

Identification and sequence analysis of alkaloid biosynthesis genes in *Papaver* section *Oxytona*

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Abstract: The benzyloquinoline alkaloids (BIA) are secondary metabolites that are produced by many of the *Papaver* species including *Papaver bracteatum*, *Papaver pseudo-orientale*, and *Papaver orientale*, three representative members of the section *Oxytona* Bernh. The sequences and expression levels of the genes positioned on the BIA biosynthesis pathway were previously defined in opium poppy (*Papaver somniferum*), one of the mostly studied species of the same genus. Nevertheless, the majority of predicted BIA-related gene sequences in the section *Oxytona* have not been specified. Here we are presenting new cDNA sequences that belong to the *Oxytona* species. In this study, partial sequences of *norcoclaurine-6-O-methyltransferase* (6OMT), *NADPH-dependent codeinone reductase* (COR), *salutaridinol 7-O-acetyltransferase* (SalAT), and *(S)-tetrahydroprotoberberine cis-N-methyltransferase* (TNMT) in *P. pseudo-orientale*; *3-hydroxy-N-methylcoclaurine 4'-O-methyltransferase* (4OMT) in *P. bracteatum*; and TNMT and 6OMT in *P. orientale* were identified for the first time, and some of the previously sequenced genes were resequenced in the section *Oxytona*. Furthermore, expressions of those genes were also detected by using qRT-PCR in leaves. The findings were used to construct phylogenetic trees demonstrating the evolutionary relationships of BIA-related genes among *Oxytona* species.

Key words: 4OMT, 6OMT, BIA, COR, *Oxytona*, *P. bracteatum*, *P. orientale*, *P. pseudo-orientale*, SalAT, TNMT

1. Introduction

Turkey is considered the gene origin of many plant species, including the species of the genus *Papaver*, due to its geographical position and climatic diversity (Davis et al., 1988; Atalay, 1994; Parmaksız and Özcan, 2011). The genus *Papaver* L. comprises different sections and accessions classified according to their unique properties like distinct morphology and chemical characteristics such as type and amount of secondary metabolites. The section *Oxytona* Bernh, comprising perennial herbs, is one of those groups represented by three different species: *P. bracteatum* (2n = 14), *P. pseudo-orientale* (2n = 42), and *P. orientale* (2n = 28). As to the origin of the hexaploid *P. pseudo-orientale*, Goldblatt (1974) suggested that it may have arisen as an allopolyploid product of the diploid *P. bracteatum* and the tetraploid *P. orientale*. *Oxytona* species are mostly known for their codeine, thebaine, and oripavine content. These groups of chemicals are known as BIAs (Sariyar, 2002). As a medicinal aromatic plant, *P. somniferum* L. is commercially grown because of its secondary metabolites like morphine and codeine, while *P. bracteatum* is grown

as a source of the morphinian alkaloid thebaine, which can be converted to some of the opiate analgesics such as codeine, oxycodone, and oxycodone (Carolan et al., 2002; Gürkök et al., 2013). For this reason, the United Nations suggested replacing the opium poppy with *P. bracteatum* (UN, 1976).

The BIA production pathway (Figures 1–3) from L-tyrosine to (S)-reticuline is common for a large variety of BIA in Papaveraceae species and is appointed at the enzyme level. In addition, the conversion of (S)-reticuline to (R)-reticuline leads to the production of morphinan alkaloids, and this series of reactions is limited to a few species in this genus (Ziegler et al., 2006).

The BIA pathway starts with the condensation of two L-tyrosine derivatives that are catalyzed by the enzyme TYDC (EC 4.1.1.25) to generate (S)-norcoclaurine (Facchini and De Luca, 1994; Lee and Facchini, 2011). Following this step, a series of reactions are catalyzed by several enzymes such as 6OMT (EC 2.1.1.128) (Morishige et al., 2000), CNMT (EC 2.1.1.140) (Choi et al., 2002), and 4OMT (EC 2.1.1.116) (Morishige, 2000). While

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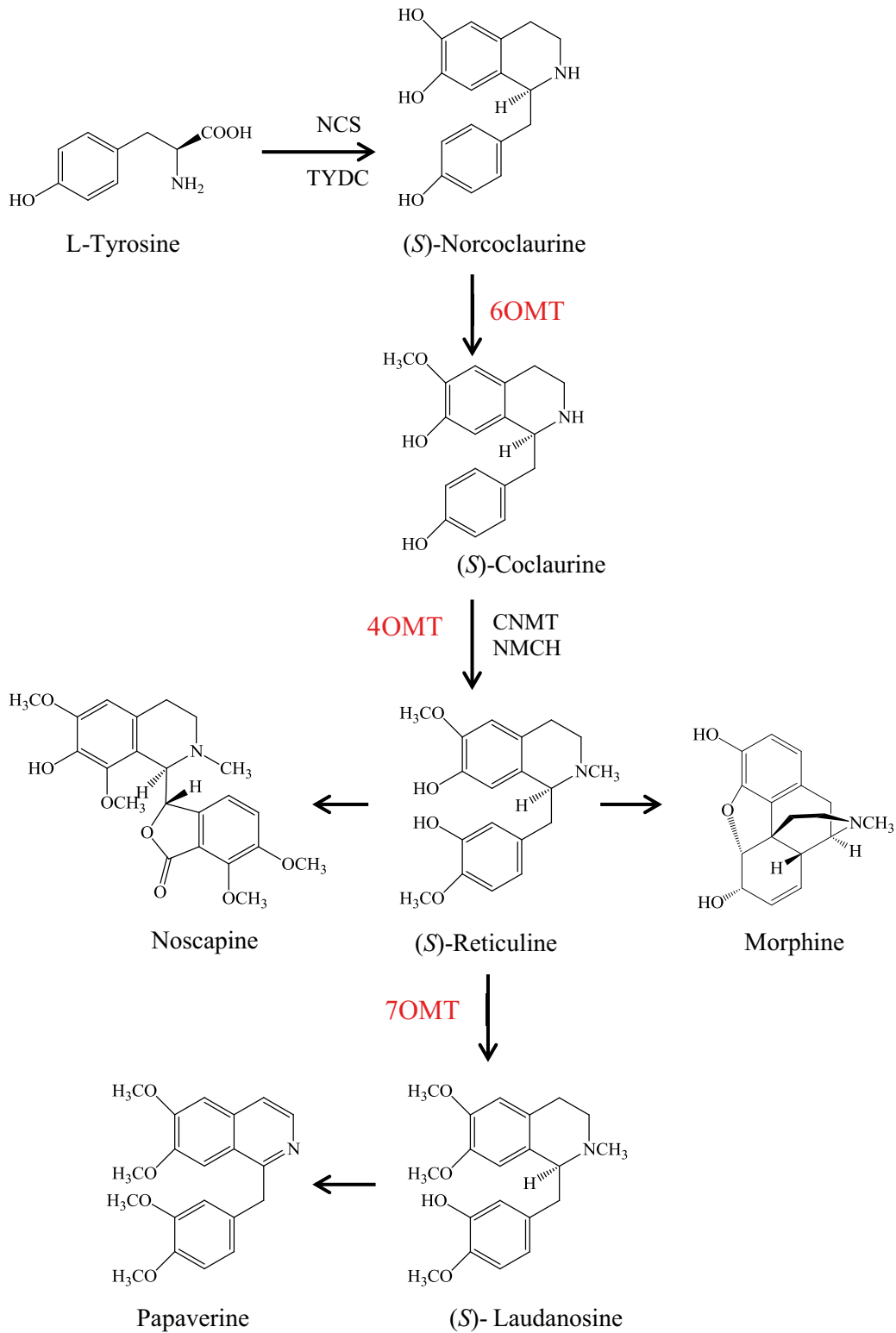


Figure 1. Papaverine biosynthesis in opium poppy is catalyzed by essential enzymes of 4OMT, 6OMT, and 7OMT. While 6OMT catalyzes the methylation reaction of (S)-norcoclaurine to form (S)-coclaurine, 4OMT and 7OMT enzymes catalyze conversion of (S)-norreticuline to (S)-tetrahydropapaverine.

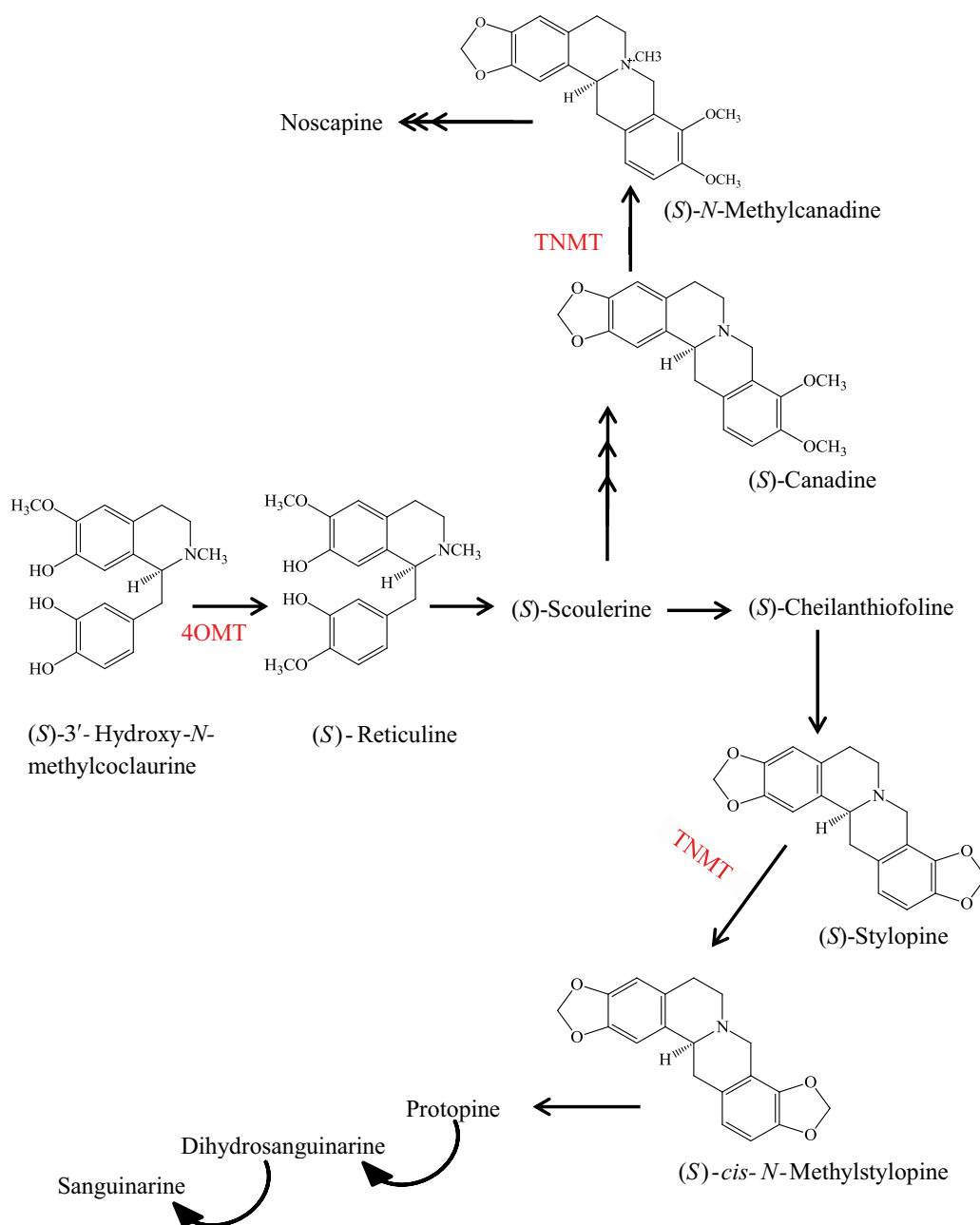


Figure 2. *Papaver somniferum* TNMT enzyme catalyzes the conversion reaction of (S)-canadine to (S)-N-methylcanadine and (S)-stylophine to (S)-cis-N-methylstylophine by adding a methyl group to each precursor metabolite; 4OMT catalyzes methylation of OH group in (S)-3'-hydroxy-N-methylcoclaurine for synthesis of (S)-reticuline, which is a central precursor for production of some cardinal BIA such as codeine, morphine, sanguinarine, and noscapine.

SalAT (EC 2.3.1.150) catalyzes the acetylation of 7(S)-salutaridinol hydroxyl group in the morphinan branch, TNMT (EC 2.1.1.122) converts (S)-stylophine to (S)-cis-N-methylstylophine in the sanguinarine branch (Grothe et al., 2001; Liscombe and Facchini, 2007). Just before the direct production of morphine, COR (EC 1.1.1.247) takes a role by catalyzing a reduction reaction of codeinone to codeine.

In both Papaveraceae and its close relative Ranunculaceae, these particular enzymes are responsible for the alkaloid production pathways for biogenesis of valuable secondary metabolites. Therefore, species of *Eschscholzia californica*, *Coptis japonica*, and *Thalictrum flavum* should be also taken into account while investigating nucleic acid composition among *Oxytona* species.

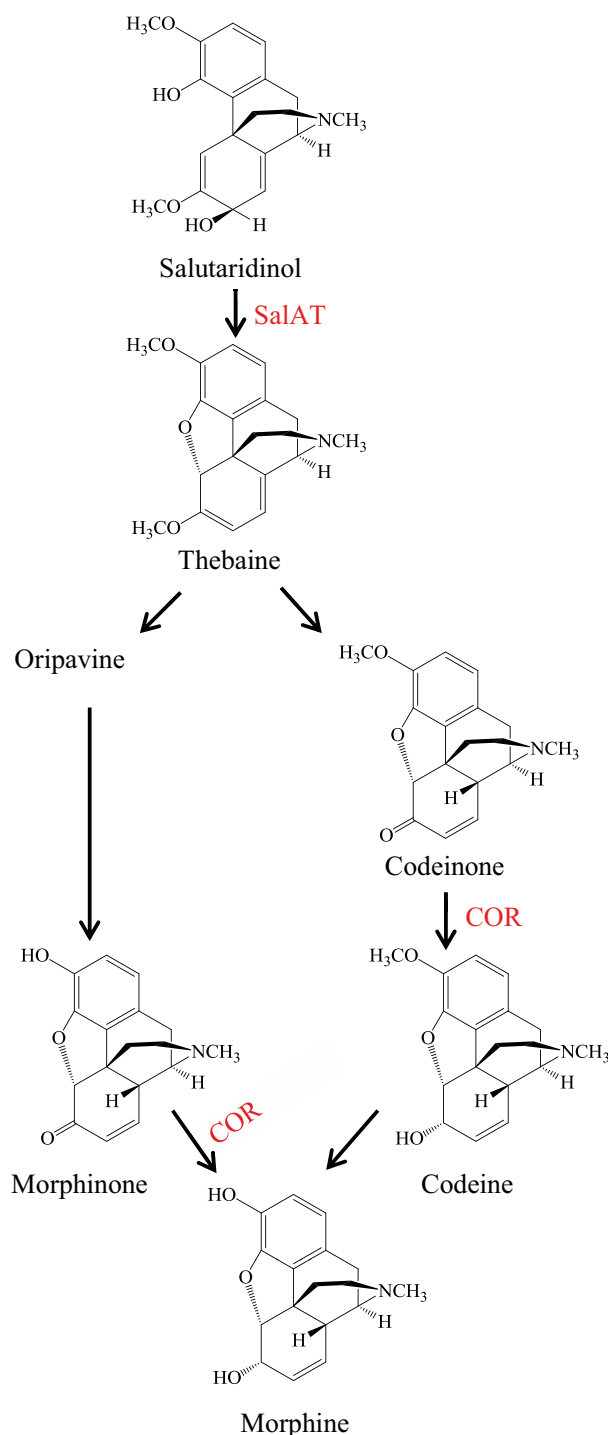


Figure 3. In opium poppy, the conversion of salutaridinol to thebaine is regulated by SalAT (SAT) enzyme, and reduction reactions of codeinone and morphinone to codeine and morphine are catalyzed by COR enzyme, respectively.

