Fig. S2

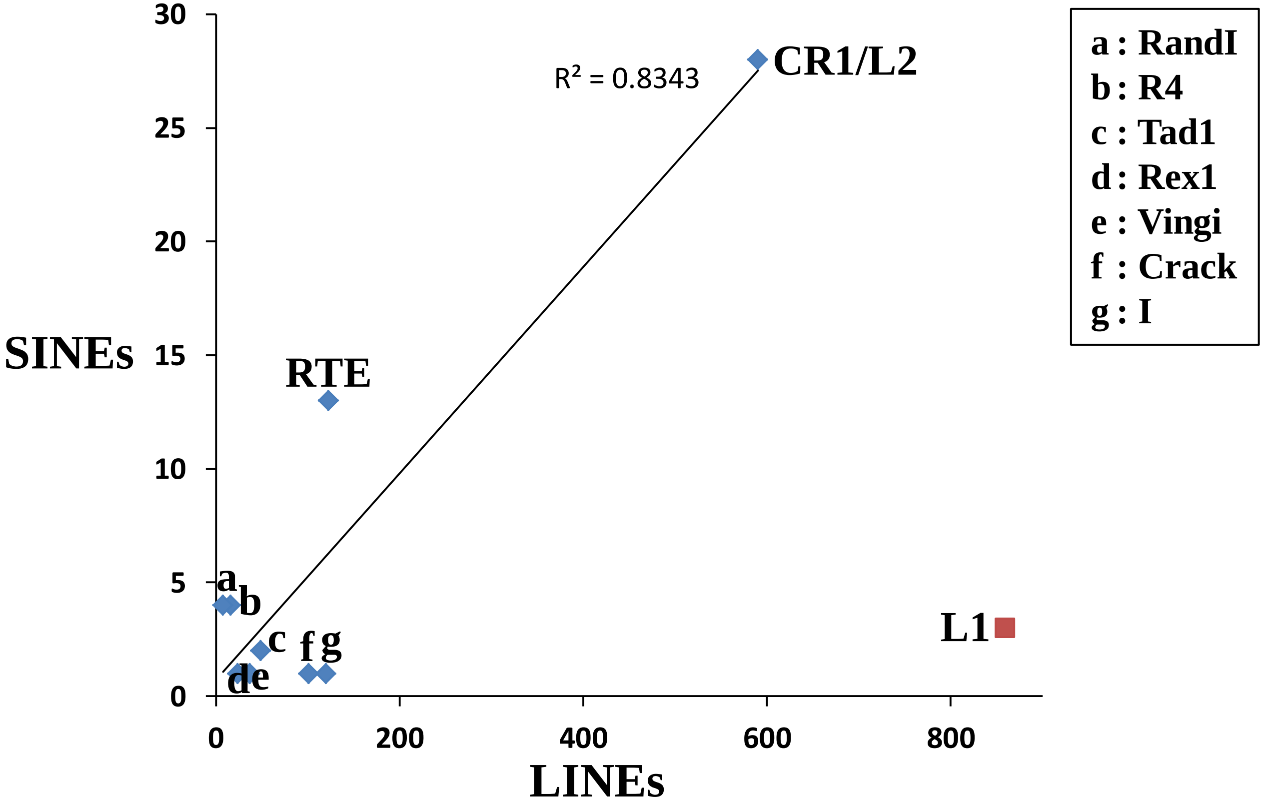

SINEs
LINEs
30
25
20
15
10
5
0
0
200
400
600
800
R² = 0.8343
CR1/L2
RTE
a
b
c
d
e
f
g
L1
a : RandI
b : R4
c : Tad1
d : Rex1
e : Vingi
f : Crack
g : I

