

Supplementary Figure S1

Orange

```
Citrus_sinensis      CATTCCGAGTCCGGCGGACGAAGTTGCCCCACGCCCCCACCAGGCTATAGCCCACCCG 60
Citrus_clementina   CATTCCGAGTCCGGCGGACGAAGTTGCCCCACGCCCCCACCAGGCTATAGCCCACCCG 60
***** * * * * * * * * * * * * * * * * * * * * * * * * * * * *
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```
Citrus_sinensis      ATTTT-TGGCCATTTTCCGCTGG-CGAGTCTTGGCGCCCCGACCTTCGGGCGCTCATTT 118
Citrus_clementina   TTTTGTGGCC-TTTTCCGCTGGACGAA-CTTGGCGCCCCGGCCTTCGGGCGGTATTT 118
***** * * * * * * * * * * * * * * * * * * * * * * * * * * *
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```
Citrus_sinensis      TTGGGCGCGGCTGTGCCCCGTGGCCTATTTTGGCACACGGAGGCCGCCGCAAAGTCTGG 178
Citrus_clementina   TTGGGCGCGGCTTTGCCCGCGCCTATTTTGGCACACGGAGGCCCTCGCAAAGTCTCG 178
***** * * * * * * * * * * * * * * * * * * * * * * * * * * *
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Citrus_sinensis      GGC 181
Citrus_clementina   CGG 181
*
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Candidate centromere repeat monomer:

