**Supplemental Tables**

**Complete plastome sequence of *Iodes cirrhosa* Turcz., the first in the Icacinaceae, comparative genomic analyses and possible split of *Iodes* species in response to climate changes**

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**Table S1 PCR primers used in this study.**

|  |  |
| --- | --- |
| **Primer ID** | **Sequence (5’-3’)** |
| 1-F | GTCCAGATTAAGGCCCTGCT |
| 1-R | TTTGGTCCCGCTATTCGGAG |
| 2-F | CTCCACGCTTTCTTTCCTTTG |
| 2-R | ATTGGGTCCTCTCGGATCTA |
| 3-F | GCTCTAGCACTGCTTCCTAAG |
| 3-R | CCGTCGCTCAACGGATAAA |
| 4-F | AACCCTGTAGACCATCCCCA |
| 4-R | GTAAGGCCCCCGTCTTAGTG |
| 5-F | TCGTAAGAACGCCCACGAAT |
| 5-R | AACCCTGTAGACCATCCCCA |
| 6-F | CCGTCGCTCAACGGATAAA |
| 6-F | TACGCCTAGGACACCAGAATA |

**Note:** F and R represent “Forward” and “Reverse,” respectively.

**Table S2 The lengths of introns and exons for genes having introns.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Gene** | **Location** | **Length (bp)** | | | | |
| **Exon I** | **Intron I** | **Exon II** | **Intron II** | **Exon III** |
| *rps*16 | LSC | 45 | 870 | 222 |  |  |
| *atp*F | LSC | 411 | 704 | 144 |  |  |
| *rpo*C1 | LSC | 435 | 763 | 1617 |  |  |
| *ycf*3 | LSC | 127 | 727 | 230 | 748 | 153 |
| *clp*P | LSC | 69 | 840 | 291 | 668 | 228 |
| *pet*B | LSC | 6 | 48 | 639 |  |  |
| *pet*D | LSC | 6 | 47 | 474 |  |  |
| *rpl*16 | LSC | 399 | 1039 | 8 |  |  |
| *rpl*2 (×2) | IR | 390 | 660 | 441 |  |  |
| *ndh*B (×2) | IR | 777 | 687 | 756 |  |  |
| *ndh*A | SSC | 559 | 986 | 539 |  |  |
| *trn*A-UGC (×2) | IR | 38 | 791 | 37 |  |  |
| *trn*C-ACA | LSC | 40 | 553 | 57 |  |  |
| *trn*E-UUC (×2) | IR | 33 | 943 | 41 |  |  |
| *trn*K-UUU | LSC | 38 | 2539 | 36 |  |  |
| *trn*L-UAA | LSC | 36 | 480 | 51 |  |  |
| *trn*T-CGU | LSC | 35 | 676 | 44 |  |  |

**Note:** Numbers in the parentheses represent the number of copies. LSC: Large Single Copy Region; SSC: Small Single Copy Region; IR: Inverted Repeat Region; CDS: Coding Sequence.

**Table S3 Base compositions for different regions of *I. cirrhosa* plastome.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Codon Position** | **T(U) (%)** | **C (%)** | **A (%)** | **G (%)** | **Length (bp)** |
| LSC |  | 32.96 | 18.26 | 31.59 | 17.19 | 84527 |
| SSC |  | 34.63 | 14.77 | 34.17 | 16.43 | 17522 |
| IRA |  | 28.46 | 20.73 | 28.54 | 22.27 | 24973 |
| IRB |  | 28.54 | 22.26 | 28.46 | 20.73 | 24972 |
| Total |  | 31.69 | 18.92 | 30.87 | 18.52 | 151994 |
| CDS |  | 31.73 | 17.79 | 30.18 | 20.30 | 73017 |
|  | 1st | 25.17 | 18.39 | 30.13 | 26.30 | 24342 |
|  | 2nd | 32.73 | 20.61 | 28.02 | 18.62 | 24342 |
|  | 3rd | 37.28 | 14.35 | 32.37 | 15.98 | 24342 |

**Note:** LSC: large single-copy region, SSC: small single-copy region, IR: inverted repeat region, CDS: coding sequence.

**Table S4 Codon usage in the plastome of *I. cirrhosa* plastome.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Codon** | **Amino Acid coded** | **Number of Codons** | **RSCU** |
| UUU | F | 879 | 1.28 |
| UUC | F | 498 | 0.72 |
| UUA | L | 808 | 1.84 |
| UUG | L | 542 | 1.23 |
| CUU | L | 573 | 1.3 |
| CUC | L | 181 | 0.41 |
| CUA | L | 370 | 0.84 |
| CUG | L | 167 | 0.38 |
| AUU | I | 1016 | 1.46 |
| AUC | I | 409 | 0.59 |
| AUA | I | 663 | 0.95 |
| AUG | M | 595 | 1 |
| GUU | V | 510 | 1.48 |
| GUC | V | 168 | 0.49 |
| GUA | V | 509 | 1.48 |
| GUG | V | 190 | 0.55 |
| UCU | S | 562 | 1.74 |
| UCC | S | 315 | 0.97 |
| UCA | S | 378 | 1.17 |
| UCG | S | 174 | 0.54 |
| CCU | P | 390 | 1.52 |
| CCC | P | 199 | 0.78 |
| CCA | P | 305 | 1.19 |
| CCG | P | 133 | 0.52 |
| ACU | T | 527 | 1.65 |
| ACC | T | 220 | 0.69 |
| ACA | T | 390 | 1.22 |
| ACG | T | 139 | 0.44 |
| GCU | A | 600 | 1.8 |
| GCC | A | 228 | 0.69 |
| GCA | A | 365 | 1.1 |
| GCG | A | 137 | 0.41 |
| UAU | Y | 746 | 1.62 |
| UAC | Y | 173 | 0.38 |
| UAA | \* | 49 | 1.65 |
| UAG | \* | 20 | 0.67 |
| CAU | H | 449 | 1.53 |
| CAC | H | 139 | 0.47 |
| CAA | Q | 645 | 1.51 |
| CAG | Q | 212 | 0.49 |
| AAU | N | 879 | 1.53 |
| AAC | N | 271 | 0.47 |
| AAA | K | 889 | 1.49 |
| AAG | K | 304 | 0.51 |
| GAU | D | 813 | 1.6 |
| GAC | D | 204 | 0.4 |
| GAA | E | 935 | 1.5 |
| GAG | E | 314 | 0.5 |
| UGU | C | 210 | 1.48 |
| UGC | C | 74 | 0.52 |
| UGA | \* | 20 | 0.67 |
| UGG | W | 408 | 1 |
| CGU | R | 325 | 1.32 |
| CGC | R | 95 | 0.39 |
| CGA | R | 359 | 1.46 |
| CGG | R | 114 | 0.46 |
| AGU | S | 401 | 1.24 |
| AGC | S | 113 | 0.35 |
| AGA | R | 434 | 1.76 |
| AGG | R | 153 | 0.62 |
| GGU | G | 557 | 1.28 |
| GGC | G | 181 | 0.42 |
| GGA | G | 709 | 1.63 |
| GGG | G | 294 | 0.68 |

