

Exploitation of Concatenated Olive Plastome DNA Markers for Reliable Varietal Identification for On-Farm Genetic Resource Conservation

Muhammad Noman^{1,2*}, Wajya Ajmal^{1*}, Muhammad Ramzan Khan^{1,2#}, Armghan Shahzad^{1,2}, Ghulam Muhammad Ali^{1,2#}

¹National Institute for Genomics and Advanced Biotechnology, National Agricultural Research Centre (NARC), Islamabad, Pakistan

²PARC Institute of Advanced Studies in Agriculture, National Agricultural Research Centre (NARC), Islamabad, Pakistan

Email: [#]drmrkhan_nigab@yahoo.com, [#]drgmali@yahoo.com

Received 20 September 2015; accepted 5 December 2015; published 8 December 2015

Copyright © 2015 by authors and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY). http://creativecommons.org/licenses/by/4.0/

© ① Open Access

Abstract

Rapid and reliable identification of olive plants using DNA markers has been attempted in the past but the selection of polymorphic regions for discrimination at varietal level remained obscure. Recent sequencing of plastid genome of the olive flaunts high resolution Cp markers for olive DNA fingerprinting. Using this information, we designed a combination of chloroplast markers to amplify genes recruited in photosynthesis, ribosomal and NADH energy metabolism for varietal identification of olive plants. Concatenated DNA sequences of more than 100 unknown and 10 reference plants samples were analyzed using various bioinformatics and phylogenetic tools. Conserved blocks of nucleotide sequences were detected in multiple alignments. Phylogenetic reconstruction differentiated the unknown plants into various clusters with known varieties. Further narrowing down of the samples through UPGMA tree clearly separated the plants into Arbosana, Frantoio and Koroneiki as the major varieties. Multiple alignments of these clusters revealed important variety specific SNPs including G and T nucleotides at specific positions. Sequence identifying at intra cultivar level was more than 98.79% while it dropped to 97%, and even to 96% at inter varietal level. Furthermore, a neighbor net network analysis separated these three clusters, thus validating the results of UPGMA tree. Over all, out of 100 plants samples, 49 plants were identified that fall into 10 varieties including Arbosana, Carolea, Chetoui, Coratina, Domat, Frantoio, Gemlik, Koroneiki,

^{*}Contributed equally.

How to cite this paper: Noman, M., Ajmal, W., Khan, M.R., Shahzad, A. and Ali, G.M. (2015) Exploitation of Concatenated Olive Plastome DNA Markers for Reliable Varietal Identification for On-Farm Genetic Resource Conservation. *American Journal of Plant Sciences*, **6**, 3045-3074. <u>http://dx.doi.org/10.4236/ajps.2015.619299</u>

[#]Corresponding authors.

Leccino and Moraiolo. The maximum number of known plants belongs to Frantoio and Gemlik (8 each). The least number of samples was identified from Carolea, Domat and Moraiolo with 2 samples each. However, 51 plants could not be identified, as plants were not clustered with any of reference control. Our results have implications in on-farm conservation of olive germplasm and provision of genuine material for multiplication of authentic varieties. This strategy can be extended to varietal identification of other plant species.

Keywords

DNA Fingerprinting, Olive, Marker, Chloroplast, Genome, Identification, Phylogenetic

1. Introduction

One of the characteristic fruit trees of the Mediterranean area is the evergreen and long-lived olive (*Olea europaea* L.). It is diploid with 46 chromosomes from the Oleaceae family [1]-[3]. Olive can be as older as 500 years but over 2000 years older trees are also in record. It is a medium sized tree with grey-green leaves arranged opposite to one another. The olive comes from the genus Olea that has 3 subgenera Paniculatea, Olea and Tetrapilus [4]. *Olea europaea* L. is the only single species that bears edible fruit [5] [6]. The origin of olive is still unclear, but the main hypothesis suggests that it originated from the Eastern shores of the Mediterranean [7].

The fruit and oil of olive are of prime importance worldwide. Although 90% of world olive production is used for oil extraction [8], the consumption of table olives is also growing globally. Today, the olive tree is grown commercially within latitudes 30° and 45° in both the Northern and Southern hemispheres, where climatic conditions are similar to the Mediterranean basin, with mild winters and warm, dry summers [9] [10]. Pakistan lies in the belt between 30° - 45° North and South of the equator, hence it is a potential area for olive cultivation. The suitable areas include Pothwar, Khyber Pakhtunkhwa, Swat, Dir, Malakand, Loralai, Khuzdar and Quetta districts etc. Edible oil is the biggest food import item of Pakistan. Pakistan imports olive oil and fruit every year and huge funds are consumed on their cost. Self-sufficiency in edible can be attained by cultivating olive orchards in the marginal lands (more than 3 million acres; 30% of total land) of Pakistan. Under different projects, the total olive tree cover is more than 800 ha comprising of 106,048 trees. These plants are at fruiting stage and some of these plants are giving very good yield. But the biggest problem which is restricting their large scale propagation is that these olive varieties/plants are unidentified and there is no record which variety/cultivar they are. Therefore, oil extracted from these plants is mixed and does not get its premium price in the market. Unavailability of known high yielding and quality oil producing varieties/plants is the biggest hurdle for large scale propagation of olive in the poor lands of Pakistan. Furthermore, the unavailability of true to type olive nurseries is also impeding the olive propagation in the potential regions.

The olive's ancient origin, easy propagation and popularity have resulted in the presence of its numerous cultivars across the world. Several cultivars may have the same name (homonyms), or the same cultivar may be called by different names (synonyms) in different areas [11]-[13]. Many areas in botany depend on the efficiency to discriminate plant genotypes and calculate the amount of diversity and similarity in a group of genotypes. This has been done traditionally through morphological and biochemical markers and presently through DNA markers or DNA fingerprinting [14]. Molecular markers are preferred because they have several advantages over their alternatives. Like, they are co-dominantly inherited and highly polymorphic. They can be easily visualized and are spread over the whole genome evenly. They are stable, quick, inexpensive and simple to use. They require small amount of DNA and do not require any pre-info about the genome [15]. The olive gene pools have also been characterized utilizing the high resolving capacity of the molecular markers. Many researchers have traced the origin of olive germplasm using different molecular makers like RAPD [16].

An advanced genome screening technique is that of the plastome sequencing or screening the chloroplast DNA through specific markers. The chloroplasts are inherited maternally in the cultivated olives [17]. The plastidial variability is low in the cultivated olives in contrast to that detected at the subspecies level. The mitochondria and chloroplasts both pass through recurrent mutations but the level of mutations is low as demonstrated by [18]. Taking advantage of the highly conserved nature of cpDNA, universal primers for the cpDNA introns have been developed for numerous plant species [19]. Besnard and his colleagues detected 14 polymorphisms in the 3

chloroplast regions (trnT-L, trnQ-R and matK) in the Olea europaea complex [20].

For this study, the last approach of sequencing of the entire chloroplast genome of the *Olea europaea* subsp. europaea cv. Frantoio to identify the polymorphic regions was employed. The resulting availability of the entire plastome map allowed to evaluate the sequence arrangement of the plastid genome in Olea europaea and to identify new organellar polymorphisms that could discriminate between cultivated olive varieties [21]. In order to propagate only the better and high yielding cultivars, there is dire need to screen the cultivated olive plants in Pakistan to identify variety/cultivar. We can also graft our desired varieties onto the wild plants. This can enhance the olive fruit and oil yield in Pakistan. The work of this nature has not been done in Pakistan to date. Olive growers can name accurately some cultivars with distinguished phenotypic traits. But they confuse while differentiating the cultivars having similar morphological characters. Due to this problem, certified and good quality material for the establishment of new olive orchards is not available. Hence rapid and reliable identification of unknown olive plants growing at various olive farms through DNA marker is essential. Therefore, the objective of the present study was to screen unknown and known plants through specific cholorplast DNA markers for identification of polymorphic regions, identification of unknown cultivars of olive growing at different orchards in Pakistan using DNA markers, and to infer their evolutionary relationship through phylogenetic reconstruction. The results demonstrate that olive genome harbours some very advantageous polymorphic sites which can be employed for the reliable screening of unknown olive varieties through cultivar specific SNPs. The evolutionary relationship explored by phylogenetic investigation also helped in identifying the plants. Finally the neighbor-net network analysis validated the clustering of plants into specific variety.

2. Plant Materials and Methods

2.1. Selection of Materials and Sampling Plan

Information about the olive plants growing at different locations in Pakistan was obtained from National Director of the Olive Project, Pakistan Agricultural Research Council, Islamabad, Pakistan. Different areas of Khyber Pakhtunkhwa province were selected for plant sampling. Each plant was labeled using olive farm name, orchard number, row number and plant number. After plant labeling, fresh leaf tissue was harvested from the plants. The samples were stored at -80° C until DNA extraction was performed.

2.2. Sequence Retrieval and Primer Designing

The chloroplast genomes of 8 olive cultivars including Frantoio were retrieved from NCBI database. The genome sequences were aligned and scanned using MacVector7.2 software [22] and polymorphic markers were selected. In this case, three chloroplast markers Oe-psbK-psbI-trnS-trnG-trnS-GCU-trnGUCC, Oe-rps8-rpl14-rps8-rpl14 exon, Oe-ndhF exon-rpl32-trnL3-trnL-UAG were selected. Three pairs of primers were designed for all the selected genes and regions.

2.3. DNA Extraction, PCR Amplification and Sequencing

A total of 110 plant leaf samples were used for DNA extraction using CTAB method [23]. For quality assessment DNA was run on 0.8% agarose gel. The diluted DNA samples were used as a template for PCR amplification with three primer pairs. The primer pairs used were named as CP3, CP4 and CP5. The sequence of the CP5 forward primer was 5'-CTGACAATTCATTTCTATTTCTAGA-3' and reverse primer was

5'-CATTATTTATCTATAATTCGTTGGA-3'. Their position in cpDNA is 8986 to 9705 and they amplify a fragment of 720 bp length.

Each PCR reaction (50 μ l) contained 10 ng DNA template, 10× reaction buffer, 5 μ L MgCl₂, 1 μ L dNTPs, 1 μ L of each primer, and 0.5 μ L of Taq DNA polymerase (Promega, Madison, WI, USA). The reaction mixtures were incubated in a thermocycler (Applied Biosystems Inc) for 5 min at 95°C, followed by 36 cycles of 1 min at 94°C (denaturing), 1 minute at the annealing temperature 58°C, and 1 min at 68°C (extension). PCR products were run on 1.2% agarose gel to view the amplification success. The PCR product was sent to Macrogen (Korea) for sequencing.

2.4. Sequence Analysis and Multiple Alignments

The sequence files obtained were edited and analyzed with MacVector7.2 program [22]. Blastn was done for

target identification in NCBI database (<u>http://blast.ncbi.nlm.nih.gov/Blast.cgi</u>). The BioEdit software [24] was used to trim the sequences to remove the mismatched/flanking regions from both the ends. The ClustalW multiple alignment of the sequences was done using BioEdit and MEGA6 software [24] [25]. The mutations were detected, recorded and matched with previously available known data of different olive cultivars. Furthermore sequence identity at intra and inter varietal level was calculated through pairwise alignments. In this way, different olive cultivars were discriminated based on sequences similarities. A dataset was prepared that comprised 100 unknown and 10 known plants marker region sequences to be analyzed with bioinformatics software.

2.5. Phylogenetic Reconstruction

In order to infer the evolutionary relationship among different cultivars, phylogenetic reconstruction using UPGMA algorithm was done in MEGA6. The data generated was also helpful in cultivar identification.

It is well demonstrated that phylogenetic network could better reveal the evolutionary history including hybridization, recombination and homoplasmy etc. than a tree like structure. Therefore, a neighbor-net network reconstruction analysis was implemented in SplitTree4 package with default parameters using an uncorrected P distance method [26].

2.6. Unknown Plant Identification

The results from cultivar specific mutations *i.e.* SNPs, multiple alignments and phylogenetic reconstruction were combined and analyzed for plant identification. The identified plants were tabulated and shown graphically in results section.

3. Results

3.1. The Selected Marker Genes in Olive Plastome Are Polymorphic

Mariottiand his colleagues sequenced entire chloroplast genome of Frantoio cultivar and reported a number of polymorphic markers [21]. Using this information we set out to find the most variable regions with high resolving power that can be used to identify the olive plants at variety level. Scanning of the olive chloroplast genome revealed three polymorphic regions (**Supplementary Figure S1**). The region 1 coding for the photosystem thylakoid membrane (psb-A) and transfer RNA (trnL) gene is located in the start from 8986 bp to 9705 bp. This region spans a length of 720 bp. It is the most polymorphic region as it harbors six different types of mutations including two SNPs, two indels and two SSRs. The details about these regions are given in **Table 1**. Similarly, the region 2 is located between 83112 bp to 83852 bp with a stretch of 740 bp. This region was also quite polymorphic and encodes ribosomal protein S (rps). Region 3 is located in the extreme distal portion. This region could amplify a size of 1334 bp between 101263 bp to 102599 bp. Ribosomal protein S (rpsT) and NADH dehydrogenase (ndhF) are encoded by these markers genes. Based on this information, three primer pairs CP5, CP4 and CP3 were designed for the amplification of selected regions 1, 2, and 3, respectively using "primer tool" in MacVector 7.2 software (**Supplementary Table S1**).

Initially, PCR amplification followed by sequencing analysis for five known cultivars, Carolea, Gemlik, Domat, Leccino and Moraiolo grown at NARC revealed that CP5 gave the best amplification and sequencing results in comparison with CP3 and CP4 primers. There were fewer polymorphic sites detected in regions ampli-

| mentioneu. | | | |
|------------|-------------------|-----------|----------|
| Sr. No. | Polymorphism type | Motif | Position |
| 1 | SSR | T10-11 | 9072 |
| 2 | SNP | C/T | 9463 |
| 3 | SNP/Indel | A/T/- | 9535 |
| 4 | Indel | TTAGATA/- | 9536 |
| 5 | Indel | A4(G)A5/- | 9574 |
| 6 | SSR | A11-14 | 9579 |

Table 1. Mutations detected in the selected polymorphic region of olive plastome. Type and position of mutation are also mentioned.

fied using CP3 and CP4 primers. Furthermore the sizes of their products were also longer in comparison with CP5 (Data not shown). On the other hand, CP5 revealed a number of polymorphic sites. Hence CP5 primer pair was selected for the amplification of olive samples. Moreover the product size with CP5 was smaller (less than 720 bp) that could be easily amplified which reduced the sequencing cost as well. At least three PCR products were sequenced for each sample. The sequences were edited using BioEdit program and trimmed in order to eliminate the errors induced by sequencing procedure and to get the reliable sequence for analysis.

To explore the variability in the upstream regions of chloroplast genes, five reference plants sampled from NARC were compared with Frantoio sequence of NCBI database. For this purpose a multiple alignment was generated in BioEdit program. The alignment in **Figure 1** shows that the selected region is quite polymorphic. In a short span of 600 bp, 14 mutations can be identified. These mutations included SNPs and deletion/insertions. There are two deletions located at 445 bp and 514 bp position, where A is deleted. The most frequent substitutions present are A and G nucleotides. There are specific SNPs in the NARC Carolea including A at position 46, 86, 294 and 296. Similarly another SNP of the nucleotide G is present only in NCBI Frantoio at 238th position. These mutations seem to be cultivars specific.

| NARC Carolea | AAGATCTATT (| CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
|---------------|--------------|-------------|------------|------------|------------|------------|------------|------------|
| NARC Domat | AAGATCTATT (| CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| NARC Gemlik | AAGATCTATT (| CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| NARC Leccino | AAGATCTATT (| CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| NARC Moraiolo | AAGATCTATT (| CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| NCBI_Frantoio | AAGATCTATT (| CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| NARC_Carolea | TACCGAAGGG # | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| NARC_Domat | TACCGTAGTG # | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| NARC_Gemlik | TACCGTAGGG # | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| NARC_Leccino | TACCGTAGTG 3 | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| NARC_Moratolo | TACCGTAGTG A | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| NCBI_Franto10 | TACCGTAGTG I | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| NARC Carolea | AATAAAATCC # | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAAAT |
| NARC Domat | AATAAAATCC A | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAAAT |
| NARC Gemlik | AATAAAATCC A | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAAAT |
| NARC Leccino | AATAAAATCC A | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAAAT |
| NARC Moraiolo | AATAAAATCC A | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAAAT |
| NCBI Frantoio | AATAAAATCC A | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAGAT |
| _ | | | | | | | | |
| NARC_Carolea | TTCAAAAATT 1 | IGAAAAATAA | ATAAATAAAT | CAAGTCATCA | ACGGAACCGG | AAAAAAAGGG | ATTCAAACCC | TCGGTACGAA |
| NARC Domat | TTCAAAAATT 1 | IGAAAAATAA | ATAAATAAAT | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACGAA |
| NARC Gemlik | TTCAAAAATT 1 | IGAAAAATAA | ATAAATAAAT | CAAGTCATCA | ACGGAACOGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| NARC Leccino | TTCAAAAATT 1 | IGAAAAATAA | TAAATAAAT | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| NARC Moraiolo | TTCAAAAATT 1 | IGAAAAATAA | ATAAATAAAT | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| NCBI Frantoio | TTCAAAAATT 1 | IGAAAAATAA | ATAAATAAAT | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| _ | | | | | | | | |
| NARC_Carolea | TAACTCGTAC A | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| NARC_Domat | TAACTCGTAC A | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| NARC_Gemlik | TAACTCGTAC A | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| NARC_Leccino | TAACTCGTAC A | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| NARC_Moraiolo | TAACTCGTAC A | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| NCBI_Frantoio | TAACTCGTAC A | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| NARC Carolea | TACATATAAT (| STAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| NARC Domat | TACATATAAT (| STAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| NARC Gemlik | TACATATAAT (| STAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGAT-TACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| NARC Leccino | TACATATAAT (| STAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| NARC Moraiolo | TACATATAAT (| STAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| NCBI Frantoio | TACATATAAT (| STAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| | | | | | | | | |
| NAKC_Carolea | GATAAAGGAA (| GGCTCGAAC | GAGCCTATAA | ATAAATAAAG | AAAAAAAAA | AAGAAAACTT | CITG | |
| NARC_Domat | GATAAAGGAA (| GGCTCGAAC | GAGCCTATAA | ATAAATAAAG | AAAAAAAAA | AAAAAAACTT | CTTT | |
| NARC_Gemlik | GATAAAGGAA (| SGGCICGAAC | GAGCCTATAA | ATAA-TAAAG | AAAAAAAAAA | AAAAAAACTT | CIII | |
| NARC_Leccino | GATAAAGGAA (| GGCTCGAAC | GAGCCTATAA | ATAAATAAAG | AAAAAAAAA | AAAAAAACAT | CITT | |
| NAKC_Moraiolo | GATAAAGGAA (| GGCTCGAAC | GAGCCTATAA | ATAAATAAAG | AAAAAAAAAA | AAAAAAACTT | CTTT | |
| NUBI_Frantoio | GATAAAGGAA (| SGGCI CGAAL | GAGCULAIAA | ATAAATAAAG | AAAAAAAAAA | ANGARGACAI | 0111 | |

Figure 1. Multiple alignments of the marker region sequences of 5 olive varieties collected from NARC and one sequence of Frantoio retrieved from NCBI database, using BioEdit software. The shaded regions show the conserved sequences in the marker region of the chloroplast DNA of these different varieties. The regions that are not shaded exhibit the sites of mutations. These are SNPs and indels. SNPs are substitutions of single nucleotides. The gaps are the indels.

The above results allow us to infer that upstream region of the olive plastome is highly polymorphic with cultivar specific SNPs. Thus, this region *i.e.* CP5 primer specific can be used to identify plants at the variety level.

3.2. Phylogenetic Reconstruction Clustered the Unknown with Known Varieties of Olive

After sampling, the leaf material was immediately processed for DNA extraction using CTAB method [23]. A total of 110 samples were run on agarose gel for quantification. Chloroplast DNA was also present in this genomic DNA. These DNA samples were labelled and stored at -20° C. As CP5 primer pair was found to be the most polymorphic that could amplify a very short region of 720 bp containing 6 different mutations; therefore this primer pair was used to amplify Oe-psbK-psbI and Oe-trnS-trnG-1-4 regions of the plastome DNA of olive. It was possible to amplify the entire plate of 96 samples in a single PCR reaction. The amplified products were resolved on agarose gel against 1 kb ladder (**Figure 2**). The quality and quantity of PCR product was good enough for sequencing.

Sequencing of all the 110 samples was carried out using the services of MACROGEN Korea. Targets samples were selected using BLAST search. The sequences were edited using BioEdit software [24]. The sequences were trimmed and aligned. This region contains all the SNPs, indels and SSRs showing polymorphism in different samples.

Based on sequence data, three types of *in silico* approaches were adopted to identify the unknown olive samples/sequences. Firstly, comparison of unknown sequences with known sequences through multiple alignments Secondly, identification of variety specific SNPs, indels and SSRs in unknown plant samples. Thirdly, phylogenetic reconstruction of unknown plants with known plants using UPGMA and neighbor-net network analysis. In order to get the final results about the plant samples identification, these three approaches were combined.

Multiple alignments of all the samples were generated (Supplementary Figure S2). The sequences for all the samples were highly conserved but different groups of plants with specific mutations were detectable. SNPs, indels and deletions were found throughout the aligned regions. The conserved region was shaded while the sites of mutations were not as shown in the Supplementary Figure S2. Though chloroplast like mitochondria is inherited from the mother parent only, this is exempted from genetic recombination during meiosis. Even, the major portion of the CpDNA is conserved, but the sequencing of the whole plastome of olive revealed that mutations such as SNPs, indels and SSRs are present. Some of the mutations are variety specific and this level of polymorphism is suitable to be used for cultivar identification.

In order to differentiate the unknown plants, phylogenetic reconstruction was carried out for all the samples including 100 unknown plants samples along with 10 known plants. A circular phylogenetic tree (Figure 3) demonstrates 17 clusters and 21 branches. Of them, 49 unknown plants clustered with 10 varieties of olive plants. These clusters include Frantoio and Gemlik (8 plants each), Coratina (5 plants), Arbosana and Chetoui (6 plants each), Carolea, Domat and Moraiolo (2 plants each), Leccino (3 plants) and Koroneiki (7 plants). The



Figure 2. PCR product amplified with CP5 primer visualized on agarose gel. Each fragment is about 720 bp in length. $1 \rightarrow 110$ indicates samples and control PCR products These include 100 unknown samples and 10 reference known samples. "M" denotes marker (1 kb).



Figure 3. Phylogenetic circular tree of all the 110 olive plants samples. The evolutionary history was inferred using the UPGMA method. The optimal tree with the sum of branch length = 0.77561405 is shown. The evolutionary distances were computed using the Kimura 2-parameter method and are in the units of the number of base substitutions per site. The analysis involved 110 nucleotide sequences. All positions containing gaps and missing data were eliminated. There were a total of 523 positions in the final dataset. Evolutionary analyses were conducted in MEGA6. The clusters with coloured branches were selected for further validation in two other phylogenetic reconstructions.

reference plants getting the maximum matches of 8 plants were Frantoio and Gemlik (8 each) while the olive varieties with minimum matches were Carolea, Domat and Moraiolo (2 plants each) (**Table 2**). The Koroneiki is found at the basal position while Frantoio is the most recent variety. The rest of samples did not cluster with any of the reference samples. They clustered together, separately from the known varieties and remained unknown. They constitute majority of the samples (51).

3.3. Variety Specific SNPs, Indels, SSRs Can Be Detected in Amplified Regions

For zooming in the data were fragmented into smaller sets. For example the 1st set contains the sequences of only Arbosana, Frantoio and Koroneiki and of the unknown plants in their clusters. A smaller phylogenetic UPGMA tree was constructed in MEGA6. Figure 4 demonstrate that all the three clades retained their integrity by the clustering of the same unknown plants to their reference plants as in the circular tree thus validating the results obtained from the circular tree. The neighbour-net network better reveals recombination, homoplasmy and evo-



Figure 4. UPGMA phylogenetic tree showing unknown plants along with their reference plants. Tree was constructed using MEGA6 software. The topology of the tree is as that of the corresponding clusters in the circular tree. The number on the nodes indicates bootstrap values for 1000 replicates.

| Sr. No. | Known Cultivars | No. of identified Plants |
|---------|-----------------|--------------------------|
| 1 | NARC_Carolea | 2 |
| 2 | NARC_Domat | 2 |
| 3 | NARC_Gemlik | 8 |
| 4 | NARC_Leccino | 3 |
| 5 | NARC_Moraiolo | 2 |
| 6 | Tn_Arbosana | 6 |
| 7 | Tn_Chetoui | 6 |
| 8 | Tn_Coratina | 5 |
| 9 | Tn_Frantoio | 8 |
| 10 | Tn_Koroneiki | 7 |

 Table 2. List of plants identified using multiple alignments and phylogenetic reconstruction.

lutionary relationship than a tree like structure. To further validate our results, the neighbour-net network of the sequences of three clusters was constructed in SpitsTree4 software (Figure 5). The resulting phylogenetic tree exhibited the same clusters of reference plants and unknown plants. The tree is clearly differentiated into three clusters. Though branches are scattered and are at distance in Koroneiki but it is the same cluster. Furthermore the tree retained the topology as UPGMA tree. So it can be concluded from all the three phylogenetic trees, that the mutations in the marker regions are variety specific. This marker region is reliable for the identification of olive varieties.

The multiple alignments of the sequences of marker regions of 16 plants showed a number of different SNPs at specific positions (**Figure 6**). Variety specific SNPs are present specifically in the marker region sequences of Frantoio and its clustered plants at positions 82, 258, 275 and 357 collected from Ternab. Similarly, Koroneiki



Figure 5. Neighbour-net network constructed with SplitsTree 4. The clusters retained their integrity thus further validating the corresponding clusters of the circular tree.

and the unknown plants in its cluster taken from Ternab have SNPs at 147, 163 and 221 positions. Similarly, Arbosana and the unknown plants in this cluster from Ternab have a common SNP at position 163 where T has substituted. Two deletions are also found at positions 532 and 536.

The unknown plants that have mutations corresponding to their reference plants and on this basis they have clustered together with a unique reference plant. These can be considered to be that variety sharing similarities in the chloroplast DNA sequence. This small dataset validated our results.