BIAs are synthesized in different tissues in different amounts by different organs of the individual plants. Some early studies have shown that BIA production could be changed by manipulating several genes, including 4OMT, 6OMT, (*R,S*)-reticuline 7-*O*-methyltransferase (7OMT), SalAT, COR, and TNMT (Apuya et al., 2008; Desgagné-Penix and Facchini, 2012).

To understand and manipulate the biosynthesis mechanism of those alkaloids, it is important to determine the responsible genes on the specified metabolic pathway and their sequences with robust expression levels. In order to address questions regarding the pathway, we report the 4OMT, 6OMT, SalAT, COR, and TNMT cDNA sequences in *P. bracteatum*, *P. pseudo-orientale*, and *P. orientale*. In addition, expressions of these genes were measured in leaf tissues as preliminary research to determine whether the transcripts of genes were present.

2. Materials and methods

2.1. Plant material

P. bracteatum, *P. pseudo-orientale*, and *P. orientale* seeds were obtained from Toprak Mahsulleri Ofisi (TMO), Ankara, Turkey, and grown in a mixture of one-third perlite, one-third peat, and one-third sterile soil in an environment of 24/20 °C and 16/8 h light/dark at 60% humidity in plant growth cabinets (PolEko).

2.2. Total RNA isolation and cDNA generation

Leaf samples were collected from 4–5-week-old seedlings. Then 100 mg of frozen poppy leaves were ground to a fine powder in liquid nitrogen for RNA isolation using TRIzol reagent (cat. no. 15596-026, Invitrogen, Carlsbad, CA, USA), following the manufacturer's protocol. The RNA quantification was achieved using a NanoDrop 2000c spectrophotometer (Thermo Fisher Scientific, Lenexa, KS, USA), and RNA quality was checked on 1.5% agarose gels. Each purified RNA sample was cleaned with an RNeasy mini kit (Qiagen), as described in the manufacturer's protocol. The cDNAs were generated by reverse transcription of 3 µg of total RNA. cDNA synthesis was carried out using the SuperScript double-stranded cDNA synthesis kit (Invitrogen) by following the manufacturer's protocol. Before the cloning and qRT-PCR analysis, synthesized cDNA samples were normalized by using 18 S rRNA forward and reverse primers (Supplementary Document 1).

2.3. In vitro cloning of the genes

All primers used in this experiment were designed based on the sequence information of the *P. somniferum* genome. All gene segments were amplified by classic PCR with their specific primers (Supplementary Document 1) from the cDNA templates. For touch-down PCR, the thermal-cycler was adjusted for a 5 min 95 °C pre-denaturation, 10 cycles of 1 min at 95 °C, 1 min at 60–50 °C, 30 s at 72 °C

and 30 cycles of 1 min at 94 °C, 1 min at 55 °C, 1 min at 72 °C, and a 5 min final extension at 72 °C. After PCR, the end products were run on the agarose gel, and each positive band was removed separately and purified by QIAquick gel extraction kit (Qiagen), according to the manufacturer's protocol. All purified amplicons were ligated to pGEM-T (Promega) T-A cloning plasmid by using T4 DNA ligase and a buffering system (Thermo Scientific).

Chemically competent *E. coli* DH5alpha cells were prepared using a CaCl₂ buffering system (Ünver, 2008). pGEM-T plasmids containing the cloned genes were transferred to the competent DH5alpha cells by heat-shock transfection method and plated on specific LB-agar medium containing adequate amounts of IPTG, Xgal, and ampicillin for blue/white colony screening. The colonies containing the correct inserts in their plasmids were determined by colony-PCR by using M13 F & R primers.

2.4. Sequence homology analysis

The verified colonies were cultured in Hi-Salt LB-Broth medium (Sigma Aldrich) containing the appropriate amounts of ampicillin at 37 °C for 18 h, and plasmids were isolated by QIAprep Spin MiniPrep kit (Qiagen), as described in the manufacturer's protocol. Plasmids containing the clones were sequenced by a commercial company (RefGen, Ankara, Turkey) by Sanger dideoxy sequencing method.

Sequence homology among the genes encoding enzymes involved in alkaloid biosynthesis was determined by using several software programs including ClustalW2, ClustalX2, fr 33 translator, MEGA 6.0, and BLASTn.

ClustalW2 and ClustalX2 algorithms (Larkin et al., 2007) were used to illustrate the nucleic acid sequence similarity (% identity) between the identified and previously identified nucleic acid sequences in the NCBI database. In addition, ClustalX2 was used to create the FASTA files for alignments. Then the created FASTA files were employed for drawing phylogenetic trees to demonstrate the genetic proximity between the three members of the section *Oxytona* and other known alkaloid-synthesizing plant species such as *T. flavum*, *E. californica*, *C. japonica*, *Papaver rhoeas*, and *Papaver nudicaule*. For each different gene, a neighbor-joining tree comparing the phylogenetic proximity between all sequenced genes and query sequences (including partial CDS, complete CDS, alleles, and clones) was generated by conducting a bootstrap test in MEGA 6.0. (Tamura et al., 2013). To predict the potential amino acid sequences of cDNA clones we used Fr33 translator online software program (<http://www.fr33.net/translator.php>). Amino acid alignments were executed by using the BLASTn online software of NCBI and ClustalW2.

2.5. Quantification of expression levels of genes with qRT-PCR

Total RNA isolated from leaves was used to quantify the expression levels of *4OMT*, *6OMT*, *7OMT*, *SalAT*, *COR*, *TYDC*, and *TNMT* genes. Previously synthesized cDNA samples were used as templates in qRT-PCR, and all primers used for analysis were designed using the sequence information of *P. somniferum* in the NCBI GenBank database by online software Primer3Plus (version 2.3.3) (<http://primer3plus.com>) (Untergasser et al., 2012) (Supplementary Document 1). All cDNAs were amplified with 0.1 µL (100 µM) gene-specific primers and 18 µL of SYBR Green Master Mix in a total reaction volume of 20 µL reaction mixture by using a LightCycler 480II real-time PCR platform (Roche Applied Science, Penzberg, Germany). The thermal-cycler protocol is 5 min at 95 °C, followed by 41 cycles of 10 s at 95 °C, 20 s at 55 °C, 10 s at 72 °C and 1 cycle of 5 s at 95 °C, 20 s at 55 °C, continuous at 97 °C for melting curve, and for cooling, 1 cycle of 30 s at 40 °C. Each reaction was performed in triplicate. The relative expression levels of the genes were calculated by using Livak's method (Livak and Schmittgen, 2001).

3. Results

Varied lengths of cDNA segments were amplified, and some partial nucleic acid sequences were newly uncovered in the section *Oxytona* of the genus *Papaver*. To our knowledge, the genes involved in alkaloid biosynthesis in *P. pseudo-orientale* have not been previously identified from the gene databases. In order to fill the gaps in the literature, the partial sequences belonging to *6OMT* (*Pps6OMT*), *COR* (*PpsCOR*), *SalAT* (*PpsSalAT*), and *TNMT* (*PpsTNMT*) genes were identified for the first time in *P. pseudo-orientale* in different lengths (1030, 646, 1330, and 716 bp, respectively). Furthermore, a 1417 bp partial sequence of *4OMT* gene in *P. bracteatum* (*Pb4OMT*), a 923 bp sequence of *TNMT* (*PoTNMT*), and a 748 bp segment of *6OMT* (*Po6OMT*) gene in *P. orientale* were reported for the first time in the literature (Supplementary Document 2). In addition, some previously identified gene sequences in *Oxytona* species were resequenced, and their sequence information was also supplied. The accession numbers of the sequenced genes were received from the NCBI GenBank as follows: KR260906 (*P. bracteatum 6OMT*), KR260907 (*P. pseudo-orientale 6OMT*), KR260908 (*P. orientale 6OMT*), KR260909 (*P. bracteatum TNMT*), KR260910 (*P. pseudo-orientale TNMT*), KR260911 (*P. bracteatum SalAT*), KR260912 (*P. pseudo-orientale SalAT*), KR260913 (*P. bracteatum COR*), KR260914 (*P. pseudo-orientale COR*), and KR260915 (*P. orientale COR*). The gene sequences 160–1140 bp in *4OMT*, 560–1310 bp in *6OMT*, 490–730 bp; 1230–1400 bp in *COR*, 310–1510 in *SalAT*, and 450–1050 in *TNMT* were relatively conserved

in the list of the species including *Papaver* spp., *C. japonica*, and *T. flavum* in each individual gene ortholog (Supplementary Document 3).

When 4OMT sequences of *Oxytona* species were aligned with *P. somniferum* 4OMT2, 89% of nucleic acid sequences were found to be identical in *P. bracteatum*, whereas *P. orientale* shared about 95% identical sequences. Between the aligned sequences of 4OMT in *P. bracteatum* and *P. orientale*, the similarity was about 91%. For 6OMT, the sequenced gene segments were more than 95% similar to each other in *Oxytona* species and *P. somniferum*. In the alignment of *T. flavum* and *C. japonica* with *Oxytona*, the similarity percentage dropped to 70%–75%. The *P. bracteatum* sequences showed alteration between the previously identified complete CDS sequence of a gene clone (~95.7%) and partial CDS (~77.8%) sequence. We also resequenced another methyltransferase *TNMT* gene in *P. bracteatum*. When we aligned it with the previously sequenced *P. bracteatum* *TNMT* (EU882994.1) there was 100% homology. The general sequence homology of all denoted genes between *P. pseudo-orientale* and other mentioned *Papaver* species was in the range of 78%–85%.

In one other sequenced gene, *SalAT* or *SAT*, the aligned sequences of *P. pseudo-orientale* and *SAT-1* of *P. bracteatum* (FJ200355.1) shared approximately 98% homology. The identity percentage between the *P. somniferum* *SAT* homologs and the sequenced *P. pseudo-orientale* *SAT* gene is about 95%.

In phylogenetic analysis, allele sequences of *P. somniferum* were also taken into account. Surprisingly, one of the *COR* alleles' (cor2-1 allele) complete CDS sequence (AF108438.1) showed less similarity between *Oxytona* species *COR* orthologs and other allele *COR* gene sequences of *P. somniferum*. In *P. bracteatum*, the obtained partial sequence was almost 99% similar to the previously identified full gene sequence that can be acquired from the NCBI database. Additionally, for the sequenced *COR* genes in *P. pseudo-orientale* and *P. orientale*, the

percentage identity was about 90% with the other used query sequences of genus *Papaver*, except the previously-mentioned cor2-1 allele in *P. somniferum*.

The amino acid sequences corresponding to 6OMT, *COR*, *SalAT*, and *TNMT* gene transcripts in *Oxytona* species shared significant sequence identity with those of *P. somniferum* amino acid sequences. Approximately 95% of 6OMT, 90% of *COR*, 90% of *SalAT*, and 95% of *TNMT* were identical (Supplementary Document 4).

In phylogenetic trees, all genes, except the ones that were newly sequenced in this study, were represented by their GenBank accession numbers and species names. For each sequenced gene, a different dendrogram was created. For 4OMT, the sequenced cDNA of *P. bracteatum* is located in the same clade with the 4OMT query sequence of FJ200355.1. Similarly, *P. pseudo-orientale* 4OMT sequence is located close to the same clade (Figure 4). The sequences of 6OMT identified in our study were positioned close to *P. bracteatum* 6OMT (EU882988.1) (Figure 5). In the *TNMT* dendrogram, while the *P. bracteatum* and *P. orientale* newly sequenced cDNAs were localized in a clade close to the query sequence of *P. bracteatum* cDNA (EU882994.1), *P. pseudo-orientale* *TNMT* was located in the same clade with putative N-methyltransferase of *P. bracteatum* (EU882993.1), a CDS of clone sequence that is similar to tetrahydroprotoberberine N-methyltransferases (Liscombe et al., 2009) (Figure 6). *P. bracteatum* and *P. pseudo-orientale* *SalAT* were both located close to the *P. bracteatum* *SalAT* (NCBI accession number: FJ200355.1) (Figure 7). Surprisingly, *P. orientale* *COR* was located at the same clade with two clones of *P. rhoeas* *COR* (Figure 8). As expected, the sequenced *COR* cDNAs of *P. bracteatum* and *P. pseudo-orientale* were located in the same clade with their sequences given in gene databases.

In order to demonstrate the expressions, qRT-PCR assays were performed. The transcripts of 4OMT, 6OMT, 7OMT, *SalAT*, *COR*, *TYDC*, and *TNMT* genes were detected in leaf tissues of all three members of the section *Oxytona* (Figure 9).

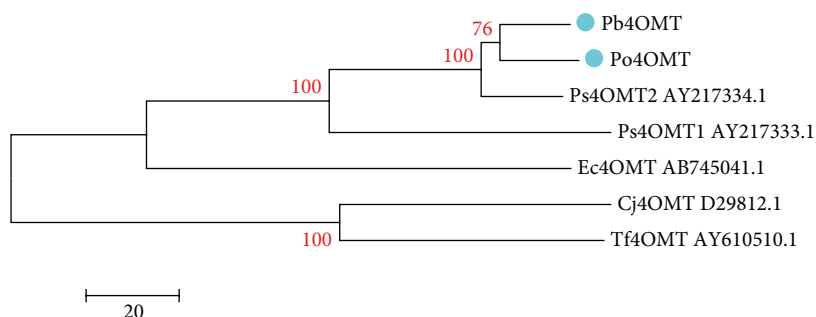


Figure 4. The representative phylogenetic tree for 4OMT genes in members of the genera *Papaveraceae* and *Ranunculaceae* with query sequences obtained from NCBI GenBank (accession numbers: D29812.1, AB745041.1, AY610510.1, AY217334.1, and AY217333.1). The blue dots indicate the gene segments sequenced in this study.