RSCU: Relative synonymous codon usage.

**Table S5 Codon frequencies in the plastome of *I. cirrhosa* plastome.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Coded Amino Acids** | **Number of Codon Types** | **Total Numbers of Codons** | **Percentage** |
| \* | 3 | 89 | 0.36% |
| C | 2 | 284 | 1.15% |
| W | 1 | 408 | 1.66% |
| H | 2 | 588 | 2.39% |
| M | 1 | 595 | 2.42% |
| Q | 2 | 857 | 3.48% |
| Y | 2 | 919 | 3.73% |
| D | 2 | 1017 | 4.13% |
| P | 4 | 1027 | 4.17% |
| N | 2 | 1150 | 4.67% |
| K | 2 | 1193 | 4.84% |
| E | 2 | 1249 | 5.07% |
| T | 4 | 1276 | 5.18% |
| A | 4 | 1330 | 5.40% |
| F | 2 | 1377 | 5.59% |
| V | 4 | 1377 | 5.59% |
| R | 6 | 1480 | 6.01% |
| G | 4 | 1741 | 7.07% |
| S | 6 | 1943 | 7.89% |
| I | 3 | 2088 | 8.48% |
| L | 6 | 2641 | 10.72% |

**Table S6 Repeats identified in the *I. cirrhosa* plastome using the program REPuter. P: Palindromic; F: Forward; R: Reverse; C: Complementary: IGS: Intergenic spacer regions.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Size** | **Start Position** | **Region** | **Type** | **Size** | **Start Position** | **Region** | **P Value** |
| 30 | 8258 | IGS | F | 30 | 35955 | IGS | 6.18E-04 |
| 30 | 8258 | IGS | P | 30 | 45888 | IGS | 5.07E-07 |
| 31 | 9605 | IGS | F | 31 | 36929 | IGS | 1.71E-04 |
| 30 | 9648 | IGS | R | 30 | 9648 | IGS | 5.64E-09 |
| 30 | 15336 | IGS | C | 30 | 47040 | IGS | 6.18E-04 |
| 32 | 28449 | IGS | P | 32 | 28449 | IGS | 1.57E-06 |
| 38 | 31895 | IGS | F | 38 | 31913 | IGS | 9.80E-12 |
| 35 | 32613 | IGS | P | 35 | 32613 | IGS | 5.78E-10 |
| 30 | 39090 | psaB | F | 30 | 41314 | psaA | 2.21E-05 |
| 49 | 57908 | accD | F | 49 | 57932 | accD | 2.17E-16 |
| 31 | 57926 | accD | F | 31 | 57950 | accD | 1.31E-07 |
| 30 | 59686 | IGS | P | 30 | 59686 | IGS | 5.64E-09 |
| 33 | 61838 | cemA | P | 33 | 61838 | cemA | 1.30E-05 |
| 30 | 72250 | IGS | F | 30 | 72275 | IGS | 6.18E-04 |
| 42 | 74548 | IGS | P | 42 | 74548 | IGS | 2.60E-12 |
| 52 | 76939 | IGS | P | 52 | 76939 | IGS | 3.82E-18 |
| 48 | 91100 | ycf2 | F | 48 | 91133 | ycf2 | 3.83E-14 |
| 48 | 91100 | ycf2 | P | 48 | 145340 | ycf2 | 3.83E-14 |
| 36 | 91112 | ycf2 | F | 36 | 91163 | ycf2 | 1.49E-10 |
| 36 | 91112 | ycf2 | F | 36 | 91181 | ycf2 | 7.80E-09 |
