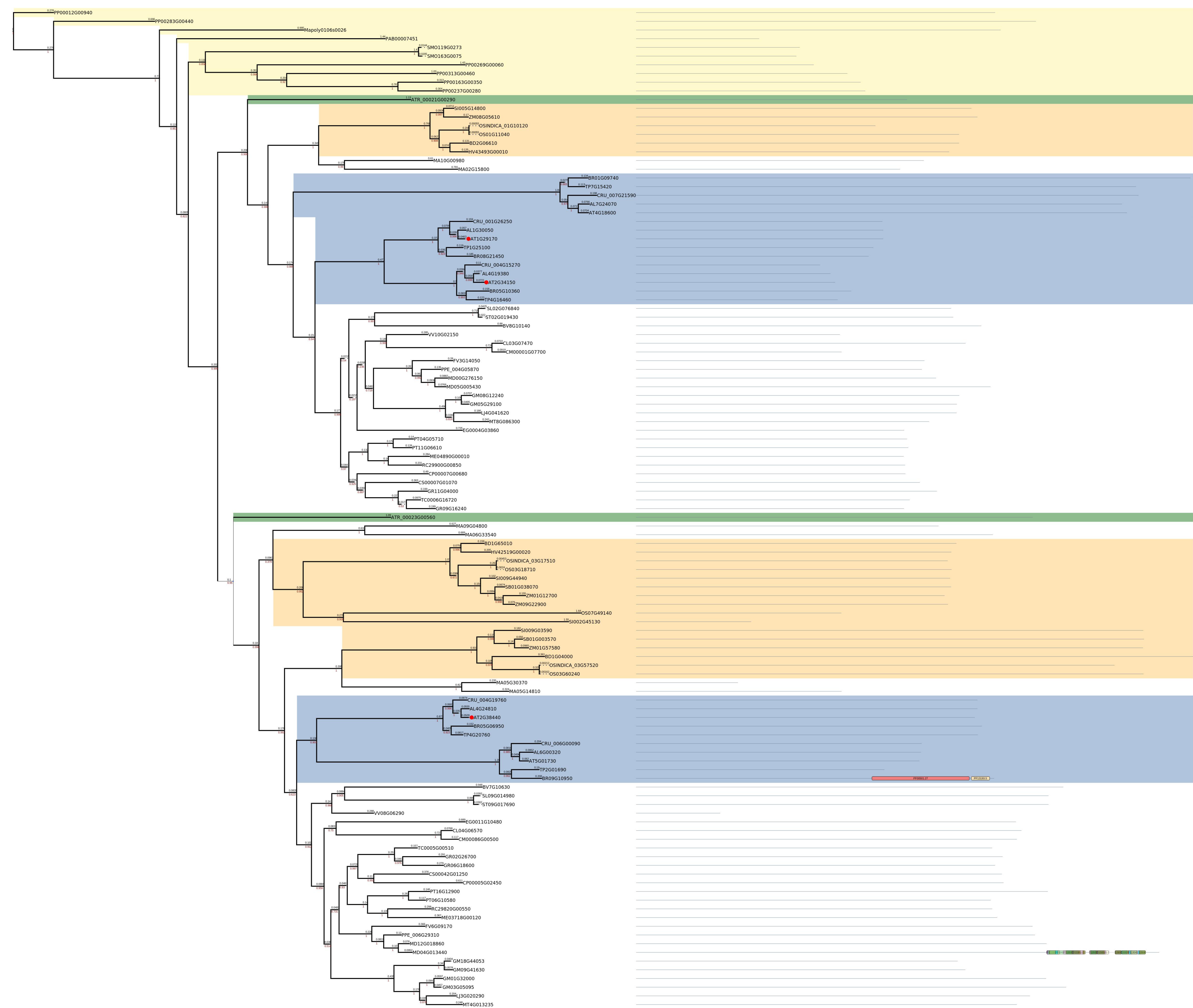


Figure S15. PhyML relations and composition of domains for AT1G29170, AT2G34150, AT2G38440 homologues of representative plant species. The color legends of species and domains is given below