```
>Citrus_sinensis
CATTCCGAGTCCGGCGGACGAAGTTGCCCCACGCCCCCACCAGGCTATAGCCCACCCG
ATTTTGGCCATTTTCCGCTGGCGAGTCTTGGCGCCCCGACCTTCGGGCGCTCATTTT
GGGCGCGGCTGTGCCCCGTGGCCTATTTTGGCACACGGAGGCCGCCGCAAAGTCTGGGG
C
>Citrus_clementina
CATTCCGAGTCCGGCGGACGAAGTTGGCCAGCCCCACCCCCAAGGCTATAGCCCACCCG
TTTTTGTGGCCTTTTCCGCTGGACGAAGTTGGCGCCCCGGCCTTCGGGCGGTATTTT
GGGCGCGGCTTTGCCCGCGCCTATTTTGGCACACGGAGGCCCTCGCAAAGTCTCGCG
G
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Arabidopsis
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```
Arabidopsis_lyrata   TTGCTTCTCAAATCTTTGTGGGTGTGGCCGAAGTCC-TATGAGTTTTCGGTTTGGAGCT 59
Arabidopsis_thaliana TTGCTTCTCAAAGCTTTCATGGTGTAGCCAAAGTCCATATGAGTCTTTGGCTTGTGTCT 60
***** * * * * * * * * * * * * * * * * * * * * * * * * * * *
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```
Arabidopsis_lyrata   TCTAAACGGAACAACTACTTTAGCTTTCGGGATCCGGTTGCGGCTCTAGTTCTTATAC 119
Arabidopsis_thaliana TCTAA-CAAGGAACACTACTTAGGCTTTTAAGATCGGGTTGCGGTTAAGTTCTTATAC 119
***** * * * * * * * * * * * * * * * * * * * * * * * * * * *
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```
Arabidopsis_lyrata   CCAATCATAAACACGAGATCTAGTCATATTTGACTCCAAAAACACTAACCAAGCTTCTTA 179
Arabidopsis_thaliana TCAATCATAACATGACATCAAGTCATATTCGACTCCAAAA-CACTAACCAACCTTCTTC 178
***** * * * * * * * * * * * * * * * * * * * * * * * * * * *
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Centromere repeat monomers:

```
>Arabidopsis_lyrata
TTGCTTCTCAAATCTTTGTGGGTGTGGCCGAAGTCCTATGAGTTTTCGGTTTGGAGCTT
CTAAACGGAACAACTACTTTAGCTTTCGGGATCCGGTTGCGGCTCTAGTTCTTATACC
CAATCATAAACACGAGATCTAGTCATATTTGACTCCAAAAACACTAACCAAGCTTCTTA
>Arabidopsis_thaliana
TTGCTTCTCAAAGCTTTCATGGTGTAGCCAAAGTCCATATGAGTCTTTGGCTTGTGTCT
TCTAACAGGAACACTACTTAGGCTTTAAGATCGGGTTGCGGTTTAAGTTCTTATACT
CAATCATAACATGACATCAAGTCATATTCGACTCCAAAAACACTAACCAACCTTCTTC
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#####
Eucalyptus
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```
Eucalyptus_grandis   ATTTTGGAGATCCCGATACCTTGAAAGTCGGCTGAAATCAAGAAACGGAGACTCGGCACA 60
Eucalyptus_globulus ATTTTGGACATCACAGCACCTGAACGCCCCGGCGAAACAAGAGAACGAAGATCCACAGA 60
***** * * * * * * * * * * * * * * * * * * * * * * * * * * *
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```
Eucalyptus_grandis   AAAAATTCCTTGTGTTCCATTAATAATTCCTTTTCGG---TATTTTCACT-ATAGACC 115
Eucalyptus_globulus GAAAATTCCTGTTTTCCATAGAAAATTCCTTTCCGGCCATTTTGGCTGAAAACC 120
***** * * * * * * * * * * * * * * * * * * * * * * * * * * *
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```
Eucalyptus_grandis   CCGGCAGGCGGAAA-CGGCATGGATAAGTGGGCTCCAAAAGCTTTATTTTCGATCGGATT 174
Eucalyptus_globulus CCGACAGTTGAAATCTGTTGGGAAACATGGCTTCCAAAAGCATTAGATCAGTCCGACCC 180
***** * * * * * * * * * * * * * * * * * * * * * * * * * * *
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Lithocarpus_calolepis      TTCGGGAGTATTTTGGTCATTTTT-AGGTTTCGGGGGTATTTTGGTAAT 99
Lithocarpus_grandilifolius ATCCGGGGTATTTTGGTCATTTTTGGTTTCGGGGGT-ATTTTGGTCAT 97
*****
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Lithocarpus_calolepis TTTT-AGGTTTCGGGG 115
Lithocarpus_grandilofolius TTTTGGGTTTCGGAG 114
**** *

Candidate centromere repeat monomer:

>Lithocarpus_calolepis
TATTTTGGTCATTTTTTGGGTTTCGGGGTATTTTGGTCATTTTTTGGGTTTCGGGAGTA
TTTGGTCATTTTATAGGTTTCGGGGTATTTTGGTAATTTTATAGGTTTCGGGG
>Lithocarpus_grandilofolius
TATTTTGGTAATTTTTTGTTCGAGGGTATTTGGTCATTTTATAGGTTTCGGGGGTATT
TTGGTCATTTTTTGGGTTTCGGGGTATTTGGTCATTTTTTGGGTTTCGGAG

Beechs 2

Lithocarpus_balansae TTTGAGCCCTTACATCGGCACGAAATTGGAATCCAAATTCGGGTAAC 50
Lithocarpus_hancei TTTGAGCCCTTATATCGGCACAAAATTGGAATCCAATTCGGGTAAC 50
Lithocarpus_xylocarpus TTTACGCCTTATATCGGCACAAAATTGGAGTCCAAATTCGGGGAAC 50
*** **

Lithocarpus_balansae GGTGGCCACATTCAAACGAGGATAACTCTCCCGATTTTATCAAAAAA 100
Lithocarpus_hancei AGTGGCCCATATTCAAACGATAAATAACTCTCATGATTTTGTTCGAAAAA 100
Lithocarpus_xylocarpus GGTGGCCCATATTCAAACGACAATAACTCTCTTGATTTTATCGAAAAA 100

Lithocarpus_balansae TACAAAATTTGTGCTCAAATTCAAGCTCAGGATGTCTACTTTCTAAAACA 150
Lithocarpus_hancei TACAAAATTTGTGTTCAAATTCAAGCTCAGGACGTCTACTTTCTAAAACA 150
Lithocarpus_xylocarpus CACCAAATTTGTGTTCAAATTCAAGCTCAGAATGTCTACTTTCTAAAATA 150
** ***** *

Lithocarpus_balansae CGAAGGCCGCGTCAAAGAATTCCTCACGGTTCAAAGTTATTGACGAAAC 200
Lithocarpus_hancei CTTAGGCCGCGTTAAAGAATTCCTTCGGTTCAAAGTTATTGACGAAAC 200
Lithocarpus_xylocarpus TTAAGGCCGCGTTGAAGAATTCCTCACGGTTCAA-GTTATTGTCGAAAG 199

Lithocarpus_balansae GGTGGCCAAAGCACACTTTTCGTACACTTCCTAACCATTAAACGCCCG 250
Lithocarpus_hancei GGTGGCCAAAGGTCACTTTTCGTCTCATTTCTAACCATTAAACGCTCGT 250
Lithocarpus_xylocarpus GGCGACCAAAGGTCACTTTTCGACACATTCCAAACCGATGAAGGCTCGT 249
** * ***** *

Lithocarpus_balansae GGATAACTACCCACTCACGTATTTTTCCTCCGAACTTGATTTTGGGAAG 300
Lithocarpus_hancei GGATAACAACCCACTCACATATTTTTCCTCCGAACTTGATTTTGGGAAG 300
Lithocarpus_xylocarpus GAATAACTACCCACCAAGTATTTTTCACAAAACCTTCACTTTGAGAGG 299
* ***** *

Lithocarpus_balansae ATTGATCTCGCGATATAGGAAAAATATTTCCAGCCAAATTCGTGAGCAA 350
Lithocarpus_hancei ATTGATCTCGCGATGTAGGAAAAATATTTTCATGCACAAATTCGTGAGCAA 350
Lithocarpus_xylocarpus ATTGACCTCAAGATATAGAAAAATATTTTCATCGCCAAATCCGAGAAAA 349
***** **

Lithocarpus_balansae AACTTCAAACCTCCCT 367
Lithocarpus_hancei AACCACAGACTTCTCCT 367
Lithocarpus_xylocarpus AACCTTAGACATCAATG 366
*** **

Candidate centromere repeat monomer:

>Lithocarpus_balansae
TTTGAGCCCTTACATCGGCACGAAATTGGAATCCAAATTCGGGTAACCGTGGCCAC
ATTCAAACGAGGATAACTCTCCCGATTTTATCAAAAAATACAAAATTTGTGCTCAAAT
TCAAGCTCAGGATGTCTACTTTCTAAAACACGAAGCCGCGTCAAAGAATTCCTCACGGT
TCAAAAGTTATTGACGAAACGGTGGCCAAAGCACACTTTTCGTACACTTCCTAACCAGT
TAACGCCCGCGGATAACTACCCACTCACGTATTTTTCCTCCGAACTTGATTTTGGGAAG
ATTGATCTCGCGATATAGGAAAAATATTTCCAGCCAAATTCGTGAGCAAACTTCAAAC
TTCCCT
>Lithocarpus_hancei
TTTGAGCCCTTATATCGGCACAAAATTGGAATCCAATTCGGGTAACCTCAGTGGCCAT
ATTCAAACGATAATAACTCTCATGATTTTGTGCAAAAAATACAAAATTTGTGTTCAAAT
TCAAGCTCAGGACGTCTACTTTCTAAAACACTTAGGCCGCGTTAAAGAATTCCTTCGGT
TCAAAAGTTATTGACGAAACGGTGGCCAAAGGTCACTTTTCGTCTCATTTCTAACCAGT
TAACGCTCGTGGATAACAACCCACTCACATATTTTTCCTCCGAACTTGATTTTGGGAAG
ATTGATCTCGCGATGTAGGAAAAATATTTTCATGCACAAATTCGTGAGCAAAACACAGAC

TTCTCCT
>Lithocarpus_xylocarpus
TTTACGCCTTTTATCGGCACAAAATTGGAGTCCAAATTTTCGGGGAAGTTCGGTGGCCCAT
ATTCAAACGACAATAACTCTCTTGATTTTTATCGAAAAACACCAAATTTGTGTTCAAAT
TCAAGCTCAGAATGTCTACTTTCTAAAAATTAAGGCCGCGTTGAAGAATTCCCTACGGT
TCAAAGTTATTGTCAAAGGGCGACCAAAGGTCACTTTTCGACACATTTCCAAACCGATG
AAGGCTCGTGAATAACTACCCACCAAAGTATTTTTTACACAAAACCTCACTTTGAGAGGA
TTGACCTCAAGATATAGAAAAATATTTTCATCGCCAAATCCGAGAAAAAACCTTAGACA
TCAATG

Potato

Solanum_tuberosum CGTTAAGACCTTAGCTATGGAGCCAGTTAGCCCTCACGGCCAAAACGTCCCATTTTAAAG 60
Solanum_phureja CGTTAAGACCTTAGCTATGGAGCCAGTTAGCCCTCACGGCCAAAACATCCCATTTTGAAG 60

Solanum_tuberosum GTCAAATGTGCCCCAAATCAGGAAAACCCC-AATTTTGTGCGATTTTCGTATGCTATAGTC 119
Solanum_phureja GTCAAATGTGCCCCAGAGCAGGTAAACCCCAATTTTGCCGATTTTCGTGTGCTATAGTC 120

Solanum_tuberosum CATGGACTTTTGGTGATCTGGAATTCGACAAAATTTT-GCCAAAATTTTTCGTGGACG 178
Solanum_phureja CATGGACTTTTGGTGATCTGGAATTCGACATAATTTTGCCAAAATTTTTCATGGACG 180

Solanum_tuberosum TC 180
Solanum_phureja TC 182
**

Candidate centromere repeat monomer:

>Solanum_tuberosum
CGTTAAGACCTTAGCTATGGAGCCAGTTAGCCCTCACGGCCAAAACGTCCCATTTTAAAG
GTCAAATGTGCCCCAAATCAGGAAAACCCCAATTTTGTGCGATTTTCGTATGCTATAGTCC
ATGGACTTTTGGTGATCTGGAATTCGACAAAATTTTGCCAAAATTTTTCGTGGACGTC
>Solanum_phureja
CGTTAAGACCTTAGCTATGGAGCCAGTTAGCCCTCACGGCCAAAACATCCCATTTTGAAG
GTCAAATGTGCCCCAGAGCAGGTAAACCCCAATTTTGCCGATTTTCGTGTGCTATAGTC
CATGGACTTTTGGTGATCTGGAATTCGACATAATTTTGCCAAAATTTTTCATGGACG
TC

Monkeyflower

Mimulus_guttatus CTTTGATCATTTTGTCTTCCTGGACACCTAATTTTCGATTTGTACCTAAAAGATACCAA 60
Mimulus_laciniatus CTTTGATCATTTTGTCTTCCTGGACACCTAATTTTCGATTTGTACCTATAAGATACCAA 60
Mimulus_dentilobus CTTTGATCATTTTGTCTTCCTCGACACCTAATTTTCGATTTGTACCTATAAGATACCAA 60

Mimulus_guttatus TCCACCAATAAAAACAGAAATATAAATTAATCCAACAAAAATCCACGTAAACGTAAACG 120
Mimulus_laciniatus TCCACCAATTAAAAACAGAAATATAAATTAATCCAACAAAAATCCACGTAAACGTAAACG 120
Mimulus_dentilobus TCCACCAATTAAAAACAGAAATATAAATTAATCCAACAAAAATCCACGTAAACGTAAACG 120

Mimulus_guttatus TTGAGTGTTATTTCTACACTCCACTGTATCTTTTGTATCTAGTGTTTTGCTGTTGTTG 180
Mimulus_laciniatus TCGAGTTTTATTTCTACACTCCATGTAATCTTTTTTATCTAGTGTTTTGCTGTTGTTG 180
Mimulus_dentilobus TAGAGTGTTATTTCTACACTCCACTGTATCTTTTTTATCTAGTGTTTTGCTGTTGTTG 180
* * * *

Mimulus_guttatus GTTATGCGTATTAAAGTCCTAGTATTGTAGTTCGTGTTTTTAAGAACGTTGTTGCGAATG 240
Mimulus_laciniatus TTGATGCGTATTAAAGTCATAGTATTGTAGTTCGTGTTTTTAAGAACGTTGTTGCGGATG 240
Mimulus_dentilobus TTGATGCGTATTAAAGTCCTAGTATTGTAGTTCGTGATTTTAAGAACGTTGTTGCGAATG 240
* * * *

Mimulus_guttatus CACTTTTGCGCATGTTTTTTTACATGTACGTTTGTGCATGTCCATTTGAGCGAGTGTTGTT 300
Mimulus_laciniatus CACTTTTGCGCATGTTTTTTTACATGTACGTTTGTGCATGTCCATTTGAGGGAGTGTTGTT 300
Mimulus_dentilobus CACTTTTGCGCATGTTTTTTTACATGTACGTTTGTGCATGTCCATTTGAGCGAGTGTTGTT 300

Mimulus_guttatus TGTGCATGTTTGTGATTGTATTAATGTCCTAGGATTGTAGTTGTGTTTTTCATGATCC 360
Mimulus_laciniatus TGTGCATGTTTGTGATTGTATTAATGTCCTAGGATTGTAGTTGTGTTTTTCATGATCC 360
Mimulus_dentilobus TGTGCATGTTTGTGATTGTATTAATGTCCTAGGATTGTAGTTGTGTTTTTCATGATCC 360

Mimulus_guttatus	TTTTTGCGAATGCACCTTTTGCCTGAGTACTTTTGTGCATGCTTTTGAACCTTTTACTCATG	420
Mimulus_laciniatus	TTTTTGCGAATGCACCTTTTGCCTGAGTACTTTTGTGCATGCTTTTGTACTTTTACTTATG	420
Mimulus_dentilobus	TTTTTGCGAATGCACCTTTTGCCTGAGTACTTTTATGCATGTTTTTGTACTTTTACTTATG	420

Mimulus_guttatus	TGCGTATCTTTTCTAGCGAGTGTTTTTGTGCACGTTTCTTGATGCGCATTCATGTCCTCG	480
Mimulus_laciniatus	TGCGTATCTTTTCTAGCGAGTGTTTTTGTGCACGTTTCTTGATGCGCATTCATGTCCTCG	480
Mimulus_dentilobus	TGCGTATCTTTTCTAGCGAGTGTTTTTGTGCACGTTTCTTGATGCGCATTCATGTCCTCG	480

Mimulus_guttatus	AACTGTAGCACGTATTTTCATGATCGCTTTTGGAAATCCAATTTTGACCATGTTTCGAGTCC	540
Mimulus_laciniatus	AATTGTAGTACGTATTTTCATGATCGCTTTTGTATCCAATTTTGACCATGTTTCGAGTCC	540
Mimulus_dentilobus	AACTGTAGTACGTATTTTCATGATCGCTTTTGGAAATCCAATTTTGACCATGTTTCGAGTCC	540
	** *****	
Mimulus_guttatus	GAATTTGGAATTTTGACGTTAGACAGGAATTGTAGCCAAGTAAATAGCTTTCTAATGCC	600
Mimulus_laciniatus	GAATTTGGAATTTTGACGTTAGACAGGAATTGTAGCCCGCTGAAATAGCTTTCTAATGCC	600
Mimulus_dentilobus	GAATTTGGAATTTTGCCATTAGACGGGAATTGTAGCCAAGTAAATAGCTTTCTAATGCC	600

Mimulus_guttatus	ACCGGAACCAAGTCGATTTGGAGTCCGGATGAGAAAGTTATGCTCGACTTCGTGGACACTA	660
Mimulus_laciniatus	GCCGGAACCAAGTTGATTTGGAGTCCGGATGAGAGAGTTATGCTCGACTTCGTGGACACTA	660
Mimulus_dentilobus	GCCGGAACCAAGTCATTTGGAGTCCGGATGAGAAAGTTATGCTCGACTTCGTGGACACTA	660

Mimulus_guttatus	CCAAAGATGTTGAGGGATTCTCTCTTCTAATTTGATTTTATTTCTTAATTGCAACTCTT	720
Mimulus_laciniatus	CCAAAGATGTTGAGGGATTCTCTCTTCTAATTTGATTTTATTTCTTAATTGCAACTCTT	720
Mimulus_dentilobus	CCAAAGATGTTGAGGGATTCTCTCTTCTAATTTGATTTTATTTCTTAATTGCAACTCCT	720

Mimulus_guttatus	TTCTTACC	728