Fig. S3

```
                              Box A                                        Box B
TS              GACAAGAGGGGTTGCTCTGATGGTAAGCAACCTCCACTTCCAACCAAGAGGTTGTGAGTTCGAGTCACCCCAAGAGCAAGGTGGGGAGTT     90
RTE-1_STu       tttcttgat·t·attg·ctcctt·gttg·tta·a····at·ttt·gtatt·gatgtta·gttttat·ta·ttttct·tcct·ttacttgg     3961

TS              CTTGGAGGGAAGGATGCCGAGGGTCTATTGGAAACAGCCTCTCTACC-CCA--GGGTAGGGGTAAGGTCTGCGTACACACTACCCTCCCC     177
RTE-1_STu       a··t··t·t·cttga··t········tcc··················t···cga·····t··c···············t···········     4051

TS              AGACCCCAC-TAGTGGGATTATACTGGGT-TG(TTG)0-14 -3'                                                 207
RTE-1_STu       ·········c··········tc·······a··ttgttgttgttg-3'                                               4095
```

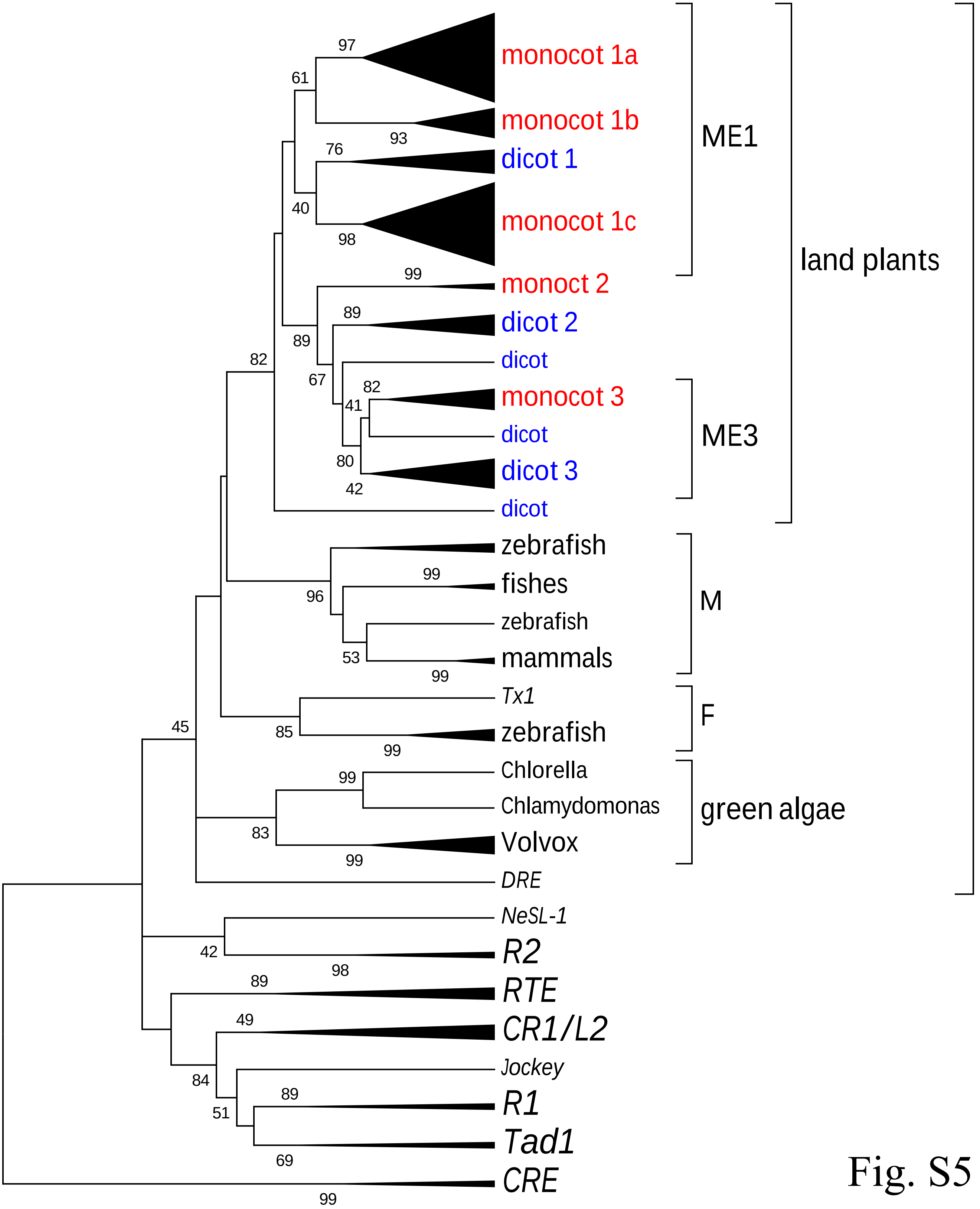
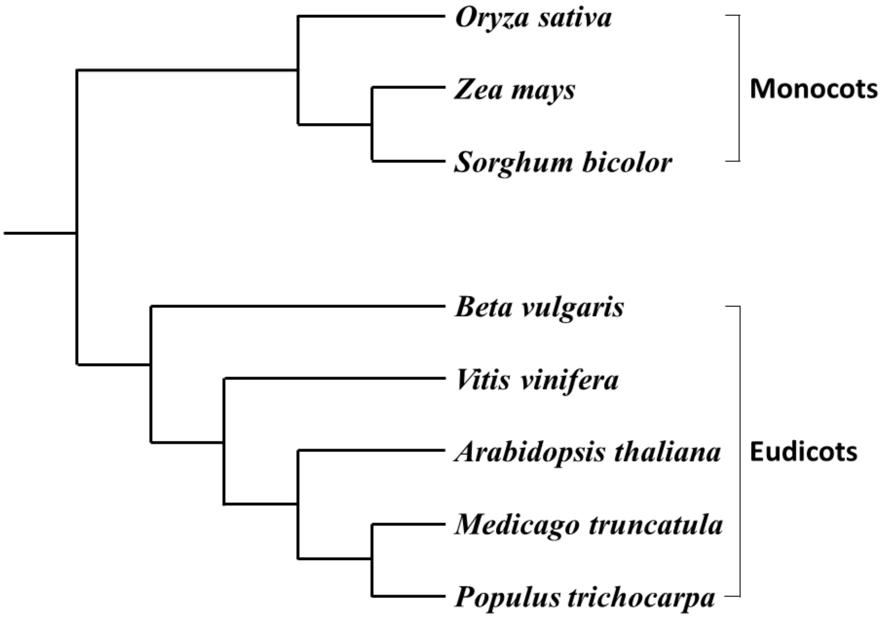