0.0033333

taxonomic identity of protein

- Poaceae
- Brassicales
- Out group
- Amborella trichopoda

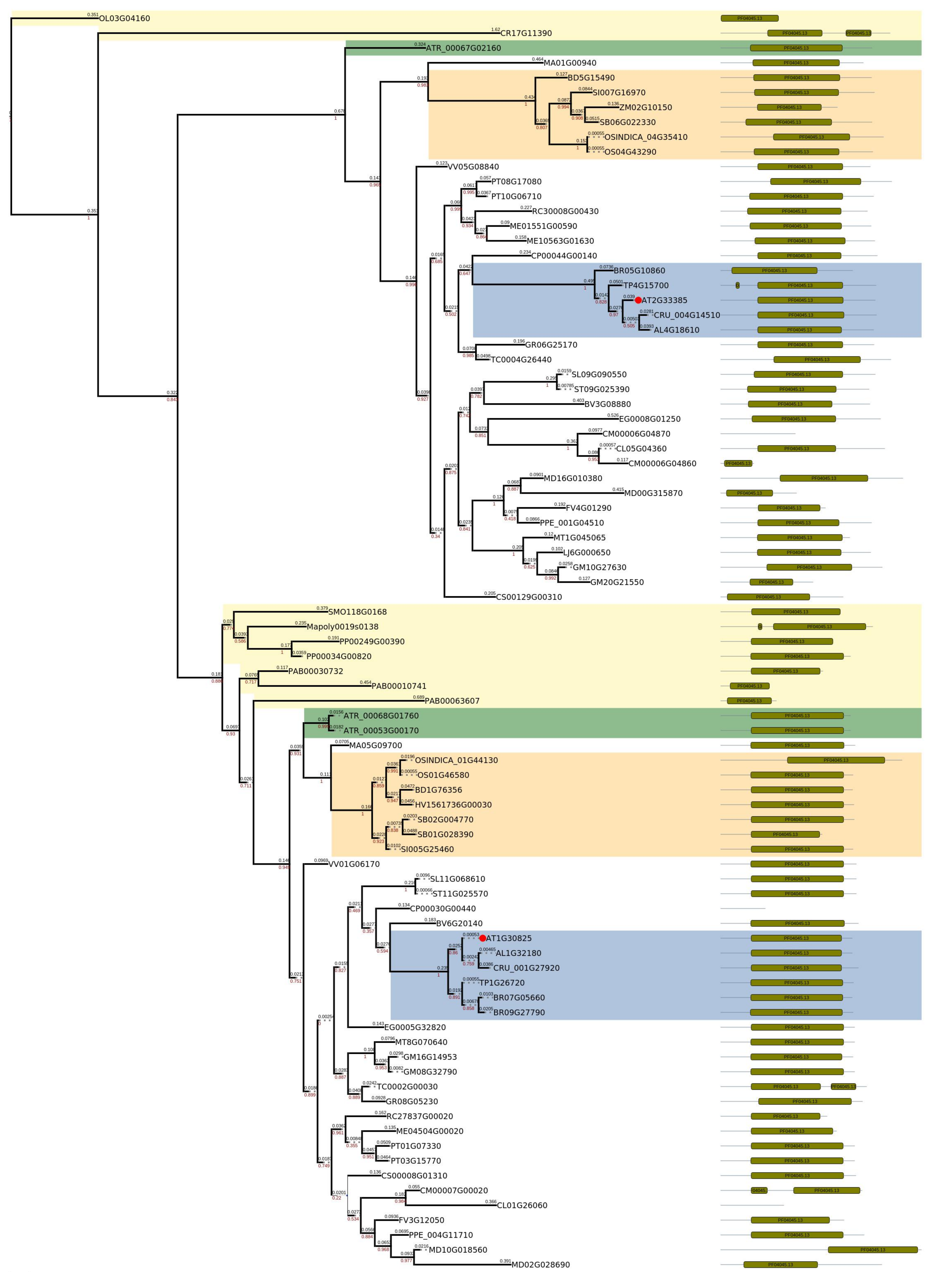
domain architecture

- AMP_binding_enzyme_FF00501_27
- AMP_binding_enzyme_C_terminal_domain_FF13193_5
- Mitochondrial_28S_ribosomal_protein_S27_FF10037_8
- PPR_repeat_FF01535_19
- PPR_repeat_FF12854_6
- PPR_repeat_family_FF13041_5
- Pentatricopeptide_repeat_domain_FF13812_5

PF00612 PF13193

PF13193 PF13193

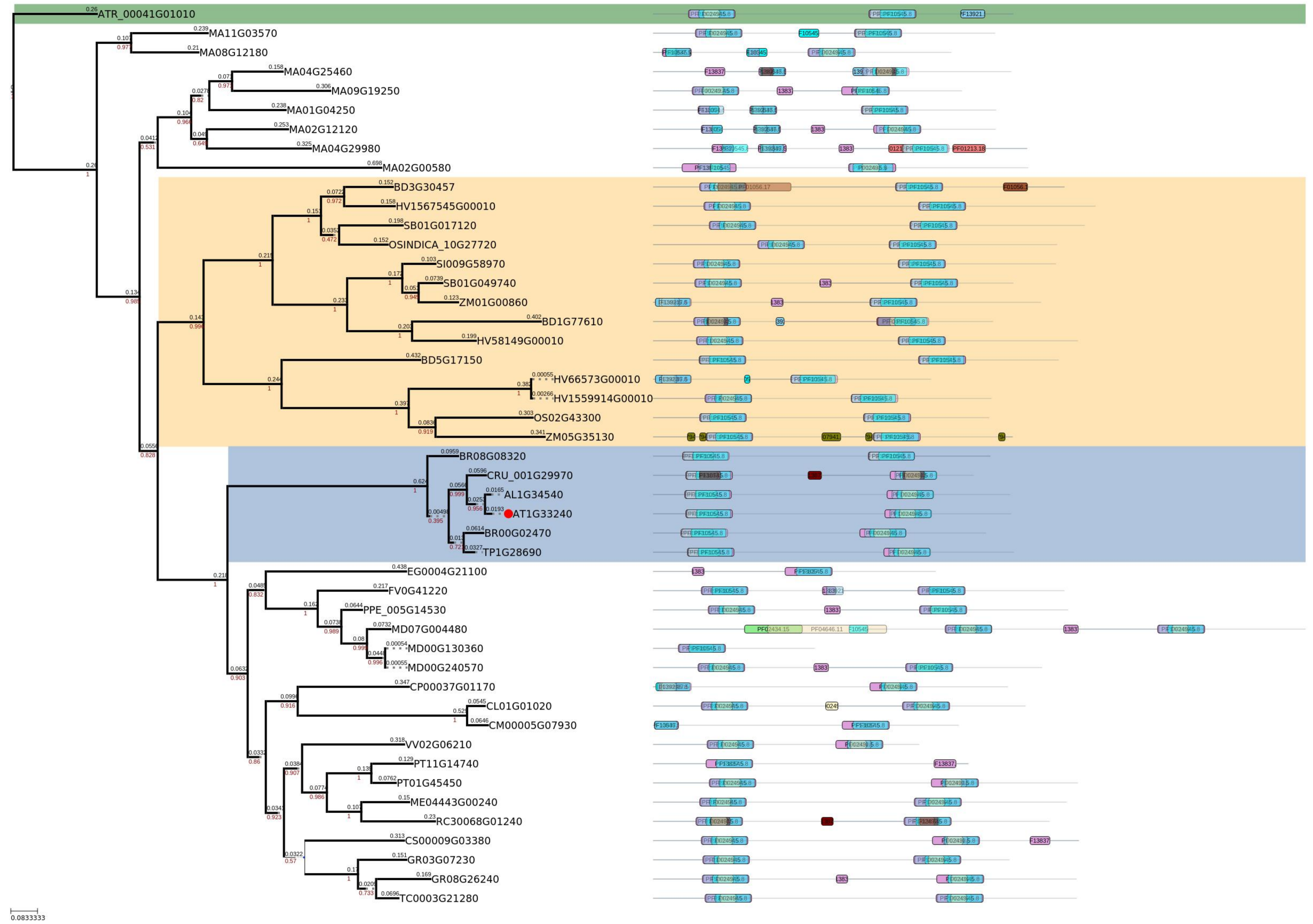
Figure S16. PhyML phylogenetic relations and composition of domains for AT2G33385, AT1G30825 homologues of representative plant species. The color legends of species and domains is given below



