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

Dataset:

Num of genes in input gene set: 24
Total number of genes: 20834
Prediction LLR threshold: 0

The CLIME PDF output two sections:

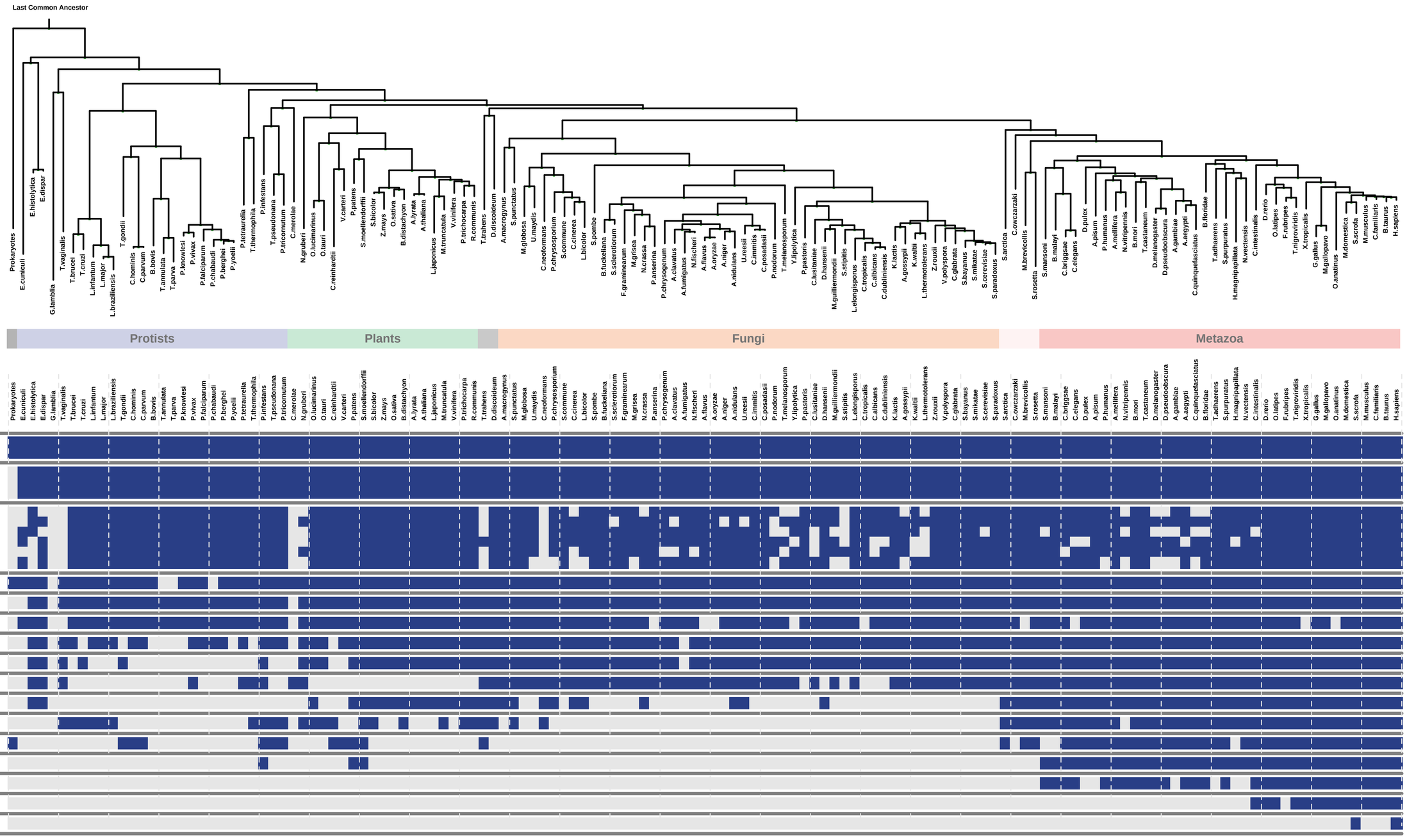
1) Overview of Evolutionarily Conserved Modules (ECMs)

- 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+

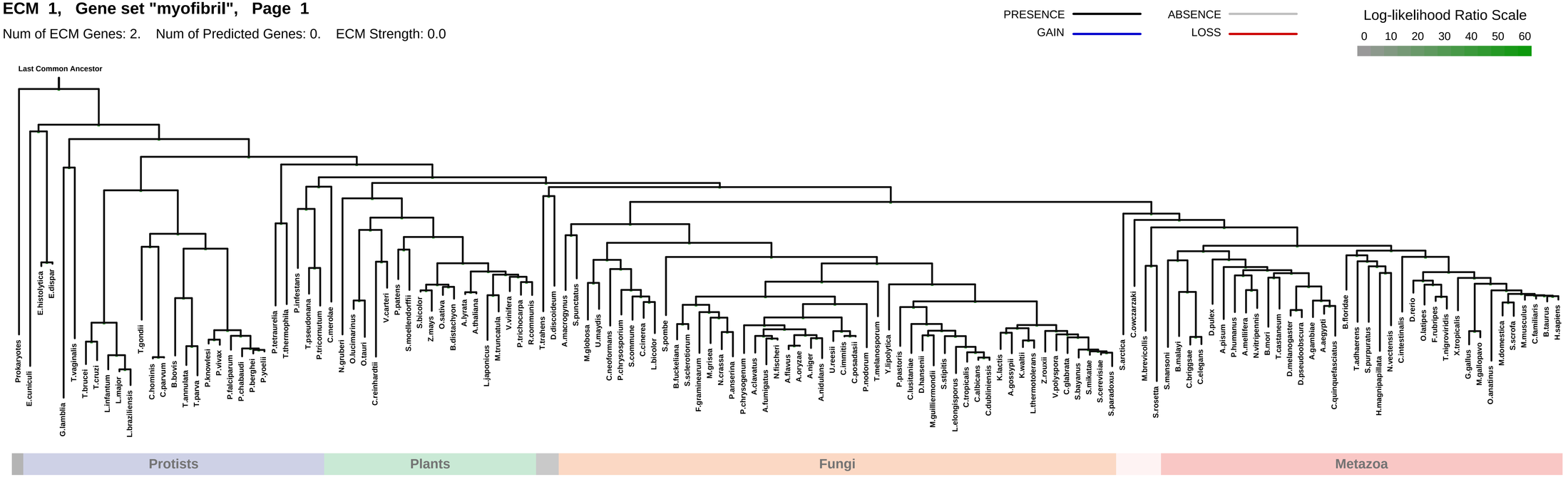
- Top panel shows the inferred evolutionary history on the predefined species tree. Branch color shows the gain event (blue) and loss events (red color, with brighter color indicating higher confidence in loss). Branches before the gain or after a loss are shown in gray.
- Bottom panel shows the input 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 "myofibril", Page 1

Num of ECM Genes: 2. Num of Predicted Genes: 0. ECM Strength: 0.0

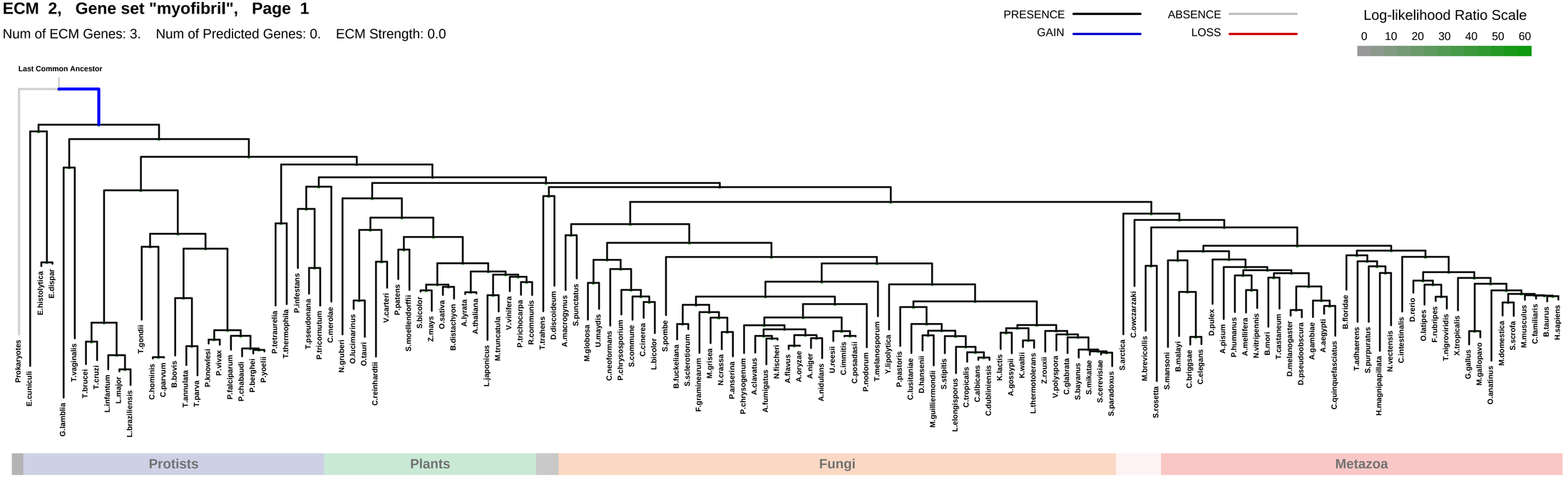


PG	Protein	LLR	Notes
	OBSCN		1 / 2 / 3
	PSMA6		2 / 4 / 5 / 6 / 7 / 8

1: M band || 2: myofibril || 3: Z disc || 4: nuclear matrix || 5: polysome || 6: proteasome core complex || 7: proteasome core complex, alpha-subunit complex || 8: sarcomere

ECM 2, Gene set "myofibril", Page 1

Num of ECM Genes: 3. Num of Predicted Genes: 0. ECM Strength: 0.0

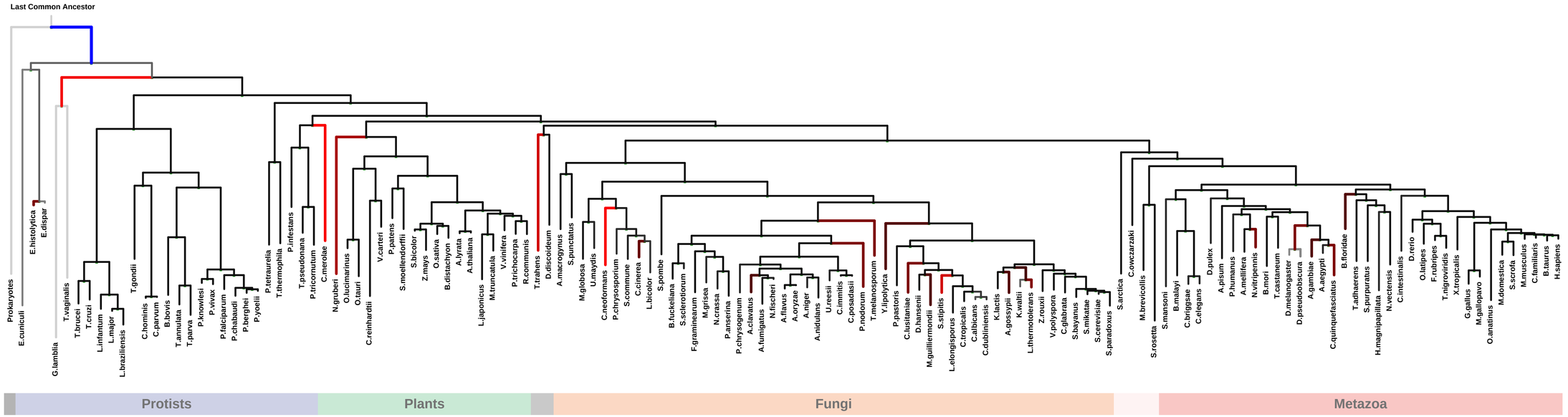


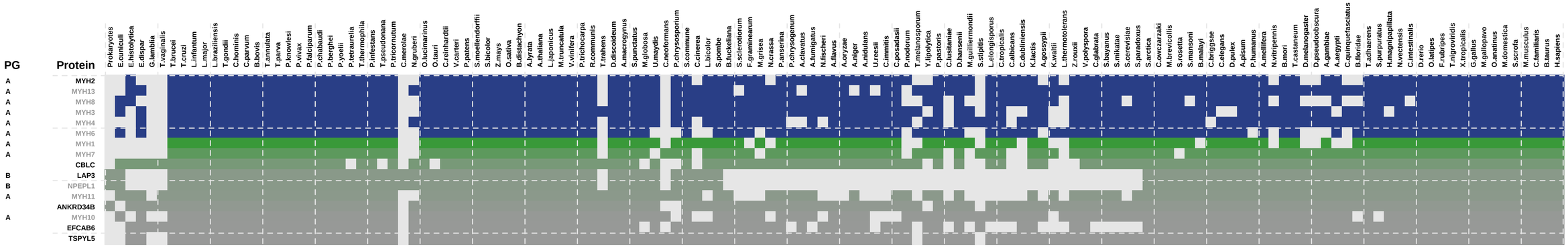
PG	Protein	LLR	Notes
	ACTG1		1 / 2 / 3
A	MYL1		3 / 4 / 5
A	MYL2		3 / 5 / 6 / 7

1: axon || 2: filamentous actin || 3: myofibril || 4: muscle myosin complex || 5: sarcomere || 6: actin cytoskeleton || 7: myosin complex

ECM 3, Gene set "myofibril", Page 1

Num of ECM Genes: 6. Num of Predicted Genes: 10. ECM Strength: 6.0

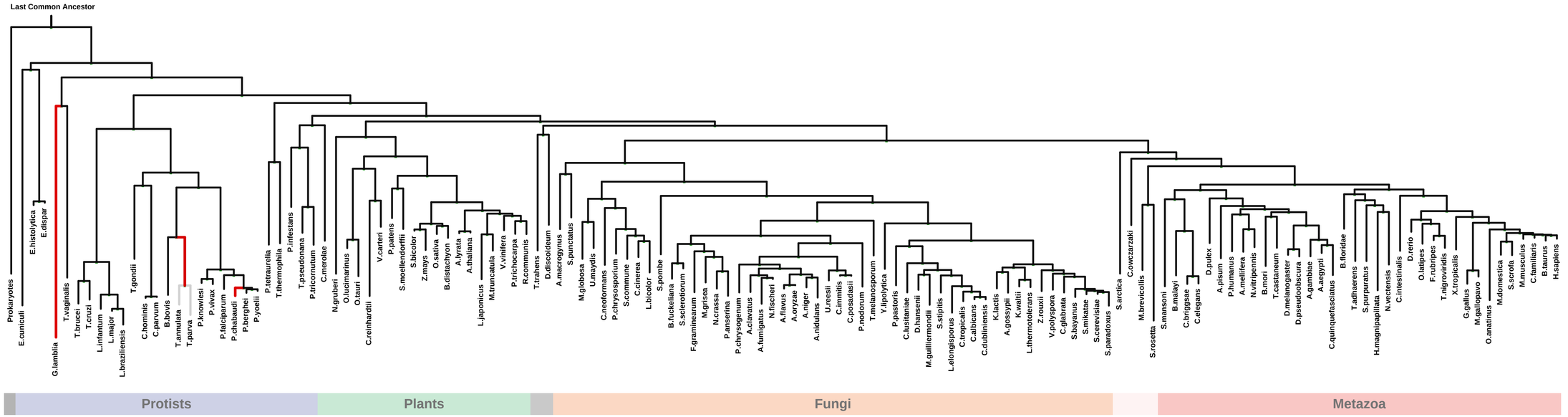


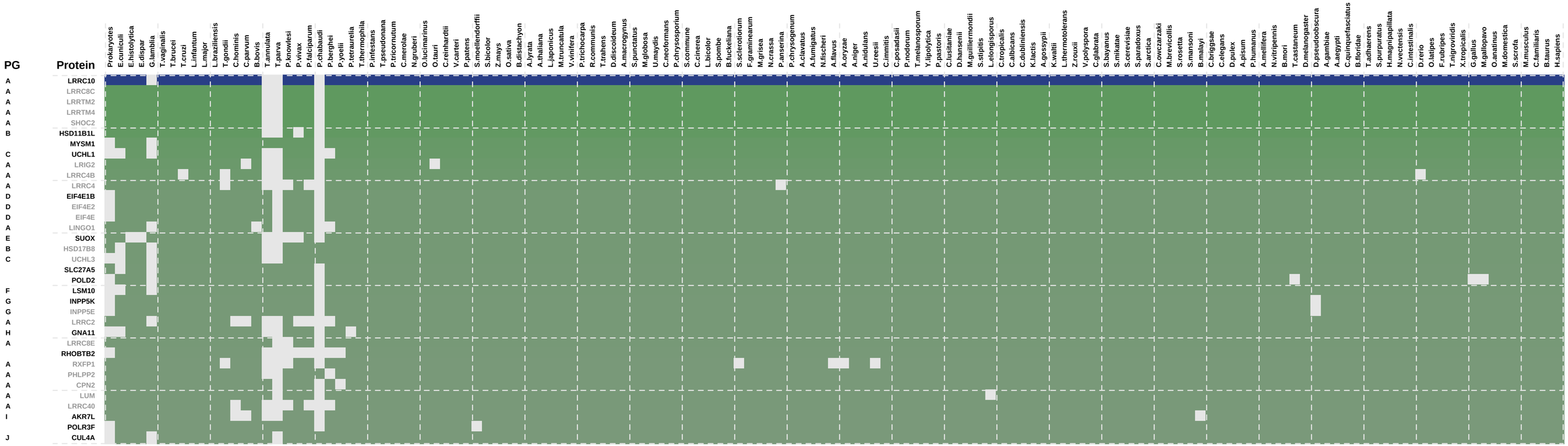


1: A band || 2: actomyosin contractile ring || 3: focal adhesion || 4: muscle myosin complex || 5: myofibril || 6: myosin filament || 7: sarcomere || 8: myosin complex || 9: stress fiber || 10: Z disc || 11: intercalated disc || 12: melanosome || 13: smooth muscle contractile fiber || 14: axon || 15: cell cortex || 16: cleavage furrow || 17: dendritic spine || 18: growth cone || 19: midbody || 20: myosin II complex || 21: neuromuscular junction || 22: spindle

ECM 4, Gene set "myofibril", Page 1

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

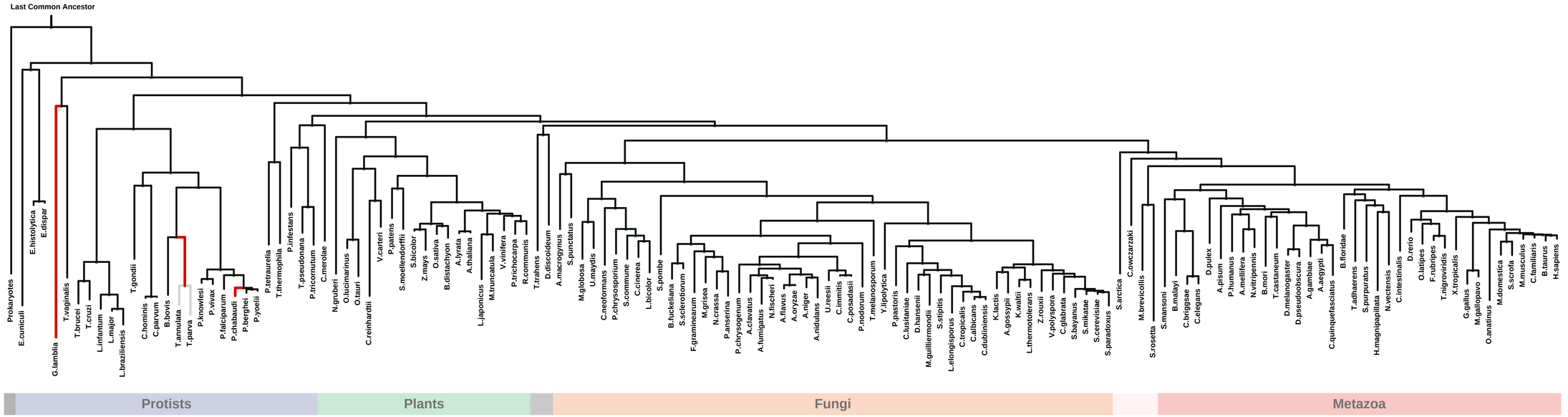


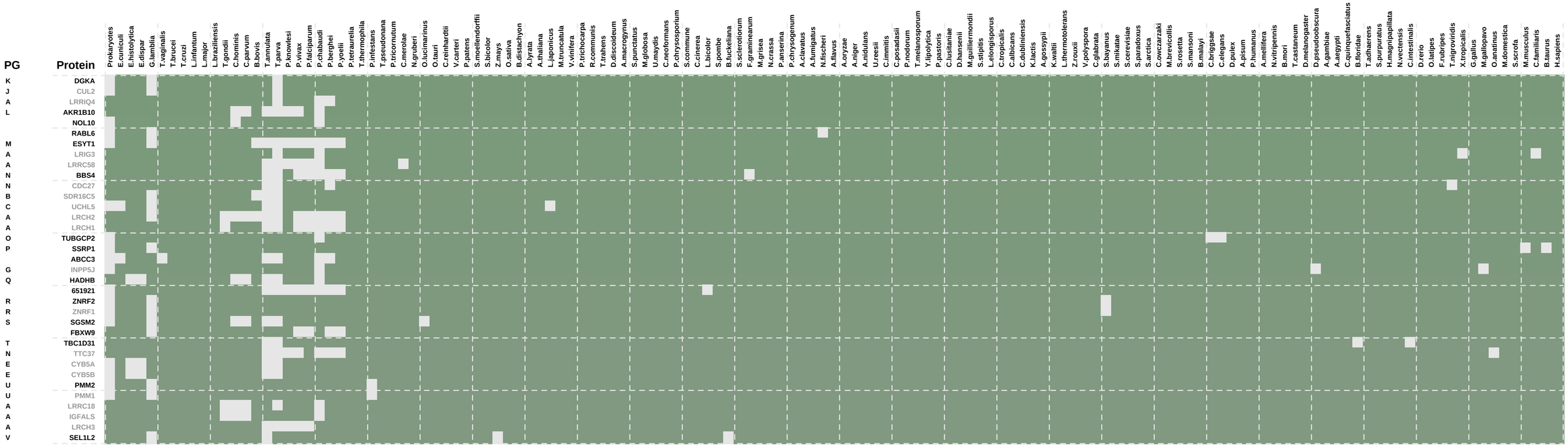


1: myofibril || 2: postsynaptic membrane || 3: protein phosphatase type 1 complex || 4: chromatin remodeling complex || 5: presynaptic membrane || 6: mRNA cap binding complex || 7: cytoplasmic mRNA processing body || 8: cytoplasmic stress granule ||
9: eukaryotic translation initiation factor 4F complex || 10: RNA-induced silencing complex || 11: mitochondrial intermembrane space || 12: mitochondrial envelope || 13: basal plasma membrane || 14: integral to endoplasmic reticulum membrane ||
15: Cajal body || 16: U7 snRNP || 17: neuron projection || 18: ruffle || 19: ruffle membrane || 20: trans-Golgi network || 21: cilium axoneme || 22: Golgi cisterna membrane || 23: extrinsic to internal side of plasma membrane ||

ECM 4, Gene set "myofibril", Page 2

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

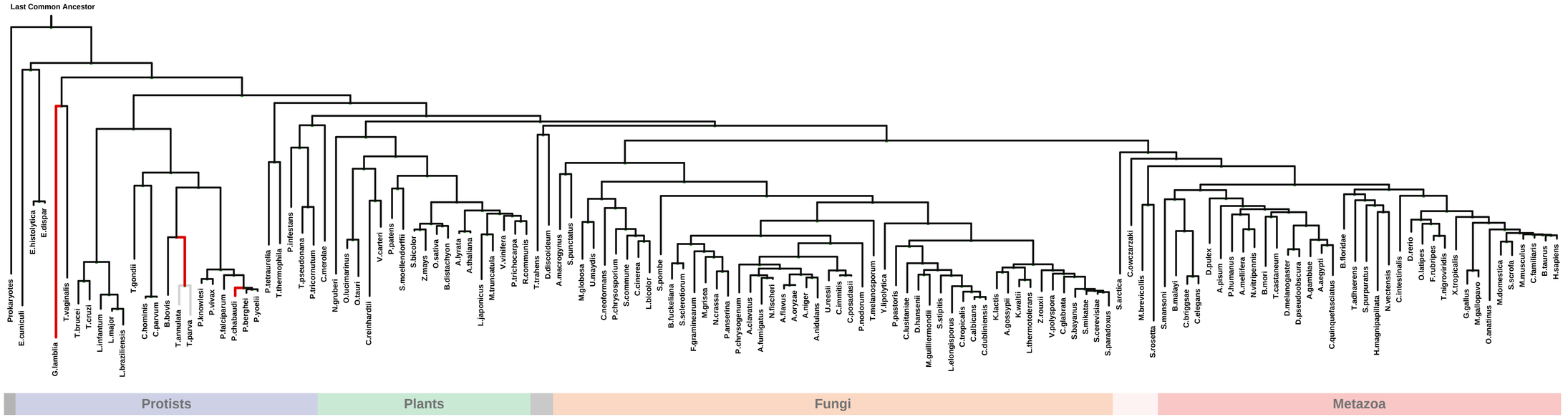




1: Cul2-RING ubiquitin ligase complex || 2: lysosome || 3: BBSome || 4: centriolar satellite || 5: centriole || 6: cilium membrane || 7: microtubule basal body || 8: motile cilium || 9: nonmotile primary cilium || 10: pericentriolar material ||
11: anaphase-promoting complex || 12: spindle || 13: spindle microtubule || 14: Ino80 complex || 15: proteasome complex || 16: cytoplasmic microtubule || 17: microtubule organizing center || 18: spindle pole || 19: chromosome ||
20: dendritic shaft || 21: growth cone || 22: ruffle || 23: mitochondrial envelope || 24: mitochondrial fatty acid beta-oxidation multienzyme complex || 25: mitochondrial nucleoid || 26: mitochondrial outer membrane || 27: endosome membrane ||

ECM 4, Gene set "myofibril", Page 3

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

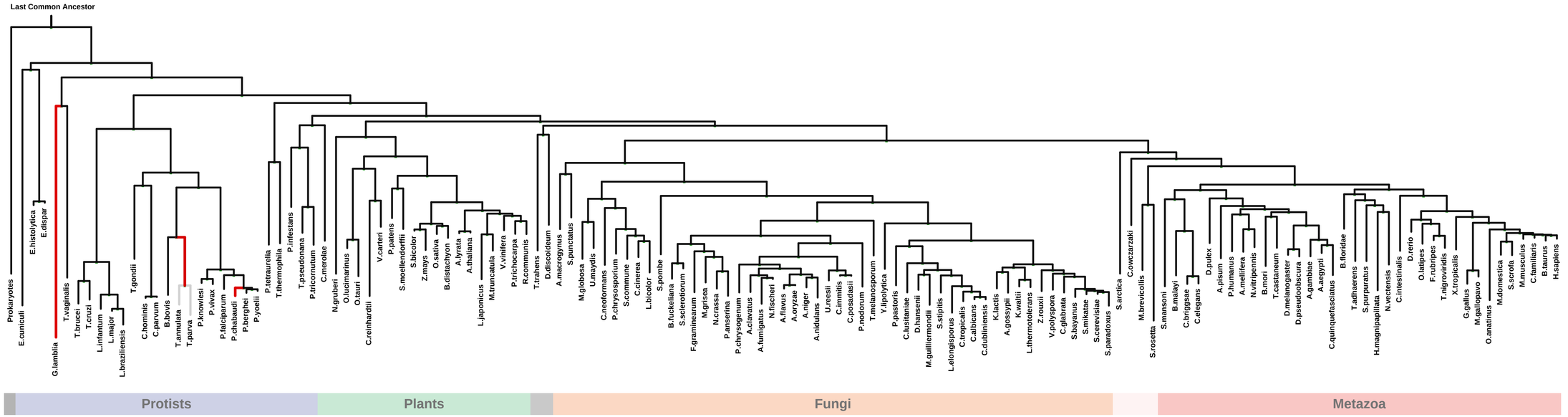


PG	Protein	LLR	Notes
	SUPT6H	10.6	
	GGPS1	10.5	
W	NOS1	10.5	1 / 2 / 3 / 4
	100510614	10.5	
W	DIAPH2	10.4	5
W	DAAM2	10.4	
W	DAAM1	10.4	6
W	DIAPH1	10.4	7 / 8
W	INF2	10.4	
X	SPEN	10.4	9
H	GNAT1	10.2	2 / 10 / 11 / 12 / 13 / 14
H	GNAT3	10.2	2 / 10 / 11 / 13
K	NOX5	10.1	
Y	EIF4G1	10.0	15
X	RBM15	9.9	
Z	CPSF1	9.9	16
W	RNF4	9.7	17 / 18
	RNGTT	9.7	
	DUSP22	9.6	
a	STT3A	9.6	19
a	STT3B	9.6	19
b	DUSP26	9.6	
b	DUSP4	9.6	
b	DUSP5	9.6	
b	DUSP6	9.6	
b	DUSP7	9.6	
b	DUSP8	9.6	
b	DUSP9	9.6	
B	CBR4	9.6	
b	DUSP1	9.6	
b	DUSP14	9.6	
b	DUSP16	9.6	20
b	DUSP2	9.6	
b	DUSP18	9.6	
b	DUSP19	9.6	

1: dendritic spine || 2: photoreceptor inner segment || 3: sarcolemma || 4: sarcoplasmic reticulum || 5: early endosome || 6: stress fiber || 7: mitotic spindle || 8: ruffle membrane || 9: transcriptional repressor complex ||
10: extrinsic to internal side of plasma membrane || 11: heterotrimeric G-protein complex || 12: photoreceptor connecting cilium || 13: photoreceptor outer segment || 14: photoreceptor outer segment membrane || 15: eukaryotic translation initiation factor 4F complex ||
16: mRNA cleavage and polyadenylation specificity factor complex || 17: microtubule cytoskeleton || 18: PML body || 19: oligosaccharyltransferase complex || 20: cytoplasmic membrane-bounded vesicle

