

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:

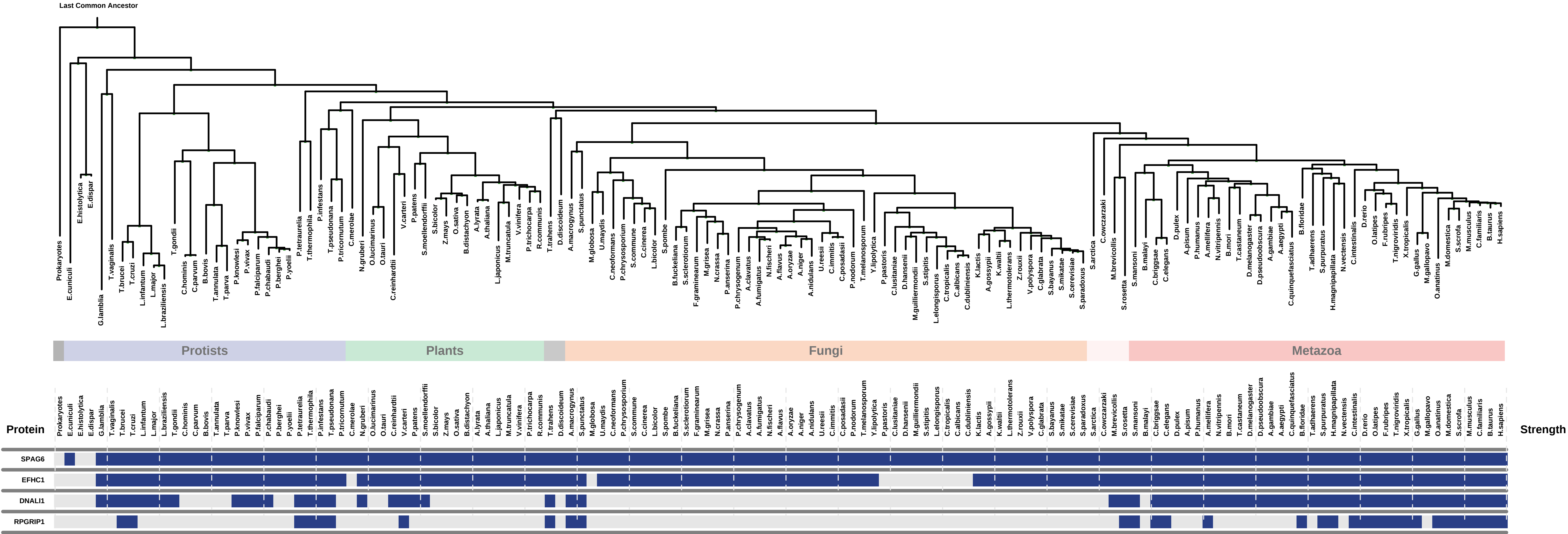
1) Overview of Evolutionarily Conserved Modules (ECMs)

- 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 $E < 1e-3$).

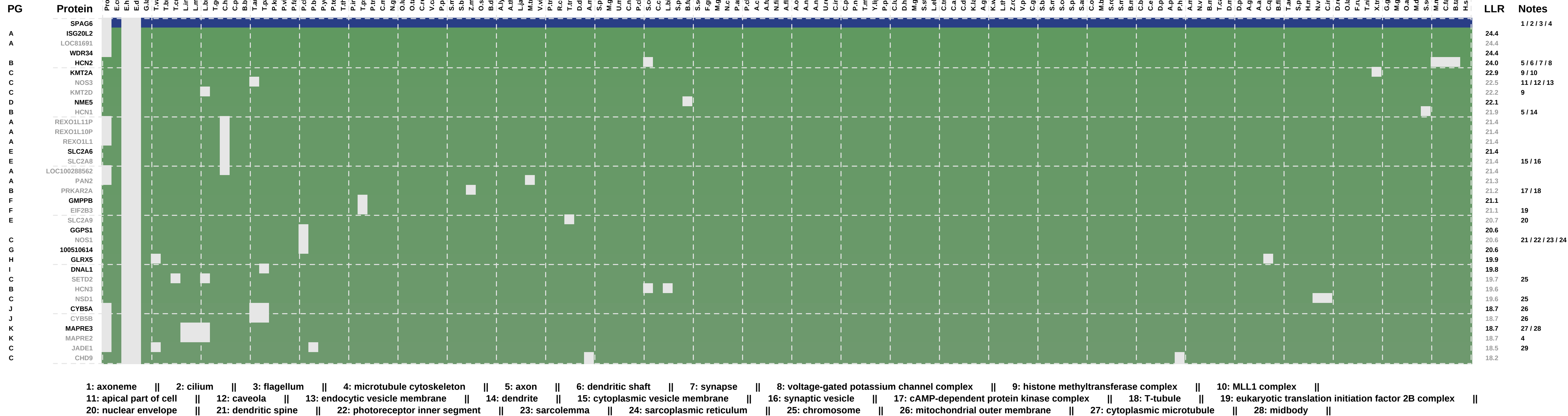
2) Details of each ECM and its expansion ECM+

- 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.

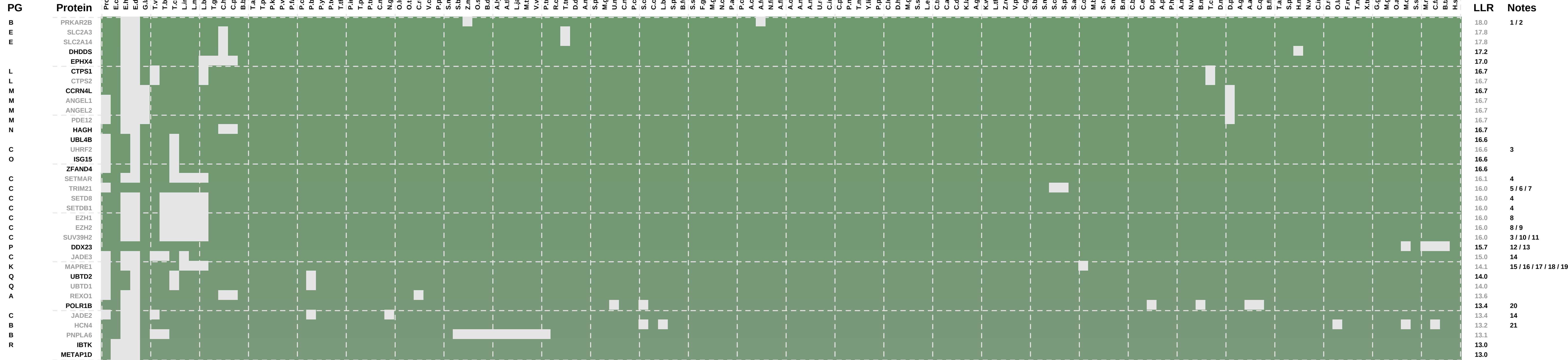
Overview of Evolutionarily Conserved Modules (ECMs)



