

Table S7. Fifteen different motifs commonly observed in *PhC5-MTase* genes.

Motif	Best possible match
1	NRNSDSPLSDVKNEQJLVFLSIVDYLRPKYVLMENVVDFVRFNKGYLFRLLALASLLEMGYQVRFGIM EAGAYGLPQFRKRVFIWAALPSEVLPEWPEPTH
2	VQMCFHPEQDRVLTVRECARLQGFPDSYKFSGTIKEKYRQVGNAVAVPVAFALGY
3	ISRTDRYKSLGNSFQVDTVAYHLSVLKDLFPNGINVLSLFSGIGGAEVALHRLGIRLKNVVSVEISEVNR NILRSWWEQTNQTGELI
4	YAIMEKTGEPDDCLSTCEAKELEFKLDGNKKSTLPLPGQVDVICGGPPCQGISG
5	TSVLYDHRPLQLNEDBYIRVCQIPKRP GABFRDLPGVIV
6	ELALLDJYSGCGMSTGLCKGAVSSGVWLITKEEPDANAF AQNSLKLNH
7	YYENEAFKAKDGWFIYSVRLFYRPPDVTDEKYAAADIRKRGYIHNLPIDNPFALLPKKEVTI
8	IYFVEYMFESSDHSKMLHGKLLQRGSETVLGTAANERELFTNECLTVQLKDIKGTVSLEIRSRPWGH QYRKENIDADKLDRAAEERKAKDLPTEYYCK
9	TDMAWYRLGKPSKQYAPWFEPVLKTVRVGISILTLLKRESRVAKLSYADVIKRLCGLEENDKAYISSK LLDVERYVVVHGQIILQLFEEYPDEDIKRCPF
10	GDDKEEEKGVRFQSFGRVENWNISGYEDGSPVIWISTALADYDCRKPSKKYKKJYDYFFEKACACVE VYKSLSK
11	VHGKSKGPFGRLLWWDENVPTVVTDPZPH
12	QVQKYVLDQCRKWNLVWVGRNKLAPLEPDEVEMJLGFPKNHTRG
13	HHTKWIIKKKKKILQKGENLNPRAGIAPVVSMMKAMQATTTRLVNRIWGEFYSIY
14	DLPCRTLHNWALYNSDSLISLELLPMKPCADIDVTIFGSGVVAEDDGS
15	SGJEILSSGYGGDFVISQSPCIYLQLANLDST