Mimulus_laciniatus	TTCTTACC	728
Mimulus_dentilobus	TTCTTACC	728

Candidate centromere repeat monomer:

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>Mimulus_guttatus
CTTTGATCATTTTTGCTTCCTGGACACCTAATTTTCGATTTGTACCTAAAAGATACCAAA
TCCACCAATAAAAACAGAAATATAAATTAATCCAAACAAAAATCCACGTAAACGTAAACG
TTGAGTGTTATTTCTACACTCCACTGTATCTTTTGTATCTAGTGTTTTTGCTGTTGTTG
GTTATGCGTATTAAAGTCTAGTATTGTAGTTCGTGTTTTTAAGAACGTTGTTGCGAATG
CACTTTTGCGCATGTTTTTTTACATGTACGTTTGTGCATGTCCATTTGAGCGAGTGTTGTT
TGTGCATGTTTGTGATTGTGTTAATGTCCTAGGATTGTAGTTTGTGTTTTCATGATCC
TTTTTGCGAATGCACCTTTTGCCTGAGTACTTTTGTGCATGCTTTTGAACCTTTTACTCATG
TGCGTATCTTTTCTAGCGAGTGTTTTTGTGCACGTTTCTTGATGCGCATTCATGTCCTCG
AACTGTAGCACGTATTTTCATGATCGCTTTTGGAAATCCAATTTTGACCATGTTTCGAGTCC
GAATTTGGAATTTTGACGTTAGACAGGAATTGTAGCCAAGTAAATAGCTTTCTAATGCC
ACCGGAACCAAGTCGATTTGGAGTCCGGATGAGAAAGTTATGCTCGACTTCGTGGACACTA
CCAAAGATGTTGAGGGATTCTCTCTTCTAATTTGATTTTATTTCTTAATTGCAACTCTT
TTCTTACC
>Mimulus_dentilobus
CTTTGATCATTTTTGCTTCCTCGACACCTAATTTTCGATTTGTACCTATAAGATACCAAA
TCCACCAATTAACAGAAATATAAATTAATCCAAAAAATCCACGTAAACGTAAACG
TAGAGTGTTATTTCTACACTCCACTGTATCTTTTATCTAGTGTTTTTGCTGTTGTTG
TTGATGCGTATTAAAGTCTAGTATTGTAGTTCGTGATTTTAAGAACGTTGTTGCGAATG
CACTTTTGCGCATGTTTTTTTACATGTACGTTTGTGCATGTCCATTTGAGCGAGTGTTGTT
TGTGCATGTTTGTGATTGTGTTAATGTCCTAGGATTGTAGTTTGTGTTTTCATGATCC
TTTTTGCGAATGCACCTTTTGCCTGAGTACTTTTATGCATGTTTTTGTACTTTTACTTATG
TGCGTATCTTTTCTAGCGAGTGTTTTTGTGCACGTTTCTTGATGCGCATTCATGTCCTCG
AACTGTAGTACGTATTTTCATGATCGCTTTTGGAAATCCAATTTTGACCATGTTTCGAGTCC
GAATTTGGAATTTTGCCATTAGACGGGAATTGTAGCCAAGTAAATAGCTTTCTAATGCC
GCCGGAACCAAGTCATTTGGAGTCCGGATGAGAAAGTTATGCTCGACTTCGTGGACACTA
CCAAAGATGTTGAGGGATTCTCTCTTCTAATTTGATTTTATTTCTTAATTGCAACTCCT
TTCTTACT
>Mimulus_laciniatus
CTTTGATCATTTTTGCTTCCTGGACACCTAATTTTCGATTTGTACCTATAAGATACCAAA

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TCCACCAATTAAACAGAAATATAAATTAATCCAAACAAAAATCCACGTAAACGTAAACG
TCGAGTTTATTTCTACACTCCATTGTATCTTTTTATCTAGTGTTTTGCTGTTGTTG
TTGATGCGGTATTAAAGTCATAGTATTGTAGTTCGTGTTTTAAGAACGTGTGTGCGGATG
CACTTTTGCGCATGTTTTTTTACATGTACGTTTGTGCATGTCCATTTGAGGGAGTGTGTT
TGTGCATGTTTGTGATTGTATTAATGTCCTAGGATTGTAGTTTGTGTTTTCATGATCC
TTTTTGCGAATGCACTTTTGCCTGAGTACTTTTGTGCATGCTTTTGTACTTTTACTTATG
TGCATATCTTTTCTAGCGAGTGTTTTTGTGCACGTTTCTTGATGCGCATTTCATGTCCTTG
AATTGTAGTACGTATTTTCATGATCGCTTTTGTATCCAATTTTGACCATGTTTCGAGTCC
GAATTTGGAATTTTGACGTTAGACGGAATTGTAGCCCGCTGAAATAGCTTTCTAATGCC
GCCGGAACAGTTGATTGAGTCCGGATGAGAGAGTTATGCTCGACTTCGTGGACACTA
CCAAGATGTTGAGGGATTCTCTCTTAATTTGATTTTATTTCTTAATTGCAACTCTT
TTCTTACC

Grasses

Zea_mays	-TTTTTCGCAACGAACATGCCCAATCCACTACTTTAGGTCCAAAACATCATGTTTGGG-GT	58
Zea_luxurians	-TTTTTCGCAACGAACATGCCCAATCCACTACTTTAGGTCCAAAACATCATGTTTGGG-GT	58
Setaria_italica	TTTTTTCGCAACGAACGCATGCAATCTTCTAATTATACCCTAGAA-CATGTTTGGGAGT	59
Setaria_viridis	TTTTTTCGCAACGAACGCATGCAATCTTCTAATTATACCCTAGAA-CATGTTTGGGAGT	59
Panicum_capillare	--TTTTTCGCAAGGAACGCACCCGATCCACTCCAT-GGACCCAAAACATCATGTTTGGG-C	56
Panicum_hallii	-TTTTTCGCAACGAACGCACCCGATCCACTCCATTGGACCCAAAACATCATGTTTGGGGC	59
Panicum_virgatum	-TTTTTCGCAACGAACGCACCCCAATCCACCCCATTTGGACCCATAAATCATGTTTGGTAC	59
Oryza_sativa	--TTTTTGCCACGAACGCACCCCAATACACTCCAATATGTCCAAAACATCATGTTTGG--C	56
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Zea_mays	GATTTC-----GCGCAATTTGCTTGCCGCACGTCACCCATTCCGAA	99
Zea_luxurians	GGTTTC-----GCGCAATTTGCTTGCCGCACGTCACCCATTCCGAA	99
Setaria_italica	GTTTTT-----GAGCA-TTCGGTTCCGGCAGGAAAAACGATGC-AA	98
Setaria_viridis	GTTTTT-----GGGCA-TTCGGTTCCGGCAGGAAAAATGATGC-AA	98
Panicum_capillare	GT TTC-----GGACCGTTTCGTTACTGCACGAAAGTCGGTGC-AA	95
Panicum_hallii	GT TTC-----GGACCGTTTCGTTACTGCACGAAAGTCGATGC-AA	98
Panicum_virgatum	GTTTCATAGTGT TTTGGGTGCATT TTTGGGATCATTTTCGTAAC TGCATGAAACTCGGTGC-AA	118
Oryza_sativa	CTTTTT-----GAAC TTTTTCATTC CGGTAAAAACATCGCACCCA	97
	** * * * * *	

Zea_mays	AACGGGTA---TCGGGGTGCATACAAA---GCACGAGTTTTTGCCACCGGAACAATTTC	152
Zea_luxurians	AACGGGTG---TCGGGGTGCATACAAA---GCACGAGTTTTTGCCACCGGAACCATTTC	152
Setaria_italica	AACAGGTGCATTTTCGG---CACCCGAAT--GCACTATTTTCGGGTAGCGAAAC--TCGG	150
Setaria_viridis	AACGGGTGCATTTTCGG---CACCCGAAT--GCACTATTTGCCGGGTAGCGAAAC--TCGG	150
Panicum_capillare	AACGGGCC-AA-CTGGTGC-CATT--AAC--GCACAAGT-TCGCTAAACGAAG--TTGC	144
Panicum_hallii	AAC TGCCGAA-CTGGTGC-CATT--AAC--GCACAAGT-TCGCTAAACAAAG--TCGC	148
Panicum_virgatum	AACGGGGTGAA-CTGGTGC-AATT--AAT--GCAAAAGT-TCGTGCCACGAAG--TCAC	168
Oryza_sativa	CGTGTGCCAATATTGG---CATT--AATTGACAAAAGT-TCGCCGCGCGAA---TCAC	146
	* ** * * * *	

Zea_mays	TTCG----	156
Zea_luxurians	TTCG----	156
Setaria_italica	GTGGA---	155
Setaria_viridis	GTGGA---	155
Panicum_capillare	GTGCGAA-	151
Panicum_hallii	GTGCGAA-	155
Panicum_virgatum	GTGCGGA-	175
Oryza_sativa	GAAGTGAG	154
	*	

Centromere repeat monomer:

>Zea_mays
TTTTTCGCAACGAACATGCCCAATCCACTACTTTAGGTCCAAAACATCATGTTTGGGGTGA
TTTCGCGCAATTTGCTTGCCGCACGTCACCCATTCGAAAACGGGTATCGGGTGCATAC
AAAGCACGAGTTTGTGCCACCGGAACATTTCTTCG
>Zea_luxurians
TTTTTCGCAACGAACATGCCCAATCCACTACTTTAGGTCCAAAACATCATGTTTGGGGTGG
TTTCGCGCAATTTGCTTGCCGCACGTCACCCATTCGAAAACGGGTGTCGGGTGCATAC
AAAGCACGAGTTTGTGCCACCGGAACATTTCTTCG
>Setaria_italica
TTTTTTCGCAACGAACGCATGCAATCTTCTAATTATACCCTAGAACATGTTTGGGAGTG
TTTTTGAGCATTCGGTTCCGGCAGGAAAAACGATGCAAAACAGGTGCATTTCCGGCACCCG
AATGCACTATTTTCGGGTAGCGAAACTCGGGTGGA
>Setaria_viridis
TTTTTTCGCAACGAACGCATGCAATCTTCTAATTATACCCTAGAACATGTTTGGGAGTG

TTTTTGGGCATTTCGGTTCGGCACGAAAAATGATGCAAAACGGGTGCATTTCGGCACCCG
AATGCACTATTGCCGGGTAGCGAAACTCGGGTGA
>Panicum_virgatum
TTTTTCGCAACGACGCACCCATCCACCCATTCGACCTAAACTCATGTTTGGTACG
TTTCATAGTGTTCGGGTGCATTTCGGATCATTCGTAACTGCATGAAACTCGGTGCAAAA
CGGGGTGAACTGGTGCAATTAATGCAAAAGTTCGTGCCACGAAGTCACGTCCGGA
>Panicum_capillare
TTTTTCGCAACGACGCACCCGATCCACTCCATGGACCCAAAACATCATGTTTGGGCGTT
CGGACCGTTTCGTTACTGCACGAAAGTCGGTGCAAAACGGGCCAACTGGTGCCATTAACG
CACAAGTTCGCTAAACGAAGTTCGCTCGGA
>Panicum_hallii
TTTTTCGCAACGACGCACCCGATCCACTCCATTCGACCCAAAACATCATGTTTGGGCGG
TTTCGGACCGTTTCGTTACTGCACGAAAGTCGATGCAAAACTGGCCGAACGTGGTGCCATT
AACGCACAAGTTCGCTAAACAAGTTCGCTCGGA
>Oryza_sativa
TTTTTGGCACGACCCCAATACACTCCAATATGTCCAAAACATCATGTTTGGCCTTT
TTGAATTTTTTCATTCCGGTAAAAACATCGCACCCACGTGTGCCAATATTGGCATTAAAT
TGACAAAAGTTCGCCGCGCAATCACGAAGTGAG

Sorghum

Sorghum_bicolor	GATGCAAGATAGGTGCACGGTTTGCACGGAACGCACCATAGGCTAAGAAACCATTTTGA	60
Sorghum_propinquum	GATGCAAGATAGGTGCACGGTTTGCATGGAACATACCATATGCTAAGAAATCAATTTGA	60
Miscanthus_giganteus	GATGCAAGATAGGTGCACGGTTTGCGCCAAACGTACCATAGGCTCAGAAATCATTTTGA	60

Sorghum_bicolor	CGCACCCGATGGAACCTCTAGATGAAGTGTGTCAAATGGAAGCTCGGTTTCGGTCTGTTT	120
Sorghum_propinquum	CGCACCCGATGGAACCTCTAGATGACGTGTGTCAAATGGAAGCTCGCTTTGGTCTGTTT	120
Miscanthus_giganteus	CGCACCCGATGGAACCTCTAGGTGACGTGGGTCTATGTGGAATCTCGTTTCGGTCCGTTT	120

Sorghum_bicolor	GAGATAGTGTTAATCTT	137
Sorghum_propinquum	GAGACAGTGCTAATCTC	137
Miscanthus_giganteus	GAGATAGTGTTAGTGTT	137

--ACTUAL READS--

>Sorghum_bicolor
GATGCAAGATAGGTGCACGGTTTGCACGGAACGCACCATAGGCTAAGAAACCATTTTGA
CGCACCCGATGGAACCTCTAGATGAAGTGTGTCAAATGGAAGCTCGGTTTCGGTCTGTTT
GAGATAGTGTTAATCTT
>Sorghum_propinquum
GATGCAAGATAGGTGCACGGTTTGCATGGAACATACCATATGCTAAGAAATCAATTTGA
CGCACCCGATGGAACCTCTAGATGACGTGTGTCAAATGGAAGCTCGCTTTGGTCTGTTT
GAGACAGTGCTAATCTC
>Miscanthus_giganteus
GATGCAAGATAGGTGCACGGTTTGCGCCAAACGTACCATAGGCTCAGAAATCATTTTGA
CGCACCCGATGGAACCTCTAGGTGACGTGGGTCTATGTGGAATCTCGTTTCGGTCCGTTT
GAGATAGTGTTAGTGTT

Corals

Acropora_millepora	CAAAACCCTAGTGACGGTACTTTGCACAAAAAGTTGCTTATCTCGAGGAG-ATCG---A	56
Acropora_palmata	CAAAAC----GTGT-CGAT-CTCCTCGAAATAAGCAACTTTTGTGCAAAGTACCGTGCA	54

Acropora_millepora	CAAG--TTTTGGTG-GTTTTTCAGCAAA-TGCCCTACTTTTTGCAACATTTTTCTAAAAA	112
Acropora_palmata	CTAGGGTTTTGACCAATTTTGTAGCAAAATGTTGCAAAAAGTATGGCATTTGGTGAAAAA	114
	* * *	

Acropora_millepora	TTGGGT	118
Acropora_palmata	CCAC--	118

Candidate centromere repeat monomer:

>Acropora_millepora
CAAAACCCTAGTGACGGTACTTTGCACAAAAAGTTGCTTATCTCGAGGAGATCGACAAG
TTTTGGTGGTTTTTCAGCAAAATGCCCTACTTTTGTCAACATTTTTCTAAAAATGGGT

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>Acropora_palmata
CAAAACGTGTCGATCTCCTCGAAATAAGCAACTTTTTGTGCAAAGTACCGTGCACTAGGG
TTTTGACCCAATTTTGAGCAAAATGTTGCAAAAAGTATGGCATTGGTGAAAAACCAC

#####
Mosquitos
anopheles_gambiae      ATGGCCGTAACAACGATAATAGATGGCAACAAAATTCAACATCAAATTTCAAGGCCATTC 60
anopheles_gambiae_S    ATGGCCGTAACAACGATAATAGATGGCAACAAAATTCAACATCAAATTTCAAGGCCATTC 60
anopheles_gambiae_M    ATGGCCGTAACAACGATAATAGATGGCAACAAAATTCAACATCAAATTTCAAGGCCATTC 60
                        *****

anopheles_gambiae      AAATAGTGCAAGATGGCTTCATTGGATGAAAC 93
anopheles_gambiae_S    AAATAGTGCAAGATGGCTTCATTGGATGAAAC 93
anopheles_gambiae_M    AAATAGTGCAAGATGGCTTCATTGGATGAAAC 93
                        *****

Candidate centromere repeat monomer:
>anopheles_gambiae
ATGGCCGTAACAACGATAATAGATGGCAACAAAATTCAACATCAAATTTCAAGGCCATTC
AAATAGTGCAAGATGGCTTCATTGGATGAAAC
>anopheles_gambiae_M
ATGGCCGTAACAACGATAATAGATGGCAACAAAATTCAACATCAAATTTCAAGGCCATTC
AAATAGTGCAAGATGGCTTCATTGGATGAAAC
>anopheles_gambiae_S
ATGGCCGTAACAACGATAATAGATGGCAACAAAATTCAACATCAAATTTCAAGGCCATTC
AAATAGTGCAAGATGGCTTCATTGGATGAAAC

#####
Drosophila 1
Drosophila_erecta      TAATTCCTCAACTTGTTATGGCTTATATTTTCATTATACGTTCCCTCTAACAGCCTATAAAG 60
Drosophila_yakuba      TAATTCCTCAACTTGTTCTGG-TTATTTTTCTTATATGTACTCTCTACCTGCCCATAAAC 59
                        *****

Drosophila_erecta      TAGTGGACAGGAAG--TTCGTGAAT-TTAGT-TAATAAATGTG--TTCATG----- 106
Drosophila_yakuba      TAGAGAATGTAATGGCCTCTATAAACGTTGATGCAGGCGATGGGGATTTCAGGAGCTGCGC 119
                        *** * * * * * * * * * * * * * * * * * * * * * *

Drosophila_erecta      -----TTTGTGTTTG---CGC-----ACGAAA-----AGTGG 130
Drosophila_yakuba      GGGTGTAATACTGTCATTACGACGCCGTGAACCAGGACCAACCAAGCCAGGTATAG 179
                        * * * * * * * * * * * * * * * * * * * * * *

Drosophila_erecta      T-----TTCAT---GTGGTGCGCAGATAAA--C 153
Drosophila_yakuba      TGGAATGAACTATATTTTTTAAACTATATGTGTTCATTGAATAATACAAATTAAGTC 239
                        * * * * * * * * * * * * * * * * * * * * * *

Drosophila_erecta      AATCTACATCCAG---AAAGAA---GAA-----AATATAA----- 182
Drosophila_yakuba      CATCGACATTAAATATTAAATAAAGTGAATTACTGTCAGCTTACACCAATATGACATGT 299
                        *** * * * * * * * * * * * * * * * * * * * * *

Drosophila_erecta      -----ACTCT--AAACTCTAGAC-----CAAGTCA---TCGG-----TAATTGTAA 218
Drosophila_yakuba      CAACTGATTCCCGAAAAATATACACAGTCAAAACAAGTTAAGTTTGGCCACGTAATTGTTA 359
                        * * * * * * * * * * * * * * * * * * * * * *

Drosophila_erecta      -----TTAAAACTGGTGCACATAGTGTTCAAAAA 248
Drosophila_yakuba      ATGATTGTTTGAAAAAGTA-TATACATGATGCTTGTTAA 396
                        * * * * * * * * * * * * * * * * * * * * *

Candidate centromere repeat monomer:
>Drosophila_erecta