taxonpmic identity of protein domain architecture

- Poaceae Arp2_3_complex_34_kD_subunit_p34_Arc_PF04045_13
- Brassicales
- Out group
- Amborella trichopoda

Figure S17. PhyML phylogenetic relations and composition of domains for AT1G33240 homologues of representative plant species. The color legends of species and domains is given below

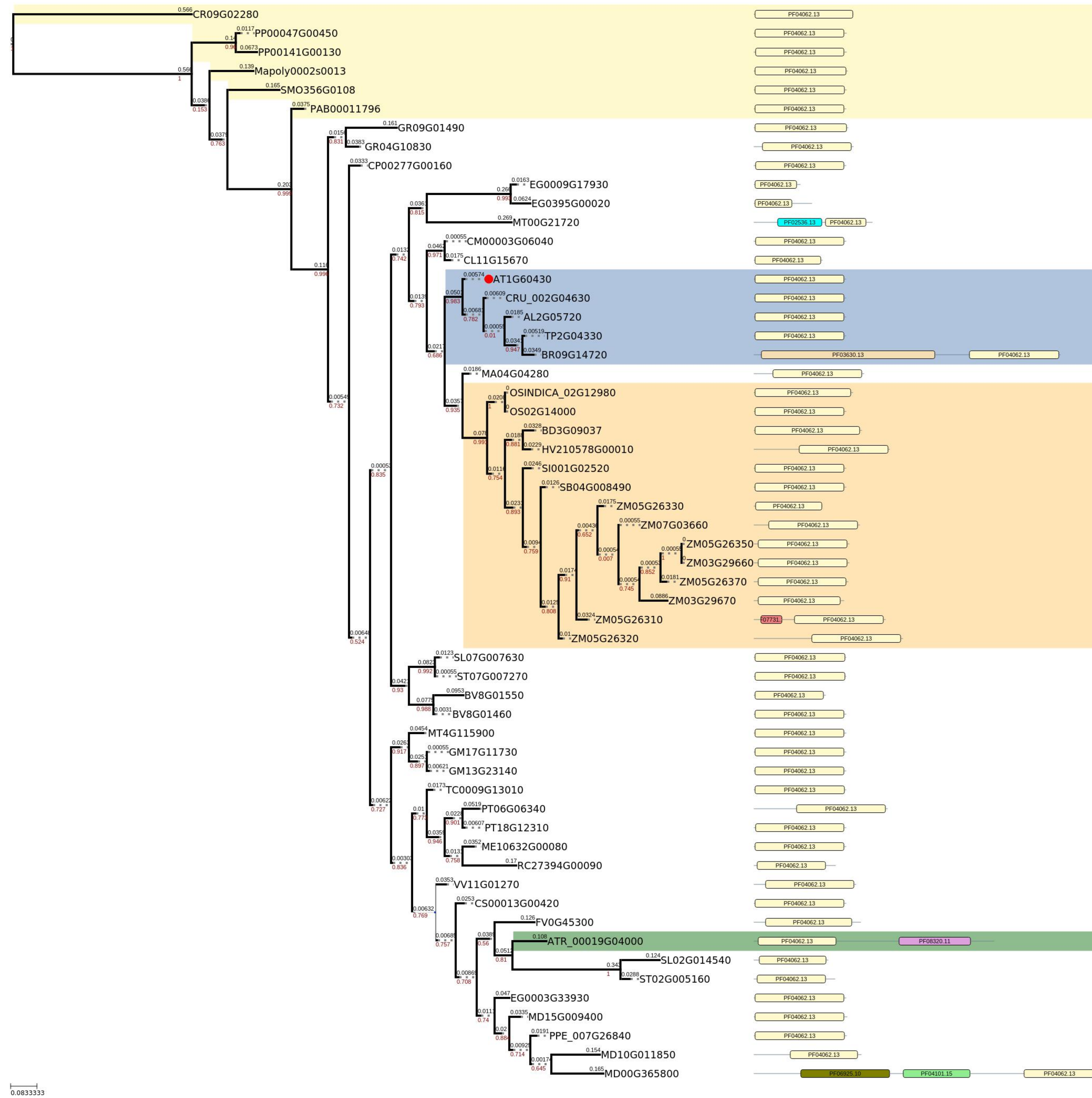


taxonpmic identity of protein

domain architecture

Poaceae	Alcohol_dehydrogenase_transcription_factor_Myb_SANT_like_PF10545_8	PF10545.8	Protein_of_unknown_function_DUF604_PF04646_11	PF04646.11
	Myb_like_DNA_binding_domain_PF00249_30	PF00249.30	Fringe_like_PF02434_15	PF02434.15
Brassicales	Myb_SANT_like_DNA_binding_domain_PF13837_5	PF13837.5		
	Myb_like_DNA_binding_domain_PF13921_5	PF13921.5		
Out group	Myb_SANT_like_DNA_binding_domain_PF13873_5	PF13873.5		