ECM 4, Gene set "myofibril", Page 4

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

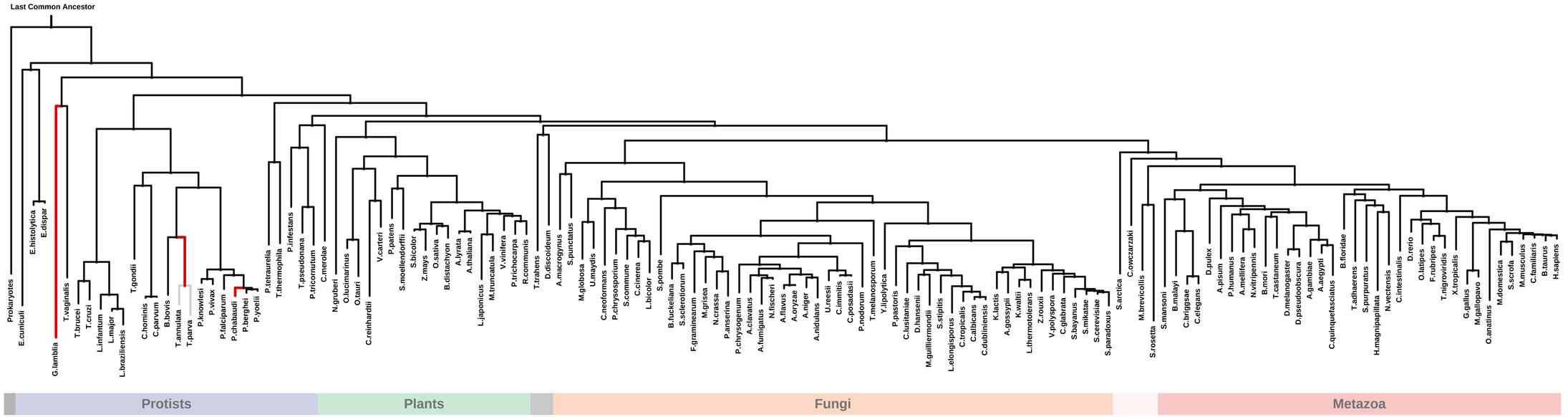


PG	Protein	LLR	Notes
H	GNA13	9.6	1 / 2 / 3 / 4
b	SSH1	9.6	5 / 6 / 7
b	SSH2	9.6	
b	SSH3	9.6	
b	DUSP13	9.6	
b	DUPD1	9.6	
b	DUSP10	9.6	
b	STYX	9.6	
b	100290651	9.6	
b	DUSP28	9.6	
	PSMD13	**9.5**	**8 / 9 / 10**
	TRMT1L	**9.4**	
	METTL21B	**9.3**	
H	GNAI2	9.2	2 / 3 / 7 / 11
H	GNAI3	9.2	2 / 3 / 7 / 11 / 12
	RPL27A	**9.2**	**13**
c	**UBE4A**	**9.2**	**14**
	WDR74	**9.1**	
R	RNF43	9.1	15
d	**COPG1**	**9.1**	**16**
d	COPG2	9.1	16
e	**FBXL2**	**9.1**	
A	LRCH4	8.9	17
V	KIAA0141	8.9	
f	**IPO7**	**8.9**	**18**
A	LRRC8B	8.9	
g	**PFKL**	**8.9**	**19**
	ASNSD1	**8.8**	
	CHMP5	**8.7**	**20**
M	PLCD4	8.7	
M	PLCG1	8.7	6 / 21 / 22 / 23
M	PLCG2	8.7	
M	PLCD1	8.7	
W	LNX2	8.7	
	RABGGTA	**8.7**	

1: brush border membrane || 2: extrinsic to internal side of plasma membrane || 3: heterotrimeric G-protein complex || 4: melanosome || 5: cleavage furrow || 6: lamellipodium || 7: midbody || 8: proteasome accessory complex || 9: proteasome complex || 10: proteasome regulatory particle || 11: membrane raft || 12: zymogen granule || 13: cytosolic large ribosomal subunit || 14: ubiquitin ligase complex || 15: nuclear envelope || 16: COPI vesicle coat || 17: PML body || 18: nuclear pore || 19: 6-phosphofructokinase complex || 20: endosome membrane || 21: neuron projection || 22: ruffle || 23: signalosome

ECM 4, Gene set "myofibril", Page 5

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

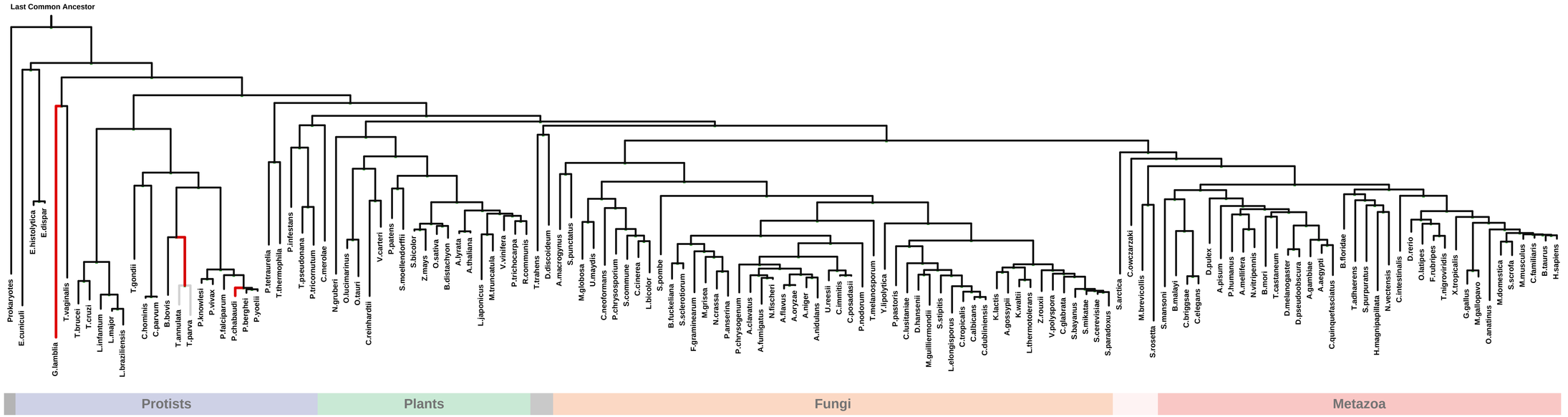


PG	Protein	LLR	Notes
	SREK1	8.6	1
W	PDZRN4	8.5	
A	SLIT2	8.4	
	RBM41	8.3	
L	AKR1A1	8.2	
g	PFKM	8.2	2
	YIF1B	8.2	
A	BGN	8.2	3 / 4 / 5 / 6 / 7 / 8
	TRMT5	8.1	
	UNG	8.0	
W	TRIM21	8.0	9 / 10 / 11
	ARCN1	8.0	12 / 13
A	CNOT6	7.8	
	TMEM30A	7.8	
	DDX23	7.8	14 / 15
A	NRROS	7.6	
f	CSE1L	7.6	16
h	ZBTB11	7.6	
	NOC3L	7.6	17
i	CCNG1	7.5	18
	ARPC1B	7.5	19 / 20
	DAZ2	7.4	
	ERCC4	7.4	21 / 22 / 23
	DNAJC6	7.3	
	LSM1	7.3	10
j	ALG2	7.2	
b	DUSP27	7.2	
k	RBM14-RBM4	7.2	
l	SF1	7.1	1 / 24
	TRRAP	7.1	25 / 26 / 27 / 28
m	EIF1B	7.1	
m	EIF1	7.1	
n	MYO10	7.1	29 / 30 / 31 / 32 / 33 / 34 /
n	MYO7B	7.1	33
P	HMGB1	7.1	34 / 36 / 37

1: spliceosomal complex || 2: 6-phosphofructokinase complex || 3: extracellular matrix || 4: Golgi lumen || 5: lysosomal lumen || 6: proteinaceous extracellular matrix || 7: sarcolemma || 8: transport vesicle || 9: cytoplasmic mRNA processing body ||
10: ribonucleoprotein complex || 11: SCF ubiquitin ligase complex || 12: clathrin adaptor complex || 13: COPI vesicle coat || 14: catalytic step 2 spliceosome || 15: U5 snRNP || 16: nuclear pore || 17: nuclear speck || 18: dendrite ||
19: actin cytoskeleton || 20: Arp2/3 protein complex || 21: chromosome, telomeric region || 22: nuclear chromosome, telomeric region || 23: nucleotide-excision repair complex || 24: ribosome || 25: NuA4 histone acetyltransferase complex ||

ECM 4, Gene set "myofibril", Page 6

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

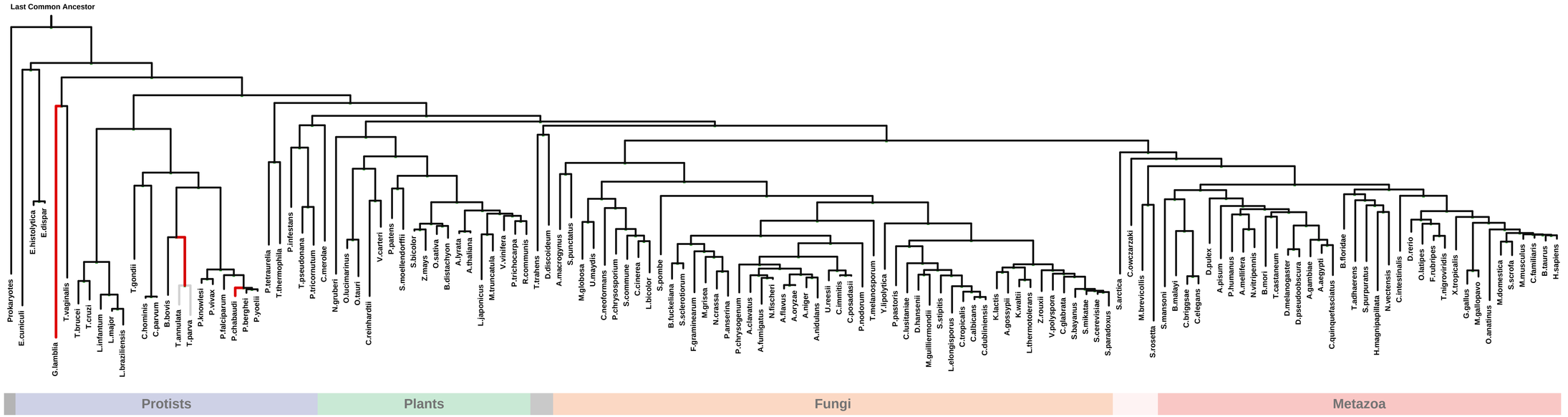


PG	Protein	LLR	Notes
	ATP6V1C2	7.1	1
	SLC36A4	7.0	
A	LRRC10B	7.0	
M	EEA1	7.0	2 / 3 / 4
A	SLIT1	7.0	
A	LRRTM3	6.9	5
	RAVER2	6.9	
i	CCND3	6.9	6
W	PCGF1	6.9	7
	RQCD1	6.9	8
o	LARP6	6.8	9
	CLP1	6.8	10
	MYCBP2	6.8	11 / 12
A	CCRN4L	6.7	
A	ANGEL2	6.6	
A	ANGEL1	6.6	
A	PDE12	6.6	
	RPTOR	6.6	13 / 14 / 15
B	HSDL1	6.6	
	RBM5	6.6	16
p	SLC25A39	6.6	
p	SLC25A4	6.6	17
p	SLC25A40	6.6	
p	SLC25A41	6.6	
p	SLC25A42	6.6	
p	SLC25A43	6.6	
p	SLC25A44	6.6	
p	SLC25A45	6.6	
p	SLC25A48	6.6	
p	SLC25A5	6.6	18 / 19
p	SLC25A6	6.6	20
X	RBM15B	6.6	
q	EIF2A	6.6	21
	PRMT8	6.6	
q	EIF3B	6.6	22

1: proton-transporting V-type ATPase, V1 domain || 2: early endosome || 3: early endosome membrane || 4: extrinsic to plasma membrane || 5: postsynaptic membrane || 6: cyclin-dependent protein kinase holoenzyme complex || 7: PcG protein complex || 8: cytoplasmic mRNA processing body || 9: ribonucleoprotein complex || 10: tRNA-intron endonuclease complex || 11: axon || 12: microtubule cytoskeleton || 13: dendrite || 14: lysosome || 15: TORC1 complex || 16: spliceosomal complex || 17: mitochondrial outer membrane || 18: mitochondrial nucleoid || 19: MMXD complex || 20: mitochondrial inner membrane presequence translocase complex || 21: eukaryotic translation initiation factor 2 complex || 22: eukaryotic translation initiation factor 3 complex

ECM 4, Gene set "myofibril", Page 7

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

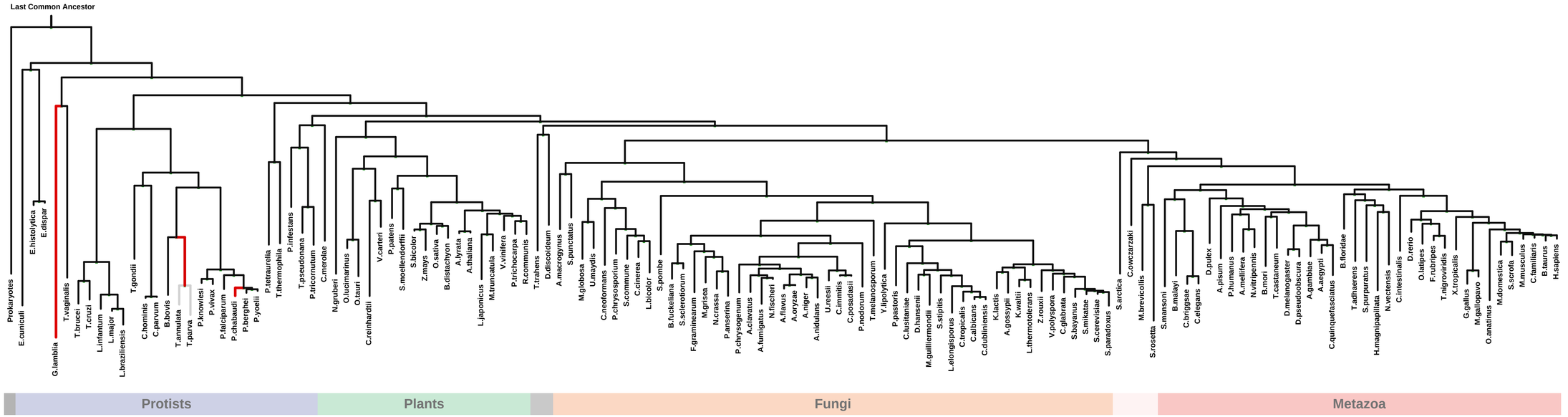


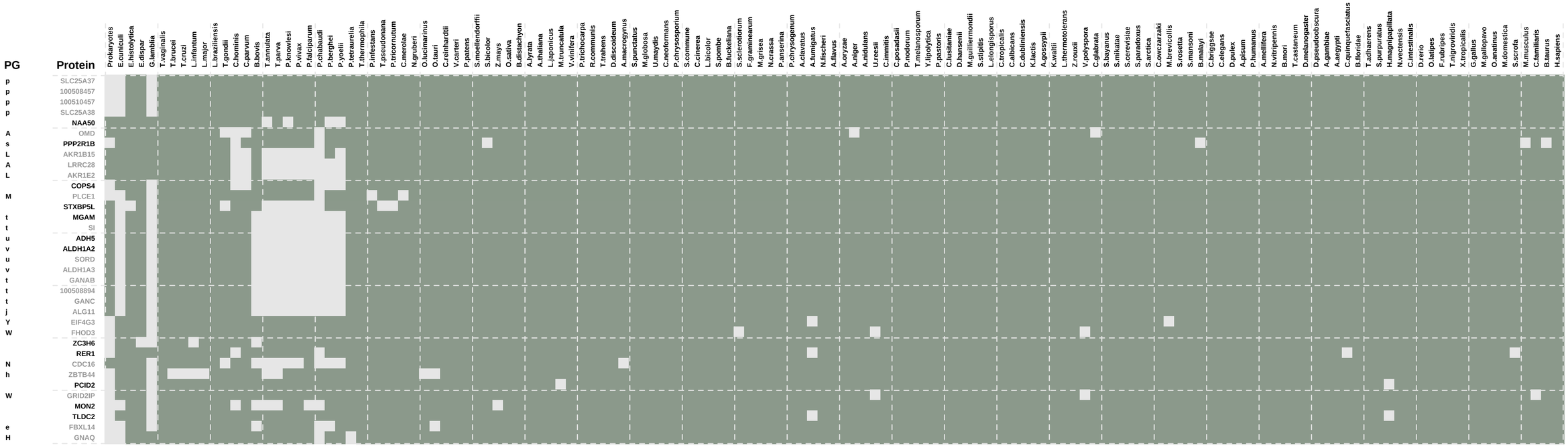
PG	Protein	LLR	Notes
B	DECR2	6.6	1
M	ITSN2	6.6	
Z	SF3B3	6.6	2 / 3 / 4 / 5
	CHKA	**6.6**	
	CHMP2A	**6.6**	6
p	SLC25A1	6.6	
p	SLC25A10	6.6	
p	SLC25A11	6.6	
p	SLC25A12	6.6	
p	SLC25A13	6.6	
p	SLC25A14	6.6	
p	SLC25A15	6.6	
r	**TNPO1**	**6.6**	7
r	TNPO2	6.6	7
p	SLC25A16	6.6	
p	SLC25A17	6.6	1 / 8 / 9
p	SLC25A18	6.6	
p	SLC25A19	6.6	
p	SLC25A2	6.6	
p	SLC25A20	6.6	
p	SLC25A21	6.6	
p	SLC25A22	6.6	
p	SLC25A26	6.6	
p	SLC25A28	6.6	
p	UCP1	6.6	
p	UCP2	6.6	
p	UCP3	6.6	
p	SLC25A29	6.6	
p	SLC25A3	6.6	
p	SLC25A30	6.6	
p	SLC25A31	6.6	10 / 11
p	SLC25A32	6.6	
p	SLC25A33	6.6	
p	SLC25A34	6.6	
p	SLC25A36	6.6	

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

ECM 4, Gene set "myofibril", Page 8

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

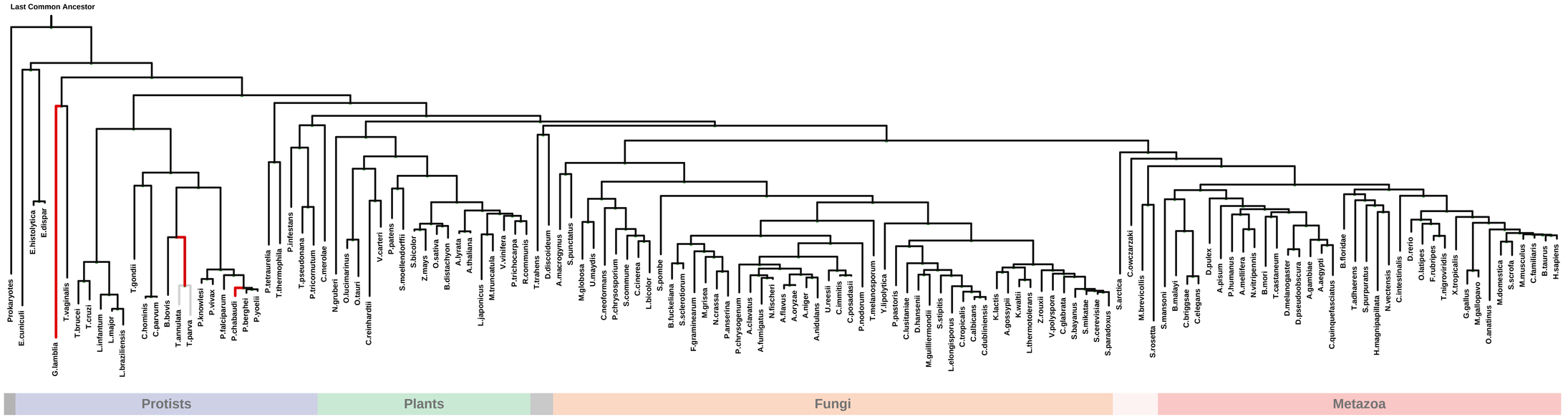


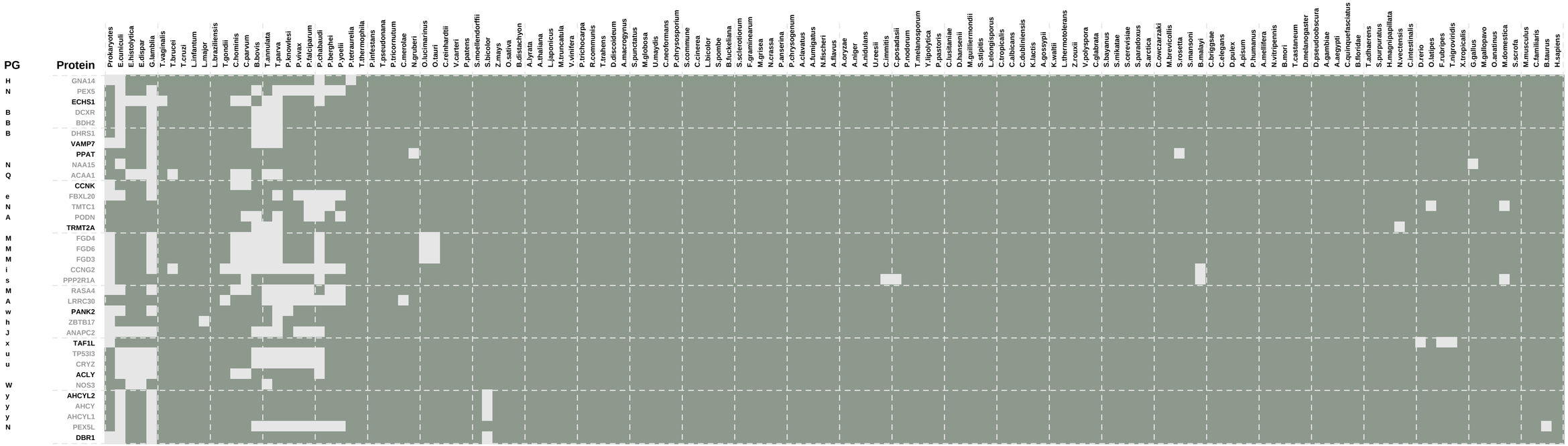


1: Golgi lumen || 2: lysosomal lumen || 3: proteinaceous extracellular matrix || 4: signalosome || 5: brush border || 6: membrane raft || 7: cilium || 8: flagellum || 9: mitochondrial membrane || 10: endoplasmic reticulum lumen || 11: melanosome || 12: eukaryotic translation initiation factor 4F complex || 13: integral to Golgi membrane || 14: anaphase-promoting complex || 15: spindle || 16: spindle microtubule || 17: postsynaptic membrane || 18: trans-Golgi network || 19: extrinsic to internal side of plasma membrane || 20: heterotrimeric G-protein complex || 21: nuclear membrane

ECM 4, Gene set "myofibril", Page 9

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





1: extrinsic to internal side of plasma membrane || 2: heterotrimeric G-protein complex || 3: peroxisomal matrix || 4: peroxisomal membrane || 5: peroxisome || 6: brush border || 7: microvillus || 8: apical part of cell || 9: late endosome membrane ||
10: lysosomal membrane || 11: neuron projection || 12: phagocytic vesicle || 13: phagocytic vesicle membrane || 14: SNARE complex || 15: synapse || 16: transport vesicle membrane || 17: proteinaceous extracellular matrix ||
18: actin cytoskeleton || 19: filopodium || 20: lamellipodium || 21: ruffle || 22: chromosome, centromeric region || 23: microtubule cytoskeleton || 24: protein phosphatase type 2A complex || 25: intrinsic to internal side of plasma membrane ||

ECM 4, Gene set "myofibril", Page 10

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

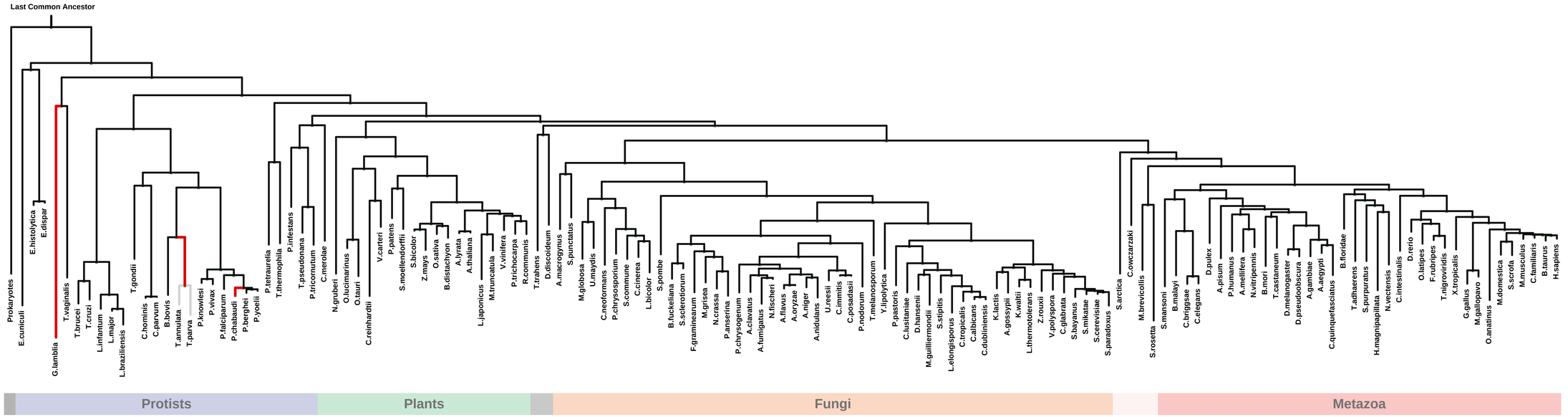
PRESENCE — GAIN — ABSENCE — LOSS

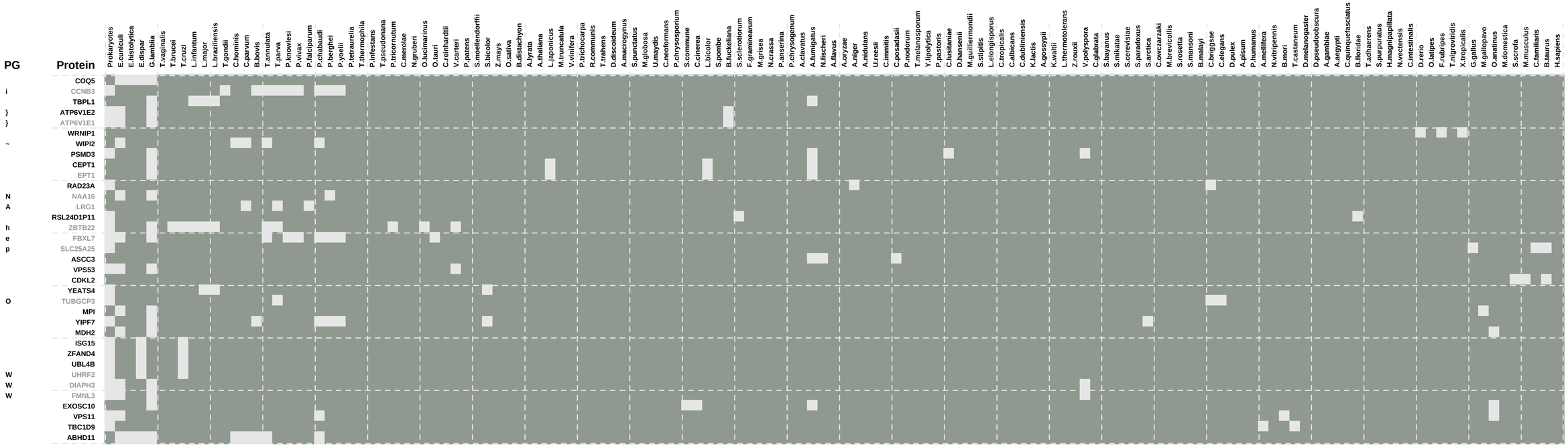
Log-likelihood Ratio Scale: 0 10 20 30 40 50 60

1: Cdc73/Paf1 complex || 2: nuclear speck || 3: transcriptionally active chromatin || 4: cleavage furrow || 5: early endosome || 6: Cul4A-RING ubiquitin ligase complex || 7: Cul4B-RING ubiquitin ligase complex || 8: Cul4-RING ubiquitin ligase complex ||
9: endocytic vesicle || 10: endosome membrane || 11: recycling endosome membrane || 12: early endosome membrane || 13: lipid particle || 14: platelet dense tubular network membrane || 15: microvillus || 16: chromatin ||
17: cyclin-dependent protein kinase holoenzyme complex || 18: nuclear membrane || 19: microtubule cytoskeleton || 20: female pronucleus || 21: male pronucleus || 22: condensed nuclear chromosome outer kinetochore || 23: spindle pole ||