Over all data show that there are 49 plants differentiated into 10 varieties given as Arbosana, Carolea, Chetoui, Coratina, Domat, Frantoio, Gemlik, Koroneiki, Leccino and Moraiolo (Figure 7). A total of 188 mutations are present including SNPs and indels in 110 plants in the region amplified with CP5 marker shown in Supplementary Figure S2.

| T 1 | ACTOTOL NAC TOTTOOTTA | TOCOTTOTO | 3 T 3 T T T T T T T T T | *** | 03 TOTTTOO3 | TTOOTATOTA | 3 7 6 3 7 6 6 3 6 6 |
|---|---|---|---|--|--|--|---|
| Tn_Arbosona | ACICIGAAAC ICIICGIIIA | ICCCGIAGIG | AIAIIIIIG | Incidicit | CAICIIIGGA | TICCIAICIA | AIGAICCAGG |
| Tn 16 | ACTCTGAAAC TCTTCGTTTA | TCCCGTAGTG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG |
| T_{n} 10 | ACTCTGAAAC TCTTCGTTTA | TCCCGTAGTG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG |
| T_{m}^{11} | ACTCTGAAAC TCTTCGTTTA | TCCCGTAGTG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG |
| III_/0 | ACTOTOL ALC TOTTOCTTA | TOCOCTICTO | 3 T 3 T T T T T T T T | **** | CA TOTTTOCA | TTOOTATOTA | 3 7 6 3 7 6 6 3 6 6 |
| ln_31 | ACICIGAAAC ICIICGIIIA | ICCCGIAGIG | AIAIIIIIG | THURSDOIGH | CATCILIGGA | TICCIAICIA | AIGAICCAGG |
| Tn Frantoio | ACTCTGAAAC TCTTCGTTTA | TACCGTAGTG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG |
| Tn^{-3} | ACTCTGAAAC TCTTCGTTTA | TACCGTAGTG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG |
| T_{m}^{-62} | ACTOTGANAC TOTTCOTTA | TACCETACTO | ATATTTTTC: | TTTCTCTCTT | CATCTTTCCA | TTCCTATCTA | ATGATCCACC |
| 111_03 | ACTOTOMIC TOTTOOTTIM | TACCCTACTC | ATATTTTTC | TTTCTCTCTT | CATCTTTCCA | TTCCTATCTA | ATCATCCACC |
| Tn_80 | ACICIGAAAC ICIICGIIIA | TACCGIAGIG | AIAIIIIIG | IIICICICI | CAICIIIGGA | TICCIAICIA | AIGAICCAGG |
| Tn 82 | ACTCTGAAAC TCTTCGTTTA | TACCGTAGTG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG |
| Tn 85 | ACTCTGAAAC TCTTCGTTTA | TACCGTAGTG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG |
| Ta Kananalia | ACTOTGANAC TOTTOGTTTA | TCCCGAAGTG | ATATTTTTC | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGACCCAGG |
| In_Koronekie | | 7000011010 | 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | | 01.1011100. | | 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 |
| Tn 26 | ACICIGAAAC ICIICGIIIA | TUUUGAAGGG | ATATITITIG | THUCICICIT | CATCITIGGA | TICCIAICIA | AIGACCCAGG |
| Tn ⁵¹ | ACTCTGAAAC TCTTCGTTTA | TACCGTAGTG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCAATCTA | ATGATCCAGG |
| Tn 33 | ACCCTGAAAC CCTTCGTTTA | TCCCGTAGGG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGACCCAGG |
| Tm 20 | ACCCTGAAAC TCTTCGTTTA | TCCCGTAGGG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG |
| 111_39 | | | | | | | |
| | | | | | | | |
| Tn Arbosona | ACGTAATCCT GGACGTGAAG | AATAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTTATCTAT |
| $T_n 16$ | ACGTAATCCT GGACGTGAAG | AATAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT |
| | ACGTAATCCT GGACGTGAAG | AATAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT |
| In_49 | ACCENNECCE CONCEPTONIC | *********** | A A A C C C T T T T | TOOTTOOTTA | 3 TTTTT 3 3 3 TT | TTTOTTLOCK | TTTT XTOT XT |
| Tn 70 | ACGIAAICCI GGACGIGAAG | AATAAAAICC | AAAGGGIIII | ICCIIGGIIA | ATTTICAAAT | TITCITAGGA | TITIAICIAI |
| Tn_31 | ACGAAATCCT GGACGTGAAG | AATAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT |
| Tn Frantoio | ACGTAATCCT GGACGTGAAG | AAAAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT |
| | ACGTANTOCT COACGTONAC | AATAAATCC | AAAGGGTTTT | TCCTTCCTTA | ATTTTCAAAT | TTTCTTACCA | TTTTATCTAT |
| Tn_3 | ACGINATOOT GONCOTONNO | 1171111700 | 111000000000000000000000000000000000000 | TOOTTOOTTA | ATTTTOAAAT | TTTOTINGGA | TITINICIAL |
| Tn 63 | ACGIAAICCI GGACGIGAAG | AATAAAAICC | AAAGGGIIII | ICCIIGGIIA | ATTTICAAAT | TITCITAGGA | TITIAICIAI |
| Tn_80 | ACGTAATCCT GGACGTGAAG | AATAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT |
| T. 92 | ACGTAATCCT GGACGTGAAG | AATAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT |
| 1n_82 | ACCENATOOT COACCECARC | AAAAAATCC | AAACCCTTTT | TCCTTCCTTA | a TTTTC as aT | TTTCTTACCA | TTTTATCTAT |
| In_85 | ACGINATOCI GGACGIGAAG | AAAAAAA | 11100001111 | TOOTIOGITA | ATTTTOART | TITCITAGGA | TITIATOTAL |
| Tn Koronekie | ACGAAACCCG GGACGTGAAG | AAAAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT |
| T_{n}^{-26} | ACGAAACCCG GGACGTGAAG | AAAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT |
| Tn_20 | ACGAAACCCG GGACGTGAAG | AAAAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT |
| 1n_51 | ACCANACCCC CCACCTCAAC | AAAAAATCC | AAACCCTTTT | TCCTTCCTTA | ATTTTCAA AT | TTTCTTACCA | TTTTATCTAT |
| Tn_33 | ACGRARCOUS GORCOIGRAS | AAAAAAA | AAA66601111 | ICCIICGIIA | ATTTTCAAAT | TITCTINGGA | TITIAICIAI |
| Tn 39 | ACGTAACCCT GGACGTGAAG | AAAAAAATCC | AAACCCTTTT | TCCTTCCTTA | ATTTTCAAAT | TTTCTTACCA | TTTTATCTAT |
| 11 07 | | | | 1001100111 | | 111011110011 | |
| | | | | 1001100111 | | 111011110011 | |
| Tn_or | TCCACACGTT TAACTAAAAT | TTCAAAAATT | TGAAAAAAAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG |
| Tn_Arbosona | TCCACACGTT TAACTAAAAT | TTCAAAAATT TTCAAAAATT | TGAAAAAAAA | ATAAATAAAT | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG |
| Tn_Arbosona Tn_16 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT | TTCAAAAATT TTCAAAAATT | ТGАААААААА ТGАААААААА | АТАААТАААТ АААААТАААТ | CAAGCCATCA CAAGCCATCA | ACGGAACCGG ACGGAACCGG | AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn 49 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGААААААА ТGАААААААА ТGАААААААА | АТАААТАААТ АААААТАААТ АТАААТАААТ | CAAGCCATCA CAAGCCATCA CAAGCCATCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAA TCCACACGTT TAACTAAAAA | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGААААААА ТGАААААААА ТGAAAAAAA TGAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA | ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGААААААА ТGАААААААА ТGAAAAAAAA TGAAAAAAAA TGAAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA | ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAAAT | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТСАААААААА ТСАААААААА ТСАААААААА ТСАААААААА | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGААААААА ТGАААААААА ТGАААААААА ТGАААААААА | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA | ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | Т <u>GAAAAAAAA</u> Т <u>GAAAAAAAAA</u> Т <u>GAAAAAAAAA</u> Т <u>GAAAAAAAAA</u> Т <u>GAAAAAAAA</u> Т <u>GAAAAAAAA</u> | ATAAATAAAT AAAAATAAAT ATAAATAAAT ATAAATAAAT ATAAATAAAT ATAAATAAAT ATAAATAAAT | CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGTCATCA CAAGTCATCA | ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAA TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAAT | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGААААААА ТGААААААА ТGААААААА ТGААААААА ТGААААААА TGAAAAATA TGAAAAATA TGAAAAATA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_63 Tn_80 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAAAT | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGААААААА ТGAAAAAAA ТGAAAAAAA ТGAAAAAAA ТGAAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAAAAT | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТСАААААААА ТСАААААААА ТСАААААААА ТСАААААААА | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_71 Tn_Frantoio Tn_3 Tn_63 Tn_63 Tn_80 Tn_82 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGААААААА ТGААААААА ТGААААААА ТGААААААА ТGААААААА TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ | CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA | ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_80 Tn_82 Tn_85 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAAAAT | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА TGАЛАЛАТА TGAЛАЛТА TGAЛАЛТА TGAЛАЛТА TGAЛАЛТА TGAЛАЛТА | АТАААТАААТ АДАААТАААТ АТАААТАААТ АТАААТАА | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_63 Tn_80 Tn_82 Tn_85 Tn_Koronekie | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAAAAT | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGAAAAAAA ТGAAAAAAA ТGAAAAAAA ТGAAAAAAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_63 Tn_80 Tn_82 Tn_85 Tn_Koronekie Tn_Koronekie | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAAAAT CCCACACGTT TAACTAAAAAT | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGААААААА ТGААААААА ТGААААААА ТGААААААА ТGААААААА TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АЗААЗАЗААТ | CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_80 Tn_82 Tn_85 Tn_Koronekie Tn_26 Tn_21 | ТССАСАССТТ ТААСТАЛАЛ ТССАСАССТТ ТААСТАЛАЛ ТССАСАССТТ ТААСТАЛАЛ ТССАСАССТТ ТААСТАЛАЛ ТССАСАССТТ ТААСТАЛАЛ ТССАСАССТТ ТААСТАЛАЛ ТССАСАССТТ ТААСТАЛАЛ ТССАСАССТТ ТААСТАЛАЛ ТССАСАССТТ ТААСТАЛАЛ ТССАСАССТТ ТААСТАЛАЛ СССАССССТТ ТААСТАЛАЛ | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТСАЛАЛАЛА ТСАЛАЛАЛАЛ ТСАЛАЛАЛАЛ ТСАЛАЛАЛАЛ ТСАЛАЛАЛАЛ ТСАЛАЛАЛАЛ ТСАЛАЛАТАЛ ТСАЛАЛАЛАЛ ТСАЛАЛАЛАЛ ТСАЛАЛАЛАЛ | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АЗАААЗАА | CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGGG AAAGAGAGGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_82 Tn_85 Tn_Koronekie Tn_26 Tn_51 | ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААСАТ ТССАСАССТТ ТААСТААСАТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGААААААА ТGААААААА ТGААААААА ТGААААААА ТGАААААТА TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААА | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCCGG ACGGACCCGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_63 Tn_80 Tn_82 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_33 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAAAAT CCCACACGTT TAACTAAAAAT CCCACACGTT TAACTAAAAAT CCCACACGTT TAACTAAAAAT | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАЛА TGАЛАЛАЛА TGАЛАЛАЛА TGАЛАЛАЛА | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АЗАААЛАААТ АЗАААТАААТ | CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCCGG ACGGACCCGG ACGGACCCGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_70 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_80 Tn_82 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_33 Tn_39 | ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАЛА TGАЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААА | CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGOCATCA CAAGOCATCA CAAGCCATCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCCGG ACGGACCCGG ACGGACCGG ACGGACCGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_80 Tn_82 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_33 Tn_39 | ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААСАТ ТССАСАССТТ ТААСТААСАТ ТССАСАССТТ ТААСТААСАТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGААААААА ТGААААААА ТGААААААА ТGААААААА ТGАААААТА TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААА | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCCGG ACGGACCCGG ACGGACCCGG ACGGACCGG ACGGACCGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_82 Tn_85 Tn_Koronekie Tn_26 Tn_33 Tn_33 Tn_39 Tn_Arbosona | ТССАСАССТТ ТААСТААААТ ГССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ГССАСАССТТ ТААСТААААТ ГССАСАССТТ ТААСТААСАТ ТССАСАССТТ ТААСТААСАТ ТССАСАССТТ ТААСТААААТ ГССАСАССТТ ТААСТААААТ ГССАСАССТТ ТААСТААААТ СССАССССТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ | ТТСАААААТТ | ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАЛА TGАЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААА | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA | ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGACOGG ACGGACCOGG ACGGACCOGG ACGGACCOGG ACGGACCOGG ACGGACCOGG ACGGACCOGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_33 Tn_39 Tn_Arbosona | ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGААААААА ТGААААААА ТGААААААА ТGААААААА ТGАААААТАА TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ | CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGOCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCGG ACGGACCGG ACGGACCGG ACGGACCGG ACGGACCGG ACGGACCGG ACGGACCGG | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_82 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_33 Tn_39 Tn_Arbosona Tn_16 | ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ГССАСАССТТ ТААСТААААТ ГССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААСАТ ТССАСАССТТ ТААСТААСАТ ТССАСАССТТ ТААСТААААТ ГССАСАССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ | ТGААААААА ТGААААААА ТGААААААА ТGААААААА TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААА | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCCGG ACGGACCCGG ACGGACCCGG ACGGACCCGG CTCAGCCATC CTCAGCCATC | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG CTCTCCCAATT |
| Tn_Arbosona Tn_16 Tn_70 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_82 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_33 Tn_39 Tn_Arbosona Tn_16 Tn_16 Tn_49 | ТССАСАССТТ ТААСТААААТ ГССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ГССАСАССТТ ТААСТААААТ ГССАСАССТТ ТААСТААСАТ ТССАСАССТТ ТААСТААСАТ ТССАСАССТТ ТААСТААААТ ГССАСАССТТ ТААСТААААТ ГССАСАССТТ ТААСТААААТ СССАССССТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ | ТТСАААААТТ | ТGААААААА ТGААААААА ТGААААААА ТGААААААА ТGАААААТАА TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААА | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA | ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGACOGG ACGGACOGG ACGGACCOGG ACGGACCOGG ACGGACCOGG CTCAGCCATC CTCAGCCATC | AAAGAGAGGG |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_33 Tn_39 Tn_Arbosona Tn_16 Tn_49 Tn_70 | ТССАСАССТТ ТААСТАЛАЛТ ТССАСАССТТ ТААСТАЛАЛТ ТССАСАССТТ ТААСТАЛАЛТ ТССАСАССТТ ТААСТАЛАЛТ ТССАСАССТТ ТААСТАЛАЛТ ТССАСАССТТ ТААСТАЛАЛТ ТССАСАССТТ ТААСТАЛАЛТ ТССАСАССТТ ТААСТАЛАЛТ ТССАСАССТТ ТААСТАЛАЛТ ТССАСАССТТ ТААСТАЛАЛТ СССАССССТТ ТААСТАЛАЛТ | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТААСТСGTАС ТААСТСGTАС | ТGААААААА ТGААААААА ТGААААААА ТGААААААА ТGАААААТАА TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ СААТСССЯАСС СААТСССЯАСС | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CATTAGCCCA CTTTAGCCCA | ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGACCOGG ACGGACCOGG ACGGACCOGG CTCAGCCATC CTCAGCCATC CTCAGCCATC | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG CTCTCCCAATT TCTCCCCAATT TCTCCCCAATT |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_82 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_33 Tn_39 Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_21 | ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААСАТ ТССАСАССТТ ТААСТААСАТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТААСТССТАС ТААСТССТАС ТААСТССТАС | ТGААААААА ТGААААААА ТGААААААА ТGААААААА TGAAAAAAA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААА | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CATTAGCCCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCGG ACGGACCGG ACGGACCGG ACGGACCGG CTCAGCCATC CTCAGCCATC CTCAGCCATC | AAAGAGAGAG AAAGAGAGAGAGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT |
| Tn_Arbosona Tn_16 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_82 Tn_85 Tn_Koronekie Tn_26 Tn_33 Tn_39 Tn_Arbosona Tn_16 Tn_70 Tn_16 Tn_70 Tn_71 Tn_71 | ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААСАТ ТССАСАССТТ ТААСТААСАТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ ТССАСАССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ СССАССССТТ ТААСТААААТ | ТТСААААТТ ТТСААСТСЯТАС ТААСТСЯТАС ТААСТСЯТАС | ТGААААААА ТGААААААА ТGААААААА ТGААААААА ТGАААААТАА TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CATTAGCCCA CTTTAGCCCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCGG ACGGACCGG ACGGACCGG ACGGACCGG ACGGACCGG CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG CTCTCCCAATT TCTCCCCAATT TCTCCCCAATT |
| Tn_Arbosona Tn_16 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_82 Tn_85 Tn_Koronekie Tn_26 Tn_33 Tn_39 Tn_Arbosona Tn_16 Tn_49 Tn_31 Tn_Frantoio | ТССАСАССТТ ТААСТАЛАЛТ ТССАСАССТТ ТААСТАЛАЛТ СССАССССТТ САСТАЛАЛТ | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТАСТСGTАС ТААСТСGTАС ТААСТСGTАС ТААСТСGTАС | ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА TGАЛАЛАЛА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАЛА TGАЛАЛАЛА TGАЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАЛА TGAЛАЛАТА TGAЛАЛАТА TGAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АЛАААТАААТ | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA | ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGACOGG ACGGACOGG CCGGACCOGG CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC | AAAGAGAGAG AAAGAGAGAGG AAAGAGAGAGG AAAGAGAGAGG AAAGAGAGAGG AAAGAGAGAGG AAAGAGAGAGG AAAGAGAGAGG AAAGAGAGAGG AAAGAGAGAGG AAAGAGAGAGG AAAGAGAGAGG AAAGAGAGAGG TCTCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_33 Tn_730 Tn_731 Tn_70 Tn_31 Tn_70 Tn_31 Tn_70 Tn_31 Tn_Frantoio Tn_70 Tn_31 Tn_70 Tn_31 Tn_70 Tn_31 Tn_Frantoio Tn_70 Tn_31 Tn_Frantoio Tn_70 Tn_70 </td <td>TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACCGTT TAACTAAAAT CCCACCGTT TAACTAAAAT CCCACCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT</td> <td>ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТААСТССГАС ТААСТССГАС ТААСТССГАС ТААСТССГАС</td> <td>ТGAAAAAAA ТGAAAAAAA ТGAAAAAAA ТGAAAAAAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAAAAA</td> <td>АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААА</td> <td>CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA</td> <td>ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCGG ACGGACCGG ACGGACCGG CTCAGCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC</td> <td>AAAGAGAGAG AAAGAGAGAGAGA AAAGAGAGAGAGA AAAGAGAGAGAGA AAAGAGAGAGAGA AAAGAGAGAGAGA AAAGAGAGAGAGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT</td> | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACCGTT TAACTAAAAT CCCACCGTT TAACTAAAAT CCCACCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТААСТССГАС ТААСТССГАС ТААСТССГАС ТААСТССГАС | ТGAAAAAAA ТGAAAAAAA ТGAAAAAAA ТGAAAAAAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААА | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCGG ACGGACCGG ACGGACCGG CTCAGCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC | AAAGAGAGAG AAAGAGAGAGAGA AAAGAGAGAGAGA AAAGAGAGAGAGA AAAGAGAGAGAGA AAAGAGAGAGAGA AAAGAGAGAGAGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA AAAGAGAGAGGA TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT |
| Tn_Arbosona Tn_16 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_82 Tn_85 Tn_Koronekie Tn_26 Tn_33 Tn_30 Tn_49 Tn_33 Tn_39 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_Frantoio Tn_31 Tn_Frantoio Tn_3 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACCGGTT TAACTAAAAT CCCACCGGTT TAACTAAAAT CCCACCGGTT TAACTAAAAT CCCACCGGTT TAACTAAAAT TCCACCGGTT TAACTAAAAT TCCACCGGTT TAACTAAAAT TCCACCGGTT TAACTAAAAT TCCACCGGTT TAACTAAAAT TCCACCGGTT TAACTAAAAT TCCACCGGTT TAACTAAAAT TCCACCGGTT TAACTAAAAT TCCACCCGGT TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA | TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC | ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА TGАЛАЛАЛА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАЛА TGАЛАЛАЛА TGАЛАЛАЛА TGАЛАЛАЛА TGАЛАЛАЛА TGAЛАЛАТА TGAЛAЛАТА TGAЛАЛАЛАТА TGA TGA TGAC TGA TGAC TGA TGAC TGAC TGA | АТАААТААТ ААААТАААТ АТАААТАААТ АТАААТАА | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGTCCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCGG ACGGACCGG ACGGACCGG ACGGACCGG CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGAGGG AAAGAGAGAGAGGG AAAGAGAGAGAGGG AAAGAAG |
| Tn_Arbosona Tn_16 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_39 Tn_Arbosona Tn_16 Tn_70 Tn_51 Tn_33 Tn_70 Tn_70 Tn_710 Tn_Frantoio Tn_31 Tn_Frantoio Tn_31 Tn_90 | ТССАСАССТТ ТААСТАЛАЛТ ТССАСАССТТ ТААСТАЛАЛТ СССАСАССТТ ТААСТАЛАЛТ АТТССАЛССС ГСССТАССАЛ АТТССАЛССС ТСССТАССАЛ АТТССАЛССС ТСССТАССАЛ АТТССАЛССС ТСССТАССАЛ | TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC | ТGААААААА ТGААААААА ТGААААААА ТGААААААА ТGААААААА ТGАААААТАА TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGTCCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCGG ACGGACCGG CCCAGCACC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG CTCTCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_33 Tn_739 Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_31 Tn_63 Tn_63 Tn_63 Tn_80 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACCGTT TAACTAAAAT CCCACCGTT TAACTAAAAT CCCACCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA | ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТТСАААААТТ ТААСТССГАС ТААСТССГАС ТААСТССГАС ТААСТССГАС ТААСТССГАС ТААСТССГАС ТААСТССГАС ТААСТССГАС | ТGААААААА ТGААААААА ТGААААААА TGAAAAAAA TGAAAAAAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААА | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGTCCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCGG ACGGACCGG ACGGACCGG CTCAGCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG CTCTCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT |
| Tn_Arbosona Tn_16 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_33 Tn_30 Tn_37 Tn_731 Tn_33 Tn_39 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_80 Tn_82 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAAAAT TCCACACGTT TAACTAAAAAT CCCACACGTT TAACTAAAAAT CCCACACGTT TAACTAAAAAT CCCACACGTT TAACTAAAAAT CCCACACGTT TAACTAAAAAT CCCACACGTT TAACTAAAAAT CCCACACGTT TAACTAAAAAT CCCACACGTT TAACTAAAAAT CCCACACGTT TAACTAAAAAT CCCACCCGTT TAACTAAAAAT CCCACACGTT TAACTAAAAAT CCCACCCGTT TAACTAAAAAT CCCACCCGTT TAACTAAAAAT CCCACCCGTT TAACTAAAAAT CCCACCCGTT TAACTAAAAAT ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA | TTCAAAAATT TACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC | ТGАЛАЛАЛА ТGАЛАЛАЛАА ТGАЛАЛАЛАА ТGАЛАЛАЛАА ТGАЛАЛАЛАА ТGАЛАЛАЛАА ТGАЛАЛАТАА ТGАЛАЛАТАА ТGАЛАЛАТАА ТGАЛАЛАТАА TGАЛАЛАТАА TGАЛАЛАЛАА TGАЛАЛАЛАА TGАЛАЛАЛАА TGАЛАЛАЛАА TGАЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАТАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAACAA TGACGATTAG AACGGATTAG AACGGATTAG AACGGATTAG AACGGATTAG AACGGATTAG AACGGATTAG AACGGATTAG | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGTCCA CTTTAGTCCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCGG ACGGACCGG ACGGACCGG ACGGACCGG CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG CTCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT |
| Tn_Arbosona Tn_16 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_82 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_39 Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_31 Tn_Frantoio Tn_31 Tn_Frantoio Tn_80 Tn_80 Tn_70 Tn_181 Tn_Frantoio Tn_31 Tn_80 Tn_80 Tn_80 Tn_80 Tn_81 Tn_70 Tn_31 Tn_70 Tn_31 Tn_70 Tn_80 Tn_80 Tn_82 Tn_85 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT CCCCCCGTT TAACTAAAAT CCCCCCGTT TAACTAAAAT CCCCCCGTT TAACTAAAAT ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA | TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC | ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА ТGАЛАЛАЛА TGАЛАЛАЛА TGАЛАЛАЛА TGАЛАЛАЛА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАТА TGАЛАЛАЛА TGАЛАЛАЛА TGАЛАЛАЛА TGAAAAAAA TGAЛAЛАЛА TGAAAAAAA TGAAAAAAAA TGAAAAAAAA TGAAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС СААТСССАСС | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCGG CCGGACCGG CCCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG CTCTCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_33 Tn_70 Tn_33 Tn_70 Tn_85 Tn_Koronekie Tn_26 Tn_33 Tn_70 Tn_31 Tn_Frantoio Tn_31 Tn_Frantoio Tn_80 Tn_82 Tn_82 Tn_85 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACCGTT TAACTAAAAT CCCACCGTT TAACTAAAAT CCCACCGTT TAACTAAAAT TCCACCGGT TAACTAAAAT TCCACCGGT TAACTAAAAT CCCACCGTT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT TCCACCGCGT TAACTAAAAT TCCACCCGTT TAACTAAAAT ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA | TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC | ТGAAAAAAA ТGAAAAAAA ТGAAAAAAA ТGAAAAAAA TGAAAAAAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAAAAA | АТАААТААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААА | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCGG ACGGACCGG CTCAGCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG CTCTCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT |
| Tn_Arbosona Tn_16 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_33 Tn_30 Tn_37 Tn_731 Tn_Arbosona Tn_16 Tn_37 Tn_70 Tn_31 Tn_Frantoio Tn_31 Tn_Frantoio Tn_31 Tn_Frantoio Tn_80 Tn_85 Tn_Koronekie | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA | TTCAAAAATT TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC | ТGААААААА ТGААААААА ТGААААААА ТGААААААА ТGАААААТАА TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAAAAA | АТАААТАААТ АААААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АТАААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ АААААТАААТ | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC | AAAGAGAGAGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT |
| Tn_Arbosona Tn_16 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_39 Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_33 Tn_70 Tn_31 Tn_Frantoio Tn_31 Tn_Frantoio Tn_80 Tn_80 Tn_70 Tn_131 Tn_Frantoio Tn_35 Tn_63 Tn_80 Tn_80 Tn_85 Tn_Koronekie Tn_26 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT ACTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA | TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC | ТGААААААА ТGААААААА ТGААААААА ТGААААААА ТGААААААА TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAATA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAA TGAAAAAAAA | АТАААТАААТ АЛАААТАААТ АТАААТАААТ АТАААТАА | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCGG CCGGACCGG CCCAGCACC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG CTCTCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_33 Tn_70 Tn_33 Tn_70 Tn_85 Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_31 Tn_Frantoio Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_70 Tn_31 Tn_Frantoio Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_51 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAGAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACCGTT TAACTAAAAT CCCACCGTT TAACTAAAAT CCCACCGTT TAACTAAAAT CCCACCGTT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCACCGGT TAACTAAAAT CCCCCCGTT TACTAAAAAT CCCCCCGTT TAACTAAAAT ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA | TTCAAAAATT TACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC | ТGAAAAAAA ТGAAAAAAA ТGAAAAAAA ТGAAAAAAA TGAAAAAAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAATAA TGAAAAAAAA | АТАААТААТ АДААДТААТ АТАААТААТ АТАААТААТ АТАААТАА | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCGG ACGGACCGG CTCAGCACCGG CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG CTCTCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT TCTCCCCAATT |
| Tn_Arbosona Tn_16 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_33 Tn_16 Tn_39 Tn_Arbosona Tn_16 Tn_70 Tn_31 Tn_Frantoio Tn_31 Tn_Frantoio Tn_80 Tn_63 Tn_63 Tn_70 Tn_31 Tn_Frantoio Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_73 Tn_63 Tn_70 Tn_31 Tn_Frantoio Tn_30 Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_33 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT CCCACCGGTT TAACTAAAAT ACTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA | TTCAAAAATT TACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC | ТGАЛАЛАЛА ТGАЛАЛАЛАА ТGАЛАЛАЛАА ТGАЛАЛАЛАА ТGАЛАЛАЛАА TGАЛАЛАЛАА TGАЛАЛАТАА TGАЛАЛАТАА TGАЛАЛАТАА TGАЛАЛАТАА TGАЛАЛАТАА TGАЛАЛАТАА TGАЛАЛАТАА TGАЛАЛАЛАА TGАЛАЛАЛАА TGАЛАЛАЛАА TGАЛАЛАЛАА TGАЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАТАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAЛАЛАЛАА TGAACGATTAG AACGGATTAG AACGGATTAG AACGGATTAG AACGGATTAG AACGGATTAG AACGGATTAG AACGGATTAG AACGGATTAG AACGGATTAG | АТАААТААТ ААААТАААТ АТАААТАААТ АТАААТАА | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA | ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGAACCGG ACGGACCGG ACGGACCGG ACGGACCGG ACGGACCGG CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC CTCAGCCATC | AAAGAGAGAGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG AAAGAGAGAGGG TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT |
| Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_63 Tn_80 Tn_85 Tn_Koronekie Tn_26 Tn_51 Tn_33 Tn_70 Tn_Arbosona Tn_16 Tn_49 Tn_70 Tn_31 Tn_Frantoio Tn_3 Tn_Frantoio Tn_3 Tn_Frantoio Tn_3 Tn_Frantoio Tn_3 Tn_Frantoio Tn_3 Tn_Frantoio Tn_3 Tn_70 Tn_16 Tn_49 Tn_70 Tn_16 Tn_49 Tn_70 Tn_16 Tn_31 Tn_Frantoio Tn_31 Tn_Frantoio Tn_32 Tn_51 Tn_70 Tn_31 Tn_Frantoio Tn_31 Tn_Frantoio Tn_32 Tn_70 Tn_70 Tn_31 Tn_Frantoio Tn_32 Tn_70 Tn_70 Tn_31 Tn_Frantoio Tn_32 Tn_700 Tn_70 Tn_700 Tn_70 Tn_70 | TCCACACGTT TAACTAAAAT TCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT CCCACACGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT TCCACCCGTT TAACTAAAAT ACTCGAACCC TCGGTACGAA ATTCGAACCC TCGGTACGAA | TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TTCAAAAATT TACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC TAACTCGTAC | ТGААААААА ТGАААААААА ТGАААААААА ТGАААААААА | АТАААТАААТ АЛАААТАААТ АТАААТАААТ АТАААТАА | CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGTCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CAAGCCATCA CTTTAGCCCA CTTTAGCCCA CTTTAGCCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA CTTTAGTCCA | ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGAACOGG ACGGACCOGG ACGGACCOGG CTCAGCCATC | AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG AAAGAGAGGG CTCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT TCTCCCAATT |

Figure 6. Multiple alignment of the sequences of the marker regions generated in BioEdit software. These are the sequences of the CP5 amplified marker regions of three reference plants (Arbosana, Frantoio and Koroneiki) and the 13 unknown plants (Tn_16, Tn_49....). Variety specific SNPs can be seen in the unknown and reference plant. The regions that are not shaded are the sites of SNPs. The shaded regions are the conserved sequences in this region of cpDNA of the olive plants shown here.