| 36 | 91112 | ycf2 | P | 36 | 145304 | ycf2 | 7.80E-09 |
| 36 | 91112 | ycf2 | P | 36 | 145322 | ycf2 | 1.49E-10 |
| 35 | 91113 | ycf2 | F | 35 | 91146 | ycf2 | 5.50E-12 |
| 35 | 91113 | ycf2 | P | 35 | 145340 | ycf2 | 5.50E-12 |
| 48 | 91133 | ycf2 | P | 48 | 145373 | ycf2 | 3.83E-14 |
| 59 | 91146 | ycf2 | F | 59 | 91164 | ycf2 | 3.46E-24 |
| 45 | 91146 | ycf2 | F | 45 | 91182 | ycf2 | 2.01E-12 |
| 45 | 91146 | ycf2 | P | 45 | 145294 | ycf2 | 2.01E-12 |
| 59 | 91146 | ycf2 | P | 59 | 145298 | ycf2 | 3.46E-24 |
| 35 | 91146 | ycf2 | P | 35 | 145373 | ycf2 | 5.50E-12 |
| 34 | 91157 | ycf2 | F | 34 | 91193 | ycf2 | 1.11E-07 |
| 34 | 91157 | ycf2 | P | 34 | 145294 | ycf2 | 1.11E-07 |
| 36 | 91163 | ycf2 | P | 36 | 145373 | ycf2 | 1.49E-10 |
| 59 | 91164 | ycf2 | P | 59 | 145316 | ycf2 | 3.46E-24 |
| 30 | 91175 | ycf2 | F | 30 | 91193 | ycf2 | 5.64E-09 |
| 30 | 91175 | ycf2 | P | 30 | 145298 | ycf2 | 5.64E-09 |
| 36 | 91181 | ycf2 | P | 36 | 145373 | ycf2 | 7.80E-09 |
| 45 | 91182 | ycf2 | P | 45 | 145330 | ycf2 | 2.01E-12 |
| 30 | 91193 | ycf2 | P | 30 | 145316 | IGS | 5.64E-09 |
| 34 | 91193 | ycf2 | P | 34 | 145330 | ycf2 | 1.11E-07 |
| 31 | 92472 | ycf2 | F | 31 | 92502 | ycf2 | 1.41E-09 |
| 31 | 92472 | ycf2 | P | 31 | 143988 | ycf2 | 1.41E-09 |
| 31 | 92502 | ycf2 | P | 31 | 144018 | ycf2 | 1.41E-09 |
| 40 | 98282 | ycf2 | P | 40 | 117076 | Intron | 5.37E-15 |
| 36 | 109034 | IGS | F | 36 | 109052 | IGS | 7.80E-09 |
| 36 | 109034 | IGS | P | 36 | 127433 | ycf1 | 7.80E-09 |
| 36 | 109052 | IGS | P | 36 | 127451 | ycf1 | 7.80E-09 |
| 40 | 117076 | Intron | F | 40 | 138199 | IGS | 5.37E-15 |
| 30 | 118583 | IGS | P | 30 | 118583 | IGS | 2.21E-05 |
| 30 | 119665 | IGS | F | 30 | 119686 | IGS | 6.18E-04 |
| 36 | 127433 | ycf1 | F | 36 | 127451 | ycf1 | 7.80E-09 |
| 31 | 143988 | ycf2 | F | 31 | 144018 | ycf2 | 1.41E-09 |
| 45 | 145294 | ycf2 | F | 45 | 145330 | ycf2 | 2.01E-12 |
| 59 | 145298 | ycf2 | F | 59 | 145316 | ycf2 | 3.46E-24 |
| 36 | 145304 | ycf2 | F | 36 | 145373 | ycf2 | 7.80E-09 |
| 30 | 145311 | ycf2 | F | 30 | 145347 | ycf2 | 6.18E-04 |
| 36 | 145322 | ycf2 | F | 36 | 145373 | ycf2 | 1.49E-10 |
| 30 | 145329 | ycf2 | F | 30 | 145347 | ycf2 | 2.21E-05 |
| 48 | 145340 | ycf2 | F | 48 | 145373 | ycf2 | 3.83E-14 |