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

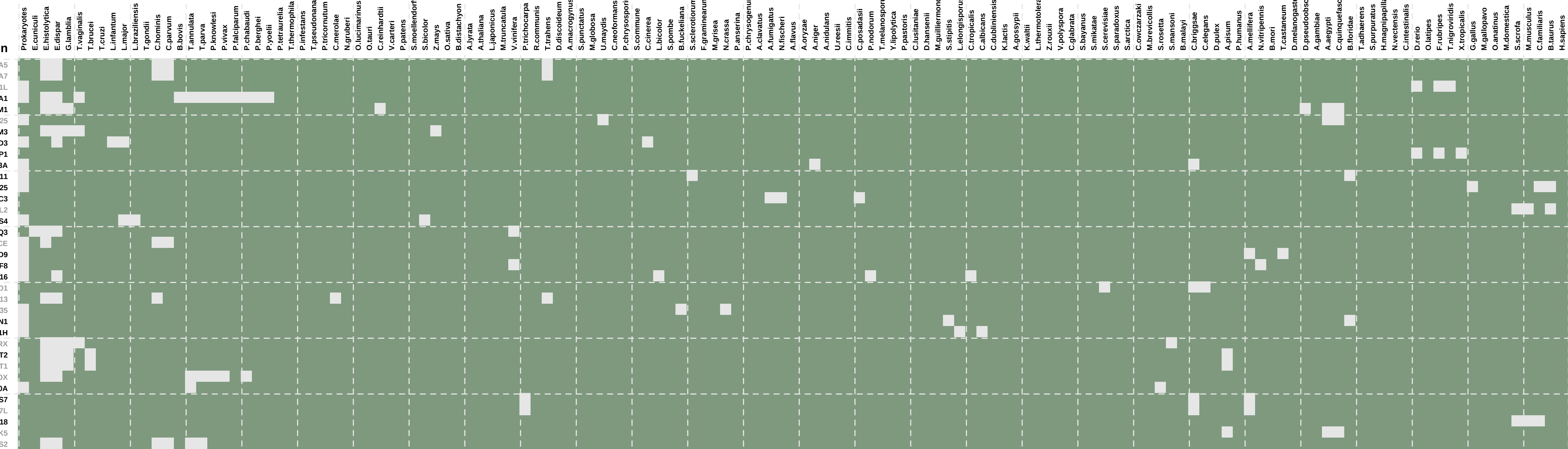


Num of ECM Genes: 1. Num of Predicted Genes: 500

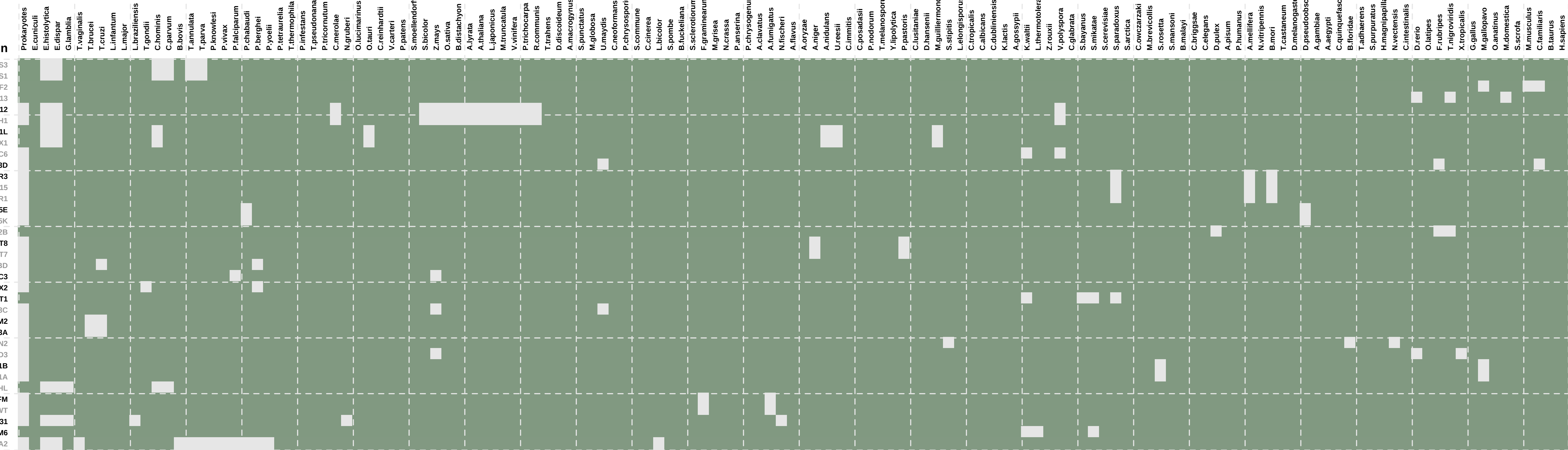


1: cAMP-dependent protein kinase complex || 2: membrane raft || 3: nuclear heterochromatin || 4: chromosome || 5: cytoplasmic mRNA processing body || 6: ribonucleoprotein complex || 7: SCF ubiquitin ligase complex || 8: ESC/E(Z) complex || 9: pronucleus || 10: chromatin || 11: chromosome, centromeric region || 12: catalytic step 2 spliceosome || 13: U5 snRNP || 14: histone acetyltransferase complex || 15: cell projection membrane || 16: cortical microtubule cytoskeleton || 17: cytoplasmic microtubule || 18: microtubule plus end || 19: spindle || 20: DNA-directed RNA polymerase I complex || 21: terminal button

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

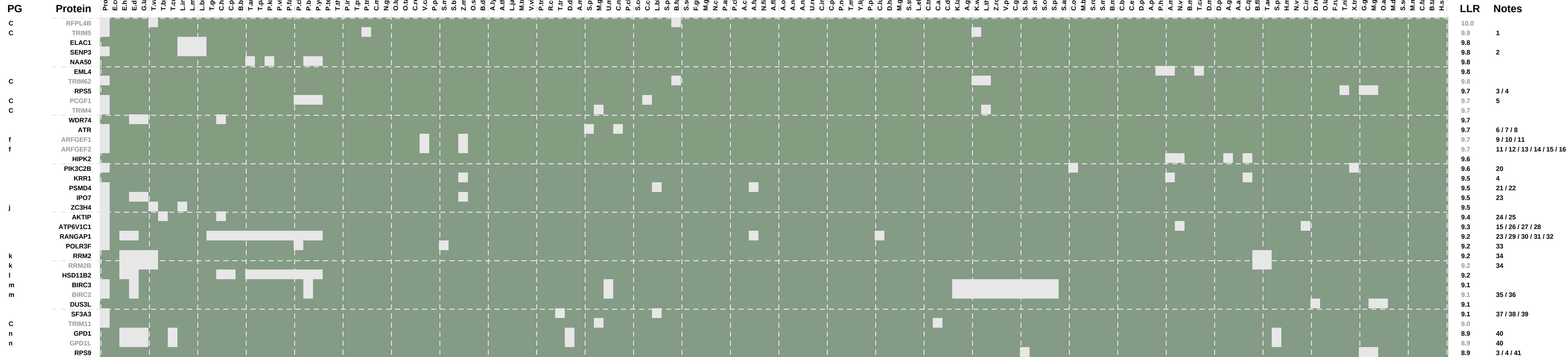


Num of ECM Genes: 1. Num of Predicted Genes: 500



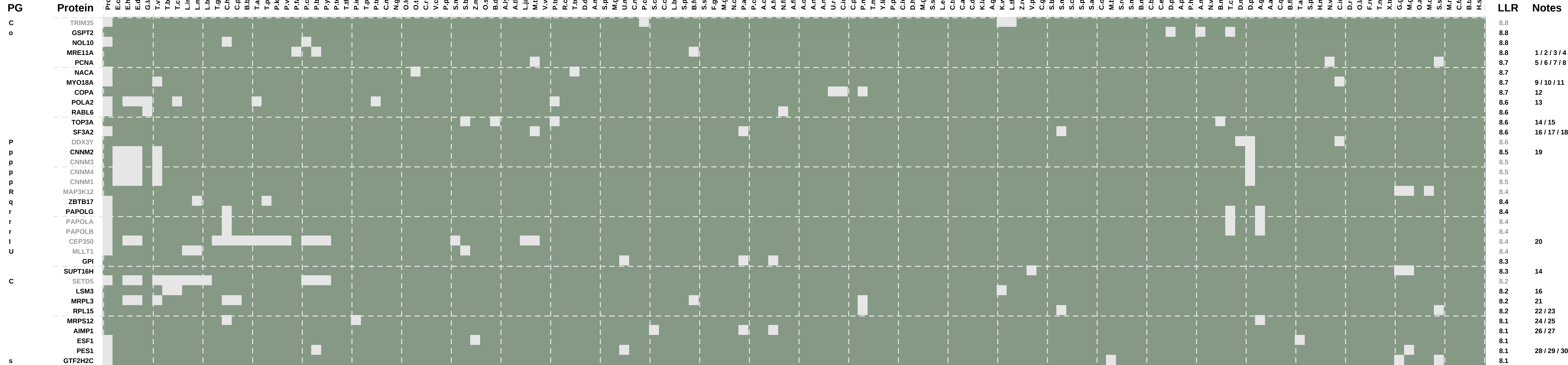
1: nuclear cyclin-dependent protein kinase holoenzyme complex || 2: nuclear speck || 3: cilium axoneme || 4: dynein complex || 5: axonemal dynein complex || 6: mitochondrial crista || 7: cilium || 8: cis-Golgi network || 9: endoplasmic reticulum-Golgi intermediate compartment || 10: Golgi cisterna membrane || 11: neuron projection || 12: ruffle || 13: ruffle membrane || 14: trans-Golgi network || 15: CCR4-NOT complex || 16: cytoplasmic mRNA processing body || 17: aggresome || 18: inhibitory synapse || 19: postsynaptic membrane || 20: basolateral plasma membrane || 21: cell-cell junction || 22: membrane raft || 23: midbody || 24: transport vesicle || 25: catalytic step 2 spliceosome || 26: postsynaptic density || 27: chromatin ||