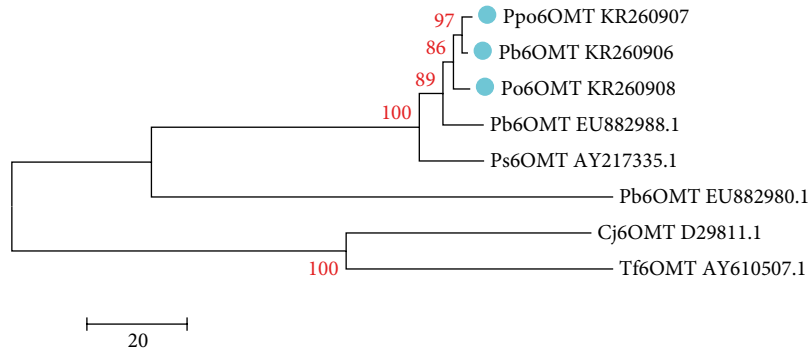


Figure 5. A dendrogram demonstrating the phylogenetic relationship between members of the genera Papaveraceae and Ranunculaceae for 6OMT genes with NCBI GenBank query sequences: D29811.1, AY610507.1, AY217335.1, EU882988.1, and EU882980.1. The blue dots indicate the gene segments sequenced in this study.

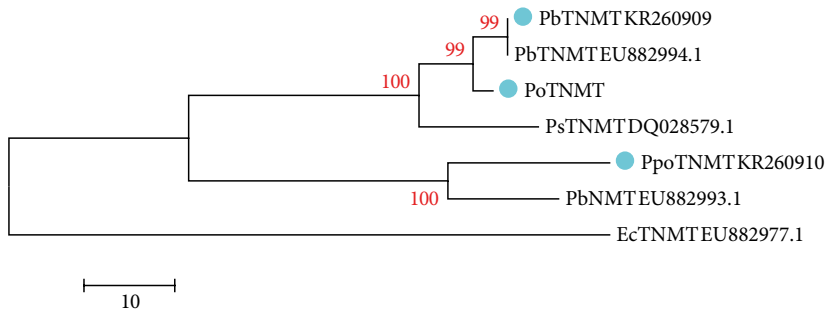


Figure 6. The phylogenetic relationship among TNMT genes was established with knowledge obtained from new cDNA sequences with known query sequences of the genus Papaveraceae: DQ028579.1, EU882994.1, EU882993.1, and EU882977.1. The blue dots indicate the gene segments sequenced in this study.

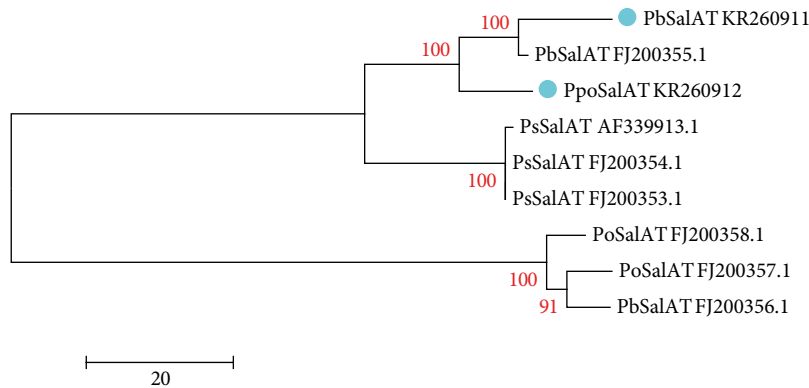


Figure 7. A dendrogram for SalAT (SAT) genes was created by using new cDNA sequences and query sequences (AF339913.1, FJ200354.1, FJ200353.1, FJ200358.1, FJ200357.1, FJ200356.1, and FJ200355.1) from the genus Papaveraceae. The blue dots indicate the gene segments sequenced in this study.

4. Discussion

Opium poppy produces many important alkaloids such as codeine, thebaine, and morphine that have been used for medical purposes for many years, and its great economic importance it has been attracting research in

recent decades. Nevertheless, *P. bracteatum*, from the section *Oxytona*, can also produce pentacyclic morphinan alkaloids like thebaine as an end product, and it can be converted industrially into opiate analgesics in large amounts (Sariyar, 2002; Parmaksız and Özcan, 2011).

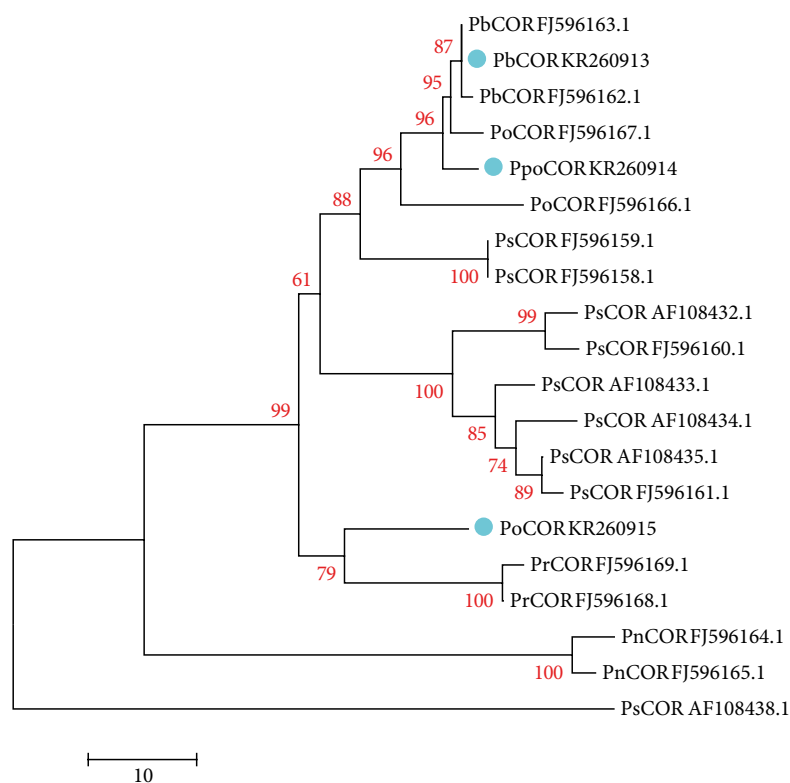


Figure 8. A phylogenetic tree showing phylogenetic relationship of *COR* genes among the genus *Papaveraceae* members. Query sequences from the NCBI GenBank demonstrated by accession number: AF108433.1, AF108434.1, AF108435.1, AF108432.1, FJ596161.1, FJ596160.1, FJ596159.1, FJ596158.1, AF108438.1, FJ596169.1, FJ596168.1, FJ596167.1, FJ596166.1, FJ596164.1, FJ596165.1, FJ596162.1, and FJ596163.1. The blue dots indicate the gene segments sequenced in this study.

Other overlooked members of the section *Oxytona*, *P. pseudo-orientale* and *P. orientale*, can produce a varied spectrum of the valuable BIAs like oripavine, isothebaine, and orientalidine (Shafiee et al., 1975). The major enzymes that catalyze the biosynthesis of those compounds have not been identified in *P. pseudo-orientale*. Here, we report on molecular cloning and characterization of some cDNA sequences encoding *4OMT*, *6OMT*, *SalAT*, *COR*, and *TNMT* genes located on the BIA production pathway, and they were all validated at gene expression level in section *oxytona*.

The cDNA sequences encoding different enzyme groups showed great similarity that cannot be neglected. This is because they are located on the genomes that are evolutionarily close to each other. Ziegler and his colleagues identified different novel benzyloisoquinoline *O*-methyltransferases in *P. somniferum* and compared the amino acid sequences with *E. californica* and some other plant species to establish a logic that helps shed light on the functioning of evolutionary mechanisms (Pienkny et al., 2009). The resequenced nucleic acid sequences showed a substantial identity percentage with previously

sequenced genes of *P. somniferum*, *P. bracteatum*, and *P. orientale* from the literature. The newly identified cDNA sequences belonging to *P. bracteatum*, and especially *P. pseudo-orientale*, expand the list of sequences that have been reported in gene databases.

As previously reported in *P. somniferum*, BIA-related genes are expressed at different levels in companion cells first and then the encoded enzymes are translocated from companion cells to sieve elements, and finally the opium alkaloids are collected at the laticifers of the poppies (Beaudoin and Facchini, 2014). The greatest amount of opium alkaloid is generally collected in the latex of the capsule (Schulz et al., 2004). In light of this information, it is necessary to quantify the expression levels of those genes organ-specifically, especially in the stem and capsule. As a preliminary work, we only inspected whether the genes are expressed in leaves. Even the cloning of the *TYDC* gene could not be accomplished; its transcripts were detected in all three members of *Oxytona*, as reported in another member of the genus *Papaver*, *P. somniferum*, by Facchini and De Luca (Facchini, 1994).

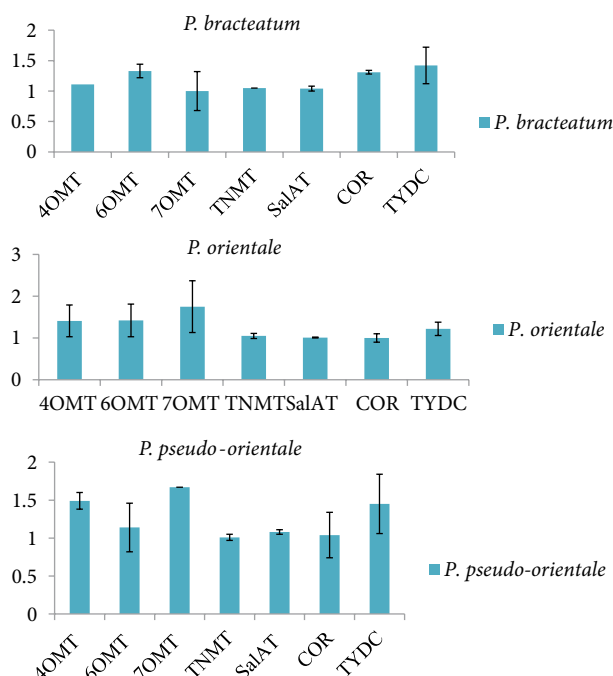


Figure 9. The relative expression levels of 4OMT, 6OMT, 7OMT, SalAT, COR, TYDC, and TNMT gene transcripts were measured by using qRT-PCR in the section *Oxytona* members *P. bracteatum*, *P. pseudo-orientale*, and *P. orientale*. The vertical axis represents the relative expression levels of genes.

In particular, expression of COR in *P. bracteatum* was observed as a result of our study. In addition, the overexpression of COR in *P. somniferum* resulted in increased morphinan alkaloid biosynthesis (Larkin et al., 2007). The gene transcripts of 4OMT, 6OMT, SalAT, COR, TYDC, and TNMT were detected in *P. orientale* and *P. pseudo-orientale*, even though they cannot produce morphine as an end-product. This could be because there is another pathway that directly affects the end products and does not allow further production of morphinan alkaloids as a negative feedback mechanism. Alternatively, Tisserat and Berhow (2009) reported that enzymes with a role in the production of end-products show less enzyme activity in *P. bracteatum*.

Although alignment analysis showed higher similarity for amino acid compositions between *Oxytona* species and *P. somniferum*, it is important to note that sometimes an

alternation of a critical residue in the amino acid sequence can cause different folding of the protein, thus altering the function. By taking into account this fact, further research with a functional genomics perspective is necessary to find the proper functions of these genes in BIA biosynthesis in the section *Oxytona*.

The new knowledge of cDNA sequences from *Oxytona* species can lead to the production of high-level alkaloid producing varieties of *Papaver* species through genetic manipulation such as gene overexpression, silencing, or genome editing and this could be a subject for future investigations.

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References

- Apuya NR, Park JH, Zhang L, Ahyow M, Davidow P, Van Fleet J, Rarang JC, Hippley M, Johnson TW, Yoo HD (2008). Enhancement of alkaloid production in opium and California poppy by transactivation using heterologous regulatory factors. *Plant Biotechnol J* 6: 160–175.
- Atalay I (1994). *Vegetation Geography of Turkey*. İzmir, Turkey: Ege Üniversitesi Basımevi.
- Beaudoin GA, Facchini PJ (2014). Benzylisoquinoline alkaloid biosynthesis in opium poppy. *Planta* 240: 19–32.