**Table S7 SSR sequences identified in the plastome of *I. cirrhosa.***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Count** | **SSR seqeunce** | **Size** | **Start** | **End** | **Region** |
| 1 | (T)8 | 8 | 140 | 147 | IGS |
| 2 | (A)13 | 13 | 314 | 326 | IGS |
| 3 | (A)8 | 8 | 1663 | 1670 | IGS |
| 4 | (T)9 | 9 | 3524 | 3532 | CDS |
| 5 | (AC)4 …… (GA)4 | 82 | 3828 | 3909 | IGS |
| 6 | (A)8 …… (A)8 …… (A)9 | 94 | 4331 | 4424 | IGS |
| 7 | (A)10 | 10 | 4596 | 4605 | IGS |
| 8 | (A)8 | 8 | 4956 | 4963 | IGS |
| 9 | (TA)4 | 8 | 6431 | 6438 | IGS |
| 10 | (A)10 | 10 | 7674 | 7683 | IGS |
| 11 | (T)11 | 11 | 8003 | 8013 | IGS |
| 12 | (T)8 …… (A)8t(A)12 | 50 | 8160 | 8209 | IGS |
| 13 | (TA)5 …… (T)10 | 87 | 9768 | 9854 | IGS |
| 14 | (A)12 | 12 | 10071 | 10082 | IGS |
| 15 | (A)10 | 10 | 11652 | 11661 | IGS |
| 16 | (A)8 …… (T)11 | 93 | 12263 | 12355 | IGS |
| 17 | (T)10 | 10 | 13024 | 13033 | IGS |
| 18 | (A)10 | 10 | 13571 | 13580 | IGS |
| 19 | (AT)5 …… (T)8 | 59 | 14068 | 14126 | IGS |
| 20 | (A)8 | 8 | 14443 | 14450 | IGS |
| 21 | (T)10 …… (T)12 | 25 | 15341 | 15365 | IGS |
| 22 | (T)9 …… (A)10 …… (A)10 | 31 | 16162 | 16192 | IGS |
| 23 | (T)11 | 11 | 18368 | 18378 | CDS |
| 24 | (A)8 | 8 | 18511 | 18518 | CDS |
| 25 | (AT)5 | 10 | 19747 | 19756 | CDS |
| 26 | (AT)5 | 10 | 20775 | 20784 | CDS |
| 27 | (T)9 | 9 | 20999 | 21007 | CDS |
| 28 | (T)8 | 8 | 26093 | 26100 | CDS |
| 29 | (A)8 | 8 | 27957 | 27964 | IGS |
| 30 | (T)8 | 8 | 28449 | 28456 | IGS |
| 31 | (A)11 | 11 | 28884 | 28894 | IGS |
| 32 | (T)8 | 8 | 29292 | 29299 | IGS |
| 33 | (T)10 | 10 | 29883 | 29892 | IGS |
| 34 | (A)9 …… (T)8 | 31 | 30105 | 30135 | IGS |
| 35 | (TC)5 | 10 | 31087 | 31096 | IGS |
| 36 | (T)10 | 10 | 31849 | 31858 | IGS |
| 37 | (AT)4 | 8 | 32495 | 32502 | IGS |
| 38 | (A)10 | 10 | 32812 | 32821 | IGS |
| 39 | (TTC)4 | 12 | 35573 | 35584 | IGS |
| 40 | (A)10 …… (T)9 | 28 | 35769 | 35796 | IGS |
| 41 | (A)8 …… (GA)4 | 38 | 35929 | 35966 | IGS |
| 42 | (A)8 | 8 | 36707 | 36714 | IGS |
| 43 | (CAAA)3 …… (TA)4 | 56 | 42893 | 42948 | IGS |
| 44 | (T)9 | 9 | 43804 | 43812 | Intron |
| 45 | (A)10 | 10 | 44812 | 44821 | Intron |
| 46 | (T)8 | 8 | 45093 | 45100 | IGS |
| 47 | (G)9 | 9 | 45581 | 45589 | IGS |
| 48 | (T)8 …… (T)11 | 36 | 45697 | 45732 | IGS |
| 49 | (A)10 …… (A)14 | 27 | 47045 | 47071 | IGS |
| 50 | (AT)4 | 8 | 47520 | 47527 | IGS |
| 51 | (A)8 | 8 | 47840 | 47847 | IGS |
| 52 | (T)8 | 8 | 48291 | 48298 | IGS |
| 53 | (T)8 | 8 | 49171 | 49178 | IGS |
| 54 | (T)9 | 9 | 51051 | 51059 | IGS |
| 55 | (T)8 | 8 | 51563 | 51570 | IGS |
| 56 | (T)8 | 8 | 51675 | 51682 | IGS |
| 57 | (T)9 | 9 | 52562 | 52570 | IGS |
| 58 | (T)8 | 8 | 54518 | 54525 | CDS |
| 59 | (T)9 | 9 | 54942 | 54950 | IGS |
| 60 | (A)8 …… (TA)4 | 42 | 55066 | 55107 | IGS |
| 61 | (GA)4 | 8 | 55791 | 55798 | IGS |
| 62 | (A)8 …… (T)16 | 62 | 57126 | 57187 | IGS |
| 63 | (A)8 | 8 | 58040 | 58047 | IGS |
| 64 | (G)8 | 8 | 58423 | 58430 | IGS |
| 65 | (TA)4 | 8 | 59016 | 59023 | IGS |
| 66 | (T)9 …… (AT)4 | 41 | 59424 | 59464 | IGS |
| 67 | (TA)4 | 8 | 59594 | 59601 | IGS |
| 68 | (A)8 …… (A)8 | 49 | 59731 | 59779 | IGS |
| 69 | (T)8 | 8 | 59967 | 59974 | IGS |
| 70 | (A)8 | 8 | 60846 | 60853 | IGS |
| 71 | (AATG)3 | 12 | 61852 | 61863 | IGS |
| 72 | (T)8 …… (AT)4 | 60 | 62132 | 62191 | IGS |