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



1: cytoplasmic mRNA processing body || 2: MLL1 complex || 3: cytosolic small ribosomal subunit || 4: ribonucleoprotein complex || 5: PcG protein complex || 6: chromosome || 7: PML body || 8: XY body || 9: nuclear matrix || 10: small nuclear ribonucleoprotein complex || 11: trans-Golgi network || 12: asymmetric synapse || 13: axonemal microtubule || 14: cytoplasmic membrane-bounded vesicle || 15: cytoplasmic vesicle || 16: dendritic spine || 17: microtubule organizing center || 18: recycling endosome || 19: symmetric synapse || 20: endocytic vesicle || 21: proteasome accessory complex || 22: proteasome complex || 23: nuclear pore || 24: FHF complex || 25: HOPS complex || 26: apical part of cell ||

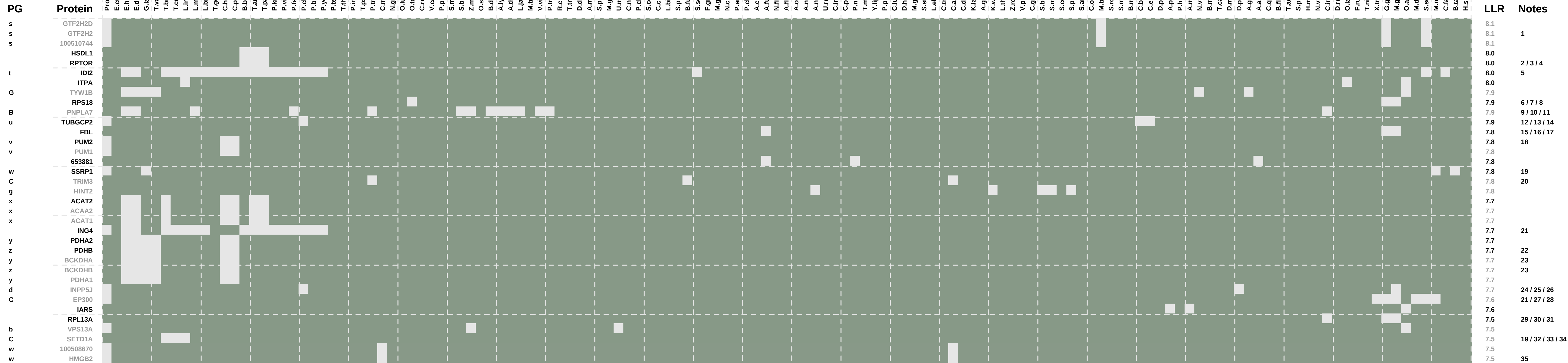
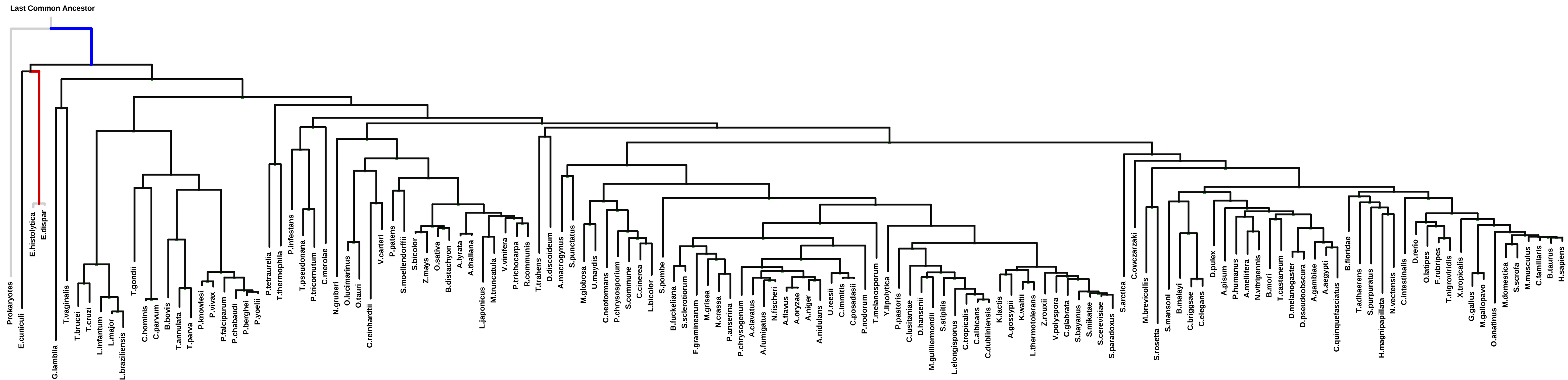
Num of ECM Genes: 1. Num of Predicted Genes: 500



1: chromosome, telomeric region || 2: condensed nuclear chromosome || 3: Mre11 complex || 4: nuclear chromatin || 5: DNA replication factor C complex || 6: microtubule cytoskeleton || 7: nuclear replication fork || 8: PCNA-p21 complex || 9: actomyosin || 10: endoplasmic reticulum-Golgi intermediate compartment || 11: myosin complex || 12: COPI vesicle coat || 13: alpha DNA polymerase:primase complex || 14: chromosome || 15: PML body || 16: catalytic step 2 spliceosome || 17: small nuclear ribonucleoprotein complex || 18: spliceosomal complex || 19: basolateral plasma membrane || 20: spindle || 21: mitochondrial large ribosomal subunit || 22: cytosolic large ribosomal subunit || 23: ribosome || 24: mitochondrial ribosome ||

ECM 1, Gene set "axoneme", Page 7

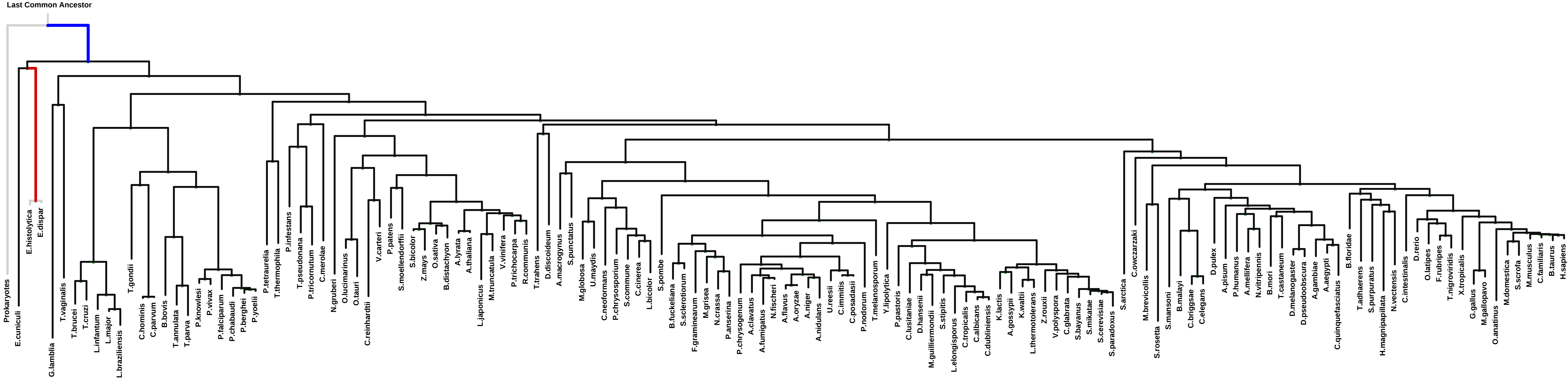
Num of ECM Genes: 1. Num of Predicted Genes: 500



1: holo TFIIF complex || 2: dendrite || 3: lysosome || 4: TORC1 complex || 5: peroxisome || 6: cytosolic small ribosomal subunit || 7: ribosome || 8: small ribosomal subunit || 9: lysosomal membrane || 10: mitochondrial membrane || 11: nuclear membrane || 12: cytoplasmic microtubule || 13: microtubule organizing center || 14: spindle pole || 15: box C/D snoRNP complex || 16: Cajal body || 17: granular component || 18: cytoplasmic stress granule || 19: chromosome || 20: early endosome || 21: histone acetyltransferase complex || 22: pyruvate dehydrogenase complex || 23: mitochondrial alpha-ketoglutarate dehydrogenase complex || 24: dendritic shaft || 25: growth cone || 26: ruffle || 27: chromatin ||