Figure 7. Graph showing the number of identified and unidentified olive plants on the basis of DNA sequence variations, multiple alignment and phylogenetic reconstruction. Frantoio and Gemlik revealed maximum matches of 8 each.

3.4. Identification of Olive Plants Using Multiple Alignments and Phylogenetics

Forty nine unknown plants were identified when a circular UPGMA (Unweighted Pair Group Mean Average) tree was reconstructed with MEGA6 (Figure 3). The remaining 51 unknown plants either clustered together or arranged separately but not with any of the known variety. They remained unidentified. The identified plants are written against their respective known variety in the Table 3.

Frantoio variety sampled from Ternab was clustered with 8 unknown plants. Gemlik sampled from NARC also clustered with 8 other unknown plants. It means, those plants that are clustered with Frantoio are all Frantoio. This is based on the similarity of the marker region and thus they clustered with their respective varieties. Five plants found to be Coratina, 6 were clustered with Arbosana, 6 with Chetoui. 2 were Carolea, 2 Domat, 2 clustered with Moraiolo and 3 found to be Leccino. A total of 49 unknown could be identified while the remaining 51 remained unidentified (Figure 7). They might also be identified by taking more reference controls. In order to find the closeness and differentiation at cultivar level, pairwise alignments were generated using Bio-Edit software to calculate the percent identity. In this connection, three plant cultivars represented in circular UPGMA tree (Tn_Arbosana, Tn_Frantoio and Tn_Koroneiki) were tested. The similarity is 99.26% - 99.81% between Tn_Arbosana and samples. It is 99.44% - 99.81% in Tn_Frantoio and its clustered plants. Similarly, Koroneiki and its samples are 98.17% - 99.16% identical as given in Table 4. It means these are closely related and represent one cultivar.

But surprisingly, the identity was less than 98% and even reduced to 96% between the different known cultivars. Tn_Arbosana and Tn_Frantoiohas 98% identity. Tn_Arbosana and Tn_Koroneikihas 97% and Tn_Frantoio and Tn_Koroneiki has 96% identity. Hence we can infer that 98% identity shows a different cultivar and above it is the same cultivar or plant.

4. Discussion

Varietal identification of olive plants is very important for further propagation and marketing of olive oil. The

M. Noman et al.

| Sr. No. | Known cultivars | Identified unknown plants | Sr. No. | Known cultivars | Identified unknown plants |
|---------------|--------------------|--------------------------------|---------|------------------|---------------------------|
| | | Tn_Oc1_84 (R7-P5) ^a | | | Tn_Oc1_17 (R2-P12) |
| 1 | NARC_Carolea | Tn_Oc1_93 (R8-P2) | 2 | NARC_Domat | Tn_Oc1_41 (R4-P8) |
| | | Tn_Oc1_65 (R6-P2) | | | Tn_Oc1_10 (R1-P10) |
| 2 | NARC_Leccino | Tn_Oc1_68 (R6-P5) | 7 | NARC_Moraiolo | T- 0-1 (0 (D5 D12) |
| | | Tn_Oc1_81 (R7-P2) | | | In_Oc1_60 (K5-P13) |
| | | Tn_Oc1_28 (R3-P11) | | Tn_Oc1_3 (R1-P3) | |
| 3 NARC_Gemlik | Tn_Oc1_30 (R3-P13) | | | Tn_Oc1_6 (R1-P6) | |
| | | Tn_Oc1_40 (R4-P7) | | | Tn_Oc1_21 (R2-P16) |
| | NAPC Comlik | Tn_Oc1_42 (R4-P9) | 8 | Th Frontoio | Tn_Oc1_63 (R5-P16) |
| | NARC_Gennik | Tn_Oc1_43 (R4-P10) | | TII_FIAIII010 | Tn_Oc1_69 (R6-P6) |
| | | Tn_Oc1_47 (R4-P15) | | | Tn_Oc1_80 (R7-P1) |
| | | Tn_Oc1_58 (R5-P11) | | | Tn_Oc1_82 (R7-P3) |
| | | Tn_Oc1_87 (R7-P9) | | | Tn_Oc1_85 (R7-P6) |
| | | Tn_Oc1_8 (R1-P8) | | | Tn_Oc1_9 (R1-P9) |
| | | Tn_Oc1_16 (R2-P11) | | | Tn_Oc1_14 (R2-P6) |
| 4 | Tn Arbosana | Tn_Oc1_31 (R3-P14) | 0 | Tn Chatoui | Tn_Oc1_15 (R2-P9) |
| 4 | TII_AI bosana | Tn_Oc1_49 (R5-P2) | 9 | III_Chetour | Tn_Oc1_53 (R5-P6) |
| | | Tn_Oc1_62 (R5-P15) | | | Tn_Oc1_59 (R5-P12) |
| | | Tn_Oc1_70 (R6-P7) | | | Tn_Oc1_75 (R6-P12) |
| | | Tn_Oc1_26 (R3-P9) | | | Tn_Oc1_7 (R1-P7) |
| | | Tn_Oc1_33 (R3-P16) | | | Tn_Oc1_11 (R1-P11) |
| | | Tn_Oc1_39 (R4-P6) | | | Tn_Oc1_18 (R2-P13) |
| 5 | Tn_Koroneiki | Tn_Oc1_51 (R5-P4) | 10 | Tn_Coratina | Tn_Oc1_28 (R3-P11) |
| | | Tn_Oc1_89 (R7-P13) | | | |
| | | Tn_Oc1_94 (R8-P4) | | | Tn_Oc1_78 (R6-P15) |
| | | Tn_Oc1_98 (R8-P8) | | | |

Table 3. Identified olive varieties and number of plants from Tarnab olive orchard.

^aTn_Oc_1 (R1-P1) stands for Tarnab Orchard 1, Sample 1 in the Row 1 and Plant number 1.

 Table 4. Sequence identity percentage calculated through pairwise alignment of the samples in three clusters of Tn_Arbosana,

 Tn_Frantoio and Tn_Koroneiki calculated in BioEdit software.

| Tn_4 | Arbosana | Tn_ | _Frantoio | Tn_Koroneiki | | |
|---------------|---------------------|---------------|---------------------|---------------|---------------------|--|
| Unknown Plant | Sequence Identity % | Unknown Plant | Sequence Identity % | Unknown Plant | Sequence Identity % | |
| Tn_16 | 99.63 | Tn_3 | 99.81 | Tn_26 | 99.16 | |
| Tn_49 | 99.81 | Tn_63 | 99.44 | Tn_51 | 99.08 | |
| Tn_70 | 99.26 | Tn_80 | 99.44 | Tn_33 | 98.79 | |
| Tn-31 | 99.81 | Tn_82 | 99.63 | Tn_39 | 98.17 | |

majority of the cultivated olive plants present in Pakistan were brought from foreign countries, mostly Afghanistan and their variety name is not known and this is serious problem that the farmers are facing for years. They can differentiate these plants only by their morphology. They have no idea about the exact variety name or cultivar. As the morphological as well as biochemical parameters have limitations of being not reliable and very time consuming [27]. Thus it urged to develop a rapid, reliable and cost effective protocol for the accurate identification through DNA marker, an alternative. Molecular markers can detect DNA polymorphism to discriminate different cultivars in a very effective way [28].

The chloroplast genome of olive is the best platform for resolving the mixed and unknown plants of olive exactly into their varieties [29]. CpDNA is mostly conserved but has polymorphic regions enough to be used for this purpose. In this regard, the recent sequencing of the entire chloroplast genome of Frantoio cultivar is a big landmark. Marrioti and colleagues revealed 40 polymorphic regions in the CpDNA. Recent sequencing of plastid genome of the olive flaunts high resolution Cp markers for olive DNA fingerprinting [21]. Using this information, we designed a combination of chloroplast markers to amplify genes recruited in photosynthesis, ribosomal and NADH energy metabolism. Concatenated sequence of more than 100 unknown plants and 10 reference plants samples were analyzed using various bioinformatics and phylogenetic tools.

Scanning of entire chloroplast genome revealed 3 polymorphic regions. Multiple alignments of Frantoio and 5 NARC cultivars exhibited cultivar specific SNPs and deletions insertion that paved the way to extend this work to identify plants from 100 samples with more reference controls sampled from Ternab. Besnard and colleagues designed three markers in this region for identification of species or plants [30]. The plastid DNA regions screened by them showed a higher level of polymorphisms within the genus Olea than the rps16 and trnL-trnF sequences used in previous study [31]. The trnS-trnG intergenic spacer was the most variable region and was highly recommended for phylogenetic reconstructions of Oleaceae.

In this study, the marker region sequences of 100 unknown olive plants were analyzed. In order to investigate the evolutionary relationship, a phylogenetic tree was constructed taking 10 known reference plants. The tree clearly separated the samples into 10 clusters. These clusters include Arbosana, Carolea, Chetoui, Coratina, Domat, Frantoio, Gemlik, Koroneiki, Leccino and Moraiolo. This relationship shows that these plants have sequences similar to the known plants and might be the same variety. Multiple alignments were generated for the entire samples. The alignments revealed conservations groups in these plants on the basis of sequence similarities. This dataset was fragmented into smaller groups. Three clusters including Arbosana, Frantoio and Koroneiki were put under phylogenetic reconstruction again. There was a clear separation of these clusters along with unknown plants. This clustering was further validated using a neighbor net network in Splits Tree4 package. In order to find variety specific SNPs, a multiple alignment for these three clusters was generated. There was an obvious differentiation into three groups. "A" was specific to Koroneiki, "C" seemed to be preferable SNP for Frantoio. This is supported by pairwise alignments generated to calculate the percent identity between the samples of three clusters in circular phylogenetic reconstruction. The similarity is 99.26% - 99.81% between Tn_Arbosana and samples. It is 99.44% - 99.81% in Tn_Frantoio and its clustered plants. Similarly, Koroneiki and its samples are 98.17% - 99.16% identical. It means these are closely related and represent one cultivar. But surprisingly, the identity was less than 98% and even reduced to 96% between the different known cultivars. Hence we can infer that 98% identity shows a different cultivar and above it is the same cultivar or plant.

Taken together the data from all the approaches allow us to demonstrate that out of 100 plants 49 could be identified separated into 10 varieties. It is very important to mention that 51 plant samples could not be identified. They were not clustered into any of the known sequence clade. This means that there exist other varieties in these orchards for which we do not have any reference genome sequence. There are two solutions to this problem. First there is need to sequence more known varieties growing in Pakistan or to acquire the DNA of these varieties from other olive growing countries to be used as reference known genome. Secondly we need to sequence another nearby marker to expand gene region. Both the sequences will be joined. This is referred as concatenation of the sequences. It has more resolving power than a single sequence. Hence both sequences will be concatenated for alignment and phylogenetic reconstruction. This will generate more sequence diversity to get plants identified. An alternative strategy is to use nuclear markers (Cos markers) for which already many olive varieties have been sequenced. The implication of the above study is to identify all the fruit bearing unknown olive plants. The advent of high throughput genotyping through base calling SNPs has revolutionized the DNA fingerprinting. It is now possible to sequence the entire genome of the organisms and this technology is becoming cheaper ever passing day. This can be very practical for plants especially olive to sequence the entire plastome of all the samples.

5. Conclusion

In nutshell, our data reveal that the chloroplast genome of olive has polymorphic sites having variety specific SNPs and indels and they have resolving power to discriminate the olive plants at variety level. The Cp5 primer used successfully identified 49 varieties out of 100 unknown olive plants through mutations detection by alignment of the marker region sequences followed by the phylogenetic reconstruction with different bioinformatics software. This strategy can be further extended to characterize the olive tree germplasm reliably and efficiently with low costs which is distributed throughout the country in search of the better varieties. After the better varieties have been identified, this will enhance the olive oil and fruit production in Pakistan by the on-farm preservation and provision of the authentic germplasm to olive growers for the establishment to new olive orchards.

Acknowledgements

We are grateful to Dr. Muhammad Munir (National Project Director Olive), Dr. Nasir Cheema, PSO, Olive project at PARC for providing useful information aboit olive orchards and help there in sampling. We are thankful to Mr. Said Ahmed (Director, Olive Project KPK), Mr. Riaz Alam (Ternab), Dr. Muhammad Tariq (Director BARI), Mr. Muhammad Khalil (RA, BARI), Mr. Mukhtar (PSO, HRI, NARC), for providing the olive plants research material. Sincere appreciation and gratitude to Dr. Amir Ali Abbasi (NCB, QAU) for help in bioinformatics analysis. Italian funded project "Promotion of Olive Cultivation for Economic Development and Poverty" Pakistan Agricultural Research Council (PARC), Islamabad Pakistan is acknowledged for providing funding to Dr. MR Khan.

References

- Angiolillo, A., Mencuccini, M. and Baldoni, L. (1999) Olive Genetic Diversity Assessed Using Amplified Fragment Length Polymorphisms. *Theoretical and Applied Genetics*, 98, 411-421. <u>http://dx.doi.org/10.1007/s001220051087</u>
- [2] Doveri, S. and Baldoni, L. (2007) Olive. Fruits and Nuts, Springer, 253-264. <u>http://dx.doi.org/10.1007/978-3-540-34533-6_13</u>
- [3] Golding, B., Reale, S., Doveri, S., Díaz, A., Angiolillo, A., Lucentini, L., Pilla, F., Martín, A., Donini, P. and Lee, D. (2006) SNP-Based Markers for Discriminating Olive (*Olea europaea L.*) Cultivars. *Genome*, 49, 1193-1205.
- [4] Green, P. (2002) A Revision of Olea L.(Oleaceae). Kew Bulletin, 91-140. http://dx.doi.org/10.2307/4110824
- [5] Carriero, F., Fontanazza, G., Cellini, F. and Giorio, G. (2002) Identification of Simple Sequence Repeats (SSRs) in Olive (*Olea europaea* L.). *Theoretical and Applied Genetics*, **104**, 301-307. <u>http://dx.doi.org/10.1007/s001220100691</u>
- [6] Lavee, S. (1985) Olea europaea. Handbook of Flowering, Vol. 6, CRC Press, Boca Raton, 423-434.
- [7] Rugini, E. and Lavee, S. (1992) Olive. *Biotechnology of Perennial Fruit Crops*, CAB International, Wallingford, 371-382.
- [8] Colmogro, S., Collins, G. and Sedgley, M. (2010) Processing Technology of the Table Olive. *Horticultural Reviews*, 25, 235.
- [9] Connels, J.H. (2005) History and Scope of the Olive Industry. *Olive Production Manual*, Vol. 3353, UCANR Publications, Oakland, 1-10.
- [10] Sanz-Cortés, F., Martinez-Calvo, J., Badenes, M., Bleiholder, H., Hack, H., Llacer, G. and Meier, U. (2002) Phenological Growth Stages of Olive Trees (*Olea europaea*). *Annals of Applied Biology*, **140**, 151-157. <u>http://dx.doi.org/10.1111/j.1744-7348.2002.tb00167.x</u>
- [11] Besnard, G., Breton, C., Baradat, P., Khadari, B. and Bervillé, A. (2001) Cultivar Identification in Olive Based on RAPD Markers. *Journal of the American Society for Horticultural Science*, **126**, 668-675.
- [12] Lanza, B., Marsilio, V. and Martinelli, N. (1996) Olive Pollen Ultrastructure: Characterization of Exine Pattern through Image Analysis-Scanning Electron Microscopy (IA-SEM). *Scientia Horticulturae*, 65, 283-294. http://dx.doi.org/10.1016/0304-4238(95)00868-3
- [13] Barranco, D., Cimato, A., Fiorino, P., Rallo, L., Touzani, A., Castaneda, C., Serafin, F. and Truijillo, I. (2000) World Catalogue of Olive Varieties. International Olive Oil Council, Madrid.
- [14] Jeffreys, A.J., Wilson, V. and Thein, S.L. (1985) Individual-Specific "Fingerprints" of Human DNA. *Nature*, **316**, 76-79. http://dx.doi.org/10.1038/316076a0
- [15] Giannoulia, K., Gazis, F., Nikoloudakis, N., Milioni, D. and Haralampidis, K. (2002) Breeding, Molecular Markers and Molecular Biology of the Olive Tree. *European Journal of Lipid Science and Technology*, **104**, 574-586. <u>http://dx.doi.org/10.1002/1438-9312(200210)104:9/10<574::AID-EJLT574>3.0.CO;2-1</u>

- [16] Belaj, A., Caballero, J.M., Barranco, D., Rallo. L. and Trujillo, I. (2003) Genetic Characterization and Identification of New Accessions from Syria in an Olive Germplasm Bank by Means of RAPD Markers. *Euphytica*, 134, 261-268. <u>http://dx.doi.org/10.1023/B:EUPH.0000004954.93250.f5</u>
- Besnard, G., Khadari, B., Villemur, P. and Bervillé, A. (2000) Cytoplasmic Male Sterility in the Olive (*Olea europaea* L.). *Theoretical and Applied Genetics*, **100**, 1018-1024. <u>http://dx.doi.org/10.1007/s001220051383</u>
- [18] Besnard, G., Khadari, B., Baradat, P. and Bervillé, A. (2002) Combination of Chloroplast and Mitochondrial DNA Polymorphisms to Study Cytoplasm Genetic Differentiation in the Olive Complex (*Olea europaea* L.). *Theoretical and Applied Genetics*, **105**, 139-144. <u>http://dx.doi.org/10.1007/s00122-002-0868-6</u>
- [19] Dumolin-Lapegue, S., Pemonge, M. and Petit, R. (1997) An Enlarged Set of Consensus Primers for the Study of Organelle DNA in Plants. *Molecular Ecology*, 6, 393-397. <u>http://dx.doi.org/10.1046/j.1365-294X.1997.00193.x</u>
- [20] Besnard, G., Casas, D., Rubio, R. and Vargas, P. (2003) A Set of Primers for Length and Nucleotide-Substitution Polymorphism in Chloroplastic DNA of *Olea europaea* L. (Oleaceae). *Molecular Ecology Notes*, 3, 651-653. http://dx.doi.org/10.1046/j.1471-8286.2003.00547.x
- [21] Mariotti, R., Cultrera, N.G., Díez, C.M., Baldoni, L. and Rubini, A. (2010) Identification of New Polymorphic Regions and Differentiation of Cultivated Olives (*Olea europaea* L.) through Plastome Sequence Comparison. *BMC Plant Biology*, 10, 211. <u>http://dx.doi.org/10.1186/1471-2229-10-211</u>
- [22] Olson, S.A. (1994) MacVector: An Integrated Sequence Analysis Program for the Macintosh. Computer Analysis of Sequence Data, Springer, 195-201. <u>http://dx.doi.org/10.1385/0-89603-276-0:195</u>
- [23] Doyle, J.J. (1987) A Rapid DNA Isolation Procedure for Small Quantities of Fresh Leaf Tissue. *Phytochemical Bulletin*, **19**, 11-15.
- [24] Hall, T.A. (1999) BioEdit: A User-Friendly Biological Sequence Alignment Editor and Analysis Program for Windows 95/98/NT. Nucleic Acids Symposium Series, 41, 95-98.
- [25] Tamura, K, Stecher, G., Peterson, D., Filipski, A. and Kumar, S. (2013) MEGA6: Molecular Evolutionary Genetics Analysis Version 6.0. *Molecular Biology and Evolution*, **30**, 2725-2729. <u>http://dx.doi.org/10.1093/molbev/mst197</u>
- [26] Huson, D.H. and Bryant, D. (2006) Application of Phylogenetic Networks in Evolutionary Studies. *Molecular Biology Evolution*, 23, 254-267. <u>http://dx.doi.org/10.1093/molbev/msj030</u>
- [27] Tanksley, S.D. and Orton, T.J. (1983) Isozymes in Plant Breeding and Genetics. Elsevier.
- [28] Busconi, M., Foroni, C., Corradi, M., Bongiorni, C., Cattapan, F. and Fogher, C. (2003) DNA Extraction from Olive Oil and Its Use in the Identification of the Production Cultivar. *Food Chemistry*, 83, 127-134. http://dx.doi.org/10.1016/S0308-8146(03)00218-8
- [29] Shaw, J., Lickey, E.B., Schilling, E.E. and Small, R.L. (2007) Comparison of Whole Chloroplast Genome Sequences to Choose Noncoding Regions for Phylogenetic Studies in Angiosperms: The Tortoise and the Hare III. American Journal of Botany, 94, 275-288. http://dx.doi.org/10.3732/ajb.94.3.275
- [30] Besnard, G., de Casas, R.R., Christin, P.A. and Vargas, P. (2009) Phylogenetics of Olea (Oleaceae) Based on Plastid and Nuclear Ribosomal DNA Sequences: Tertiary Climatic Shifts and Lineage Differentiation Times. *Annals of Botany*, 105. <u>http://dx.doi.org/10.1093/aob/mcp105</u>
- [31] Wallander, E. and Albert, V.A. (2000) Phylogeny and Classification of Oleaceae Based on rps16 and trnL-F Sequence Data. American Journal of Botany, 87, 1827-1841. <u>http://dx.doi.org/10.2307/2656836</u>

Abbreviations

Cp, Chloroplast CTAB, Cetyl Trimethyl Ammonium Bromide MEGA, Molecular Evolution Genetics Analysis NARC, National Agricultural Research Centre NCBI, National Center for Biotechnology Information RAPD, Random Amplified Polymorphic DNA SNP, Single Nucleotide Polymorphism SSR, Simple Sequence Repeat UPGMA, Unweighted Pair Grouped Method with Arithmetic Mean



Figure S1. Polymorphic sites of olive chloroplast genome cv. Frantoio. (Adopted from Mariotti *et al.* (2010)). The three marker regions namely CP3, CP4 and CP5 are shown. The different colours indicate the four mono-nucleotide microsatellites (poly-T and poly-G are reported in the external circle, poly-A and poly-C in the internal circle), bar lengths correspond to the number of repetitions. Arrows indicate polymorphisms (base mutations, microsatellites and indels). The circle reports the interspersed repeats to the same number corresponds the same repetition. External or internal number position corresponds to the sense or anti-sense sequence direction.