TAATTCCTCAACTTGTTATGGCTTATATTTTCATTATACGTTCCCTCTAACAGCCTATAAAG
TAGTGGACAGGAAGTTCCGTGAATTTAGTTAATAAATGTGTTTCATGTTTGTGTTGCGCA
CGAAAAGTGGTTTCATGTGGTGCGCAGATAAACAATCTACATCCAGAAAGAAGAAAAATAT
AAACTCTAAACTCTAGACCAAGTCATCGGTAATTGTAATTAATAAAGTGGTGCACATAGTG
TTCAAAAA
>Drosophila_yakuba
TAATTCCTCAACTTGTTCTGGTTATTTTTCTTATATGTACTCTCTACCTGCCCATAACT
AGAGAATGTAATGGCCTCTATAAACGTTGATGCAGGCGATGGGGATTTCAGGAGCTGCGCG
GGTGTAATAATCTGCATTTCAGGACGCCGTGAACCAGGACCAACCAAGCCAGGTAGTAGT
GGAATGAACTATATTTTTTAAACTATATGTGTTCATTGAATAATACACAATTAAGTCC
ATCGACATTTAATATTAAAAAACTGAATTACTGTGTCAGCTTACACCAATATGACATGTC

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AACTGATTCCTCCGAAAATATACACAGTCAAACAAGTTAAGTTTGGCCACGTAATTGTTAA
TGATTGTTTGAAGATATACATGATGCTTGTTAA

Drosophila 2

Drosophila_sechellia TTTGTGCAAAATTTTGGATTTTTCGATTTTAGATACCAGGCGATGATAATCAGTAGCGG 60
Drosophila_simulans TTTGTGCAAAATTTTGGATCTTTCGATTTTAGATACCAGGCGATGATAATCAGTAGCGG 60

Drosophila_sechellia GTGTCTACTGAAAACCACTAATCGTTGGTCACCTTCTGGAATCTTGTTCGCCTGGTAA 120
Drosophila_simulans GTGTCTACAGAAAACCA-CTTATCGTTGGTCACCTTCTGGAATCTTGTTCGCCTGGTAG 119

Drosophila_sechellia TTAAACCGAAAAATCTCTCAATTG--CAACAAATGCGTATT 162
Drosophila_simulans TTAAACCGAAAAATCTCTCAATTGCGCTACAAATGCGCATT 163

Candidate centromere repeat monomer:

>Drosophila_sechellia
TTTGTGCAAAATTTTGGATTTTTCGATTTTAGATACCAGGCGATGATAATCAGTAGCGG
GTGTCTACTGAAAACCACTAATCGTTGGTCACCTTCTGGAATCTTGTTCGCCTGGTAA
TTAAACCGAAAAATCTCTCAATTGCAACAAATGCGTATT
>Drosophila_simulans
TTTGTGCAAAATTTTGGATCTTTCGATTTTAGATACCAGGCGATGATAATCAGTAGCGG
GTGTCTACAGAAAACCACTTATCGTTGGTCACCTTCTGGAATCTTGTTCGCCTGGTAGT
TTAAACCGAAAAATCTCTCAATTGCGCTACAAATGCGCATT

Drosophila 3

Drosophila_ficusphila CCATAACTTTTGAAATTTTACCCGATTTAAAAGTGAATACCTCTCTGA 50
Drosophila_rhopaloea CCATAACTTTACCAAACTTAAGCCGATTCCAAGTGGCATACCTCTAAAG 50

Drosophila_ficusphila ATTTGTATTAAAAATATCTATCTAGCTGCATTATTGGTTTATTTTCGAAT 100
Drosophila_rhopaloea ACTTCTGATTTCGATTCTCTAAAAATCTGCATT-----CAAATTTTCAAT 95
* * * * *

Drosophila_ficusphila TT---TTGGTCAATATTTTGTAAATTTTTATGACCCCGACCTGTCAA 146
Drosophila_rhopaloea TTAACGTTGATCAA-ATTTT-TGACCCATTTTCATGTCAGTTATTTCTAA 143
* * * * *

Drosophila_ficusphila ATTTGCAAAAAATGGGTTTGCAAGAAAGTGACCAGATCCCAGCACTG--C 194
Drosophila_rhopaloea -TTTCCGA-----GGACTTGTAAACAGAGTGACT-----CAAAATTTGGAC 181
* * * * *

Drosophila_ficusphila TTAGC--- 199
Drosophila_rhopaloea TTAGAGAGT 190

Candidate centromere repeat monomer:

>Drosophila_ficusphila
CCATAACTTTTGAAATTTTACCCGATTTAAAAGTGAATACCTCTCTGAATTTGTTATT
AAAATATCTATCTAGCTGCATTATTGGTTTATTTTCGAATTTTGGTCAATATTTGTAA
TTTTTTATGACCCCGACCTGTCAAATTTGCAAAAAATGGGTTTGCAAGAAAGTGACCA
GATCCCAGCACTGCTTAGC
>Drosophila_rhopaloea
CCATAACTTTACCAAACTTAAGCCGATTCCAAGTGGCATACCTCTAAAGACTTCTGATT
CGATTCTCTAAAAATCTGCATTCAAATTTTCAATTTAACGTTGATCAAATTTTGACCC
ATTTTCATGTCAGTTATTCTAATTTCCGAGGACTTGAACAGAGTGACTCAAATTTGGA
CTTAGAGAGT

Drosophila 4

Drosophila_virilis ACTATATCATATAGCTGCCATAGGAACGATCGGTCGAAAATTAAGTTTGTATGAAA-- 58
Drosophila_elegans ACTATATCATATAGCTCCCATAGGAACAA---TCGAAAATAAAT---GAAAAAAT 52

Drosophila_virilis --AACATTT-TGTTTTTCAAGATATCTTGACCAAAC--TCGGCATTATTAGTTTTACTA 113

Drosophila_elegans ATAACTTTTCTGTTTTT---AACTTTTGTTTAGTTCCTTCGACATATAGCAATGGTTAAA 109
 *** ** * * * * *** ** * * * *

Drosophila_virilis TACTCCTCATATATATGCAAAATCCTATTAAGATCGGACC 153
Drosophila_elegans TATTTCAGAATTACGGTTTAAATTCATCAAAATCGGACG 149
 ** * * * **** ** ** *****

Candidate centromere repeat monomer:

>Drosophila_virilis
ACTATATCATATAGCTGCCATAGGAACGATCGGTCGAAAATTAAGTTTTGTATGAAAAA
CATTTTGTTCCTCAAGATATCTTGACCAAACTCGGCATTTATTAGTTTACTATACCTCT
CATATATATGCAAAATCCTATTAAGATCGGACC
>Drosophila_elegans
ACTATATCATATAGCTCCCATAGGAACAATCGAAAAATAAATGAAAAAATTATAACTTT
TCTGTTTTTAACTTTTTGTAGTTCCTTCGACATATAGCAATGGTTAAATATTCAGAAT
TACGGTTTAAATTCATCAAAATCGGACG

Wasps

Nasonia_giraulti CGCTTTGGTTTTAGATTTTATACTCGCTTCGCTCGCCTTCCTTCGATGTGCCGAGGTGTT 60
Nasonia_longicornis CGCTTTGGTTTTAGATTTTATACTCGCTTCGCTCGCCTTCCTTCGATGTGCCGAGGTGTT 60
Nasonia_vitripennis CGCTTTGGTTTTGATTT-ATACTCGCTTCGCTCGCCTTCCTCCGATGTGCCGAGGTGTT 59
 ***** ***** ***** ***** *****

Nasonia_giraulti TTTTAAATAAATTATTGAGCTCGGGGAGCGTGGTGTAGTTGGGTTTAAAG 109
Nasonia_longicornis GATTAAATAAATTATTGAGCTCGGGGAGCGTGGTGTAGTTGGGTTTAAAG 109
Nasonia_vitripennis GTTTAAATAAATTATTGAGCTCGGGGAGCGTGGTGTAGTTGGGTTTAAAG 108

Candidate centromere repeat monomer:

>Nasonia_giraulti
CGCTTTGGTTTTAGATTTTATACTCGCTTCGCTCGCCTTCCTTCGATGTGCCGAGGTGTT
TTTTAAATAAATTATTGAGCTCGGGGAGCGTGGTGTAGTTGGGTTTAAAG
>Nasonia_longicornis
CGCTTTGGTTTTAGATTTTATACTCGCTTCGCTCGCCTTCCTTCGATGTGCCGAGGTGTT
GATTAAATAAATTATTGAGCTCGGGGAGCGTGGTGTAGTTGGGTTTAAAG
>Nasonia_vitripennis
CGCTTTGGTTTTGATTTATACTCGCTTTGCTCGCCTTCCTCCGATGTGCCGAGGTGTTG
TTTTAAATAAATTATTGAGCTCGGGGAGCGTGGTGTAGTTGGGTTTAAAG

Zebrafish

Danio_rerio ATTTTCACTTGCAACTTGCTTTAA---CATGTTTAACAGTGCATGAATTGTT--GTCT 53
Danio_nigrofasciatus ATTTTCACTTTCTCTTGCTCTGAAAAGCGTGTAGAGTTGCCTGTACTGTAGTGATC 60
Danio_albolineatus ATTTTCACTTGCAAGTTGTAAAA---CATGCTTAATACAGCATGCACTGTG--TTTT 54
 ***** * *** * * *** ** * ***

Danio_rerio AAAACAAAAAAGATGATGCATTTTATGGCTGGATC--GTTTT-ATCACTTTCTGAATTG 110
Danio_nigrofasciatus AAAACAAAAA-GAATGATGGTTTTTCATCATTCTTTTGTGTTGATCACTCTCTGTTCTG 119
Danio_albolineatus TAAACTTAAA-GAATGATGATTTTCACTGTTTAAAGCAAATCTGTCACTTGCTCTTTT 113
 **** *** ***** *** * ** ***** ** *

Danio_rerio G-ACGTTGAAAAATGAGCTTATCTCAG---CCAGCAGAGAGGTCA---AATCACAGTAAT 162
Danio_nigrofasciatus G-GCCCTCTAAACG----TGTTTTAA---TAAGTTGCAAGTGAC---AATCA--GCAGA 165
Danio_albolineatus GCACCTACCAAGC-----TCTGAAAAGCAAGTTGCAGAATCTAGGAATTG--ACAAT 164
 * * ** * * ** * *** *

Danio_rerio GCAAACTCAGTCAGAGACATAG--- 184
Danio_nigrofasciatus TCTGGCTGAGTTGCCATACTGTT- 190
Danio_albolineatus TATGAACA--TTATCCTTTTGCTTA 188
 * *

Candidate centromere repeat monomer:

>danio_rerio
TAAAACGATCCAGCCATAAAATGCATCATTCCTTTTTGTTTTAGACAACAATTCATGCAC
TGTTAAACATGTTAAAGCAAGTTGCAAGTGAAAATCTATGTCTCTGACTGAGTTGCATT
ACTGTGATTTGACCTCTCTGCTGGCTGAGATAAGCTCATTTTCAACGTCCAATTCAGAAA
GTGA
>Danio_albolineatus
TTTAAGCAAATTCGTCACTTGCTCTTTTGCACCTACCAAGCTCTGAAAAGCAAGTTGC

AGAATTCTAGGAATTGACAATTATGAAACATTATCCTTTTGCTTAATTTTCACTTGCAAG
TTGTTAAACATGCTTAATACAGCATGCACTGTGTTTTTAAACTTAAAGAATGATGATT
TTCACGT
>Danio_nigrofasciatus
GTTTAGAGGGCCAGAACAGAGAGTGATCAAAACAAAAGAAATGATGAAAACCATCATT
CTTTTTGTTTGTATCACTAACAGTACAGGCAACTCTAAACACGCTTTTCAGAGCAAGAGA
AAGCTGAAAATAAACAGTATGGCAAACCTCAGCCAGATCTGCTGATTGTCACCTTGCAACTT
ATTAAACAC

Cichlids

Pundamilia_nyererei	GTAACCTTTTGATAGAAGACTCAGACAAACATGTTTATGGCTTTATCTTAT	50
melanochromis_auratus	GTAACCTTTTGATAGTAGACTCAGACAGACATGTTTATGGCTTTATCTTAT	50
labeotropheus_fuelleborni	GTAACCTTTTGATAGAAGACTCAGAAACACATGTTTATGGCTTTATCTTAT	50
metriaclima_zebra	GTAACCTTTTGATAGAAGACTCAGATACACATGTTTATGGCTTTATCTTAT	50
rhamphochromis_esox	GTAACCTTTTGATAGAAGACTCAGACAAACATGTTTATGGCTTTATCTTAT	50
oreochromis_niloticus	GTAACCTTTTGATAGGAGACTCGGACACACATATTTAGGCTTGGCCTTAT	50

Pundamilia_nyererei	AGAACTCAATATCCCCGTGCTGGGCAAACAGGTTTGCAGCCGTTTGAGC	100
melanochromis_auratus	AGAACTCAATATCCCCGTGCTGGCCGAACAGGTTTGCAGCCGTTTGAGC	100
labeotropheus_fuelleborni	AGAACTCAATATCCC-GTGTGGGCAAACAGGTTTGCAGCCGTTTGAGC	99
metriaclima_zebra	AAAACCTCAAGATCTCCGTGCTGGGAAAACAGGTTTGCAGCCGTTTGAGC	100
rhamphochromis_esox	AGAACTCAATGTCCCCGTGCTGGGAAAACAGGTTTGCAGCTGTTTGAGC	100
oreochromis_niloticus	AGAACTCAGCATTTCCATGCTGGGGAATAGGTTTGCCTGTTTGAGC	100
	* * * * *	

Pundamilia_nyererei	TAAGATTTTAAATTTATTCACATAATGAAAACCTATACTTTGTTTCAGGC	150
melanochromis_auratus	TAAGATTTTAAATTTATTCACATAATGAAAACCTATACTTTGTCTCGGGC	150
labeotropheus_fuelleborni	TAAGATTTTAAATTTATTCACATAATGAAAACCTATACTTTGTTTCAGGC	149
metriaclima_zebra	TAAGATTTTAAATTTATTCACATAATGAAAACCTATACTTTGTCTCGGGC	150
rhamphochromis_esox	TAAGATTTTCAAGTTTATACACATAATGAAAACCTATACTTTGTTTCGGTC	150
oreochromis_niloticus	TAAGATTTTCA-GTTATTGACTAAATGAAAACC-ATAATGTGTTTCAGGC	148

Pundamilia_nyererei	GAGTTTCCCATTCAAATGCATGT--CAGTGAGAAACGCACTGTCTTGGCG	198
melanochromis_auratus	GAGTTTCCCATTCAAATGCATGTAACAGTGAGAAACGCACTGTCTTGGCG	200
labeotropheus_fuelleborni	GAGTTTCCCATTCAAATGCATGTAACAGTGAGAAACGCACTGTCTTGGCG	199
metriaclima_zebra	GAGTTCCCATTCAAATGCATGTAACAGTGAGAAACGCACTGTCTTGGCG	200
rhamphochromis_esox	GAGTTCCCATTCAAATGCATGTAACAGTGAGAAACGCACTGTCTTGGCG	200
oreochromis_niloticus	GAG-----AAACGCACTGTCTCGCCG	169

Pundamilia_nyererei	AAATAAAGCGTTTTTGTACAACCTTCATATAAATCGCT	235
melanochromis_auratus	AAATAAAGCATTTTTTGTACAACCTTCATATAAATCGCT	237
labeotropheus_fuelleborni	AAATAAAGCGTTTTTGAACAACCTTCATATAAATCGCT	236
metriaclima_zebra	AAAGAAAGCGTTTTTGTACAACCTTCATATAAATAGCT	237
rhamphochromis_esox	AAAGAAAGCGTTTTTGTACAACCTTCATAAATCGCT	237
oreochromis_niloticus	AAATAAGGCGATTTTCCCAAGTCCATAAAGACAGCT	206

Candidate centromere repeat monomer:

>pundamilia_nyererei
GTAACCTTTTGATAGAAGACTCAGACAAACATGTTTATGGCTTTATCTTATAGAACTCAAT
ATCCCCGTGCTGGGCAAACAGGTTTGCAGCCGTTTGAGCTAAGATTTTAAATTTATTCAC
ATAATGAAAACCTATACTTTGTTTCAGGCGAGTTTCCCATTCAAATGCATGTCAGTGAG
AAACGCACTGTCTTGGCGAAATAAAGCGTTTTTGTACAACCTTCATATAAATCGCT
>melanochromis_auratus
GTAACCTTTTGATAGTAGACTCAGACAGACATGTTTATGGCTTTATCTTATAGAACTCAAT
ATCCCCGTGCTGGCCGAACAGGTTTGCAGCCGTTTGAGCTAAGATTTTAAATTTATTCAC
ATAATGAAAACCTATACTTTGTCTCGGGCGAGTTTCCCATTCAAATGCATGTAACAGTG
AGAAACGCACTGTCTTGGCGAAATAAAGCATTTTTTGTACAACCTTCATATAAATCGCT
>labeotropheus_fuelleborni
GTAACCTTTTGATAGAAGACTCAGAAACACATGTTTATGGCTTTATCTTATAGAACTCAAT
ATCCCCGTGCTGGGCAAACAGGTTTGCAGCCGTTTGAGCTAAGATTTTAAATTTATTCAC
ATAATGAAAACCTATACTTTGTTTCAGGCGAGTTTCCCATTCAAATGCATGTAACAGTGA
GAAACGCACTGTCTTGGCGAAATAAAGCGTTTTTGAACAACCTTCATATAAATCGCT
>metriaclima_zebra
GTAACCTTTTGATAGAAGACTCAGATACACATGTTTATGGCTTTATCTTATAAACTCAAG

ATCTCCGTGCTGGGAAAACAGGTTTTGCAGCCGTTTGAGCTAAGATTTTAAAATTATTC
CATAATGAAAACCTATACTTTGTCTCGGGCGAGTTCCCATTCAAATGCATGTAACAGTG
AGAAACGCATTGTCTTGGCGAAAGACGTTTTTGTACAACCTCATATAAATAGCT
>rhamphochromis_esox
GTAACCTTTGATAGAAGACTCAGACAAACATGTTTATGGCTTTATCTTATAGAACTCAAT
GTCCCGGTGCTGGGAAAACAGGATTTGCAGCTGTTTGAGCTAAGATTTTCAAGTTATACA
CATAATGAAAACCTATACTTTGTTCGGTCGAGTTCCCATTCAAATGCATGTAACAGTG
AGAAACGCACGTGTCTTGGCGAAAGACGTTTTTGTACAACCTCATATAAATCGCT
>oreochromis_niloticus
GTAACCTTTGATAGGAGACTCGGACACACATATTTTCAAGCTTGGCCTTATAGAATTGAGC
ATTTCCATGCTGGGAAAATAGGTTTTGCCACTGTTTGAGCTAAGATTTTCAAGTTATGAC
TAAATGAAAACCTAATGTGTTTCAGGCGAGAAACGCACGTGTCTCGCCGAAATAAGGCGA
TTTTCACCAAGTCCATAAAGACAGCT

Cats

Felis_catus GCACTGGGTTCAGTGGAGGCTGCAGTGCCGCGG 33
Felis_silvestris GCACTGGGTTCAGTGGAGGCTGCAGTGCCGCGG 33

Candidate centromere repeat monomer:

>Felis_catus
GCACTGGGTTCAGTGGAGGCTGCAGTGCCGCGG
>Felis_silvestris
GCACTGGGTTCAGTGGAGGCTGCAGTGCCGCGG

Bovine

Bison_bison AATGGAAGATTGGACTT-CCCTGGGCCAAACACAAGAGG--CATC-CTGAATCCCCGT- 55
Bos_taurus_taurus AATGGAAGATTGGACTT-CC-TGGGC--AACACAAGAAGGCCATCACTGATTTCCCGTT 56