ECM 4, Gene set "myofibril", Page 11

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

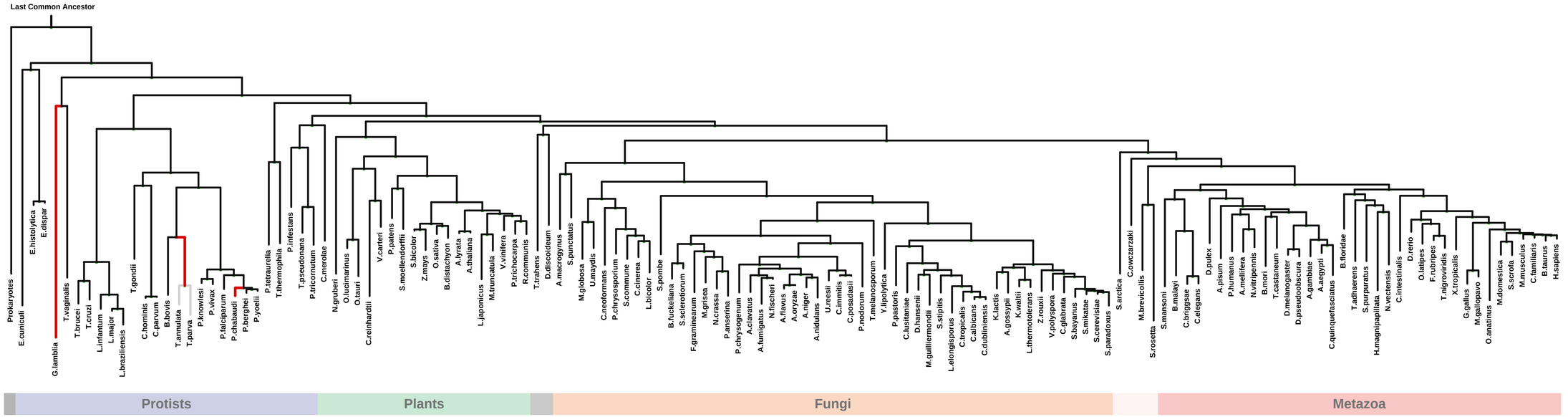


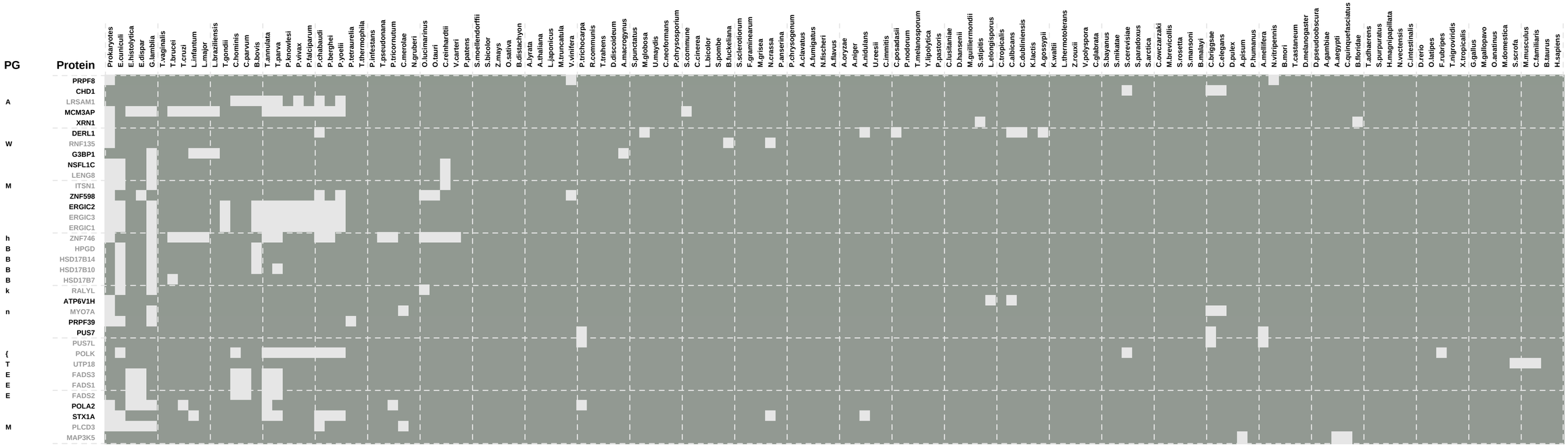


1: transcription factor TFIIA complex || 2: acrosomal vesicle || 3: proton-transporting two-sector ATPase complex, catalytic domain || 4: endosome || 5: microvillus || 6: proton-transporting two-sector ATPase complex || 7: autophagic vacuole || 8: autophagic vacuole membrane || 9: pre-autophagosomal structure membrane || 10: proteasome accessory complex || 11: proteasome complex || 12: nuclear membrane || 13: SCF ubiquitin ligase complex || 14: ubiquitin ligase complex || 15: endosome membrane || 16: GARP complex || 17: NuA4 histone acetyltransferase complex || 18: nuclear matrix || 19: centriole || 20: polar microtubule || 21: spindle || 22: nuclear heterochromatin || 23: exosome (RNase complex) ||

ECM 4, Gene set "myofibril", Page 12

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

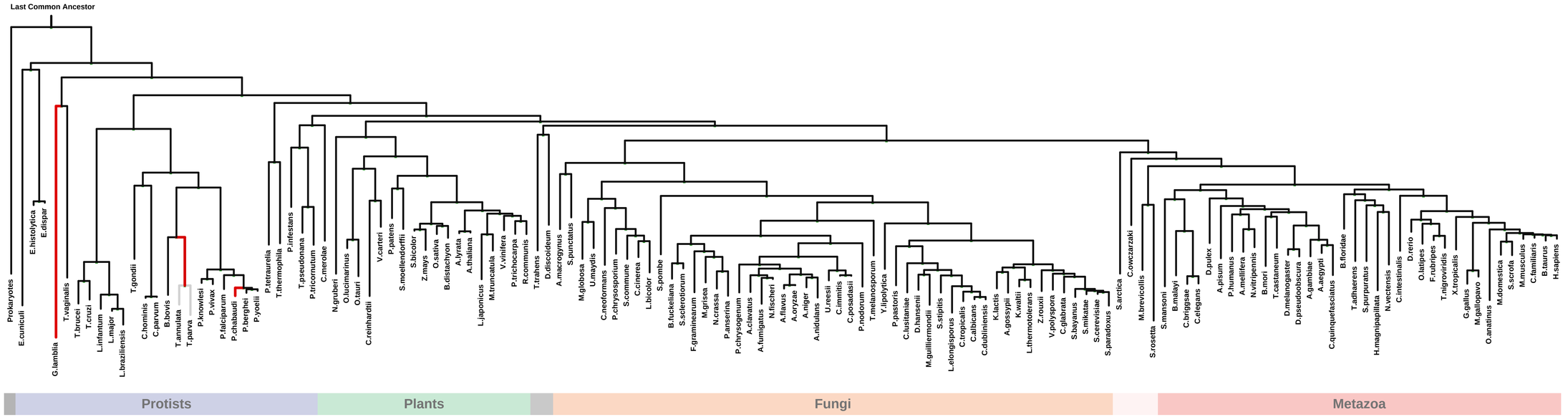


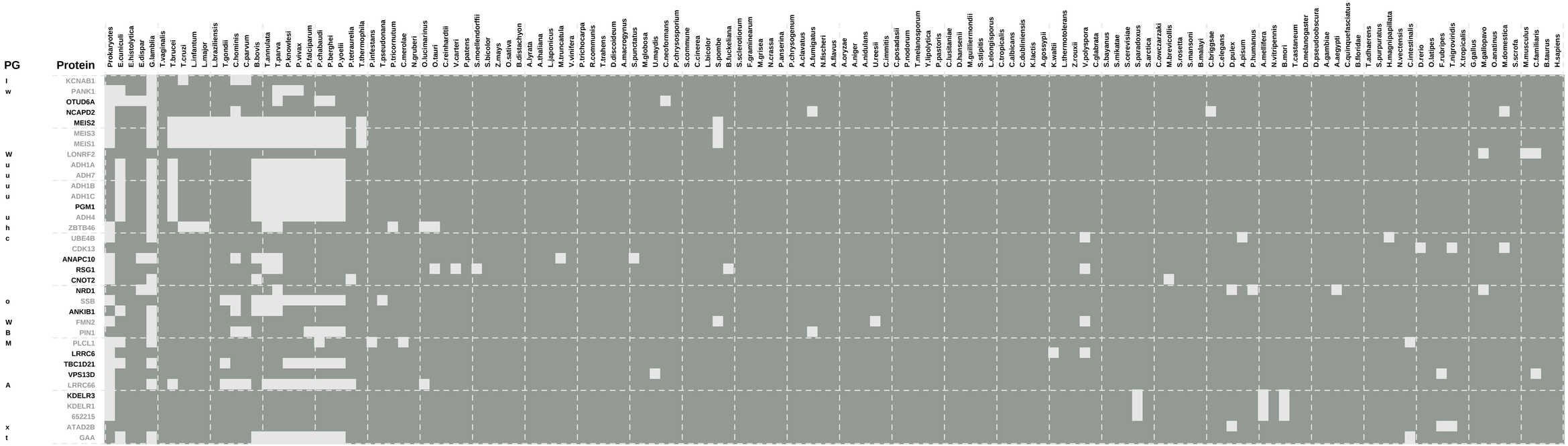


1: catalytic step 2 spliceosome || 2: nuclear speck || 3: U5 snRNP || 4: membrane part || 5: intermediate filament cytoskeleton || 6: early endosome || 7: integral to endoplasmic reticulum membrane || 8: late endosome || 9: chromosome ||
10: Golgi stack || 11: coated pit || 12: endocytic vesicle || 13: lamellipodium || 14: neuron projection || 15: synapse || 16: endoplasmic reticulum-Golgi intermediate compartment membrane || 17: endoplasmic reticulum-Golgi intermediate compartment ||
18: vacuolar proton-transporting V-type ATPase, V1 domain || 19: cell cortex || 20: lysosomal membrane || 21: melanosome || 22: myosin complex || 23: photoreceptor connecting cilium || 24: photoreceptor inner segment || 25: photoreceptor outer segment ||

ECM 4, Gene set "myofibril", Page 13

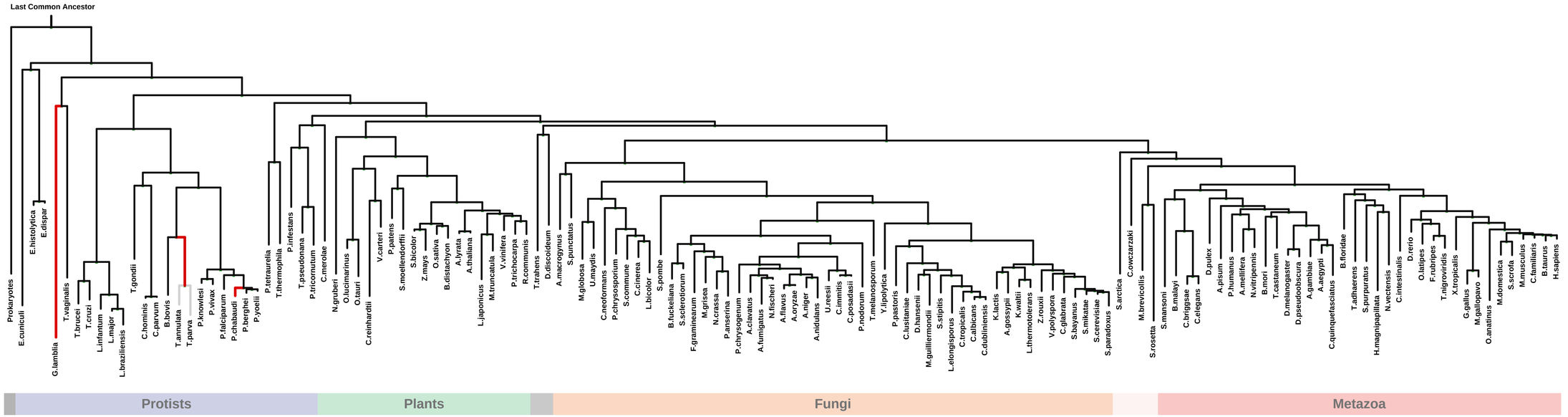
Num of ECM Genes: 1. Num of Predicted Genes: 500





ECM 4, Gene set "myofibril", Page 14

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

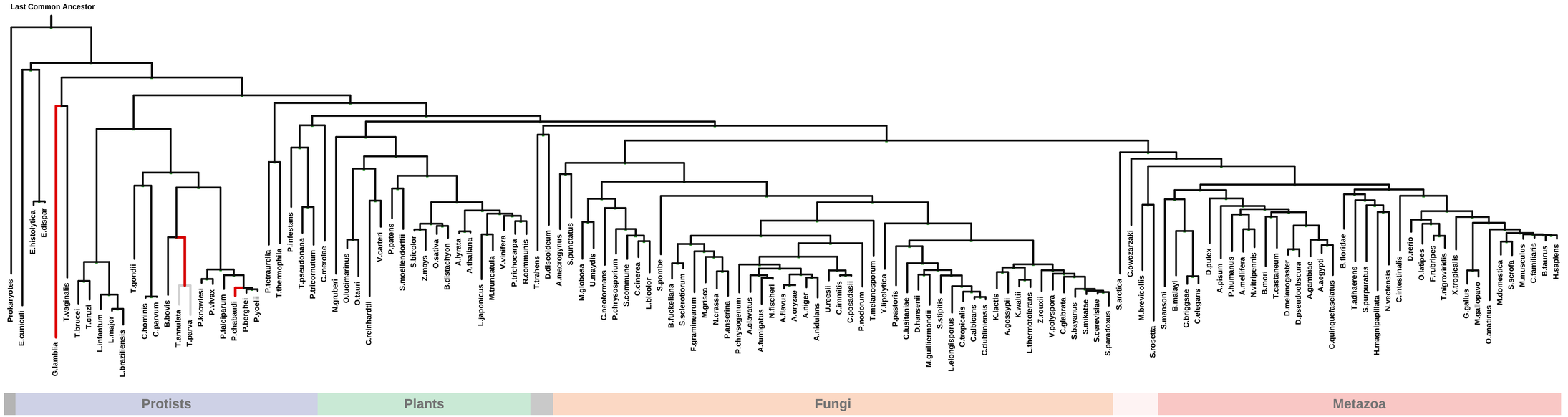


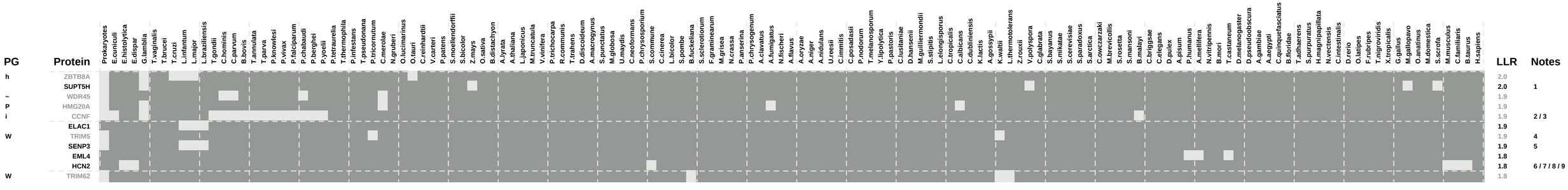
PG	Protein	LLR	Notes
A	ECM2	2.5	1 / 2
	CNOT7	2.5	3 / 4
	CNOT8	2.5	
	RRM1	2.5	5
	UBD	2.4	6
	IQSEC3	2.4	7 / 8 / 9
	STX2	2.4	10 / 11 / 12 / 13 / 14
h	ZBTB37	2.4	
	HINT1	2.4	
p	SLC25A52	2.4	
	TMED10	2.4	15 / 16 / 17 / 18 / 19 / 20 /
	VPS13C	2.4	
F	LSM2	2.3	25
	RNF113A	2.3	
	XRN2	2.3	6
	PIGK	2.2	26 / 27
	DNAL1	2.2	
	PSD3	2.2	8 / 9 / 28
	ASF1B	2.2	29
	ASF1A	2.2	30
	H2BFWT	2.1	31 / 32
	H2BFM	2.1	32
	WDR34	2.1	
	ISG20L2	2.1	
	LOC81691	2.1	
	SPAG6	2.1	33 / 34 / 35 / 36
	CCDC94	2.1	
	RPL36	2.1	37
	MCM6	2.1	38
W	FMNL1	2.1	39 / 40 / 41
W	RFPL4B	2.0	
	SVOP	2.0	42 / 43
P	HMGB3	2.0	44
S	SGSM1	2.0	
	ANKLE1	2.0	45

1: interstitial matrix || 2: proteinaceous extracellular matrix || 3: CCR4-NOT complex || 4: cytoplasmic mRNA processing body || 5: ribonucleoside-diphosphate reductase complex || 6: aggresome || 7: inhibitory synapse || 8: postsynaptic membrane ||
9: trans-Golgi network || 10: basolateral plasma membrane || 11: cell-cell junction || 12: membrane raft || 13: midbody || 14: transport vesicle || 15: cis-Golgi network || 16: COPI-coated vesicle || 17: endoplasmic reticulum-Golgi intermediate compartment ||
18: endoplasmic reticulum-Golgi intermediate compartment membrane || 19: gamma-secretase complex || 20: melanosome || 21: secretory granule membrane || 22: trans-Golgi network transport vesicle || 23: transport vesicle membrane ||

ECM 4, Gene set "myofibril", Page 15

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

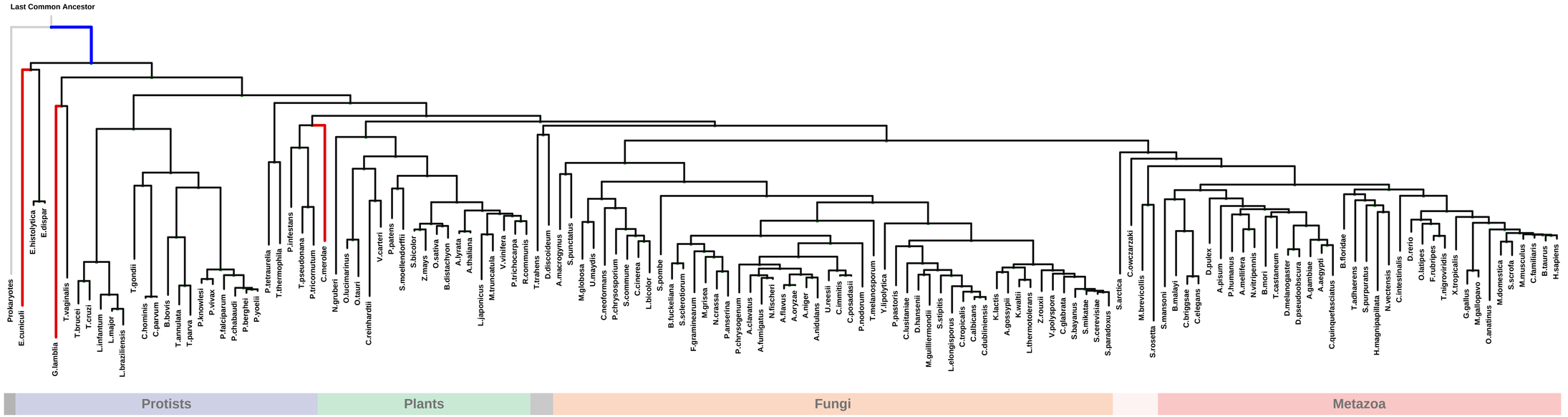


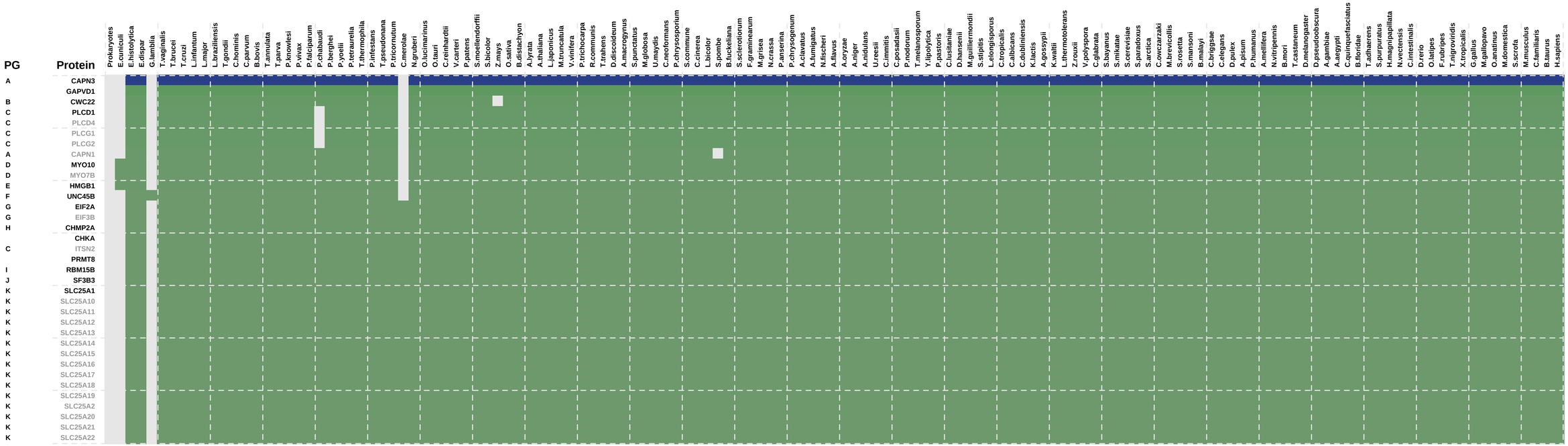


1: DSIF complex || 2: centriole || 3: SCF ubiquitin ligase complex || 4: cytoplasmic mRNA processing body || 5: MLL1 complex || 6: axon || 7: dendritic shaft || 8: synapse || 9: voltage-gated potassium channel complex

ECM 5, Gene set "myofibril", Page 1

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

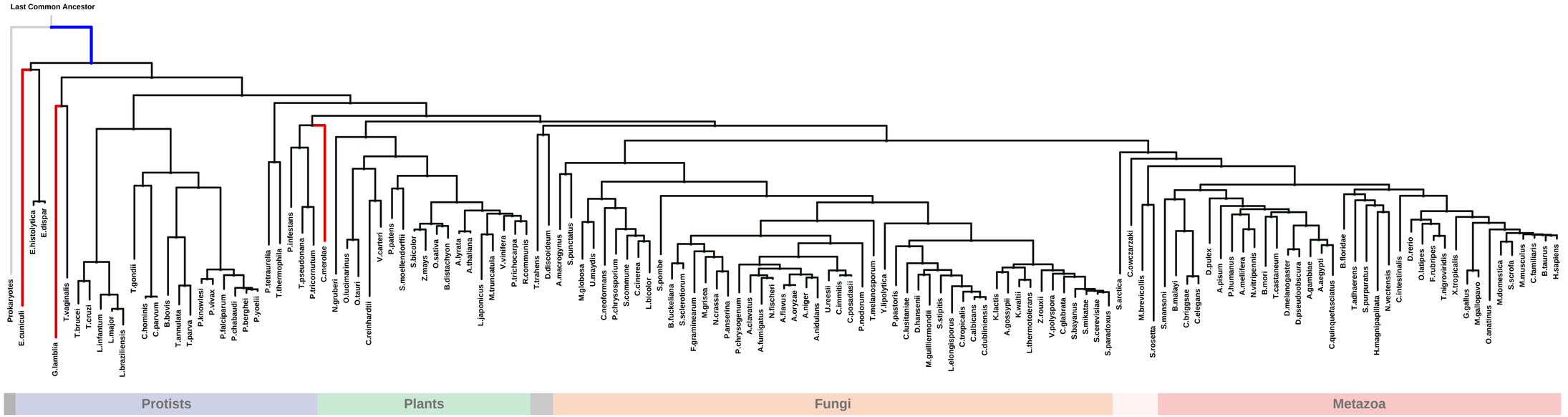




1: myofibril || 2: T-tubule || 3: Z disc || 4: endosome || 5: catalytic step 2 spliceosome || 6: spliceosomal complex || 7: lamellipodium || 8: neuron projection || 9: ruffle || 10: signalosome || 11: cell cortex ||
12: filopodium membrane || 13: filopodium tip || 14: myosin complex || 15: condensed chromosome || 16: transcriptional repressor complex || 17: eukaryotic translation initiation factor 2 complex || 18: eukaryotic translation initiation factor 3 complex ||
19: late endosome membrane || 20: small nuclear ribonucleoprotein complex || 21: U12-type spliceosomal complex || 22: integral to peroxisomal membrane || 23: peroxisomal membrane || 24: peroxisome

ECM 5, Gene set "myofibril", Page 2

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

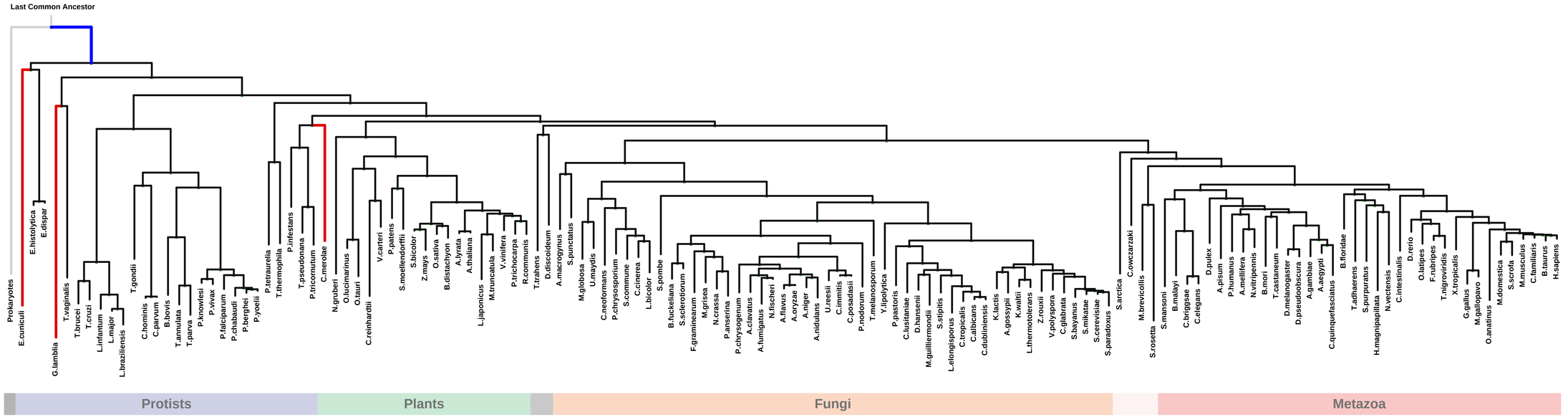


PG	Protein	LLR	Notes
K	SLC25A26	18.7	
K	SLC25A28	18.7	
K	SLC25A29	18.7	
K	SLC25A3	18.7	
K	SLC25A30	18.7	
K	SLC25A31	18.7	1 / 2
K	SLC25A32	18.7	
K	SLC25A33	18.7	
K	SLC25A34	18.7	
K	SLC25A36	18.7	
K	SLC25A37	18.7	
K	SLC25A38	18.7	
K	SLC25A39	18.7	
K	SLC25A4	18.7	3
K	SLC25A40	18.7	
K	SLC25A41	18.7	
K	SLC25A42	18.7	
K	SLC25A43	18.7	
K	SLC25A44	18.7	
K	SLC25A45	18.7	
K	SLC25A48	18.7	
K	SLC25A5	18.7	4 / 5
K	SLC25A6	18.7	6
L	**TNPO1**	**18.7**	7
L	TNPO2	18.7	7
K	UCP1	18.7	
K	UCP2	18.7	
K	UCP3	18.7	
M	**DECR2**	**18.7**	8
K	100508457	18.7	
K	100510457	18.7	
C	PLCE1	18.3	
N	**NAA15**	**17.6**	
B	NOM1	17.3	
O	**AHCYL1**	**17.0**	

1: cilium || 2: flagellum || 3: mitochondrial outer membrane || 4: mitochondrial nucleoid || 5: MMXD complex || 6: mitochondrial inner membrane presequence translocase complex || 7: nuclear pore || 8: peroxisome

ECM 5, Gene set "myofibril", Page 3

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

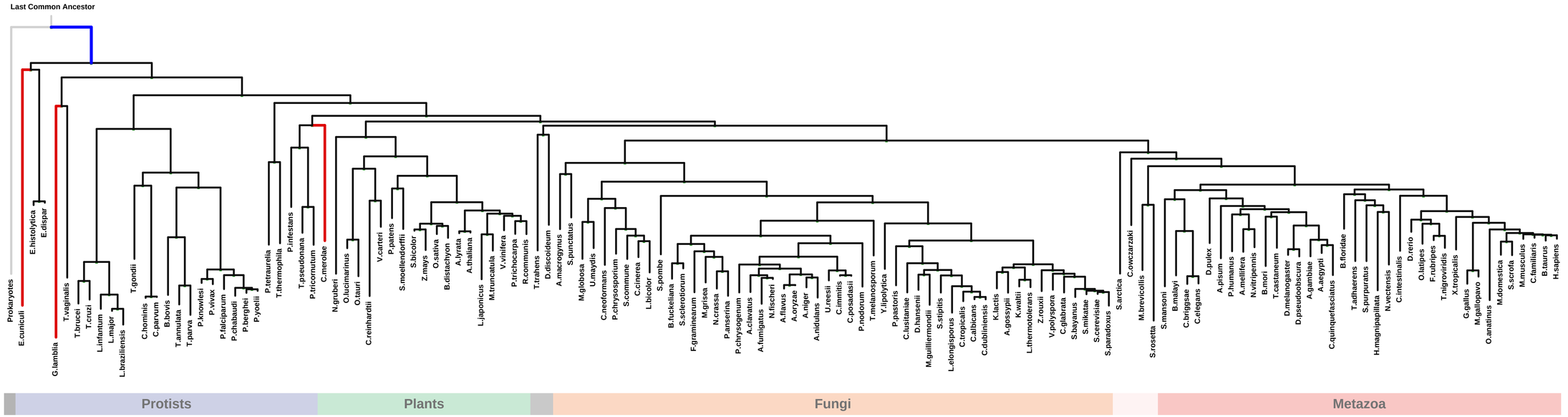


PG	Protein	LLR	Notes
O	AHCYL2	17.0	
O	AHCY	17.0	1
	DBR1	17.0	
J	DDB1	16.7	2 / 3 / 4
J	100290337	16.7	
P	NAP1L2	16.7	5
P	NAP1L4	16.7	5
M	WWOX	16.6	6
A	CAPN2	16.5	7
Q	ATP6V1E2	16.4	8 / 9
Q	ATP6V1E1	16.4	6 / 9 / 10 / 11
N	NAA16	16.1	
	PRMT5	15.9	
	VPS53	15.9	12 / 13
R	VPS33B	15.9	14 / 15 / 16 / 17 / 18 / 19
S	FMNL3	15.8	
S	DIAPH3	15.8	
	MPI	15.8	
T	MDH2	15.8	
C	SH3YL1	15.7	20
	LENG8	15.6	
C	ITSN1	15.6	21 / 22 / 23 / 24 / 25
U	NSFL1C	15.6	26 / 27
	ATG3	15.5	
M	HSD17B14	15.5	
M	HPGD	15.5	
V	RALYL	15.4	
W	MAP1LC3C	15.4	28 / 29 / 30 / 31 / 32
W	GABARAPL1	15.4	28 / 33 / 34 / 35 / 36
W	GABARAPL2	15.4	28 / 29 / 30
W	GABARAP	15.4	18 / 28 / 29 / 30 / 37 / 38 /
M	HSD17B7	15.4	
D	MYO7A	15.3	1 / 17 / 25 / 40 / 41 / 42 /
	PRPF39	15.3	
	LSM10	14.8	46 / 47