| 73 | (A)8 | 8 | 62544 | 62551 | IGS |
| 74 | (A)9 | 9 | 63134 | 63142 | IGS |
| 75 | (A)9 | 9 | 63882 | 63890 | IGS |
| 76 | (T)9 | 9 | 65519 | 65527 | IGS |
| 77 | (TA)5 …… (A)8 …… (A)9 | 76 | 65644 | 65719 | IGS |
| 78 | (T)8 | 8 | 66357 | 66364 | IGS |
| 79 | (T)10 | 10 | 66509 | 66518 | IGS |
| 80 | (AT)4(ATA)4 …… (T)11 | 119 | 67065 | 67183 | IGS |
| 81 | (A)8 | 8 | 67485 | 67492 | IGS |
| 82 | (A)15 | 15 | 68559 | 68573 | IGS |
| 83 | (T)8 | 8 | 68737 | 68744 | IGS |
| 84 | (T)11 | 11 | 69292 | 69302 | IGS |
| 85 | (T)9 | 9 | 69753 | 69761 | IGS |
| 86 | (A)8 | 8 | 70426 | 70433 | Intron |
| 87 | (T)8 | 8 | 70643 | 70650 | Intron |
| 88 | (T)8 | 8 | 70974 | 70981 | Intron |
| 89 | (T)8 …… (A)11 | 23 | 71488 | 71510 | Intron |
| 90 | (T)9 | 9 | 71727 | 71735 | Intron |
| 91 | (TA)4 | 8 | 75408 | 75415 | IGS |
| 92 | (T)8 | 8 | 77311 | 77318 | IGS |
| 93 | (T)9 | 9 | 78119 | 78127 | IGS |
| 94 | (TA)4 …… (T)10 | 91 | 78290 | 78380 | CDS |
| 95 | (T)13 | 13 | 80299 | 80311 | IGS |
| 96 | (T)10 …… (T)8 …… (TAAT)3 | 86 | 80812 | 80897 | IGS |
| 97 | (A)10 …… (T)10 | 99 | 81356 | 81454 | IGS |
| 98 | (T)8 | 8 | 82846 | 82853 | Intron |
| 99 | (AT)6 …… (TA)4 | 111 | 84139 | 84249 | IGS |
| 100 | (T)9 …… (T)10 | 45 | 84543 | 84587 | CDS |
| 101 | (TA)4 | 8 | 85168 | 85175 | Intron |
| 102 | (GA)4 …… (GA)4 | 20 | 86775 | 86794 | IGS |
| 103 | (A)9 | 9 | 89320 | 89328 | IGS |
| 104 | (TA)4 | 8 | 92769 | 92776 | IGS |
| 105 | (AG)4 | 8 | 94730 | 94737 | CDS |
| 106 | (A)9 | 9 | 96631 | 96639 | IGS |
| 107 | (T)9 | 9 | 97368 | 97376 | CDS |
| 108 | (T)10 | 10 | 98640 | 98649 | IGS |
| 109 | (T)11 | 11 | 102190 | 102200 | IGS |
| 110 | (G)9 | 9 | 103390 | 103398 | IGS |
| 111 | (CT)4 | 8 | 105509 | 105516 | IGS |
| 112 | (T)8 …… (A)11 | 38 | 109625 | 109662 | IGS |
| 113 | (A)9 | 9 | 109861 | 109869 | IGS |
| 114 | (A)10 | 10 | 111282 | 111291 | IGS |
| 115 | (A)9 …… (A)9 …… (A)8 | 118 | 111535 | 111652 | IGS |
| 116 | (A)8 | 8 | 111845 | 111852 | IGS |
| 117 | (A)8 | 8 | 112360 | 112367 | IGS |
| 118 | (A)9 …… (TA)4 | 32 | 112607 | 112638 | IGS |
| 119 | (T)8 | 8 | 112870 | 112877 | IGS |
| 120 | (GA)4 | 8 | 113054 | 113061 | IGS |
| 121 | (A)9 | 9 | 113514 | 113522 | IGS |
| 122 | (T)9 | 9 | 114042 | 114050 | IGS |
| 123 | (A)9 | 9 | 114267 | 114275 | IGS |
| 124 | (AT)4 …… (A)8 …… (GATT)3 | 187 | 116235 | 116421 | IGS |
| 125 | (AGAA)3 | 12 | 117735 | 117746 | IGS |
| 126 | (TA)8 | 16 | 118591 | 118606 | IGS |
| 127 | (T)8 | 8 | 120707 | 120714 | IGS |
| 128 | (T)8 | 8 | 122739 | 122746 | CDS |
| 129 | (T)8 | 8 | 123094 | 123101 | IGS |
| 130 | (A)10 | 10 | 123666 | 123675 | IGS |
| 131 | (T)18 | 18 | 123809 | 123826 | IGS |
| 132 | (A)8 …… (T)8 | 98 | 124168 | 124265 | IGS |
| 133 | (T)8 | 8 | 124478 | 124485 | IGS |
| 134 | (AG)4 | 8 | 131006 | 131013 | IGS |
| 135 | (C)9 | 9 | 133124 | 133132 | IGS |
| 136 | (A)11 | 11 | 134322 | 134332 | IGS |
| 137 | (A)10 | 10 | 137873 | 137882 | IGS |
| 138 | (A)9 | 9 | 139146 | 139154 | IGS |
| 139 | (T)9 | 9 | 139883 | 139891 | IGS |
| 140 | (CT)4 | 8 | 141785 | 141792 | IGS |
| 141 | (TA)4 | 8 | 143746 | 143753 | IGS |
| 142 | (T)9 | 9 | 147194 | 147202 | CDS |
| 143 | (TC)4 …… (TC)4 | 20 | 149728 | 149747 | CDS |
| 144 | (AT)4 | 8 | 151346 | 151353 | IGS |
| 145 | (A)10 …… (A)9 | 45 | 151935 | 151979 | IGS |