- Carolan J, Hook I, Walsh J, Hodkinson T (2002). Using AFLP markers for species differentiation and assessment of genetic variability of in vitro-cultured *Papaver bracteatum* (section *Oxytona*). In *Vitro Cell Dev Biol Plant* 38: 300–307.
- Choi K-B, Morishige T, Shitan N, Yazaki K, Sato F (2002). Molecular cloning and characterization of coclaurinen-methyltransferase from cultured cells of *Coptis japonica*. *J Biol Chem* 277: 830–835.
- Davis PH, Mill R, Tan K (1988). *Flora of Turkey and the East Aegean Islands*. Edinburgh, UK: Edinburgh University Press.
- Desagné-Penix I, Facchini PJ (2012). Systematic silencing of benzyloquinoline alkaloid biosynthetic genes reveals the major route to papaverine in opium poppy. *Plant J* 72: 331–344.
- Facchini PJ, De Luca V (1994). Differential and tissue-specific expression of a gene family for tyrosine/dopa decarboxylase in opium poppy. *J Biol Chem* 269: 26684–26690.
- Goldblatt P (1974). Biosystematic studies in *Papaver* section *Oxytona*. *Ann Missouri Bot Gard* 61: 264–296.
- Grothe T, Lenz R, Kutchan TM (2001). Molecular characterization of the salutaridinol 7-O-acetyltransferase involved in morphine biosynthesis in opium poppy *Papaver somniferum*. *J Biol Chem* 276: 30717–30723.
- Gürkök T, Kaymak E, Boztepe G, Koyuncu M, Parmaksız I (2013). Molecular characterisation of the genus *Papaver* section *Oxytona* using ISSR markers. *Turk J Bot* 37: 644–650.
- Larkin MA, Blackshields G, Brown N, Chenna R, McGettigan PA, McWilliam H, Valentin F, Wallace IM, Wilm A, Lopez R (2007). Clustal W and Clustal X version 2.0. *Bioinformatics* 23: 2947–2948.
- Larkin PJ, Miller JA, Allen RS, Chitty JA, Gerlach WL, Frick S, Kutchan TM, Fist AJ (2007). Increasing morphinan alkaloid production by over-expressing codeinone reductase in transgenic *Papaver somniferum*. *Plant Biotechnol J* 5: 26–37.
- Lee E-J, Facchini PJ (2011). Tyrosine aminotransferase contributes to benzyloquinoline alkaloid biosynthesis in opium poppy. *Plant Physiol* 157: 1067–1078.
- Liscombe DK, Facchini PJ (2007). Molecular cloning and characterization of tetrahydropyprotoberberine cis-N-methyltransferase, an enzyme involved in alkaloid biosynthesis in opium poppy. *J Biol Chem* 282: 14741–14751.
- Liscombe DK, Ziegler J, Schmidt J, Ammer C, Facchini PJ (2009). Targeted metabolite and transcript profiling for elucidating enzyme function: isolation of novel N-methyltransferases from three benzyloquinoline alkaloid-producing species. *Plant J* 60: 729–743.
- Livak KJ, Schmittgen TD (2001). Analysis of relative gene expression data using real-time quantitative PCR and the 2- $\Delta\Delta CT$ method. *Methods* 25: 402–408.
- Morishige T, Tsujita T, Yamada Y, Sato F (2000). Molecular characterization of the S-adenosyl-L-methionine: 3'-hydroxy-N-methylcoclaurine 4'-O-methyltransferase involved in isoquinoline alkaloid biosynthesis in *Coptis japonica*. *J Biol Chem* 275: 23398–23405.
- Parmaksız İ, Özcan S (2011). Morphological, chemical, and molecular analyses of Turkish *Papaver* accessions (Sect. *Oxytona*). *Turk J Bot* 35: 1–16.
- Pienkny S, Brandt W, Schmidt J, Kramell R, Ziegler J (2009). Functional characterization of a novel benzyloquinoline O-methyltransferase suggests its involvement in papaverine biosynthesis in opium poppy (*Papaver somniferum* L.). *Plant J* 60: 56–67.
- Sariyar G (2002). Biodiversity in the alkaloids of Turkish *Papaver* species. *Pure Appl Chem* 74: 557–574.
- Schulz H, Baranska M, Quilitzsch R, Schütze W (2004). Determination of alkaloids in capsules, milk and ethanolic extracts of poppy (*Papaver somniferum* L.) by ATR-FT-IR and FT-Raman spectroscopy. *Analyst* 129: 917–920.
- Shafiee A, Lalezari I, Nasser-Nouri P, Asgharian R (1975). Alkaloids of *Papaver orientale* and *Papaver pseudo-orientale*. *J Pharm Sci* 64: 1570–1572.
- Tamura K, Stecher G, Peterson D, Filipski A, Kumar S (2013). MEGA6: molecular evolutionary genetics analysis version 6.0. *Mol Biol Evol* 30: 2725–2729.
- UN (1976). United Nations Document Scientific Research on *Papaver bracteatum*, Report of the Fourth Working Group, ST/ SOA/SER.J/23.
- Untergasser A, Cutcutache I, Koressaar T, Ye J, Faircloth BC, Remm M, Rozen SG (2012). Primer3—new capabilities and interfaces. *Nucleic Acids Res* 40: e115–e115.
- Ünver T (2008). Detection and characterization of plant genes involved in various biotic and abiotic stress conditions using DDRT-PCR and isolation of interacting proteins. PhD, Middle East Technical University, Ankara, Turkey.
- Ziegler J, Voigtländer S, Schmidt J, Kramell R, Miersch O, Ammer C, Gesell A, Kutchan TM (2006). Comparative transcript and alkaloid profiling in *Papaver* species identifies a short chain dehydrogenase/reductase involved in morphine biosynthesis. *Plant J* 48: 177–192.

Supplementary Document 1

Supplement Tables

Table 1. List of the primers used for cloning of the genes in *Oxytona* section.

Name	Sequence (5'-3')
Pso-4OMT_F	CTGTCTTCTCTTCTTGACAA
Pso-4OMT_R	ACAGACAAATACAATTTTCA
Pso-6OMT_F	ACAGTAAGCAAGATTGATCA
Pso-6OMT_R	GGGTAAGCCTCAATTACAGA
Pso-SalAT_F	ACAATGTATAGTGCTGCTGT
Pso-SalAT_R	CAATTC AAGGATTTCACTT
Pso-COR_F	AGTAATGGTGTACCTATGAT
Pso-COR_R	CTTCTCATCCCAGAACTCT
Pso-TYDC_F	AGTCTTCCAGCTAATAACTT
Pso-TYDC_R	GAGAATTTTCATGAATGGTAG
Pso-CNMT_F	ATGGGTTCAATAGATGAGGT
Pso-CNMT_R	CTACTTCTTCTTGAAAAGCA
M13_F	CCCAGTCACGACGTTGT
M13_R	CAGGAAACAGCTATGAC
18S rRNA_F	TAGCGGGCCTCTTCTCTTTC
18S rRNA_R	CGCATTTTCGCTACGTTCTTC

Table 2. List of the primers specifically designed for qRT-PCR.

Name	Sequence (5'-3')
Pso-4OMT_RT_F	GTAACGGCGGAGTTGAGAAG
Pso-4OMT_RT_R	GCCTAGTATCATCGGCACCA
Pso-6OMT_RT_F	CACGACTGGAGTGACGAAGA
Pso-6OMT_RT_R	TCGCAACACACAATCAACAA
Pso-7OMT_RT_F	TGGAACCGTTCAAGTAACAGAG
Pso-7OMT_RT_R	ATATGCCACGGAGCAAACA
Pso-SalAT_RT_F	CAACAAGGGTTGAGGTGGTT
Pso-SalAT_RT_R	TGGTGCGTCCATTTTCTTTC
Pso-COR_RT_F	TGATCTTGTCCTCCCTGCTC
Pso-COR_RT_R	TCAAGCTTACCGGATGGTGT
Pso-TYDC_RT_F	GCAACCTCCAAGGCTACAAA
Pso-TYDC_RT_R	TGGCACAGAGAAACAATGGA
Pso-CNMT_RT_F	TCAGCAACAATAGACGAAGCA
Pso-CNMT_RT_R	AGACCACCTTGACCACAACC

Supplementary Document 2

>Seq1**KR260906** [organism=Papaver bracteatum] P.bracteatum norcoclaurine 6-O-methyltransferase (6OMT) gene, partial cds

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AGCAAAAATCTGGAACAAATTTACGGCCTTGCAGAATCATTAGTTCTGAAATGTGCAGTTCAATTAGAGATTGCTG
AAACACTTCACAACAATGTCAAACCCATGTCTTTATCCGAATTAGCATCGAACTTCCCGTTGCTCAACCCGTTAAC
GAAGACCGTCTGTTCCGAATCATGCGTTACTTGGTTTACATGGAACCTTCAAGATAGACGCTACCACGCAGAAATA
CTCATTAGCTCCACCAGCTAAGTATTTGTTGAGAGGGTGGGAGAAATCAATGGTTGATTCAATTTTATGCATAAATG
ATAAGGATTTCTTAGCTCCGTGGCATCATTTAGGTGACGGTTTAAACCGGTAAGTGTGACGCTTTTGAGAAAGCGTTG
GGGAAGAGTATTTGGGTTTATATGAGTGAAAATCCTGAAAAGAATCAATTGTTTAAATGCAGCAATGGCTTGTGATAC
TAGATTGGTTACTTCTGCATTGGCTAATGAGTGCAAAAGTATTTTCAGTGACGGAATCAGAACACTGGTGGATGTGCG
GCGGCGGTACCGGTACTGCTGTGAAAACCATATCTAAAGCTTTTCCGGATATTAAGTGCACTATCTATGATCTTCCT
CATGTCATAGCTGATTCTCCTGAAATTCCCAATATTACTAAAATTTCTGGAGATATGTTCAAGTCTATTTCCTAGTGC
TGATGCCATCTTCATGAAGTGCATACTTCACGACTGGAATGATGAGGAATGCATTCAAATCTTGAAGCGATGCAAAG
AAGCATTACCAAAAGATGGCAAAGTTATTATCGTGGATGTCTGTATAGACATGGATTTCGACTCATCCATATGCAAAA
ATTAGACTCACATTGGATTTGGATATGATGCTCAACACTGGTGGAAAAGAGAGAACCAAAGAAGAATGGAAGATACT
TTTTGATGCCGCTGGTTTTGCAAGCCACAAAGTCACTCAGATATCTGCTGTCCAATCTGTAATTGAGGCTACCCAA
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>Seq2**KR260907** [organism=Papaver pseudo-orientale] P.pseudo-orientale norcoclaurine 6-O-methyltransferase (6OMT) gene, partial cds

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AAACAGTAAGCAAGATTGATCAACAAAACCAAGCAAAAATCTGGAACAAATTTACGGTTTTTGCAGAATCACTAGTT
CTGAAATGTGCAGTTCAACTAGAGATTGCTGAAACACTTCACAACAATGTCAAACCCATGTCTTTATCCGAATTAGC
ATCCAAACTTCCGGTTGCTCAACCCGTTAACGAAGACCGTTTTGTTCCGAATTATGCGTTACTTGGTTCACATGGAAC
TCTTCAAGATAGACGCTACCACGCAGAAATACTCATTAGCTCCACCAGCTAAGTATTTGTTGAGAGGGTGGGAGAAA
TCAATGGTTGATTCAATTTTATGCATAAATGATAAGGATTTTTTAGCTCCGTGGCATCATTTAGGTGACGGTTTAAAC
CGGTAAGTGTGACGCTTTTGAGAAAGCGTTGGGGAAGAGTATTTGGGTTTATATGAGTGAAAATCCTGAAAAGAATC
AATTGTTTAAATGCAGCAATGGCTTGTGATACTAGATTGGTTACTTCTGCATTGGCTAATGAGTGCAAAAGTATTTTC
AGTGACGGAATCAGAACACTGGTGGATGTGCGGCGGTGGTACCGGTACTGCTGTGAAAACCATATCTAAAGCTTTTCC
GGATATTAAGTGCACTATCTATGATCTTCCTCATGTCATAGCTGATTCTCCTGAAATTCCCAATATTACTAAAATTT
CTGGAGATATGTTCAAGTCTATTTCCTAGTGCTGATGCCATCTTCATGAAGTGCATACTTCACGACTGGAGTGATGAG
GAATGCATTCAAATCTTGAAGCGATGCAAAGAAGCATTACCAAAAGATGGCAAAGTTATTATCGTGGATGTCTGTAT
AGACATGGATTTCGACTCATCCATATGCAAAAATTAGACTCACATTGGATTTGGATATGATGCTCAACACTGGTGGAA
AAGAGAGAACCAAAGAAGAATGGAAGATACTTTTTGATGCCGCTGGTTTTGCAAGCCACAAAGTCACTCAGATATCT
GCTGTCCAATCTGTAATTGAGGCTTACCC
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>Seq3**KR260908** [organism=Papaver orientale] P.orientale norcoclaurine 6-O-methyltransferase (6OMT) gene, partial cds

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AAATACTCATTAGCTCCACCAGCTAAGTATTTGTTGAGAGGATGGGAGAAATCAATGGTTGATTCAATTTTATGCAT
AAATGATAAGGATTTCTTAGCTCCGTGGCATCATTTAGGTGACGGTTTAAACCGGTAAGTGTGACGCTTTTGAGAAAG
CGTTGGGGAAGAGTATTTGGGTTTATATGAGTGAAAATCCTGAAAAGAATCAATTGTTTAAATGCAGCAATGGCTTGT
GATACTAGATTGGTTACTTCTGCATTGGCTAATGAGTGCAAAAGTATTTTCAGTGACGGAATCAGAACACTGGTGGAA
TGTCGGCGGTGGTACCGGTACTGCTGTGAAAACCATATCTAAAGCTTTTCCGGATATTAAGTGCACTATCTATGATC
TTCCTCATGTCATAGCTGATTCTCCTGAAATTCCCAATATTACTAAAATTTCTGGAGATATGTTCAAGTCTATTTCCT
AGTGCTGATGCCATCTTCATGAAGTGCATACTTCACGACTGGAATGATGAGGAATGCATTCAAATCTTGAAGCGATG
CAAAGAAGCATTACCAAAAGATGGCAAAGTTATTATCGTGGATGTCTGTAATAGACATGGATTTCGACTCATCCATATG
CAAAAATTAGACTCACATTGGATTTGGATATGATGCTCAACACTGGTGGAAAAGAGAGAACCAAAGAAGAATGGAAG
ATACTTTTTGATGCCGCTGGTTTTGCAAGCCACAAAGTCACTCAGAATTCTGCAG
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>Seq4**KR260909** [organism=Papaver bracteatum] P.bracteatum (S)-tetrahydroprotoberberine-cis-N-methyltransferase (TNMT) gene, partial cds
 CGTCTGCAATGGGGTTATAAATCATCTCATCAAGAACAACCTCTCCTTCAACCTTGACTTCATTAAATCCTTAAAAAA
 GATGGAAATGTCAGGAGAGATTGAGACAATGAACAAGGAACTTATGAATTACCCTCAGAATTCTTAGAGGCAGTTT
 TTGGAAAAACAGTCAAGCAAAGTATGTGTTACTTTCAAACATGAATCAGCAACAATAGACGAAGCAGAAGAAGCTGCA
 CATGAATTATACTGTGAACGAGCACAGATCAAAGATGGACAAACTGTTCTCGACATTGGTTGTGGTCAAGGTGGTCT
 AGTTCTATACATTGCTCGGAAATATAAGAAATGTCATGTTACAGGGCTCACTAATTCAAAGGCACAAGTCAATTACT
 TACTCAAGCAAGCAGAGAAGCTTGGGCTGACAAATGTCGACGCCATACTAGCAGATGTCACTCAATATGAATCTGAC
 AAGACATACGATCGACTACTTATGATTGAAGCCATAGAGCACATGAAAACTTACAAGTGTTCATGAAGAACTATC
 AACTTGGATGACAGAAGAAAGTCTTCTCTTTGTGGACCATGTCTGCCATAAAACCTTTGCTCACTTTTTTTGAGGCAG
 TCGACGAGGATGACTGGTACTCAGGTTTCATCTTCCCCCAGGTTGTGCAACCATACTAGCTGCTAATAGTCTCCTC
 TATTTCCAGGATGATGTTTCAGTTGTGGATCATTGGGTTGTCAACGGAATGCACATGGCTCGTTCACTAGACATTTG
 GAGAAAGGCACTAGACAAAAATATGGAAGCTGCAAAGAAATTCTATTACCTGGACTTGAGGAAGCCACGAAGCAG
 TAAA