1: melanosome || 2: Cul4A-RING ubiquitin ligase complex || 3: Cul4B-RING ubiquitin ligase complex || 4: Cul4-RING ubiquitin ligase complex || 5: chromatin assembly complex || 6: microvillus || 7: chromatin || 8: acrosomal vesicle ||
9: proton-transporting two-sector ATPase complex, catalytic domain || 10: endosome || 11: proton-transporting two-sector ATPase complex || 12: endosome membrane || 13: GARP complex || 14: HOPS complex || 15: late endosome ||
16: late endosome membrane || 17: lysosomal membrane || 18: lysosome || 19: platelet alpha granule || 20: ruffle membrane || 21: coated pit || 22: endocytic vesicle || 23: lamellipodium || 24: neuron projection || 25: synapse ||

ECM 5, Gene set "myofibril", Page 4

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

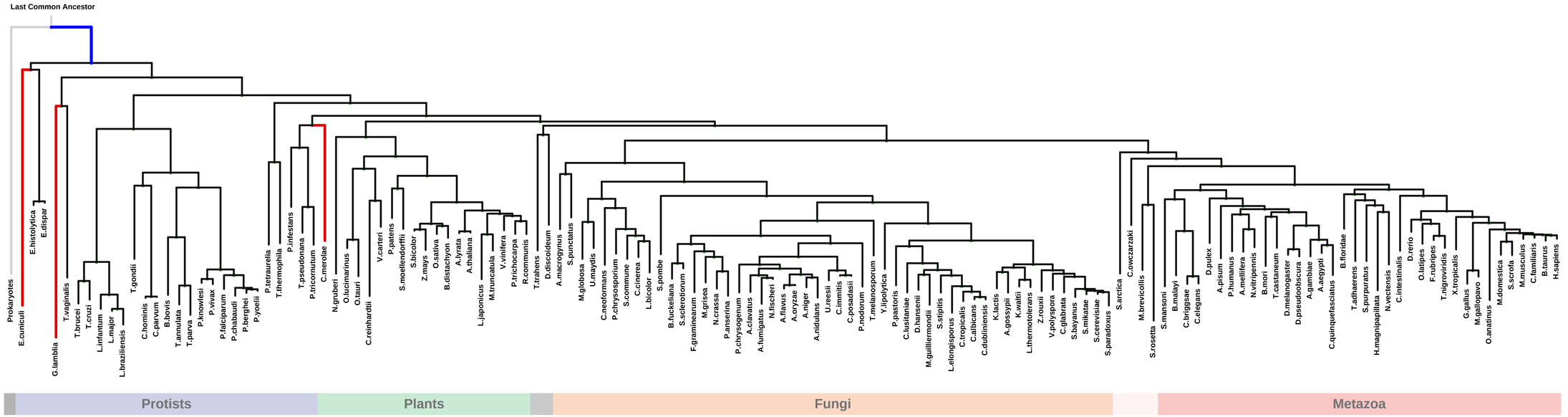


PG	Protein	LLR	Notes
C	SLC27A5	14.8	1 / 2
F	PLCL1	14.7	
P	SMYD4	14.4	
P	TSPYL4	14.4	
X	NAP1L1	14.4	3 / 4
E	RNF19A	14.1	
E	HMGB3	14.1	5
F	HMG20A	14.0	
U	SMYD2	13.5	
X	UBXN2B	13.5	
Y	RNF19B	13.4	
Y	STX5	13.3	6 / 7
Z	100510546	13.3	
	PDCD2L	13.2	
M	KLHL9	13.2	8 / 9
a	XAB2	13.1	10
b	HSD17B8	13.0	11
b	UCHL3	13.0	
c	RABL6	12.7	
Z	ISY1-RAB43	12.6	
W	ISY1	12.6	10
W	PANK2	12.6	12
W	ATRN	12.5	
C	BTF3	12.5	
	MAP1LC3B2	12.5	13 / 14 / 15
E	MAP1LC3A	12.5	13 / 14 / 15 / 16 / 17 / 18
T	MAP1LC3B	12.5	13 / 14 / 15 / 16 / 18 / 19 /
E	EPS15L1	12.0	22
E	CEP97	12.0	
E	RTFDC1	12.0	
	SSRP1	11.9	5
	LDHB	11.6	
	100508670	11.6	
	HMGB3P27	11.6	5
	HMGB2	11.6	23

1: basal plasma membrane || 2: integral to endoplasmic reticulum membrane || 3: chromatin assembly complex || 4: melanosome || 5: chromosome || 6: endoplasmic reticulum-Golgi intermediate compartment membrane || 7: SNARE complex ||
8: Cul3-RING ubiquitin ligase complex || 9: midbody || 10: catalytic step 2 spliceosome || 11: mitochondrial envelope || 12: mitochondrial intermembrane space || 13: autophagic vacuole membrane || 14: cytoplasmic vesicle || 15: endomembrane system ||
16: autophagic vacuole || 17: late endosome || 18: organelle membrane || 19: axon || 20: dendrite || 21: microtubule associated complex || 22: coated pit || 23: condensed chromosome

ECM 5, Gene set "myofibril", Page 5

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

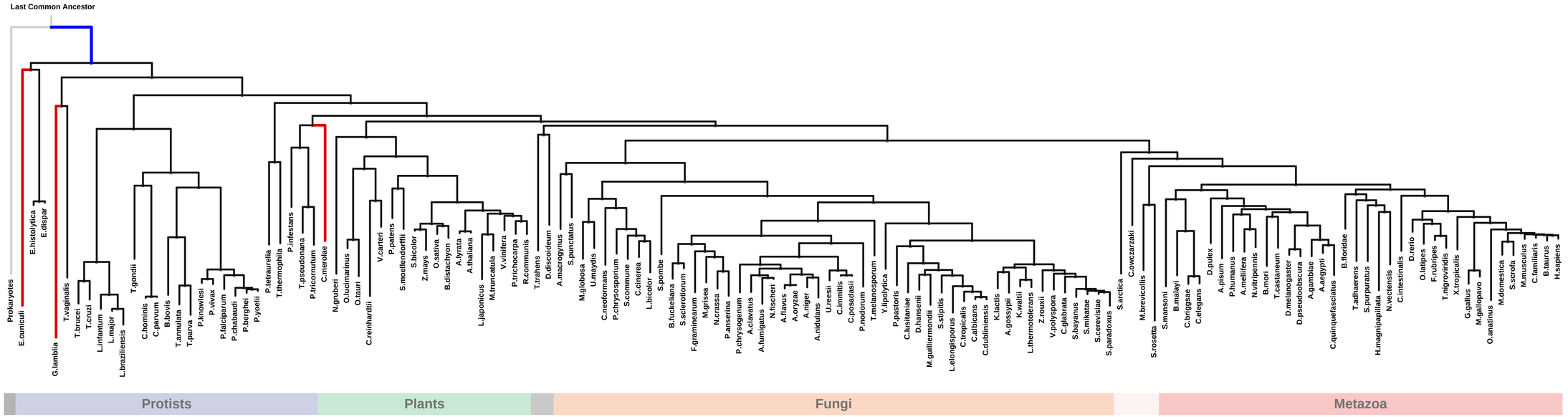


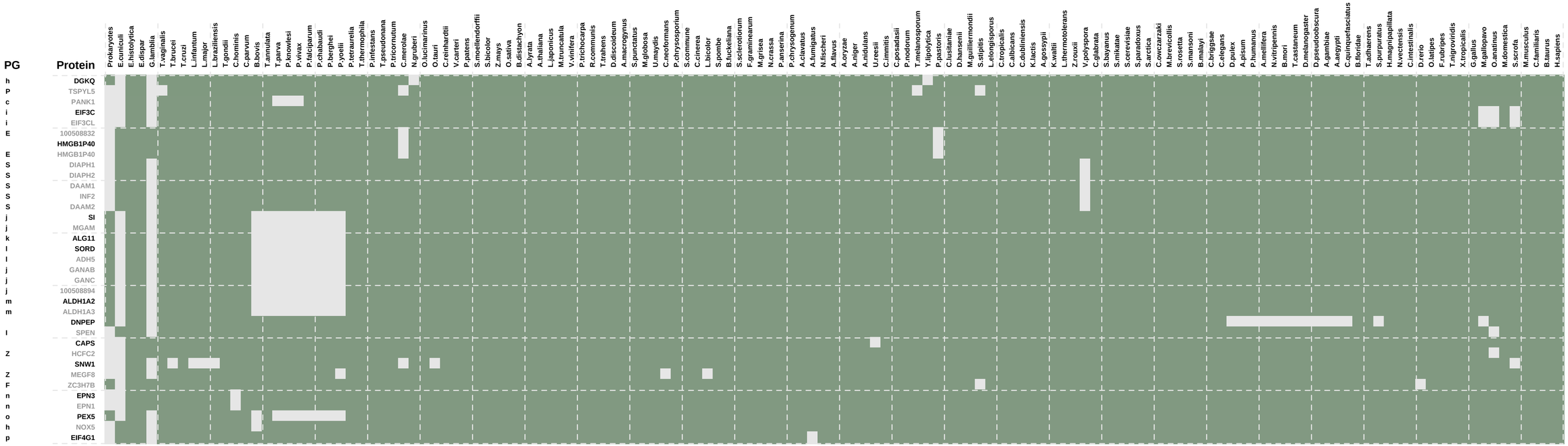
PG	Protein	LLR	Notes
	ARPC4-TTLL3	11.3	
C	MCTP2	11.2	
D	MYO1A	11.2	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8
D	MYO1C	11.2	1 / 3 / 5 / 6 / 7 / 9 / 10 / 11
D	MYO1G	11.2	8
D	MYO1H	11.2	8
D	MYO15A	11.2	8 / 13
D	MYO18B	11.2	12 / 14
D	MYO19	11.2	8 / 15
F	SMYD3	11.2	
M	DCXR	11.1	3 / 7
M	DHRS1	11.1	
d	VAMP7	11.1	16 / 17 / 18 / 19 / 20 / 21 /
M	BDH2	11.1	
E	HMGB4	11.0	25
M	HSD17B10	11.0	
e	ZNRF2	10.9	18 / 26 / 27
e	ZNRF1	10.9	28 / 29 / 30
C	SYT3	10.9	28 / 30
	RANBP10	10.9	31
	SUCLG1	10.9	
D	ARHGAP25	10.9	
C	SYT7	10.9	29 / 30
E	HMGB3P22	10.9	
	TBC1D21	10.8	
S	TRIM22	10.8	32 / 33
S	BRCA1	10.8	5 / 25 / 34 / 35 / 36 / 37 /
f	PMM1	10.7	
f	PMM2	10.7	
	653889	10.7	
	MCCC1	10.7	
g	SEC14L1	10.7	
g	SEC14L5	10.7	
L	IPO4	10.7	9
	STON1-GTF2A1L	10.7	

1: basal plasma membrane || 2: basolateral plasma membrane || 3: brush border || 4: cortical actin cytoskeleton || 5: filamentous actin || 6: lateral plasma membrane || 7: microvillus || 8: myosin complex || 9: nuclear pore ||
10: stereocilium membrane || 11: stress fiber || 12: unconventional myosin complex || 13: stereocilium || 14: sarcomere || 15: mitochondrial outer membrane || 16: apical part of cell || 17: late endosome membrane || 18: lysosomal membrane ||
19: neuron projection || 20: phagocytic vesicle || 21: phagocytic vesicle membrane || 22: SNARE complex || 23: synapse || 24: transport vesicle membrane || 25: chromosome || 26: endosome membrane || 27: presynaptic membrane ||

ECM 5, Gene set "myofibril", Page 6

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

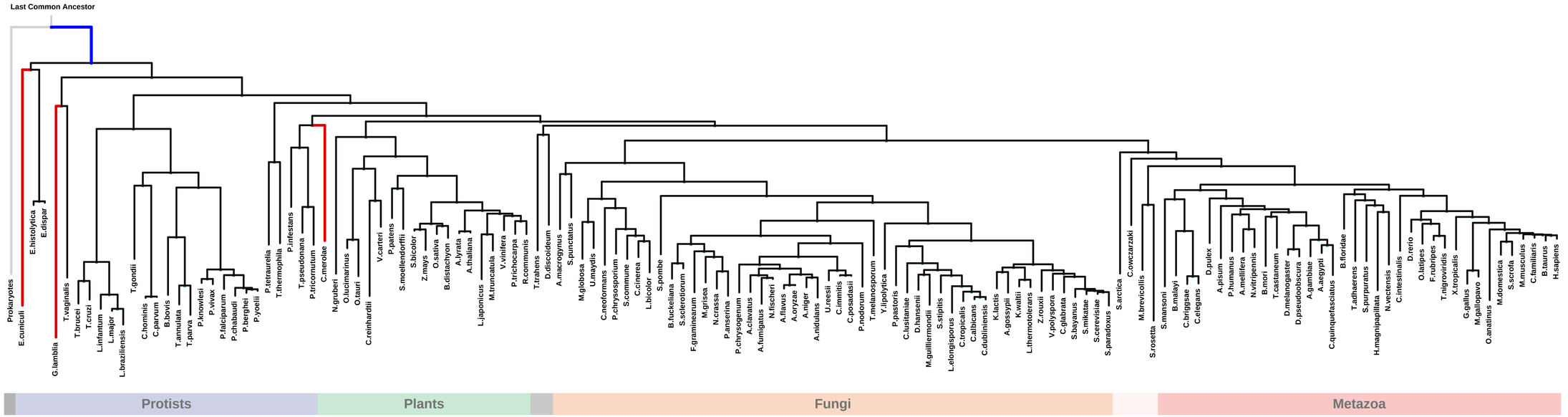




1: nuclear speck || 2: cell periphery || 3: eukaryotic translation initiation factor 3 complex || 4: mitotic spindle || 5: ruffle membrane || 6: early endosome || 7: stress fiber || 8: brush border || 9: membrane raft || 10: cilium ||
11: flagellum || 12: mitochondrial membrane || 13: endoplasmic reticulum lumen || 14: melanosome || 15: transcriptional repressor complex || 16: catalytic step 2 spliceosome || 17: chromatin || 18: nuclear part || 19: spliceosomal complex ||
20: clathrin-coated vesicle || 21: coated pit || 22: peroxisomal matrix || 23: peroxisomal membrane || 24: peroxisome || 25: eukaryotic translation initiation factor 4F complex

ECM 5, Gene set "myofibril", Page 7

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

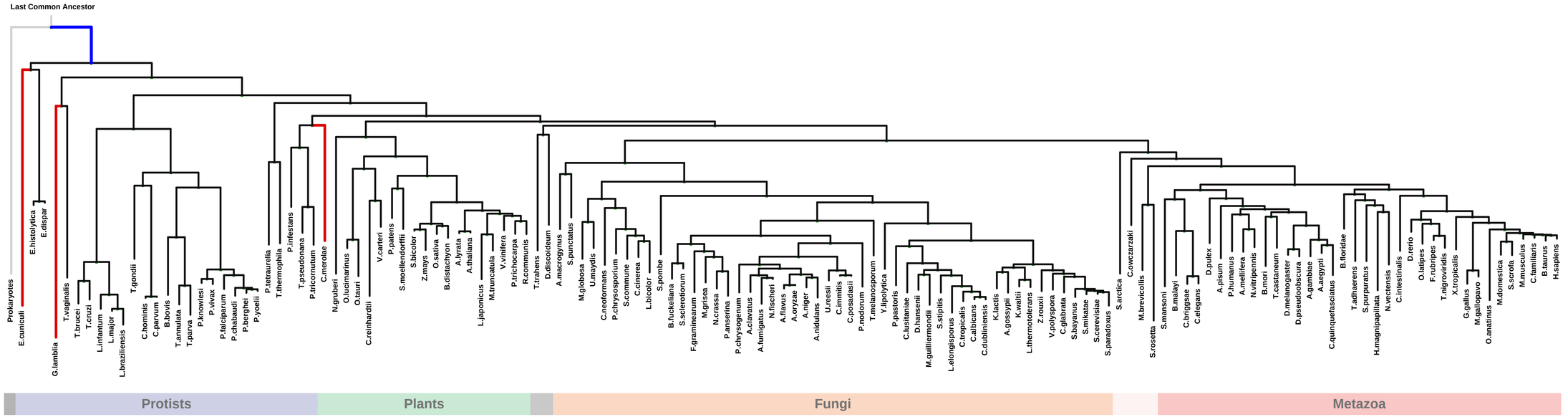


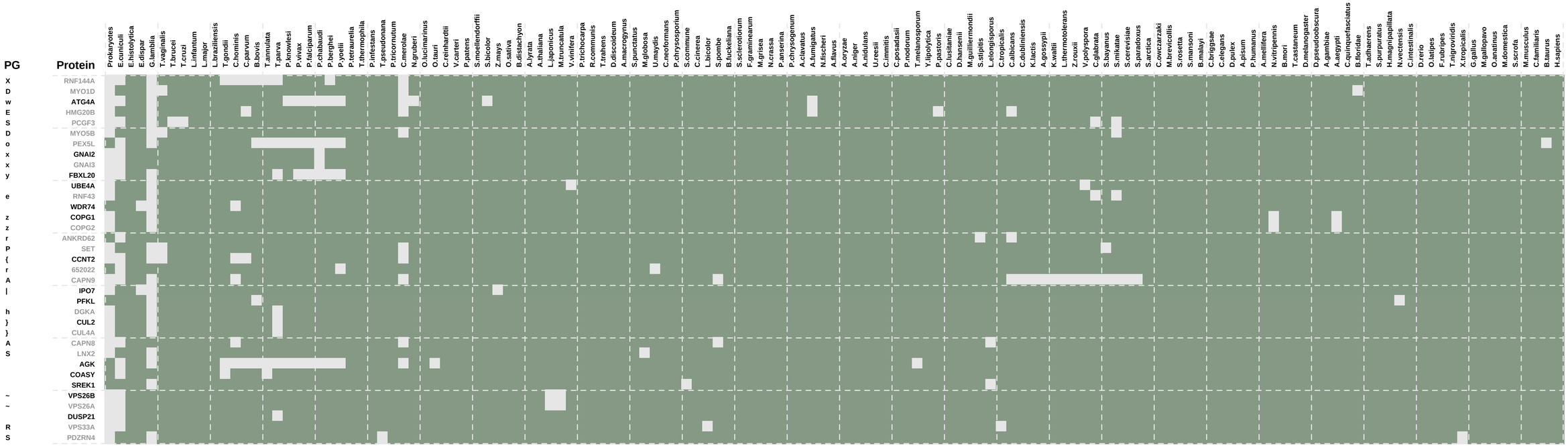
PG	Protein	LLR	Notes
q	**SERINC1**	**9.9**	
q	SERINC3	9.9	
X	RNF217	9.9	
r	**NOTCH3**	**9.9**	
a	UCHL5	9.9	1 / 2
s	**PSD4**	**9.9**	3
s	PSD	9.9	3 / 4
l	RBM15	9.9	
d	VAMP8	9.8	5 / 6 / 7 / 8 / 9 / 10
J	CPSF1	9.8	11
Y	STX16	9.8	10
C	H2AFZ	9.8	12 / 13
t	**TRMT10C**	**9.8**	
t	TRMT10A	9.8	
t	TRMT10B	9.8	
C	H2AFB1	9.8	14 / 15
C	H2AFB2	9.8	14 / 15
C	H2AFB3	9.8	
C	H2AFV	9.8	13
u	**TMED9**	**9.8**	16 / 17 / 18
u	TMED2	9.8	16 / 17 / 19 / 20 / 21 / 22
u	TMED4	9.8	
S	RNF4	9.6	23 / 24
S	FMNL1	9.5	25 / 26 / 27
D	MYO6	9.5	4 / 26 / 28 / 29 / 30 / 31 / 3
k	ALG2	9.4	
v	**UQCRC2**	**9.4**	41
v	PMPCA	9.4	
	COQ5	**9.4**	
	PSMD13	**9.4**	2 / 42 / 43
	MYSM1	**9.4**	44
C	MCTP1	9.3	
X	ARIH2	9.3	
X	CUL9	9.3	45
	TMX2	**9.3**	

1: Ino80 complex || 2: proteasome complex || 3: trans-Golgi network || 4: ruffle || 5: early endosome || 6: late endosome membrane || 7: lysosomal membrane || 8: recycling endosome || 9: secretory granule membrane ||
10: SNARE complex || 11: mRNA cleavage and polyadenylation specificity factor complex || 12: Barr body || 13: nucleosome || 14: nuclear nucleosome || 15: transcriptionally active chromatin || 16: endoplasmic reticulum-Golgi intermediate compartment ||
17: endoplasmic reticulum-Golgi intermediate compartment membrane || 18: trans-Golgi network transport vesicle || 19: COPI-coated vesicle || 20: COPI-coated vesicle membrane || 21: Golgi cisterna membrane || 22: zymogen granule membrane ||

ECM 5, Gene set "myofibril", Page 8

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

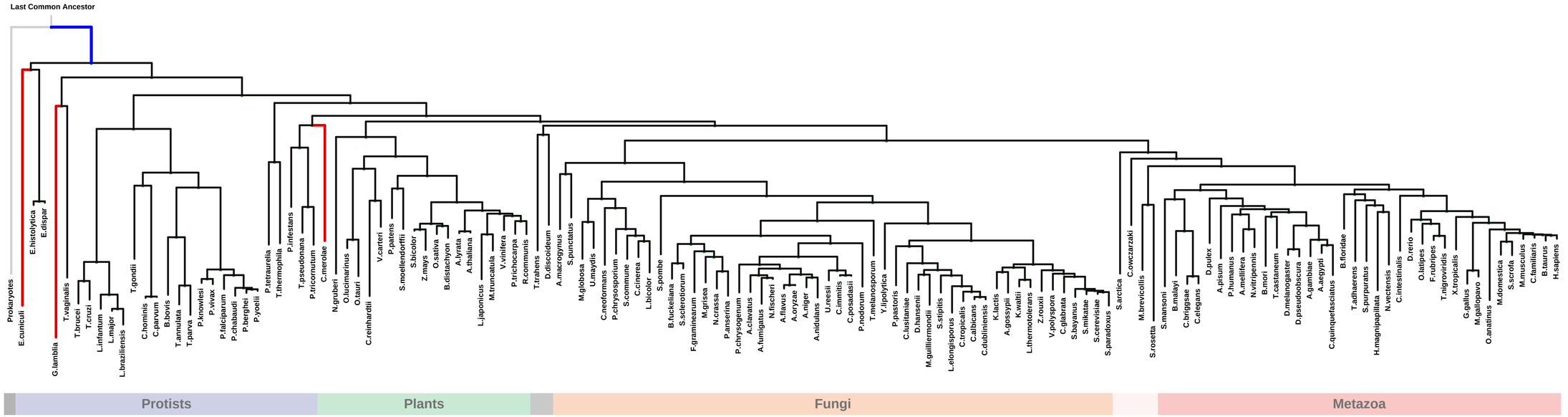


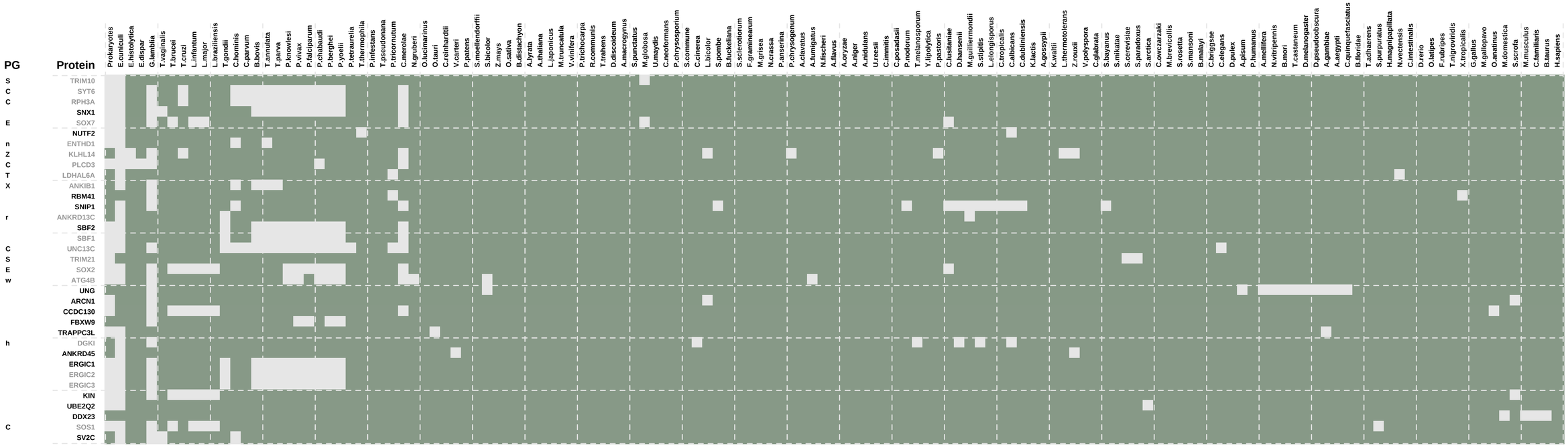


1: axolemma || 2: myosin complex || 3: smooth endoplasmic reticulum || 4: chromosome || 5: PcG protein complex || 6: cytoplasmic vesicle membrane || 7: dendritic spine || 8: cell tip || 9: dendrite || 10: intracellular cyclic nucleotide activated cation channel complex ||
11: peroxisomal membrane || 12: extrinsic to internal side of plasma membrane || 13: heterotrimeric G-protein complex || 14: membrane raft || 15: midbody || 16: zymogen granule || 17: ubiquitin ligase complex || 18: nuclear envelope ||
19: COPI vesicle coat || 20: nuclear pore || 21: 6-phosphofructokinase complex || 22: Cul2-RING ubiquitin ligase complex || 23: Cul4A-RING ubiquitin ligase complex || 24: Cul4-RING ubiquitin ligase complex || 25: mitochondrial membrane ||

ECM 5, Gene set "myofibril", Page 9

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

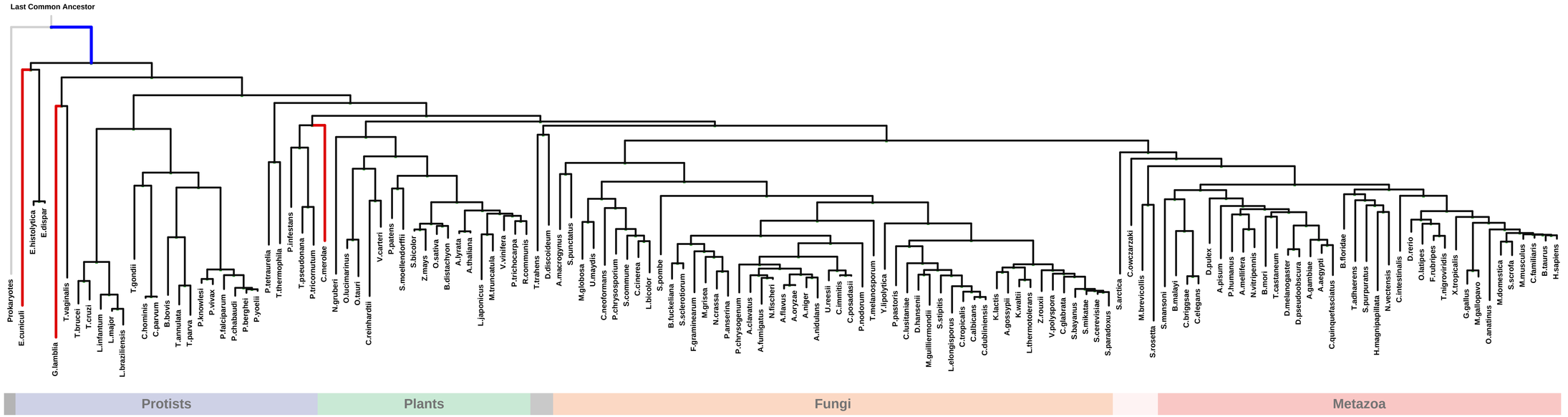


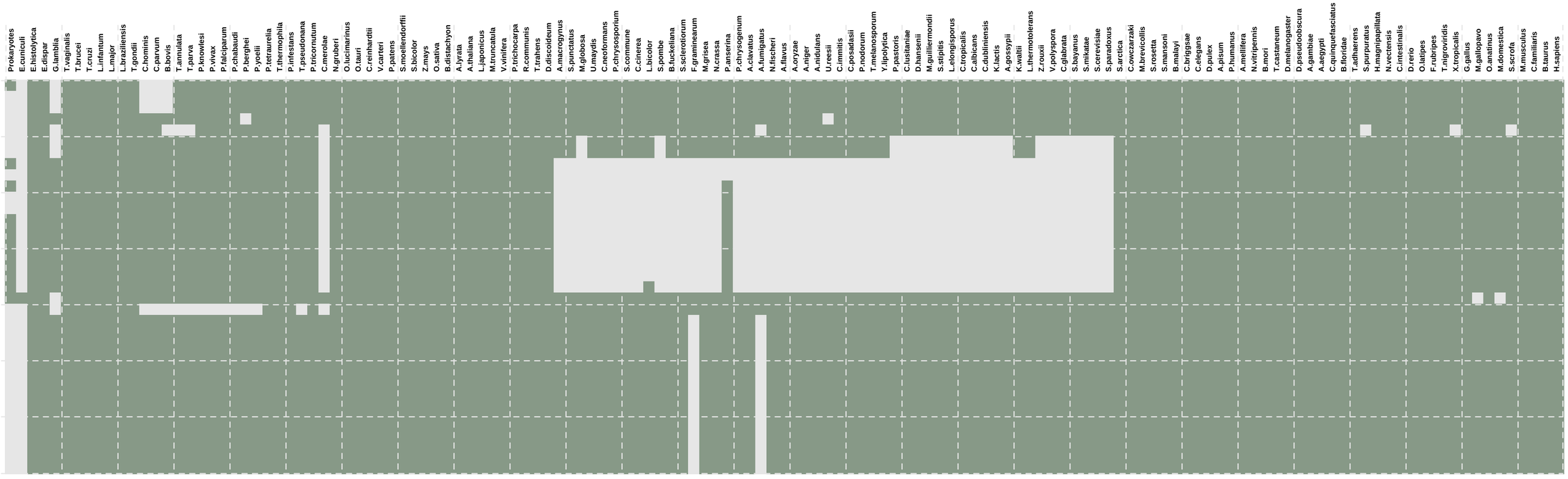


1: extrinsic to membrane || 2: perinuclear endoplasmic reticulum || 3: synaptic vesicle membrane || 4: secretory granule || 5: early endosome membrane || 6: endosome membrane || 7: microtubule cytoskeleton || 8: nuclear pore ||
9: neuron projection || 10: cleavage furrow || 11: vacuolar membrane || 12: presynaptic membrane || 13: cytoplasmic mRNA processing body || 14: ribonucleoprotein complex || 15: SCF ubiquitin ligase complex || 16: clathrin adaptor complex ||
17: COPI vesicle coat || 18: guanyl-nucleotide exchange factor complex || 19: endoplasmic reticulum-Golgi intermediate compartment || 20: endoplasmic reticulum-Golgi intermediate compartment membrane || 21: nuclear matrix || 22: catalytic step 2 spliceosome ||