Bos_grunniens -ATGGAAGATTGGACTT-CCCTGGGCC-AACACAAGAGG--CATC-CTGAATCCCCGT- 53
Bos_taurus_indicus AATGGAAGATTGAAGTTCCTGGGCC-AAC-CAAAAGG--CATC-CTGACTTCCCGT- 54

Bison_bison CGTAATTCGAGAATCC--TGCC-GACACTCGAGAAAATCCACGTG--TTCCCCCGTCATC 110
Bos_taurus_taurus CGTAATTCGAGATTCGCGCGCC-AA-ACTCGAGACA-CCAACGTGGATTCGCCCGTCATC 113
Bos_grunniens CGTAATTCGAGAATCC--CGCC-GCAACTCGAGAAAACACGTGG-TTCCCCCGTCATC 109
Bos_taurus_indicus CGTAATTC-AGAAATCC-CGCGCGTAACTCGAGAAAACACGTGG-CTCCCCCGTCCATC 111

Bison_bison -GCA--AGAT-GAAGCCCTTTCCCGCTACAGT--GTCT--CAGGAGAAGTCCCACGTTAG 162
Bos_taurus_taurus -GCACAAGATTGAAGCCCTTTCC-GCTACAGC--GTCT--CAGGAGAAGTCCCACGTTAG 167
Bos_grunniens -GCA--AGAT-GAAGCCCTTTCCCGCTACAGC--GTCT--CAGGAGAAGTCCCACGTTAG 161
Bos_taurus_indicus CGCA--AGAT-GAAGCCCTTTCCCGCAACAGCCGCGCCTCCAGGAGAAGTCCCACGT-AG 167

Bison_bison GTATTGGAGGTCGAAACGGTACTTGGC-ACC-TTGATG-CGACC--ACAAAGTGCCCCGA 217
Bos_taurus_taurus GAATTGAGCGGTGGAACGGTACTTGGC-ACCCTTGACGCGGCCCCACAAAGTTCCCCGG 226
Bos_grunniens GAATTGGAGGTCGAAACGGTACTTGGCCACCCTTGATG-CGACCC-ACAAAGTTCCC-GA 218
Bos_taurus_indicus G-ATTGGAGGTCGAAAGGGCACTTGGC-GCCCTTGATG-CGACCC-ACAAAGTTCCCCGA 223
 * * * *

Bison_bison CATCCCGGTCTCCCTCGAGAGGAACACC-GAAGTTTTCCGGC-ACCACTTCTCTGAGC 275
Bos_taurus_taurus CATCCCG--TCTCCCTGGAGAGGAACACC-GAG--TTTCCGGC-ACCACTTCTCTGAGC 280
Bos_grunniens CATCCCGGTCTCCCTCGGAGAGGAACCCCTGAGGTTTTCCGGCCACCCTTCTCTGAGC 278
Bos_taurus_indicus AATCCCGGTCTCCCTCGAGAGGAACACT-GAGGCTTTC--GC-ACCCCTCTCTGACC 279

Bison_bison CCCTTCTACCC-TCCTGA-TCTGGACAGG-AGGGTCGACTCCCTGCTTTGTCTGGAAGG 332
Bos_taurus_taurus CCCTTCTACCC-TCCTGA-TCTCGACAGGAGGGTCGACTCCCTGCTTTGTCTGGAAGG 338
Bos_grunniens CCCTTCTACCC-TCCTGA-TCTGGACAGG-AGGGTCGACTCCCTGCTTTTCTGGAAGG 335
Bos_taurus_indicus CTTTCTCCCCCTCCTGAATCTGGACAGG--AGGTCGACTCCCTGCTT-GTCTGGAAGG 336
 * * * *

Bison_bison GGTTCGCCGACCTTCCGGTCGCACCTCAGGATGAGGCCGGGTCTCA-CGACGAC-ATTTCA 390
Bos_taurus_taurus GGTTCGCCGACCTTCCGGTCGCACCTCAGGATGAGGCCGGG-CTCA-CGACGAC-ATTCCA 395
Bos_grunniens GGTTCGCCGACCTTCCGGTCGCACCTCAGGATGAGGCCGGT-CTCA-CGACGAC-ATTCCA 392
Bos_taurus_indicus GGTTC--GACCTTCCGTCCACCTCCAGGAATGAGGCCGGT-CTCAACGAAGACCATTCCA 394

Bison_bison	G-ACGTGGCCT--CGTGGGTGGTTCC-ACATTCCGAAGGAC-CCCGATTTCCTCCGGTCCCC	445
Bos_taurus_taurus	G-ACGTGGCCT--CGTGGGTGCTTCC-ACATTGCGAAGCAC-CCCGATTTCCTCCGGTCCCC	450
Bos_grunniens	GGACGTGGCCT--CGTGGGTGGTTCC-ACATTGCGTAAGACACCCGATTTCCTCCGGTCCCC	449
Bos_taurus_indicus	--ACGTGCCCTCCGTGGGTGGTTCCACATT-CGTAGGAC-CCCGATTCCC--GTCCCC	448

Bison_bison	TCTTG-ATAAGAACCCGATGCCCCGGACACCTCTT-CGAACCTCCACCCTGTGAATGAAGT	503
Bos_taurus_taurus	TCTTG-GTAAGAACCCGATGCCCCGGACACCTCT--CGAAC-TCCACCCTGTGAATGAGGT	506
Bos_grunniens	TCTTG-ATAAGAACCCGATGCCCCGGACACCTCTTCCGAAC-TCCACCCTGTGAATGAAGT	507
Bos_taurus_indicus	TCTTGATAAGAACCCGATGCCCCGGACACCTCTC-CGAACCTCAACCCTG-GAATGAAGT	506

Bison_bison	CAACACGAAGGGGAGTGCATCGCCGGAAGGAAACCCCAAGGTTCCAAA	563
Bos_taurus_taurus	CAACACGAAGGGGAGTG-CCCGCCGTCATCGTCCGGAAGAAACCCCAAGGTTCCAAA	565
Bos_grunniens	CAACACGAAGGGGAGTGCATCGCCGTCATCGTTCGGGGAAGAAACCCCAAGGTTCCAAA	567
Bos_taurus_indicus	CAACACGAAGGGCAAT---TTTTCCGTCATCGTTCAGAAAAA---CCCAG-TTCCAAA	559

Bison_bison	TACCGCTCGACAAGT-GGCCTGTCT-CCCCGGGAAACACCTCGAGAGGCAAGCGGAGTTC	621
Bos_taurus_taurus	TACAGCTCGACAAGT-GGCCTCTCT-CCCCGGGGA-CACCTCGAGAGGCAAGCGGAGTTC	622
Bos_grunniens	TACAGCTCGACAATG-GGCCTCTCT-CCCCGGGGA-CACCTCGAGAGGCAAGCGGAGTTC	624
Bos_taurus_indicus	TACAGCTCGACAAGCGGCTCTTCTTCCCCGGGACCATCTCGAGATGCAAGCGGAGTTC	619

Bison_bison	CATGCCTCA--CCCAAGACGAGG-CCTGACTCTCCCTGTCCCAAGTCTGCAGGGACCTTG	678
Bos_taurus_taurus	CATGCCTCAA-CCCAAGACGAGGACCTGACTCTCC-TGTCCCAGTCTGCAGGGACCTTG	680
Bos_grunniens	CATGCCTCAA-CCCAAGACGAGG-CCTGACTCTCC-TGTCCCAGTCTGCAGGGACCTTG	681
Bos_taurus_indicus	CATGCCTCAAACCAAGACAG---CCGACTCTCC-TGTCCCAGTCTGCAGA---CCTG	671

Bison_bison	CGAT-CAGAGTCTGAAGTCAGAGGAACCCCTGAGGTTCC-TGCCTCAACTGGAGATG-AGG	735
Bos_taurus_taurus	CGATTCCGAGTCTGAAATCAGAGGAACCCCTGAGGTTCC-TGCCTCAACTGGAGATGAGG	739
Bos_grunniens	CGAT-CGG--TCTGAAATCAGAGGAACCCCTGAGGTTCC-TGCCTCAACTGGAGATG-AGG	736
Bos_taurus_indicus	CGATCGGAAGTCTGAA-TCA-AGGTACCTGCGGTTCCGCCCTCAACTGGAGATG-AGG	728

Bison_bison	CCCTCTTCCAATGCACCAA-CCCAAGTGGGAGTGCCGAGAAGCCC-TCCCA-CCTCCAGT	792
Bos_taurus_taurus	CCCTCTTCCAATGCACCAAACCCCGTGG-AGTCCCAGAGAGGCCCTCCCA-CCTCCAGT	797
Bos_grunniens	CCCTCTTCCAATGCACCAA--CCCCATGG-AGTCCCAGAGAGGCCCTCCCAAGCTCCAGT	793
Bos_taurus_indicus	CC-TCTTCCAATGCACCAAACCCAGTGG-GGTCCCAGAGAGGCCCTTCCCA-CCTCCAGG	785

Bison_bison	TTTCCCTGACTTCTCAGAGCC-ACCATGAGAAGCCCCCTGAGGTCACCTGCA-CAAGTCA	850
Bos_taurus_taurus	TC-CGCTGA-TTCTCAGAGCCACCATGAGAAGCCCCCTGAGGTCACCTGCA-CAAGTCG	854
Bos_grunniens	TT-CCCTGACTTCTCAGAGCC-ACCATGAGAAGCCCCCTGAGGTCACCTGCA-CAAGTCG	850
Bos_taurus_indicus	TT-CCCTG-CTTCTCAGAGCC-ACCATGAGAAGCCCCCTGAGGTCACCTGCAACAAGTCG	842

Bison_bison	AGGGAAGCCA--GGTTTCTGCCTCAACCCGAGAAGACC---TCGAGAGACCTTCTTCA	905
Bos_taurus_taurus	AGGGAAGCCAAGGGTTCCTGCTCAACCCGAGAAGACC---TCGAGAGACCTTCTTCA	911
Bos_grunniens	AGGGAA-CCA-GTGTTCCTGCTCAACC-GAGAAAGACCCCTCGAGAGACCTTCTTCA	907
Bos_taurus_indicus	AGG-AACCCA-GGGTTTCTGCTCAACC--GAAAAGACC---TCGAGAGACCTTCT-CA	894

Bison_bison	ACA-CGTCTC-GAG-CCAGATTCCCTAACAGTGACTC-GAGA-GCAATGACGCGCTCCC	960
Bos_taurus_taurus	ACATCGTCTC-GAGGCCAGGTTCCT-TACCAG-GACTC-GAGG-GCAATGACGCGCTCCC	966
Bos_grunniens	ACA-CGTCTC-GAGGCCAGATTCCCTTACCAT-GACTCCGAGGACCAATGACGCGCTCCC	964
Bos_taurus_indicus	ACA-CGTCTCTGAGGCCAA--TCCC-TAACAT-GGCTCGGGAATCCAGTGACGCGCTCCC	949

Bison_bison	CCTCGCCATTGCGCA-TGGAGACCCGACTTCCCTGGCGCCC-ACGAGAG--CTCACTGA	1016
Bos_taurus_taurus	CCTCGCCACT-CGCG-TGGAGACCC-GACTTCCCTGGCGCCCCACGAGAGG-CTCACTGA	1022
Bos_grunniens	CCTCGCCACT-TGCA-TGGAGACCC-GACTTCCCTGG-GCCCCACGAGAGG-CTCACTGA	1019
Bos_taurus_indicus	CCCCACCACTTCGACTTGAGAACCCGACTTCCCTGGCACCCACCAAGAGGCTCACTGA	1009

Bison_bison	CCTCGCCGTCGTACACT--AGGA-AAAACCGCACACTGTGGC-GCCAGCTCGA-GAACAA	1071
Bos_taurus_taurus	CCTCGCCGTCGCACCTC--GTGA-GAAACCGCACCTTGGGGCCCGCGGCTCGA-GAACCA	1078
Bos_grunniens	CCTCGCCGTCGTACCTC--GTGA-GAAACCGCACCTTGGGGCCGCC-GCTCGA-GAACAA	1074
Bos_taurus_indicus	CCTCGCCG-CGTACCTCCAGTGAAGAAAACAC-CACCGGGGCCGCC-GCTCGAAGAACAA	1066
	***** ** * * * * * * * * * * * * * * * *	
Bison_bison	--CCCTGAGCCCTCC-CCATCATCGCG-AGTTGAGGG-CCTTCGTCTCCTGTATGG-CCT	1125
Bos_taurus_taurus	--CCC-GAGACTCCC-CCGTCATCGCGGAGATGAGGG-CCTTCGTCTCCTGCATGGGCCT	1133
Bos_grunniens	--CCCCGAGACTCCC-CCGTCATCGCG-AGATGAGGGGCTTCGTCTCCTGCATGG-CCT	1129
Bos_taurus_indicus	ACCCCCGAGAATTCCACCCTCATCGAG-AGATGAGGGCCCTCCGCCCTCCT--CAGGCCT	1122
	*** ** * * * * * * * * * * * * * * * *	
Bison_bison	AGA--GACCAA-TCT--CCTCGACTCTCTCTCAAACGCCTCAGGAGGCTTGACTCCCTTT	1180
Bos_taurus_taurus	AGA--G-CCAA-CCT--CGCGACCTCTCTC-CAAACGCCTCAGGAGGCT-GACTCCCATTT	1185
Bos_grunniens	AGA--GACCAAATCT--CGCGACCTCTCTC-CAAGCGCTCAGGAGGCTTGACTCCCTTT	1184
Bos_taurus_indicus	AGAAGGCCCAATCCTTCCGCGAACCTCTCCAAAACGCCTCAGA--GCCTGACTCCCTTC	1180
	*** * * * * * * * * * * * * * * * *	
Bison_bison	---AGTCC-ACCCAGTGAGCTCCAAGAGAT-ACCCGTCGC--GACTCGAGAGC-AGAGCG	1232
Bos_taurus_taurus	---TGTCC-ACCCAGTGGAGCTCAAGAGAT-ACCCGTCGC--GACTCGGAGGC-AGAAAG	1237
Bos_grunniens	---AGTCC-ACCCAGTGAGCTCCAAGAGAT-ACCCGTCGC--GATTCTGAGAGC-AGGCGG	1236
Bos_taurus_indicus	GCGAGTCCCAACCCAGTGGAGCCCAAGAGATGAACCGTCGCCTGATTCTGAGAGCCAGAGCG	1240
	**** * * * * * * * * * * * * * * * *	
Bison_bison	--GGGTTCTTTGCTTCCACT--CGACA-TGAATGC--TGTCTCCCCGGGTGCGTCTGGAA	1285
Bos_taurus_taurus	TTGGGTTTCGTTGCTTCCCCCT--CGAGA-TGAATGCC-TGTCTCCCCGGGTGCGTCTTGGA	1293
Bos_grunniens	--GGGTTCTTTGCTTCCACT--CGAGAATGAATGCC-TGTCTCCCCGGGTGCGTCT-GGA	1290
Bos_taurus_indicus	--GCCCTCTTTGCTTCCACTTCCGAGGTGAAATGCCTTGTCTCCCCGG-TG-GTCT--GA	1294
	* ** * * * * * * * * * * * * * * * *	
Bison_bison	TTGCAACCCTGAGATCCCTTTTCGCCCCCTGGAGAGGAA-CACTGG-CTTCTGGACACGAA	1343
Bos_taurus_taurus	ATGCCACCCCGAG-TCCCCGTCGCCCC-TGGAGAGGAA-CCTCGGGCTTCTGGGCAC-AA	1349
Bos_grunniens	ATGCAACCC-GAGATCCCTGTTCGCCCC-TGGAGAGGAA-CATTGG-CTTCTGGACAC-AA	1345
Bos_taurus_indicus	ATGC-ACCCGAGATCC-TGTTCGCCCT---GAGAGAAAACAATTG-CTTCTG--CACAAA	1346
	*** * * * * * * * * * * * * * * * *	
Bison_bison	GCCTAGA-TGA-GGTCTATT-GGCCCTGCA-GT-CACTCGA-GAGCAATCCCC-AGCTTT	1396
Bos_taurus_taurus	GCCTAGA-TGAAGGTCTATCAGGGCCTGCAAGT-CACTCTG-GAGCAATCCCC-AGCTTT	1405
Bos_grunniens	GCCTAGA-TGA-TGTCTATT-GGCCCTGCA-GT-CACTCGA-GAGCAATCCCC-AGCTTT	1398
Bos_taurus_indicus	GCCTAGAAATGA-GTCTATT-GGCCCTTCA-GTACACTCGATGAGCAATCCCCGAGCTT	1403
	***** ** * * * * * * * * * * * * * * * *	
Bison_bison	CCTT-CGCAACTCG- 1409	
Bos_taurus_taurus	TCTTTCGCAACTCG- 1419	
Bos_grunniens	CCTT-CGCAACTCGA 1412	
Bos_taurus_indicus	CCCTTCGCAACTCCA 1418	
	* * * * * * * * *	

Candidate centromere repeat monomer:

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>Bison_bison
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TTGAGAAATCCTGCCGACACTCGAGAAAATCCAGTGTTCCTCCGTCATCGCAAGATGAA
GCCCTTTCCCGCTACAGTGTCTCAGGAGAAGTCCCACGTTAGGTATTGGAGGTCGAAACG
GTACTTGGCACCTTGATGCGACCACAAAGTGCCCCGACATCCCGGTCTCCTCGAGAGG
AACACCGAAGTTTTCGGCACCACCTTCTCTGAGCCCCCTTCTACCTCCTGATCTGGACA
GGAGGTCGACTCCCCTGCTTTGTCTGGAAGGGTTCCCGACCTTCCGGTCGCACCTCAG
GATGAGGCCGGGTCTCAGCAGGACATTTACAGACGTGGCCTCGTGGGTGGTTCCACATTC
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AACCTCCACCCTGTGAATGAAGTCAACACGAAAGGGCAGTGACTCGCCCGTGCATCGTCG
GGAAAAAACCCCGAGTTCCAAATACCGCTCGACAAGTGGCCTGTCTCCCCGGGAAACAC
CTCGAGAGGCAAGCGAGTTCCATGCCTCACCCAGACGAGGCCTGACTCTCCTGTCTCC
AAGTCTGCAGGGACCTTTCGATCAGAGTCTGAAGTCAAGAGAACCTGAGGTTCTGCCT
CACTGGAGATGAGGCCCTCTTCCAATGCACCAAAACCCAGTGGGAGTGCCGAGAAGCCCT
CCCACCTCCAGTTTCTCCTGACTTCTCAGAGCCACCATGAGAAGCCCCCTGAGGTACCT
GCACAAGTCAAGGGAAGCAGGTCTTCTGCCTCAACCCGAGAAAGACCTCGAGAGACCTT
CTTCAACAGTCTCGAGCCAGATTCCCCTAACAGTGACTCGAGAGCAATGACGCGCTCCC
CCTCGCCATTGCGCATGGAGACCCGACTTCCCTGGCGCCACGAGAGCTCACTGACCTC
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CGACTCTCTCTCAAACGCCTCAGGAGGCTTGACTCCCTTTAGTCCACCCAGTGAGCTCCA
AGAGATACCCGTCGCGACTCGAGAGCAGAGCGGGGTTCTTGTCTCCACTCGACATGAAT

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GCTGTCTCCCCGGGTGCGTCTGGAATTGCAACCTGAGATCCCTTTGCCCCCTGGAGAG
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>Bos_taurus_taurus

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ATTGAAGCCCTTTCCGCTACAGCGTCTCAGGAGAAGTCCCACGTTAGGAATTGAGCGGTG
GAACGGTACTTGGCACCCCTTGACGGCGGCCCCACAAAGTTCCCCGGCATCCCCGTCTCCCT
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CTCGAACTCCACCCTGTGAATGAGGTCAACACGAAGGGGCAGTCCCCGCCGTGCATCGT
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CCTCGAGAGGCAAGCGGAGTTCCATGCCTCAACCAAGACGAGGACCTGACTCTCTGTGTC
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CCTCAACTGGAGATGGAGGCCCTTTCATGCACCAAAACCCCGTGGAGTCCCGAGAGG
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GCTCCCCCTCGCCACTCGCGTGGAGACCCGACTTCCCTGGCGCCCCACGAGAGGCTCACT