>Seq5**KR260910** [organism=Papaver pseudo-orientale] P.pseudo-orientale (S)-tetrahydroprotoberberine-cis-N-methyltransferase (TNMT) gene, partial cds
 GCGAGCGAGCACAAATCAAAGATGGACAACTGTTCTTGATATCGGTTGCGGTCAAGGTGGTCTAGTTCTATACGTT
 GCTCAGAAATATAAGAACTGTCATGTTACAGGGCTCACTAATTCAAAGGAACAAGTGAATTATATAATCAAACAAAC
 AGAGAAGCTTGGGCTGAAAAACGTGGACGTCTACTGGCAGATGTTACTCAATACGAATCTGACAAGACATACGATC
 GAATACTTGTAAATTGGAGCTGTAGAGCACATGAAAAACATACAAGTGTATGAAGAACTATCAACCTGGATGACC
 GAAGATAGCTTTCTTTTTGTGGATCATCTCTGCCATAAAACATTTAGTCACTTATTTGAGGCAATCGACGAGGATGA
 CTGGTACTCTGGTTACATCTTTTCCCCGGGTTGTCTTACAGTTCTATCTGCTGATAGTCTCCTCTATTTCCAGGACG
 ATGTTTCCGTTGTGGATCATTGGGTTGTGAACGGGATGCACATGGCTCGTACAATGGATGCGTGGAGAAAGAAGCTA
 GATAAAATATGGAAGCGGTAAAAGAAATTCTATTACCAGGACTTGGTGGGAACCATGAAGCAGTAAATGGCGTCAT
 TACTCACATCAGGACATTGTGTTTGGGAGGGTATGTACAATTCTCATTCAACGATGGAGATGAATGGATGAACGCAC
 AACTGCTTTCAAGAAGAAGTAGA

>Seq6**KR260911** [organism=Papaver bracteatum] P.bracteatum salutaridinol 7-O-acetyltransferase (salAT) gene, partial cds
 AGTTCTCTTTCCCAATGTATAGTTCACTTTTATCCAATGGATGGCAGATTGATAGACTATATCCTGGTCTACTGTCA
 TGACCCAGGGATTGACTTTTACAAAGTAAAAATTAAAGGTAAATGTGTGACTTCATGTGCGCAACCGGATGTGCCTC
 TAAGCCACCTTCTTCCATCTGAAGTTGTTTCCGCGAATGTCCCTAAGGAAGCACTGGTGATCGTTCAAGTGAACATG
 TTTGACTGTGGTGGAAACAGCCATTTGTTTCGAGTATATCACATAAGATTTCCGATGTAGCTACAATGGGTACGTTTCA
 TCGTAGTTGGGCAAGCACCACCAAAACATCTCGTAGCGGGGATGCAACTGCTGCCGTTATCACAGATCAGAAATTGA
 TTCCTTCTTTGACTCGGCATCTCTATTCCACCTAGTGAACGATTGGCATCTCCATCAGGGATGGCAGAGATACCA
 TTTTCCAGTATCCCGGAGGATACAGAAGATGATAAACTGTCAGCAAGAGATTTGTGTTTCGATTTTGCAAAGATAAC
 ATCTGTAAGCGAAAAGCTGCAAGTATTGATGCATGATAACTACAAAAGCCGAGGCCAACAAGGGTTGAGGTGGTTA
 CTTCTCTAATATGGAAGTCCGTGATGAAATCCACTCCAGCCGGTTTTTTACCAGTCGTAGATCATGCCGTGAACCTT
 AGAAAGAAAATGGACCCACCATTACAAGATGCGTCATTTCGAAATCTATCTGTAAGTGTTCGGCGTTCTTACCAGC
 AACAACAACGACAACGACGAATGCGGTCAACAAGACAATCAATAGTACGAGTAGTGAATCGCAAGTGGTACTTCATG
 AGTTACATGATTTTATAGCTCAGCTAAGGAGTGAAATAGATAAGGTCAAGGGTGATAAAGGTAGCTTGAGAAAGTC
 ATTCAAAATTTTGTTCGGTTATGATGCTTCAATAAAGAAAATCAATGATGTTGAAGATAAGGTGATAAACTTTTG
 GATAAGTAGCTGGTGCAGGATGGGATTATACGAGATTGATTTTGGTTGGGGAAAGCCAATTTGGGTTACAATTGATC

CAAATATCAAGCCGAATAAGAATTGTCTTTTCATGAATGATACGAAATGTGGTCAAGGAATAGAAGTTTGGGCGAGC
TTTCTTGAGGATGATATGGCTAAGTTC

>Seq7**KR260912** [organism=Papaver pseudo-orientale] P.pseudo-orientale
salutaridinol 7-O-acetyltransferase (salAT) gene, partial cds

ACCCCATCTCAACTTAAAACTTCAATTTGTCACTTCTCGATCAATGTTTTCTTTATATTATTATGTTCCAATCAT
TCTTTTCTACCCGGACACCGTCGCTAATAGTACCGGTAGCAGTAACCATCATGATGATCTTGACTTGCTTAAGAGTT
CTCTTTCCAAAACACTAGTTCACTTTTATCCAATGGCTGGTAGAATGATAGACAATATCCTGGTCGACTGTCATGAC
CAAGGGATTGAATTTTACAAAGTAAAAATTAGAGGTAAAAATATGTGACTTCATGTCGCAATCGGATGTGCCTCTAAG
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AGTAGCTGGTGCAGGATGGGATTATACGAGATTGATTTTGGTTGGGGAAAGCCAATTTGGGTTACAATTGATCCAAA
TATCAAGCCGAACAAGAATTGTCTTTTCATGAATGATACGAAATGTGGTCAAGGAATAGAAGTTTGGGCGAGCTTTC
TTGAGGATGATATGGCTAAGT

>Seq8**KR260913** [organism=Papaver bracteatum] P.bracteatum NADPH-dependent
codeinone reductase (cor) gene, partial cds

AAACAATGGAAAAAGGAACAGAAAGAGAGAAATTGGCGTTTTTGAAGCGATAGAGGTTCGGTTACAGACATTTTCGAT
ACAGCTGCTGCATACCAAACCTGAAGAGTGTCTTGGTGAAGCTATAGCTGAAGCACTTCAACTTGGTCTAATAAAATC
TCGAGAGGAACCTTTCATCACTTCCAAGCTCTGGTGCATGATGCTCACGCTGATCTTGTCTCCCTGCTCTTCAGA
ATTCTCTGAGGAATCTCAAATTGGAGTATCTTGATCTACATTTGATACACTTTCCGGTAAGCTTGAAGCCAGGGAAG
ATTGTTAGCGATATACCAAAGGATCAAATGCTTCCAATGGACTACAAATCTGTATGGGTAGCCATGGAAGAGTGTCA
GACCTTTGGCTTCACTAGGGCAATCGGTGTGAGTAATTTTTTCATGCAAAAAGCTTCAAGAGTTGATGGCGACAGCCA
ACAGCCCTCCAGTTGTAAATGAAGTGGAGATGAGCCCGGTTTTCCAACAAAAAATTTGAGAGCATATTGCAAGGCC
AATAATATCATGATCACTGCATACTCGGTTTTTGGGAGCCAGAGGAGCCGCATGGGGCAGCAATGCAGTTATGGATTTC
TAAGGTGCTTCACGAGATTGCTGTGGCCAGAGGAAAATCTGTTGCCAGGTTAGTATGAGATGGGTTTACCAGCAAG
GCGCGTGTCTTGTGGTGAAGTTTCAATGAAGAGAGGATGAAGGAAAACCTTAAGATATTGATTGGGAACTATCA
GCAGAAGACATGGAAAAGATCAGAGAAATCCGCAATGTAGAACAAGCTCTGCTGATTTCTTGTTATCACCGACTGG
GCCTTTCAAACCTGAAGAAGAGTTCTGGGATGAGAAG

>Seq9**KR260914** [organism=Papaver pseudo-orientale] P.pseudo-orientaleNADPH-
dependent codeinone reductase (cor) gene, partial cds

AGGAATCTCAAATTGGAGTATCTTGATCTATATTTGATACACTTTCCGGTAAGCTTGAAGCCAGGGAAGATTGTTAG
CGATATACCAAAGGATCAAATGCTTCCAATGGACTACAAATCAGTATGGGCAGCCATGGAAGAGTGTGAGACCTTG
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TTCACGAGATTGCTGTGGCCAGAGGAAAATCTGTTGCCAGGTTAGTATGAGATGGGTTTACCAGCAAGGCGCGTGT

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>Seq10**KR260915** [organism=Papaver orientale] P.orientaleNADPH-dependent codeinone reductase (cor) gene, partial cds

AAAATGGGTACCAGTGATCAGTTTAAAGCTTCGGGCGTTTGGGATGCCTGCTTTAGGTATGGGAACAGCTGAAACCATGGAAAAAGGAACCGACAGAGAGAGATCAGCGTTTTTGAAGCGATTGAGGTCGGTTACAGGCACTTCGATACAGCTGCTGCTTATCAAACCTGAAGAGTGTCTTGGTGAAGCTATAGCTGAAGCACTTCAACTTGGTCTAATTAAATCTCGAGATGAACCTTTCATCACTTCCAAGCTCTGGTGCATGATGCTCACGCTGATCTCGTCTCCTGCTCTTCAGAATTCTCTGAGGAATCTTAAATTGGAGTATCTGGATCTATATTTGATACACTTTCCGGTAAGCTTGAAACCAGGGAAGATTGTTAACGAAATACCAAAGGATCAAATGCTTCCAATGGACTACAAATCTGTGTGGGCAGCCATGGAAGAGTGTGCGACCCTTGGCTTCACTAGGGCAATCGGTGTCAGCAATTTCTCATGCAAAAAGCTTCAAGAGTTGATGGCGACAGCTAATAGCCCTCCAGTGGTAAATGAAGTGGAGATGAGCCCCACTTTACATCAAAAAAATCTGAGAGAATATTGCAAGGCCAATAATATCATGATCATTGCATACTCGGTTTTGGGAGCCAGAGGAACCGGATGGGGCAGCAACGCAGTTATGGATTCTAAGGTGCTTCACCAGATTGCTGTGGCCAGAGGAAAATCTGTTGCTCAGGTTAGCATGAGATGGGTTTACCAGCAAGGTGCGTGCTTTGTGGTAAAAAGTTTCAATGAAGAGAGGAGGAAGG

>P.bracteatum4OMT

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>P.orientale4OMT

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>P.orientaleTNMT

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GAAAAACAGTCAAGCAAAGTATGTGTTACTTCAAACATGAATCAGCAACAATAGACGAAGCAGAAGAAGCTGCACAT
GAATTATACTGTGAACGAGCACAAATCAAAGATGGACAACTGTTCTCGACATTGGTTGTGGTCAAGGTGGTCTAGT
TCTATACATTGCTCAGAAATATAAGAAATGTCATGTTACAGGGCTCACTAATTCAAAGGCACAAGTCAATTACTTAC
TCAAGCAAGCAGAGAAGCTTGGGCTGACAAATGTCGACGCCATACTAGCAGATGTCACTCAATATGAATCTGACAAG
ACATACGATCGACTACTTATGATTGAAGCCATAGAGCACATGAAAACTTACAACCTGTTTCATGAAGAACTATCAAC
TTGGATGACAGAAGAAAGTCTTCTCTTTGTGGACCATATCTGCCATAAAACCTTTGCTCACTTTTTTGGAGGCAGTCG
ACGAGGATGACTGGTACTCAGGTTTCATCTTCCCCCAGGTTGTGCAACCATACTAGCTGCTAATAGTCTCCTCTAT
TTCCAGGATGATGTTTTCAGTTGTGGATCATTGGGTTGTCAATGGAATGCACATGGCTCGTTTCAGTAGACAATTGGAG
AAAGGCACTAGACAAAAATATGGAAGCTGCAAAAGAAATTCTATTACCTGGACTTGGAGGAAGCCACGAAGCAGTGA
ATGGAGTCGTTACACACATTAGAACATTCTGTATGGGAGGCTATGAACAATTCTCAATGAACAATGGAGATGAAGG

Supplementary Document 3

Alignments (4OMT gene)

CLUSTAL 2.1 multiple sequence alignment

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P.bracteatum4OMT      -----AG-----TCTCGTTCTTG----- 13
P.orientale4OMT      -----
AY217334.1P.somniferum4OMT2 -----AAAGCCAAAGCAAAAACTGTCTTCTC-TTCTTGACAATTATAT 43
AY217333.1P.somniferum4OMT1 -----AAACGTAG-----TCTTCTTCTCAATTAAGAAAT 29
AB745041.1E.californica4OMT CGGCAGGAACACACAGAGACCAA-----TCTCTTTCAAG-----CAATT 39
D29812.1C.japonica4OMT -----ACACTTGAAAAGAA-----ACTAGA-----AAAG 23
AY610510.1T.flavum4OMT --TTTGTCACTTACTACAATCA-----TCATCATCATA-----ATAT 35

P.bracteatum4OMT      -----TCGCCTATTGCATGAATAGTTTtagttgcattcccagatgc 53
P.orientale4OMT      -----
AY217334.1P.somniferum4OMT2 ACAGCAAAAATCGCATATCTAATGGGTAGTTTtagatgcaaaaccagctgc 93
AY217333.1P.somniferum4OMT1 ATTCTACAAACATCATATT--ATGGGTAGT--AGTA-----TAGATGC 68
AB745041.1E.californica4OMT ACCCCAACAAACTCAAAAT-CAAGAATGG----GTT-----TAGAATT 77
D29812.1C.japonica4OMT  A-----AATAACGCAA-ATATTACTAAGAGAATTAAGATGGC---TTT 62
AY610510.1T.flavum4OMT  AT----ATAATAACAGAGCATACCTGTATTTACATTACATGGCGGCTTT 81

P.bracteatum4OMT      TG-AGCACATTAAG-----TTACCAACGAATATCAAGATCAATCTATGG 96
P.orientale4OMT      -----TATA- 4
AY217334.1P.somniferum4OMT2 TGCAACACAAGAAG-----TTTCCATCAAAGATCAAGCTCAA-CTATGG 136
AY217333.1P.somniferum4OMT1 TGAAACACATGAAG-----TTGACATCAAAGATCAAGCTCAA-TTATGG 111
AB745041.1E.californica4OMT T--AATG-AAGAAG-----TTGATATCAAAGCTCAAGCTCAT-CTATGG 117
D29812.1C.japonica4OMT  CCATGGGAAAGATGATGTTCTGGACATCAAAGCTCAAGCTCAT-GTGTGG 111
AY610510.1T.flavum4OMT  CCAAGGAAAGGATGCATCTGTTCGATATCAAAGCTCAAGCCCAC-GTATGG 130
                                     * *