	Adenylate_cyclase_associated_CAP_N_terminal_PF01213_18	PF01213.18		
Amborella trichopoda	Myc_amino_terminal_region_PF01056_17	PF01056.17		
	Potassium_channel_Kv1_4_tandem_inactivation_domain_PF07941_10	PF07941.10		

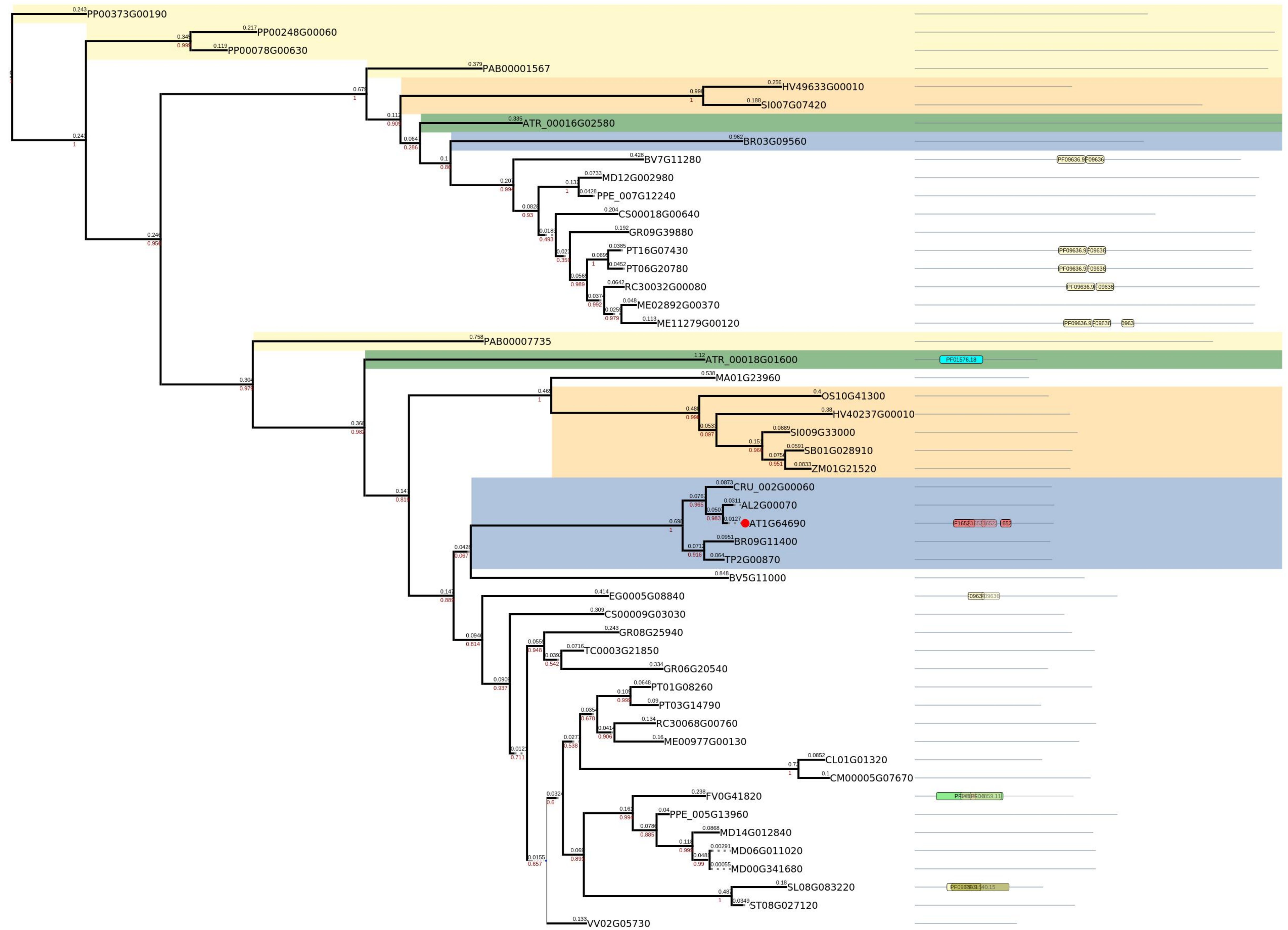
Figure S18. PhyML phylogenetic relations and composition of domains for AT1G60430 homologues of representative plant species. The color legends of species and domains is given below



taxonpmic identity of protein domain architecture

Poaceae	ARP2_3_complex_ARPC3_21_kDa_subunit_PF04062_13	PF04062.13
	mTERF_PF02536_13	PF02536.13
Brassicales	Fumble_PF03630_13	PF03630.13
	Multicopper_oxidase_PF07731_13	PF07731.13
Out group	PIG_X_PBN1_PF08320_11	PF08320.11
	Glycosyltransferase_family_28_C_terminal_domain_PF04101_15	PF04101.15
Amborella trichopoda	Monogalactosyldiacylglycerol_MGDG_synthase_PF06925_10	PF06925.10