GACCTCGCCGTCGCACCTCGTGAGAAACCGCACCCCTGGGGCCCGCGGTCGAGAACCACC
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>Bos_taurus_indicus

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>Bos_grunniens

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GAACCCCTGAGGTTTTTCGGGCCACCACTTCTCTGAGCCCCCTTCTACCTCCTGATCTGG
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GCACAAGTCAGGGAACCGAGTGTTCCTGCTCAACCGAGAAGACCCCTCGAGAGACC
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TCCAAGAGATAACCGTCGCGATTTCGAGAGCAGGCGGGGGTTCTTTGCTTCCACTCGAGAA
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GAGGAACATTGGCTTCTGGACACAAGCCTAGATGATGTCTATTTGGCCCTGCAGTCACTCG
AGAGCAATCCCCAGCTTTCCTTCGCAACTCGA

Caprid

Capra_hircus	--TCCATCAGAGGCTTGCCACGGGGCCTCTC---GGGATTCTCTCCCGTCGATGCCG	54
Ovis_aries	TTTTCCCTCGTGTCTTCCACAGAGGCTTCCACAGAGGCTTCCACAGGGCTGTCCCA	60
	* * * * *	
Capra_hircus	GGGCTAAGACCTTGTGTGGAGTCGGTGCCGAACCTGAGGATTCTCTCCAGTGCAG-A	113
Ovis_aries	CGTGC--ACACGTGGTG--GGAGTCGAT--CCTCGGCTTGAA-----CGTCAAGGCAGTG	109
	* * * * *	
Capra_hircus	CAGGGATAATGGGGTTCCTTGAGTCGCCTCAGGGGATCAGGCCTCTCTCGAATGGTGG	173
Ovis_aries	CAGGGAACAGGTTCTCTGGAATGGACTGACACATCTGGGGACTCTTGAATGGTGG	169

Capra_hircus	CACGAACCTGGAGTTCCTCTCGCCTTTCCTGTGGAGAGCGCCTCCTCTTGCGATGCGACG	233
Ovis_aries	CACGACCCTGGAGTTCCTCTCGCCTTTCCTGTGGAGAGCGCCTCCTCTTGAGATGCGACG	229

Capra_hircus	GGAATCCCGGAATTCTTTCCCTCC-ACGCAGGCACACGAGCCCTCCCCACGAGCTTACA	292
Ovis_aries	GGAACGCGGGAATTCTTTCCCTACGAAACAGGAAAGGATCCCTCATCTCGAGCTCG-G	288

Capra_hircus	AGGCGCAAACGGGCCACCTCTGGATGTGAGCGCGACCCTCGTGCTTAAACTCGAGTGCAG	352
Ovis_aries	AGGCGGAAACGGGGTCCCCTGATGTGTTCGGGACCCTCGTGCTTCTCTCGAGTGGAG	348

Capra_hircus	ACAGGGAACAGGGAACCTCTGGAATGGCAGCAAACATCTGAAGGACCCTTGGGAAGGT	412
Ovis_aries	AC-GGGTGTGTCGGGAACCTCTTGAGTTGCAGCAAGGGTGTGAAGGACCCTTTGGAAAGTT	407
	** *	
Capra_hircus	CCACACGTAACCTGTGAGTAGCCTCGAGACGCCCCAGCGGAAATGCGCCTCATCTCGACA	472
Ovis_aries	CCAGGGGTTAGATGTGATTAGCCTCGAGAAGCCTCAGCGGAAATGGGCCTCATCTCGCCT	467

Capra_hircus	GGAGACGAGAACCGCCGGGATTTTCCCGACACGCGGAAGGTCCTCTCGACCTACGACGCG	532
Ovis_aries	GGAGGGCAAACCTCCTGGATTTTCTCGAGTTGCGGCAGGTGCTCTCGACTTACGACGGG	527

Capra_hircus	GACAACAGGGACCCGCTCTGGTGGCCGAGGAAACGCCAGTCCCCATGCGAGTTGCACAC	592
Ovis_aries	GCCCTCAGGGACCCGCTCTGGTGGCCTCAGGAAAGGCCAGTCCCCATGCGAGTTCTCGG	587
	* *	
Capra_hircus	GGGCATCTCGGGAACCTCTCCAGTCAAGCAAGGCTTAAAGACCTGTGTGAAGTCCCA	652
Ovis_aries	GGGCCTTTTGGGAATTCTCTCCCGCTGATGCCGGGCTTAAAGACCTGTGTGAAGTCAAG	647

Capra_hircus	GACGGAACCTGTG-ATTACCTCCAGCGCTCACACGGATAATGGGCCACATCTG-AGTCT	710
Ovis_aries	GCCGGAACCTGAGGATTCCTCTCCAGTGCTGACATGGATCTTGGGGTACTTCTGGAGTCT	707
	* *	
Capra_hircus	CCCCAGGGGAGAACTCCTCGTCTCGAGTGGCGCATGCG--TGCGCTCGACTCACGAGC	768
Ovis_aries	CCCCAGGGGAGTCACTCCTCGTCTCGAATGCGGGCATGCACTTGCGCTTCTCTCAGAGC	767

Capra_hircus	GGGAACAGCAGGGACACGCTTCCCGTCGCCTGCAGCAAAGGACCAGTGC	817
Ovis_aries	GGTAGCAGAGTGTACGCGAGTCCGCCCGTGATCAAAGCATCTATGG	816
	** *	

Centromere repeat monomer:
>Capra_hircus
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>Ovis_aries

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AGTCTCGTCTCGAATGCGGGCATGCACCTTGCCTTTCTCCAGAGCGGTAGCAGCAGTG
TCACGAGTCCGCCCCGTGGATCAAAGCATCTATGG

Primates

Gorilla_gorilla_graueri	CAAAAAGAGTGTTCAAA-CTGCTGTATCAAAAGAAAGGTTCAACTCTGT	49
Gorilla_gorilla_gorilla	CAAAAAGAGGGTTTCAAAACTGCTCTGTCAAAAGAAAGGTTAAACTCTGT	50
homo_sapiens	CAAAAAGAGTGTTCAAAAGTCTCAATCAAAAGAAAGGTTCAACTCTGT	50
pongo_abelii	CAAAAAGAGTGTTCAAAAGTCTCAATCAAAAGAAAGGTTCAACTCTGT	50
nomascus_leucogenys	CAAAAAGAGTGTTCAAAAGTCTCAATCAAAAGAAAGGTTCAACTCTGT	50
pongo_pygmaeus	CAAAAAGACTGTTTCAAAAGTCTCAATCAAAAGAAAGGTTCAACTCTGT	50
hylobates_concolor	CAAAAAGAGTGTTCATAAAAGTCTCAATCAAAAGAAAGGTTCAACTCTGT	50
pan_paniscus	CAAAAAGAGTGTTCAAAAGTCTCTATGAAAGAAAGGTTCAACTCTGT	50
pan_troglodytes_schweinfurthii	CAAAAAGAGTGTTCAAAAGTCTCTATCAAAAGAAAGGTTCAACTCTGT	50
pan_troglodytes_troglodytes	CAAAAAGAGTGTTCAAAAGTCTCTATCAAAAGAAAGGTTCAACTCTGT	50
macaca_mulatta	CAAGAAGTGGCT-AGCGAAAGGCTCCTTGAAAG-AAAGATGTAAGTCTGT	48
Macaca_fascicularis	CAAGAAGTGTCTTAGC-AAAGGCTTCTTGAGGGGAAAGCTGTAAGTCTGT	49
papio_hamadryas	CAAGAAATAGGCTAGCGAAAGGATCCATGAGAAGAAAGATGTAAGTCTGT	50
	*** ** * * * * * *	

Gorilla_gorilla_graueri	TAGTTGAGGACACACATCACAAAGAAGTTTCTGAGAATGCTTCTGTCTAG	99
Gorilla_gorilla_gorilla	GAGTGGAACACACACAAAGAAAGTTACTGAGAATGATTCTCTCTAG	100
homo_sapiens	GAGTTGAATGCACACATCACAAAGAAGTTTCTCAGAATGCTTCTGTCTAG	100
pongo_abelii	GAGATGAATGCACACATCACAAAGAAGTTTCTCAGAATGCTTCTGTCTAA	100
nomascus_leucogenys	TAGATGAATGCACAGATTAGAAAGAAGTTTACAGAATGCTTCTGTGTAG	100
pongo_pygmaeus	GAGATGAATGCACACATCACAAAGAAGTTTCTCAGAATGCTTCTGTCTAG	100
hylobates_concolor	GAGATGAATGCACACATCACAAAGAAGTTTCTCAGAATGCTTCTGTCTAG	100
pan_paniscus	GAGTTGAAAGCACACATCACAAAGAAGTTTCTGAGAATGCTTCTGTGTAG	100
pan_troglodytes_schweinfurthii	GAGTTGAATGCACACATCACAAAGAAGTTTCTGAGAATGCTTCTGTCTAG	100
pan_troglodytes_troglodytes	GAGTTGAATGCACACATCACAAAGAAGTTTCTGAGAATGCTTCTGTCTAG	100
macaca_mulatta	GAGATGAATTCACAGAACACAAAGAAGTTTCTCAGAAAGCTTCTTTCTCT	98
Macaca_fascicularis	GAGATGAATTCACAGAACACAAAGCAGTTTCTCAGAAAGCTTCTTTCTCT	99
papio_hamadryas	GAGATGAATTCACAGAACACAAAGCAGTTTCTCAGAAAGCTTCTTTCCAG	100
	** ** * * * * * *	

Gorilla_gorilla_graueri	ATTTTATATGAAGATATTTCCCGTTTCCAACGAAATCTTCAGAGTA-TCC-	147
Gorilla_gorilla_gorilla	TCATTAGACGAAGATAATCCCGTTTCCAACGAAAGCCCCAAAGAGCTCC-	149
homo_sapiens	TTTTTATGTGAAGATATTTCTTTTCCACCATAGGCCTCAAAGCGCTCC-	149
pongo_abelii	TTTTTATGTGAAGATATTTCTTTTCCACCATAGGCCTCAAAGCGCTCC-	149
nomascus_leucogenys	TTTTTATTTGAAGATATTTCTTTTCCACCATAGGCCTCAAAGCGCTCC-	149
pongo_pygmaeus	TTTTTATGTGAAGATATTTCTTTTCCACCATAGGCCTCAAAGCGCTCC-	149
hylobates_concolor	TTTTTATGTGAAGATATTTCTTTTCCACTATAGGCCCTAAAGTGCTCC-	149
pan_paniscus	TTTTTATGTGAAGATATTTCTTTTCAAAGTAGGCCTCAAAGCGCTCC-	149
pan_troglodytes_schweinfurthii	TTTTTATGTGAAGATATTTCTTTTCCAACATAGGCCTCAAAGCGCTCC-	149
pan_troglodytes_troglodytes	TTTTTATGTGAAGATATTTCTTTTCCACCATAGGCCTCAAAGGGCTCC-	149

macaca_mulatta	TTTTTATCGGAGGATATTTCCCTTGGCACCATAGCCCTCAAAGGGATCCC	148
Macaca_fascicularis	TTTTTATCTGAGGATATTTCCCTTTTCCCTATAGTCTTCTATGGGCTTCG	149
papio_hamadryas	TTTTCATCTGAGGATATTTCCCTTTTACCATAGCCCTCAATGGGCTTCC	150
	* * * * *	

Gorilla_gorilla_graueri	AAATATCCACTTGCAGATTCTA	169
Gorilla_gorilla_gorilla	AAATATCCACTTGCAAACTCCA	171
homo_sapiens	AAATATCCACATGCAGATTCTA	171
pongo_abelii	AAATATCCACTTGCAGATTCTA	171
nomascus_leucogenys	AAATGTCCACTTGCAGATTCTA	171
pongo_pygmaeus	AAATATCCCTTTGCAGATTCTA	171
hylobates_concolor	AATTATCCACTTGCAGATCCTA	171
pan_paniscus	AAATGTCCACTTGCAGATTCTA	171
pan_troglodytes_schweinfurthii	AAATATCCACTTGCAGATTCTA	171
pan_troglodytes_troglodytes	AAATATCCACTTGCAGATTCTA	171
macaca_mulatta	AAATATCACTTCGCCGATTCCA	170
Macaca_fascicularis	AAATATCTCTTTTCCAATTCCA	171
papio_hamadryas	AAATATCACTTTTCAAATTCCA	172
	** * * *	

callithrix_jacchus	GAAGGAACGTGCTCC--ACTCTCTGAATCTAAACGCGGATTCAAC--TCCCTTAGTTAAG	56
Saimiri_boliviensis	GAAGAAACGTGTTTCTACCTCGCTGAGACT-----GTTTCTACATTCTCCTAAGAAAG	53
ateles_geoffroyi	CACAGAAAGGTTTCTAAACTGCTGCAAAACACACACGAGTTTAAC--TCTGTAAGTTGAA	58
	* * * * *	

callithrix_jacchus	CGAACGCACAGGAGAGCAGTTTGAAGGATACGTTTCGTTTTGTGTTTTAGACGGAGATTTA	116
Saimiri_boliviensis	-GGTTTCTTAACGTGCGTGCTT--ACACACATCTTTTTTCCGTGTTTGAAACGCATTCTTA	110
ateles_geoffroyi	TGCACACATTGACAAGCATTAGTTAGATTGCTCCGTTTTG-GTTTTAGACGAGATATT	117
	* * * * *	

callithrix_jacchus	CAGCTATTCTGAAATGCTTGGATTGGCTGGAAAAATGCGTTTTCCGC-TGCTTCACAG	175
Saimiri_boliviensis	CTGCTAACTCTTATATGCGTCTCTAGGGCTGGAAATGACTGTTT-CTGCATTCTCCAAAG	169
ateles_geoffroyi	CCTCTGTACAGCAAAATGCTCCCTTTCGCTCTGGAAATCCAAACGCAG--TTCTTAGAAG	175
	* * * * *	

callithrix_jacchus	AAAGGGTTTACAACTC-CTGCAAAACGCATATCAGTTTAACTCTGTAAGTTGAA-TGCAC	233
Saimiri_boliviensis	AAAGGGTTTCTGAACTG-CTGCAAAACACACATCAGTTTAACTCTGGAAGTTGAA-TACAC	227
ateles_geoffroyi	AAACGTGTGCTAACTCGCTG-AATGAAACTCCGCTTCAGCTCCCTTAGTTGAAACGAAC	234
	** * * *	

callithrix_jacchus	ACATTGAAGACCGTTCTGTTAGGTAGCTGCGTTTTG-GTTCTAGAAGCA--GATATTTCT	290
Saimiri_boliviensis	ACATTGACAACCATTTCTGCTAGATAGCTCCGTTTTG-GTTTTAGAGCAA--GGTATTTCT	284
ateles_geoffroyi	ACACAGCAGAGCAGTTTGAATGATGCGTTTCTTCTGTGTTTTAGACGCACTATTACTGCT	294
	** * * *	

callithrix_jacchus	CAATACAGCGTTTACTCCCATTACAGCTGGAA-TAGCAAAAC-GCAGCTCCTA	341
Saimiri_boliviensis	CTTTACAGCCTGTCTCCCATCCACTCTGGAA-TGTCCAAAC-GCAGCTTTTA	335
ateles_geoffroyi	TTTTCTGACGTG--CCTGGATTG-GCTGGAATGACAGTTTGTGCATCTCTG-	343
	* * * *	

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>homo_sapiens
CAAAAAGAGTGTTTCAAACTGCTCAATCAAAAGAAAGGTTCAACTCTGTGAGTTGAATGCACACATCACAAGAAGTTTCTCAGAATGCTTCTGTCT
TAGTTTTTATGTGAAGATATTTCCCTTTTCCACCATAGGCCCTCAAAGCGCTCCAATATCCACATGCAGATTCTA
>Gorilla_gorilla_graueri
CAAAAAGAGTGTTTCAAACTGCTGTATCAAAAGAAAGGTTCAACTCTGTAGTTGAGGACACACATCACAAGAAGTTTCTGAGAATGCTTCTGTCT
AGATTTTATATGAAGATATTTCCCGTTTCCAACGAAATCTTCAGAGTATCCAAATATCCACTTGCAGATTCTA
>Gorilla_gorilla_gorilla
CAAAAAGAGGGTTTCAAACTGCTCTGTCAAAAGAAAGGTTAAACTCTGTGAGTGGAACACACACAACACAAGAAGTTACTGAGAATGATTCTCTC
TAGTCATTAGACGAAGATAATCCCGTTTCCAACGAAAGCCCCAAGAGCTCCAATATCCACTTGCAAACTCCA
>hylobates_concolor
CAAAAAGAGTGTTTATAAACTGCTCAATCAAAAGAAAGGTTCAACTCTGTGAGATGAATGCACACATCACAAGAAGTTTCTCAGAATGCTTCTGTCT
TAGTTTTTATGTGAAGATATTTCCCTTTTCCACTATAGGCCCTAAAGTGCTCCAATTATCCACTTGCAGATCCTA
>macaca_mulatta
CAAGAACTGGCTAGCGAAAGGCTCCTTGAAAGAAAGATGTAACCTCTGTGAGATGAATTCACAGAACACAAGAAGTTTCTCAGAAAGCTTCTTTCTC
TTTTTTATCGGAGGATATTTCCCTTTGGCACCATAGCCCTCAAAGGGATCCCAAATATCACTTCGCCGATTCCA
>nomascus_leucogenys
CAAAAAGAGTGTTTCAAACTGCTCAGTCAAAAGAAAGGTTCAACTCTGTAGATGAATGCACAGATTAGAAAGAAGTTTACAGAATGCTTCTGTCT
TAGTTTTTATTTGAAGATATTTCCCTTTTACCATAGGCCCTCAAAGCGCTCCAATATGCCACTTGCAGATTCTA
>pan_paniscus

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cynocephalus_variegatus      TCTGTTTCAAAATCTCTGTGCAAAAAGCATCAGAGAAGCTTCCCCGCTTAG 200
cynocephalus_volans          TCAGTTTCAAAATCTCTGTGAAAAAGCATCAGAGAAGCTTCTCCGTTTAG 200

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cynocephalus_variegatus      AATCCAGCATAACTCACTGAACCGAAGATGTGGCAGTTACAAGAGAAGTT 250
cynocephalus_volans          AATCCAGCATATCTCACAGAACCGAAGAAGTGGTAGTTAGAAGGGAGTTA 250
                              *****
cynocephalus_variegatus      GAGCTAAGAGAAGTTTGTCTTCTGAAATTAGAAGCAAAATCACACTGCAA 300
cynocephalus_volans          GAGCTGCAAGCAGTTTGCTTTGGGAAATTAGACGCGAAATGAAACTGCAA 300
                              *****
cynocephalus_variegatus      ACGGCATTCAAGCAGGCTTG-AAAAGTGTGGTGCATATCTCTGCCAAAAA 349
cynocephalus_volans          ATG-CCTTCCAACAGGCTTGAAAAAGTGTGTTCTATATCTCTGCCAAACA 349
                              * * * * *
cynocephalus_variegatus      CA 351
cynocephalus_volans          AA 351
                              *