ECM 1, Gene set "axoneme", Page 8

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

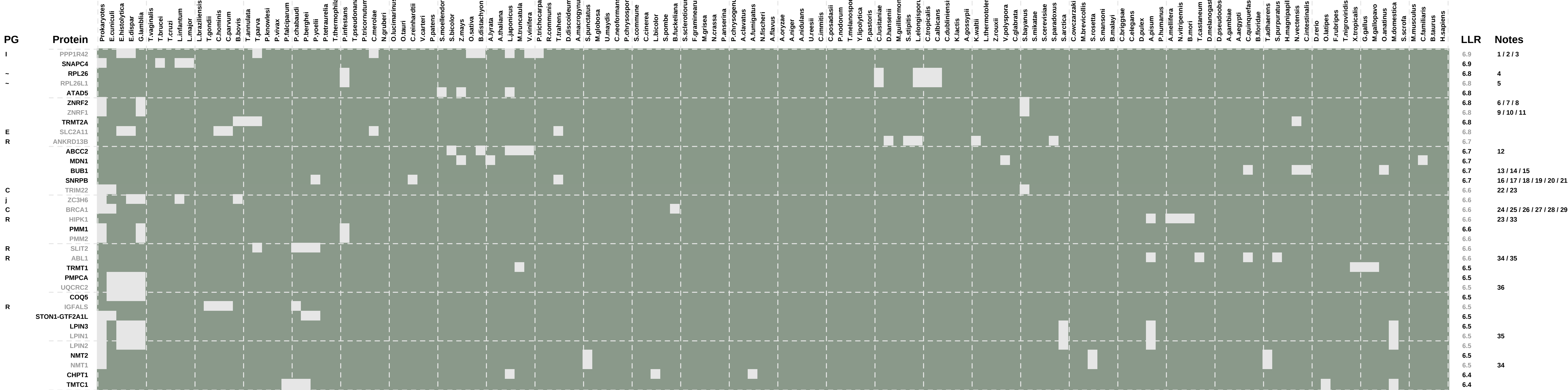
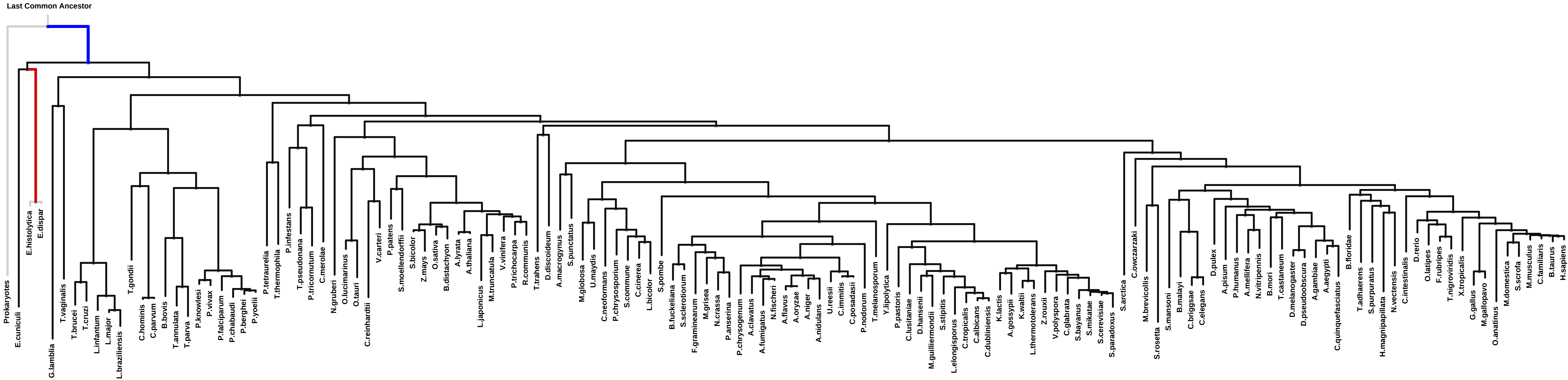


PG		Protein	Protists	Plants	Fungi	Metazoa	LLR	Notes
w	Z	R	HMGB3P27				7.5	1
			DNAH6				7.5	2 / 3
			LRG1				7.4	
Z	R	I	PPAN-P2RY11				7.4	
			CLP1				7.4	4
			ABHD17A				7.4	
R	S	{	DNAH7				7.4	2 / 3 / 5
			FEM1C				7.4	
			DCTN1				7.3	6 / 7 / 8 / 9
R	u		PSMC2				7.3	10 / 11
			MYCBP2				7.3	12 / 13
			UBA1				7.3	
x	C	C	PHLPP2				7.3	
			REV3L				7.3	1 / 14
			DOHH				7.3	
}	q	o	LATS1				7.3	9 / 15
			SLC36A4				7.3	
			FNTA				7.2	16
I			TYMS				7.2	
			LOC100289085				7.2	
			PTRH2				7.2	
			TUBGCP3				7.2	17 / 18 / 19
			EIF4E2				7.2	20
			EIF4E				7.2	20 / 21 / 22 / 23 / 24
			EIF4E1B				7.2	20
			PIGA				7.1	25
			HADHB				7.1	26 / 27 / 28 / 29
			TRIM17				7.1	
			ZMYND8				7.1	
			CHRA1				7.1	
			RPL5				7.1	30 / 31
			CCNI2				7.0	32 / 33
			ZBTB41				7.0	
			GSPT1				6.9	
			SNRPA1				6.9	34 / 35 / 36 / 37

1: chromosome 2: axonemal dynein complex 3: cilium axoneme 4: tRNA-intron endonuclease complex 5: cilium 6: cell leading edge 7: cytoplasmic dynein complex 8: kinetochore 9: spindle pole 10: proteasome accessory complex 11: proteasome complex 12: axon 13: microtubule cytoskeleton 14: zeta DNA polymerase complex 15: microtubule organizing center 16: microtubule associated complex 17: centriole 18: polar microtubule 19: spindle 20: mRNA cap binding complex 21: cytoplasmic mRNA processing body 22: cytoplasmic stress granule 23: eukaryotic translation initiation factor 4F complex 24: RNA-induced silencing complex 25: glycosylphosphatidylinositol-N-acetylglucosaminyltransferase (GPI-GnT) complex

ECM 1, Gene set "axoneme", Page 9

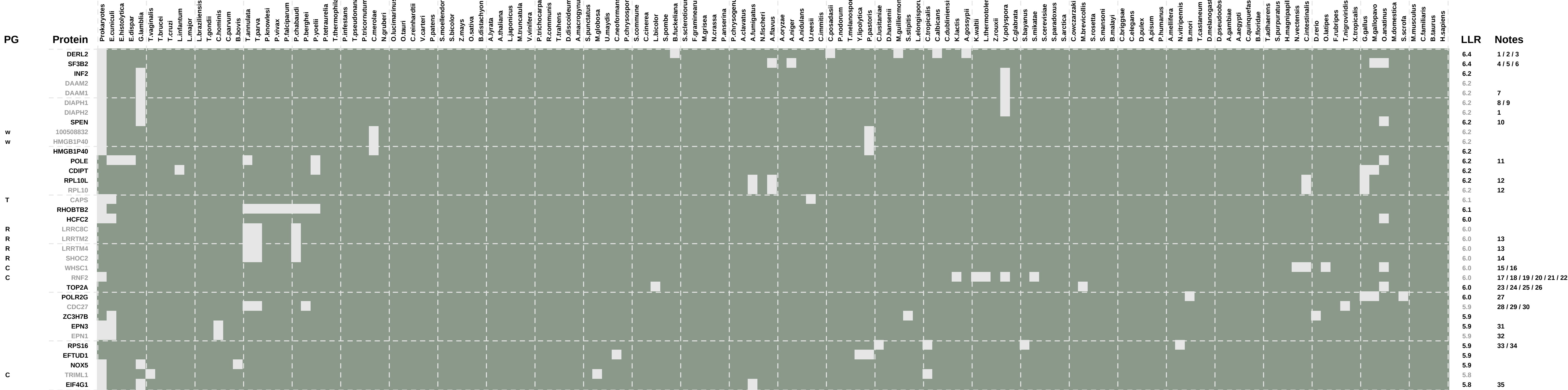
Num of ECM Genes: 1. Num of Predicted Genes: 500