**Note:** IGS: intergenic spacers, CDS: coding sequence, Intron: intronic sequence.

**Table S8 Tandem repeat sequences identified in the *I. cirrhosa* plastome using the program Tandem Repeat Finder.**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Start** | **End** | **Size of Repeat Unit** | **Copy of Repeat Units** | **Matches between adjacent copies (%)** | **Alignment score** | **Sequence of the repeat unit** | **Sequence of the entire repeat** |
| 8431 | 8460 | 15 | 1.9 | 93 | 53 | TATATAATTAATATAT | TATATAATAATATATTATATAATTAATATA |
| 9651 | 9688 | 11 | 3.1 | 79 | 51 | TCTATTACATTA | TCTATTACATTATTATTACATTATCTCTATTACATTAT |
| 9649 | 9688 | 14 | 3.1 | 79 | 59 | TCTCTATTACATTA | TCTCTATTACATTATTATTACATTATCTCTATTACATTAT |
| 16171 | 16196 | 11 | 2.4 | 100 | 52 | GAAAAAAAAAA | GAAAAAAAAAAGAAAAAAAAAAGAAA |
| 28916 | 28945 | 13 | 2.3 | 100 | 60 | GAATGTATTATAT | GAATGTATTATATGAATGTATTATATGAAT |
| 31896 | 31951 | 18 | 3.1 | 97 | 103 | TATAATACATTATCATTA | TATAATACATTATCATTATATAATACATTATCATTATATAATACATTATCGTTATA |
| 32264 | 32298 | 17 | 2.1 | 100 | 70 | TTCTTTATTTTTTATTA | TTCTTTATTTTTTATTATTCTTTATTTTTTATTAT |
| 32257 | 32303 | 24 | 2 | 82 | 58 | TTCTTTATTCTTTATTATCTATTA | TTCTTTCTTCTTTATTTTTTATTATTCTTTATTTTTTATTATCTATT |
| 42259 | 42288 | 15 | 2 | 100 | 60 | GTCAAATAACTAATT | GTCAAATAACTAATTGTCAAATAACTAATT |
| 42914 | 42945 | 16 | 2 | 100 | 64 | TATTCTATATCTATAT | TATTCTATATCTATATTATTCTATATCTATAT |
| 47038 | 47075 | 15 | 2.4 | 86 | 60 | ATAGAATAAAAAAAAA | ATAGAATAAAAAAAAAATAGAAAAAAAAAAAAAAGAAT |
| 47506 | 47539 | 16 | 2.2 | 89 | 50 | TATATATTCATAGAA | TATATATTCATAGAATATATATTTCATATAATAT |
| 57909 | 57981 | 24 | 3 | 95 | 137 | GAGAAAGTTCGAATGATCTCGATG | GAGAAAGTTCGAATGATCTCGATGGAGAAAGTTCGAATGATTTCGATGGAGAAAGTTCGAATGATCTCGATGG |
| 72251 | 72300 | 25 | 2 | 100 | 100 | TTGATGTGTAAACCTAAAATAAAAA | TTGATGTGTAAACCTAAAATAAAAATTGATGTGTAAACCTAAAATAAAAA |
| 83009 | 83051 | 20 | 2.1 | 95 | 79 | ATTTTGATATTCTATCACCGG | ATTTTGATATTCTATCACCGGATTTTGTATTCTATCACCGGAT |
| 91101 | 91215 | 18 | 6.8 | 89 | 117 | TATTGATGATAGTCGA | TATTGATTATATCGATATTGATGATAGTGACGATATTGATGATAGTGATATTGATGATAGTGACGATATTGATGATAGTGACGATATTGATGCTAGTGACGATATTGATGCTAGT |
| 91113 | 91223 | 18 | 6.3 | 92 | 183 | CGATATTGATGATAGTGA | CGATATTGATGATAGTGACGATATTGATGATAGTGATATTGATGATAGTGACGATATTGATGATAGTGACGATATTGATGCTAGTGACGATATTGATGCTAGTGACGATAT |
| 91113 | 91222 | 9 | 12.6 | 70 | 73 | CGATAGTGA | CGATATTGATGATAGTGACGATATTGATGATAGTGATATTGATGATAGTGACGATATTGATGATAGTGACGATATTGATGCTAGTGACGATATTGATGCTAGTGACGATA |
| 91101 | 91215 | 33 | 3.4 | 90 | 171 | TATTGATGATAGTCGATATTGATGATAGTGACGA | TATTGATTATATCGATATTGATGATAGTGACGATATTGATGATAGTGATATTGATGATAGTGACGATATTGATGATAGTGACGATATTGATGCTAGTGACGATATTGATGCTAGT |
| 92473 | 92533 | 30 | 2 | 100 | 122 | ATTTATGATGAAGAGGATGAGCTTCAAGAG | ATTTATGATGAAGAGGATGAGCTTCAAGAGATTTATGATGAAGAGGATGAGCTTCAAGAGA |
| 98627 | 98666 | 18 | 2.2 | 90 | 64 | TTTTTATTTAATATTTTAT | TTTTTATTTACTATTTTTTTTTTATTTAATATTTTATTTT |
| 109039 | 109088 | 18 | 2.8 | 96 | 91 | GATCTAATAAGTACATTC | GATCGAATAAGTACATTCGATCTAATAAGTACATTCGATCTAATAAGTAC |
| 119658 | 119707 | 21 | 2.6 | 75 | 55 | ATAAAAATATTAATTAT | ATAAATAATATTAATTATATAAAAATATTTATTAATTATATAAAAATATT |
| 119666 | 119707 | 21 | 2 | 100 | 84 | TATTAATTATATAAAAATATT | TATTAATTATATAAAAATATTTATTAATTATATAAAAATATT |
| 127434 | 127483 | 18 | 2.8 | 96 | 91 | GTACTTATTAGATCGAAT | GTACTTATTAGATCGAATGTACTTATTAGATCGAATGTACTTATTCGATC |
| 137856 | 137896 | 18 | 2.3 | 86 | 64 | AAAATAAAATAGTAAATA | AAAATAAAATATTAAATAAAAAAAAAATAGTAAATAAAAAT |
| 143989 | 144049 | 30 | 2 | 100 | 122 | TCTCTTGAAGCTCATCCTCTTCATCATAAA | TCTCTTGAAGCTCATCCTCTTCATCATAAATCTCTTGAAGCTCATCCTCTTCATCATAAAT |
| 145312 | 145408 | 9 | 11.1 | 73 | 92 | CATCAATAT | CATCAATATCGTCACTAGCATCAATATCGTCACTATCATCAATATCGTCACTATCATCAATATCACTATCATCAATATCGTCACTATCATCAATATC |
| 145305 | 145421 | 33 | 3.5 | 90 | 164 | TCACTATCATCAATATCGTCACTATCATCAATA | TCACTAGCATCAATATCGTCACTAGCATCAATATCGTCACTATCATCAATATCGTCACTATCATCAATATCACTATCATCAATATCGTCACTATCATCAATATCGATATAATCAATA |
| 145299 | 145409 | 18 | 6.3 | 92 | 183 | ATATCGTCACTATCATCA | ATATCGTCACTAGCATCAATATCGTCACTAGCATCAATATCGTCACTATCATCAATATCGTCACTATCATCAATATCACTATCATCAATATCGTCACTATCATCAATATCG |