```

Candidate centromere repeat monomer:

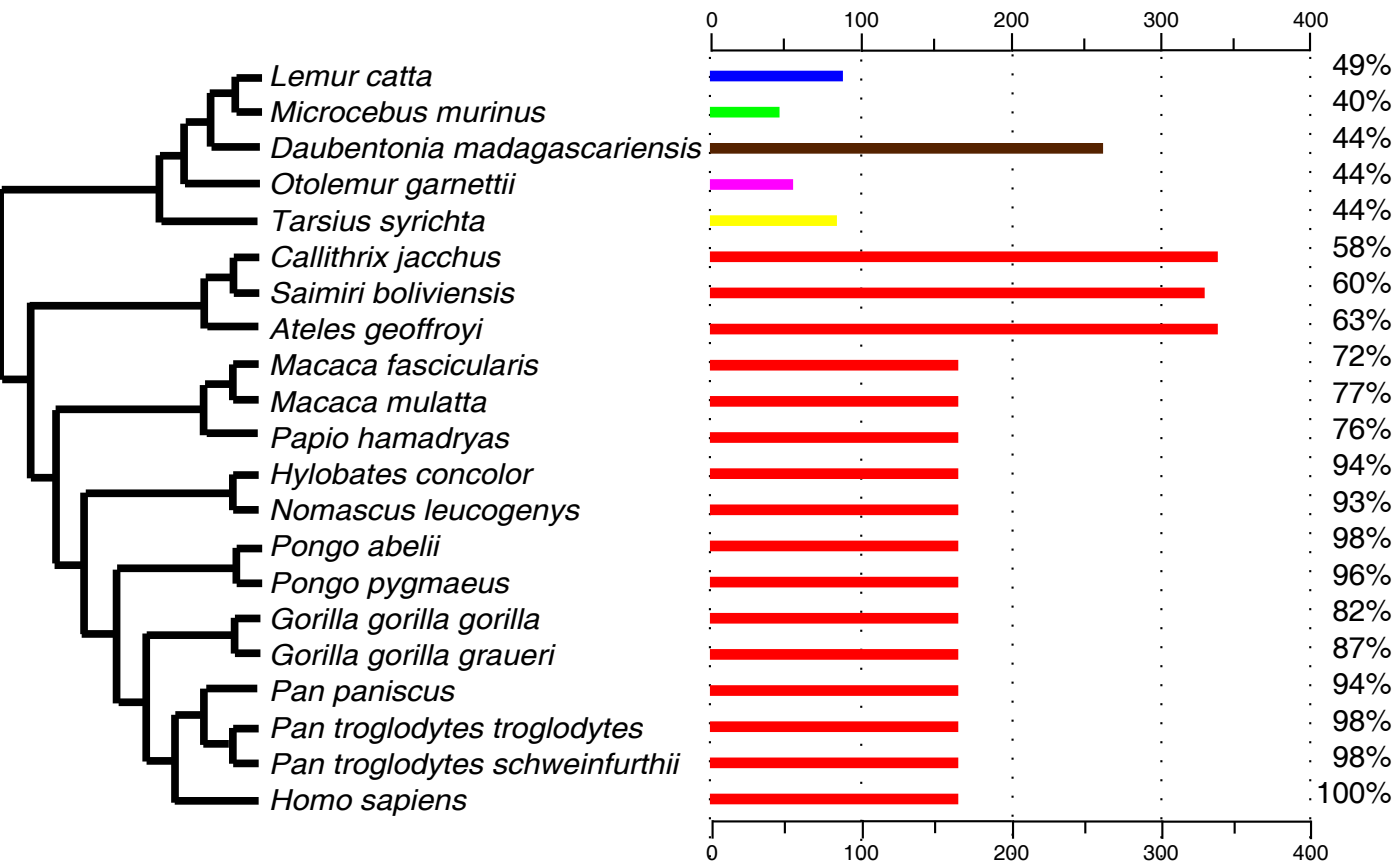
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>cynocephalus_variegatus
CTCCCTGGAGGTTGAGCTTCTGCAAGCCACTTTAACTTTAAGAAATGAGAGAGCAGAATA
TGCTTCTCACATCTAGCATGCAGGAATTCAGGTTTGCAAGTTCTATGTGAAAGCCCATTG
AAGCCTATGGGGGAAACGGCTTCTGAGACTTCTGTTTCAAAATCTCTGTCAAAAAGCATC
AGAGAAGCTTCCCCGCTTAGAATCCAGCATAACTCACTGAACCGAAGATGTGGCAGTTAC
AAGAGAAGTTGAGCTAAGAGAAGTTTGTCTTCTGAAATTAGAAGCAAAATCACACTGCAA
ACGGCATTCAAGCAGGCTTGAAAAAGTGTGGTGCATATCTCTGCCAAAAACA
>cynocephalus_volans
CTCCCCGAGGTTGAGCTTTCAGAAGCTAGTTTAACTCTAAGGGAGGAAGCAGCAGAATG
TGCTTCTCACATCTAGCCTGTAGGAATTCAGGTTGGCAAGTTCTATGGGGAAGCCCATTG
CTGCCTATGGTGGAAACGGCATGGGAGATTTAGTTTCAAAATCTCTGTGAAAAGCATC
AGAGAAGCTTCTCCGTTTAGAATCCAGCATATCTCACAGAACCGAAGAAGTGGTAGTTAG
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ATGCCTTCCAACAGGCTTGAAAAAGTGTGTTCTATATCTCTGCCAAACAAA