97
monocot 1a
61
monocot 1b
93
76
dicot 1
40
monocot 1c
98
ME1
99
monoct 2
89
dicot 2
89
82
dicot
67
82
monocot 3
41
dicot
80
dicot 3
42
dicot
ME3
land plants
zebrafish
99
fishes
96
zebrafish
53
mammals
99
M
Tx1
85
zebrafish
99
F
Chlorella
99
Chlamydomonas
83
Volvox
99
green algae
45
DRE
L1
NeSL-1
42
R2
98
89
RTE
49
CR1/L2
84
Jockey
51
89
R1
Tad1
69
CRE
99

Fig. S5

Fig. S6

ME1	monocot 1a	Oryza sativa	rice	monocot
ME1	monocot 1a	Zea mays	maize	monocot
ME1	monocot 1a	Sorghum bicolor	sorghum	monocot
ME1	monocot 1b	Zea mays	maize	monocot
ME1	monocot 1b	Sorghum bicolor	sorghum	monocot
ME1	dicot 1	Beta vulgaris	beet	eudicot
ME1	dicot 1	Vitis vinifera	grape	eudicot
ME1	dicot 1	Populus trichocarpa	cottonwood	eudicot
ME1	monocot 1c	Oryza sativa	rice	monocot
ME1	monocot 1c	Zea mays	maize	monocot
ME1	monocot 1c	Sorghum bicolor	sorghum	monocot
		Medicago truncatula	legume	eudicot
ME2	monocot 2	Sorghum bicolor	sorghum	monocot
ME2	dicot 2	Medicago truncatula	legume	eudicot
ME2	dicot 2	Arabidopsis thaliana	thale cress	eudicot
		Beta vulgaris	beet	eudicot
ME3	dicot 3	Medicago truncatula	legume	eudicot
ME3	dicot 3	Arabidopsis thaliana	thale cress	eudicot
ME3	monocot 3	Oryza sativa	rice	monocot
ME3	monocot 3	Sorghum bicolor	sorghum	monocot

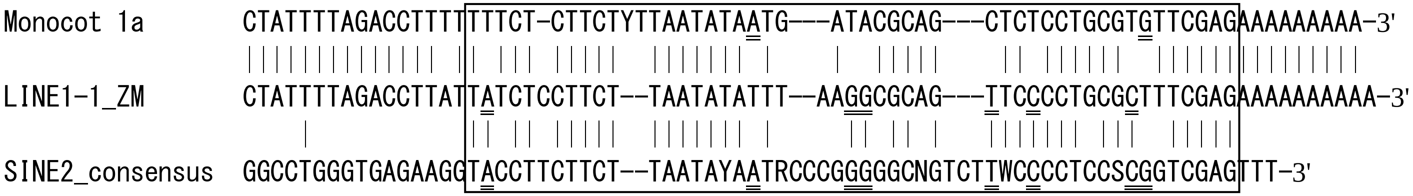


Species phylogeny (APG III system)

Fig. S8

```
SINE2_consensus  TCGGCCTGGGTGAGAAGGTCACCTTCTTCTTAATAYAATRCC--CGGGGGCNGTCTTWCCCCTCCSC-GGTCGAGTTT
ZmSINE2.1        ···a····t··········---·············C···G··--·······t·····A····-··G·a··········
SINE2-1a_SBi     ···a····c··········---············gC···G··--·······t·····A····-··G·a··········tttttt
SINE2-1c_SBi     ·g······t··········--···········g·tC··aG··--······gc·g···g·····-·G·a····c·····tt
SINE2-1_SBi      ···-··-···········-···t···········tTg·aAg·tg···c···a·····-aa··g··C·-··········ttttt
ZmSINE2.2        ····t·g···ctccg·tt-g·g·············T···A··-gt······g·····T·····a·-·-··c·······
ZmSINE2.3        ······g··acc·ttgtt··ggtc···········T···A··-gg·a····g·····T-······C·-··c·······
ZmSINE3          c·c·gg·tc·a·tcgc··-····aa········gtg··aAagtca·····ac····cT·····t----·······aaaaaa
```

Fig. S9



```
Monocot 1a       CTATTTTAGACCTTTTTTTCT-CTTCTYTTAATATAATG---ATACGCAG---CTCTCCTGCGTGTTCGAGAAAAAAAAA-3'
                 |||||||||||||| || ||| |||||  ||||||| |    |  |||||    || ||||||  |||||||||||||||
LINE1-1_ZM       CTATTTTAGACCTTATTATCTCCTTCT--TAATATATTT--AAGGCGCAG---TTCCCCTGCGCTTTCGAGAAAAAAAAAA-3'
                     |           || || |||||  ||||||| |     || || |   ||||||| |||  |||||
SINE2_consensus  GGCCTGGGTGAGAAGGTACCTTCTTCT--TAATAYAATRCCCGGGGGCNGTCTTWCCCCTCCSCGGTCGAGTTT-3'
```