P.bracteatum4OMT      AAAATTTTTTATGGTTTGTCTGATTCTCTTGTCTGCGCTGCGCTGTAGA 146
P.orientale4OMT      -----TTCTACGGTCCGTGCTGATTCTCTTGTCTGCGTTGCGCTGTAGA 48
AY217334.1P.somniferum4OMT2 AATATAATCTATGGTTTGTCTGATTCTCTTGTCTTCGCTGCGCGGTAGA 186
AY217333.1P.somniferum4OMT1 AATATAATCTATGGTTATGCTGATTCTCTTGTCTTCGTTGCACAGTAGA 161
AB745041.1E.californica4OMT AACATAATTTATGGTTTGTCTGATTCAATAGTCCTTCGTTCTGCAGTTGA 167
D29812.1C.japonica4OMT  AAAATCATCTATGGTTTGTGCAGATTCCCTAGTCCTCCGATGTGCAGTGGA 161
AY610510.1T.flavum4OMT  AAAATCATCTATGGATTGTCTGATTCCCTTGTCTTCGATGTGCAGTGGA 180
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P.bracteatum4OMT	GATTGGAATCGCGGATATTATCAAAAACAATGATGGGGCAATCACACTTG	196
P.orientale4OMT	GATTGGAATCGCGGATATTATCAAAAACAATGATGGGGCAATCACACTTG	98
AY217334.1P.somniferum4OMT2	GATTGGAATCGCGGATATTATCAAAAACAATGATGGGGCAATCACACTTG	236
AY217333.1P.somniferum4OMT1	GATTGGAATCGCAGATATTATCAAAAACAATAATGGGTCAATCACACTTT	211
AB745041.1E.californica4OMT	GTTAGGAATTGCAGATATCATCAAGAACAACAATGGTTCAATCACTGTAT	217
D29812.1C.japonica4OMT	ACTTGAATCGTCGACATCATTGATAACAACAACCAACCCATGGCACTTG	211
AY610510.1T.flavum4OMT	ACTTGGCATTTCGACATCATTGACAACAACAACCAGCCTATCCCCTTG	230
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P.bracteatum4OMT	CACAACTTGCGTCAAAACTACCAGTTCGGAATGTCAGTTCTGATTACCTG	246
P.orientale4OMT	CACAACTTGCTTCGAAACTCCCGGTTCCAAATGTCAGTTCTGATTACTTG	148
AY217334.1P.somniferum4OMT2	CACAACTTGCGGCGAAACTCCCAATTACAAATGTCAGTTCTGATTACTTG	286
AY217333.1P.somniferum4OMT1	CAGAGCTTGTATCGAAACTACCACCTTCAAATGTGAATTCTGATAATTTG	261
AB745041.1E.californica4OMT	CAGAACTTGCATCAAAACTCCCCATCTCAAATGTCAATTCTGATAACTTA	267
D29812.1C.japonica4OMT	CCGATCTGGCATCTAAGCTTCCTGTTCCGATGTGAATTGCGATAATTTG	261
AY610510.1T.flavum4OMT	CCGATTTGGCATCCAAGCTCCCCATATCCAATGTCAATTTGGATAATCTG	280
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P.bracteatum4OMT	TACAGAATTGTGGAGATACTTGGTACACCTGAAAATCTTAGCACAA--GA	294
P.orientale4OMT	TACAGAATGGTG-AGATACTTGGTACACCTGAACATCTTAGCACAA--GA	195
AY217334.1P.somniferum4OMT2	TACAGAATGGTA-AGATACTTGGTACACCTGAATATCATAGAACAA--GA	333
AY217333.1P.somniferum4OMT1	TACAGACTTCTA-AGATACTTAGTACACCTGAATATCTTAGGACAA--CA	308
AB745041.1E.californica4OMT	TATCGAGTTTTA-AGGTACTTAGTACACATGGGTATCTTAAAAGAAACCA	316
D29812.1C.japonica4OMT	TATCGGATATTA-CGATACTTGGTGAAAATGAAAATACTGAGA-GTGGAA	309
AY610510.1T.flavum4OMT	TTTCGGATTTTA-CGTTACCTAGTCAAAATGGAACACTAGATTATGCAG	329
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P.bracteatum4OMT	AACTTG----TAATGGCGGAG---TTGAGAAGGTTTACTCGCTTAAACCG	337
P.orientale4OMT	AACTTG----TAATGGCGGAG---TTGAGAAGGTTTACTCGCTTAAACCG	238
AY217334.1P.somniferum4OMT2	AACTTG----TAACGGCGGAG---TTGAGAAGGTTTACTCGCTTAAACCG	376
AY217333.1P.somniferum4OMT1	AACTTG----TGCTGCTGGAG---TTGATAGGGTTTACTCACTTAAACCA	351
AB745041.1E.californica4OMT	AATCCACCATTAAATGGAGGAGAAATTAAGAAGCTTTACTCACTTGAACCA	366
D29812.1C.japonica4OMT	AAATC-----TGATGATGGTCAG---AAGAAG---TACGCGCTTGAACCT	348
AY610510.1T.flavum4OMT	----C-----TGATGAT-----AAA---TACGCGCTTGAACCA	355
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P.bracteatum4OMT	GTTGGTACGCTACTTTTTAAGAGGATGCAGAAAAGAAAGTATGGTGCCGAT	387
P.orientale4OMT	GTTGGTACGCTACTTTTTAAGAG-ATGCAGAAAG--AAGTATGGTGCCGAT	285
AY217334.1P.somniferum4OMT2	GTCGGTACTCTACTTTTTAAGAG-ATGCAGAAAG--AAGTATGGTGCCGAT	423
AY217333.1P.somniferum4OMT1	GTTGGCACATTATTATTAAGAG-ATTCTGAAAG--AAGCATGGCACCAGT	398
AB745041.1E.californica4OMT	GTTGGTAGTTTACTAGTTAAAG-ATGCAGAAAG--AAATATGGTACCCAT	413
D29812.1C.japonica4OMT	ATTGCAACATTGCTTTCAAGGA-ATGCGAAGAG--GAGTATGGTTCCAAT	395
AY610510.1T.flavum4OMT	ATTGCGAAATTGGTCCTTAGGA-ATGAAAAAAG--GAGCATGGTTCCAAT	402
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P.bracteatum4OMT	GATATTAGGCATGACTCAAAAAGATTTCATGTTTTTCATGG-CATTTTCATG	436
P.orientale4OMT	GATATTAGGCATGACTCAAAAAGATTTCATGGTTTTTCATGGACTTTTCATG	335
AY217334.1P.somniferum4OMT2	GATACTAGGCATGACTCAAAAAGATTTCATGGTTTTTCATGG-CATTTTCATG	472
AY217333.1P.somniferum4OMT1	AATATTAGGCCTGTACAAAAAGATTTCCTTGTTTGTATGG-AATTTCTGTG	447
AB745041.1E.californica4OMT	TGTGTTAGGGATGACCCAACAAGATTTTATGATCCCATGG-CATTATATT	462
D29812.1C.japonica4OMT	GATTCTTGGAATGACTCAAAAAGATTTTATGACTCCTTGG-CATTCAATG	444
AY610510.1T.flavum4OMT	GGTTCTTGGAATGACTCAGAAAGATTTTATGACTCCATGG-CATTCAATG	451
	* * ** * * ***** ** *** ** *	
P.bracteatum4OMT	AAAGAAGGTTTAGGAAATGGAAGTACTACGGCATTGAGAAAGGAATGGG	486
P.orientale4OMT	AAAGAAGGATTAGGAAATGGAAGTACGACTGCATTGAGAAAGGAATGGG	385
AY217334.1P.somniferum4OMT2	AAAGAAGGTTTAGGAAATGGAAGTACGACTGCATTGAGAAAGGTATGGG	522
AY217333.1P.somniferum4OMT1	AAAGAAGGATTAGGCACTGGAAGTACAACAGCATTGAGAAAGCAATGGG	497
AB745041.1E.californica4OMT	AAGGAAGGATTGGGTGAAGGAAGTACT---GCTTTTGAGAAAGGAATGGG	509
D29812.1C.japonica4OMT	AAGGATGGCTTAAGTGACAATGGT---ACTGCTTTTGAGAAAGGCCATGGG	491
AY610510.1T.flavum4OMT	AAAGATGGTTTAAGTGACAATGGTGTACTGCTTTTGAAAAGGCCATGGG	501
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P.bracteatum4OMT	AATGGATATATGGAAGTATTTAGAAAGGTAATCCTGATCAGAGCCAGTTGT	536
P.orientale4OMT	AATGGATATATGGAAGTATTTAGAAAGGTAATCCTGATCAGAGCCAGTTGT	435
AY217334.1P.somniferum4OMT2	GATGGATATATGGAAGTATTTAGAAAGGTAATCCTGATCAGAGCCAGTTGT	572
AY217333.1P.somniferum4OMT1	AATGGATATGTGGAAGTATTTAGAAAGTAAATCCTAATCAAAGTCAGTTGT	547
AB745041.1E.californica4OMT	TATGACACTTTGGGAATATTTAGAAAGTCACTCCTGAACAAGGTCATTTGT	559
D29812.1C.japonica4OMT	AATGACTATATGGGAGTACTTGGAAGGACACCCTGATCAAAGCCAATTAT	541
AY610510.1T.flavum4OMT	CATGACTATATGGGAGTATTTAGAAAGGACATCCAGATCAAAGCCAACTAT	551
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P.bracteatum4OMT	TTAATGAAGGAATGGCTGGAGAAACAAGACTGTTAAC---TAAAACTCTG	583
P.orientale4OMT	TTAATGAAGGAATGGCTGGAGAAACAAGACTGTTAAC---TAAAACTCTG	482
AY217334.1P.somniferum4OMT2	TTAATGAAGGAATGGCTGGAGAAACAAGACTTTTAAC---TAAACGCTG	619
AY217333.1P.somniferum4OMT1	TTGATGAAGGGCAAGCTGGAGAAACAAGACTTTTAAC---TAAAACTCTA	594
AB745041.1E.californica4OMT	TTAATGTTGGAATGGAAGGTGAAACTAGACTTTTGAC---TAAACCCCTA	606
D29812.1C.japonica4OMT	TCAATGAAGGCATGGCCGGTGAACAAGGCTTCTCACTTCTTCACTCATA	591
AY610510.1T.flavum4OMT	TCAATGAAGGCATGGCTGGTGAACAAGGCTTCTGACATCTTCACTTATA	601
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P.bracteatum4OMT	ATCGAAGATTGTAGAGATACTTTTCAAGGTTTGGATTCTTTGGTTGATAT	633
P.orientale4OMT	ATCGAAGATTGT-GAGAT-CTTTTCAAGGTTTGGATTCACTTGTTGATGT	530
AY217334.1P.somniferum4OMT2	ATCGAAGATTGTAGAGATACTTTTCAAGGTTTGGATTCTCTTGTTGATAT	669
AY217333.1P.somniferum4OMT1	CTTGATGATTGTAGAGATACTTTTCAAGGTATGGATTGCTTGTTGATGT	644
AB745041.1E.californica4OMT	ATTGAAAGTTGTAAAGATACTTTTGAAGGTTTGAGTTCTTTGGTTGATGT	656
D29812.1C.japonica4OMT	TCTGGAA---GTAGAGATATGTTTCAAGGTATTGACTCACTTGTTGATGT	638
AY610510.1T.flavum4OMT	TCTGGAA---GTAAAGATATGTTTCAAAGTATTGATTCACTTGTTGATGT	648
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P.bracteatum4OMT	TGGTGGAGGAAATGGTACAACAATCAAGGCAATCCATGAAGCTTTTCCTC	683
P.orientale4OMT	TGGTGGAGGAAATG-TACAACAATCAAGGCAATCCATGAAGCTTTTCCTC	579
AY217334.1P.somniferum4OMT2	TGGTGGAGGAAATGGTACGACAATCAAGGCAATCTATGAAGCTTTTCCTC	719
AY217333.1P.somniferum4OMT1	TGGTGGAGGAAACGGTACGACAATTAAGGCAATCCATGAAGCTTTTCCTC	694
AB745041.1E.californica4OMT	TGGTGGTGGAAATGGCACAACAATTAAGCAATTTCTGAAGCATTTCCCTC	706
D29812.1C.japonica4OMT	TGGTGGAGGAAATGGTACTACTGTCAAGGCCATTTCTGACGCATTTCCAC	688
AY610510.1T.flavum4OMT	TGGTGGTGGAAATGGTACTACTATCAAAGCAATTTCTGTTGCATTTCCAC	698
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P.bracteatum4OMT	ATATCAAATGTACACTTTATGATCTTCCTCATGTTGTTTCCAACCTCTCAT	733
P.orientale4OMT	ATATCAAATGTACGCTTTATGATCTTCCTCATGTTGTTGCCAACCTCTCAT	629
AY217334.1P.somniferum4OMT2	ATATCAAATGTACACTTTATGATCTTCCTCATGTTGTTGCCAACCTCTCAT	769
AY217333.1P.somniferum4OMT1	ATATTAATGTACGCTTTATGATCTTCCTCATGTTATTGCTAACTCTGAT	744
AB745041.1E.californica4OMT	ATATAAATGTAGTCTTTATGATCTTCCTCATGTTGTTGCTGATTCTCAT	756
D29812.1C.japonica4OMT	ATATCAAGTGCACCTCTTTGATCTCCCTCATGTCATTGCCAATTCCTAT	738
AY610510.1T.flavum4OMT	ATATCAAATGTACCTTTTGTATCTTCCTCATGTCATTGCTAATTCATAT	748
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P.bracteatum4OMT	GATCTCCCTAACATCGGAAAAAGTTCCCGGGTGATATGGTTCAAGTTCTG	783
P.orientale4OMT	GATCTCCCTAACATCA-AAAAAGTTCCCGG-TGATATG-TTCAAGT-CTG	675
AY217334.1P.somniferum4OMT2	GATCTCCCTAACATCG-AAAAAGTTCCCGG-TGATATG-TTCAAGT-CTG	815
AY217333.1P.somniferum4OMT1	GATCACCCTAACATCC-TAAAAGTTCCCGG-TGATATG-TTCATGT-CTG	790
AB745041.1E.californica4OMT	GATCTTCCTAATATTG--AAAAGATCCCTGGTGATATA-TTCAAGT-TTA	802
D29812.1C.japonica4OMT	GACCTTCCTAATATTG--AACGAATTGGTGGCGACATG-TTTAAAT-CCG	784
AY610510.1T.flavum4OMT	GATCACCCTAATATTG--AACGTATTGGTGGTGACATG-TTCAAAG-GCA	794
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P.bracteatum4OMT	TTCCAAAGTGCTCCAGGCTATCCTTACTCAAGGTTTGATCTTTGCACCGA	833
P.orientale4OMT	TTCCCA-GTGCTC-AGGCTGTC-TTACTCAAG-TCTG--TCTTGAC-GA	718
AY217334.1P.somniferum4OMT2	TTCCCA-GTGCTC-AGGCTATC-TTACTCAAG--TTGA-TTTTGACAT-GA	858
AY217333.1P.somniferum4OMT1	TTCCAA-GTGCTC-AAGTTCTC-TTACTCAAG---TGCGTCTTGACAT-GA	833
AB745041.1E.californica4OMT	TACCTA-ATGCTC-AAGCTATC-TTACTCAAG--TTGA-TCTTGACAT-GA	845
D29812.1C.japonica4OMT	TGCCCA-GTGCCC-AAGCTATC-ATACTCAAG--CTAA-TTTTGACAT-GA	827
AY610510.1T.flavum4OMT	TGCCTA-GTGCCC-AAGCCATC-TTACTAAAG--CTAA-TTTTGACAT-GA	837
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P.bracteatum4OMT	CTGGAACCTGATGAAGAGTGTTGTGGTCAACATCCTTAAAAAGAAGTGGC	883
P.orientale4OMT	CTGGA--CTGATGAGGAGTG----AGTCAACATCCT---AAAGAAATG--	757
AY217334.1P.somniferum4OMT2	CTGGA--CTGATGAAGAGTGT----GTCAACATCCT---AAAGAAGTG--	897
AY217333.1P.somniferum4OMT1	CTGGA--CTGATGAACACTGC----GTCAACATTCT---AAAGAAATG--	872
AB745041.1E.californica4OMT	TTGGAG--TGATGAAGACTCT---GTCAAGATTCT---AAAGAAGTG--	884
D29812.1C.japonica4OMT	TTGGAA--TGACGAAGACTCG---ATCAAGATTTT---AAAGCAATG--	866
AY610510.1T.flavum4OMT	CTGGAA--TGACGAAGACAGT---ATCAAGATTCT---AAAGCAATG--	876
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P.bracteatum4OMT	CAAAGAAGGCCAATACCCGAAAGAGACAGGGGATAAAAGTGGATTATTAG	933
P.orientale4OMT	CAAAGAAG--CAAT--CCCGAAAGAGACAGGG---AAAGTG-ATTAT-AG	798
AY217334.1P.somniferum4OMT2	CAAAGAAG--CAATACC--GAAAGAGACAGGG---AAAGTG-ATTAT-AG	938
AY217333.1P.somniferum4OMT1	CAAAGAAG--CAATCCC--GAAAGAGACAGGG---AAAGTG-ATCAT-AG	913
AB745041.1E.californica4OMT	TAGAGAAG--CAGTACC--ACAAGATACAGGA---AGGGTG-ATCAT-AG	925
D29812.1C.japonica4OMT	CAGAAATG--CAGTGCC--AAAAGATGGAGGA---AAAGTG-ATTAT-AG	907
AY610510.1T.flavum4OMT	CAGAAAAG--CAGTACC--AAAAGATGGAGGG---AAAGTT-ATAAT-AG	917
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P.bracteatum4OMT	TGGAATGTAGGCACCTTTGCGAAGAAGAATCCCCAACCATTTGAACCTTTTA	983
P.orientale4OMT	TGGA--TGTAG-CACCT---GAAGAAGAATCC--AACCAT-GAACCT---	836
AY217334.1P.somniferum4OMT2	TGGA--TGTAG-CACCT---GAAGAAGAATCC--AACCAT-GAACCT---	976
AY217333.1P.somniferum4OMT1	TGGA--TGTAG-CACCT---GAAGAAGAATCT--GAACAT-GAACCT---	951
AB745041.1E.californica4OMT	TAGA--TGTAG-CCCTA---GAAGAGGAATCA--GAACAT-CCACTA---	963
D29812.1C.japonica4OMT	TGGA--TGTGG-CATTA---GATGAGGAGTCA--GACCAT-GAGCTT---	945
AY610510.1T.flavum4OMT	TGGA--TGTAG-CATTG---GATGAAGATTCA--GACCAT-GAGCTT---	955
	* ** *** * * * ** ** ** * ** *	
P.bracteatum4OMT	CACAAAGACAAGAATTTGATTCTTTTGGATATTTGGACATTGGTTGGGTG	1033
P.orientale4OMT	-ACAAAGACAAGA--TTGATTCTT---GATATT--GACAT--GTTGG-TG	875
AY217334.1P.somniferum4OMT2	-ACAAAGACAAGA--TTGATTCTT---GATATT--GACAT--GTTGG-TA	1015
AY217333.1P.somniferum4OMT1	-ACAAAGGCAAGA--TTGATTCTT---GATATT--GATAT--GTTGG-TG	990
AB745041.1E.californica4OMT	-ACAAAAACAAGA--TTGGTTCTT---GATGTT--GATAT--GTTGG-TT	1002
D29812.1C.japonica4OMT	-AGCAGCACACGA--TTGATCCTT---GATATC--GATAT--GTTGG-TG	984
AY610510.1T.flavum4OMT	-AGTAGCACAAGA--TTGATTCTT---GATATA--GATAT--GTTGG-TG	994
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P.bracteatum4OMT	AATACTGGTGGTAGAGAGAGAACTGCAGATGATTGGGAAAATTTGCTCAA	1083
P.orientale4OMT	AATACTGGTGGTAGAGAGAGAACTGCAGAGGA--GGG-----	910
AY217334.1P.somniferum4OMT2	AATACTGGTGGTAGAGAGAGAACTGCAGATGATTGGGAAAATTTGCTCAA	1065
AY217333.1P.somniferum4OMT1	AATACAGGTGGTAGAGAGAGAACTGCAGAGGATTGGGAAAATTTGCTCAA	1040
AB745041.1E.californica4OMT	AATACTGGTGGAAGGGAGAGAAAGTGAAGATGATTGGGCAAAATTACTCAA	1052
D29812.1C.japonica4OMT	AACACTGGTGGTAAAGAGCGGACTAAAGAGGTTTGGGAGAAAATTGTGAA	1034
AY610510.1T.flavum4OMT	AATACTGGGGGTAAAGAAAGGACTAAGGAAGATTGGGAGAACTGGTTAA	1044
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P.bracteatum4OMT	ACGGGCAGGCTTTTCGGTCTCAATTAGGATCAGACCCATTGCGCTATTCA	1133
P.orientale4OMT	-----	
AY217334.1P.somniferum4OMT2	ACGTGCAGGCTTTTCGGTCTCA--TAAGATCAGACCCATTGCGCTATTCA	1113
AY217333.1P.somniferum4OMT1	ACGTGCAGGCTTTTCGGTCTCA--TAAGATCAGACCGATTGCGCTATTCA	1088
AB745041.1E.californica4OMT	ACTTGCAGGTTTTTCGAACTCA--CAAGATAAGGCATATTGCTGCTGTTCA	1100
D29812.1C.japonica4OMT	AAGTGCAGGATTTAGTGGTTG--CAAAATCAGGCACATAGCGGCTATACA	1082
AY610510.1T.flavum4OMT	GTGTGCAGGTTTTAGTGGTTG--CAAAATCAGGCACATTGCAGCTATACA	1092