 Table S1. Scanning of plastid genome of Frantoio and selection of three polymorphic region for which 3 pairs of primers if were designed.

| S. No | Marker Name | Sequence (5' to 3') | Product Size (bp) | Position in CP Genome (bp) | |
|-------|---------------------------------|--------------------------------|-------------------|----------------------------|--|
| 1 | CP3-F | CCTTCTCGGAAAAGTATTTTCACA | 7.10 | 83112-83852 | |
| 1 | CP3-R | CATCCTTTGCATTGGAAGAATAGA | 740 | | |
| 2 | CP4-F | CP4-F GCTGAATAGACAGATTCATTGAAA | | 101265 102500 | |
| Z | CP4-R | CCAGACTCTCTTCACTAAGTGTTA | 1554 | 101265-102599 | |
| 2 | CP5-F | CTGACAATTCATTTCTATTTCTAGA | 720 | | |
| 3 | CP5-R CATTATTTATCTATAATTCGTTGGA | | 720 | 8986-9705 | |

Amplified length is also given, bold encloses he CP5 primer that was selected for further analysis.

| Tn_1 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | АААААТСАТС | TTGGAAATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
|----------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Tn 2 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn 3 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | АААААТСАТС | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_4 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | АААААТСАТС | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_5 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_6 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | АААААТСАТС | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_7 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | АААААТСАТС | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_8 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | АААААТСАТС | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_9 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_10 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_11 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | АААААТСАТС | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_12 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_13 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_14 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_15 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_16 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_17 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_18 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_19 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACCCTGAAAC | TCTTCGTTTA |
| Tn_20 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAA-TCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_21 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_22 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | CCTTCGTTTA |
| Tn_23 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_24 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_25 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_26 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_27 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_28 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_29 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_30 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_31 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_32 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_33 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACCCTGAAAC | CCTTCGTTTA |
| Tn_34 | AAGATCTATT | CTCTTTTTTT | TTTT-AAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTCCGTTTA |
| Tn_35 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | TGTAAGGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_36 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAAGGCTT | ACCCTGAAAC | CCTTCGTTTA |
| Tn_37 | AAGATCTATT | CTCTTTTTTT | TTTT-AAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_38 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | GGTAAGGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_39 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACCCTGAAAC | TCTTCGTTTA |
| In_40 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| 1n_41 T- 42 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| 1n_42 T42 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | GGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| 1n_43 Tn_44 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| 10_44 Tn 45 | AAGAICIAII | CICITIIII | TTTTCAAAAA | AAAAAICAIC | TIGGAGATIG | TGTAAIGCII | ACICIGAAAC | TCTTCGTTTA |
| 10_45 Tp 46 | AAGAICIAII | CICILIIII | TTTTCAAAAA | AAAAAICAIC | TIGGAGATIG | TGTAAIGCII | ACICIGAAAC | TCTTCGTTTA |
| Tn_40 | AAGAICIAII | | TITICAAAAA | AAAAAICAIC | TIGGAGATIG | TGTAAIGCII | ACICIGAAAC | TCTTCGTTTA |
| Tn 48 | AAGAICIAII | CICILIIII | TTTTCAAAAA | AAAAAICAIC | TIGGAAAIIG | TGTAAGGCII | ACICIGAAAC | TCTTCGTTTA |
| $T_{n} 40$ | AAGAICIAII | CTCTTTTTTT | TTTTCAAAAA | AAAAAICAIC | TTCCACATTC | TGTAAGGCII | ACTCTGAAAC | TCTTCGTTTA |
| $T_n = 50$ | AAGAICIAII | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTC | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn 51 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn 52 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tp 53 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TIGGAGATIG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn 54 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TIGGAGATIG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| | | | | | | | | |

| T., 55 | | | | | | | | |
|----------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 11_33 T= 56 | AAGATCTATT | CICITITIT | ТТТТСААААА | AAAAATCATC | TIGGAGATIG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| 1n_50 T 57 | AAGATCTATT | CICITITIT | ТТТТСААААА | AAAAATCATC | TIGGAGATIG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| In_5/ | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| 1n_58 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | TGTAAGGCTT | ACTCTGAAAC | TCTTCGTTTA |
| In_59 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| In_60 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_61 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_62 | AAGA-CTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_63 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_64 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_65 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_66 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_67 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_68 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_69 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_70 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_71 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_72 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_73 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_74 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_75 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_76 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_ 77 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_78 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_79 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_80 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_81 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_82 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_83 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_84 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_85 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_86 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATGG | GGTAAGGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_87 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_88 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_89 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_90 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TGGGAGATTG | GGTAATGCTT | ACCCTGAAAC | CCTCCGTTTA |
| Tn_91 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_92 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | GGTAAGGCTT | ACTCTAAAAC | TCTTCTTTTA |
| Tn_93 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_94 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | CCTCCGTTTA |
| Tn_95 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_96 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | GGTAAGGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_97 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_98 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_99 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_100 | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| NARC_Carolea | AGATCTATTT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAAATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| NARC_Domat | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| NARC Gemik | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| NARC_Leccino | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| NARC_Moraiolo | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TTGGAGATTG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| In Arbosana | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TIGGAGATIG | IGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| Tn_Cnetoui | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TIGGAGATIG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| In_Coratina | AAGATCTATT | CTCTTTTTTT | TTTTCAAAAA | AAAAATCATC | TIGGAGATIG | TGTAATGCTT | ACTCTGAAAC | TCTTCGTTTA |
| In Koroneiki | AAGATCTATT | CICITITIT | TTTTCAAAAA | AAAAATCATC | TIGGAGATIG | TGTAATGCTT | ACTOTGAAAC | TCTTCGTTTA |
| | AAGAICIAII | CICITIIII | TTTTCAAAAA | MAAAAICAIC | 1100AGA110 | TGIAAIGUII | ACICIGAAAC | TCITCGITTA |

| T., 1 | | | | | | | 10000110000 | |
|-----------------|------------|------------|------------|-------------|------------|------------|-------------|------------|
| III_I T 2 | TACCGIAGIG | AIAIIIIIIG | | CAICIIIGGA | | AIGAICCAGG | ACGIAAICCI | GGACGIGAAG |
| In_2 | TACCGTAGTG | ATATTTTTTG | TITCICICIT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| 1n_3 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_4 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_5 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGACCCAGG | ACGAAACCCG | GGACGTGAAG |
| Tn_6 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_7 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_8 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_9 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_10 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 11 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 12 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 13 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 14 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGAAATCCG | GGACGTGAAG |
| Tn 15 | TCCCGTAGTG | ATATTTTTT | TTTCTCTCTT | CATCTTTGGA | ттестатета | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 16 | TCCCGTAGTG | ATATTTTTT | TTTCTCTCTT | CATCTITICA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| Tn 17 | TACCCTACTC | ATATTTTTC | TTTCTCTCTT | CATCTITICOA | TTCCTATCTA | ATCATCCACC | ACCENATOOT | CCACCTCAAC |
| Tn_10 | TACCGIAGIG | ATATITITIG | | CATCITIGGA | TICCIAICIA | AIGAICCAGG | ACGIAAICCI | GGACGIGAAG |
| Tn_10 | ICCCGIAGIG | ATATITITIG | | CATCITIGGA | | AIGAICCAGG | ACGIAAICCI | GGACGIGAAG |
| In_19 T0 | TCCCGTAGTG | ATTTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGACCCGGG | ACGTAATCCG | GGACGTGAAG |
| In_20 | TACCGTAGGG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_21 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_22 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGAAATCCG | GGACGTGAAG |
| Tn_23 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGAAATCCT | GGACGTGAAG |
| Tn_24 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_25 | TACCGAAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | AGGATCCAGG | ACGTAATCCG | GGACGTGAAA |
| Tn_26 | TCCCGAAGGG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGACCCAGG | ACGAAACCCG | GGACGTGAAG |
| Tn_27 | TCCCGTAGGG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGAAATCCT | GGACGTGAAG |
| Tn_28 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| Tn_29 | TACCGTAGGG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_30 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| Tn_31 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGAAATCCT | GGACGTGAAG |
| Tn_32 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_33 | TCCCGTAGGG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGACCCAGG | ACGAAACCCG | GGACGTGAAG |
| Tn 34 | TCCCGTAGGG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGAAATCCG | GGACGTGAAG |
| Tn 35 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| Tn 36 | AACCGAAGGG | AAATTTTTTG | TTTCCCCCTC | CACCTTTGGA | TCCCAATCTA | ATGACCCAGG | ACGTAACCCG | GGACGGGAAG |
| Tn_37 | TCCCGAAGTG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | ттестатета | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 38 | TCCCGTAGTG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCG | GGACGTGAAA |
| Tn 39 | TCCCGTAGGG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | ттестатета | ATGATCCAGG | ACGTAACCCT | GGACGTGAAG |
| Tn 40 | TCCCGTAGTG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| Tn 41 | TACCGTAGTG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | ттестатета | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 42 | TACCGAAGGG | ATATTTTTT | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| Tn_42 | TCCCGTAGTG | ATATTTTTT | TTTCTCTCTT | CATCTITICA | TTCCTATCTA | ATGATCCAGG | ACGINATOCT | GCACCICAAA |
| Tn 44 | TCCCGTAGIG | ATATTTTTT | TTTCTCTCTT | CATCTITICA | TTCCTATCTA | ATGATCCAGG | ACGINATCCI | GGACGIGAAA |
| Tn_45 | TACCCTACTC | ATATTTTTC | TTTCTCTCTT | CATCTITICOA | TTCCTATCTA | ATCATCCACC | ACCENATOOT | CCACCTCAAC |
| Tn 46 | TACCGIAGIG | ATATTTTTT | TTTCCCTCTT | CATCITIGGA | TTCCTATCTA | ATGATCCAGG | ACGIAAICCI | GGACGIGAAG |
| Tn_40 | TCCCGIAGIG | ATATITITIG | | CAICIIIGGA | TICCIAICIA | AIGAICCAGG | ACGAAACCCCG | GGACGIGAAG |
| 111_4/ Tn 49 | TACCGTAGTG | ATATTTTTG | TITCICICIT | CATCITTGGA | TTCCTATCTA | AIGAICCAGG | ACGIAATCCT | GGACGTGAAA |
| Tn 40 | TCCCGTAGTG | ATATITTTG | THUTCHUT | CATCITTEGA | TTCCTATCTA | AGGACCCAGG | ACGIAACCCG | GGACGTGAAA |
| 111_49 Tn 50 | TCCCGTAGTG | ATATITTTTG | TITCICICIT | CATCITTGGA | TICCIATCIA | AIGAICCAGG | ACGIAATCCT | GGACGTGAAG |
| 11_50 T_ 51 | ICCCGTAGTG | ATATTTTTTG | TITCICICIT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| 11_51 T= 52 | TACCGTAGTG | ATATTTTTG | TITCTCTCTT | CATCTTTGGA | TTCCAATCTA | ATGATCCAGG | ACGAAACCCG | GGACGTGAAG |
| 1n_52 T_52 | TCCCGTAGTG | ATATTTTTTG | TITCTCTCTT | CATCTTTGGA | TICCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| 1n_53 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAÀG |
| Tn_54 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |

| Tn_55 | TACCGTAGGG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
|---------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Tn_56 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGAAACCCT | GGACGTGAAG |
| Tn_57 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_58 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| Tn_59 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_60 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_61 | TACCGAAGGG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| Tn_62 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_63 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_64 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_65 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCG | GGACGTGAAG |
| Tn_66 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_6 7 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_68 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 69 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 70 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 71 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 72 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 73 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 74 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 75 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 76 | TACCGTAGTG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | ттестатета | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 77 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn 78 | TACCETAGTE | ATATTTTTC | TTTCTCTCTT | CATCTITICA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GENCETENNE |
| Tn 79 | TCCCGTAGIG | ATATTTTTC | TTTCTCTCTT | CATCITIGGA | TTCCTATCTA | ATGATCCAGG | ACGINATOCT | GGACGIGAAG |
| Tn 80 | TACCETACTE | ATATTTTTC | TTTCTCTCTT | CATCITICOA | TTCCTATCTA | ATGATCCAGG | ACGINATOCT | CCACCICARG |
| Tn 81 | TACCOTAGIG | ATATTTTTC | TTTCTCTCTT | CATCITIGGA | TTCCTATCTA | ATGATCCAGG | ACGIAAICCI | CCACCICAAG |
| Tn 82 | TACCGIAGIG | ATATTTTTC | TTTCTCTCTT | CATCITIGGA | TTCCTATCTA | ATGATCCAGG | ACGIAAICCI | GGACGIGAAG |
| Tn_02 | TACCGIAGIG | AIAIIIIIG | | CAICIIIGGA | TICCIAICIA | AIGAICCAGG | ACGIAAICCI | GGACGIGAAG |
| 11_03 T= 94 | TACCGTAGTG | ATATTTTTG | THEFT | CATCITIGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| 1n_84 T_85 | TACCGTAGGG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| In_85 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| In_80 T_07 | TACCGTAGGG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| In_8/ | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| Tn_88 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGAAATCCG | GGACGTGAAG |
| Tn_89 | TCCCGTAGTG | ATATTTTTTG | TTTCCCCCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGAAATCCG | GGACGTGAAG |
| Tn_90 | ACCCGAAGGG | ATATTTTTTG | TTTCCCCCTT | CATCTTTGGA | TTCCTATCTA | AGGACCCAGG | ACGAAACCCG | GGACGTGAAA |
| Tn_91 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_92 | TCCCGAAGGG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAACCCG | GGACGTGAAA |
| Tn_93 | TACCGAAGGG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| Tn_94 | TCCCGAAGTG | ATATTTTTTG | TTTCCCCCTT | CATCTTTGGA | TTCCTATCTA | AGGACCCAGG | ACGAAACCCG | GGACGGGAAG |
| Tn_95 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_96 | TCCCGAAGGG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | AGGACCCAGG | ACGTAACCCG | GGACGTGAAA |
| Tn_97 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_98 | TCCCGTAGGG | ATATTTTTTG | TTTCCCCCTT | CATCTTTGGA | TTCCTATCTA | AGGACCCAGG | ACGAAACCCG | GGACGTGAAG |
| Tn_99 | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGAAATCCG | GGACGTGAAG |
| Tn_100 | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| NARC_Carolea | TACCGAAGGG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| NARC_Domat | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| NARC_Gemlik | TACCGTAGGG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAA |
| NARC_Leccino | TACCGTAGTG | ATATTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| NARC_Moraiolo | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| <u>Tn Arbosana</u> | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_Chetoui | TCCCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| Tn_Coratina | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |
| <u>Tn_Koroneiki</u> | TCCCGAAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGACCCAGG | ACGAAACCCG | GGACGTGAAG |
| Tn_Frantoio | TACCGTAGTG | ATATTTTTTG | TTTCTCTCTT | CATCTTTGGA | TTCCTATCTA | ATGATCCAGG | ACGTAATCCT | GGACGTGAAG |

| Tn 1 | ратаратсс | AAAGGGTTTT | TCCTTGGTTA | аттттсааат | TTTCTTAGGA | ттттатстат | TCCACACGTT | таастаааат |
|----------------|--------------|------------|------------|------------|------------|---|------------|------------|
| T_n 2 | AATAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAAAT |
| Tn 3 | AATAAAATCC . | AAAGGGIIII | TCCTTCCTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGII | TAACTAACAT |
| Tn_3 | AATAAAATCC . | AAAGGGIIII | TCCTTCCTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGII | TAACTAAGAT |
| Tn 5 | AATAAAAICC . | AAAGGGIIII | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | CCCACACGII | TAACTAAGAT |
| Tn_5 | AATAAAATCC . | AAAGGGIIII | TCCTTCCTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGII | TAACTAAGAT |
| Tn 7 | AATAAAATCC . | AAAGGGIIII | TCCIIGGIIA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGII | TAACTAAGAT |
| Tn 9 | AATAAAATCC . | AAAGGGIIII | TCCIIGGIIA | ATTTTCAAAT | TITCITAGGA | TITIAICIAI | CCACACGII | TAACTAAGAT |
| 11_0 Tn 0 | AATAAAATCC . | AAAGGGIIII | TCCTTGGTTA | ATTTTCAAAT | TITCIIAGGA | TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT | TCCACACGII | TAACTAAAAT |
| $T_{n} = 10$ | AAAAAAAICC . | AAAGGGIIII | TCCIIGGIIA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGII | TAACTAAAAT |
| In_10 Tn_11 | AATAAAATCC . | AAAGGGIIII | TCCIIGGIIA | ATTTTCAAAT | TITCITAGGA | TITIAICIAI | TCCACACGII | TAACTAAAAT |
| 10_11 T= 12 | AATAAAATCC . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TITTATCTAT | TCCACACGTT | TAACTAAAAT |
| 11_12 T= 12 | AATAAAATCC | AAAGGGIIII | TCCTTGGTTA | ATTTTCAAAT | TITCITAGGA | | TCCACACGIT | TAACTAAAAT |
| In_15 T_14 | AATAAAATCC . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTTATCTAT | TCCACACGTT | TAACTAAAAT |
| 1n_14 T_15 | AAAAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | ТААСТААААТ |
| In_15 | AAAAAAATCC . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAAAT |
| In_16 | AATAAAATCC . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | ТААСТААААТ |
| Tn_17 | AATAAAATCC . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | ТААСТААААТ |
| Tn_18 | AATAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAGAT |
| Tn_19 | AATAAAATCC . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACCCGTT | TAACTAAGAT |
| Tn_20 | AATAAAATCC . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAGAT |
| Tn_21 | AAAAAAATCC . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAGAT |
| Tn_22 | AATAAAATCC . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAGAT |
| Tn_23 | ааааааатсс | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | ТААСТААААТ |
| Tn_24 | AATAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | ТААСТААААТ |
| Tn_25 | ААТААААТСС . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | ТААСТААААТ |
| Tn_26 | ааааааатсс | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | CCCACACGTT | ТААСТААААТ |
| Tn_27 | ААТААААТСС . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | ТААСТААААТ |
| Tn_28 | ААТААААТСС . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | ТААСТАААТ |
| Tn_29 | ААТААААТСС . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAGAT |
| Tn_30 | ААТААААТСС . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | таастаааат |
| Tn_31 | ААТААААТСС : | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | таастаааат |
| Tn_32 | ААТААААТСС : | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAGAT |
| Tn_33 | ааааааатсс : | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | CCCACACGTT | таастаааат |
| Tn_34 | AATAAAATCC : | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | таастаааат |
| Tn_35 | ааааааатсс | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | таастаааат |
| Tn_36 | ааааааассс : | AAAGGGTTTT | CCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTTT | CCCCCCCGTT | таасааааат |
| Tn_37 | ааааааатсс : | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | таастаааат |
| Tn_38 | ааааааатсс . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | таастаааат |
| Tn_39 | ааааааатсс | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACCCGTT | таастаааат |
| Tn_40 | ААТААААТСС . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | таастаааат |
| Tn_41 | ААТААААТСС . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | таастаааат |
| Tn 42 | ААТААААТСС . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | таастаааат |
| Tn 43 | AATAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | таастаааат |
| Tn 44 | ААТААААТСС . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | таастаааат |
| Tn 45 | ААТААААТСС . | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | таастаааат |
| Tn 46 | AATAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | таастаааат |
| Tn 47 | ААТААААТСС | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | таастаааат |
| Tn_48 | AAAAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACCCGTT | ТААСТААААТ |
| Tn 49 | AATAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | ТААСТААААТ |
| Tn 50 | AATAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | ТААСТААААТ |
| Tn 51 | AAAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | CCCACCCGTT | ТААСТААААТ |
| Tn 52 | AAAAAATCC | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAGAT |
| Tn 53 | ААААААТСС | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | ТААСТААААТ |
| Tn_54 | ААААААТСС | AAAGGGTTTT | TCCTTGGTTA | ATTTTCAAAT | TTTCTTAGGA | TTTTATCTAT | TCCACACGTT | TAACTAAGAT |
| _ | | | | | | | | |

| Tn_55 | TTCAAAAATT | TGAAAAATAA | ТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
|------------------|------------|---|-------------|------------|------------|--------------|-------------|------------|
| Tn_56 | TTCAAAAATT | TGAAAAAAA | адааатааат | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_57 | TTCAAAAATT | TGAAAAATAA | ТАААТАААТА | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_58 | TTCAAAAATT | TGAAAAATAA | ТАААТАААТА | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn_59 | ТТСАААААТТ | TGAAAAAAAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_60 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACGAA |
| Tn_61 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn_62 | TTCAAAAATT | TGAAAAAAAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_63 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_64 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_65 | ттсааааатт | TGAAAAATAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACGAA |
| Tn_66 | ттсааааатт | TGAAAAATAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_67 | ттсааааатт | TGAAAAATAA | ТАААТАААТА | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 68 | ттсааааатт | TGAAAAATAA | тааатааат | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 69 | TTCAAAAATT | TGAAAAATAA | атааатааат | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 70 | TTCAAAAATT | TGAAAAAAAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn ⁷¹ | TTCAAAAATT | TGAAAAAAAA | атааатааат | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 72 | TTCAAAAATT | TGAAAAAAAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 73 | TTCAAAAATT | TGAAAAATAA | атааатааат | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 74 | TTCAAAAATT | TGAAAAATAA | атааатааат | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 75 | TTCAAAAATT | TGAAAAAAAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 76 | ттсаааатт | TGAAAAAAAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 77 | TTCAAAAATT | TGAAAAAAAA | ΑΤΑΑΑΤΑΑΑΤ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 78 | TTCAAAAATT | TGAAAAAAA | ΑΤΑΔΑΤΑΔΑΤ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 79 | TTCAAAAATT | ТСААААТАА | ΔΤΔΔΔΤΔΔΔΤ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 80 | TTCAAAAATT | ТСААААТАА | ΔΤΔΔΔΤΔΔΔΤ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 81 | TTCAAAAATT | TGAAAATAA | ATAAATAAAT | CAAGTCATCA | ACCOMACCOO | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 82 | TTCANANATT | TCAAAAAAAAA | ATAAATAAAT | CARGICATCA | ACCOMACCOG | AAAGAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 83 | TTCANANATT | TCAAAAATAA | ATAAATAAAT | CARGICATCA | ACCOMACCOO | AAAGAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 84 | TTCAAAAAII | TCANANATAA | ATAAATAAAT | CAAGCCAICA | ACCOAACCOG | AAAGAGAGGGG | ATTCCAACCC | TCCCTACCAA |
| Tn 85 | TTCAAAAAII | TCARARATAA | ATAAATAAAT | CAAGICAICA | ACCOAACCOG | AAAGAGAGGGG | ATTCGAACCC | TCCGTACGAA |
| Tn 96 | TTCAAAAATT | TGAAAAATAA | | CAAGICAICA | ACGGAACCGG | AAAGAGAGGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 87 | TTCAAAAAII | TCARACATAA | ATAAATAAAT | CAAGICAICA | ACCEALCCCG | AAAGAGAGGGG | ATTCAAACCC | TCCCTACAAA |
| Tn 99 | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGICAICA | ACGGAACCGG | AAAGAGAGGGG | ATTCCAAACCC | TCCGTACAAA |
| Tn 80 | TTCAAAAATT | TGAAAAAIAA | ATAAATAAAT | CAAGCC-ICA | ACCOACCCCG | AAAGAGAGGG- | ATTCGAACCC | TCCGTACGAA |
| Tn_00 | TICAAAAAII | TGAAAAAAAA | AAAAATAAAC | CAAGCCATCA | ACGGACCCGG | AAAGAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| $T_{n} = 01$ | TTCAAAAAII | TGAAAAAAAA | ATAAATAAAT | CAAGCCACCA | ACCENACCEG | AAAGAGAGAGGG | ATTCCAACCC | TCGGIACAAA |
| Tn 02 | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGGG | ATTCAACCC | CCCCTCCAA |
| Tn 02 | TTCAAAAATT | TGAAAAAAAA | ATAAAAAAAT | CAAGCCATCA | CCGGACCCGG | AAAAAGAGGG | ATTCAACCCC | CCGGICCAAA |
| Tn 04 | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGICAICA | ACGGAACCGG | AAAGAGAGGGG | ATTCCAAACCC | TCCGTCCGAA |
| Tn 05 | TTCAAAAAII | TCANANTAN | ATAAATAAAC | CAAGCCCICA | ACCCARCCCC | AAAGAGAGGGG | ATTCCAACCC | TCCCTACCAA |
| Tn 96 | TTCAAAAATT | TGAAAAAAAAA | ATAAATAAAT | CAAGCCATCA | ACCORACCOG | AAAGAGAGAGGG | ATTCAAACCC | TCGGTACGAA |
| Tn 97 | TTCAAAAATT | TGAAAAAAAAA | ATAAATAAAT | CAAGICATCA | ACCORACCOG | AAAAAAAAGGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 08 | TTCANANATI | TCANANTAN | ATAAATAAAT | CARGICATCA | ACCORACCCC | AAAGAGAGAGGG | ATTCCAACCC | TCCCTACCAA |
| Tn 99 | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGCC-ICA | ACGGACCCGG | AAAGAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 100 | TTCAAAAATT | TGAAAAAAAA | ATAAATAAAT | CAAGCCATCA | ACCOACCCCC | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| NARC Carolea | TTCAAAAATT | TGAAAAAAAA | ATAAATAAAT | CAAGCCATCA | ACCORCCCCC | AAAGAGAGAGGG | ATTCAAACCC | TCGGTACGAA |
| NARC Domat | TTCAAAAATT | TGAAAAAATAA | ATAAATAAAT | CAAGICATCA | ACGGAACCGG | AAAAAAAAGGGG | ATTCAAACCC | TCGGTACGAA |
| NARC Gemlik | TTCAAAAATT | TGALAATAA | ATAAATAAAT | CAAGTCATCA | ACGGAACCCG | PITCHONOMOGO | ATTCAAACCC | TCGGTACAAA |
| NARC Leccine | TTCAAAAATT | TGANANATAA | ATAAATAAAT | CAAGTCATCA | ACCCAACCOG | 777CYCYCYCCC | ATTCGAACCC | TCGGTACGAA |
| NARC Moraiolo | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGICATCA | ACGGAACCOG | VYCYCYCCC | ATTCARACCC | TCGGTACOAA |
| Tn Arheana | TTCAAAAATI | TGAAAAATAA | ATAAATAAAT | CANGICATCA | ACGGAACCCC | 7776767666 | ATTCGAACCC | TCGGTACGAA |
| Tn Chetoui | TTCANANT | TGAAAAAAA | ATAAATAAAT | CAAGECATCA | ACCOMACCOG | AAAGAGAGGGG | ATTCGAACCC | TCGCTACGAA |
| Tn Coratina | TTCAAAAAII | ТСЛЛЛЛЛТА | ATAAAATAAAT | CANGCCATCA | ACCOMACCOG | AAAGAGAGGGG | ATTCGAACCC | TCGGTACGAA |
| Tn Koronoiki | TTCAAAAAII | TCAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA | ATAAATAAAT | CAAGCCATCA | ACCOMACCOG | AAAGAGAGGGG | ATTCGAACCC | TCCCTACCAA |
| Tn Franteic | TTCAAAAAIT | TGAAAAAAAAA | ATAAAAAAAAT | CAAGUCATCA | ACGCAACCGG | AAAGAGAGGGG | ATTCCAACCC | TCGCTACCAA |
| | TICAAAAAIT | TOAAAAATAA | ATAAATAAAT | CAHGICATCA | ACGGAACCGG | AAAGAGAGGG | ATTOGAACOC | TCGGIACGAA |