Figure S19. PhyML phylogenetic relations and composition of domains for AT1G64690 homologues of representative plant species. The color legends of species and domains is given below



0.0833333

taxonomic identity of protein domain architecture

Poaceae

XkdW_protein_PF09636_9

PF09636.9

Myosin_tail_PF01576_18

PF01576.18

Brassicales

betaPIX_coiled_coil_PF16523_4

PF16523.4

Plant_protein_of_unknown_function_DUF641_PF04859_11

PF04859.11

Out group

IncA_protein_PF04156_13

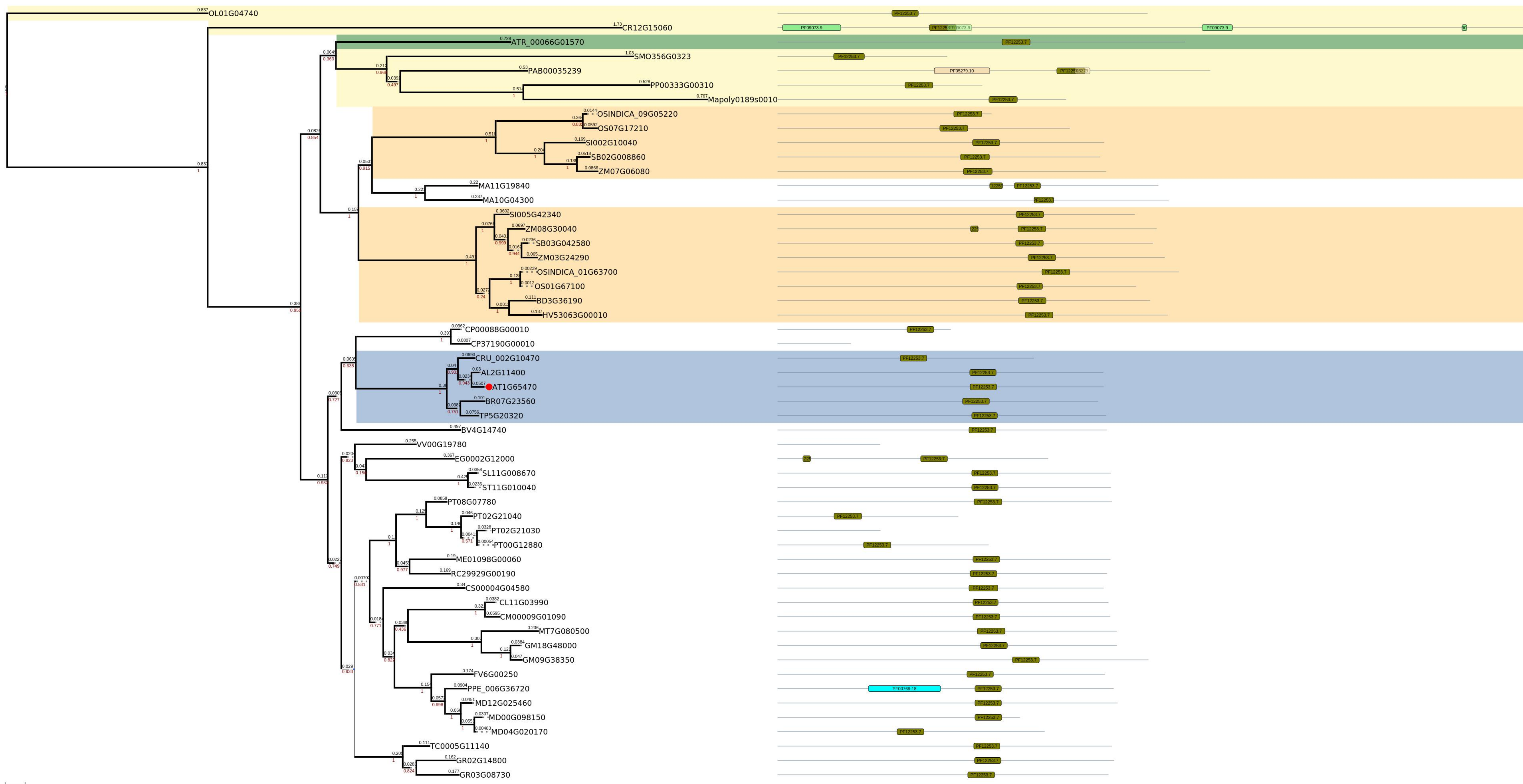
PF04156.13

Amborella trichopoda

Adhesin_lipoprotein_PF01540_15

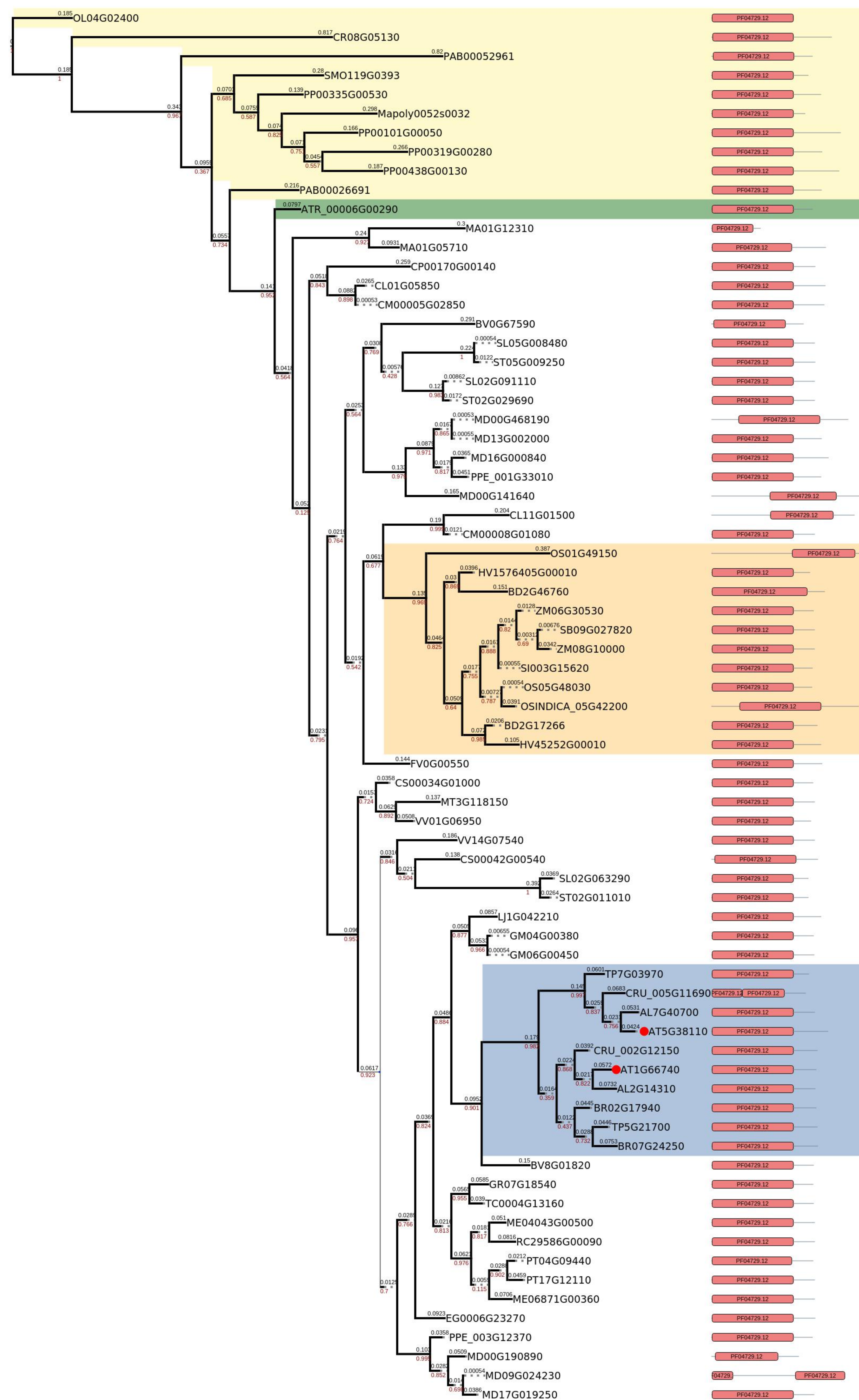
PF01540.15

Figure S20. PhyML phylogenetic relations and composition of domains of AT1G65470 homologues of representative plant species.
The color legends of species and domains is given below



taxon	pmic identity of protein	domain architecture
Poaceae	Chromatin_assembly_factor_1_subunit_A_PF12253_7 BUD22_PFO9073_9	PF12253_7 PF09073_9
Brassicales	Aspartyl_beta_hydroxylase_N_terminal_region_PF05279_10	PF05279_10
Out group	Ezrin_radixin_moesin_family_PF00769_18	PF00769_18
Amborella trichopoda		

Figure S21. PhyML phylogenetic relations and composition of domains for AT5G38110, AT1G66740 homologues of representative plant species. The color legends of species and domains is given below



taxonpmic identity of protein domain architecture



Figure S22. PhyML phylogenetic relations and composition of domains for AT1G69490 homologues of representative plant species. The color legends of species and domains is given below