P.bracteatum4OMT	GTCTGTACATTGAAGCCATTTTCCGCGGCTTAG--TAAAAGCTC-----T	1176
P.orientale4OMT	-----	
AY217334.1P.somniferum4OMT2	GTCAGT-CATTGAAGCC---TTCC---CTTAG--TAAAAGCTC-----T	1148
AY217333.1P.somniferum4OMT1	GTCTGT-CATTGAAGCT---TTCC---CATAG--TAAAAGCTC-----T	1123
AB745041.1E.californica4OMT	ATCTGT-TATTGAAGCT---TTCC---CTTAG--TATCA-----C	1131
D29812.1C.japonica4OMT	ATCAGT-CATTGAGGTT---TTTC---CATA---GTCATCTG-----	1114
AY610510.1T.flavum4OMT	ATCAGT-GATTGAGGTT---TTCC---CATAAATCGACATCTCATTGCT	1134
P.bracteatum4OMT	AA-----GGAGTACTTTGCTTCTT--TCAAAGAAAAGGC-TTTCG--TA	1215
P.orientale4OMT	-----	
AY217334.1P.somniferum4OMT2	AA-----GGAGTACTCTGCTTCCT--TCTCAGAGAAGAG-TATGCACTA	1189
AY217333.1P.somniferum4OMT1	AA-----GGAGTACTTTGCTCTTA--TGAACAATAAGTCATCTTCACTT	1165
AB745041.1E.californica4OMT	AA-----GAACAACCTCAGTTTCTTGATGGCCAAAGAGTC--TAGTAGTG	1173
D29812.1C.japonica4OMT	-----TGGATGATTTTGCCACAT-----AAGATCCTAATAAT-	1146
AY610510.1T.flavum4OMT	AGCTTGCTTGATGGCCTTTTAGTATT-TGTTTTCAATGATATGAATAATT	1183
P.bracteatum4OMT	AGCAAAG-----ATAACCCTTTGGCTCCCTATTTCCCAAAGAAA	1254
P.orientale4OMT	-----	
AY217334.1P.somniferum4OMT2	GTCAACA-----ATAAGCC-----ATCTTCAATTGAGG	1217
AY217333.1P.somniferum4OMT1	GA-GGAG-----ATGTTCC-----CTATTTCTCTC-----	1189
AB745041.1E.californica4OMT	GGACTAA-----GTTTCCTACA---TATGTAAGTTCTTAAGGGG	1209
D29812.1C.japonica4OMT	GGTGT-----TCCAAGTCACCCCTGCTG	1169
AY610510.1T.flavum4OMT	GGTATATTGGACATATATATATGTCTTTGA--TCCAAGCTGTTACAGCTA	1231
P.bracteatum4OMT	AAA--TTTTTT-----CCTTTTGCCCTT-----TA	1277
P.orientale4OMT	-----	
AY217334.1P.somniferum4OMT2	AAA--TGTTT-----CCTATTTCTGT-----TT	1240
AY217333.1P.somniferum4OMT1	-GT--TTGTTT-----CTTTTCGCTTGATGATAAGCATG	1219
AB745041.1E.californica4OMT	TGT--TTATTT-----TCTTTTTCG-----	1227
D29812.1C.japonica4OMT	CAA-GTTGTT-----TGTTTTGTT--T-----TG	1190
AY610510.1T.flavum4OMT	AAATATTGTTGATGTAATGTGATCCAAGTCTTTTATTATT-----TT	1273
P.bracteatum4OMT	CGGACCCCTTAATTTAAATTTTATTTTCAGCAGAACTCTACTTC-----T	1322
P.orientale4OMT	-----	
AY217334.1P.somniferum4OMT2	GTTTTTTCCCTTTTT--TTTCTTTTTC-----CTTTACTGG-----C	1275
AY217333.1P.somniferum4OMT1	TTAATTTCCCTATTT---CCTGTTTTTCG-----TTTCTTTT-----C	1253
AB745041.1E.californica4OMT	--AATTTGTCGTTTT---TTACTTTCTGATGAGATTCTTACT-----C	1265
D29812.1C.japonica4OMT	GTAAAGCA-----CACAGCTGAT-----TTTGATGTGATAAC	1222
AY610510.1T.flavum4OMT	GTAAGGCCCTT-TTTCATGGCCCATGTTTAACAGGCTTTTGCTTTATTAGC	1322

P.bracteatum4OMT	CCTTGTAGTGAGATGTGAAGCATATGGCGTTT-TAACGGTATGCAACGAA	1371
P.orientale4OMT	-----	
AY217334.1P.somniferum4OMT2	C---GTAGTAGGCCGTTGTTTGTATTGT-TCT-TGCTCCTGTGCAATGTA	1320
AY217333.1P.somniferum4OMT1	CCTTGTGATAAGCTCCGGTGCATGCTGT-TTT-TCTTCTCCG-GTTAAA	1300
AB745041.1E.californica4OMT	TCTTGTTATAGCCTTCAAGGT-TGTTGTATGTGTGTTCTTATGTATTAG-	1313
D29812.1C.japonica4OMT	TTCT--AGTCAC-----GA-GTATTG-ATTGGTATTCTTTAT---GG	1258
AY610510.1T.flavum4OMT	TTTTTCACCCACCTGTAGAG-GTAAGG-GCCAACGTCCCCTCAAA--AGG	1368
P.bracteatum4OMT	TTTTATTTTTGTTTCTCTTTTTTCTCCAG-----GGGGACCA	1408
P.orientale4OMT	-----	
AY217334.1P.somniferum4OMT2	ATTGAAAATTGT-----ATTTGTCTGTAA-----AAAAAAA	1352
AY217333.1P.somniferum4OMT1	TTAGACCGTTGT-----TTCTGTTGTAA-----AAAAAAA	1332
AB745041.1E.californica4OMT	--TGAAAATTG-----CAACAA-----AAATAATG	1336
D29812.1C.japonica4OMT	CCC--TCTTTCTT-----TATCTCTAATT-----	1280
AY610510.1T.flavum4OMT	ATTGATTATTCTCACAAGGATATCTCAAATTCTCAATGAGACAATGAGCA	1418
P.bracteatum4OMT	AA----TTAAAAA-----	1417
P.orientale4OMT	-----	
AY217334.1P.somniferum4OMT2	AA----AAAAAA-----	1360
AY217333.1P.somniferum4OMT1	AA----AAAAAAAAAAAAAAAAAAAAAAAAAAAAA---	1363
AB745041.1E.californica4OMT	AATGTTATTAAACGTTGTTT-----	1356
D29812.1C.japonica4OMT	-----	
AY610510.1T.flavum4OMT	AATATTGCCTGGAGCTAAAAAAAAAAAAAAAAAAAAA	1456

Alignments (6OMT gene)

CLUSTAL 2.1 multiple sequence alignment

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P.bracteatum6OMT      -----
AY217335.1P.somniferum6OMT -----
P.orientale6OMT       -----
EU882988.1P.bracteatum6OMT -----
P.pseudo-orientale6OMT -----
EU882980.1P.bracteatum6OMT CTAAATCTAACCAGAAAGACCAGTACATACTGCTGATTTTCTCTTCA 50
D29811.1C.japonica6OMT -----
AY610507.1T.flavum6OMT -----

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P.bracteatum6OMT      -----
AY217335.1P.somniferum6OMT -----
P.orientale6OMT       -----
EU882988.1P.bracteatum6OMT -----
P.pseudo-orientale6OMT -----
EU882980.1P.bracteatum6OMT TAAAACTGTGCAAAAGCTTTCTAAGAAGAAATCCACGAGAAGCTTGCCA 100
D29811.1C.japonica6OMT -----
AY610507.1T.flavum6OMT -----