Fig. S10

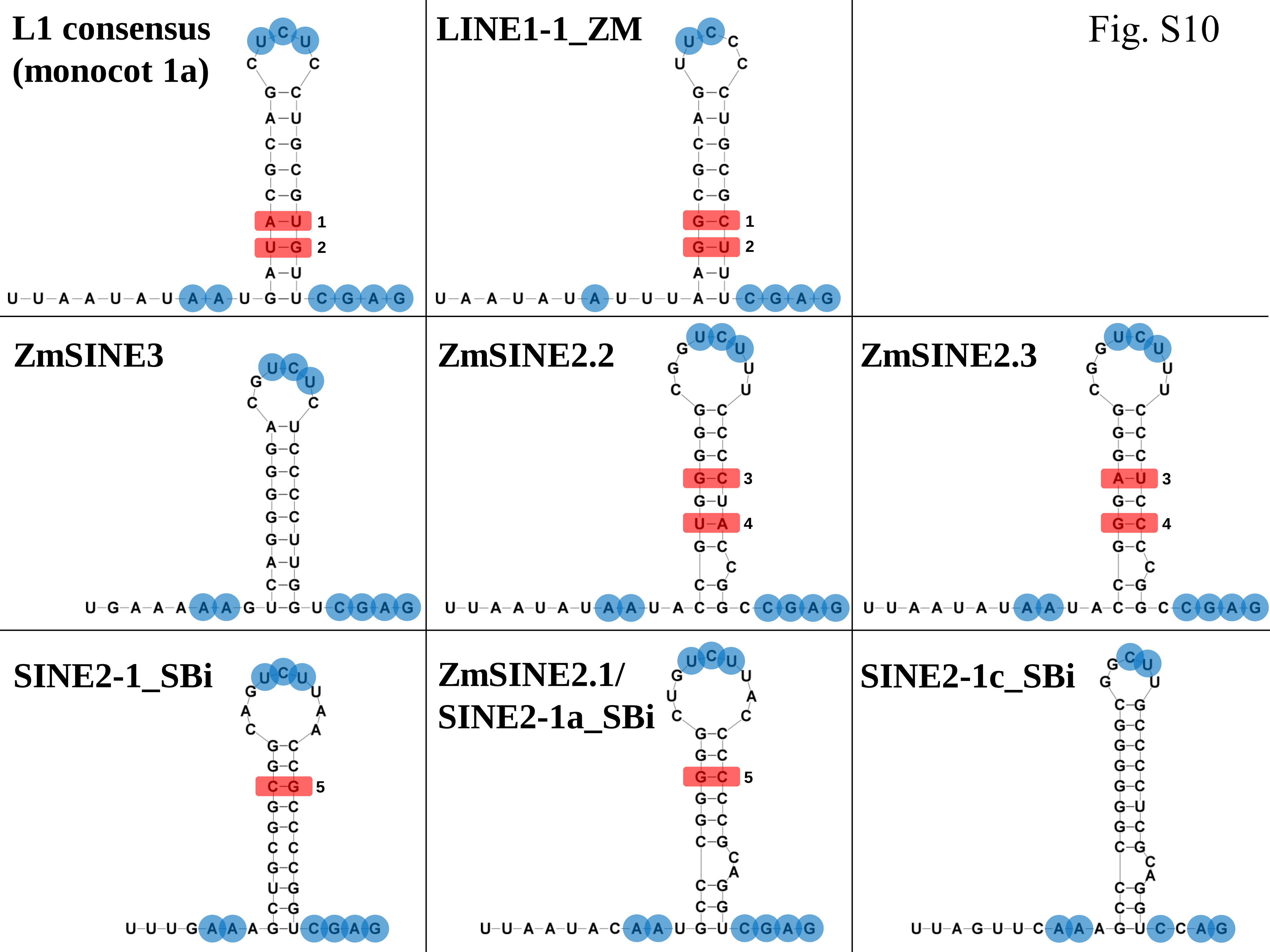

L1 consensus (monocot 1a)
LINE1-1_ZM
ZmSINE3
ZmSINE2.2
ZmSINE2.3
SINE2-1_SBi
ZmSINE2.1/ SINE2-1a_SBi
SINE2-1c_SBi
1
2
3
4
5