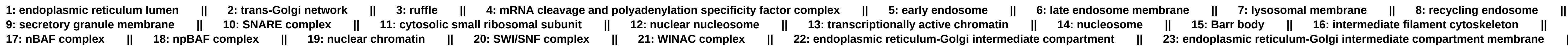
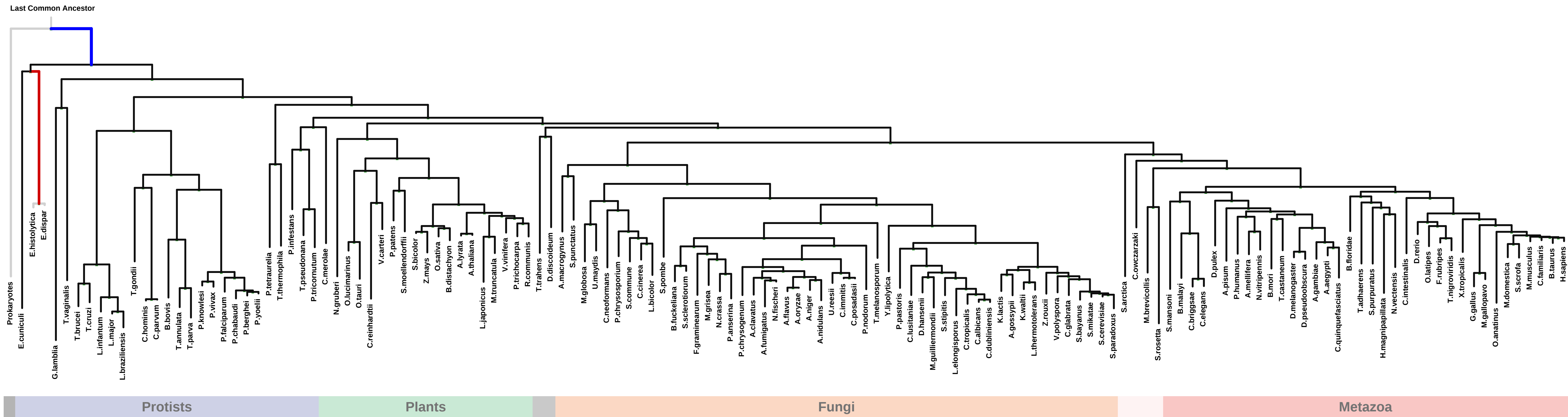
1: manchette || 2: microtubule cytoskeleton || 3: microtubule organizing center || 4: cytosolic large ribosomal subunit || 5: large ribosomal subunit || 6: endosome membrane || 7: lysosomal membrane || 8: presynaptic membrane || 9: endosome || 10: lysosome || 11: synaptic vesicle membrane || 12: intercellular canaliculus || 13: condensed chromosome kinetochore || 14: condensed nuclear chromosome, centromeric region || 15: kinetochore || 16: catalytic step 2 spliceosome || 17: histone pre-mRNA 3'end processing complex || 18: small nuclear ribonucleoprotein complex || 19: spliceosomal complex || 20: U12-type spliceosomal complex || 21: U7 snRNP || 22: Cajal body || 23: nuclear speck || 24: BRCA1-A complex ||

ECM 1, Gene set "axoneme", Page 10

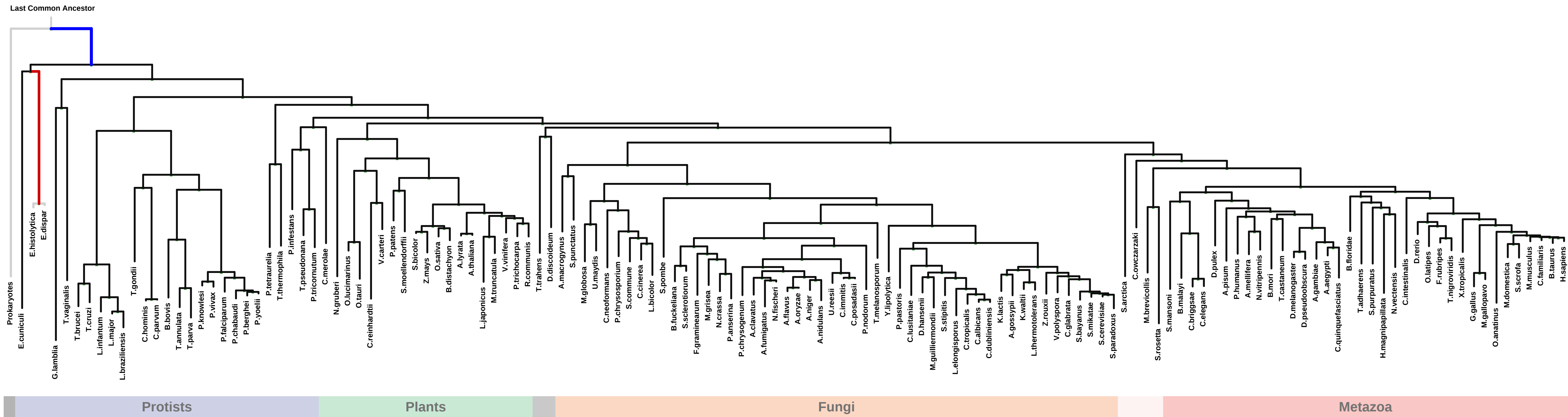
Num of ECM Genes: 1. Num of Predicted Genes: 500