ECM 5, Gene set "myofibril", Page 10

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

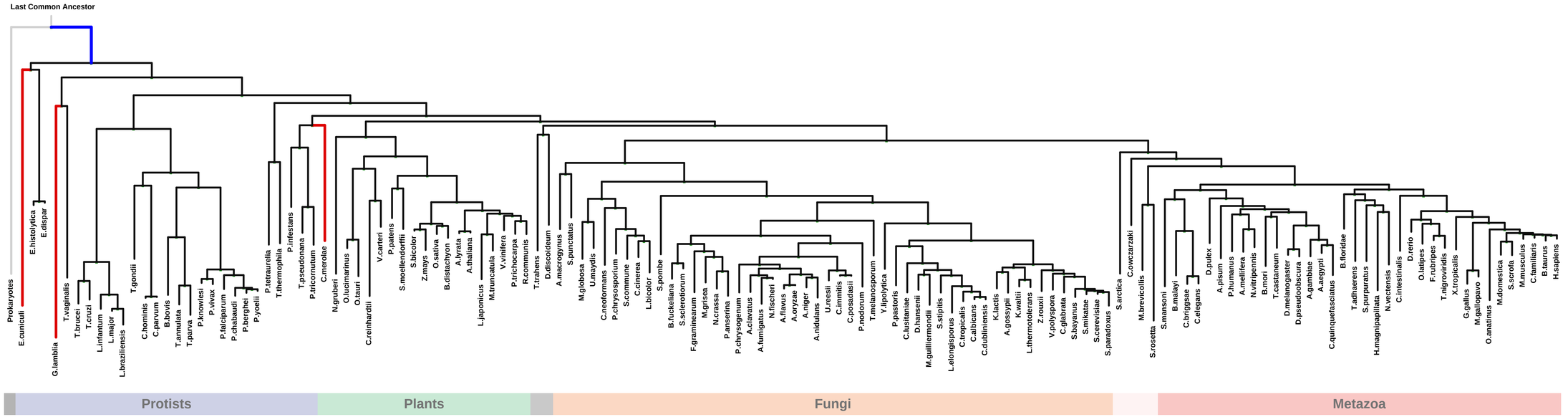


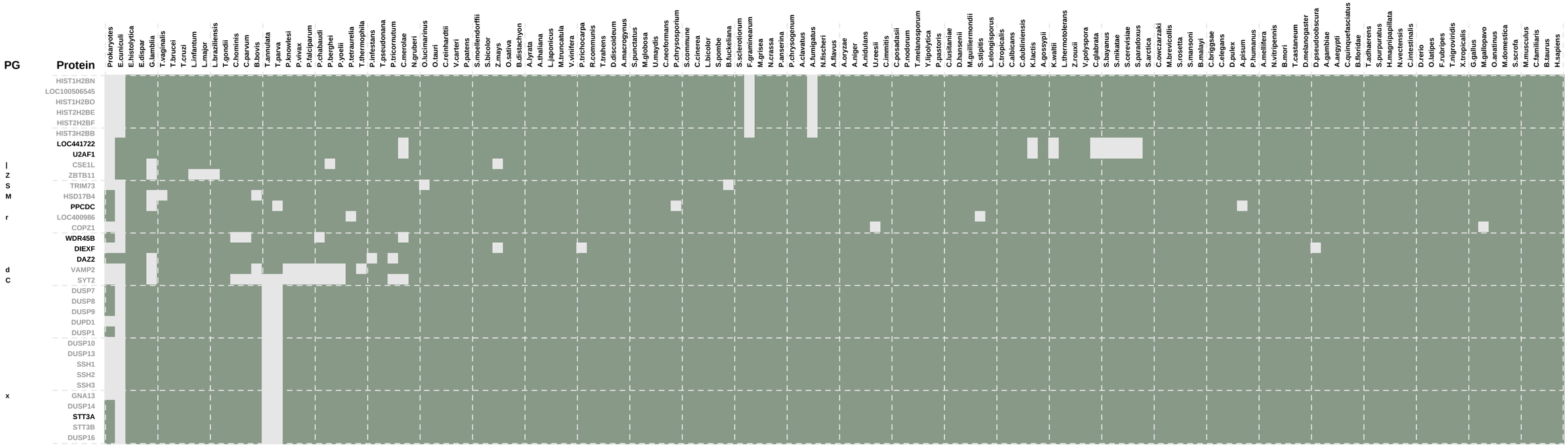


1: intermediate filament cytoskeleton || 2: cis-Golgi network || 3: COPI vesicle coat || 4: external side of plasma membrane || 5: basement membrane || 6: extracellular matrix || 7: endolysosome lumen || 8: lysosomal lumen ||
9: lysosome || 10: caveola || 11: melanosome || 12: sarcolemma || 13: alveolar lamellar body || 14: apical part of cell || 15: microvillus || 16: neuron projection || 17: perikaryon || 18: secretory granule || 19: extrinsic to plasma membrane ||
20: nucleosome

ECM 5, Gene set "myofibril", Page 11

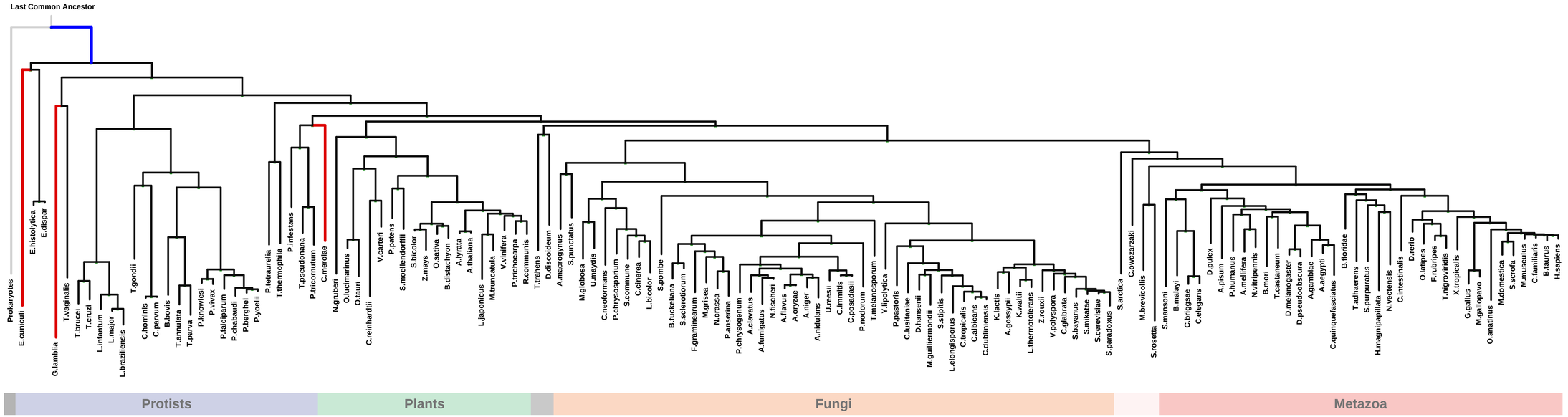
Num of ECM Genes: 1. Num of Predicted Genes: 500

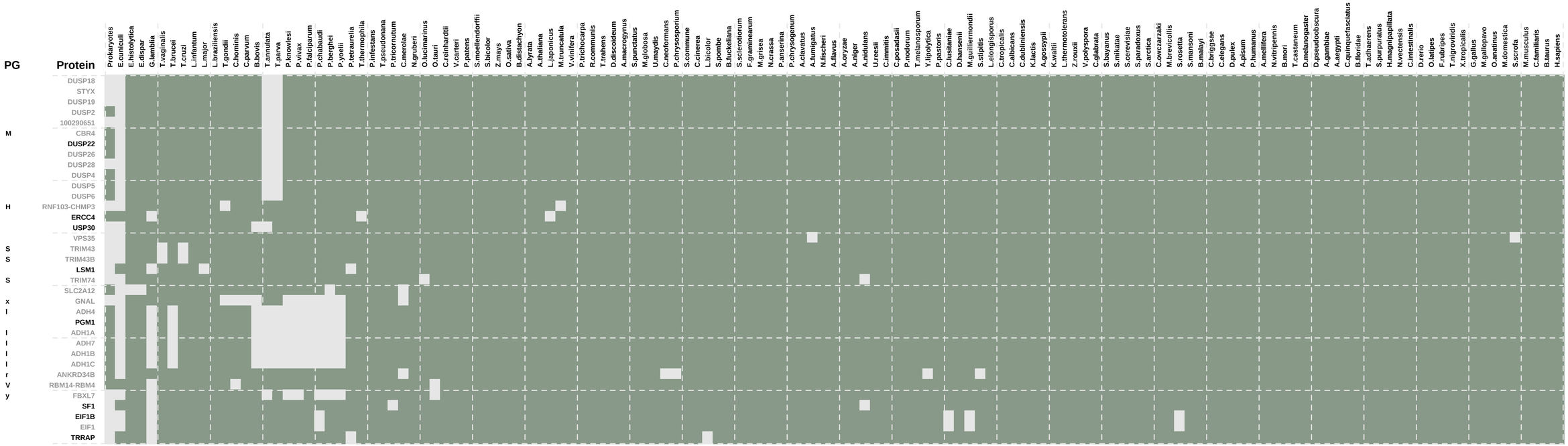




ECM 5, Gene set "myofibril", Page 12

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

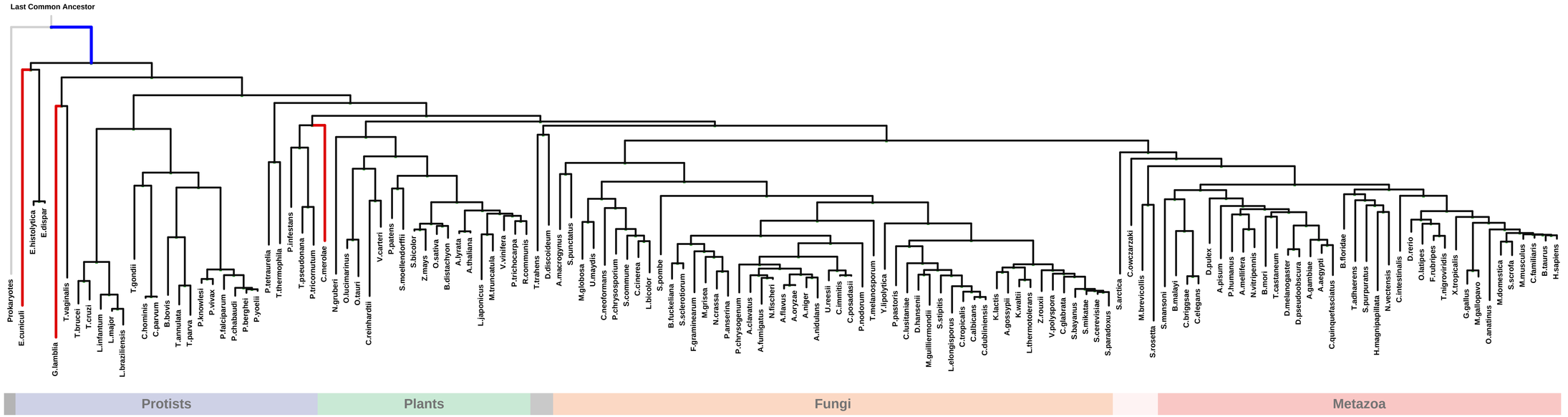


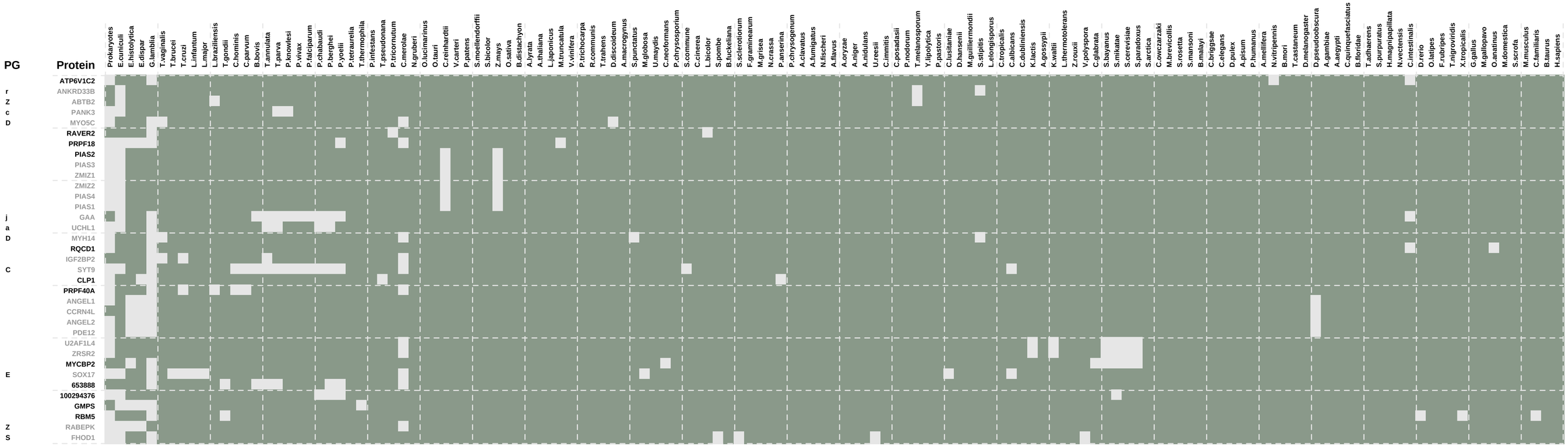


1: chromosome, telomeric region || 2: nuclear chromosome, telomeric region || 3: nucleotide-excision repair complex || 4: mitochondrial outer membrane || 5: endosome || 6: ribonucleoprotein complex || 7: endomembrane system ||
8: extrinsic to internal side of plasma membrane || 9: heterotrimeric G-protein complex || 10: microtubule cytoskeleton || 11: actin cytoskeleton || 12: SCF ubiquitin ligase complex || 13: ubiquitin ligase complex || 14: ribosome ||
15: spliceosomal complex || 16: NuA4 histone acetyltransferase complex || 17: PCAF complex || 18: STAGA complex || 19: transcription factor TFTC complex

ECM 5, Gene set "myofibril", Page 13

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

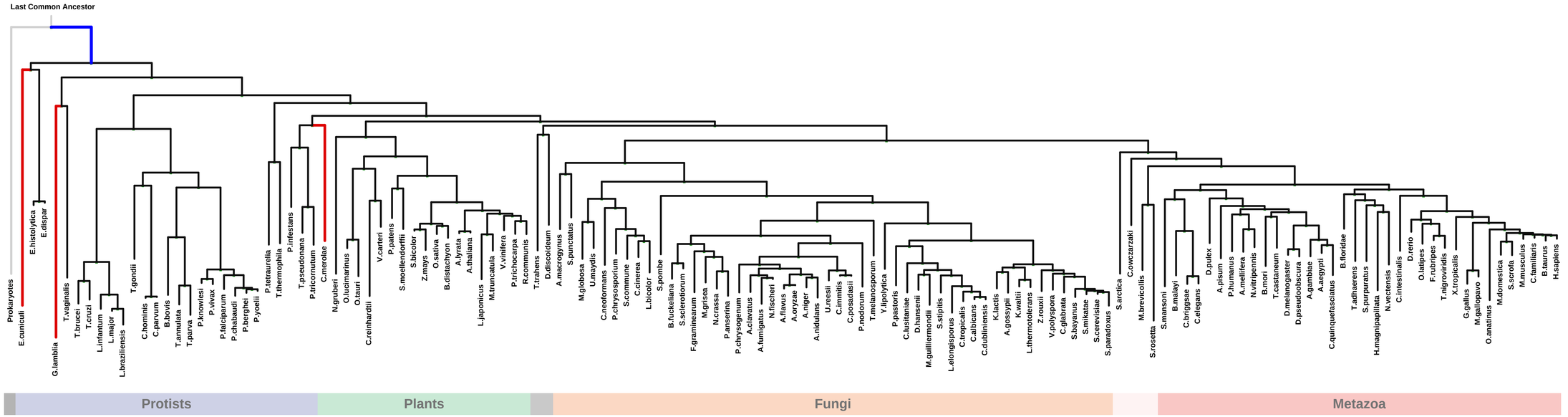


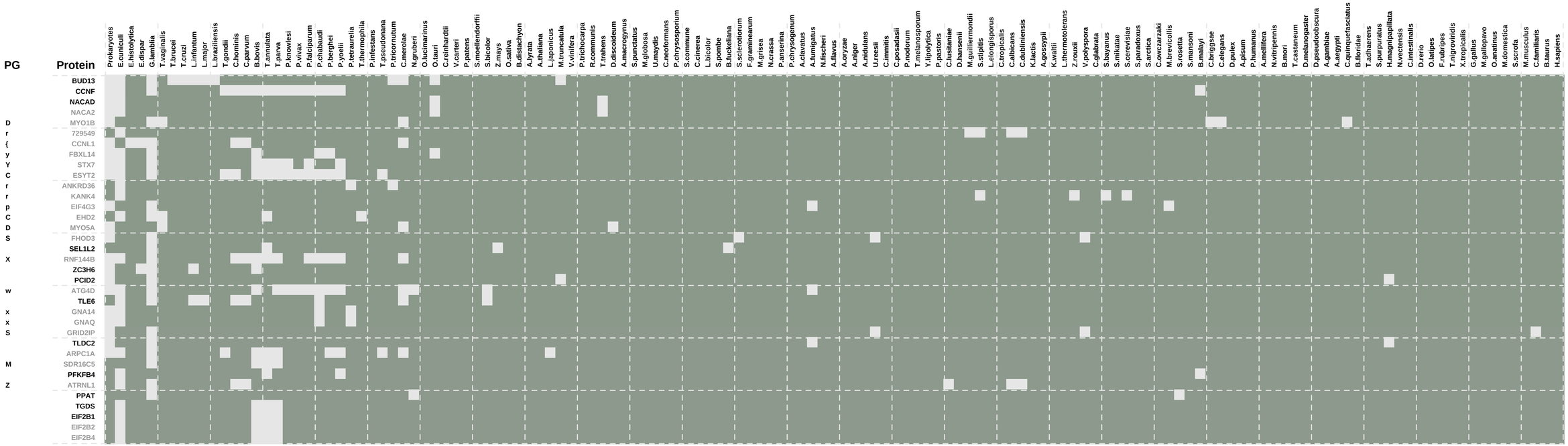


1: proton-transporting V-type ATPase, V1 domain || 2: myosin complex || 3: nuclear speck || 4: spliceosomal complex || 5: PML body || 6: dendrite || 7: synapse || 8: nuclear replication fork || 9: nuclear matrix || 10: lysosomal membrane || 11: lysosome || 12: axon || 13: growth cone || 14: stress fiber || 15: cytoplasmic mRNA processing body || 16: cytoskeletal part || 17: dense core granule || 18: secretory granule membrane || 19: synaptic vesicle membrane || 20: tRNA-intron endonuclease complex || 21: U12-type spliceosomal complex || 22: microtubule cytoskeleton || 23: endosome || 24: endosome membrane || 25: bleb

ECM 5, Gene set "myofibril", Page 14

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

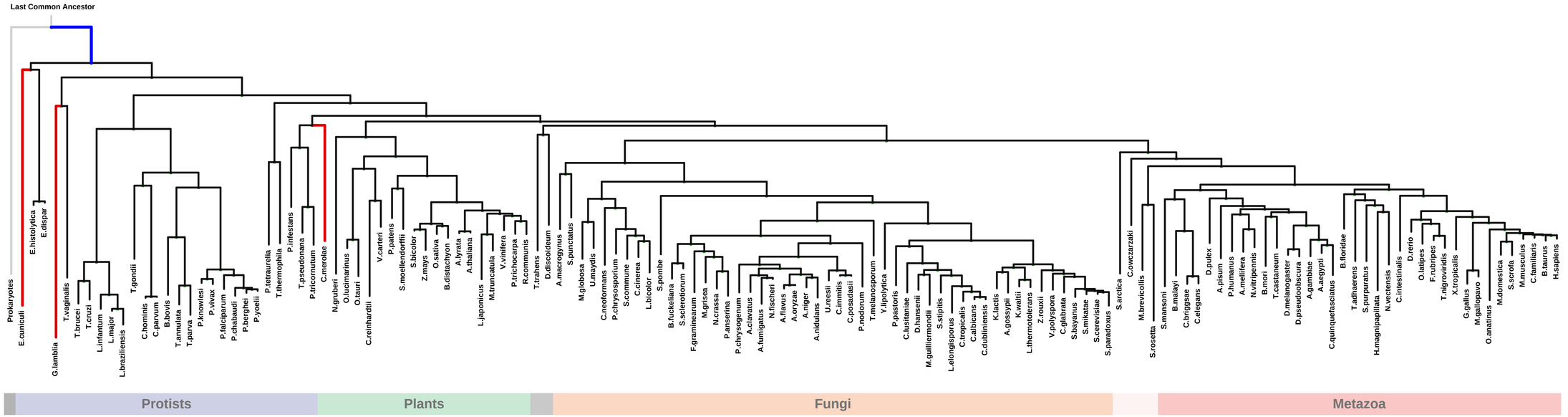


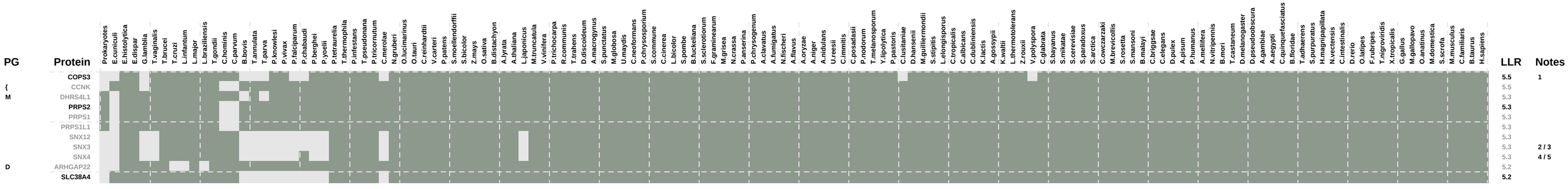


1: centriole || 2: SCF ubiquitin ligase complex || 3: brush border || 4: cell periphery || 5: filopodium || 6: myosin complex || 7: nuclear speck || 8: early endosome membrane || 9: late endosome membrane || 10: lysosomal membrane ||
11: SNARE complex || 12: eukaryotic translation initiation factor 4F complex || 13: endosome membrane || 14: recycling endosome membrane || 15: actomyosin || 16: growth cone || 17: insulin-responsive compartment || 18: intermediate filament ||
19: melanosome || 20: microtubule plus end || 21: neuron projection || 22: photoreceptor outer segment || 23: ruffle || 24: mitochondrial membrane || 25: ubiquitin ligase complex || 26: cell cortex || 27: extrinsic to internal side of plasma membrane ||

ECM 5, Gene set "myofibril", Page 15

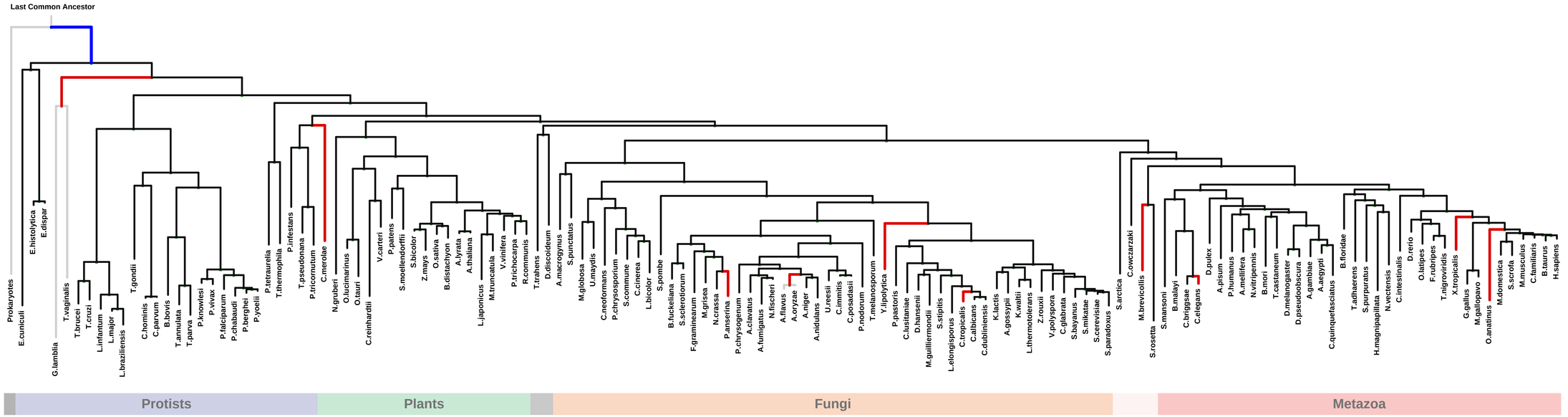
Num of ECM Genes: 1. Num of Predicted Genes: 500