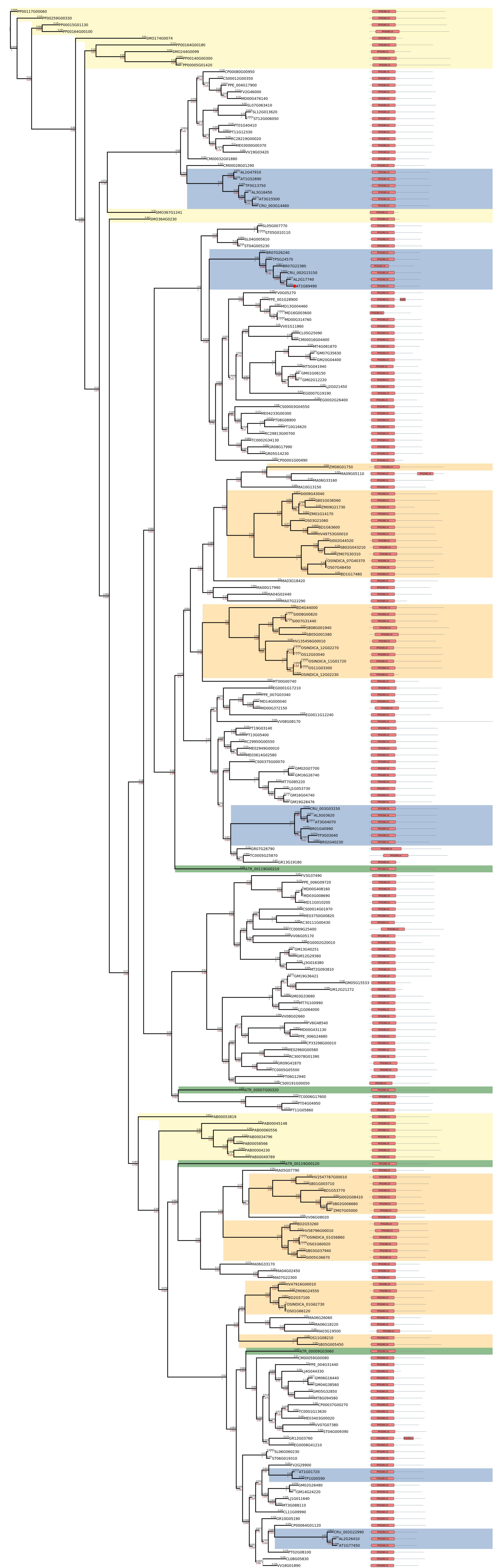
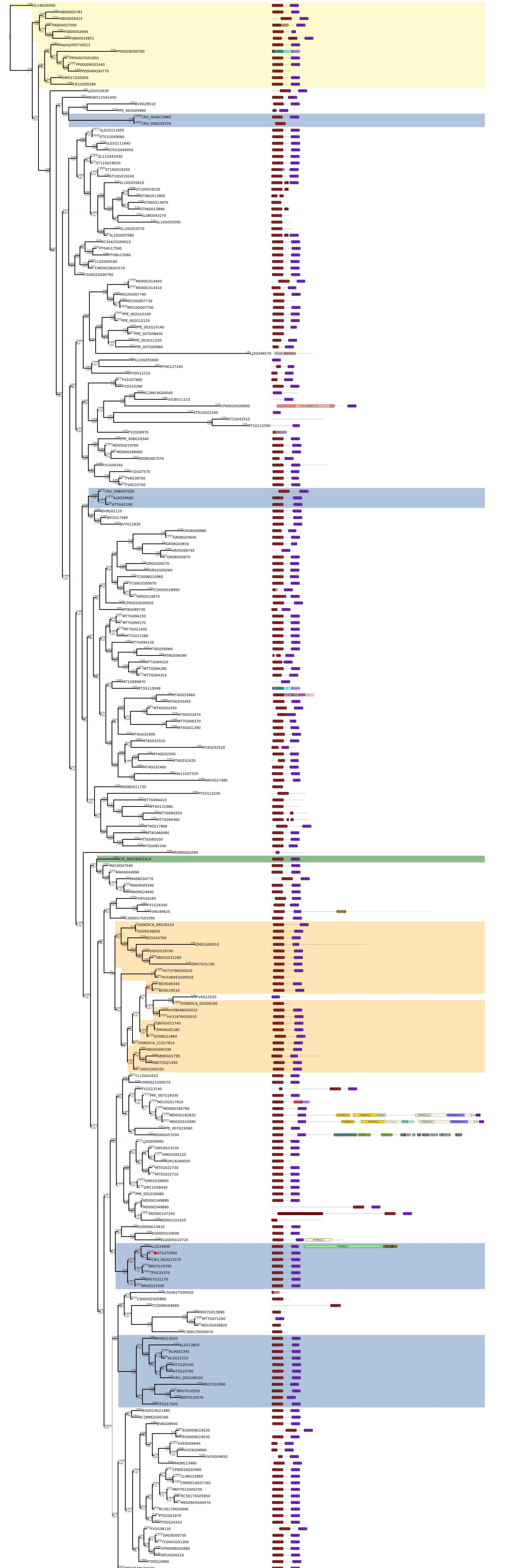


Figure S23. PhyML phylogenetic relations and composition of domains for AT1G75950 homologues of representative plant species. The color legends of species and domains is given below