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

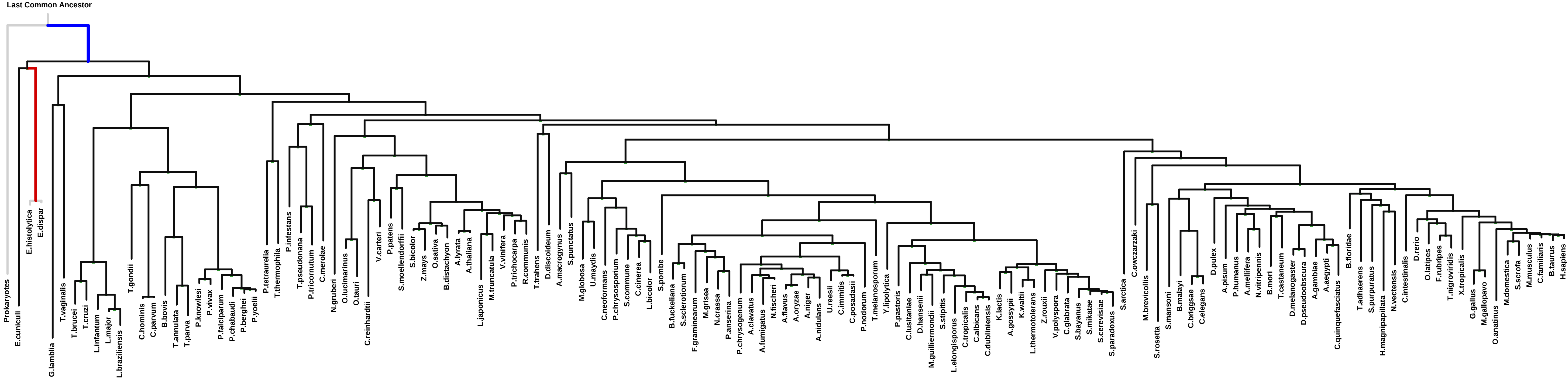


Num of ECM Genes: 1. Num of Predicted Genes: 500



ECM 1, Gene set "axoneme", Page 13

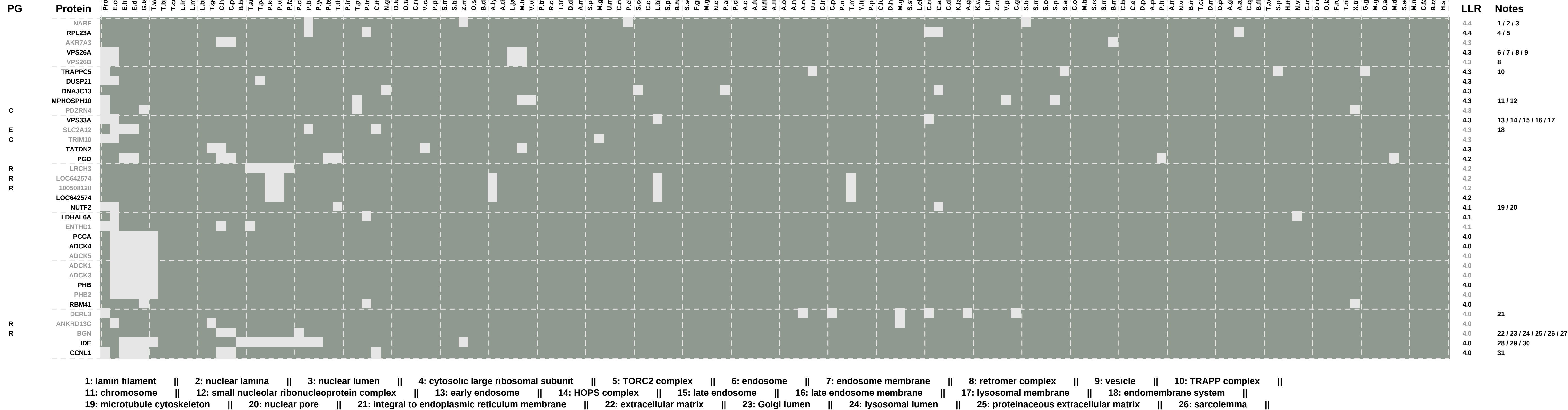
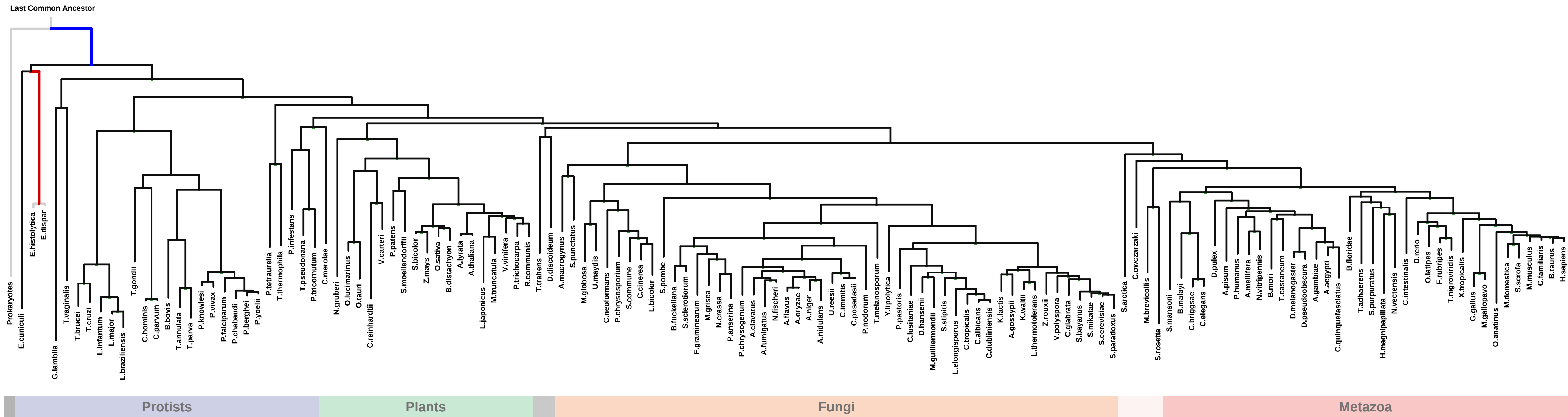
Num of ECM Genes: 1. Num of Predicted Genes: 500



PG	Protein	Protists	Plants	Fungi	Metazoa	LLR	Notes
R	LUM					4.8	1 / 2 / 3 / 4 / 5
	CMTR2					4.7	
	HSD11B1L					4.7	
	652022					4.7	6
	CCNA1					4.7	
	CNTD2					4.7	
	CCNO					4.7	7 / 8
	CCNA2					4.7	
	CCNB1					4.7	
	CCNB2					4.7	9 / 10
C	CCND1					4.7	
	CCND2					4.7	
	CCNE1					4.7	6
	CCNE2					4.7	
	CCNI					4.7	
	SUMO3					4.7	11
	PFKL					4.7	
	POLR2F					4.7	
	CERS5					4.7	11 / 12 / 13
	SETDB2					4.7	
}	KCNAB3					4.6	
	CCNB3					4.6	14
	CUL2					4.6	
	CUL4A					4.6	
	DGKA					4.6	15
	ZNF598					4.6	
	TRIM13					4.6	
	RABGGTA					4.6	16
	UACA					4.6	
	LNK2					4.6	
{	COASY					4.5	17
	HMGCS1					4.5	
	SREK1					4.5	
	TBC1D31					4.5	18
	NARFL					4.5	
						4.5	
						4.5	19 / 20
						4.5	
						4.5	
						4.5	21
C						4.5	
						4.5	
						4.5	
						4.5	22 / 23
						4.5	
						4.5	
						4.5	24
						4.5	
						4.5	
						4.5	25
Y						4.4	
						4.4	
						4.4	
						4.4	26
						4.4	
						4.4	
						4.4	
						4.4	
						4.4	
						4.4	

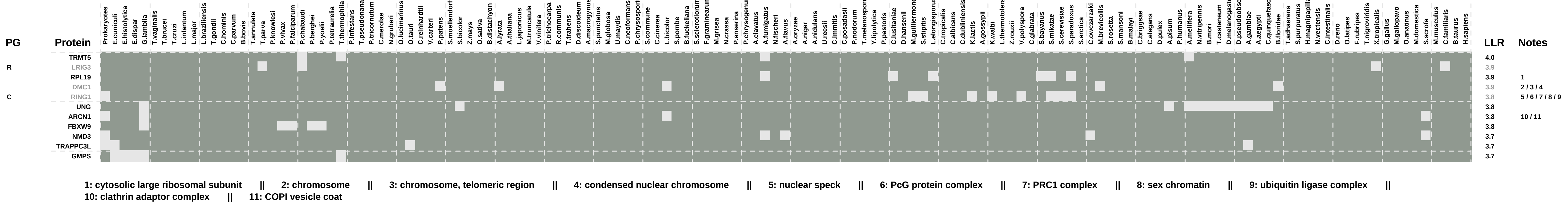
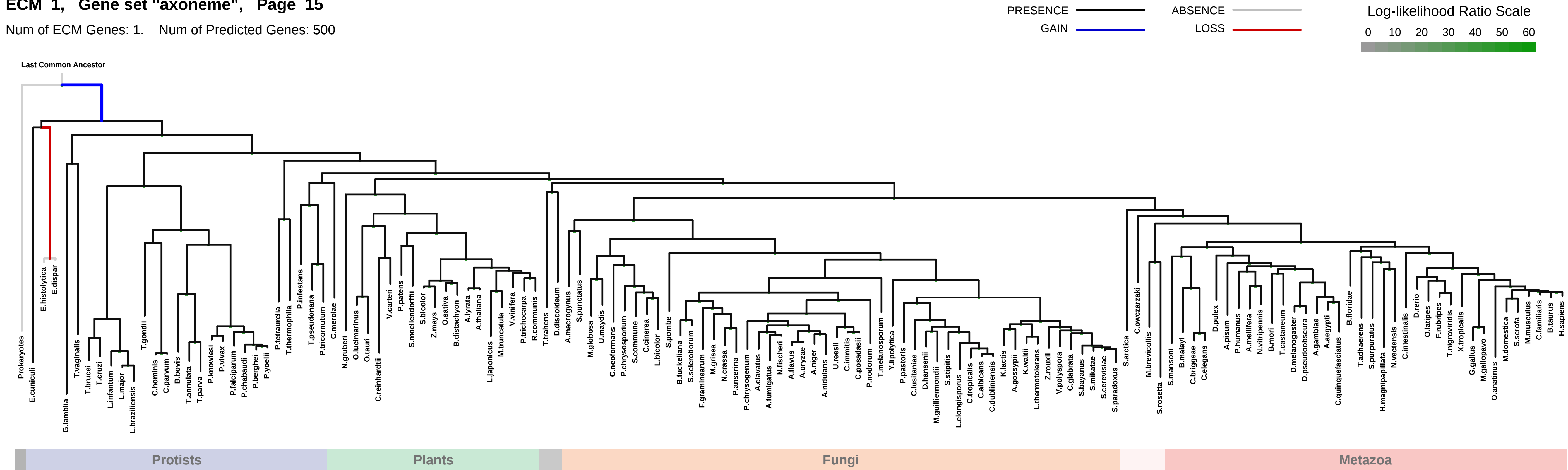
1: extracellular matrix 2: fibrillar collagen 3: Golgi lumen 4: lysosomal lumen 5: proteinaceous extracellular matrix 6: microtubule cytoskeleton 7: female pronucleus 8: male pronucleus 9: condensed nuclear chromosome outer kinetochore 10: spindle pole 11: cyclin-dependent protein kinase holoenzyme complex 12: chromatin 13: nuclear membrane 14: kinetochore 15: 6-phosphofructokinase complex 16: DNA-directed RNA polymerase II, core complex 17: chromosome 18: Cul2-RING ubiquitin ligase complex 19: Cul4A-RING ubiquitin ligase complex 20: Cul4-RING ubiquitin ligase complex 21: perinuclear endoplasmic reticulum 22: apoptosome 23: nuclear envelope