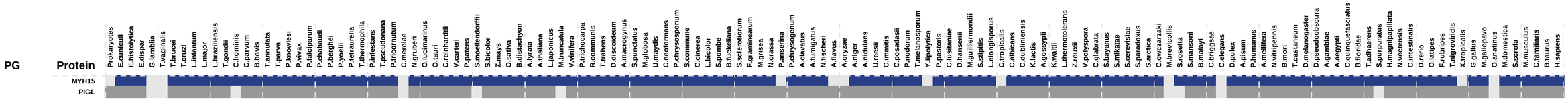




ECM 6, Gene set "myofibril", Page 1

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

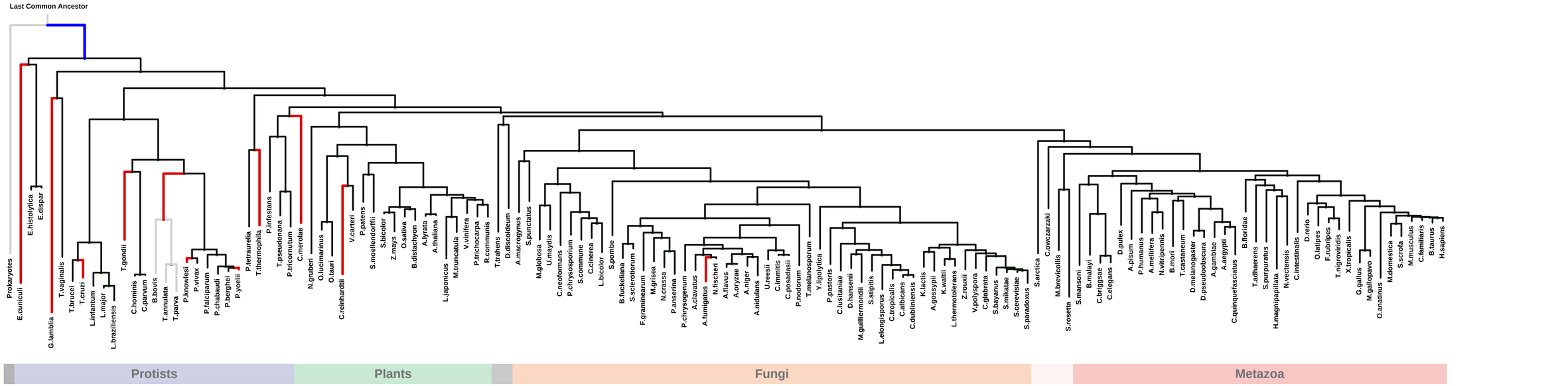




1: myofibril || 2: myosin filament

ECM 7, Gene set "myofibril", Page 1

Num of ECM Genes: 1. Num of Predicted Genes: 49

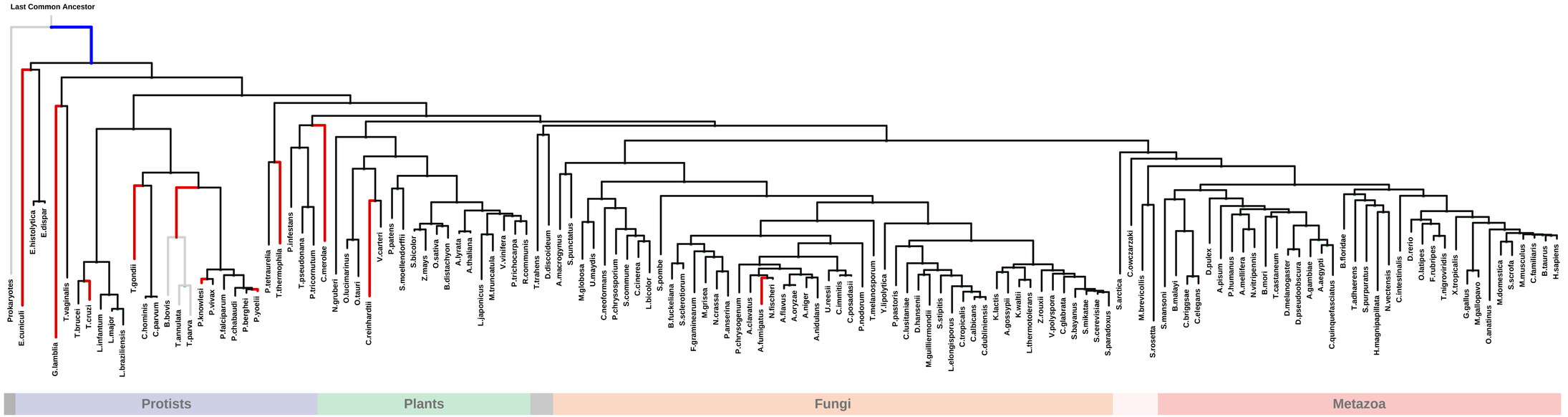


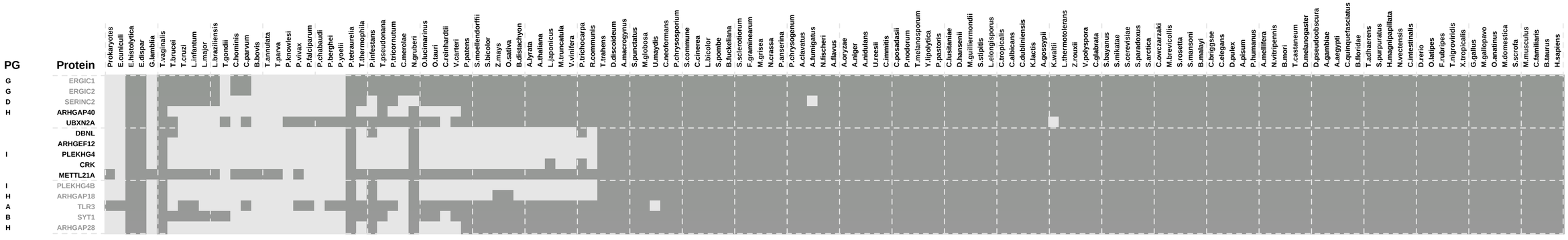
PG	Protein	LLR	Notes
	TWF1		1 / 2 / 3 / 4 / 5
	STX7	13.0	6 / 7 / 8 / 9
	NOL6	12.8	10
	SNX9	11.5	11 / 12 / 13 / 14 / 15 / 16
	RAD18	11.4	17 / 18 / 19
A	TRIL	11.2	20
B	SYT10	9.9	21
C	653888	8.8	
C	ARPC1A	7.8	1
D	SERINC5	6.7	22
	AASDH	6.7	
D	SERINC1	6.4	
D	SERINC3	6.4	
A	NRROS	5.7	
B	RPH3A	4.4	21 / 23 / 24
B	SYT6	4.4	21 / 23 / 25
E	GPX6	4.2	
E	GPX7	4.2	
E	GPX8	4.2	
E	GPX1	4.2	
E	GPX2	4.2	
E	GPX3	4.2	
E	GPX4	4.2	
E	GPX5	4.2	
	CDC45	3.4	
	SKAP2	3.2	
	100133770	3.1	
C	ARPC1B	2.8	1 / 26
	FLNC	2.1	27 / 28 / 29
	PDS5A	2.1	17
	RRP12	1.9	30
F	SBF2	1.8	31
F	SBF1	1.8	
B	PCLO	1.7	32 / 33
G	ERGIC3	1.5	34

1: actin cytoskeleton || 2: cell-cell junction || 3: filopodium || 4: myofibril || 5: ruffle membrane || 6: early endosome membrane || 7: late endosome membrane || 8: lysosomal membrane || 9: SNARE complex || 10: condensed nuclear chromosome ||
11: clathrin-coated vesicle || 12: cytoplasmic membrane-bounded vesicle || 13: cytoplasmic vesicle membrane || 14: extrinsic to internal side of plasma membrane || 15: ruffle || 16: trans-Golgi network || 17: chromatin || 18: replication fork ||
19: XY body || 20: lipopolysaccharide receptor complex || 21: synaptic vesicle membrane || 22: myelin sheath || 23: extrinsic to membrane || 24: secretory granule || 25: perinuclear endoplasmic reticulum || 26: Arp2/3 protein complex ||

ECM 7, Gene set "myofibril", Page 2

Num of ECM Genes: 1. Num of Predicted Genes: 49

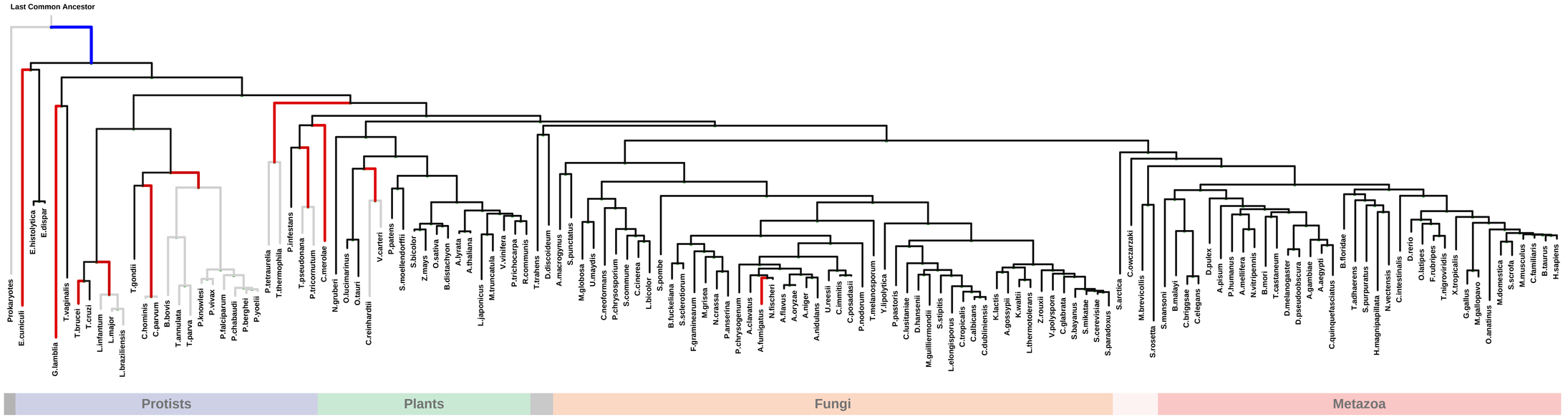




1: endoplasmic reticulum-Golgi intermediate compartment || 2: endoplasmic reticulum-Golgi intermediate compartment membrane || 3: cis-Golgi network || 4: cell cortex || 5: lamellipodium || 6: postsynaptic density || 7: ruffle ||
8: endosome || 9: endolysosome membrane || 10: endosome membrane || 11: chromaffin granule membrane || 12: clathrin-sculpted acetylcholine transport vesicle membrane || 13: clathrin-sculpted gamma-aminobutyric acid transport vesicle membrane ||
14: clathrin-sculpted glutamate transport vesicle membrane || 15: clathrin-sculpted monoamine transport vesicle membrane || 16: dense core granule || 17: endocytic vesicle membrane || 18: neuron projection || 19: presynaptic membrane ||
20: synaptic vesicle || 21: synaptic vesicle membrane

ECM 8, Gene set "myofibril", Page 1

Num of ECM Genes: 1. Num of Predicted Genes: 280

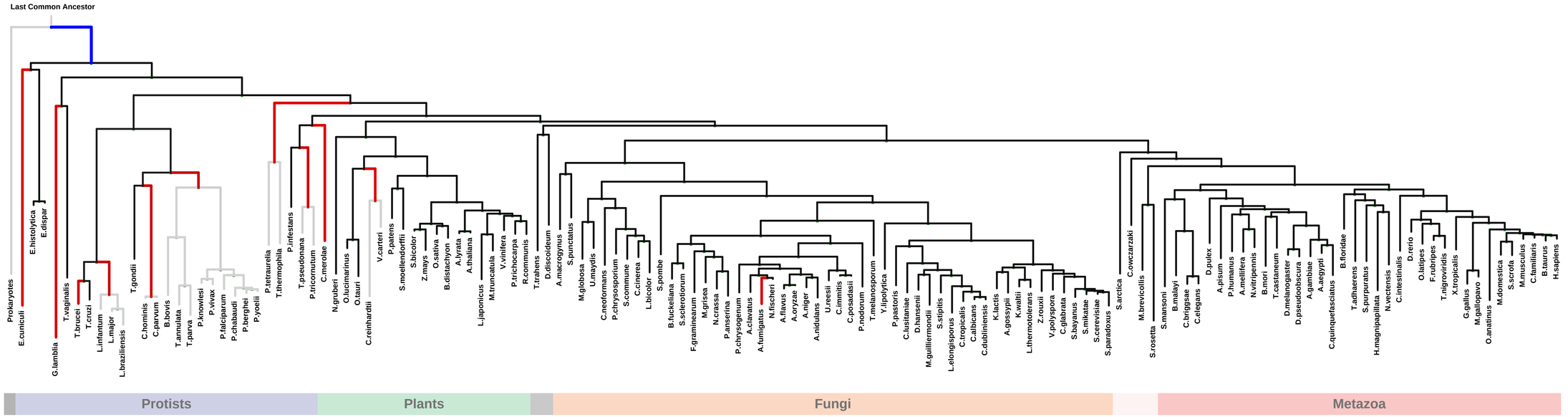


PG	Protein	LLR	Notes
			1 / 2 / 3 / 4 / 5
A	KNDC1	38.6	6 / 7
A	RALGDS	20.0	
A	RALGPS1	20.0	
A	RALGPS2	20.0	
A	RAPGEFL1	20.0	
A	RASGEF1C	20.0	
A	RGL1	20.0	
A	RGL3	20.0	
	PDS5A	17.4	8
A	CNKSR1	15.4	9 / 10
B	TLN1	15.4	10 / 11 / 12 / 13 / 14
A	DLC1	15.4	12 / 15 / 16 / 17
A	RASGRP1	14.6	
A	RASGRP3	14.6	7
A	RASGRP4	14.6	
	SLC27A2	14.4	18 / 19 / 20 / 21
A	NF1	14.1	6 / 22 / 23
A	RGL2	14.1	
A	RAPGEF5	14.1	
A	RGL4	14.1	24
A	FNBP1L	14.1	9 / 24
A	RASGEF1A	14.1	
A	RAPGEF1	13.8	25
A	ARHGAP21	13.4	26
B	EPB41L5	13.4	12 / 14 / 27
A	RASA2	13.4	23
A	SYT5	13.2	28 / 29 / 30 / 31
A	UNC13A	13.2	32
A	PLA2G4B	12.3	33
A	RASGRP2	11.8	14 / 29 / 34
A	RASA1	11.8	13 / 23
B	TLN2	11.7	10 / 11 / 12 / 13 / 34 / 35
A	SOS2	11.6	
A	PLEKHG2	11.2	

1: filopodium || 2: growth cone || 3: lamellipodium || 4: myofibril || 5: stereocilium || 6: dendrite || 7: guanyl-nucleotide exchange factor complex || 8: chromatin || 9: cell cortex || 10: cell-cell junction || 11: actin cytoskeleton || 12: focal adhesion || 13: ruffle || 14: ruffle membrane || 15: actin filament || 16: caveola || 17: stress fiber || 18: endoplasmic reticulum lumen || 19: integral to endoplasmic reticulum membrane || 20: integral to peroxisomal membrane || 21: peroxisomal membrane || 22: axon || 23: intrinsic to internal side of plasma membrane || 24: cytoplasmic membrane-bounded vesicle || 25: endosome || 26: cytoplasmic vesicle membrane || 27: extrinsic to membrane || 28: dense core granule ||

ECM 8, Gene set "myofibril", Page 2

Num of ECM Genes: 1. Num of Predicted Genes: 280

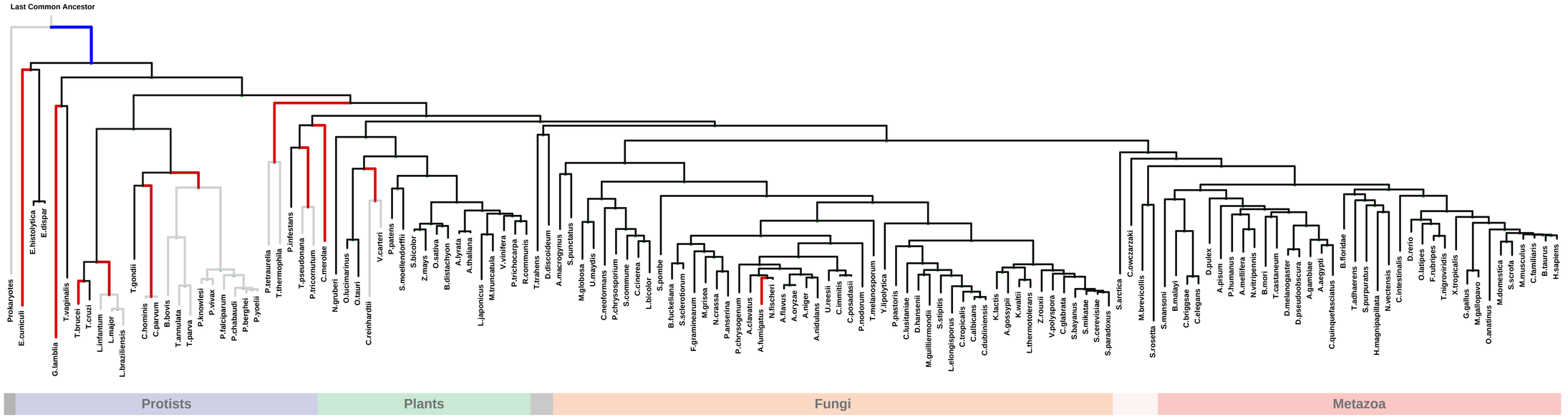


PG	Protein	LLR	Notes
	COG3	**10.9**	**1 / 2 / 3**
A	STARD8	10.6	4
A	ZSCAN12	10.6	
A	NCF1	10.3	5 / 6
C	**OSBPL6**	**10.2**	
C	OSBPL7	10.2	
C	OSBPL9	10.2	
C	OSBPL10	10.2	
C	OSBPL11	10.2	
C	OSBPL1A	10.2	7 / 8
C	OSBPL2	10.2	
C	OSBPL3	10.2	
A	CNKSR2	10.1	9 / 10
D	**CALR3**	**9.6**	**11**
D	CANX	9.6	11 / 12 / 13 / 14 / 15 / 16 /
D	CALR	9.6	11 / 15 / 19 / 20 / 21 / 22 /
A	ECT2	9.1	25 / 26 / 27 / 28 / 29 / 30
A	RASAL3	9.1	31
A	ARHGAP28	9.0	
E	**CTBP2**	**8.9**	**32 / 33**
E	GRHPR	8.9	34
E	PHGDH	8.9	
E	CTBP1	8.9	33
A	SYT1	8.9	9 / 35 / 36 / 37 / 38 / 39 /
D	CLGN	8.8	45
A	RASGEF1B	8.6	7 / 46
A	RASGRF2	8.6	
A	SPTBN1	8.5	47 / 48 / 49 / 50
A	PLEKHG4B	8.4	
A	ARHGAP18	8.4	
A	SRGAP2	8.3	10 / 51 / 52 / 53
A	NCK2	8.3	54
A	DBNL	8.2	51 / 53 / 55 / 56
A	UNC13B	8.2	32
	PLEKHA7	**8.1**	

1: cis-Golgi network || 2: Golgi cisterna membrane || 3: Golgi transport complex || 4: focal adhesion || 5: NADPH oxidase complex || 6: phagolysosome || 7: late endosome || 8: lysosomal membrane || 9: neuron projection || 10: postsynaptic membrane || 11: endoplasmic reticulum lumen || 12: axon || 13: dendrite cytoplasm || 14: dendritic spine || 15: integral to lumenal side of endoplasmic reticulum membrane || 16: melanosome || 17: ribosome || 18: rough endoplasmic reticulum || 19: acrosomal vesicle || 20: external side of plasma membrane || 21: MHC class I peptide loading complex || 22: polysome || 23: proteinaceous extracellular matrix || 24: sarcoplasmic reticulum lumen ||

ECM 8, Gene set "myofibril", Page 3

Num of ECM Genes: 1. Num of Predicted Genes: 280

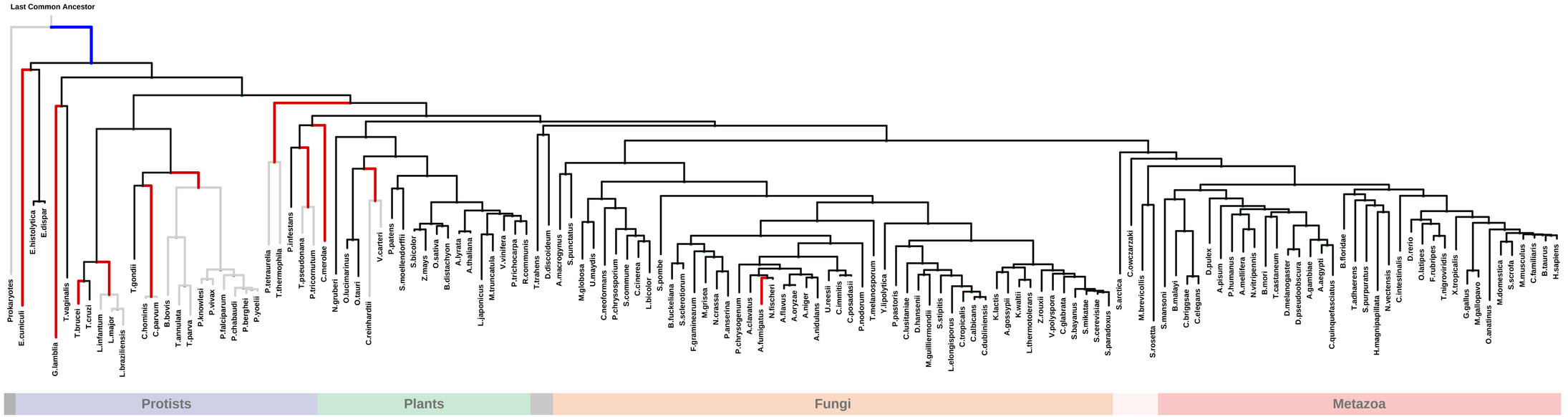


PG	Protein	LLR	Notes
A	ESYT3	8.0	
A	RAPGEF2	7.9	
F	**CLCN1**	**7.9**	**1 / 2**
A	SYT2	7.7	**3 / 4 / 5**
A	CRIP3	7.5	
A	ARHGAP33	7.5	
A	ARHGAP30	7.5	**6**
G	**ARPC5L**	**7.5**	
G	ARPC5	7.5	**7 / 8 / 9**
H	**LMAN1**	**7.5**	**10 / 11 / 12 / 13**
A	SKAP2	7.4	
A	CRIP1	7.1	
A	DOCK5	7.1	
A	SH3GL1	7.1	**14**
A	FEZF1	7.0	
A	FLNA	7.0	**7 / 15 / 16 / 17**
A	ARHGAP6	6.9	**7 / 18**
A	ZNF615	6.9	
A	ARHGEF37	6.9	
A	SKAP1	6.9	
H	LMAN2L	6.8	**19**
A	SYT3	6.7	**5 / 20**
A	ARHGAP15	6.6	
A	SYT7	6.6	**5 / 21**
A	SYT10	6.5	**5**
A	ARHGAP36	6.5	
A	DOCK4	6.4	**22 / 23 / 24**
A	GFI1	6.2	**25 / 26 / 27**
	CLUH	**6.1**	
	ARPC2	**6.0**	**7 / 8 / 9 / 28 / 29**
H	LMAN2	5.9	**10 / 11**
A	SPTBN2	5.7	**30**
F	CLCN2	5.7	**1 / 31 / 32**
A	RASAL1	5.6	**33**
I	**NCOA7**	**5.4**	

1: chloride channel complex || 2: sarcolemma || 3: chromaffin granule membrane || 4: endocytic vesicle membrane || 5: synaptic vesicle membrane || 6: cytoplasmic membrane-bounded vesicle || 7: actin cytoskeleton || 8: Arp2/3 protein complex || 9: cell projection || 10: endoplasmic reticulum-Golgi intermediate compartment || 11: endoplasmic reticulum-Golgi intermediate compartment membrane || 12: ER to Golgi transport vesicle membrane || 13: sarcomere || 14: early endosome membrane || 15: cell cortex || 16: Myb complex || 17: trans-Golgi network || 18: actin filament || 19: ER to Golgi transport vesicle || 20: endosome || 21: lysosome || 22: endomembrane system || 23: stereocilium || 24: stereocilium bundle ||

ECM 8, Gene set "myofibril", Page 4

Num of ECM Genes: 1. Num of Predicted Genes: 280

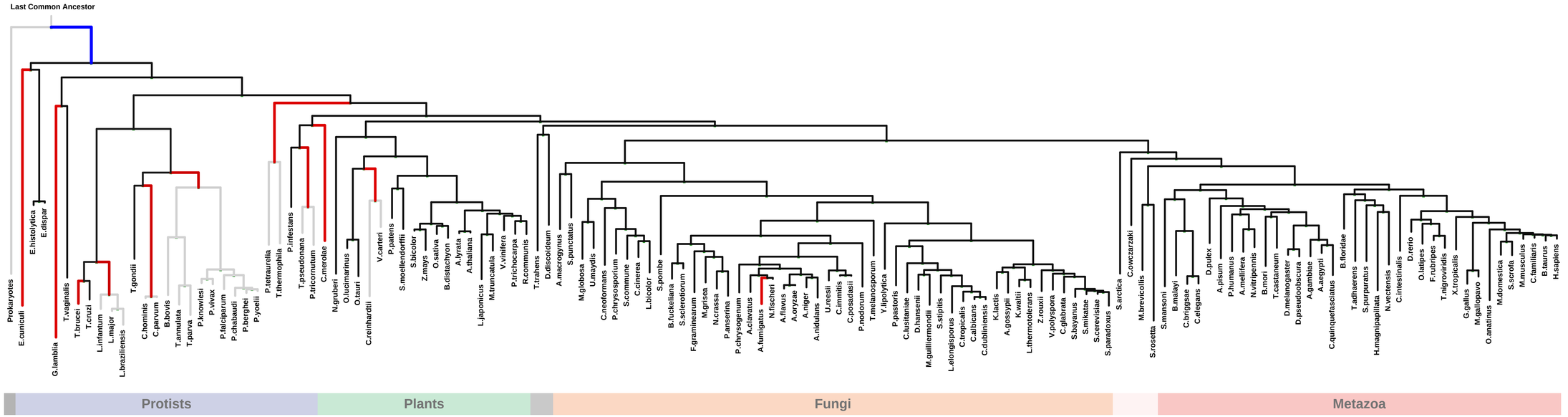


PG	Protein	LLR	Notes
A	RASGRF1	5.3	1 / 2
A	LMO1	5.2	
A	RASA3	5.2	3
A	DOC2B	5.0	4 / 5 / 6
A	ZNF260	4.9	
A	ZNF548	4.9	
A	ZNF600	4.9	
A	ZFP28	4.9	
A	ZNF732	4.9	
A	ZNF791	4.9	
A	ZNF816	4.9	
A	ZNF14	4.9	
A	DOCK1	4.9	
A	ZNF616	4.8	
A	ZNF217	4.8	7
	PRKCSH	**4.7**	**8**
	DSCR3	**4.7**	**9**
A	NCF4	4.5	10 / 11
C	OSBPL5	4.5	
C	OSBPL8	4.5	
A	ZNF787	4.4	
A	NOXA1	4.4	10
A	RPH3A	4.4	12 / 13 / 14
A	SYT6	4.4	12 / 14 / 15
A	IKZF5	4.4	
A	ZNF699	4.2	
A	ZNF136	4.2	
A	SPTBN4	4.2	16 / 17 / 18 / 19 / 20 / 21 /
A	ARHGAP31	4.2	24 / 25
J	**NLGN2**	**4.0**	**26 / 27 / 28 / 29**
	SNW1	**3.9**	**30 / 31 / 32 / 33**
A	JMJD7-PLA2G4B	3.9	
A	SYT8	3.8	6 / 34
A	ZBTB42	3.7	
A	ARHGAP5	3.7	

1: growth cone || 2: neuron projection || 3: intrinsic to internal side of plasma membrane || 4: microtubule cytoskeleton || 5: SNARE complex || 6: synaptic vesicle || 7: histone deacetylase complex || 8: endoplasmic reticulum lumen ||
9: retromer complex || 10: NADPH oxidase complex || 11: phagolysosome || 12: extrinsic to membrane || 13: secretory granule || 14: synaptic vesicle membrane || 15: perinuclear endoplasmic reticulum || 16: adherens junction ||
17: axon hillock || 18: axon initial segment || 19: cell body fiber || 20: node of Ranvier || 21: nuclear matrix || 22: PML body || 23: spectrin || 24: focal adhesion || 25: lamellipodium || 26: inhibitory synapse || 27: postsynaptic membrane ||

ECM 8, Gene set "myofibril", Page 5

Num of ECM Genes: 1. Num of Predicted Genes: 280

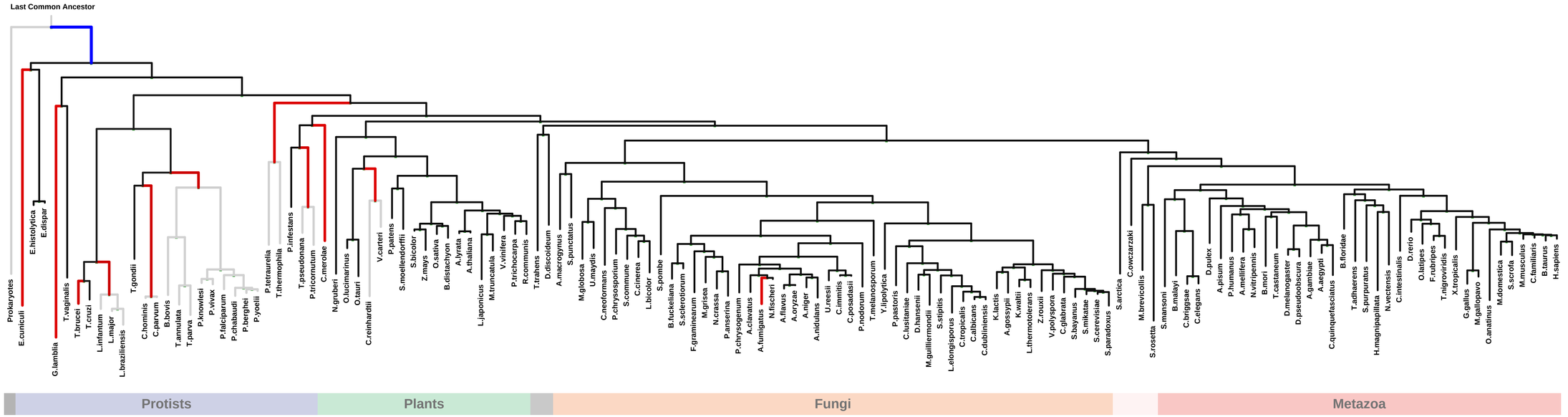


PG	Protein	LLR	Notes
	LRRC27	3.7	
A	RAPGEF6	3.7	
	ATG2A	3.6	
	RICTOR	3.5	1
	NOL6	3.2	2
	ARPC3	3.2	3 / 4 / 5
J	NLGN4X	3.1	6 / 7 / 8 / 9 / 10
A	ABLIM1	3.0	3
A	SPTA1	2.9	3 / 11 / 12 / 13 / 14
A	LHX5	2.9	
A	PLA2G4A	2.9	15
	CYFIP2	2.8	10 / 16
K	ADH4	2.7	17
K	ADH7	2.7	
	PGM1	2.7	3
K	ADH1A	2.7	
K	ADH1B	2.7	
K	ADH1C	2.7	
A	ZNF20	2.6	
	SLC22A11	2.5	18
L	SLC12A5	2.5	19 / 20
L	SLC12A4	2.5	
A	LDB3	2.5	21 / 22
A	FHL3	2.5	22 / 23
A	PDLIM5	2.5	3 / 8 / 9 / 22
A	TGFB1I1	2.5	24 / 25 / 26
A	PXN	2.5	5 / 25 / 27 / 28
A	SYT9	2.5	29 / 30 / 31
A	ARHGEF11	2.5	
A	MCF2L	2.5	5
A	ZNF347	2.4	
A	ZNF41	2.4	
A	ZNF415	2.4	17
A	ZNF419	2.4	
A	ZNF160	2.4	

1: TORC2 complex || 2: condensed nuclear chromosome || 3: actin cytoskeleton || 4: Arp2/3 protein complex || 5: lamellipodium || 6: dendrite || 7: excitatory synapse || 8: postsynaptic density || 9: postsynaptic membrane ||
10: synapse || 11: cuticular plate || 12: intrinsic to internal side of plasma membrane || 13: spectrin || 14: spectrin-associated cytoskeleton || 15: zymogen granule || 16: neuron projection || 17: microtubule cytoskeleton || 18: external side of plasma membrane ||
19: dendrite membrane || 20: perikaryon || 21: pseudopodium || 22: Z disc || 23: stress fiber || 24: extracellular matrix || 25: focal adhesion || 26: nuclear matrix || 27: cell cortex || 28: microtubule associated complex ||