**Table S9 Kimura-2-parameter distances calculated for the most divergent coding and non-coding regions .**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Gene** | **Pair of species** | **K2P distance** | **Mean Distance** | **Standard Deviation of the distance** |
| accD | *I. cirrhosa vs I. scandens* | 3.27 | 2.73 | 2.14 |
|  | *I. klaineana vs I. cirrhosa* | 1.26 |  |  |
|  | *I. klaineana vs I. liberica* | 6.11 |  |  |
|  | *I. klaineana vs I. perrieri* | 0.7 |  |  |
|  | *I. klaineana vs I. scandens* | 3.27 |  |  |
|  | *I. klaineana vs I. seretii* | 0.46 |  |  |
|  | *I. liberica vs I. cirrhosa* | 6.59 |  |  |
|  | *I. liberica vs I. scandens* | 2.94 |  |  |
|  | *I. liberica vs I. seretii* | 0.44 |  |  |
|  | *I. perrieri vs I. cirrhosa* | 1.35 |  |  |
|  | *I. perrieri vs I. liberica* | 6.07 |  |  |
|  | *I. perrieri vs I. scandens* | 3.28 |  |  |
|  | *I. perrieri vs I. seretii* | 0.7 |  |  |
|  | *I. seretii vs I. cirrhosa* | 1.05 |  |  |
|  | *I. seretii vs I. scandens* | 3.4 |  |  |
| ndhF | *I. cirrhosa vs I. scandens* | 3.82 | 15.55 | 10.16 |
|  | *I. klaineana vs I. cirrhosa* | 21.26 |  |  |
|  | *I. klaineana vs I. liberica* | 1.23 |  |  |
|  | *I. klaineana vs I. perrieri* | 21.13 |  |  |
|  | *I. klaineana vs I. scandens* | 23.51 |  |  |
|  | *I. klaineana vs I. seretii* | 2.91 |  |  |
|  | *I. liberica vs I. cirrhosa* | 21.82 |  |  |
|  | *I. liberica vs I. scandens* | 24.26 |  |  |
|  | *I. liberica vs I. seretii* | 2.31 |  |  |
|  | *I. seretii vs I. cirrhosa* | 23.47 |  |  |
|  | *I. perrieri vs I. liberica* | 23.78 |  |  |
|  | *I. perrieri vs I. scandens* | 6.31 |  |  |
|  | *I. perrieri vs I. seretii* | 25.01 |  |  |
|  | *I. perrieri vs I. cirrhosa* | 5.75 |  |  |
|  | *I. seretii vs I. scandens* | 26.63 |  |  |
| psaA | *I. cirrhosa vs I. scandens* | 0.62 | 39.74 | 39.48 |
|  | *I. klaineana vs I. cirrhosa* | 1.07 |  |  |
|  | *I. klaineana vs I. liberica* | 86.56 |  |  |
|  | *I. klaineana vs I. perrieri* | 0.53 |  |  |
|  | *I. klaineana vs I. scandens* | 0.91 |  |  |
|  | *I. klaineana vs I. seretii* | 62.93 |  |  |
|  | *I. liberica vs I. cirrhosa* | 100.54 |  |  |
|  | *I. liberica vs I. scandens* | 86.95 |  |  |
|  | *I. liberica vs I. seretii* | 1.88 |  |  |
|  | *I. perrieri vs I. cirrhosa* | 1.29 |  |  |
|  | *I. perrieri vs I. liberica* | 81.48 |  |  |
|  | *I. perrieri vs I. scandens* | 0.99 |  |  |
|  | *I. perrieri vs I. seretii* | 55.46 |  |  |
|  | *I. seretii vs I. cirrhosa* | 51.68 |  |  |
|  | *I. seretii vs I. scandens* | 63.17 |  |  |
| rbcL | *I. cirrhosa vs I. scandens* | 0.78 | 1.27 | 0.35 |
|  | *I. klaineana vs I. cirrhosa* | 1.56 |  |  |
|  | *I. klaineana vs I. liberica* | 0.49 |  |  |
|  | *I. klaineana vs I. perrieri* | 0.99 |  |  |
|  | *I. klaineana vs I. scandens* | 1.63 |  |  |
|  | *I. klaineana vs I. seretii* | 1.2 |  |  |
|  | *I. liberica vs I. cirrhosa* | 1.56 |  |  |
|  | *I. liberica vs I. scandens* | 1.63 |  |  |
|  | *I. liberica vs I. seretii* | 1.2 |  |  |
|  | *I. perrieri vs I. cirrhosa* | 1.57 |  |  |
|  | *I. perrieri vs I. liberica* | 0.92 |  |  |
|  | *I. perrieri vs I. scandens* | 1.56 |  |  |
|  | *I. perrieri vs I. seretii* | 1.28 |  |  |
|  | *I. seretii vs I. cirrhosa* | 1.2 |  |  |
|  | *I. seretii vs I. scandens* | 1.42 |  |  |
| ycf1 | *I. cirrhosa vs I. scandens* | 1.9 | 2.11 | 1.49 |
|  | *I. klaineana vs I. cirrhosa* | 2.28 |  |  |
|  | *I. klaineana vs I. liberica* | 0 |  |  |
|  | *I. klaineana vs I. perrieri* | 3.74 |  |  |
|  | *I. klaineana vs I. scandens* | 0.64 |  |  |
|  | *I. klaineana vs I. seretii* | 0.46 |  |  |
|  | *I. liberica vs I. cirrhosa* | 2.56 |  |  |
|  | *I. liberica vs I. scandens* | 0.72 |  |  |
|  | *I. liberica vs I. seretii* | 0.41 |  |  |
|  | *I. perrieri vs I. cirrhosa* | 2.74 |  |  |
|  | *I. perrieri vs I. liberica* | 4.22 |  |  |
|  | *I. perrieri vs I. scandens* | 4.15 |  |  |
|  | *I. perrieri vs I. seretii* | 4.05 |  |  |