| Tn_1 | ТТСАААААТТ ' | TGAAAAATAA | атааатааат | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
|--------------------|--------------|--------------|---|---------------------------|-------------|--------------|------------|------------|
| Tn_2 | ттсааааатт | TGAAAAATAA | атааатааат | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn_3 | TTCAAAAATT | TGAAAAATAA | тааатааат | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_4 | TTCAAAAATT | tgaaaaaaaaa | атааатааат | CAAGCCATCA | ACGGACCCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_5 | TTCAAAAATT | TGAAAAAAAAA | АТАААТАААТ | CAAGCCATCA | ACGGACCCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_6 | TTCAAAAATT | TGAAAAATAA | атааатааат | CAAG <mark>T</mark> CATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_7 | TTCAAAAATT | TGAAAAATAA | атааатааат | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_8 | TTCAAAAATT | tgaaaaaaaaa | тааатааат | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_9 | TTCAAAAATT | TGAAAAAAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_10 | TTCAAAAATT | TGAAAAATAA | ТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn_11 | TTCAAAAATT | TGAAAAATAA | ΤΑΑΑΤΑΑΑΤ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_12 | TTCAAAAATT | TGAAAAAAAA | ΑΤΑΑΑΤΑΑΑΤ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| In_13 | TTCAAAAATT | TGAAAAATAA | ΑΤΑΑΑΤΑΑΑΤ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_14 | TTCAAAAATT | TGAAAAAAAA | ΑΤΑΑΑΤΑΑΑΤ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| In_15 T= 16 | TTCAAAAATT | TGAAAAAAAA | ΑΤΑΑΑΤΑΑΑΤ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| In_10 T= 17 | TTCAAAAATT | TGAAAAAAAA | AAAAATAAAT | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGGG | ATTCGAACCC | TCGGTACGAA |
| In_1/ T= 19 | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGGG | ATTCAAACCC | TCGGTACGAA |
| In_18 T= 10 | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGGG | ATTCGAACCC | TCGGTACGAA |
| $1n_{19}$ Tn 20 | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 21 | TTCAAAAAII | TCARAAAAIAA | ATAAATAAAT | CAAGICAICA | ACCONACCCC | AAAGAGAGGGG | ATTCGAACCC | TCCCTACCAA |
| $T_{n} 21$ | TTCAAAAAII | TCARAAAIAA | ATAAATAAAT | CAAGICAICA | ACCEAACCOG | AAAGAGAGGGG | ATTCGAACCC | TCCCTACCAA |
| Tn 23 | TTCAAAAAII | TCAAAAAAAAA | ATAAATAAAT | CAAGUCAICA | ACCEACCEC | AAAGAGAGGGG | ATTCGAACCC | TCCCTACCAA |
| Tn_24 | TTCAAAAAII | TCAAAAAAAAA | AAAAAAAAAA | CAAGCCATCA | ACGGACCCGG | AAAGAGAGGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_25 | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CANGUCATCA | ACGGAACCGG | AAAGAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn_26 | TTCAAAAATT | TGAAAAAAAAAA | ALAAAAAAAA | CAAGICATCA | ACGGACCCGG | AAAGAGAGGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_27 | TTCAAAAATT | TGAAAAAAAA | TATATATA | CAAGCCATCA | ACGGACCCGG | AAAGAGAGGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 28 | TTCAAAAATT | TGAAAAATAA | ΑΤΑΑΑΤΑΑΑΤ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn 29 | TTCAAAAATT | TGAAAAATAA | ΑΤΑΑΑΤΑΑΑΤ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 30 | TTCAAAAATT | TGAAAAATAA | ТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn 31 | TTCAAAAATT | TGAAAAAAAA | тааатааат | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_32 | TTCAAAAATT | TGAAAAAAAA | атааатааат | CAAGCCATCA | ACGGACCCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_33 | TTCAAAAATT | tgaaaaaaaaa | адааатааат | CAAGCCATCA | ACGGACCCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_34 | TTCAAAAATT | TGAAAAAAAA | атааатааат | CAAGCCATCA | ACGGACCCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_35 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn_36 | TTCAAAAATT | tgaaaaaaaaa | аааааааааа | AAAGCCCCCC | ccccccccc | AAGAAGAGGG | AGTCGACCCC | CCCCCCCAAA |
| Tn_37 | TTCAAAAATT | TGAAAAAAAA | тааатааат | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_38 | TTCAAAAATT | TGAAAAATAA | тааатааат | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn_39 | TTCAAAAATT | tgaaaaaaaaa | а <mark>а</mark> ааатааат | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_40 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn_41 | TTCAAAAATT | TGAAAAATAA | ТАААТАААТА | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACGAA |
| Tn_42 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn_43 | TTCAAAAATT | TGAAAAATAA | ΑΤΑΑΑΤΑΑΑΤ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn_44 | TTCAAAAATT | TGAAAAAAAA | ΑΤΑΑΑΤΑΑΑΤ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| 1n_45 | TTCAAAAATT | TGAAAAAAAA | ΑΤΑΑΑΤΑΑΑΤ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| In_40 T= 47 | TTCAAAAATT | TGAAAAAAAA | ΑΑΑΑΑΤΑΑΑΤ | CAAGCCATCA | ACGGACCCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| 1n_4/ T= 49 | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn_40 | TTCAAAAATT | TGAAAAATAA | | CAAGICAICA | ACGGAACCGG | AAAGAGAGGGG | ATTCAAACCC | TCGGTACAAA |
| Tn 50 | TTCAAAAAIT | TCAAAAAAAAA | ATAAATAAAT | CAAGCCATCA | ACCEACCEC | AAAGAGAGGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 51 | TTCAAAAAII | TCAAAAAAAAA | AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA | CAAGCCATCA | ACCOACCCCC | AAAGAGAGGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 52 | TTCAAAAAII | TGAAAAAAAAA | AAAAAIAAAI | CAAGUCATCA | ACGGAACCCGG | AAAGAGAGGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 53 | TTCAAAAATT | TGAAAAAAAAA | ATAAATAAAT | CAAGCCATCA | ACGGAACCCG | 7776767666 | ATTCGAACCC | TCGGTACGAA |
| Tn 54 | TTCADADATT | TGAAAAATAA | ATAAATAAAT | CAAGCCATCA | ACGGAACCCG | PPERSONCE CO | ATTCGAACCC | TCGGTACGAA |
| | TIONAAATI | IONNAMIAA | ATAAATAAAT | CAROCCATCA | NSOOMACCOB | THAN ADADAD | ALICOMACCO | TOOTACOAR |

| Tn_55 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
|------------------|------------|--------------|------------|------------|------------|--------------|------------|------------|
| Tn_56 | TTCAAAAATT | TGAAAAAAA | адааатааат | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_57 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_58 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn_59 | TTCAAAAATT | TGAAAAAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_60 | TTCAAAAATT | TGAAAAATAA | ТАААТАААТА | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACGAA |
| Tn_61 | TTCAAAAATT | TGAAAAATAA | ТАААТАААТА | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn_62 | TTCAAAAATT | TGAAAAAAAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_63 | TTCAAAAATT | TGAAAAATAA | ТАААТАААТА | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_64 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_65 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACGAA |
| Tn_66 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_67 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_68 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 69 | TTCAAAAATT | TGAAAAATAA | ТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 70 | TTCAAAAATT | TGAAAAAAAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn ⁷¹ | TTCAAAAATT | TGAAAAAAAA | атааатааат | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 72 | TTCAAAAATT | TGAAAAAAAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 73 | TTCAAAAATT | TGAAAAATAA | атааатааат | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 74 | TTCAAAAATT | TGAAAAATAA | ТАААТАААТА | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 75 | TTCAAAAATT | TGAAAAAAAAA | ΑΤΑΑΑΤΑΑΑΤ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 76 | ттсаааатт | TGAAAAAAAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 77 | TTCAAAAATT | TGAAAAAAAA | ΔΤΔΔΔΤΔΔΔΤ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 78 | TTCAAAAATT | TGAAAAAAA | ATAAATAAAT | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 79 | TTCAAAAATT | ТСААБАБТАБ | ATAAATAAAT | CARGCCATCA | ACGGAACCGG | AAAGAGAGGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 80 | TTCAAAAATT | телалатал | ATAAATAAAT | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 81 | TTCAAAAATT | TCAAAAAAAAAA | ATAAATAAAT | CAAGICATCA | ACCORACCOG | AAAGAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 87 | TTCANANTT | TCAAAAAAAAA | ATAAATAAAT | CARGICATCA | ACCONACCCO | AAAGAGAGAGGG | ATTCCAACCC | TCCCTACCAA |
| Tn 83 | TTCARARATI | TCAAAAAAAAA | ATAAATAAAT | CARGICATCA | ACCOMACCOG | AAAGAGAGGGG | ATTCCAACCC | TCCCTACCAA |
| Tn 84 | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGGG | ATTCGAACCC | TCGGTACGAA |
| Tn 95 | TTCAAAAATT | TGAAAAATAA | | CAAGICAICA | ACGGAACCGG | AAAGAGAGGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_05 | TICAAAAATT | IGAAAAATAA | | CAAGICATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| 11_00 Tn 97 | TTCAAAAATT | TGAAAAATAA | | CAAGICATCA | ACGGACCCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| Tn_0/ | TICAAAAATI | IGAAAAAIAA | | CAAGICAICA | ACGGAACCGG | AAAGAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| TIL_00 T., 90 | | IGAAAAAIAA | | CAAGCC-ICA | ACGGACCCGG | AAAGAGAGAGG- | ATTCGAACCC | TCGGTACGAA |
| In_89 | TTCAAAAATT | TGAAAAAAA | AAAAATAAAC | CAAGCCATCA | ACGGACCCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| In_90 T= 01 | TTCAAAAATT | TGAAAAAAA | ATAAATAAAT | CAAGCCACCA | CCGGACCCGG | AAAGAGAGGG | ATTCCAACCC | TCGGTACAAA |
| In_91 T02 | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| In_92 | TTCAAAAATT | TGAAAAAAAA | АТАААААААТ | CAAGCCATCA | CCGGACCCGG | AAAAAGAGGG | ATTCAACCCC | CCGGTCCAAA |
| In_93 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTCCGAA |
| 1n_94 T= 05 | TTCAAAAATT | TGAAAAATAA | АТАААТАААС | CAAGCCCTCA | CCGGACCCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_95 | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| 1n_90 T= 07 | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGTCATCA | ACGGAACCGG | AAAAAAAGGG | ATTCAAACCC | TCGGTACAAA |
| In_9/ | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| 1n_98 T= 00 | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGCC-TCA | ACGGACCCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| In_99 | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGTCATCA | ACGGACCCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| | TTCAAAAATT | TGAAAAAAAA | ATAAATAAAT | CAAGCCATCA | ACGGACCCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| NARC_Carolea | TTCAAAAATT | TGAAAAATAA | ΑΤΑΑΑΤΑΑΑΤ | CAAGTCATCA | ACGGAACCGG | AAAAAAGGG | ATTCAAACCC | TCGGTACGAA |
| NARC_Domat | TTCAAAAATT | TGAAAAATAA | ΑΤΑΑΑΤΑΑΑΤ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACGAA |
| NARC_Gemlik | TTCAAAAATT | TGAAAAATÀA | ΑΤΑΑΑΤΑΑΑΤ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAÀA |
| NARC_Leccino | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| NARC_Moraiolo | TTCAAAAATT | TGAAAAATAA | ТАААТАААТ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCAAACCC | TCGGTACAAA |
| In Arbsana | TTCAAAAATT | TGAAAAAAAA | ΑΤΑΑΑΤΑΑΑΤ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| In_Chetoui | TTCAAAAATT | TGAAAAAAAA | ΑΤΑΑΑΤΑΑΑΤ | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_Coratina | TTCAAAAATT | TGAAAAATAA | АТАААТАААТ | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn_Koroneiki | TTCAAAAATT | TGAAAAAAA | таааааааа | CAAGCCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |
| Tn Frantoio | TTCAAAAATT | TGAAAAATAA | ATAAATAAAT | CAAGTCATCA | ACGGAACCGG | AAAGAGAGGG | ATTCGAACCC | TCGGTACGAA |