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



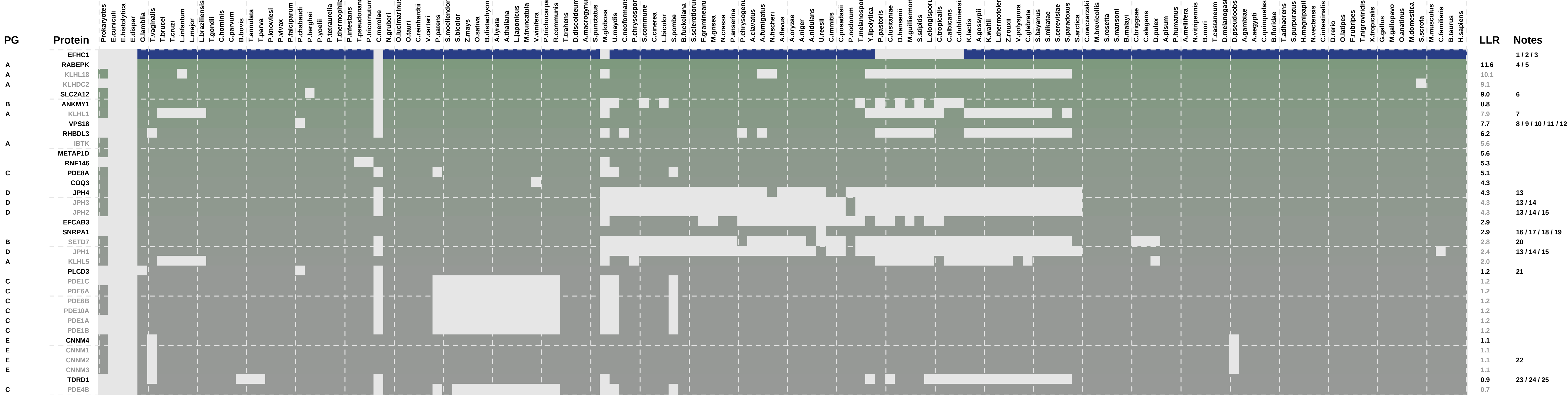
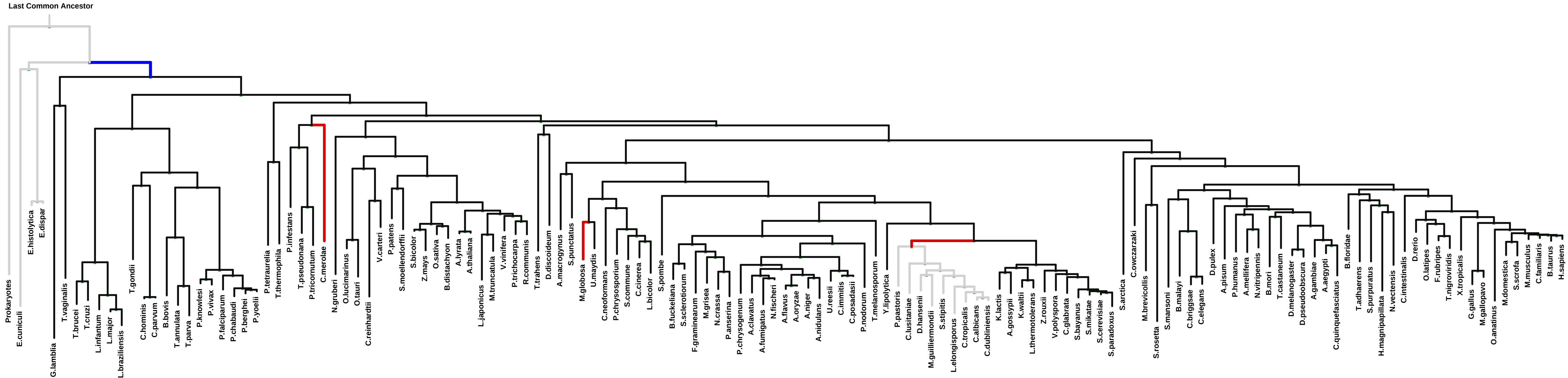
ECM 1, Gene set "axoneme", Page 15

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



ECM 2, Gene set "axoneme", Page 1

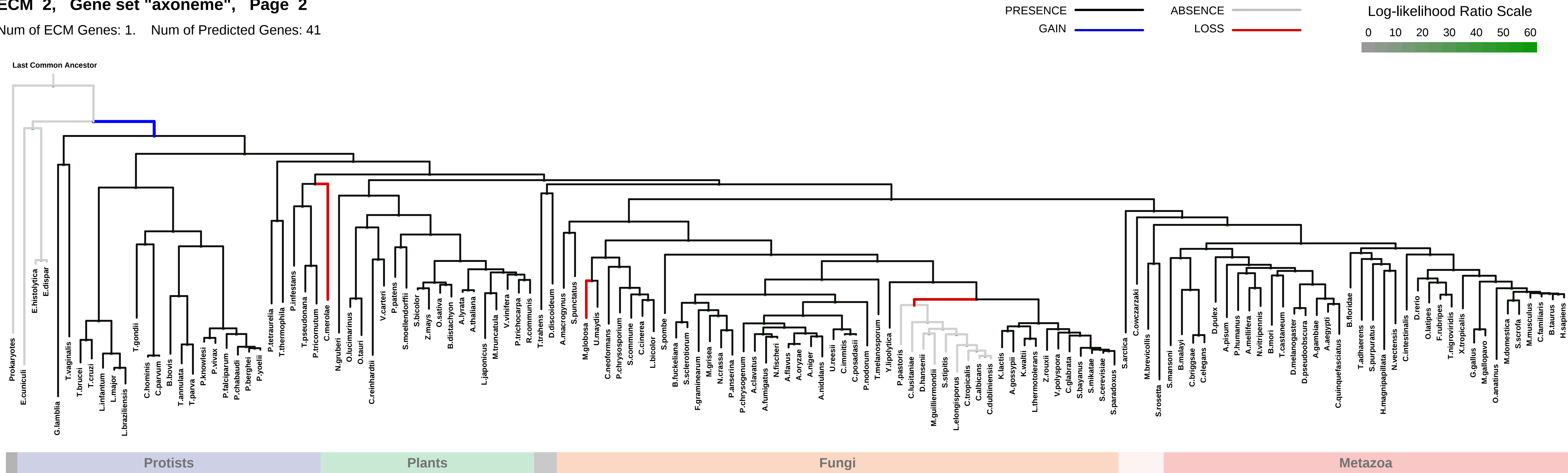
Num of ECM Genes: 1. Num of Predicted Genes: 41



