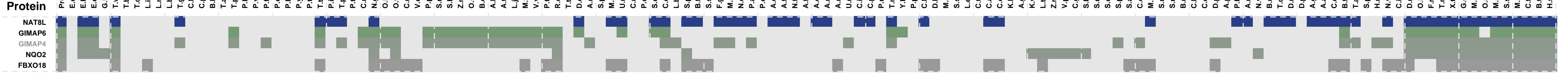
PRESENCE ——— ABSENCE ———  
GAIN ——— LOSS ———

Log-likelihood Ratio Scale



Protists Plants Fungi Metazoa

PG



LLR Notes

15.0  
5.7  
4.2  
0.6

1: mitochondrial membrane || 2: rough endoplasmic reticulum membrane