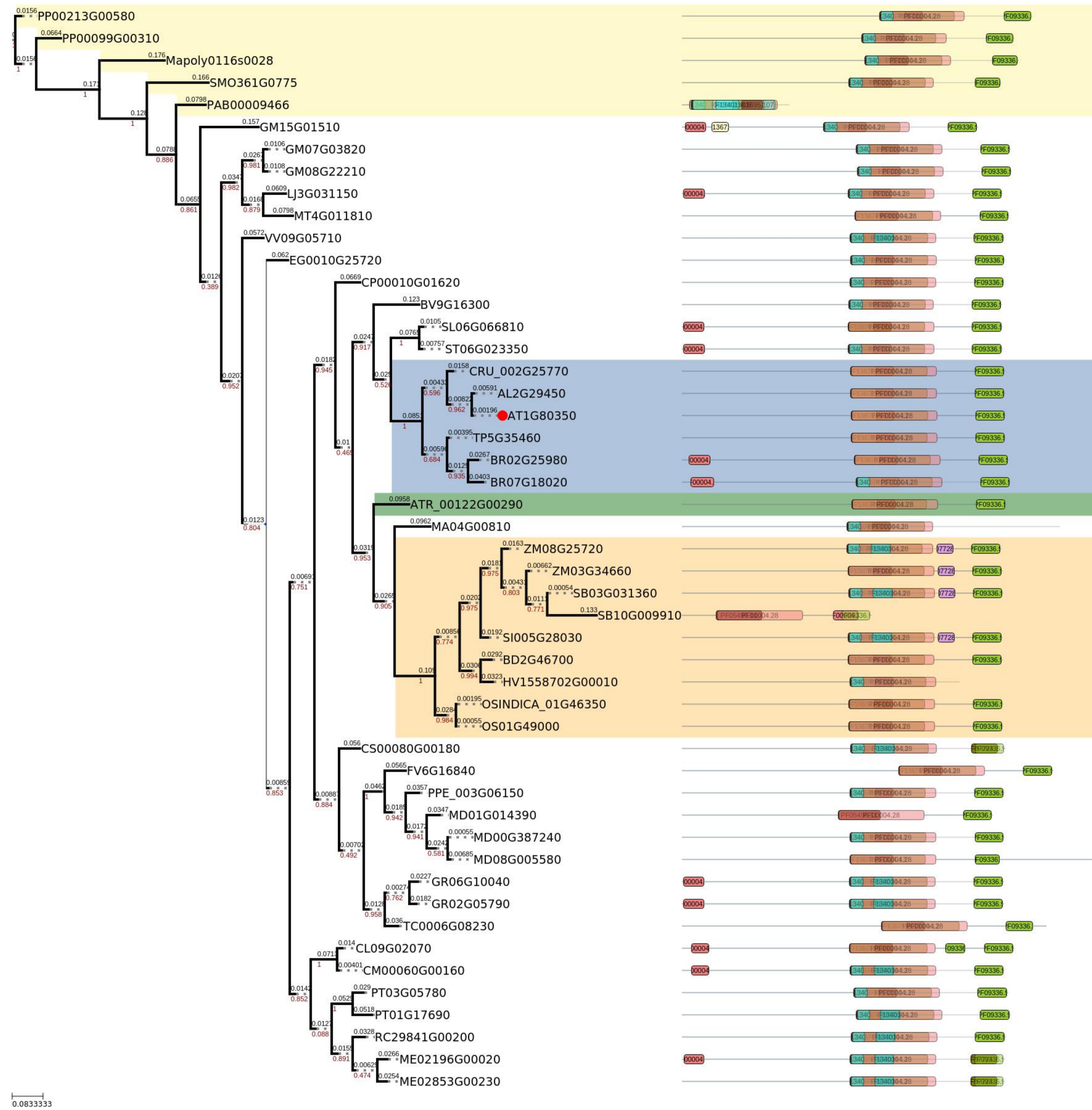
taxonomic identity of protein

- Poaceae Skp1_family_dimerisation_domain_FF01466_18
- Brassicales Skp1_family_tetramerisation_domain_FF03931_14
- Out group BTE_PO2_domain_FF0051_30
- Amborella trichopoda Ne_apical_meristem_NAM_protein_FF03365_14
- Amborella trichopoda D_isomer_specific_2_hydroxyacid_dehydrogenase_catalytic_domain_FF0389_29
- Amborella trichopoda D_isomer_specific_2_hydroxyacid_dehydrogenase_NAD_binding_domain_FF02826_18
- Amborella trichopoda TIR_beta_subunit_core_domain_FF02186_14
- Amborella trichopoda Protein_of_unknown_function_DUF615_FF04751_13

domain architecture

- Zinc_finger_C3HC4_type_RING_finger_FF00097_24
- Zinc_finger_C3HC4_type_RING_finger_FF13920_5
- Ring_finger_domain_FF13639_5
- RING_type_zinc_finger_FF13445_5
- RNA_polymerase_Rpb1_domain_1_FF4997_11
- RNA_polymerase_Rpb1_domain_2_FF0623_19
- RNA_polymerase_Rpb1_domain_4_FF05000_16
- RNA_polymerase_Rpb1_domain_5_FF04998_16
- RNA_polymerase_Rpb1_domain_6_FF04992_13
- RNA_polymerase_Rpb1_domain_3_FF04993_17
- Leucine_Rich_repeats_2_copies_FF12799_6
- RNA_domain_FF024_25
- Leucine_Rich_repeats_FF13555_5
- NS_ARC_domain_FF0931_21
- TIR_domain_FF01582_19
- GDSL_like_Lipase_Acylhydrolase_FF00657_21
- Domain_of_unknown_function_DUF569_FF04601_12
- AMP_binding_enzyme_FF0501_27
- AMP_binding_enzyme_C_terminal_domain_FF13193_5

Figure S24. PhyML phylogenetic relations and composition of domains for AT1G80350 homologues of representative plant species. The color legends of species and domains is given below



taxonpmc identity of protein

domain architecture

- Poaceae**
- Brassicales**
- Out group**
- Amborella trichopoda**

- ATPase_family_associated_with_various_cellular_activities__AAA__PF00004_28
- AAA_domain_Cdc48_subfamily__PF07724_13
- AAA_domain_PF13401_5
- AAA_domain_PF13671_5
- AAA_domain_dynein_related_subfamily__PF07728_13
- Holliday_junction_DNA_helicase_ruvB_N_terminus_PF05496_11
- Vps4_C_terminal_oligomerisation_domain_PF09336_9
- AAA_ATPase_domain_PF13191_5

- AAA_domain_PF13238_5
- IstB_like_ATP_binding_protein_PF01695_16
- Magnesium_chelatase_subunit_ChII_PF01078_20
- TIP49_C_terminus_PF06068_12

0.0833333