|  | *I. seretii vs I. cirrhosa* | 2.67 |  |  |
|  | *I. seretii vs I. scandens* | 1.1 |  |  |
| ycf2 | *I. cirrhosa vs I. scandens* | 2.72 | 1.07 | 1.32 |
|  | *I. klaineana vs I. cirrhosa* | 0.14 |  |  |
|  | *I. klaineana vs I. liberica* | 0.11 |  |  |
|  | *I. klaineana vs I. perrieri* | 0.13 |  |  |
|  | *I. klaineana vs I. scandens* | 2.86 |  |  |
|  | *I. klaineana vs I. seretii* | 0.16 |  |  |
|  | *I. liberica vs I. cirrhosa* | 0.22 |  |  |
|  | *I. liberica vs I. scandens* | 2.97 |  |  |
|  | *I. liberica vs I. seretii* | 0.24 |  |  |
|  | *I. perrieri vs I. cirrhosa* | 0.14 |  |  |
|  | *I. perrieri vs I. liberica* | 0.21 |  |  |
|  | *I. perrieri vs I. scandens* | 2.89 |  |  |
|  | *I. perrieri vs I. seretii* | 0.16 |  |  |
|  | *I. seretii vs I. cirrhosa* | 0.18 |  |  |
|  | *I. seretii vs I. scandens* | 2.91 |  |  |
| trnH-GUG/psbA | *I. cirrhosa vs I. scandens* | 103.01 | 85.61 | 71.57 |
|  | *I. klaineana vs I. cirrhosa* | 0 |  |  |
|  | *I. klaineana vs I. liberica* | 12.27 |  |  |
|  | *I. klaineana vs I. perrieri* | 95.08 |  |  |
|  | *I. klaineana vs I. scandens* | 212.31 |  |  |
|  | *I. klaineana vs I. seretii* | 47.22 |  |  |
|  | *I. liberica vs I. cirrhosa* | 162.37 |  |  |
|  | *I. liberica vs I. scandens* | 212.31 |  |  |
|  | *I. liberica vs I. seretii* | 30.46 |  |  |
|  | *I. perrieri vs I. cirrhosa* | 8.18 |  |  |
|  | *I. perrieri vs I. liberica* | 137.44 |  |  |
|  | *I. perrieri vs I. scandens* | 40.52 |  |  |
|  | *I. perrieri vs I. seretii* | 96.78 |  |  |
|  | *I. seretii vs I. cirrhosa* | 109.24 |  |  |
|  | *I. seretii vs I. scandens* | 17.02 |  |  |
| rps16\_trnQ/UUG | *I. cirrhosa vs I. scandens* | 3.37 | 32.75 | 18.87 |
|  | *I. klaineana vs I. cirrhosa* | 62.82 |  |  |
|  | *I. klaineana vs I. liberica* | 11.59 |  |  |
|  | *I. klaineana vs I. perrieri* | 27.85 |  |  |
|  | *I. klaineana vs I. scandens* | 50.47 |  |  |
|  | *I. klaineana vs I. seretii* | 41.02 |  |  |
|  | *I. liberica vs I. cirrhosa* | 52.18 |  |  |
|  | *I. liberica vs I. scandens* | 47.17 |  |  |
|  | *I. liberica vs I. seretii* | 35.54 |  |  |
|  | *I. perrieri vs I. cirrhosa* | 56.78 |  |  |
|  | *I. perrier vs I. liberica* | 11.94 |  |  |
|  | *I. perrier vs I. scandens* | 36.17 |  |  |
|  | *I.perrier vs I. seretii* | 10.98 |  |  |
|  | *I. seretii vs I. cirrhosa* | 25.6 |  |  |
|  | *I. scandens vs I. seretii* | 17.81 |  |  |
| psbM/trnD-GUC | *I. cirrhosa vs I. scandens* | 10.57 | 5.58 | 3.73 |
|  | *I. klaineana vs I. cirrhosa* | 2.51 |  |  |
|  | *I. klaineana vs I. liberica* | 0.52 |  |  |
|  | *I. klaineana vs I. perrier* | 2.24 |  |  |
|  | *I. klaineana vs I. scandens* | 9.17 |  |  |
|  | *I. klaineana vs I. seretii* | 4.36 |  |  |
|  | *I. liberica vs I. cirrhosa* | 1.95 |  |  |
|  | *I. liberica vs I. scandens* | 11.31 |  |  |
|  | *I. liberica vs I. seretii* | 3.85 |  |  |
|  | *I. perrieri vs I. cirrhosa* | 4.73 |  |  |
|  | *I. perrier vs I. liberica* | 2.4 |  |  |
|  | *I. perrier vs I. scandens* | 12.61 |  |  |
|  | *I. perrier vs I. seretii* | 5.84 |  |  |
|  | *I. seretii vs I. cirrhosa* | 5.6 |  |  |
|  | *I. seretii vs I. scandens* | 6.1 |  |  |
| petA/psbJ | *I. cirrhosa vs I. scandens* | 88.67 | 37.89 | 34.05 |
|  | *I.klaineana vs I. cirrhosa* | 7.21 |  |  |
|  | *I.klaineana vs I. liberica* | 2.37 |  |  |
|  | *I.klaineana vs I. perrieri* | 10.66 |  |  |
|  | *I.klaineana vs I. scandens* | 90.67 |  |  |
|  | *I.klaineana vs I. seretii* | 31.36 |  |  |
|  | *I. liberica vs I. cirrhosa* | 4.96 |  |  |
|  | *I. liberica vs I. scandens* | 83.06 |  |  |
|  | *I. liberica vs I. seretii* | 30.27 |  |  |
|  | *I. perrieri vs I. cirrhosa* | 8.54 |  |  |
|  | *I. perrieri vs I. liberica* | 5.81 |  |  |
|  | *I. perrieri vs I. scandens* | 88.55 |  |  |
|  | *I. perrieri vs I. seretii* | 34.23 |  |  |
|  | *I. seretii vs I. cirrhosa* | 30.74 |  |  |
|  | *I. seretii vs I. scandens* | 51.28 |  |  |