ECM 8, Gene set "myofibril", Page 6

Num of ECM Genes: 1. Num of Predicted Genes: 280

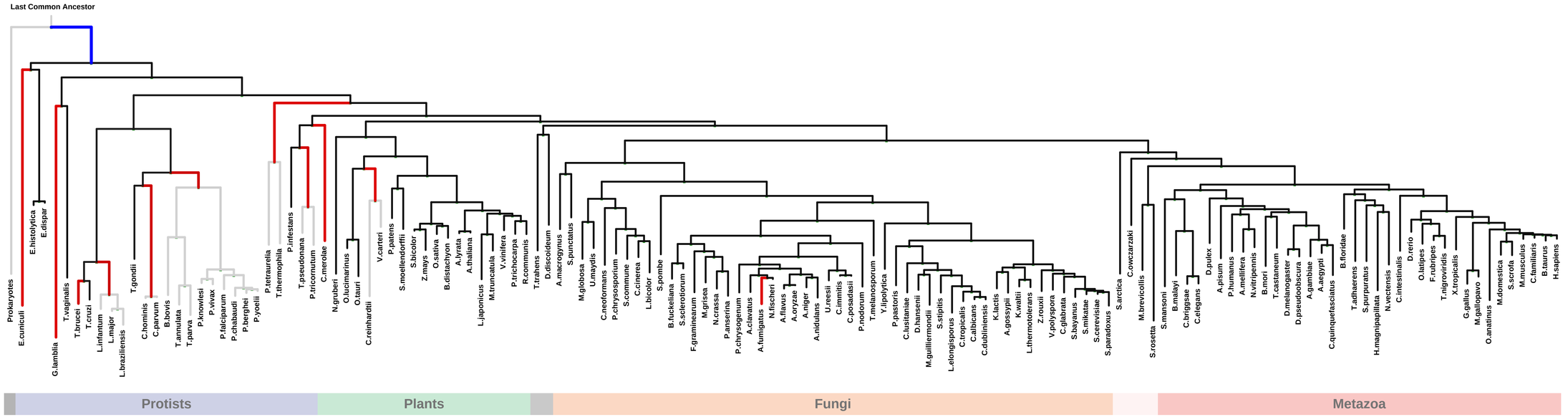


PG	Protein	LLR	Notes
A	ZNF556	2.4	
A	ZNF558	2.4	
A	ZNF562	2.4	
A	ZNF584	2.4	
A	ZNF175	2.4	1
A	ZNF189	2.4	
A	ZKSCAN8	2.4	
A	ZNF623	2.4	
A	ZNF624	2.4	
A	ZNF665	2.4	
A	ZNF696	2.4	
A	ZFP90	2.4	
A	ZNF71	2.4	
A	ZNF121	2.4	
A	ZNF225	2.4	
A	ZNF25	2.4	
A	ZNF141	2.4	
A	ZNF829	2.4	
A	ZNF845	2.4	
A	ZNF846	2.4	
A	ZNF880	2.4	
A	ZNF287	2.4	
	MON1B	**2.4**	
A	ARHGEF26	2.4	2
M	**SERINC3**	**2.4**	
M	SERINC1	2.4	
A	ZNF16	2.2	
N	**ATG4D**	**2.2**	
	LRRN3	**2.2**	3
	SCARF2	**2.1**	
A	ARHGAP35	2.1	4
	TLE6	**2.1**	5
	CCNT1	**2.0**	
A	GMIP	2.0	
A	ARHGAP29	2.0	

1: intermediate filament cytoskeleton || 2: ruffle || 3: clathrin adaptor complex || 4: actin cytoskeleton || 5: cell cortex

ECM 8, Gene set "myofibril", Page 7

Num of ECM Genes: 1. Num of Predicted Genes: 280

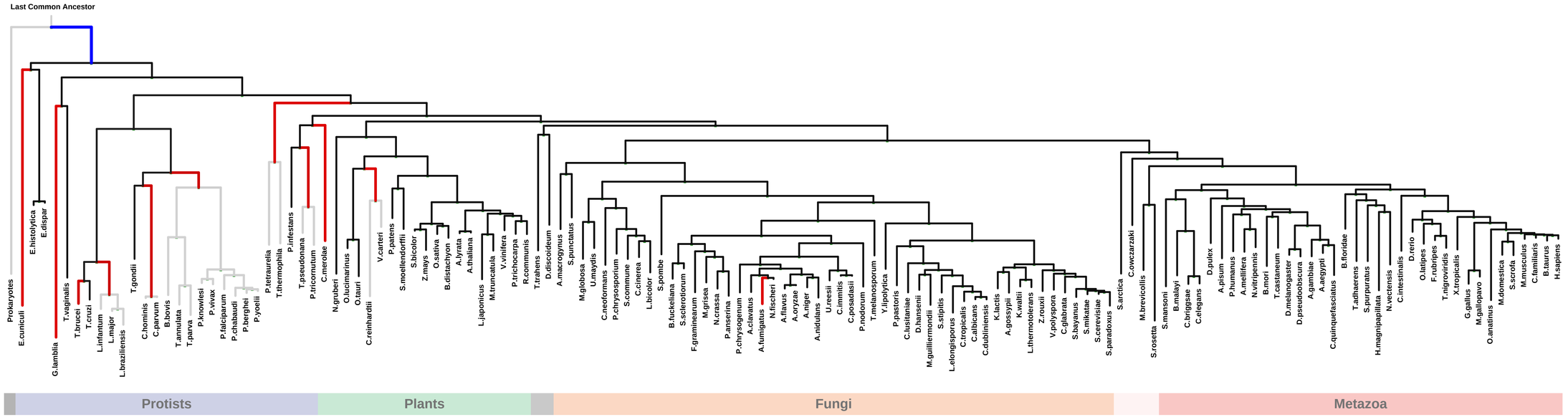


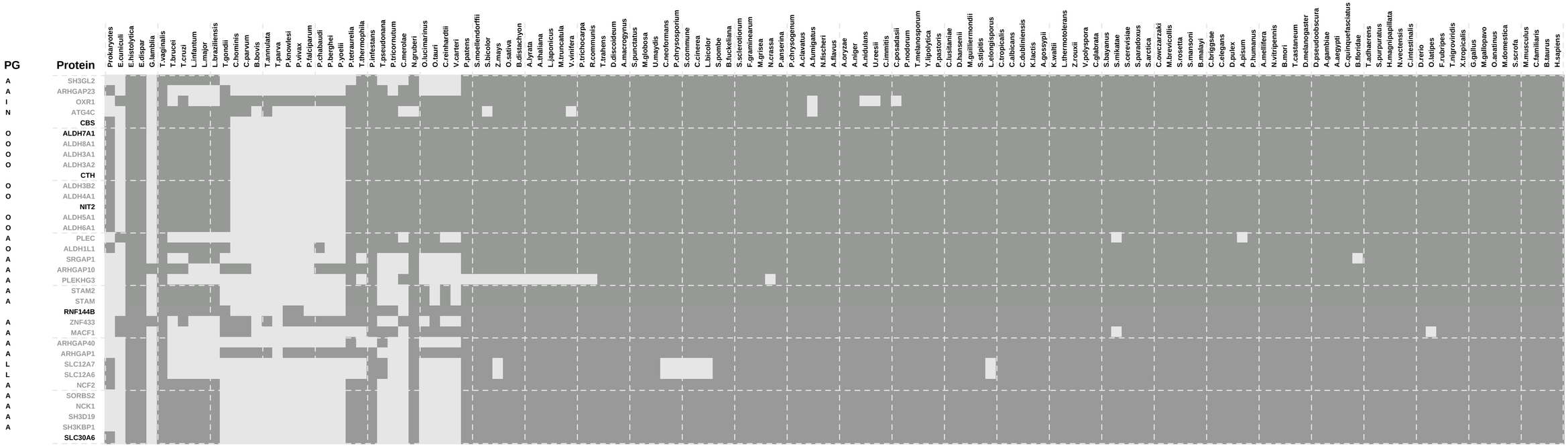
PG	Protein	LLR	Notes
A	ZNF343	2.0	
	PDCD6IP	**2.0**	**1 / 2**
A	PCLO	1.9	3 / 4
A	LIMD1	1.9	5 / 6 / 7 / 8
A	STAC	1.8	
A	ZNF101	1.7	
	SDR42E1	**1.6**	
A	ARHGAP32	1.6	9 / 10 / 11 / 12 / 13
A	ARHGAP17	1.6	14
A	CHN2	1.6	
A	TOM1L1	1.6	11 / 15 / 16 / 17
A	SOS1	1.5	
	CAPZB	**1.4**	**9 / 18 / 19 / 20 / 21**
A	SPTB	1.3	9 / 22 / 23 / 24
A	GRAPL	1.3	
A	ZNF627	1.3	
A	ZNF594	1.3	
A	CRIP2	1.3	10 / 25
A	ZNF485	1.3	
A	ZNF530	1.3	
A	ZNF534	1.3	
A	ZNF391	1.3	
A	ZNF322	1.3	
A	ZNF860	1.3	
A	ZNF155	1.3	
A	ZNF12	1.3	
A	FHL2	1.2	7 / 9 / 26 / 27
A	ISL2	1.1	
A	PLA2G4E	1.1	28
	ADAD1	**1.0**	
A	TIAM1	1.0	29
A	ARHGEF16	1.0	
A	PLEKHG1	1.0	
A	NET1	1.0	
A	SH3GL3	1.0	30

1: melanosome || 2: microtubule organizing center || 3: synapse || 4: synaptic vesicle || 5: adherens junction || 6: cytoplasmic mRNA processing body || 7: focal adhesion || 8: RNA-induced silencing complex || 9: actin cytoskeleton ||
10: cell cortex || 11: endosome membrane || 12: postsynaptic density || 13: postsynaptic membrane || 14: tight junction || 15: endosome || 16: Golgi stack || 17: lysosome || 18: cortical cytoskeleton || 19: F-actin capping protein complex ||
20: lamellipodium || 21: WASH complex || 22: intrinsic to internal side of plasma membrane || 23: spectrin || 24: spectrin-associated cytoskeleton || 25: extracellular matrix || 26: M band || 27: Z disc || 28: lysosomal membrane ||

ECM 8, Gene set "myofibril", Page 8

Num of ECM Genes: 1. Num of Predicted Genes: 280

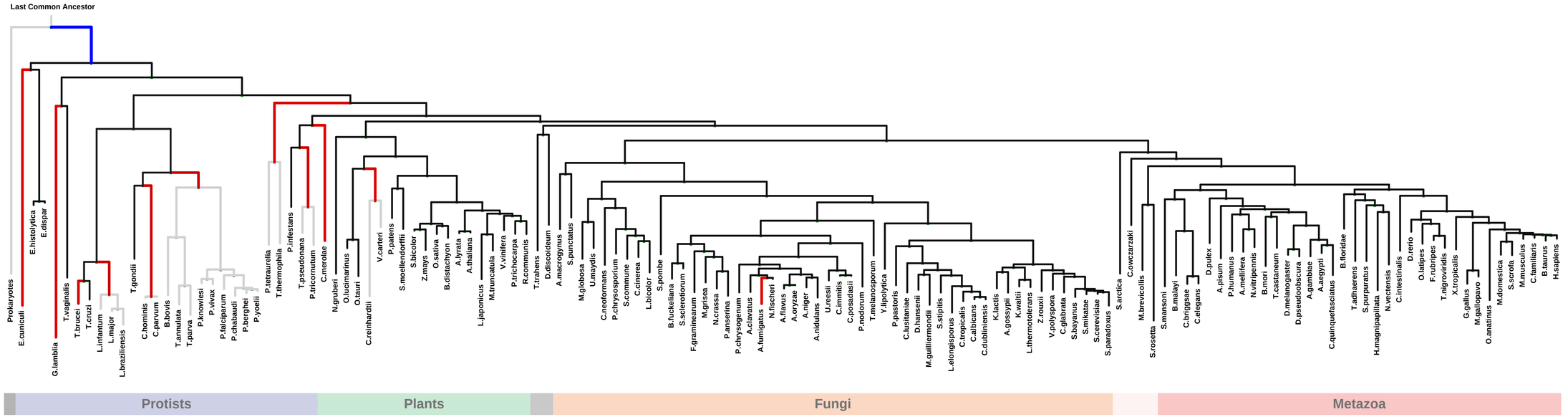




1: clathrin-coated endocytic vesicle membrane || 2: peroxisome || 3: costamere || 4: focal adhesion || 5: hemidesmosome || 6: intermediate filament cytoskeleton || 7: sarcolemma || 8: sarcoplasm || 9: early endosome membrane ||
10: mitochondrial membrane || 11: ubiquitin ligase complex || 12: ruffle membrane || 13: ruffle || 14: basolateral plasma membrane || 15: acrosomal vesicle || 16: NADPH oxidase complex || 17: phagolysosome || 18: actin cytoskeleton ||
19: Z disc || 20: vesicle membrane || 21: cytoplasmic vesicle membrane || 22: neuron projection || 23: synapse

ECM 8, Gene set "myofibril", Page 9

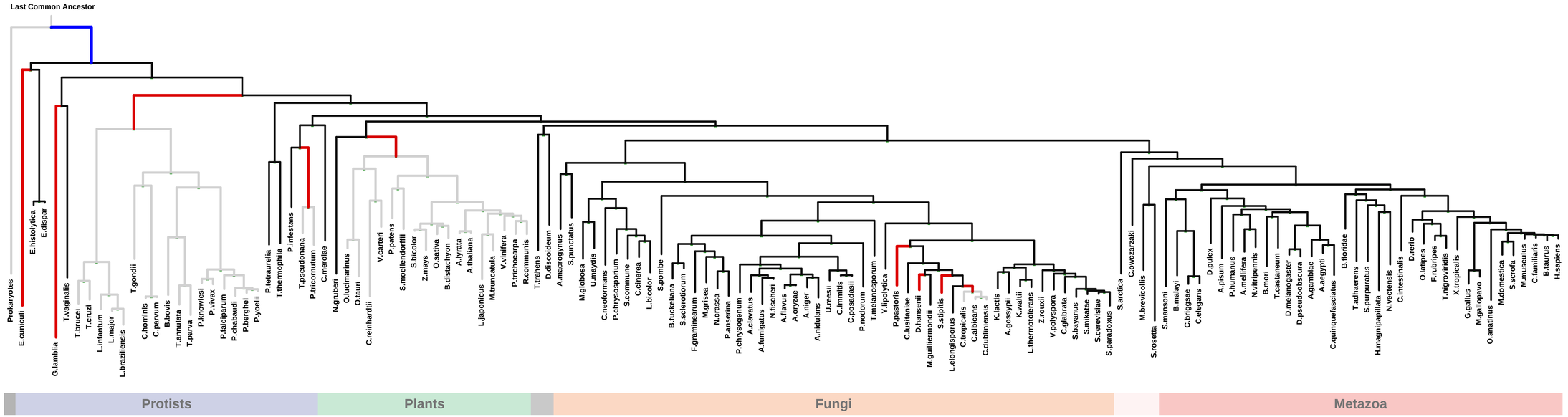
Num of ECM Genes: 1. Num of Predicted Genes: 280



PG	Protein	LLR	Notes
A	RASA4B	0.1	

ECM 9, Gene set "myofibril", Page 1

Num of ECM Genes: 1. Num of Predicted Genes: 65

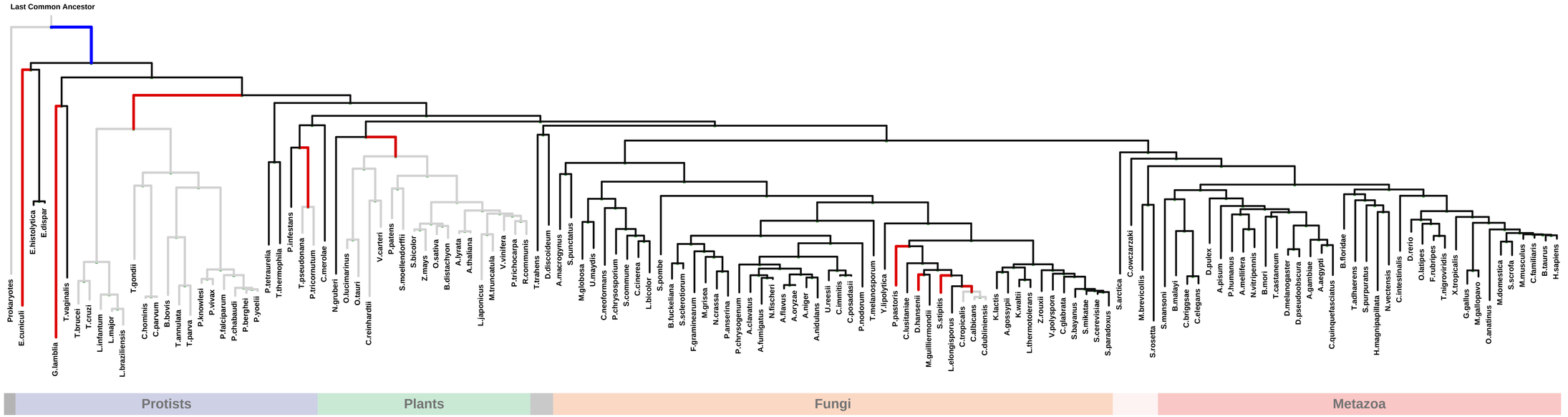


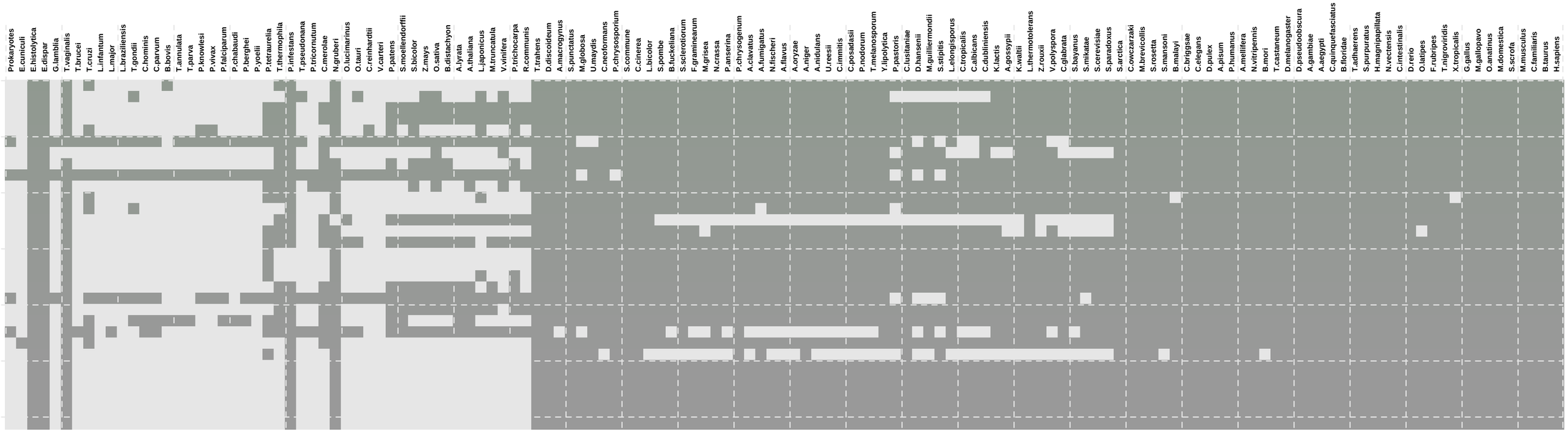
PG	Protein	LLR	Notes
A	**ARHGEF25**		**1 / 2**
A	AKAP13	23.9	
A	ARHGEF19	17.6	
	TBC1D24	**16.2**	
A	ARHGEF5	15.3	
B	**FBLIM1**	**15.1**	**3 / 4 / 5**
A	NET1	13.9	
A	PLEKHG1	13.9	
A	ARHGEF16	13.9	
A	TIAM1	13.9	**6**
A	PLEKHG6	12.5	**7 / 8**
A	MCF2L	11.0	**9**
A	ARHGEF11	11.0	
B	WTIP	10.9	**10 / 11**
B	LIMD1	10.5	**4 / 10 / 11 / 12**
A	ARHGEF10	10.1	
B	AJUBA	9.3	**4 / 6 / 9 / 11 / 13**
A	PLEKHG3	9.2	
A	ARHGEF9	8.4	
A	TIAM2	8.4	**9 / 14 / 15**
A	ARHGEF3	8.4	
	DGKI	**7.9**	**16**
A	ARHGEF37	7.6	
B	LIMS2	7.6	**4**
B	CSRP3	7.0	**17**
A	ARHGEF1	6.1	
B	TES	5.8	**4**
A	RASGRF2	5.1	
A	PLEKHG4B	4.8	
C	**ARHGAP18**	**4.8**	
	EPB41L5	**4.5**	**4 / 18 / 19**
A	DBNL	4.5	**3 / 9 / 20 / 21**
A	ARHGEF28	4.2	**22**
A	ARHGEF17	4.1	
A	ARHGEF4	4.1	**19**

1: myofibril || 2: sarcomere || 3: cell cortex || 4: focal adhesion || 5: stress fiber || 6: cell-cell junction || 7: cleavage furrow || 8: spindle pole || 9: lamellipodium || 10: adherens junction || 11: cytoplasmic mRNA processing body || 12: RNA-induced silencing complex || 13: microtubule organizing center || 14: filopodium || 15: growth cone || 16: guanyl-nucleotide exchange factor complex || 17: Z disc || 18: extrinsic to membrane || 19: ruffle membrane || 20: postsynaptic density || 21: ruffle || 22: microtubule cytoskeleton

ECM 9, Gene set "myofibril", Page 2

Num of ECM Genes: 1. Num of Predicted Genes: 65



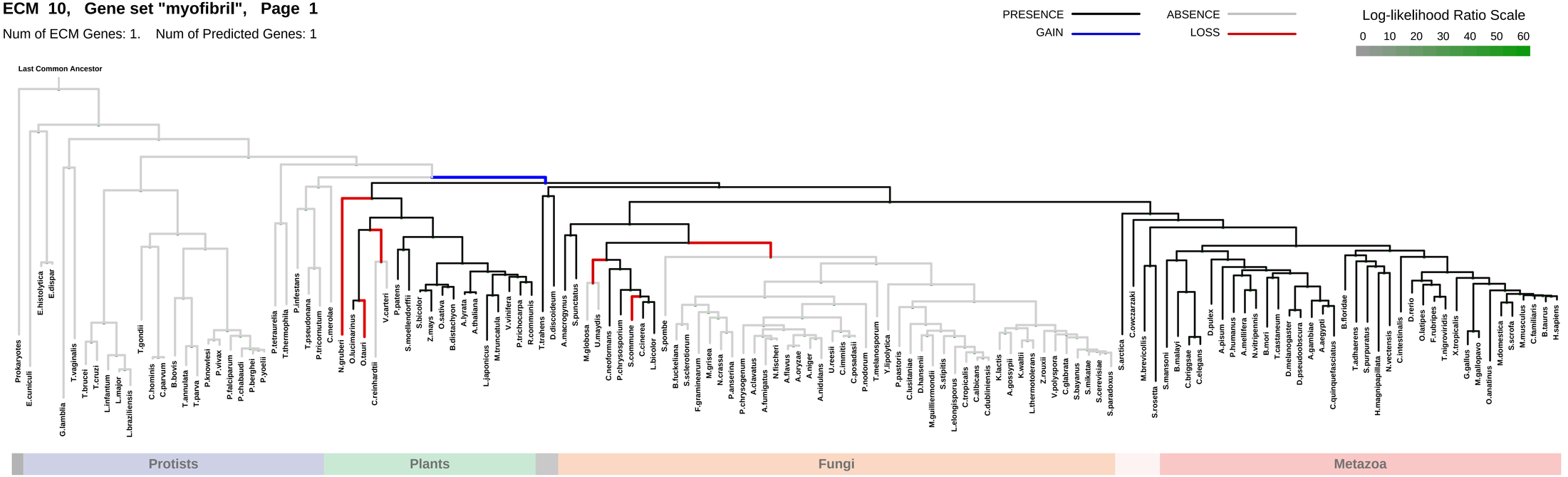


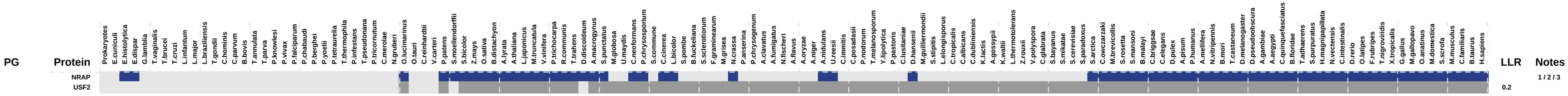
PG	Protein	LLR	Notes
A	RAPGEF1	3.8	1
	CNKSR2	3.5	2 / 3
C	ARHGAP17	3.2	4
C	ARHGAP32	3.2	3 / 5 / 6 / 7 / 8
A	RASGRP2	2.8	2 / 9 / 10
	ANKRD20A19P	2.8	
B	PDLIM3	2.6	5 / 11
B	LPP	2.6	12
	MCM3	2.5	13 / 14
A	PREX2	2.3	
A	RAPGEF2	2.3	
A	KNDC1	2.1	15 / 16
B	CRIP2	1.9	6 / 17
A	ARHGEF10L	1.6	
A	ECT2	1.5	4 / 18 / 19 / 20 / 21 / 22
A	PLEKHG4	1.3	
A	ARHGEF12	1.3	
	CRK	1.3	1
B	FHL5	1.0	
	APEH	0.8	23
B	FHL2	0.6	5 / 11 / 12 / 24
A	RASGRF1	0.5	2 / 25
	ANAPC7	0.4	26
A	RASGEF1B	0.3	27 / 28
A	ARHGEF39	0.0	
	NF1	0.0	15 / 29 / 30
	FNBP1L	0.0	6 / 31
A	RAPGEF5	0.0	
A	RASGEF1A	0.0	
A	RGL2	0.0	
A	RGL4	0.0	31

1: endosome || 2: neuron projection || 3: postsynaptic membrane || 4: tight junction || 5: actin cytoskeleton || 6: cell cortex || 7: endosome membrane || 8: postsynaptic density || 9: ruffle membrane || 10: synapse ||
11: Z disc || 12: focal adhesion || 13: alpha DNA polymerase:primase complex || 14: MCM complex || 15: dendrite || 16: guanyl-nucleotide exchange factor complex || 17: extracellular matrix || 18: cell-cell junction || 19: centralspindlin complex ||
20: cleavage furrow || 21: midbody || 22: mitotic spindle || 23: nuclear membrane || 24: M band || 25: growth cone || 26: anaphase-promoting complex || 27: early endosome || 28: late endosome || 29: axon || 30: intrinsic to internal side of plasma membrane ||
31: cytoplasmic membrane-bounded vesicle

ECM 10, Gene set "myofibril", Page 1

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

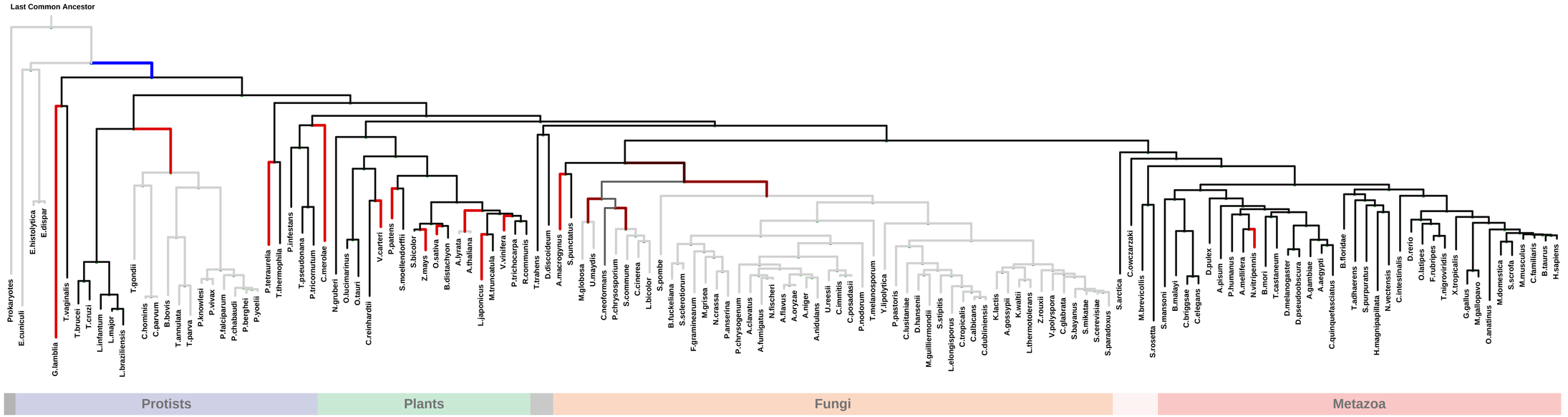


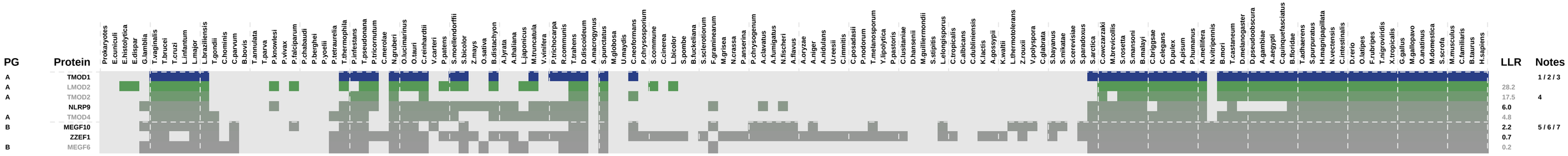


1: fascia adherens || 2: muscle tendon junction || 3: myofibril

ECM 11, Gene set "myofibril", Page 1

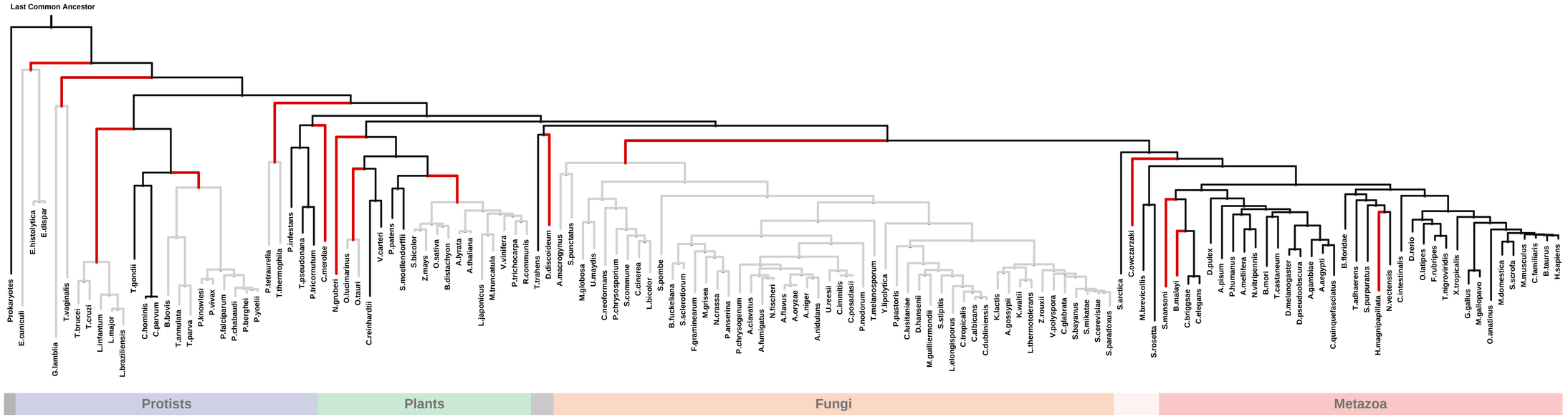
Num of ECM Genes: 1. Num of Predicted Genes: 7