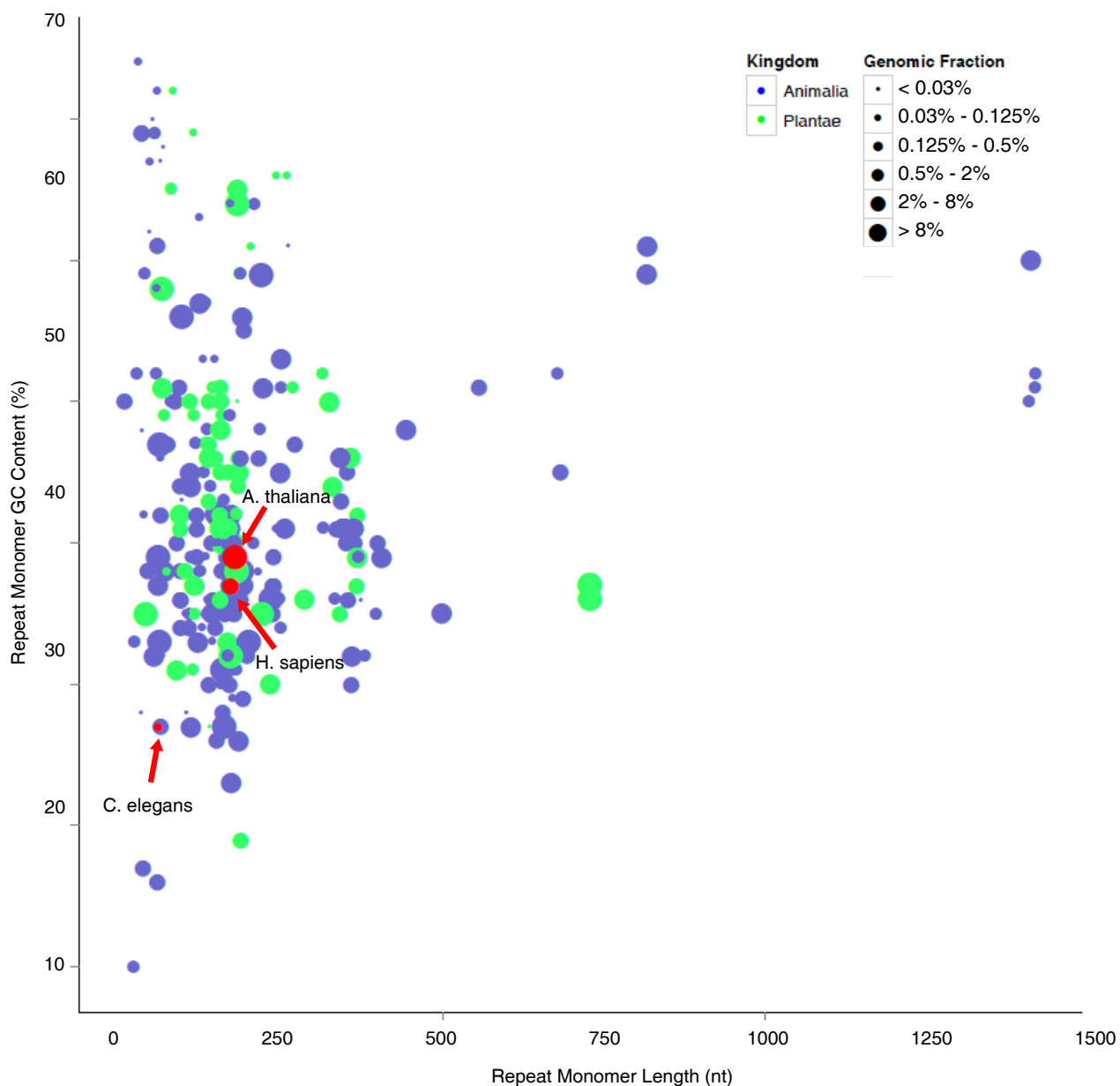
```

Supplementary Figure S2: Centromere repeats in primates only conserved among apes and monkeys

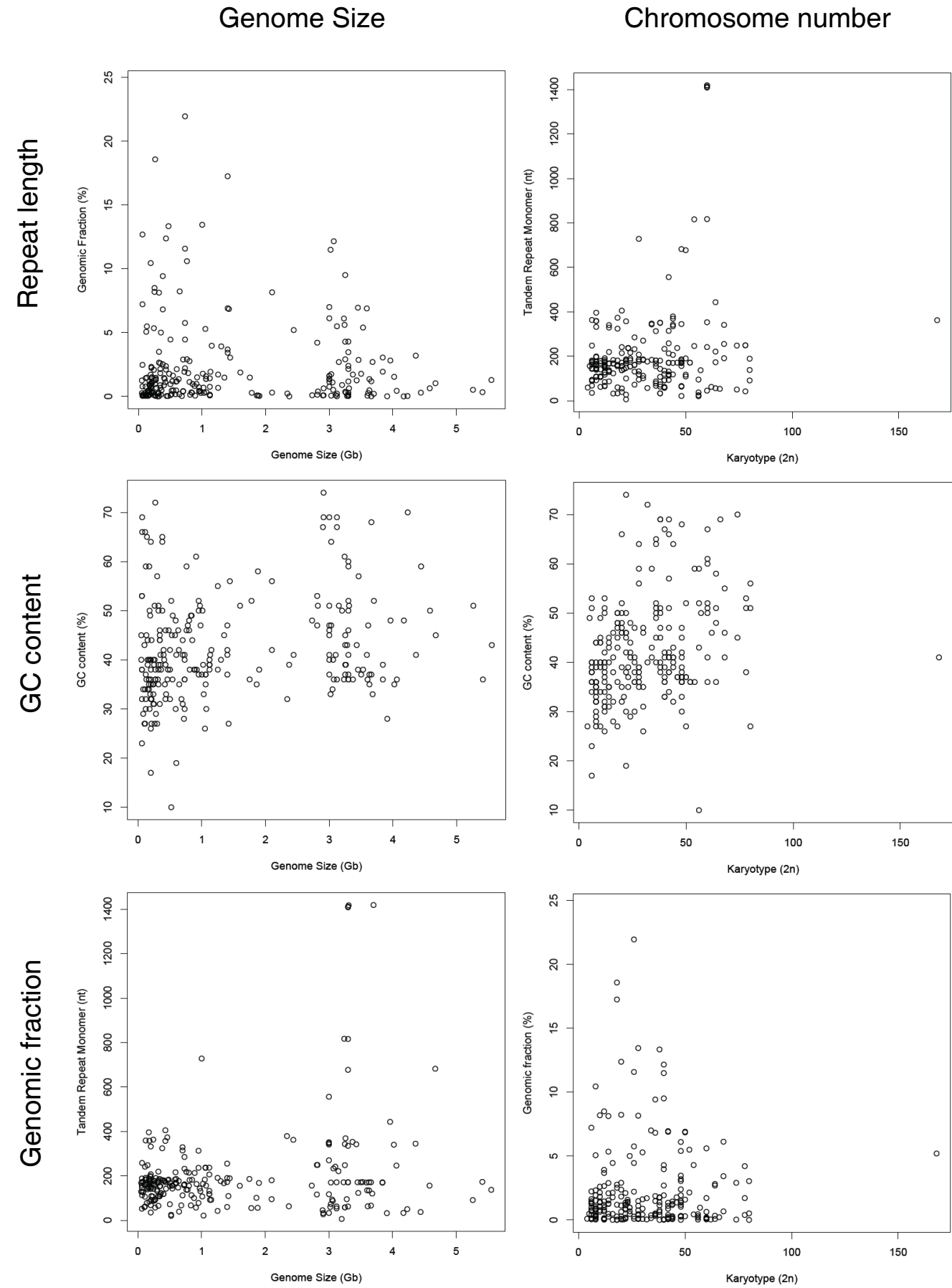
The centromere repeat sequences of the more basal primates (tarsiers and prosimians) do not show sequence similarity. Closer inspection of basal primate genomes did not reveal any sequences with sequence similarity to the ape and monkey centromere repeat.



Supplementary Figure 3A: No correlation was observed between repeat length, GC content, kingdom or genomic fraction.



Supplementary Figure S3B: We did not observe a correlation between genome size and chromosome number versus either repeat length, GC content or genomic fraction.



Supplementary Figure S4 – Nile tilapia contains related tandem repeats that differ by a 29 bp indel.

```
tandem-71      TGTGTTTCAGGCGAGAACTCCATTCAAATGCATGTAATAGCGAGAAACGCACTGTCTCGC 60
tandem-519     TGTGTTTCAGGCGAGAA-----ACGCACTGTCTCGC 31
                *****
                *****

tandem-71      CGAAATAAAGCGATTTTCACTAAGTTCATAAAGACAGCTGTAACCTTTGATAGAAGACTC 120
tandem-519     CGAAATAAAGCGATTTTCACCAAGTCCATAAAGACAGCTGTAACCTTTGATAGGAGACTC 91
                *****

tandem-71      GGACACACATATTTTCAGGCTTGGCCTTATAGAATTCAGCATTTCTATGCTGGGGAAATAG 180
tandem-519     GGACACACATATTTTCAGGCTTGGCCTTATAGAATTCAGCATTTCCATGCTGGGGAAATAG 151
                *****

tandem-71      GTTTTGCAGCTGTTTGAGCTAAGATTTTCAAGTTATTTCACAAAATGAAAACCCATAA 237
tandem-519     GTTTTGCCACTGTTTGAGCTAAGATTTTCA-GTTATTGACTAAATGAAAACC-ATAA 206
                *****
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>tandem-71
TGTGTTTCAGGCGAGAACTCCATTCAAATGCATGTAATAGCGAGAAACGCACTGTCTCGC
CGAAATAAAGCGATTTTCACTAAGTTCATAAAGACAGCTGTAACCTTTGATAGAAGACTC
GGACACACATATTTTCAGGCTTGGCCTTATAGAATTCAGCATTTCTATGCTGGGGAAATAG
GTTTTGCAGCTGTTTGAGCTAAGATTTTCAAGTTATTTCACAAAATGAAAACCCATAA
>tandem-519
TGTGTTTCAGGCGAGAAACGCACTGTCTCGCCGAAATAAGGCGATTTTCACCAAGTCCAT
AAAGACAGCTGTAACCTTTGATAGGAGACTCGGACACACATATTTTCAGGCTTGGCCTTAT
AGAATTCAGCATTTCCATGCTGGGGAAATAGGTTTTGCCACTGTTTGAGCTAAGATTTTC
AGTTATTGACTAAATGAAAACCCATAA
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Figure S5 - Relative ratios of short repeat (~680 bp) and long repeat (~1410 bp) in the five *Bovideae* species.

Species	Short repeat	Long repeat
<i>Bos taurus taurus</i>	29%	71%
<i>Bos taurus indicus</i>	32%	68%
<i>Bos grunniens</i>	40%	60%
<i>Bison bison</i>	41%	59%
<i>Bubalus bubalis</i>	57%	43%

Figure S6A. Tabular comparison to figure 6A of sequence comparison. Empty cells show sequence comparison with less than 40% sequence similarity. The three letter abbreviation corresponds to the species in top-to-bottom order as shown in Figure 6A.

	Gac	Oni	Mze	Mau	Lfu	Res	Pny	Nbr
Gac	100							
Oni		100						
Mze		66	100					
Mau		62	94	100				
Lfu		67	95	94	100			
Res		60	93	92	93	100		
Pny		74	94	95	97	93	100	
Nbr								100

Figure S6B. Tabular comparison to figure 6C of sequence comparison. Empty cells represent sequence comparison with less than 40% sequence similarity. The three letter abbreviation corresponds to the species in top-to-bottom order as shown in Figure 6C.

	Hvu	Ata	Bdi	Obr	Osa	Svi	Sit	Pha	Pca	Pvi	Zma	Zlu	Sbi	Spr	Mgi
Hvu	100														
Ata		100													
Bdi			100												
Obr				100											
Osa					100										
Svi					57	100									
Sit					59	98	100								
Pha					62	68	67	100							
Pca					65	63	63	94	100						
Pvi					41	44	45	56	55	100					
Zma					50	56	55	67	67	42	100				
Zlu					49	54	53	65	66	40	98	100			
Sbi													100		
Spr													91	100	
Mgi													87	84	100