| Ta TRACTOSTAC ALCOBATTAG CARTCORAGE CITIASTICA CICLORCART ENCICALT GANARASIA ATLACTACT Ta TALACTOSTAC ALCOBATTAG CARTCORAGE CITIASTICA CICLORCART CITCICCART GANARASIA ATLACTACT Ta TALACTOSTAC ALCOBATTAG CARTCORAGE CITIASTICA CICLORCART CITCICCART GANARASIA ATLACTACT Ta TALACTOSTAC ALCOBATTAG CARTCORAGE CITIASTICA CICLORCART CITCICCART GANARASIA ATLACTACT Ta TALACTOSTAC ALCOBATTAG CARTCORAGE CITIASTICA CICLORCART CITCICCART GANARASIA ATLACTACT Ta TALACTOSTAC ALCOBATTAG CARTCORAGE CITIASTICA CICLORCART CITCICCART GANARASIA ATLACTACT Ta TALACTOSTAC ALCOBATTAG CARTCORAGE CITIASTICA CICLORCART CITCICCART GANARASIA ATLACTACT Ta TALACTOSTAC ALGOBATTAG CARTCORAGE CITIASTICA CICLORCART CITCICCART GANARASIA ATLACTACT Ta TALACTOSTAC ALGOBATTAG CARTCORAGE CITIASTICA CICLORCART CITCICCART GANARASIA ATLACTACT Ta TALACTOSTAC ALGOBATTAG CARTCORAGE CITIASTICA CICLORCART CITCICCART GANARASIA ATLACTACT Ta TALACTOSTAC ALGOBATTAG CARTCORAGE CITIASTICA CICLORCART CITCICCART GANARASIA ATLACTACT Ta TALACTOSTAC ALGOBATTAG CARTCORAGE CITIASTICA CICLORCART CITCICCART GANARASIA ATLACTACT Ta TALACTOSTAC ALGOBATTAG CARTCORAGE CITIASTICA CICLORCART CITCICCART GANARASIA ATTACTACT Ta TALACTOSTAC ALGOBATTAG CARTCORAGE CITIASTICA CICLORCART CITCICCART GANARASIA ATTACTACT Ta TALA | Tn_l | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
|--|----------------|------------|------------|------------|------------|------------|------------|--------------------------|-------------|
| Ta TARCTORIA: ALGOBATTAG CALTCORAGE CITLATICOL TELECOLAT E BALANAGKA ATLACTACE Ta TALECTORIA: ALGOBATTAG CALTCORAGE CITLATICOLAT CITLAGUAR ATLACTACE Ta TALECTORIA: CALGOBATTAG CALTCORAGE CITLATICOLAT CITLAGUAR ATLACTACE Ta TALECTORIA: CALGOBATTAG CALTCORAGE CITLATICOLAT CITLAGUAR CITLATICOLAT Ta TALECTORIA: CALGOBATTAG CALTCORAGE CITLATICOLAT CITLAGUAR CITLATICOLAT Ta TALECTORIA: CALGOBATTAG CALTCORAGE CITLATICOLA CITLAGUAR CITLATICOLATI CIALAGUAR ATLACTACE Ta TALECTORIA: CALGOBATTAG CALTCORAGE CITLATICOLA CICLAGUAR CITLACUART GALAAAGAA ATLACTACE Ta TALECTORIA: CALGOBATTAG CALTCORAGE CITLATICOLA CICLAGUAR CITLACUART GALAAAGAA ATLACTACE Ta TALECTORIA: CALGOBATTAG CALTCORAGE CITLATICOLATI CILLAGUAR GALATACHACE Ta TALECTORIA: CALGOBATTAG CALTCORAGE CITLATICOLATI GALAAAGAA ATLACTACE Ta TALECTORIA: CALGOBATTAG CALTCORAGE CITLATICOLATI GALAAAGAA ATLACTACE Ta TALECTORIA: CALGOBATTAG CALTCORAGE CITLATICOLATI CILLAGUAR | Tn_2 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tag TRACTORIAC ALCOGATIAG CALTCORECG CITLAGUCA TECRECOLT ENCOCULAT GALAARGER ATLECTACT Tag TALECTORIAC ALCOGATIAG CALTCORECG CITLAGUCA TECRECOLTE TECTOCIATI GALAARGER ATLECTACT Tag TALECTORIAC ALCOGATIAG CALTCORECG CITLAGUCA TECRECOLTE TECTOCIATI GALAARGER ATLECTACT Tag TALECTORIAC ALCOGATIAG CALTCORECCE CITLAGUCA TECTOCIATI GALAARGER ATLECTACT Tag TALECTORIAC ALCOGATIAG CALTCORECCE CITLAGUCAT TETTOCIATI GALAARGER ATLECTACT Tag TALECTORIAC ALCOGATIAG CALTCORECG CITLAGUCAT TETTOCIATI GALAARGER ATLECTACT Tag TALECTORIAC ALCOGATIAG CALTCOREG CITLAGUCA TETROCOATI TETOCATI GALAARGER ATLECTACT Tag TALECTORIAC ALCOGATIAG CALTCOREG CITLAGUCA TETROCOATI TETOCATI GALAARGER ATLECTACT Tag TALECTORIAC ALCOGATIAG CALTCOREG CITLAGUCA TETROCOATI TETOCATI GALAARGER ATLECTACT Tag TALECTORIAC ALCOGATIAG CALTCOREG CITLAGUCA TETROCOATI TETOCATI GALAARGER ATLECTACT Tag TALECTORIAC ALCOGATIAG CALTCOREG CITLAGUCA TETROCOATI GALAARGER ATLECTACT Tag TALECTORIAC ALCOGATIAG CALTCOREG CITLAGUCA TETROCOATI GALAARGER ATLECTACT <th>Tn_3</th> <th>TAACTCGTAC</th> <th>AACGGATTAG</th> <th>CAATCCGACG</th> <th>CTTTAGTCCA</th> <th>CTCAGCCATC</th> <th>TCTCCCAATT</th> <th>GAAAAAGAGA</th> <th>ATTACTACCT</th> | Tn_3 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tag TRACTORIA CACGGATTAG CARCCOAGE CITIAGUCA CICLAGUAT CICCUCAT GANAAGBA ATTACTACT Tag TAACTORIA AAGGGATTAG CARCCOAGE CITIAGUCA CICLAGUAT CITCUCAT GANAAGBA ATTACTACT Tag TAACTORIA CAGGGATTAG CARCCOAGE CITIAGUCA CICLAGUAT CITCUCAT GANAAGBA ATTACTACT Tag TAACTORIA CAGGGATTAG CARCCOAGE CITIAGUCA CICLAGUAT CITCUCAT GANAAGBA ATTACTACT Tag TAACTORIA CAGGGATTAG CARCCOAGE CITIAGUCA CICLAGUAT CITCUCAT GANAAGBA ATTACTACT Tag TAACTORIA CAGGGATTAG CARCCOAGE CITIAGUCA CICLAGUAT CITCUCAT GANAAGBA ATTACTACT Tag TAACTORIA CAGGGATTAG CARCCOAGE CITIAGUCA CICLAGUAT CITCUCATAT GANAAGBA ATTACTACT Tag TAACTORIA CAGGGATTAG CARCCOAGE CITIAGUCA CICLAGUAT CITCUCATAT GANAAGBA ATTACTACT Tag TAACTORIA CAGGGATTAG CARCCOAGE CITIAGUCA CICLAGUAT CITCUCATAT GANAAGBA ATTACTACT Tag TAACTORIA CAGGGATTAG CARCCOAGE CITIAGUCA CICLAGUAT CITCUCATAT GANAAGBA ATTACTACT Tag TAACTORIA CAGGGATTAG CARCCOAGE CITIAGUCA CICLAGUCAT CICCUCAT GANAAGBA ATTACTACT Tag TAACTORIA CAGGGATTAG CARCCOAGE CITIAGUCA CICLAGUCAT CICCUCAT GANAAGBA ATTACTACT Tag TAACTORIA CAGGGATTAG CARCCOAGE CITIAGUCA CICLAGUCAT CICCUCAT GANAAGBA ATTACTACT Tag TAACTORIA CAGGGATTAG CARCCOAGE CITIAGUCA CICLAGUCAT CICUCAAT GANAAGBA ATTACTACT Tag TAACTORIA CAGGGATTAG CARCCOAGE CITIAGUCA CICLAGUCAT CICUCUAT GANAAGBA ATTACTACT | Tn_4 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tm The TRANCTORIA ARGGANTAG CANCORGE CITANGUCA TERECORT ETECCONT GANAMAGRA ATHERACU Tm TARCTORIA ARGGANTAG CANTCORGE CITANGUCA TERECORT ETECCONT GANAMAGRA ATHERACU Tm TARCTORIA CANGGANTAG CANTCORGE CITANGUCA TERECORT ETECCONT GANAMAGRA ATHERACU Tm TARCTORIA CANGGANTAG CANTCORGE CITANGUCA TERECORT TERECORT GANAMAGRA ATHERACU Tm TARCTORIA CANGGANTAG CANTCORGE CITANGUCA TERECORT TERECORT GANAMAGRA ATHERACU Tm TARCTORIA CANGGANTAG CANTCORGE CITANGUCA TERECORT TETECONT GANAMAGRA ATHERACU Tm TARCTORIA CANGGANTAG CANTCORGE CITANGUCA CECAGCCART CITCUCANT GANAMAGRA ATHERACU Tm TARCTORIA CANGGANTAG CANTCORGE CITANGUCA CECAGCCART CITCUCANT GANAMAGRA ATHERACU Tm TARCTORIA CANGGANTAG CANTCORGE CITANGUCA CECAGCCART CITCUCANT GANAMAGRA ATHERACU Tm TARCTORIA CANGGANTAG CANTCORGE CITANGUCA CECAGCCART CITCUCANT GANAMAGRA ATHERACU Tm TARCTORIA CANGGANTAG CANTCORGE CITANGUCA CECAGCCART CITCUCANT GANAMAGRA ATHERACU Tm TARCTORIA CANGGANTAG CANTCORGE CITANGUCA CECAGCCART CITCUCANT GANAMAGRA ATHERACU Tm TARCTORIA CANGGANTAG CANTCORGE CITANGUCA CICAGCCART CITCUCANT GANAMAGRA ATHERACU Tm TARCTORIA CANGGANTAG CANTCORGE CITANGUCA CICAGCCART CITCUCANT GANAMAGRA ATHERACU Tm TARCTORIA CANGGANTAG CANTCORGC CITANGUCA CICAGCCART CITCUCANT GANAMAGRA ATHERACU <th>Tn_5</th> <th>TAACTCGTAC</th> <th>AACGGATTAG</th> <th>CAATCCGACG</th> <th>CTTTAGCCCA</th> <th>CTCAGCCATC</th> <th>TCTCCCAATT</th> <th>GAAAAAGAGA</th> <th>ATTACTACCT</th> | Tn_5 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tm TARACTORIA CAGOSATTAG CANCOGAGO CITAGÓCCA CICAGOCANT GANANGRA ATIACTACOT Tm 9 TAACTORIA ANOGRATIAG CANTOCAGO CITAGÓCA CICAGOCANT GANANGRA ATIACTACOT Tm 10 TAACTORIA ANOGRATIAG CANTOCAGO CITAGÓCA CICAGOCANT GANANGRA ATIACTACOT Tm 11 TAACTORIA ANOGRATIAG CANTOCAGO CITAGÓCA CICAGOCANT GANANGRA ATIACTACOT Tm 12 TAACTORIA ANOGRATIAG CANTOCAGO CITAGÓCA CICAGOCANT GANANGRA ATIACTACOT Tm 13 TAACTORIA ANOGRATIAG CANTOCAGO CITAGÓCA CICAGOCANT GANANGRA ATIACTACOT Tm 14 TAACTORIA ANOGRATIAG CANTOCAGO CITAGÓCA CICAGOCANT GANANGRA ATIACTACOT Tm 14 TAACTORIA ANOGRATIAG CANTOCAGOS CITAGÓCA CICAGOCANT GANANGRA ATIACTACOT Tm 14 TAACTORIA ANOGRATIAG CANTOGAGO CITAGÓCA CICAGOCANT GANANGRA ATIACTACOT Tm 15 TAACTORIA ANOGRATIAG CANTOGAGO CITAGÓCA CICAGOCANT GANANGRA ATIACTACOT Tm 16 TAACTORIA ANOGRATIAG CANTOGAGO CITAGÓCA CICAGOCANT GANANGRA ATIACTACOT Tm 17 TAACTORIA ANOGRATIAG CANTOGAGO CITAGÓCA CICAGOCANT GANANGRA ATIACTACOT Tm 18 TAACTORIA ANOGRATIAG CANTOGAGO CITAGÓCA CICAGOCANT GANANGRA ATIACTACOT Tm 19 TAACTORIA ANOGRATIAG CANTOGAGO CITAGÓCA CICAGOCANT GANANGRA ATIACTACOT | Tn_6 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tag TARECEGTAC AGGGATTAG CANCEGAG CITAGECCA CICAGECAT CITECCAATT GANANGRA ATHERTACT Tag TARECEGTAC AGGGATTAG CANCEGAG CITAGECCA CICAGECATT GIOCAATT GANANGRA ATHERTACT Tal TARECEGTAC AGGGATTAG CANCEGAG CITAGECCA CICAGECATT GIOCAATT GANANGRA ATHERTACT Tal TARECEGTAC AGGGATTAG CANCEGAG CITAGECCA CICAGECATT CICCECAATT GANANGRA ATHERTACT Tal TARECEGTAC AGGGATTAG CANCEGAG CITAGECCA CICAGECATT CICCECAATT GANANGRA ATHERTACT Tal TARECEGTAC AGGGATTAG CANCEGAG CITAGECCA CICAGECATT CICCECAATT GANANGRA ATHERTACT Tal TARECEGTAC AGGGATTAG CANCEGAG CITAGECCA CICAGECATT CICCECAATT GANANGRA ATHECTACT Tal TARECEGTAC AGGGATTAG CANCEGAG CITAGECCA CICAGECATT CICCECAATT GANANGRA ATHECTACT Tal TARECEGTAC AGGGATTAG CANCEGAG CITAGECCA CICAGECATT CICCECAATT GANANGRA ATHECTACT Tal TARECEGTAC AGGGATTAG CANCEGAG CITAGECCA CICAGECATT CICCECAATT GANANGRA ATHECTACT Tal TARECEGTAC AGGGATTAG CANCEGAG CITAGECCA CICAGECATT CICCECAATT GANANGRA ATHECTACT Tal TARECEGTAC AGGGATTAG CANCEGAG CITAGECCA CICAGECATT CICCECAATT GANANGRA ATHECTACT Tal TARECEGTAC AGGGATTAG CANCEGAG CITAGECCA CICAGECATT CICCECAATT GANANGRA ATHECTACT Tal TARECEGTAC AGGGATTAG CANCEGAG CITAGECCA CICAGECATT CICCECAATT GANANGRA ATHECTACT Tal TARECEGTAC AGGGATTAG CANCEGAG CITAGECCA CICAGECATT CICCECAATT GANANGRA ATHE | Tn_7 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn P TRACTORIA CACOGNITIG CANCOGNO CITAGETCO TETEOCOLATI GANANGAN ATHETACIÓN Tn 10 TRACTORIA CANCOGNITIG CANTOCONO CITAGETCO TETEOCOLATI GANANGAN ATHETACIÓN Tn 11 TRACTORIA CANCOGNITIG CANTOCONO CITAGETCO TETEOCOLATI GANANGAN ATHETACIÓN Tn 12 TRACTORIA CANCOGNITIG CANTOGNO CITAGETCO TETEOCOLATI GANANGAN ATHETACIÓN Tn 13 TRACTORIA CANCONTIN CANTONNO CITAGETCO TETEOCOLATI GANANGAN ATHETACIÓN Tn 14 TRACTORIA CANCONTIN CANTONNO CITAGETCO TETEOCOLATI GANANGAN ATHETACIÓN Tn 16 TRACTORIA CANCONTINO CANTONNO CITAGETCO TETEOCOLATI GANANGANA ATHETACIÓN Tn 17 TRACTORIA CANCONTINO CITAGETCO TETAGETCO TETEOCOLATI GANANGAN ATHETACIÓN Tn 18 TRACTORIA CANCONTINO CITAGETCO TETAGETCO TETEOCOLATI GANANGAN ATHETACIÓN Tn 10 TRACTORIA CANCONTINO CITAGETCO TETAGETCO TETAG | Tn_8 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn.10 THACTOSTAC ALCOGNITIA CANTECCAGE CITIAGECCA CICAGECCANT CANANAGAA, "THACHACE T Tn.11 THACTOSTAC ALCOGNITIA CANTEGENES CITIAGETCA CICAGECCANT CANANAGAA, "THACHACE T Tn.12 THACTOSTAC ALCOGNITIA CANTEGENES CITIAGETCA CICAGECCANT CANANAGAEA ATTACHACE T Tn.13 THACTOSTAC ALCOGNITIA CANTEGENES CITIAGETCA TECAGECCANT CANANAGAEA ATTACHACE T Tn.14 THACTOSTAC ALCOGNITIA CANTEGENES CITIAGETCA TECAGECANT CICCECANT GANANAGAEA ATTACHACE T Tn.15 THACTOSTAC ALCOGNITIA CANTEGENES CITIAGETCA TECAGECANT CICCECANT GANANAGAEA ATTACHACE T Tn.16 THACTOSTAC ALCOGNITIA CANTEGENES CITIAGETCA TECAGECANT CICCECANT GANANAGAEA ATTACHACET Tn.18 THACTOSTAC ALCOGNITIA CANTEGENES CITIAGETCA TECAGECATE TECTECCANT GANANAGAEA ATTACHACET Tn.20 THACTOSTAC ALCOGNITIA CANTEGENES CITIAGETCA TECAGECATE TECTECCANT GANANAGAEA ATTACHACET Tn.21 THACTOSTAC ALCOGNITIA CANTEGENES CITIAGETCA TECAGECATE TECTECCANT GANANAGAEA ATTACHACET Tn.22 THACTOSTAC ALCOGNITIA CANTEGENES CITIAGETCA TECAGECATE TECTECCANT GANANAGAEA ATTACHACET Tn.23 THACTOSTAC ALCOGNITIA CANTEGENES CITIAGETCA TECAGECATE TECTECCANT GANANAGAEA ATTACHACET Tn.23 THACTOSTAC ALCOGNITIA CANTEGENES CITIAGETCA TECAGECATE TECTECCANT GANANAGAEA ATTACHACET Tn.23 THACTOSTAC ALCOGNITIA CANTEGENES CITIAGETCA TECAGECATE TECTECCANT GANANAGAEA ATTACHACET Tn | Tn_9 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn Thatcrostic ALCOGNITIA CANTCORAGE CITHASTCCA TCASCCATC TOTCCCANT GANANGRAGE ATTACHACT Tn TAACTOSTAC ALCOGNITIA CANTCORAGE CITHASTCCA TCASCCATC TOTCCCANT GANANGRAGE ATTACHACT Tn TAACTOSTAC ALCOGNITIA CANTCORAGE CITHASTCCA TCASCCATC TOTCCCANT GANANGRAGE ATTACHACT Tn TAACTOSTAC ALCOGNITIA CANTCORAGE CITHASTCCA TCASCCATC TOTCCCANT GANANGRAGE ATTACHACT Tn TAACTOSTAC ALCOGNITIA CANTCORAGE CITHASTCCA TCASCCATC TOTCCCANT GANANGRAGE ATTACHACT Tn TAACTOSTAC ALCOGNITIA CANTCORAGE CITHASTCCA TCASCCATC TOTCCCANT GANANGRAGE ATTACHACT Tn TAACTOSTAC ALCOGNITIA CANTCORAGE CITHASTCCA TCASCCATC TOTCCCANT GANANGRAGE ATTACHACT Tn TAACTOSTAC ALCOGNITIA CANTCORAGE CITHASTCCA TCASCCATC TOTCCCANT GANANGRAGE ATTACHACT Tn TAACTOSTAC ALCOGNITIA CANTCORAGE CITHASTCCA TCASCCATC TOTCCCANT GANANGRAGE ATTACHACT Tn TAACTOSTAC ALCOGNITIA CANTCORAGE CITHASTCCA TCASCCATC TOTCCCANT GANANGRAGE ATTACHACT Tn TAACTOSTAC ALCOGNITIA CANTCORAGE CITHASTCCA TCASCCATC TOTCCCANT GANANGRAGE ATTACTACT Tn TAACTOSTAC ALCOGNITIA CANTCORAGE CITHASTCCA TCASCCATC TOTCCCANT GANANGRAGE ATTACTACT Tn TAACTOSTAC ALCOGNITIA CANTCORAGE CITHASTCCA TCASCCATC TOTCCCANT GANANGRAGE ATTACTACT Tn TAACTOSTAC ALCOGNITIA CANTCORAGE CITHASTCCA TCASCCATC TOTCCCANT GANANGRAGE ATTACTACT Tn TAACTOSTAC ALCOGNITIA CANTCO | Tn_10 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAAA | -TTACTACCT |
| Tn The Control Concerns Control Contre Contro Contre Control Contre Control Control Control Contrel Co | Tn_11 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn.13 TAACTOGING ANGEGATING CANTOGAGG CITINGTOCA CICAGOCATE INTOCOANT GANANGAGA MITHOTACIE Tn_14 TAACTOGING ANGEGATING CANTOGAGG CITINGTOCA CICAGOCATE INTOCOANT GANANGAGA MITHOTACIE Tn_15 TAACTOGING ANGEGATING CANTOGAGG CITINGTOCA CICAGOCATE INTOCOANT GANANGAGA MITHOTACIE Tn_16 TAACTOGING ANGEGATING CANTOGAGG CITINGTOCA CICAGOCATE INTOCOANT GANANGAGA MITHOTACIE Tn_18 TAACTOGING ANGEGATING CANTOGAGG CITINGTOCA CICAGOCATE INTOCOANT GANANGAGA MITHOTACIE Tn_20 TAACTOGING ANGEGATING CANTOGAGG CITINGTOCA CICAGOCATE INTOCOANT GANANGAGA MITHOTACIE Tn_210 TAACTOGING ANGEGATING CANTOGAGG CITINGTOCA CICAGOCATE INTOCOANT GANANGAGA MITHOTACIE Tn_211 TAACTOGING ANGEGATING CANTOGAGG CITINGTOCA CICAGOCATE INTOCOANT GANANGAGA MITHOTACIE Tn_212 TAACTOGING ANGEGATING CANTOGAGG CITINGTOCA CICAGOCATE INTOCOANT GANANGAGA MITHOTACIE Tn_213 TAACTOGING ANGEGATING CANTOGAGG CITINGTOCA CICAGOCATE INTOCOANT GANANGAGA MITHOTACIE Tn_214 TAACTOGING ANGEGATING CANTOGAGG CITINGTOCA CICAGOCATE INTOCOANT GANANGAGA MITHOTACIE Tn_225 TAACTOGING ANGEGATING CANTOGAGG CITINGTOCA CICAGOCATE INTOCOANT GANANGAGA MITHOTACIE Tn_236 TAACTOGING ANGEGATING CANTOGAGG CITINGTOCA CICAGOCATE INTOCOANT GANANGAGA MITHOTACIE Tn_237 TAACTOGING ANGEGATING CANTOGAGG CITINGTOCA CICAGOCATE INTOCOANT GANANGAGA MITHOTACIE Tn_238 TAACTOGING ANGEGATING CAN | Tn_12 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGA- <mark>A</mark> | ATTACTACCT |
| Tn.14 TAACTOGIAC ALCEGRATIAS CANTOGRAG CITINGTOCA CICREGOLAT CITCCOLATI GANAAGAR ATTACTACT Tn_15 TAACTOGIAC ALCEGRATIAS CANTOGRAG CITINGTOCA CICREGOLAT CITCCOLATI GANAAGAR ATTACTACT Tn_17 TAACTOGIAC ALCEGRATIAS CANTOGRAG CITINGTOCA CICREGOLAT CITCCOLATI GANAAGAR ATTACTACT Tn_18 TAACTOGIAC ALCEGRATIAS CANTOGRAG CITINGTOCA CICREGOLAT CITCCOLATI GANAAGAR ATTACTACT Tn_19 TAACTOGIAC ALCEGRATIAS CANTOGRAG CITINGTOCA CICREGOLAT CITCCOLATI GANAAGAR ATTACTACT Tn_20 TAACTOGIAC ALCEGRATIAS CANTOGRAG CITINGTOCA CICREGOLAT CITCCOLATI GANAAGAR ATTACTACT Tn_21 TAACTOGIAC ALCEGRATIAS CANTOGRAG CITINGTOCA CICREGOLAT CITCCOLATI GANAAGAR ATTACTACT Tn_22 TAACTOGIAC ALCEGRATIAS CANTOGRAG CITINGTOCA CICREGOLAT CITCCOLATI GANAAGAR ATTACTACT Tn_23 TAACTOGIAC ALCEGRATIAS CANTOGRAG CITINGTOCA CICREGOLAT CITCCOLATI GANAAGAR ATTACTACT Tn_24 TAACTOGIAC ALCEGRATIAS CANTOGRAG CITINGTOCA CICREGOLAT CITCCOLATI GANAAGAR ATTACTACT Tn_25 TAACTOGIAC ALCEGRATIAS CANTOGRAG CITINGTOCA CICREGOLAT CITCCOLATI GANAAGAR ATTACTACCT Tn_26 TAACTOGIAC ALCEGRATIAS CANTOGRAG CITINGTOCA CICREGOLAT CITCCOLATI GANAAGAR ATTACTACT Tn_27 TAACTOGIAC ALCEGRATIAS CANTOGRAG CITINGTOCA CICREGOLAT CITCCOLATI GANAAGAR ATTACTACT Tn_28 TAACTOGIAC ALCEGRATIAS CANTOGRAG CITINGTOCA CICREGOLAT CITCCOLATI GANAAGAR ATTACTACT Tn_29 TAACTOGIAC ALCEGRATIAS CANTOGRAG | Tn_13 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn.15 TAACTOGIAC ALCEGRATIAS CARTCORACE CITIAGUCA CICAGOCATE CITCCORATE GANAAGRA ATTACTACET Tn.16 TAACTOGIAC ALCEGRATIAS CARTCORACE CITTAGUCA CICAGOCATE CITCCORATE GANAAGRA ATTACTACET Tn.18 TAACTOGIAC ALCEGRATIAS CARTCORACE CITTAGUCA CICAGOCATE TETECORATE GANAAGRA ATTACTACET Tn.19 TAACTOGIAC ALCEGRATIAS CARTCORACE CITTAGUCA CICAGOCATE TETECORATE GANAAGRA ATTACTACET Tn.20 TAACTOGIAC ALCEGRATIAS CARTCORACE CITTAGUCA CICAGOCATE TETECORATE GANAAGRA ATTACTACET Tn.21 TAACTOGIAC ALCEGRATIAS CARTCORACE CITTAGUCA CICAGOCATE TETECORATE GANAAGRA ATTACTACET Tn.22 TAACTOGIAC ALCEGRATIAS CARTCORACE CITLAGUCA CICAGOCATE TETECORATE GANAAGRA ATTACTACET Tn.23 TAACTOGIAC ALCEGRATIAS CARTCORACE CITLAGUCA CICAGOCATE TETECORATE GANAAGRA ATTACTACET Tn.24 TAACTOGIAC ALCEGRATIAS CARTCORACE CITLAGUCA CICAGOCATE TETECORATE GANAAGRA ATTACTACET Tn.25 TAACTOGIAC ALCEGRATIAS CARTCORACE CITLAGUCA CICAGOCATE TETECORATE GANAAGRA ATTACTACET Tn.26 TAACTOGIAC ALCEGRATIAS CARTCORACE CITLAGUCA CICAGOCATE TETECORATE GANAAGRA ATTACTACET Tn.27 TAACTOGIAC ALCEGRATIAS CARTCORACE CITLAGUCA CICAGOCATE TETECORATE GANAAGRA ATTACTACET Tn.28 TAACTOGIAC ALCEGRATIAS CARTCORACE CITLAGUCA CICAGOCATE TETECORATE GANAAGRA ATTACTACET Tn.29 TAACTOGIAC ALCEGRATIAS CARTCORACE CITLAGUCA CICAGOCATE TETECORATE GANAAGRA ATTACTACET Tn.29 TAACTOGIAC ALCEGRATI | Tn_14 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn.16 TAACTOGIAC AACGGATTAG CANTOGAGG GITTAGCOL CICAGOCATE GUTCCOANT GANANGAGA ATTACTACET Tn.17 TAACTOGIAC AACGGATTAG CANTOGAGG GITTAGCOL CICAGOCATE ICTOCOANT GANANGAGA ATTACTACET Tn.19 TAACTOGIAC AACGGATTAG CANTOGAGG GITTAGCOL CICAGOCATE ICTOCOANT GANANGAGA ATTACTACET Tn.20 TAACTOGIAC AACGGATTAG CANTOGAGG GITTAGCOL CICAGOCATE ICTOCOANT GANANGAGA ATTACTACET Tn.21 TAACTOGIAC AACGGATTAG CANTOGAGG GITTAGCOL CICAGOCATE ICTOCOANT GANANGAGA ATTACTACET Tn.22 TAACTOGIAC AACGGATTAG CANTOGAGG GITTAGTOCA CICAGOCATE ICTOCOANT GANANGAGA ATTACTACET Tn.21 TAACTOGIAC AACGGATTAG CANTOGAGG GITTAGTOCA CICAGOCATE ICTOCOANT GANANGAGA ATTACTACET Tn.22 TAACTOGIAC AACGGATTAG CANTOGAGG GITTAGTOCA CICAGOCATE ICTOCOANT GANANGAGA ATTACTACET Tn.23 TAACTOGIAC AACGGATTAG CANTOGAGG GITTAGTOCA CICAGOCATE ICTOCOANT GANANGAGA ATTACTACET Tn.24 TAACTOGIAC AACGGATTAG CANTOGAGG GITTAGTOCA CICAGOCATE ICTOCOANT GANANGAGA ATTACTACET Tn.25 TAACTOGIAC AACGGATTAG CANTOGAGG GITTAGTOCA CICAGOCATE ICTOCOANT GANANGAGA ATTACTACET Tn.28 TAACTOGIAC AACGGATTAG CANTOGAGG GITTAGTOCA CICAGOCATE ICTOCOANT GANANGAGA ATTACTACET Tn.29 TAACTOGIAC AACGGATTAG CANTOGAGG CITTAGTOCA CICAGOCATE ICTOCOANT GANANGAGA ATTACTACET Tn.20 TAACTOGIAC AACGGATTAG CANTOGAGG CITTAGTOCA CICAGOCATE ICTOCOANT GANANGAGA ATTACTACET Tn.20 TAACTOGIAC AACGGATTAG CANTOGAGG CITTAGT | Tn_15 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn17 TAACTGATAC AACGGATTAG CAATCCGACG CITTAGECCA CICAGCCATC ICTCCCCAAT GAAAAGAGA ATTACTACCT Tn218 TAACTGATAC AACGGATTAG CAATCCGACG CITTAGECCA CICAGCCATC ICTCCCCAAT GAAAAGAGA ATTACTACCT Tn20 TAACTGATAC AACGGATTAG CAATCCGACG CITTAGECCA CICAGCCATC ICTCCCCAAT GAAAAGAGA ATTACTACCT Tn21 TAACTGATAC AACGGATTAG CAATCCGACG CITTAGECCA CICAGCCATC ICTCCCCAAT GAAAAGAGA ATTACTACCT Tn22 TAACTGATAC AACGGATTAG CAATCCGACG CITTAGECCA CICAGCCATC ICTCCCCAAT GAAAAGAGA ATTACTACCT Tn22 TAACTGATAC AACGGATTAG CAATCCGACG CITTAGECCA CICAGCCATC ICTCCCCAAT GAAAAGAGA ATTACTACCT Tn23 TAACTGATAC AACGGATTAG CAATCCGACG CITTAGECCA CICAGCCATC ICTCCCCAAT GAAAAGAGA ATTACTACCT Tn225 TAACTGATAC AACGGATTAG CAATCCGACG CITTAGECCA CICAGCCATC ICTCCCCAAT GAAAAAGAGA ATTACTACCT Tn26 TAACTGATAC AACGGATTAG CAATCCGACG CITTAGECCA CICAGCCATC ICTCCCCAAT GAAAAGAGA ATTACTACCT Tn27 TAACTGATAC AACGGATTAG CAATCCGACG CITTAGECCA CICAGCCATC ICTCCCCAAT GAAAAGAGA ATTACTACCT Tn29 TAACTGATAC AACGGATTAG CAATCCGACG CITTAGECCA CICAGCCATC ICTCCCCAAT GAAAAAGAGA ATTACTACCT Tn30 TAACTGATAC AACGGATTAG CAATCCGACG CITTAGECCA CICAGCCATC ICTCCCCAAT GAAAAGAGA ATTACTACCT Tn31 TAACTGATAC AACGGATTAG CAATCCGACG CITTAGECCA CICAGCCATC ICTCCCCAAT GAAAAGAGA ATTACTACCT Tn32 TAACTGATAC AACGGATTAG CAATCCGACG CITTAGECCA CICAGCCATC ICTCCCCAAT GAAAAGAGA ATTACTACCT Tn33 TAACTGATAC AACGGA | Tn_16 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn18 TAACTORIC AACGGATTAG CARTCORACG CITIAGCOCA CTORSOCARC INCORAT GAAAAGAGA ATTACTACC Tn21 TAACTORIAC AACGGATTAG CARTCORACG CITIAGCOCA CTORSOCARC INCOCCART GAAAAGAGA ATTACTACC Tn21 TAACTORIAC AACGGATTAG CARTCORACG CITTAGOCCA CTORSOCARC INTOCOCART GAAAAGAGA ATTACTACC Tn21 TAACTORIAC AACGGATTAG CARTCOGACG CITTAGOCCA CTORSOCARC INTOCOCART GAAAAGAGA ATTACTACCT Tn22 TAACTORIAC AACGGATTAG CARTCOGACG CITTAGOCCA CTORSOCARC INTOCOCART GAAAAGAGA ATTACTACCT Tn23 TAACTORIAC AACGGATTAG CARTCOGACG CITTAGOCCA CTORSOCARC INTOCOCART GAAAAGAGA ATTACTACCT Tn25 TAACTORIAC AACGGATTAG CARTCOGACG CITTAGOCCA CTORSOCARC INTOCOCART GAAAAGAGA ATTACTACCT Tn25 TAACTORIAC AACGGATTAG CARTCOGACG CITTAGOCCA CTORSOCARC INTOCOCART GAAAAGAGA ATTACTACCT Tn26 TAACTORIAC AACGGATTAG CARTCOGACG CITTAGOCCA CTORSOCARC INTOCOCART GAAAAGAGA ATTACTACCT Tn27 TAACTORIAC AACGGATTAG CARTCOGACG CITTAGOCCA CTORSOCARC INTOCOCART GAAAAGAGA ATTACTACCT Tn28 TAACTORIAC AACGGATTAG CARTCOGACG CITTAGOCCA CTORSOCARC INTOCOCART GAAAAGAGA ATTACTACCT Tn29 TAACTORIAC AACGGATTAG CARTCOGACG CITTAGOCCA CTORSOCARC INTOCOCART GAAAAGAGA ATTACTACCT Tn30 TAACTORIAC AACGGATTAG CARTCOGACG CITTAGOCCA CTORSOCARC INTOCOCART GAAAAGAGA ATTACTACCT Tn31 TAACTORIAC AACGGATTAG CARTCOGACG CITTAGOCCA CTORSOCART INTOCAATT GAAAAAGAGA ATTACTACCT Tn33 TAACTORIAC AACGGATTAG CARTCOG | Tn_17 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_19 THACTOGING HAGGGATING CARTCOGAGE GITHAGECCA TECAGECART GENERALGAE ATTACHACT Tn_21 THACTOGING HAGGGATING CARTCOGAGE GITHAGECCA CTCAGECART CITCCCART GANAHAGAG ATTACHACT Tn_21 THACTOGING HAGGGATING CARTCOGAGE GITHAGECCA CTCAGECART CITCCCART GANAHAGAG ATTACHACT Tn_21 THACTOGING HAGGGATING CARTCOGAGE GITHAGECCA CTCAGECCART CITCCCART GANAHAGAG ATTACHACT Tn_21 THACTOGING HAGGGATING CARTCOGAGE GITHAGECCA CTCAGECCART CITCCCART GANAHAGAG ATTACHACT Tn_22 THACTOGING HAGGGATING CARTCOGAGE GITHAGECCA CTCAGECCART CITCCCART GANAHAGAG ATTACHACT Tn_25 THACTOGING HAGGGATING CARTCOGAGE GITHAGECCA CTCAGECCART CITCCCART GANAHAGAG ATTACHACT Tn_27 THACTOGING HAGGGATING CARTCOGAGE GITTAGECCA CTCAGECCART CITCCCART GANAHAGAGA ATTACHACT Tn_28 THACTOGING HAGGGATING CARTCOGAGE GITTAGECCA CTCAGECCART CITCCCART GANAHAGAGA ATTACHACT Tn_30 THACTOGING HAGGGATING CARTCOGAGE GITTAGECCA CTCAGECCART CITCCCART GANAHAGAGA ATTACHACT Tn_31 THACTOGING HAGGGATING CARTCOGAGE GITTAGECCA CTCAGECCART CITCCCART GANAHAGAGA ATTACHACT Tn_32 THACTOGING HAGGGATING CARTCOGAGE GITTAGECCA CTCAGECCART CITCCCAATT GANAHAGAGA ATTACHACT Tn_33 THACTOGING HAGGGATING CARTCOGAGE GITTAGECCA CTCAGECCART CAATAGATA GANAHAGAGA ATTACHACT Tn_34 THACTOGING HAGGGATING CARTCOGAGE GITTAGECCA CTCAGECCART CAATAGATA GANAHAGAGA ATTACHACT Tn_35 THACTOGING HAGGGATING CA | Tn_18 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn 20 TAACTOGTAC AACGGATTAG CAATCOGACG CTTLAGTCCA CTCAGCCART CAAAAAGAGA ATTACAACCT Tn 21 TAACTOGTAC AACGGATTAG CAATCOGACG CTTLAGTCCA CTCAGCCART CACAATT GAAAAAGAGA ATTACTACCT Tn 22 TAACTOGTAC AACGGATTAG CAATCOGACG CTTLAGTCA CTCAGCCART CTCTCCCAATT GAAAAAGAGA ATTACTACCT Tn 23 TAACTOGTAC AACGGATTAG CAATCOGACG CTTLAGTCA CTCAGCCART CTCTCCCAATT GAAAAAGAGA ATTACTACCT Tn 24 TAACTOGTAC AACGGATTAG CAATCOGACG CTTLAGTCA CTCAGCCART CTCTCCCAATT GAAAAAGAGA ATTACTACCT Tn 25 TAACTOGTAC AACGGATTAG CAATCOGACG CTTLAGTCA CTCAGCCART CTCTCCCAATT GAAAAAGAGA ATTACTACCT Tn 26 TAACTOGTAC AACGGATTAG CAATCOGACG CTTLAGTCA CTCAGCCART CTCTCCCAATT GAAAAAGAGA ATTACTACCT Tn 27 TAACTOGTAC AACGGATTAG CAATCOGACG CTTLAGTCCA CTCAGCCART CTCTCCCAATT GAAAAAGAGA ATTACTACCT Tn 28 TAACTOGTAC AACGGATTAG CAATCOGACG CTTLAGTCCA CTCAGCCART CTCTCCCAATT GAAAAAGAGA ATTACTACCT Tn 30 TAACTOGTAC AACGGATTAG CAATCOGACG CTTLAGTCCA TCCAGCCART CTCTCCCAATT GAAAAAGAGA ATTACTACCT Tn 31 TAACTOGTAC AACGGATTAG CAATCOGACG CTTLAGTCCA TCCAGCCART CTCACCCAATT GAAAAAGAGA ATTACTACCT Tn 32 TAACTOGTAC AACGGATTAG CAATCOGACG CTTLAGTCCA Tn 33 TAACTOGTAC AACGGATTAG CAATCOGACG CTTLAGTCCA Tn 34 TAACTOGTAC AACGGATTAG CAATCOGACG CTTLAGTCCA Tn 33 TAACTOGTAC AACGGATTAG CAATCOGACG CTTLAGTCA Tn 34 TAACTOGTAC AACGGATTAG CAATCOGA | Tn_19 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn.21 TRACTOGING RAGGANING CARTCOGAGE GITHAGICCA CICAGCCART GANARAGAG ATTACHACT Tn.22 TRACTOGING RAGGANING CARTCOGAGE GITHAGICCA CICAGCCART GICAARAGAGA ATTACHACT Tn.24 TRACTOGING RAGGANING CARTCOGAGE GITHAGICCA CICAGCCART GICAARAGAGA ATTACHACT Tn.25 TRACTOGING RAGGANING CARTCOGAGE GITHAGICCA CICAGCCART GICAARAGAGA ATTACHACT Tn.26 TRACTOGING RAGGANING CARTCOGAGE GITHAGICCA CICAGCCART CICACCART GANARAGAG ATTACHACT Tn.27 TRACTOGING RAGGANING CARTCOGAGE GITHAGICCA CICAGCCART CICACCART GANARAGAGA ATTACHACT Tn.28 TRACTOGING RAGGANING CARTCOGAGE GITHAGICCA CICAGCCART CICACCART GANARAGAGA ATTACHACT Tn.29 TRACTOGING RAGGANING CARTCOGAGE GITHAGICCA CICAGCCART CICACCART GANARAGAGA ATTACHACT Tn.29 TRACTOGING RAGGANING CARTCOGAGE GITHAGICCA CICAGCCART CICACCATT GANARAGAGA ATTACHACT Tn.30 TRACTOGING RAGGANING CARTCOGAGE GITHAGICCA CICAGCCART CICACCATT GANARAGAGA ATTACHACT Tn.31 TRACTOGING RAGGANING CARTCOGAGE GITHAGICCA CICAGCCART CICACCANT GANARAGAGA ATTACHACT Tn.33 TRACTOGING RAGGANING CARTCOGAGE GITHAGICCA CICAGCCART CICACCANT GANARAGAGA ATTACHACT Tn.34 TRACTOGING RAGGANING CARTCOGAGE GITHAGICCA CICAGCCART CICACCANT GANARAGAGA ATTACHACT Tn.35 TRACTOGING RAGGANING CARTCOGAGE GITHAGICCA CICAGCCART CICACCANT GANARAGAGA ATTACHACT Tn.36 TRACTOGING RAGGANING CARTCOGAGE GITHAGICCA CICAGCCART CICACCCANT GANARAGA | Tn_20 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACAACCT |
| Tn 22 TRACTOCIAC ARCEGATTAG CARTCORACE CITTAGECCA CICAGCCATT CICCCART GARAAGAGA ATTACTACCT Tn 24 TRACTOCIAC ARCEGATTAG CARTCORACE CITTAGECCA CICAGCCATT CICCCART GARAAGAGA ATTACTACCT Tn 25 TRACTOCIAC ARCEGATTAG CARTCORACE CITTAGECCA CICAGCCATT CICCCART GARAAGAGA ATTACTACCT Tn 26 TRACTOCIAC ARCEGATTAG CARTCORACE CITTAGECCA CICAGCCATT CICCCART GARAAGAGA ATTACTACCT Tn 27 TRACTOCIAC ARCEGATTAG CARTCORACE CITTAGECCA CICAGCCATT CICCCART GARAAGAGA ATTACTACCT Tn 28 TRACTOCIAC ARCEGATTAG CARTCOGACE CITTAGECCA CICAGCCATT CICCCCART GARAAGAGA ATTACTACCT Tn 29 TRACTOCIAC ARCEGATTAG CARTCOGACE CITTAGECCA CICAGCCATT CICCCCART GARAAGAGA ATTACTACCT Tn 31 TRACTOCIAC ARCEGATTAG CARTCOGACE CITTAGECCA CICAGCCATT CICCCCART GARAAGAGA ATTACTACCT Tn 31 TRACTOCIAC ARCEGATTAG CARTCOGACE CITTAGECCA CICAGCCATT CICCCCART GARAAGAGA ATTACTACCT Tn 32 TRACTOCIAC ARCEGATTAG CARTCOGACE CITTAGECCA CICAGCCART CICCCCART GARAAGAGA ATTACTACCT Tn 33 TRACTOCIAC ARCEGATTAG CARTCOGACE CITTAGECCA CICAGCCART CICCCCART GARAAGAGA ATTACTACCT Tn 34 TRACTOCIAC ARCEGATTAG CARTCOGACE CITTAGECCA CICAGCCART CICCCCART GARAAGAGA ATTACTACCT Tn 35 TRACTOCIAC ARCEGATTAG CARTCOGACE CITTAGECCA CICAGCCART CICCCCART GARAAGAGA ATTACTACCT Tn 36 RAACTOCIA ARCEGATTAG CARTCOGACE CITTAGECCA CICAGCCART CICCCCART GARAAGAGA ATTACTACCT Tn 37 TRACTOCIAC ARCEGATTAG CART | Tn_21 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn 23 TAACTEGTAC AACGGATTAG CAATCEGACG CITTAGECCA CICAGECATT CICCECAATT GAAAAGAGA ATTACTACET Tn 24 TAACTEGTAC AACGGATTAG CAATCEGACG CITTAGECCA CICAGECATT CICCECAATT GAAAAGAGA ATTACTACET Tn 25 TAACTEGTAC AACGGATTAG CAATCEGACG CITTAGECCA CICAGECATT CICCECAATT GAAAAGAGA ATTACTACET Tn 26 TAACTEGTAC AACGGATTAG CAATCEGACG CITTAGECCA CICAGECATT CICCECAATT GAAAAGAGA ATTACTACET Tn 27 TAACTEGTAC AACGGATTAG CAATCEGACG CITTAGECCA CICAGECATT CICCECAATT GAAAAGAGA ATTACTACET Tn 28 TAACTEGTAC AACGGATTAG CAATCEGACG CITTAGECCA CICAGECATT CICCECAATT GAAAAGAGA ATTACTACET Tn 30 TAACTEGTAC AACGGATTAG CAATCEGACG CITTAGECCA CICAGECATT CICECCAATT GAAAAGAGA ATTACTACET Tn 31 TAACTEGTAC AACGGATTAG CAATCEGACG CITTAGECCA CICAGECATT CICECCAATT GAAAAGAGA ATTACTACET Tn 33 TAACTEGTAC AACGGATTAG CAATCEGACG CITTAGECCA CICAGECATT CICECCAATT GAAAAGAGA ATTACTACET Tn 34 TAACTEGTAC AACGGATTAG CAATCEGACG CITTAGECCA CICAGECATT CICECCAATT GAAAAGAGA ATTACTACET Tn 35 TAACTEGTAC AACGGATTAG CAATCEGACG CITTAGECCA CICAGECATT CICECCAATT GAAAAGAGA ATTACTACET Tn 36 TAACTEGTAC AACGGATTAG CAATCEGACG CITTAGECCA CICAGECATT CICECCAATT GAAAAGAGA ATTACTACET Tn 37 TAACTEGTAC AACGGATTAG CAATCEGACG CITTAGECCA CICAGECATT CICECCAATT GAAAAGAGA ATTACTACET Tn 36 TAACTEGTAC AACGGATTAG CAATCEGACG CITTAGECCA CICAGECATT CICECCAATT GAAAAGAGA ATTACTACET Tn 37 TAACTE | Tn_22 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_24TAACTGGTAC AACGGATTAG CAATCCGACG GTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTTn_25TAACTGGTAC AACGGATTAG CAATCCGACG GTTTAGCCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTTn_27TAACTGGTAC AACGGATTAG CAATCCGACG GTTTAGCCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTTn_28TAACTGGTAC AACGGATTAG CAATCCGACG GTTTAGCCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTTn_30TAACTGGTAC AACGGATTAG CAATCCGACG GTTTAGCCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTTn_30TAACTGGTAC AACGGATTAG CAATCCGACG CTTTAGCCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTTn_31TAACTGGTAC AACGGATTAG CAATCCGACG CTTTAGCCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTTn_32TAACTGGTAC AACGGATTAG CAATCCGACG CTTTAGCCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTTn_33TAACTGGTAC AACGGATTAG CAATCCGACG CTTTAGCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCTTn_34TAACTGGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_35TAACTGGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_36AAACTGGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA TCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_37AAACTGGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA TCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_39TAACTGGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA TCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_40TAACTGGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA TCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_41TAACTGGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA TCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_43TAACTGGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA TCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_44TAACTGGTAC AAC | Tn_23 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_25TAACTGGTAC AACGGATTAG CAATCCGACG GTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAAAA ATTACTACCTTn_26TAACTGGTAC AACGGATTAG CAATCCGACG CTTTAGCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_27TAACTGGTAC AACGGATTAG CAATCCGACG CTTTAGCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_29TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_30TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_31TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_32TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_33TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_34TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_35TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_36AACCCCCA AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_37AACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_40TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_41TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_44TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_44TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_44TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_45TAAC | Tn_24 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_26IAACTCGTAC AACGGATTAG CAATCCGACG CITTAGCCCA CTCAGCCART CITCCCAATT GAAAAGAGA ATTACTACCTTn_27TAACTCGTAC AACGGATTAG CAATCCGACG CITTAGCCCA CTCAGCCART CITCCCCAATT GAAAAGAGA ATTACTACCTTn_29TAACTCGTAC AACGGATTAG CAATCCGACG CITTAGCCCA CTCAGCCART CITCCCCAATT GAAAAGAGA ATTACTACCTTn_30TAACTCGTAC AACGGATTAG CAATCCGACG CITTAGCCCA CTCAGCCART CITCCCCAATT GAAAAGAGA ATTACTACCTTn_31TAACTCGTAC AACGGATTAG CAATCCGACG CITTAGCCCA CTCAGCCART CITCCCCAATT GAAAAGAGA ATTACTACCTTn_31TAACTCGTAC AACGGATTAG CAATCCGACG CITTAGCCCA CTCAGCCART CITCCCCAATT GAAAAGAGA ATTACTACCTTn_33TAACTCGTAC AACGGATTAG CAATCCGACG CITTAGCCCA CTCAGCCART CITCCCCAATT GAAAAGAGA ATTACTACCTTn_34TAACTCGTAC AACGGATTAG CAATCCGACG CITTAGCCCA CTCAGCCART CITCCCCAATT GAAAAAGAGA ATTACTACCTTn_35TAACTCGTAC AACGGATTAG CAATCCGACG CITTAGCCCA CTCAGCCART CITCCCCAATT GAAAAAGAGA ATTACTACCTTn_36AAACACCTCA AACGGATTAG CAATCCGACG CITTAGCCCA CTCAGCCART CITCCCCAATT GAAAAAGAGA ATTACTACCTTn_37AAACTCGTAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCART CITCCCCAATT GAAAAAGAGA ATTACTACCTTn_38TAACTCGTAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCART CITCCCCAATT GAAAAAGAGA ATTACTACCTTn_40TAACTCGTAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCART CITCCCCAATT GAAAAAGAGA ATTACTACCTTn_41TAACTCGTAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCART CITCCCCAATT GAAAAAGAGA ATTACTACCTTn_42TAACTCGTAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCART CITCCCCAATT GAAAAAGAGA ATTACTACCTTn_43TAACTCGTAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCART CITCCCCAATT GAAAAAGAGA ATTACTACCTTn_44TAACTCGTAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCART CITCCCCAATT GAAAAAGAGA ATTACTACCT <t< th=""><th>Tn_25</th><th>TAACTCGTAC</th><th>AACGGATTAG</th><th>CAATCCAACG</th><th>CTTTAGTCCA</th><th>CTCAGCCATC</th><th>TCTCCCAATT</th><th>GAAAAAAAA</th><th>ATTACTACCT</th></t<> | Tn_25 | TAACTCGTAC | AACGGATTAG | CAATCCAACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAAAA | ATTACTACCT |
| In 27TRACTOSTAC ARCGATTAG CARTCGAGG CITTASCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 28TAACTOSTAC ARCGATTAG CARTCGAGG CITTASCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 29TAACTOSTAC ARCGATTAG CARTCGAGG CITTAGCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 30TAACTOSTAC ARCGATTAG CARTCGAGG CITTAGCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 31TRACTOSTAC ARCGATTAG CARTCGAGG CITTAGCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 33TRACTOSTAC ARCGATTAG CARTCGAGG CITTAGCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 33TRACTOSTAC ARCGATTAG CARTCGAGG CITTAGCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 34TAACTOSTAC ARCGATTAG CARTCGAGG CITTAGCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 35TRACTOSTAC ARCGATTAG CARTCGAGG CITTAGCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 36AARCACTCA ARCGAGTAG CARTCGAGG CITTAGCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 37ARACTOSTAC ARCGATTAG CARTCGAGG CITTAGCCCA CTCAGCCART CTCCCCART GARAAGAGA ATACTACCTIn 38TAACTOSTAC ARCGGATTAG CARTCGAGG CITTAGCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 40TAACTOSTAC ARCGGATTAG CARTCGAGG CITTAGCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 41TAACTOSTAC ARCGGATTAG CARTCGAGG CITTAGCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 42TAACTOSTAC ARCGGATTAG CARTCGAGG CITTAGCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 43TAACTOSTAC ARCGGATTAG CARTCGAGG CITTAGCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 44TAACTOSTAC ARCGGATTAG CARTCGAGC CITTAGCCCA CTCAGCCART CTCCCCART GARAAGAGA ATTACTACCTIn 45TAACTOSTAC ARCGGATTAG CARTCGAGC CITTAGCCCA CTCAGCCART CTC | Tn_26 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| In 28TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAGAAA ATTACTACCTIn 29TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAGAAA ATTACTACCTIn 30TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAGAAA ATTACTACCTIn 31TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCTIn 32TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCTIn 33TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCTIn 34TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTIn 35TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTIn 36AAACACCTCA AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTIn 37AAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTIn 38TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTIn 39TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTIn 40TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTIn 41TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTIn 42TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTIn 44TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTIn 44TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTIn 45 | Tn_27 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| In_29TRACTORIAC ARCIGATIAG CARTCOGACG CITIAGCCCA CICAGCCART CICCCCART GAAAAAGAGA ATTACIACCTIn_30TAACTORIAC ARCIGATIAG CAATCOGACG CITIAGCCCA CICAGCCART CICCCCART GAAAAAGAGA ATTACIACCTIn_31TAACTORIAC ARCIGATIAG CAATCOGACG CITIAGCCCA CICAGCCART CICCCCART GAAAAAGAGA ATTACIACCTIn_32TAACTORIAC ARCIGATIAG CAATCOGACG CITIAGCCCA CICAGCCART CICCCCAATT GAAAAAGAGA ATTACIACCTIn_33TAACTORIAC ARCIGATIAG CAATCOGACG CITIAGCCA CICAGCCART CICCCCAATT GAAAAAGAGA ATTACIACCTIn_34TAACTORIAC ARCIGATIAG CAATCOGACG CITIAGCCA CICAGCCART CICCCCAATT GAAAAAGAGA ATTACIACCTIn_35TAACTORIAC ARCIGATIAG CAATCOGACG CITIAGCCA CICAGCCART CICCCCAATT GAAAAAGAA ATACIACCTIn_36AAACACCTCA ARCIGATIAG CAATCOGACG CITIAGCCA CICAGCCART CICCCCAATT GAAAAAGAA ATACIACCTIn_37AAACTORIAC ARCIGATIAG CAATCOGACG CITIAGCCA CICAGCCART CICCCCAATT GAAAAAGAA ATACIACCTIn_38TAACTORIAC ARCIGATIAG CAATCOGACG CITIAGCCA CICAGCCART CICCCCAATT GAAAAAGAA ATACIACCTIn_40TAACTORIAC ARCIGATIAG CAATCOGACG CITIAGCCA CICAGCCART CICCCCAATT GAAAAAGAA ATACIACCTIn_41TAACTORIAC ARCIGATIAG CAATCOGACG CITIAGTCCA CICAGCCART CICCCCAATT GAAAAAGAA ATACIACCTIn_42TAACTORIAC ARCIGATIAG CAATCOGACG CITIAGTCCA CICAGCCART CICCCCAATT GAAAAAGAA ATACIACCTIn_43TAACTORIAC ARCIGATIAG CAATCOGACG CITIAGTCCA CICAGCCART CICCCCAATT GAAAAAGAGA ATACIACCTIn_44TAACTORIAC ARCIGATIAG CAATCOGACG CITIAGTCCA CICAGCCART CICCCCAATT GAAAAAGAGA ATACIACCTIn_45TAACTORIAC ARCIGATIAG CAATCOGACG CITIAGTCCA CICAGCCART CICCCCAATT GAAAAAGAGA ATACIACCTIn_46TAACTORIAC ARCIGATIAG CAATCOGACG CITIAGTCCA CICAGCCART CICCCCAATT GAAAAAGAGA ATACIACCTIn_47TAACTORIAC ARCIGATIAG | Tn_28 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAAA | ATTACTACCT |
| In_30 TAACTORIAC AACGGATTAG CANTOCAACG CITTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCT In_31 TAACTORIAC AACGGATTAG CANTOCGACG CITTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCT In_32 TAACTORIAC AACGGATTAG CANTOCGACG CITTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCT In_33 TAACTORIAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCT In_34 TAACTORIAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCT In_35 TAACTORIAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCT In_36 AAACACCTCA AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCT In_37 TAACTORIAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCT In_38 TAACTORIAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCT In_40 TAACTORIAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCT In_41 TAACTORIAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCT In_42 TAACTORIAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCT In_43 TAACTORIAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCT In_44 TAACTORIAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCT In_45 TAACTORIAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCT In_46 TAACTORIAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCT In_47 TAACTORIAC AACGGATTAG CAATCCGACG CITTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAGAGA ATTACTACCT <l< th=""><th>Tn_29</th><th>TAACTCGTAC</th><th>AACGGATTAG</th><th>CAATCCGACG</th><th>CTTTAGCCCA</th><th>CTCAGCCATC</th><th>TCTCCCAATT</th><th>GAAAAAGAGA</th><th>ATTACTACCT</th></l<> | Tn_29 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| In_31TARCTORIAC ARCIGATIAS CARTOGACS CITIAGUCCA CTCAGUCAUT UNDERCART GAAAAGAGA ATTACTACUTIn_32TARCTORIAC ARCIGATIAS CARTOGACS CITIAGUCCA CTCAGUCAUT UNDERCART GAAAAGAGA ATTACTACUTIn_33TARCTORIAC ARCIGATIAS CARTOGACS CITIAGUCCA CTCAGUCAUT UNDERCART GAAAAGAGA ATTACTACUTIn_34TARCTORIAC ARCIGATIAS CARTOGACS CITTAGUCCA CTCAGUCAUT CUCCUCATT GAAAAAGAGA ATTACTAUCTIn_35TARCTORIAC ARCIGATIAS CARTOGACS CITTAGUCCA CTCAGUCAUT UNDERCART GAAAAAGAA ATTACTAUCTIn_36AAACAUCTCA ARCIGATIAS CARTOGACS CUTTAGUCCA CTCAGUCAUT UNDERCART GAAAAGAGA ATTACTAUCTIn_37ARACTORIAC ARCIGATIAS CARTOGACS CUTTAGUCCA CTCAGUCAUT UNDERCART GAAAAGAAA ATACTAUCTIn_38TARCTOGTAC ARCIGATIAS CARTOGACS CUTTAGUCCA CTCAGUCAUT UNDERCART GAAAAGAGA ATTACTAUCTIn_39TARCTOGTAC ARCIGATIAS CARTOGACS CUTTAGUCCA CTCAGUCAUT UNDERCART GAAAAGAGA ATTACTAUCTIn_40TARCTOGTAC ARCIGATIAS CARTOGACG CUTTAGUCCA CTCAGUCAUT UNDERCART GAAAAGAGA ATTACTAUCTIn_41TARCTOGTAC ARCIGATTAS CARTOGACG CUTTAGUCCA CTCAGUCAUT UNDERCART GAAAAGAGA ATTACTAUCTIn_42TARCTOGTAC ARCIGATTAS CARTOGACG CUTTAGUCCA CTCAGUCAUT UNDERCART GAAAAGAGA ATTACTAUCTIn_43TARCTOGTAC ARCIGATTAS CAATOCGACG CUTTAGUCCA CTCAGUCAUT UNDERCART GAAAAGAGA ATTACTAUCTIn_44TARCTOGTAC ARCIGATTAS CAATOCGACG CUTTAGUCCA CTCAGUCAUT UNDERCART GAAAAGAGA ATTACTAUCTIn_47TARCTOGTAC ARCIGATTAS CAATOCGACG CUTTAGUCCA CTCAGUCAUT UNDERCART GAAAAGAGA ATTACTAUCTIn_48TARCTOGTAC ARCIGATTAS CAATOCGACG CUTTAGUCCA CTCAGUCAUT UNDERCART GAAAAGAGA ATTACTAUCTIn_49TARCTOGTAC ARCIGATTAS CAATOCGACG CUTTAGUCCA CTCAGUCAUT UNDERCART GAAAAGAGA ATTACTAUCTIn_50TARCTOGTAC ARCIGATTAS CAATOCGACG CUTTAG | In_30 T= 21 | TAACTCGTAC | AACGGATTAG | CAATCCAACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAAA | ATTACTACCT |
| In_32TRACTORIAC ARCEGATIAG CARTCEGACG CITITAGTECA CICAGECART TETECECART GARAAAGAGA ATTACTACETTn_33TRACTEGTAC ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART CECCECART GARAAAGAGA ATTACTACETTn_35TRACTEGTAC ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART CECCECART GARAAAGAGA ATTACTACETTn_36ARACACETCA ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART CETCECCART GARAAAGAGA ATTACTACETTn_37ARACACETCA ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART CETCECCART GARAAAGAGA ATTACTACETTn_38TRACTCEGTAC ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART TECCECART GARAAAGAGA ATTACTACETTn_39TRACTCEGTAC ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART CECECCART GARAAAGAGA ATTACTACETTn_40TRACTCEGTAC ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART CECECCART GARAAAGAGA ATTACTACETTn_41TRACTCEGTAC ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART CECECCART GARAAAGAGA ATTACTACETTn_42TRACTCEGTAC ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART CECECCART GARAAAGAGA ATTACTACETTn_43TRACTCEGTAC ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART CECECARTT GARAAAGAGA ATTACTACETTn_44TRACTCEGTAC ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART CECECARTT GARAAAGAGA ATTACTACETTn_45TRACTCEGTAC ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART CECECARTT GARAAAGAGA ATTACTACETTn_46TRACTCEGTAC ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART CECECARTT GARAAAGAGA ATTACTACETTn_47TRACTCEGTAC ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART CECECARTT GARAAAGAGA ATTACTACETTn_46TRACTCEGTAC ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART CECECAATT GARAAAGAGA ATTACTACETTn_50TRACTCEGTAC ARCEGATTAG CARTCEGACG CITTAGTECA CICAGECART CECECCARTT GARAAAGAGA ATTACTACETTn_51 </th <th>In_31 T_32</th> <th>TAACTCGTAC</th> <th>AACGGATTAG</th> <th>CAATCCGACG</th> <th>CTTTAGCCCA</th> <th>CTCAGCCATC</th> <th>TCTCCCAATT</th> <th>GAAAAAGAGA</th> <th>ATTACTACCT</th> | In_31 T_32 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| In_33TRACTOGIAC ARCOGATIAG CARTCORACE CTITAGECCA CTCAGCCATE FECCECCART GARAAAGAGA ATTACTACETTn_34TRACTOGIAC ARCOGATIAG CARTCORACE CTITAGECCA CTCAGCCATE TCECCCART GARAAAGAGA ATTACTACETTn_35TRACTCOTAC ARCOGATIAG CARTCORACE CTITAGECCA CTCAGCCATE TCECCCART GARAAAGAGA ATTACTACETTn_36ARACACCTCA ARCOGATIAG CARTCOGACE CTITAGECCA CTCAGCCATE TCECCCART GARAAAGAGA ATTACTACETTn_37ARACTCOTAC ARCOGATTAG CARTCOGACE CTITAGECCA CTCAGCCATE TCECCCART GARAAAGAGA ATTACTACCTTn_38TRACTCOTAC ARCOGATTAG CARTCOGACE CTITAGECCA CTCAGCCATE TCECCCART GARAAAGAGA ATTACTACCTTn_39TRACTCOTAC ARCOGATTAG CARTCOGACE CTITAGECCA CTCAGCCATE TCECCCART GARAAAGAGA ATTACTACCTTn_40TRACTCOTAC ARCOGATTAG CARTCOGACE CTITAGECCA CTCAGCCATE TCECCCART GARAAAGAGA ATTACTACCTTn_41TRACTCOTAC ARCOGATTAG CARTCOGACE CTITAGECCA CTCAGCCATE TCECCCART GARAAAGAGA ATTACTACCTTn_42TRACTCOTAC ARCOGATTAG CARTCOGACE CTITAGECCA CTCAGCCATE TCECCCART GARAAAGAGA ATTACTACCTTn_43TRACTCOTAC ARCOGATTAG CARTCOGACE CTITAGECCA CTCAGCCARE TCECCCART GARAAAGAGA ATTACTACCTTn_44TRACTCOTAC ARCOGATTAG CARTCOGACE CTITAGECCA CTCAGCCARE TCECCCART GARAAAGAGA ATTACTACCTTn_45TRACTCOTAC ARCOGATTAG CARTCOGACE CTITAGECCA CTCAGCCARE TCECCCART GARAAAGAGA ATTACTACCTTn_46TRACTCOTAC ARCOGATTAG CARTCOGACE CTITAGECCA CTCAGCCARE TCECCCART GARAAAGAGA ATTACTACCTTn_47TRACTCOTAC ARCOGATTAG CARTCOGACE CTTAGECCA CTCAGCCARE TCECCCART GARAAAGAGA ATTACTACCTTn_48TRACTCOTAC ARCOGATTAG CARTCOGACE CTTAGECCA CTCAGCCARE TCECCCART GARAAAGAGA ATTACTACCTTn_50TRACTCOTAC ARCOGATTAG CARTCOGACE CTTAGECCA CTCAGCCARE TCECCCART GARAAAGAGA ATTACTACCTTn_51TRACTCOTAC A | 1n_32 T_ 32 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| In_34TARCTORIAC ARCOGNTING CARTCORACE CTITAGECCA CTCARCCART FUNCTIONAL GARARAGAGA HIRCTRCTTn_35TRACTORIAC ARCOGNTING CARTCORACE CTITAGECCA CTCARCCART GARARAGAGA HIRCTRCTTn_36ARACACCTCA ARCOGNTING CARTCORACE CTITAGECCA CTCARCCART GARARAGAGA ATTACTACCTTn_37ARACTORIAC ARCOGNTING CARTCORACE CTITAGECCA CTCARCCART GARARAGAGA ATTACTACCTTn_38TARCTORIAC ARCOGNTING CARTCORACE CTITAGECCA CTCARCCART CTCCCCART GARARAGAGA ATTACTACCTTn_39TRACTORIAC ARCOGNTING CARTCORACE CTITAGECCA CTCARCCART CTCCCCART GARARAGAGA ATTACTACCTTn_40TRACTORIAC ARCOGNTING CARTCORACE CTITAGECCA CTCARCCART CTCCCCCART GARARAGAGA ATTACTACCTTn_41TRACTORIAC ARCOGNTING CARTCORACE CTITAGECCA CTCARCCART CTCCCCCART GARARAGAGA ATTACTACCTTn_42TRACTORIAC ARCOGNTING CARTCORACE CTITAGECCA CTCARCCART CTCCCCART GARARAGAGA ATTACTACCTTn_43TRACTORIAC ARCOGNTING CARTCORACE CTITAGECCA CTCARGCCART CTCTCCCART GARARAGAGA ATTACTACCTTn_44TRACTORIAC ARCOGNTING CARTCORACE CTITAGECCA CTCARGCCART CTCTCCCART GARARAGAGA ATTACTACCTTn_45TRACTORIAC ARCOGNTING CAATCCORACE CTITAGECCA CTCARGCCART CTCTCCCART GARARAGAGA ATTACTACCTTn_46TAACTCORIAC ARCOGNTING CAATCCORACE CTITAGECCA CTCARGCCART CTCTCCCART GARARAGAGA ATTACTACCTTn_47TRACTORIAC ARCOGNTING CAATCCORACE CTITAGECCA CTCARGCCART CTCTCCCART GARARAGAGA ATTACTACCTTn_49TRACTORIAC ARCOGNTING CAATCCORACE CTITAGECCA CTCARGCCART CTCTCCCART GARARAGAGA ATTACTACCTTn_50TRACTORIAC ARCOGNTING CAATCCORACE CTITAGECCA CTCARGCCART CTCTCCCART GARARAGAGA ATTACTACCTTn_51TRACTORIAC ARCOGNTING CAATCCORACE CTITAGECCA CTCARGCCART CTCTCCCART GARARAGAGA ATTACTACCTTn_52TRACTORIAC ARCOGNT | 11_33 Tn 24 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCCCCCAATT | GAAAAAGAGA | ATTACTACCT |
| In_35TAACICGIAC AACGGATIAG CAATCCGACG CITTAGUCCA CUCAGCCALC INCCCAATT GAAAAAGAAA AAGACAIn_36AAACACCTCA AACGGATAG CAATCCGACG CUTTAGUCCA CUCAGCCACC CCCCCCACT AAAAAAGAAA AAGACCCCCTIn_37AAACTCGTAC AACGGATTAG CAATCCGACG CUTTAGUCCA CUCAGCCATC TCUCCCAATT GAAAAAGAAA ATACTACCTIn_38TAACTCGTAC AACGGATTAG CAATCCGACG CUTTAGUCCA CUCAGCCATC TCUCCCAATT GAAAAAGAAA ATACTACCTIn_40TAACTCGTAC AACGGATTAG CAATCCGACG CUTTAGUCCA CUCAGCCATC TCUCCCAATT GAAAAAGAGA ATTACTACCTIn_41TAACTCGTAC AACGGATTAG CAATCCGACG CUTTAGUCCA CUCAGCCATC TCUCCCAATT GAAAAAGAGA ATTACTACCTIn_42TAACTCGTAC AACGGATTAG CAATCCGACG CUTTAGUCCA CUCAGCCATC TCUCCCAATT GAAAAAGAGA ATTACTACCTIn_43TAACTCGTAC AACGGATTAG CAATCCGACG CUTTAGUCCA CUCAGCCATC TCUCCCAATT GAAAAAGAGA ATTACTACCTIn_44TAACTCGTAC AACGGATTAG CAATCCGACG CUTTAGUCCA CUCAGCCATC TCUCCCAATT GAAAAAGAGA ATTACTACCTIn_45TAACTCGTAC AACGGATTAG CAATCCGACG CUTTAGUCCA CUCAGCCATC TCUCCCAATT GAAAAAGAGA ATTACTACCTIn_46TAACTCGTAC AACGGATTAG CAATCCGACG CUTTAGUCCA CUCAGCCATC TCUCCCAATT GAAAAAGAGA ATTACTACCTIn_47TAACTCGTAC AACGGATTAG CAATCCGACG CUTTAGUCCA CUCAGCCATC TCUCCCAATT GAAAAAGAAA ATTACTACCTIn_48TAACTCGTAC AACGGATTAG CAATCCGACG CUTTAGUCCA CUCAGCCATC TCUCCCAATT GAAAAAGAAA ATTACTACCTIn_50TAACTCGTAC AACGGATTAG CAATCCGACG CUTTAGUCCA CUCAGCCATC TCUCCCAATT GAAAAAGAAA ATTACTACCTIn_52TAACTCGTAC AACGGATTAG CAATCCGACG CUTTAGUCCA CUCAGCCATC TCUCCCAATT GAAAAAGAGA ATTACTACCTIn_53TAACTCGTAC AACGGATTAG CAATCCGACG CUTTAGUCCA CUCAGCCATC TCUCCCAATT GAAAAAGAGA ATTACTACCTIn_55TAACTCGTAC AACGGATTAG CAATCCGACG CUTTAGUCCA CUCAGCCATC TCUCCCAATT GAAAAAGAGA ATTACTACCCT | Tn 25 | TAACICGIAC | AACGGAIIAG | CAAICCGACG | CITIAGCCCA | CICAGCCAIC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| In_30AAACACCTAR ARGARAGA ARACCCOCC CETTAGECEE CECECECEE CECECECE CECECATT GAAAAGGA ATACACCECTIn_37AAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGGA ATTACTACCTIn_39TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGGA ATTACTACCTIn_40TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGGA ATTACTACCTIn_41TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGGA ATTACTACCTIn_42TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGGA ATTACTACCTIn_43TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTIn_44TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTIn_45TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTIn_46TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTIn_47TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTIn_48TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTIn_49TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTIn_50TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGGA ATTACTACCTIn_52TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGGA ATTACTACCTIn_53TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGGA ATTACTACCTIn_55TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGECCA CTCAGCCATC TCTCCCAATT GAAAAGGA ATTACTACCTTn_55TAACTCGTAC AACGGA | Tn 26 | TAACICGIAC | AACGGATTAG | AATCCGACG | CITIAGICCA | CICAGCCAIC | CCCCCAATT | GAAAAAAAAA | ATTACTACCT |
| Th_37AARCTOGTAC ARCGATTAG CARTCGACG CTTTAGTCCA CTCAGCCART CTCCCCAATT GAAAAGAGA ATTACTACCTTn_38TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCART CTCCCCCAATT GAAAAGAGA ATTACTACCTTn_40TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCART CTCCCCCAATT GAAAAGAGA ATTACTACCTTn_41TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCART CTCCCCCAATT GAAAAGAGA ATTACTACCTTn_42TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCART CTCCCCAATT GAAAAGAGA ATTACTACCTTn_43TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCART CTCCCCAATT GAAAAGAGA ATTACTACCTTn_44TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCART CTCCCCAATT GAAAAGAGA ATTACTACCTTn_45TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCART CTCCCCCAATT GAAAAGAGA ATTACTACCTTn_46TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCART CTCCCCAATT GAAAAGAGA ATTACTACCTTn_47TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCART CTCCCCCAATT GAAAAGAGA ATTACTACCTTn_48TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCART CTCCCCAATT GAAAAAGAGA ATTACTACCTTn_50TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCART CTCTCCCAATT GAAAAAGAGA ATTACTACCTTn_51TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCART CTCTCCCAATT GAAAAAGAGA ATTACTACCTTn_52TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCART CTCTCCCAATT GAAAAAGAGA ATTACTACCTTn_53TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCART CTCTCCCAATT GAAAAAGAGA ATTACTACCTTn_55TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCART CTCTCCCAATT GAAAAAGAGA ATTACTACCTTn_55TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCART CTCTCCCAATT GAAAAAGAGA ATTACTACCT | Tn_30 | AAACACCICA | AACGAAGAAG | AAACCCCCCG | CUTTIGCCCC | CCCGCCCCCC | TOTOCCAUCI | AAAAAAGAAA | AAGACCCCCCI |
| The_50TARCTOTIAC MACGATTAG CARTCORACT CTTAGTCCA CTCARCCATC TOTOCOMAIT GAMARAGAM ATTACTACCTTn_39TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TOTOCCCAATT GAMAAAGAGA ATTACTACCTTn_40TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TOTOCCCAATT GAMAAAGAGA ATTACTACCTTn_41TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TOTOCCCAATT GAMAAAGAGA ATTACTACCTTn_42TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TOTOCCAATT GAMAAAGAGA ATTACTACCTTn_43TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TOTOCCAATT GAMAAAGAGA ATTACTACCTTn_44TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TOTOCCAATT GAMAAAGAGA ATTACTACCTTn_45TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TOTOCCAATT GAMAAAGAGA ATTACTACCTTn_46TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TOTOCCAATT GAMAAAGAGA ATTACTACCTTn_47TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TOTOCCAATT GAAAAAGAAA ATTACTACCTTn_50TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TOTOCCAATT GAAAAAGAGA ATTACTACCTTn_51TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TOTOCCAATT GAAAAAGAGA ATTACTACCTTn_52TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TOTOCCAATT GAAAAAGAGA ATTACTACCTTn_53TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TOTOCCAATT GAAAAAGAGA ATTACTACCCTTn_54TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TOTOCCAATT GAAAAAGAGA ATTACTACCCTTn_55TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TOTOCCAATT GAAAAAGAGA ATTACTACCCT | Tn 38 | TAACICGIAC | AACGGATIAG | CANTCCGACG | CITIAGICCA | CICAGCCAIC | TCTCCCAATT | CAAAAAGAGA | ATTACTACCT |
| Th_57TARCTOSTRO ARCSORTARS CARTCORACS CTTARSTOCA CTORSTORE TOTOCORATT GARARAGAR ATTACTACCTTn_40TAACTOGTAC AACGGATTAG CAATCOGACG CTTAGTCCA CTCAGCCATC TCTCCCAATT GARARAGAGA ATTACTACCTTn_41TAACTOGTAC AACGGATTAG CAATCOGACG CTTAGTCCA CTCAGCCATC TCTCCCAATT GARARAGAGA ATTACTACCTTn_42TAACTOGTAC AACGGATTAG CAATCOGACG CTTAGTCCA CTCAGCCATC TCTCCCAATT GARARAGAGA ATTACTACCTTn_43TAACTOGTAC AACGGATTAG CAATCOGACG CTTAGTCCA CTCAGCCATC TCTCCCAATT GARARAGAGA ATTACTACCTTn_44TAACTOGTAC AACGGATTAG CAATCOGACG CTTAGTCCA CTCAGCCATC TCTCCCAATT GARARAGAGA ATTACTACCTTn_45TAACTOGTAC AACGGATTAG CAATCOGACG CTTAGTCCA CTCAGCCATC TCTCCCAATT GARARAGAGA ATTACTACCTTn_46TAACTOGTAC AACGGATTAG CAATCOGACG CTTAGTCCA CTCAGCCATC TCTCCCAATT GARARAGAGA ATTACTACCTTn_47TAACTOGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GARAAAGAGA ATTACTACCTTn_50TAACTOGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GARAAGAGA ATTACTACCTTn_51TAACTOGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GARAAGAGA ATTACTACCTTn_52TAACTOGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GARAAGAGA ATTACTACCTTn_54TAACTOGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCT | Tn 30 | TAACICGIAC | AACGGATTAG | CANTCCGACG | CTITAGICCA | CTCAGCCATC | TCCCCCAATT | CANAAAAGAAA | ATTACTACCT |
| Th_40TRACTOSTAC ARCOGATTAS CARTOCORCO CITRAGICOL CICAGOCATC TOTOCOLATT GAAAAAGAGA ATTACTACCTTn_41TAACTOGTAC AACGGATTAG CAATCOGACG CITTAGTOCA CICAGOCATC TOTOCOLATT GAAAAAGAGA ATTACTACCTTn_42TAACTOGTAC AACGGATTAG CAATCOGACG CITTAGTOCA CICAGOCATC TOTOCOLATT GAAAAAGAGA ATTACTACCTTn_43TAACTOGTAC AACGGATTAG CAATCOGACG CITTAGTOCA CICAGOCATC TOTOCOLATT GAAAAAGAGA ATTACTACCTTn_44TAACTOGTAC AACGGATTAG CAATCOGACG CITTAGTOCA CICAGOCATC TOTOCOLATT GAAAAAGAGA ATTACTACCTTn_45TAACTOGTAC AACGGATTAG CAATCOGACG CITTAGTOCA CICAGOCATC TOTOCOLATT GAAAAAGAGA ATTACTACCTTn_46TAACTOGTAC AACGGATTAG CAATCOGACG CITTAGTOCA CICAGOCATC TOTOCOLATT GAAAAAGAGA ATTACTACCTTn_47TAACTOGTAC AACGGATTAG CAATCOGACG CITTAGTOCA CICAGOCATC TOTOCOLATT GAAAAAGAGA ATTACTACCTTn_48TAACTOGTAC AACGGATTAG CAATCOGACG CITTAGTOCA CICAGOCATC TOTOCOLATT GAAAAAGAGA ATTACTACCTTn_50TAACTOGTAC AACGGATTAG CAATCOGACG CITTAGCCCA CICAGOCATC TOTOCOLATT GAAAAAGAGA ATTACTACCTTn_52TAACTOGTAC AACGGATTAG CAATCOGACG CITTAGTOCA CICAGOCATC TOTOCOLATT GAAAAAGAGA ATTACTACCTTn_53TAACTOGTAC AACGGATTAG CAATCOGACG CITTAGTOCA CICAGOCATC TOTOCOLATT GAAAAAGAGA ATTACTACCTTn_55TAACTOGTAC AACGGATTAG CAATCOGACG CITTAGTOCA CICAGOCATC TOTOCOLATT GAAAAAGAGA ATTACTACCT | Tn_40 | TAACTCGTAC | AACGGATTAG | CANTCOGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| In_41Indicidite Arconitation characterized contracterized circadecate foreconant gaaaaagaga attactacetIn_42TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTIn_43TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTIn_44TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTIn_45TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTIn_46TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTIn_47TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTIn_48TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTIn_50TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTIn_51TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTIn_52TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTIn_53TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAGAGA ATTACTACCTIn_54TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCT | Tn_40 | TAACTCGTAC | AACGGATTAG | CANTCCOACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | CANANAGAGA | ATTACTACCT |
| Tn_43TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_44TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_45TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_46TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_47TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_48TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAAAAA ATTACTACCTTn_50TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_51TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_52TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_53TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_54TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCT | Tn 42 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_44TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_45TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_46TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_47TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_48TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_50TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_51TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_52TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_53TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_54TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_55TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCT | Tn 43 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_45TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_46TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_47TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_48TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_49TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_50TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_51TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_52TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_53TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_54TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_55TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCT | Tn 44 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_46TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_47TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAAA ATTACTACCTTn_48TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_49TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_50TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_51TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_52TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_53TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_54TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_55TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCT | Tn 45 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_47TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAAA ATTACTACCTTn_48TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAAAAA ATTACTACCTTn_49TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_50TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_51TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_52TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_53TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_54TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_55TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCT | Tn 46 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_48TAACTCGTAC AACGGATTAG CAATCCAACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAAAAA ATTACTACCTTn_49TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_50TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_51TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_52TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_53TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_54TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_55TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCT | Tn 47 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAAA | ATTACTACCT |
| Tn_49TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_50TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_51TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_52TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_53TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_54TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_55TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCT | Tn 48 | TAACTCGTAC | AACGGATTAG | CAATCCAACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAAAAA | ATTACTACCT |
| Tn_50TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_51TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_52TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_53TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_54TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_55TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCT | Tn 49 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_51TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGCCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_52TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_53TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_54TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_55TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCT | Tn 50 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_52TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_53TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_54TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_55TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCT | Tn_51 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_53TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_54TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCTTn_55TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAGA ATTACTACCT | Tn_52 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_54TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCAATT GAAAAAGAGA ATTACTACCTTn_55TAACTCGTAC AACGGATTAG CAATCCGACG CTTTAGTCCA CTCAGCCATC TCTCCCCAATT GAAAAAGAAA ATTACTACCT | Tn_53 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_55 таастостас аассдаттас саатсодаес стттастсса стелессате тетессаатт саалаадала аттастаест | Tn_54 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| | Tn_55 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAAA | ATTACTACCT |