ECM 12, Gene set "myofibril", Page 1

Num of ECM Genes: 1. Num of Predicted Genes: 83

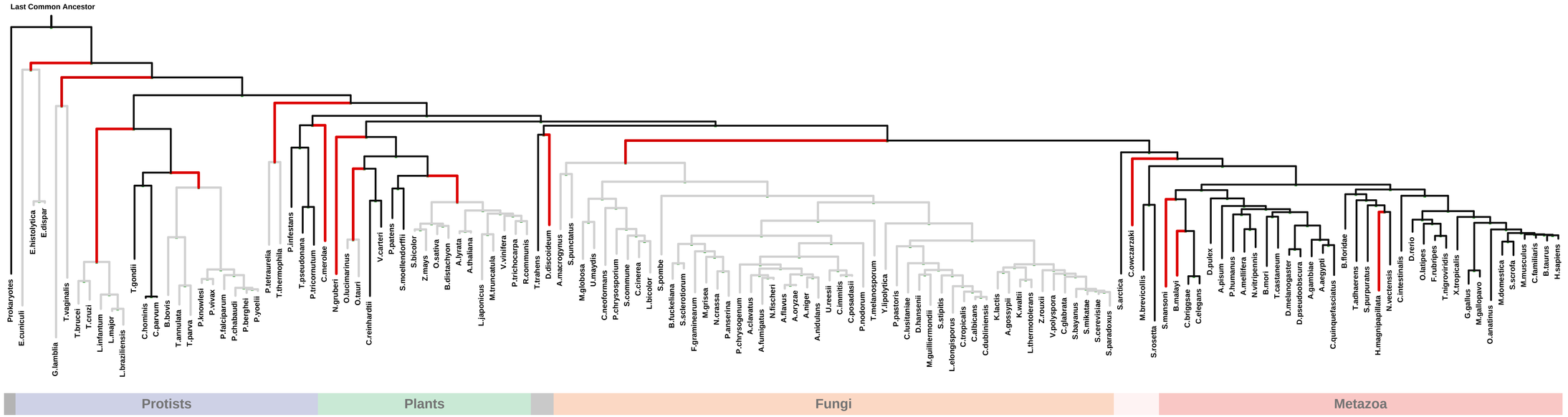


PG	Protein	LLR	Notes
A	**KCNJ8**		**1 / 2 / 3 / 4**
A	KCNJ11	54.7	**1 / 4 / 5**
	KCNJ12	**52.0**	
A	KCNJ12	52.0	
A	KCNJ18	52.0	
A	KCNJ4	52.0	**4 / 6 / 7 / 8**
A	100290070	52.0	
A	KCNJ16	48.4	**4**
A	KCNJ6	48.4	**4 / 8 / 9 / 10**
A	KCNJ15	48.4	
A	KCNJ1	47.2	**4**
A	KCNJ5	45.7	**4 / 5 / 11**
A	KCNJ3	44.6	**4 / 5 / 11**
A	KCNJ2	41.7	**8**
A	KCNJ10	41.4	**6 / 12 / 13**
A	KCNJ9	33.9	
A	KCNJ14	33.9	**4**
B	**MYOM3**	**19.8**	**14**
B	EGFLAM	15.8	**15 / 16 / 17**
B	CNTN1	14.0	**18**
	HHIPL1	**14.0**	
B	CDON	13.8	**19**
B	IGSF22	13.8	
C	**ARSG**	**13.3**	**20 / 21**
C	ARSH	13.3	**20**
C	ARSF	13.3	**20**
C	ARSI	13.3	**20**
C	STS	13.2	**20 / 21 / 22 / 23**
C	ARSD	13.2	**20 / 21**
C	ARSE	11.8	**20 / 24**
D	**GALNT2**	**11.1**	**24 / 25 / 26**
C	GALNS	10.8	**27**
C	ARSJ	10.8	**20**
B	FNDC3A	10.5	**28 / 29**
B	MYBPC3	10.5	**30 / 31 / 32**

1: ATP-sensitive potassium channel complex || 2: myofibril || 3: sarcolemma || 4: voltage-gated potassium channel complex || 5: T-tubule || 6: basolateral plasma membrane || 7: cytoplasmic vesicle membrane || 8: dendrite ||
9: axon || 10: neuronal cell body membrane || 11: external side of plasma membrane || 12: dystrophin-associated glycoprotein complex || 13: microvillus || 14: M band || 15: basement membrane || 16: interstitial matrix || 17: synapse ||
18: anchored to membrane || 19: extracellular matrix || 20: endoplasmic reticulum lumen || 21: lysosome || 22: endosome || 23: nuclear envelope || 24: Golgi stack || 25: Golgi cisterna membrane || 26: integral to Golgi membrane ||

ECM 12, Gene set "myofibril", Page 2

Num of ECM Genes: 1. Num of Predicted Genes: 83

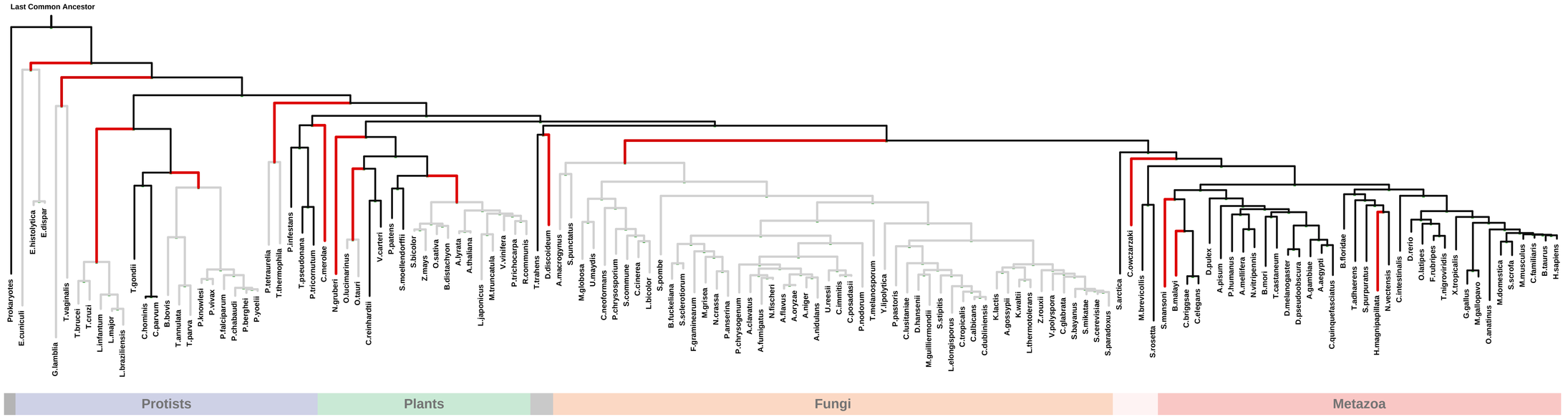


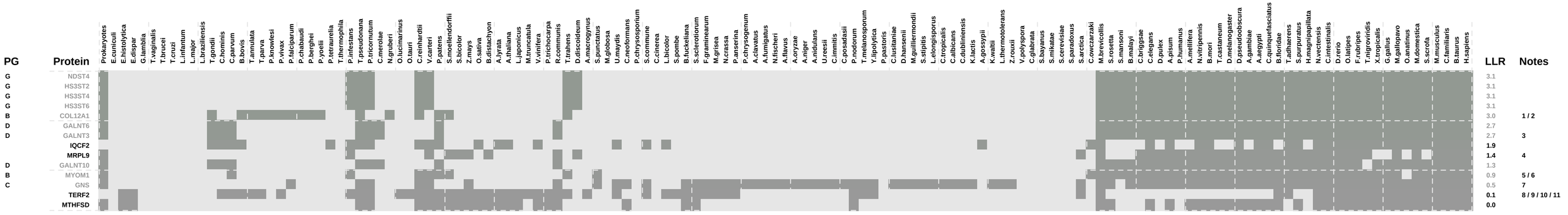
PG	Protein	LLR	Notes
B	PRTG	9.7	
	FST	**8.0**	
C	ARSA	7.9	1 / 2 / 3
E	**SLC34A3**	**7.9**	4 / 5
E	SLC34A1	7.9	4 / 6
E	SLC34A2	7.9	4
F	**EGLN3**	**7.7**	
	THUMPD3	**7.7**	
F	EGLN1	7.5	
D	GALNT18	7.3	
D	GALNT12	7.3	
D	WBSCR17	7.3	
D	GALNT7	7.3	
D	GALNT9	7.3	
D	GALNT11	7.3	
D	GALNT15	7.2	7
	SLC22A18	**6.6**	8 / 9
C	SGSH	6.3	2
	ALDH18A1	**6.2**	
B	L1CAM	6.1	10 / 11 / 12
B	NEO1	6.1	
B	DCC	6.1	13 / 14 / 15
	SDK2	**6.1**	
B	MYOM2	6.0	16
	CHST15	**5.9**	
C	IDS	5.8	2
B	SDK1	5.0	
	PRSS37	**4.8**	
F	EGLN2	4.2	
	ABHD14B	**4.0**	
	OLAH	**3.8**	
C	ARSB	3.5	1 / 2 / 3 / 17
B	BOC	3.3	13 / 18
G	**NDST2**	**3.1**	
G	NDST3	3.1	

1: endoplasmic reticulum lumen || 2: lysosomal lumen || 3: lysosome || 4: brush border membrane || 5: cytoplasmic vesicle || 6: basolateral plasma membrane || 7: transport vesicle || 8: cytoplasmic part || 9: nuclear envelope ||
10: external side of plasma membrane || 11: presynaptic membrane || 12: terminal button || 13: axon || 14: growth cone membrane || 15: membrane raft || 16: myosin filament || 17: rough endoplasmic reticulum || 18: growth cone

ECM 12, Gene set "myofibril", Page 3

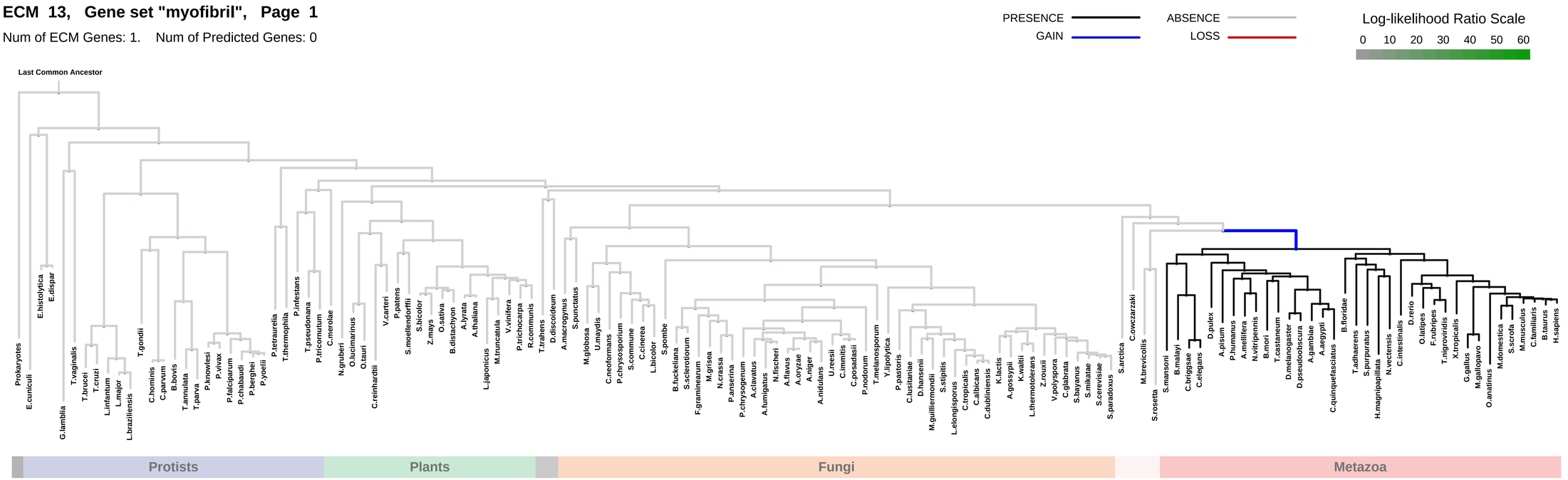
Num of ECM Genes: 1. Num of Predicted Genes: 83





ECM 13, Gene set "myofibril", Page 1

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

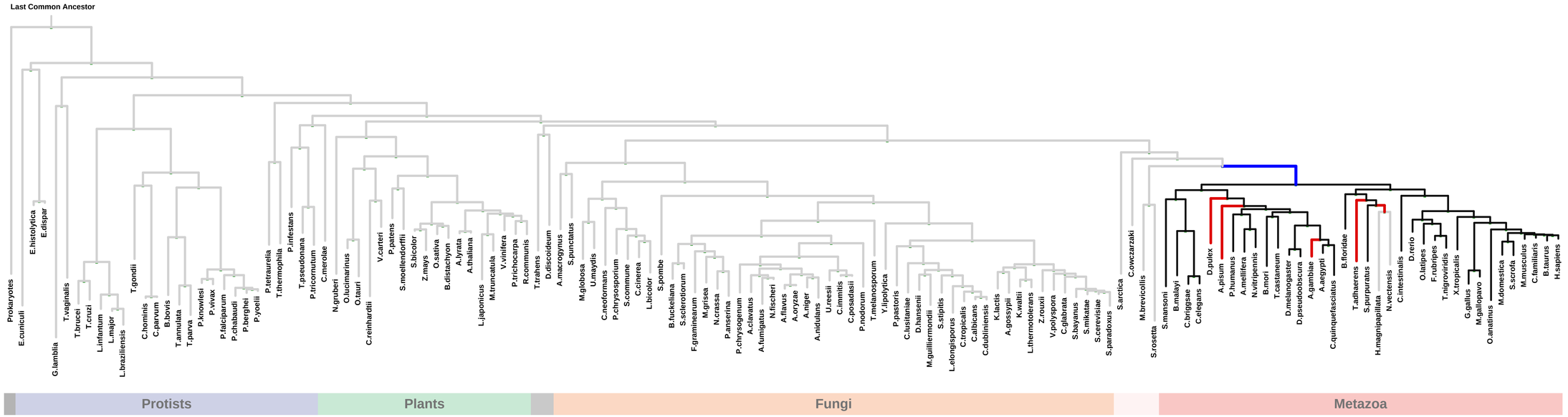


PG	Protein	LLR	Notes
	MYBPC1		1 / 2

1: myofibril || 2: myosin filament

ECM 14, Gene set "myofibril", Page 1

Num of ECM Genes: 1. Num of Predicted Genes: 63

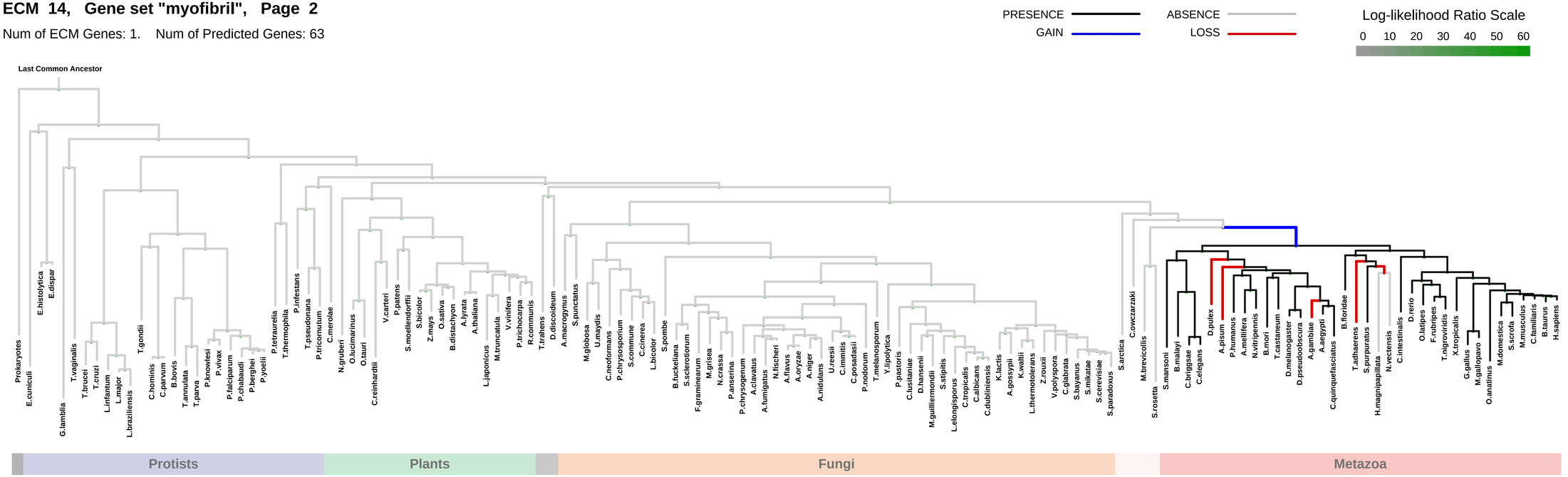


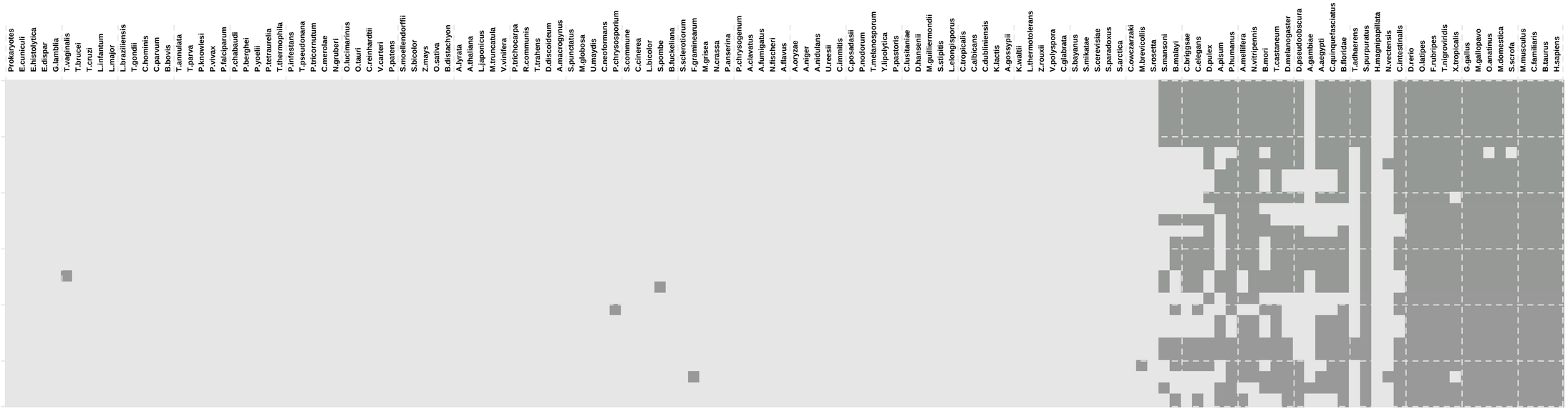
PG	Protein	LLR	Notes
A	MYOD1		1 / 2
A	MYF6	24.7	
A	MYOG	14.5	
	CD80	11.6	3
	DAPL1	11.3	
B	NFATC2	10.8	4 / 5
C	LOC100508969	7.9	
A	MYF5	6.7	
D	FAM193A	6.3	
E	GFRAL	6.1	
	COX7A1	5.6	6
	HABP4	5.2	7
	GADD45GIP1	4.6	
	RABEP2	4.5	8
	IGSF5	4.4	9
	HDAC9	4.0	10 / 11
	VSTM2L	3.8	
	BTNL8	3.7	
C	LGALS12	3.6	
C	LGALSL	3.6	
C	LGALS1	3.6	12 / 13
	BAG5	3.0	14
	MFF	2.8	15 / 16 / 17
	TNNT1	2.5	18
	IGSF3	2.4	
	ND6	2.2	19
	LAMP3	2.2	20 / 21
	KRT222	2.1	22
	NDNF	2.1	12
	GAREML	1.8	
	AKAP6	1.7	23 / 24 / 25 / 26
	ZNF185	1.7	27
F	CRABP1	1.7	
F	FABP12	1.7	
F	FABP3	1.7	28

1: myofibril || 2: nuclear chromatin || 3: external side of plasma membrane || 4: actin cytoskeleton || 5: ribonucleoprotein complex || 6: mitochondrial respiratory chain || 7: sarcomere || 8: early endosome || 9: tight junction ||
10: histone deacetylase complex || 11: histone methyltransferase complex || 12: extracellular matrix || 13: proteinaceous extracellular matrix || 14: inclusion body || 15: integral to mitochondrial membrane || 16: mitochondrial outer membrane ||
17: peroxisome || 18: troponin complex || 19: mitochondrial respiratory chain complex I || 20: alveolar lamellar body membrane || 21: lysosomal membrane || 22: intermediate filament || 23: calcium channel complex || 24: nuclear envelope ||

ECM 14, Gene set "myofibril", Page 2

Num of ECM Genes: 1. Num of Predicted Genes: 63



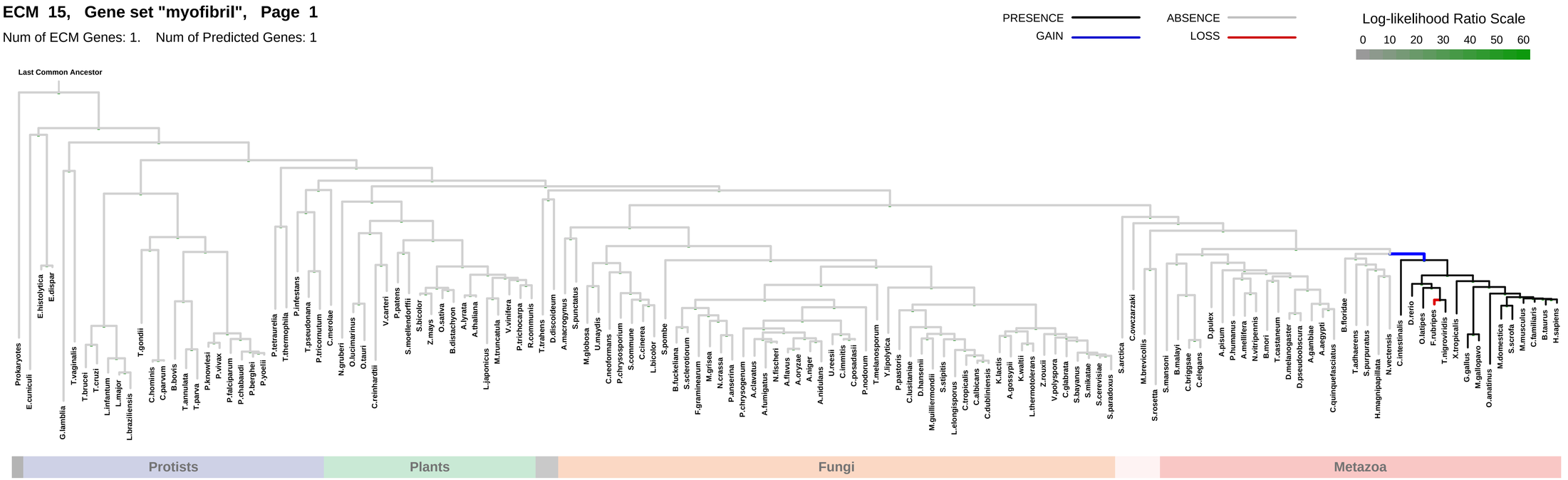


PG	Protein	LLR	Notes
F	FABP4	1.7	1
F	PMP2	1.7	
F	FABP5	1.7	
F	FABP7	1.7	2
F	FABP9	1.7	3
F	CRABP2	1.7	
	MYEOV2	**1.6**	
B	NFATC4	1.5	4
G	**COBL**	**1.5**	5 / 6 / 7 / 8 / 9 / 10 / 11
G	COBLL1	1.5	
	DCSTAMP	**1.5**	12 / 13 / 14
D	FAM193B	1.2	
C	LGALS3	1.2	15 / 16 / 17
	SERTAD2	**1.0**	
C	LGALS13	1.0	
C	LGALS14	1.0	
C	CLC	1.0	
H	**SOGA2**	**0.7**	
H	SOGA1	0.7	
	FAM195B	**0.6**	
	ZHX2	**0.6**	
E	GFRA1	0.5	18 / 19
E	GFRA3	0.5	18 / 19 / 20
F	FABP2	0.4	21 / 22
F	RBP2	0.4	
	ABI3BP	**0.3**	15 / 23
B	NFATC3	0.2	
	SMDT1	**0.1**	
	VWC2L	**0.1**	

1: lipid particle || 2: cell projection || 3: acrosomal vesicle || 4: intermediate filament cytoskeleton || 5: actin filament || 6: axon || 7: axonal growth cone || 8: cell cortex || 9: dendrite || 10: dendritic growth cone ||
11: ruffle || 12: endoplasmic reticulum-Golgi intermediate compartment membrane || 13: endosome membrane || 14: integral to endoplasmic reticulum membrane || 15: extracellular matrix || 16: proteinaceous extracellular matrix || 17: spliceosomal complex ||
18: anchored to membrane || 19: extrinsic to membrane || 20: external side of plasma membrane || 21: apical cortex || 22: microvillus || 23: interstitial matrix

ECM 15, Gene set "myofibril", Page 1

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

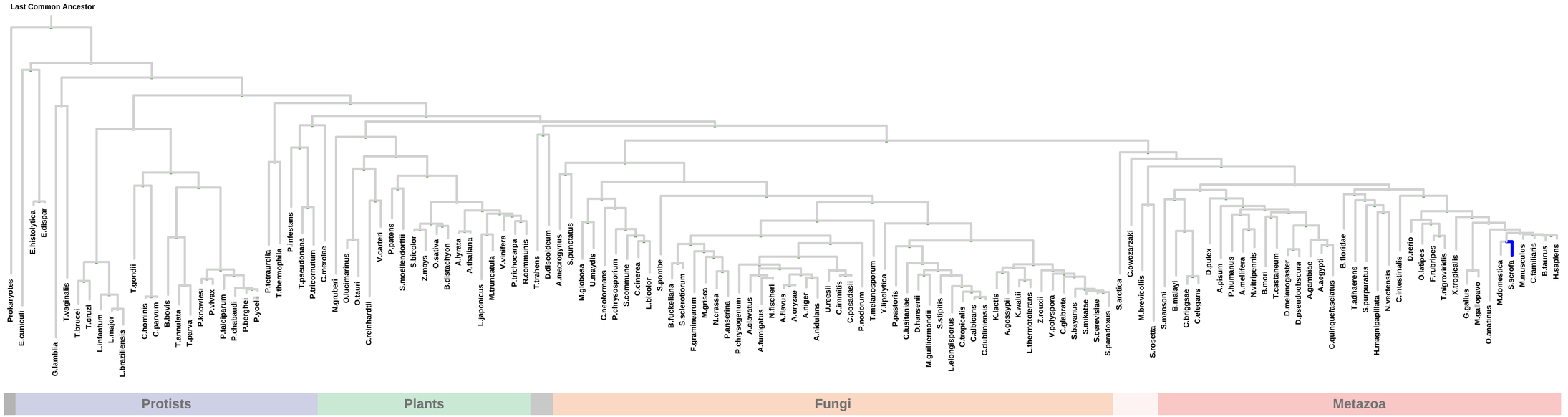


PG	Protein	LLR	Notes
	CALD1		1 / 2 / 3 / 4 / 5
	PRR14	5.4	

1: actin cap || 2: actin cytoskeleton || 3: actin filament || 4: myofibril || 5: postsynaptic density

ECM 16, Gene set "myofibril", Page 1

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



PG	Protein	LLR	Notes
	PDE4DIP		1

1: myofibril