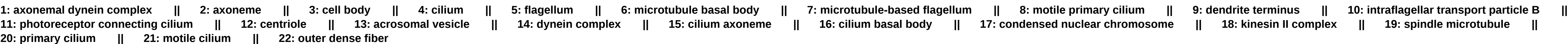
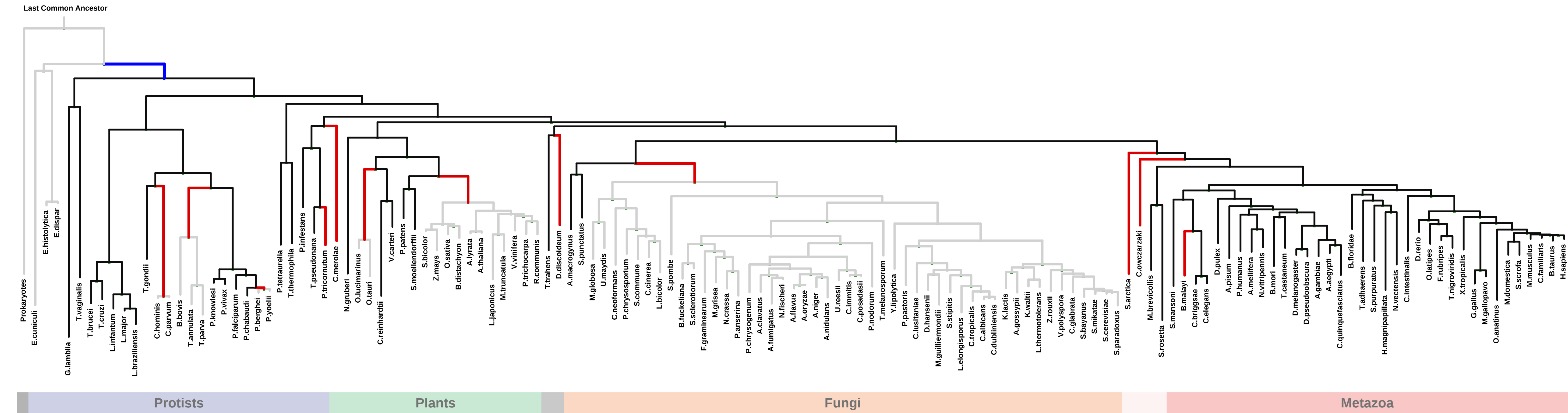
1: axoneme || 2: cilium || 3: flagellum || 4: endosome || 5: endosome membrane || 6: endomembrane system || 7: dendrite || 8: actin filament || 9: early endosome || 10: HOPS complex || 11: late endosome membrane || 12: lysosomal membrane || 13: junctional sarcoplasmic reticulum membrane || 14: junctional membrane complex || 15: Z disc || 16: catalytic step 2 spliceosome || 17: small nuclear ribonucleoprotein complex || 18: spliceosomal complex || 19: U2 snRNP || 20: chromosome || 21: cleavage furrow || 22: basolateral plasma membrane || 23: chromatoid body || 24: P granule || 25: pi-body

ECM 2, Gene set "axoneme", Page 2

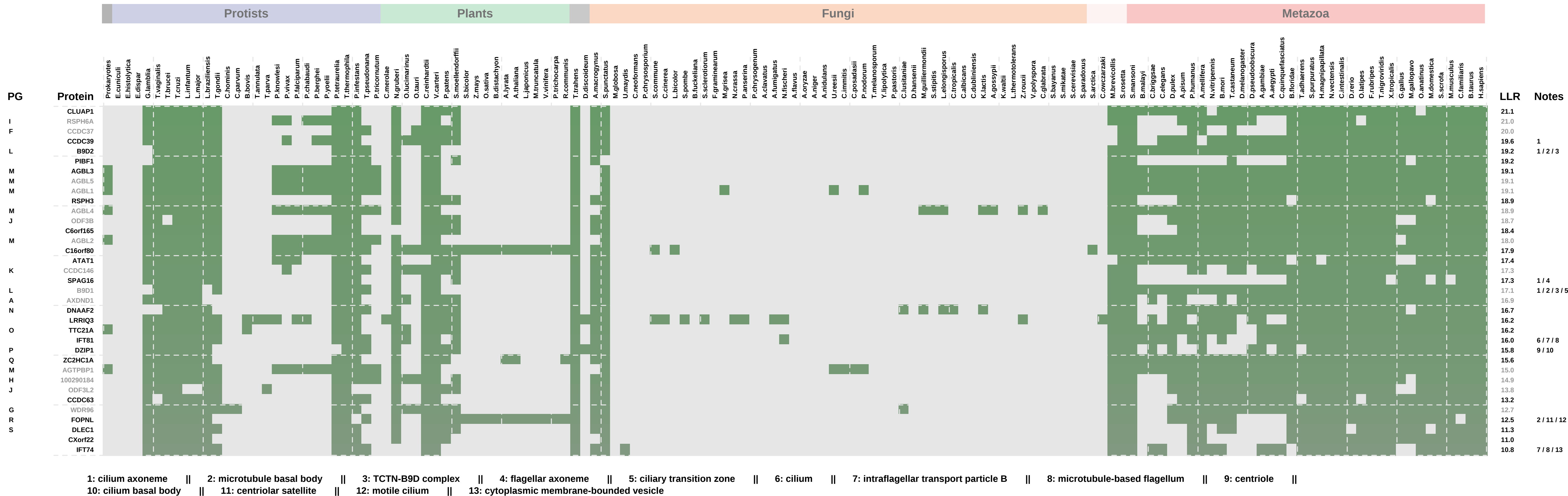
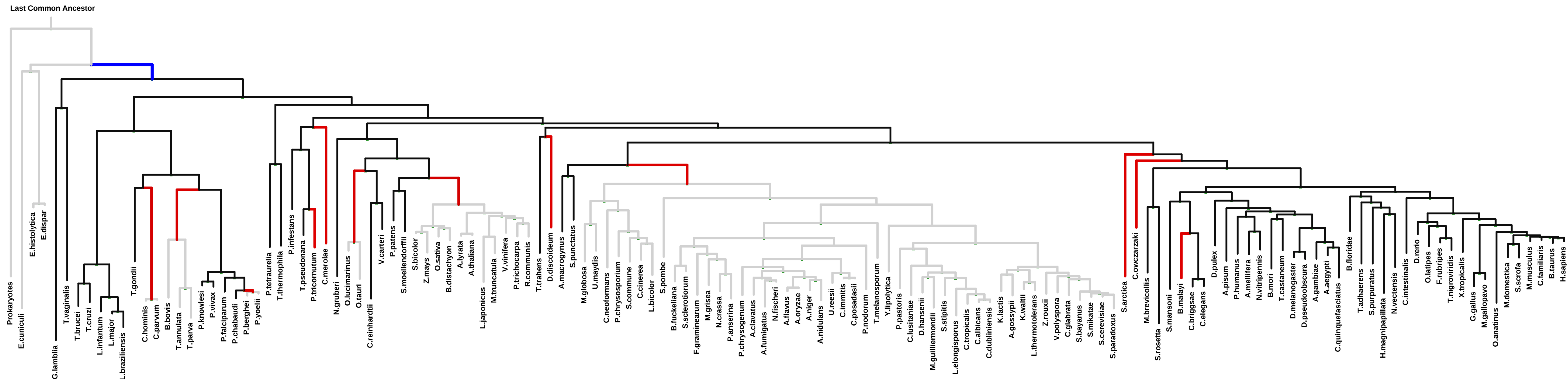
Num of ECM Genes: 1. Num of Predicted Genes: 41

[illegible]

Num of ECM Genes: 1. Num of Predicted Genes: 109



Num of ECM Genes: 1. Num of Predicted Genes: 109

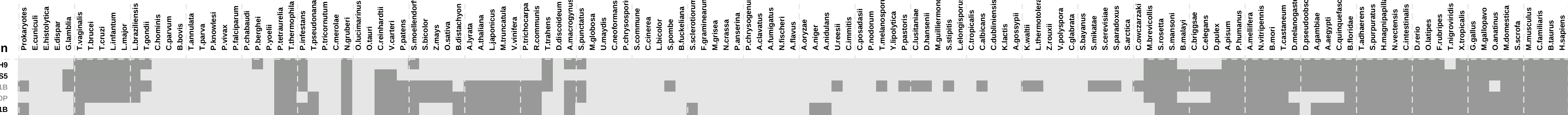


Num of ECM Genes: 1. Num of Predicted Genes: 109



LLR	Notes
10.7	1
10.7	2 / 3 / 4
10.4	
10.2	
9.8	
9.7	
8.9	5
8.3	
8.3	3 / 4
8.0	
8.0	2
7.7	
6.9	
6.6	6
6.5	
6.2	
6.2	
6.2	
5.9	7
5.7	
5.1	
5.1	8
4.9	3 / 4 / 9 / 10
4.8	
4.5	
4.3	11
4.3	
3.5	7 / 12
3.4	
3.0	
2.9	
2.3	13 / 14
1.9	13 / 15 / 16

Num of ECM Genes: 1. Num of Predicted Genes: 109



1: cilium axoneme || 2: motile cilium || 3: BBSome || 4: cilium membrane || 5: microtubule basal body

Num of ECM Genes: 1. Num of Predicted Genes: 31



1: axoneme || 2: cilium || 3: cell-cell junction || 4: cilium axoneme || 5: microtubule basal body || 6: tight junction || 7: centriole || 8: cilium membrane || 9: cytoplasmic vesicle membrane || 10: TCTN-B9D complex ||
11: microtubule cytoskeleton || 12: aggresome || 13: intermediate filament cytoskeleton || 14: PML body || 15: spindle pole || 16: mitochondrial membrane || 17: ciliary transition zone || 18: apical part of cell