| Tn_56 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
|-----------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Tn_57 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_58 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_59 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_60 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_61 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAAAA | ATTACTACCT |
| Tn_62 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_63 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_64 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_65 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_66 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_67 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_68 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_69 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_70 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_71 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_72 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_73 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_74 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_75 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_76 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_77 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_78 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_79 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_80 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_81 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_82 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_83 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_84 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAAAAA | ATTACTACCT |
| Tn_85 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_86 | TAACTCGTAC | AACGGATTAG | CAATCCAACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAAAA | ATTACTACCT |
| Tn_87 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_88 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACAACCT |
| Tn_89 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_90 | TAACTCGTAC | AACGGATTAC | CAACCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAAAA | ATTACTACCT |
| Tn_91 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_92 | AAACTCGTAC | AACGGATTAG | CAATCCAACC | CTTTATCCCA | CTCACCCATC | TCTCCCAATT | GAAAAAAAA | ATTACTCCCT |
| Tn_93 | TAACTCGTAC | AACGGATTAG | CAATCCAACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAAAAA | ATTACTACCT |
| Tn_94 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_95 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| In_96 | AAACTCGTAC | AACGGATTAG | CAACCCAACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAAAAA | ATTACTACCT |
| Tn_97 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_98 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_99 T- 100 | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| NARC_Carolea | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| NARC_Domat | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CTTTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| NARC_Gemik | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CITTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| NARC_Leccino | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CITTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| The Ash | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CITTAGICCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Th Arbosana | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CITTAGCCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_Cnetoui | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CITTAGTUCA | CTCAGCCATC | TOTOCCAATT | GAAAAAGAGA | ATTACTACCT |
| Tn_Coratina | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CITTAGCCCA | CTCAGCCATC | TOTOCCAATT | GAAAAAGAGA | ATTACTACCT |
| Th Koroneiki | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CITTAGCCCA | CTCAGCCATC | TOTOCCAATT | GAAAAAGAGA | ATTACTACCT |
| 1 n_r rantoio | TAACTCGTAC | AACGGATTAG | CAATCCGACG | CITTAGTCCA | CTCAGCCATC | TCTCCCAATT | GAAAAAGAGA | ATTACTACCT |