Fig. S11

```
                            Box A
SINEX-3_CR      --GGGGGGGTCGTCTAAATGGTTAAGACACTCA-AGCCGATTTCGTTAAGGCTTCGAGAG
L1-1_CR         CACAGCGCGTCTTGCAGCGGGCTGGAGCCCGCTTAGTCAGCGCCACATCTGGCCCGTTTA
                    * * *** *  *   ** *    * * *  ** *     *      *   **

                        Box B
SINEX-3_CR      ATCCTGGGTTCGAATCCCGGTCACCCCACCAGGAAGGGCCCTGGTTTACCAAAACCCATC
L1-1_CR         GTTTTCTGCTTGTGTCTCCTCTGCCGGTTCTCCTGGGGTGTTGCTTAAGCAACCGACTTG
                 *  *  * * *  ** *     **    *     ***   ** ** * ***    * *

SINEX-3_CR      CACACCTTGGTGGTGTGTAGAC----CCCCCCTGTGGTGCAGGGAGTCTCTGGGGTACAA
L1-1_CR         TGGGGGTGGGGTGGGTTTGGGCGGGGCGAGTGCGTAGCGCTGGTGTTTTCTTTTCTGGCG
                      * **  * ** * * *    *      ** * ** **   * ***    *

SINEX-3_CR      GGCTGGAGCTCTGGGCCT-GCAACTGGAGAGCTTTCAAGTTCAAGATCCAAGATTCAAGT
L1-1_CR         CGCGGTGGTGGTGGTTCTTGCGGTTAG---GCTGTGGTGT---AGGTTGGTGCTTGGGTT
                 ** *  *   ***  ** **   * *   *** *   **   ** *    * **    *

SINEX-3_CR      GGAGCTCTGGGCCTGTCAACTGGAGAGCTCTAGATGATCTGTGTGGTCATGGCAGTGGCT
L1-1_CR         AGGTCTGGCGGTGTTTTTGTGCAACCCCTCCCGGGGGGCGGGGGGGCCA-GCCTCCTGCT
                 *  **   **  * *       *   ***  *  *  * * * ** ** * *    ***

SINEX-3_CR      GTAGTTGTCACCTAGCTGTTGAGAACTCCAGTAGGTGTGTGGTGTCACCTGGCTGTTGAG
L1-1_CR         CTGTCTGCCGGGTCGGGGTGGGGTGGGGTGG--GATGGATGGGGGTGGTTGGTGGC---G
                 *   ** *   * *  ** * *       *  * **  *** *     ***  *    *

SINEX-3_CR      GTTTCCAGTAGGTGTGTGGTGGAACAAAAACTTCTCTTCTCTTCTCTGATCTCTGGCCCT
L1-1_CR         GTTTTCG--AGGTGTTTGCTTTC-TGTTTTCTTCTCTTTTCTTCTCT----TCTTGCCCT
                **** *   ****** ** *          ******** *******    *** *****

SINEX-3_CR      ATCGAGGTTCTG-TGATATGATCCAGGCTGCCTT--GGCAGTAGGGTGGTAGTGCGTCTA
L1-1_CR         GTCAGGGTTCTGGTCTCGGGGACCAGGCTGCTTTCAGGCAGCAGGGGGGCAGCGCGTCTG
                 **  ******* *     *  ********* **  ***** **** ** ** ******

SINEX-3_CR      CCACCG--CAACCTTGTAAGGATGACT--TTAAAAAAAAAAA
L1-1_CR         CCCCTGTTCAACCTTGTAAGGATGATTCCTCAAAAAAAAAAA
                ** * *  ***************** *  * ***********
```