| Tn_l | ТАСАТАТААТ | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
|------------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Tn_2 | тасататаат | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_3 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_4 | TACATATAAT | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_5 | TACATATAAT | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_6 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_ 7 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_8 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_9 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_10 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_11 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_12 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_13 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_14 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_15 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_16 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_17 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_18 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_19 | TACATATAAT | GTAAGGGGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | CCTTTTAGAT | TAGATAATTA |
| Tn_20 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_21 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_22 | TACATATAAT | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_23 | TACATATAAT | GTAAGGAGTC | TTTCTTTC-C | TATTCTATAG | AGAT-TACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_24 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_25 | TACATATAAG | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAAAT | ТАААТААТТА |
| Tn_26 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_27 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_28 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_29 | TACATATAAT | GTAAGGAGTC | TTTCTTTCCC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_30 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_31 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_32 | TACATATAAT | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGAT-TACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_33 | TACATATAAT | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_34 | TACATATAAT | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_35 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAAAT | TAGATAATTA |
| Tn_36 | CCCTTAAAAA | AAAGGGAGGC | CCTCTTTCCT | TCCCCTCTCG | AGAGAGAAAA | ACAGAAAATT | TCTTTCATGT | AGAAATATAT |
| Tn_37 | тасататаат | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_38 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_39 | TACATATAAT | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_40 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_41 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| In_42 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_43 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAAAT | TAGATAATTA |
| In_44 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_45 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| 1n_46 | TACATATAAT | GTAAGGAGCC | TTTCTTTC-C | TATTCTATAG | AGAT-TACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| In_4/ | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAAAT | TAGATAATTA |
| In_48 | TACATATAAG | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGAT-TACAA | ATCAGGAATT | TCTTTTAAAT | TAGA-AATTA |
| 1n_49 T= 50 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| 11_50 T_ 51 | TACATATAAT | GTAAGGAGTC | TITCITTCIC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| 111_51 Tn 52 | TACATATAAT | GTAAGGAGCC | TITCITTCIC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| 111_52 Tr. 52 | TACATATAAT | GTAAGGAGTC | TITCITTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| 11_03 Tn 54 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| 111_34 Tn 55 | TACATATAAT | GTAAGGAGTC | TITUTTUTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| 11_55 | TACATATAAT | GTAAGGAGTC | TITCTTTCTC | TATTCTATAG | AGATATACÀA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |

| Tn_56 | ТАСАТАТААТ | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
|---------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Tn_57 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_58 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAAAT | TAGATAATTA |
| Tn_59 | TACATATAAT | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_60 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_61 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAAAT | TAGATAATTA |
| Tn_62 | ТАСАТАТААТ | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_63 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_64 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_65 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_66 | TACATATAAT | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_67 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_68 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_69 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_70 | TACATATAAT | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_71 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_72 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_73 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_74 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_75 | ТАСАТАТААТ | GTAAGGAGTC | TTTCTTTCTC | T-TTCTATAG | AGAT-TACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_76 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_77 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_78 | ТАСАТАТААТ | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_79 | ТАСАТАТААТ | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_80 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_81 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_82 | ТАСАТАТААТ | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_83 | ТАСАТАТААТ | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_84 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_85 | ТАСАТАТААТ | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_86 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_87 | TACATATAAG | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_88 | TACATATAAT | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_89 | TACATATAAT | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGAT-TACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_90 | TACATATAAG | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGA-ATACAA | ATCAGGAATT | TCTTTTAAAT | AAGATAATTA |
| Tn_91 | ТАСАТАТААТ | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_92 | TCCATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAA | AGATATCCAA | ATCAGGAATT | TCTTTTAAAT | ΤΑΑΑΤΑΑΤΤΑ |
| Tn_93 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_94 | TACATATAAT | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_95 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_96 | TACATATAAG | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAAAT | ТАААТААТТА |
| Tn_97 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_98 | TACATATAAT | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_99 | ТАСАТАТААТ | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_100 | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGAT-TACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| NARC_Carolea | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| NARC_Domat | ТАСАТАТААТ | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| NARC_Gemlik | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGAT-TACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| NARC_Leccino | ТАСАТАТААТ | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| NARC_Moraiolo | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn Arbosana | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_Chetoui | ТАСАТАТААТ | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_Coratina | ТАСАТАТААТ | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn Koroneiki | TACATATAAT | GTAAGGAGCC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |
| Tn_Frantoio | TACATATAAT | GTAAGGAGTC | TTTCTTTCTC | TATTCTATAG | AGATATACAA | ATCAGGAATT | TCTTTTAGAT | TAGATAATTA |

| Tn_1 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAGAAAACTT CTTTGGGTTG |
|-----------|---|
| Tn 2 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAGAAAACTT CTTTGGGTTG |
| Tn 3 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAGAAGACTT CTTT |
| Tn 4 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAGAAGACAT CTTT |
| Tn 5 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAGAAGAT-T CTTTG |
| Tn 6 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAGAAGCTTCTTTG |
| Tn 7 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAGAAGCTTCTTTG |
| Tn 8 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AGGAGGCTTCTTT |
| Tn 9 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAGG AAAAAAAAA AAGAAGACTT CTTT |
| Tn 10 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAAAAACTT TTTTGTGTTG |
| Tn 11 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAGAAGACTT CTTT |
| Tn 12 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAGAAGACTT CTTT |
| Tn 13 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAGAAGACAT CTTT |
| Tn 14 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAGAAGACAT CTTT |
| Tn 15 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAGAAGATAT CTTT |
| Tn 16 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAGAAGACTT CTTT |
| Tn 17 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 18 | GATABAGGAB GGGCTCGABC GAGCCTATAB ATABATABAG ABABABABAB ABGAGACAT TTTT |
| Tn 19 | GATAAAGGAG GGGCTCGAAC GAGCCTTTAA ATAAATAAAG AAAAAAAAAA |
| Tn 20 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAGG AAAAAAAAAA |
| Tn 21 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 22 | GATAAAGGAA GEGETEGAAC GAGEETATAA ATAAATAAAG AAAAAAAAA AAGAAGAEAT ETTT |
| Tn 23 | GATAAAGGAA GEGETEGAAC GAGEETATAA ATAAATAAAG AAAAAAAAA AAGAAGAEAT ETTT |
| Tn 24 | GATABAGGAB GGGCTCGABC GAGCCTATAB ATABATABAG ABABABABAB ABGAGACTT CTTT |
| Tn 25 | GATABASCAR COCCICCARC CRECCTATAR ATARATARAS ARAAAAAAA ARAAAAAAA TCTTTGGGTTG |
| Tn_26 | GATABASCAR COCCICCARC CACCUTATAR ATARATARAS ARAAAAAAA A.GAAGA-AT CTTTG |
| Tn_27 | GATAARGGAA GEGETEGAAC GAGEETATAA ATAAATAARG AAAAAAAAA A GAAGA-AT CITIG |
| Tn 28 | GATABAGGAB GEGETICEABE GAGECTATAB ATABATABAG BABABABABA ABABAB-CTT TTTTGGGTTG |
| Tn_20 | CATALAGGAR COCCICCARC CACCCTATAL ATALATARG ANALAMAR ANALAR CIT ITTOCOTIC |
| Tn 30 | GATABASCAR COCCICCARC CRECCTATAR ATARATARAS ARAAAAAAA AAAAAAAACTI CIII |
| Tn 31 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 32 | GATABAGGAA GGGCTCGAAC GAGCCTATAA ATABATABAG ABAABABABA AAGAAGACAT TTTT |
| Tn 33 | GATABAGGAB GGGCTCGABC GAGCCTATAB ATABATABAG BABABABABA BAGAGACAT CTTT |
| Tn 34 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 35 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAAAAAAAATTTTGGGTGG |
| Tn 36 | ANTAGAAGAG GCCCCCCCC CCCCCCCCAC ATAATTAAAA AAAAAAAAA |
| Tn 37 | GATABAGGAA GGGCTCGAAC GAGCCTATAB ATABATABAG ABABABABAB ABABABAT-T CTTTGGGTGG |
| Tn 38 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 39 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 40 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 41 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 42 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 43 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAAAAAACTT TTTTGTGTTG |
| Tn 44 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 45 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 46 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAA AAGAAGACAT CTTT |
| Tn 47 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 48 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAA-TAAAG AAAAAAAAAA AAAAAAAACTT TTTTGGGTA- |
| Tn 49 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG GAAAAAAAAA AAGAAGACAT CTTT |
| Tn 50 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 51 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAGG AAAAAAAAAA |
| Tn 52 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 53 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 54 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| Tn 55 | GATAAAGGAA GGGCTCGAAC GAGCCTATAA ATAAATAAAG AAAAAAAAAA |
| _ | |

| m = = < | | | | | | _ | |
|---------------|------------|------------|------------|------------|------------|------------|------------|
| In_56 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | АААААААААА | AAGAAGACAT | CTTT |
| Tn_57 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | АААААААААА | AAGAAGATAT | CTTT |
| Tn_58 | GATAAAGGAA | GGGCTCAAAC | GAGCCTATAA | ATAAATAAAG | АААААААААА | AAAAAAACTT | CTTTGGGTGG |
| Tn_59 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | АААААААААА | AAGAAGACAT | CTTT |
| Tn_60 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | АААААААААА | AAAAAAACTT | TTTTGTGTTG |
| Tn_61 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | АААААААААА | АААААААС | TCTTGGGGTA |
| Tn_62 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGATTC | TTTG |
| Tn_63 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACAT | CTTT |
| Tn_64 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACTT | CTTT |
| Tn_65 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | АААААААСАТ | CTTTGTGTTG |
| Tn_66 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACAT | CTTT |
| Tn_67 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACAT | CTTT |
| Tn_68 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | ААААААТ-Т | CTTTGTGTGG |
| Tn_69 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACAT | CTTT |
| Tn_70 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AGGAAGACTT | CTT |
| Tn 71 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AGGAAGACTT | CTT |
| Tn 72 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | GAAAAAAAAA | AAGAAGACAT | CTTT |
| Tn 73 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACAT | CTTT |
| Tn 74 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACAT | CTTT |
| Tn 75 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | АТАААТАААG | ААААААААА | AAGAAGACAT | CTTT |
| Tn 76 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACTT | CTTT |
| Tn _77 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGA-AT | CTTTG |
| Tn_78 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAGG | ААААААААА | AGGA-GACAT | CTTT |
| Tn_79 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACAT | CTTT |
| Tn_80 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACAT | CTTT |
| Tn_81 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | АААААААСТТ | CTTTGGGTTG |
| Tn_82 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACAT | CTTT |
| Tn_83 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACAT | CTTT |
| Tn_84 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | атааатааад | ААААААААА | AAGAAAACAT | CTTTGTGTTG |
| Tn_85 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACAT | CTTT |
| Tn_86 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | ААААААСАТ | CTTTGTGTTG |
| Tn_87 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | ААААААСТТ | CTTTGGGTTG |
| Tn_88 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAAAAGACAT | CTTTGTG |
| Tn_89 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAGG | ААААААААА | AGGAAGACTT | TTT |
| Tn_90 | GATAAGGGAG | GGGCTCCAAC | GAGCCTATAA | АТАААТАААА | ААААААААА | ATAAAAATCC | TT |
| Tn_91 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACAT | CTTT |
| Tn_92 | AATAAAGGAA | GGGCTCAAAC | GACCCTATAA | АТАААТАААА | ААААААААА | АААААААСТТ | TTTTGGGTT- |
| Tn_93 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | АААААААСАТ | CTTTGGGTG- |
| Tn_94 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAAAAGATAT | CTTTGTG |
| Tn_95 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAATTAAGG | ААААААААА | AGGA-GACTT | CTTT |
| Tn_96 | AATAAAGGAA | GGGCTCAAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAAAAACTT | CTTTGGGTG- |
| Tn_97 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AGGAAGACTT | CTT |
| Tn_98 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | АААААААТ | CTTTGTGTG- |
| Tn_99 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACAT | CTTT |
| Tn_100 | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACTT | CTTT |
| NARC_Carolea | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAAACTT | CTTG |
| NARC_Domat | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | АААААААСТТ | CTTTGTGTT- |
| NARC_Gemlik | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAA-TAAAG | ААААААААА | AAAAAAACTT | CTTTGGGTA- |
| NARC_Leccino | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | ААААААСАТ | CTTTGTGTT- |
| NARC_Moraiolo | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | АААААААААА | AAAAAAACTT | CTTTGGGTT- |
| Tn Arbosana | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACAT | CTTT |
| Tn_Chetoui | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AGGAAGACTT | CTT |
| Tn_Coratina | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | АААААААААА | AAGAAGACTT | CTTT |
| Tn Koroneiki | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAGG | ААААААААА | AGGAAGACTT | CTT |
| Tn_Frantoio | GATAAAGGAA | GGGCTCGAAC | GAGCCTATAA | ATAAATAAAG | ААААААААА | AAGAAGACTT | CTTT |
| | | | | | | | |

(n)

Figure S2. Alignment of 10 reference and 100 unknown plants marker region sequences.