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P.bracteatum6OMT      -----
AY217335.1P.somniferum6OMT -----
P.orientale6OMT       -----
EU882988.1P.bracteatum6OMT -----
P.pseudo-orientale6OMT -----
EU882980.1P.bracteatum6OMT TTTATAATTAGCTCCTGGTAACTTATTCCTTCCACCAAATTTAAAGGTC 150
D29811.1C.japonica6OMT -----GTTCAAAGTTC 11
AY610507.1T.flavum6OMT -----AAGCAT 6

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P.bracteatum6OMT      -----
AY217335.1P.somniferum6OMT -----
P.orientale6OMT       -----
EU882988.1P.bracteatum6OMT -----CT 2

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P.pseudo-orientale6OMT	-----	
EU882980.1P.bracteatum6OMT	CAAAACCACCTTCAGTTATCTCTTCTGTACTGTAAACAAGAAACAGCC	200
D29811.1C.japonica6OMT	AAATATTAACCTTC-----CAACTCACA	33
AY610507.1T.flavum6OMT	ACATACAAGC-----AAGCCAATC	25
P.bracteatum6OMT	-----	
AY217335.1P.somniferum6OMT	-----GCAGCTA-----AAGTGTCTAAACAGAGAGAA	27
P.orientale6OMT	-----	
EU882988.1P.bracteatum6OMT	CAATCT-CATCAACAGCTA-----AAGTTTCTAAAAAGGGAGAA	40
P.pseudo-orientale6OMT	-----	
EU882980.1P.bracteatum6OMT	AATTCT-TATCAAGAGTTACACACTTATTAATAATTTCTAGAGAGAGAGAG	249
D29811.1C.japonica6OMT	AGTTCAACATCACCTATT-CA-----GAA----TCATAGAAA-----	65
AY610507.1T.flavum6OMT	AGTCCTAAATTGCCAATTACA-----AAACTTCCAAAGATA-----	62
P.bracteatum6OMT	-----AGCAAAAATCT	11
AY217335.1P.somniferum6OMT	A----TGGAACAGTAAGCAAGATTGATCAACAAAACCAAGCAAAAATCT	73
P.orientale6OMT	-----	
EU882988.1P.bracteatum6OMT	AAA--TGGAACAGTAAGCAAGATTGATCAACAAAACCAAGCAAAAATCT	88
P.pseudo-orientale6OMT	-----AAACAGTAAGCAAGATTGATCAACAAAACCAAGCAAAAATCT	42
EU882980.1P.bracteatum6OMT	AGAGATGGAAGCAGTTAGCCAGACCGATCAAGAAAACCAAGCAATAATTT	299
D29811.1C.japonica6OMT	-----TGGAAGTGA---AGAAGGACAATCTCTCATCTCAAGCTAAACTGT	107
AY610507.1T.flavum6OMT	-----TGGAATGATCAACAAGGAAAACCTCTCATCACAAGCTAAACTAT	107
P.bracteatum6OMT	GGAAACAAATTTACGGCCTTGCAGAATCATTAGTTCTGAAATGTGCAGTT	61
AY217335.1P.somniferum6OMT	GGAAACAAATTTACGGTTTCGCAGAATCACTAGTTCTGAAATGTGCAGTC	123
P.orientale6OMT	-----	
EU882988.1P.bracteatum6OMT	GGAAACAAATTTACGGCTTTGCAGAATCACTAGTTCTGAAATGTGCAGTC	138
P.pseudo-orientale6OMT	GGAAACAAATTTACGGTTTTCGCAGAATCACTAGTTCTGAAATGTGCAGTT	92
EU882980.1P.bracteatum6OMT	GGAAACAAATTTATGGTTTTGCAGAATCGTTAGTTCTCAAATGTGCAGTT	349
D29811.1C.japonica6OMT	GGAACCTCATTTATGGTTTTGCTGAATCACTAGTCCTCAAATGTGCAGTG	157
AY610507.1T.flavum6OMT	GGAACCTCATCTATGGTTTTGCTGATTCACTAGTTCTCAAATCTGCTGTA	157
P.bracteatum6OMT	CAATTAGAGATTGCTGAAACACTTCACAACAATGTCAAACCCATGTCTTT	111
AY217335.1P.somniferum6OMT	CAACTAGAGATTGCTGAAACACTTCACAACAATGTCAAACCCATGTCTTT	173
P.orientale6OMT	-----	
EU882988.1P.bracteatum6OMT	CAACTAGAGATTGCTGAAACACTTCACAACAATGTCAAACCCATGTCTTT	188
P.pseudo-orientale6OMT	CAACTAGAGATTGCTGAAACACTTCACAACAATGTCAAACCCATGTCTTT	142
EU882980.1P.bracteatum6OMT	CAATTGGAGATTGCTGAAACCATTCATAACCATGGAAAACCCATGTCATT	399
D29811.1C.japonica6OMT	CAACTTGATCTAGCCAACATAATTCACAACAGTGGCACGTCCATGACTCT	207
AY610507.1T.flavum6OMT	CAACTGGATCTAGCCAACATAATTCATAACCATGGCTCACCCATGACTCT	207

P.bracteatum6OMT	ATCCGAATTAGCATCGAAACTTCCCGTTGCTCAACCCGTTAACGAAGACC	161
AY217335.1P.somniferum6OMT	ATCCGAATTGGCATCGAAACTTCCCGTTGCTCAACCCGTTAACGAAGACC	223
P.orientale6OMT	-----	
EU882988.1P.bracteatum6OMT	ATCCGAATTAGCATCCAAACTTCCGGTTCCTCAACCCGTTAACGAAGACC	238
P.pseudo-orientale6OMT	ATCCGAATTAGCATCCAAACTTCCGGTTCCTCAACCCGTTAACGAAGACC	192
EU882980.1P.bracteatum6OMT	ATCTGAGTTAGCTTCCAAACTTCCAATTGATCAACCCGTTAACATAGATC	449
D29811.1C.japonica6OMT	TTCCGAGTTATCTTCGCGTCTTCCAA---GTCAACCTGTCAATGAAGACG	254
AY610507.1T.flavum6OMT	TTCCGAGTTATCTTTGCATCTTCCAA---GTCAGCCTGTCAATCAAGATG	254
P.bracteatum6OMT	GTCTGTTCCGAATCATGCGTTACTTGGTTCACATGGAACCTCTTCA--A--	207
AY217335.1P.somniferum6OMT	GTCTGTTCCGAATTATGCGTTACTTGGTTCACATGGAGCTCTTCA--A--	269
P.orientale6OMT	-----	
EU882988.1P.bracteatum6OMT	GTCTGTTCCGAATCATGCGTTACTTGGTTCACATGGAACCTCTTCA--A--	284
P.pseudo-orientale6OMT	GTTTGTTCGAATTATGCGTTACTTGGTTCACATGGAACCTCTTCA--A--	238
EU882980.1P.bracteatum6OMT	GGTTGTACCGAGTTATGCGTTTCTTAGTTCACATGAAACTCTTCA--ACA	497
D29811.1C.japonica6OMT	CCTTGTATCGAGTCATGCGTTACTTGGTTCACATGAAGCTATTACAAAA	304
AY610507.1T.flavum6OMT	CATTGTACCGAGTCCTGCGTTACTTGGTCCATATGAAGCTATTACCCAAA	304
P.bracteatum6OMT	-----GATA-----GACGCTACCACGCAG-----	226
AY217335.1P.somniferum6OMT	-----AATA-----GATGCTACCACGCAG-----	288
P.orientale6OMT	-----	
EU882988.1P.bracteatum6OMT	-----GATA-----GACGCTACCACGCAG-----	303
P.pseudo-orientale6OMT	-----GATA-----GACGCTACCACGCAG-----	257
EU882980.1P.bracteatum6OMT	AGGAAAAATATTCTATACTTAGTGGTGAAACCGCTCAAGTAGTAGAAGAC	547
D29811.1C.japonica6OMT	GCATCAATA-----GATGGAG--AACTAA-----	326
AY610507.1T.flavum6OMT	TCATCAATA-----GATGGTG--AATTAA-----	326
P.bracteatum6OMT	AAATACTCATTAGCTCCACCAGCTAAGTATTTGTTGAGAGGGTGGGAGAA	276
AY217335.1P.somniferum6OMT	AAATACTCATTAGCTCCACCAGCTAAGTATTTGTTGAGAGGCTGGGAGAA	338
P.orientale6OMT	AAATACTCATTAGCTCCACCAGCTAAGTATTTGTTGAGAGGATGGGAGAA	50
EU882988.1P.bracteatum6OMT	AAATACTCATTAGCTCCACCAGCTAAGTATTTGTTGAGAGGATGGGAGAA	353
P.pseudo-orientale6OMT	AAATACTCATTAGCTCCACCAGCTAAGTATTTGTTGAGAGGGTGGGAGAA	307
EU882980.1P.bracteatum6OMT	AAATATTTCATTAGCTCCACCGGCAAAATATCTGATAAGAGGTTTCAGAACA	597
D29811.1C.japonica6OMT	-GATATGGACTTGACACCAGCTAAGTATCTTGTAAAGGTTGGGATAA	375
AY610507.1T.flavum6OMT	-GATATGGTCTTGACACCCTGCTAAATTCCTAGTAAAAGGTTGGGATAA	375
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P.bracteatum6OMT	ATCAATGGTTGATTCAATTTTATGCATAAATGATAAGGATTTCTTAGCTC	326
AY217335.1P.somniferum6OMT	ATCAATGGTTGATTCAATTTTATGCATAAATGATAAGGATTTCTTAGCTC	388
P.orientale6OMT	ATCAATGGTTGATTCAATTTTATGCATAAATGATAAGGATTTCTTAGCTC	100
EU882988.1P.bracteatum6OMT	ATCAATGGTTGATTCAATTTTGTGCATAAATGATAAGGATTTCTTAGCTC	403
P.pseudo-orientale6OMT	ATCAATGGTTGATTCAATTTTATGCATAAATGATAAGGATTTTTTAGCTC	357
EU882980.1P.bracteatum6OMT	ATCAATGGTTCCTTGGGTTTTAGGCATAACTGATGAAGATTTGGTAGCTC	647
D29811.1C.japonica6OMT	ATGTATGGTTGGCTCAATTTTAGCAATCACTGATAAAGATTTTCATGGCAC	425
AY610507.1T.flavum6OMT	ATGTATGCTTGGTGCAATTTTAACCATCACTGATAAAGATTTTATGGCTC	425
	** *** ** **** ** * ***** * ** *	
P.bracteatum6OMT	CGTGGCATCATTTAGGTGACGGTTTAACCGGTAACGTGTGAC-----	367
AY217335.1P.somniferum6OMT	CATGGCACCATTTAGGCGACGGTTTGACCGGTAACGTGTGAC-----	429
P.orientale6OMT	CGTGGCATCATTTAGGTGACGGTTTAACCGGTAACGTGTGAC-----	141
EU882988.1P.bracteatum6OMT	CGTGGCACCATTTAGGTGACGGTTTGACCGGTAACGTGTGAC-----	444
P.pseudo-orientale6OMT	CGTGGCATCATTTAGGTGACGGTTTAACCGGTAACGTGTGAC-----	398
EU882980.1P.bracteatum6OMT	CATGGCATTGGTTGAAGGAAGGTATAACTGGTAACGTGAAT-----	688
D29811.1C.japonica6OMT	CATGGCATTACCTTAAGGATGGATTATCAGGCGAAAGTGGTACA-----	469
AY610507.1T.flavum6OMT	CATGGCATTATCTTAAGGAAGGAATATGAATGATGGTAGTACCAGTACC	475
	* ***** * ** ** * * **	
P.bracteatum6OMT	GCTTTTGGAGAAAGCGTTGGGGAAGAGT-ATTTGGGTTTATATGAGTGAAA	416
AY217335.1P.somniferum6OMT	GCTTTTGGAGAAAGCGTTGGGGAAGAGT-ATTTGGGTTTATATGAGTGAAA	478
P.orientale6OMT	GCTTTTGGAGAAAGCGTTGGGGAAGAGT-ATTTGGGTTTATATGAGTGAAA	190
EU882988.1P.bracteatum6OMT	GCTTTTGGAGAAAGCGTTGGGGAAGAGT-ATTTGGGTTTATATGAGTGAAA	493
P.pseudo-orientale6OMT	GCTTTTGGAGAAAGCGTTGGGGAAGAGT-ATTTGGGTTTATATGAGTGAAA	447
EU882980.1P.bracteatum6OMT	GTTTTTCGAGAAAGTGTGGGAAAGAGCCATGCAGAT-TATATGAGTGAAA	737
D29811.1C.japonica6OMT	GCGTTTGGAGAAAGCCTTGGGGACGAAT-ATATGGGGGTACATGGCAGAGC	518
AY610507.1T.flavum6OMT	GCTTTTGGAGAAAGCCTTGGGGACTAAT-ATTTGGGACTACATGGCAGAGC	524
	* ** ***** * ***** * ** * ** *** **	
P.bracteatum6OMT	ATCCTGAAAAGAATCAATTGTTTAAATGCAGCAATGGCTTGTGATACTAGA	466
AY217335.1P.somniferum6OMT	ATCCTGAAAAGAATCAATTGTTTAAATGCAGCAATGGCTTGTGATACTAGA	528
P.orientale6OMT	ATCCTGAAAAGAATCAATTGTTTAAATGCAGCAATGGCTTGTGATACTAGA	240
EU882988.1P.bracteatum6OMT	ATCCTGAAAAGAATCAATTGTTTAAATGCAGCAATGGCTTGTGATACTAGA	543
P.pseudo-orientale6OMT	ATCCTGAAAAGAATCAATTGTTTAAATGCAGCAATGGCTTGTGATACTAGA	497
EU882980.1P.bracteatum6OMT	ATCCTAAAAAGAATCAAAATGTTTAAATGAATTAATGGCTTGTGATTCTAGA	787
D29811.1C.japonica6OMT	ACCCTGAGAAAAACCAGCTATTTAATGAAGCAATGGCTAATGATTCAAGG	568
AY610507.1T.flavum6OMT	ACCCTGAGAAAAATCAGCTATTTAACGAAGGGATGGCTAATGATACTAGG	574
	* *** * ** ** ** * ***** * * ***** ***** * **	

P.bracteatum6OMT	TTGGTTACTTCTGCATTGGCTAATGAGTGCAAAAGTATTTTCAGTGACGG	516
AY217335.1P.somniferum6OMT	TTGGTTACTTCTGCATTGGCTAATGAGTGCAAAAGTATTTTCAGTGATGG	578
P.orientale6OMT	TTGGTTACTTCTGCATTGGCTAATGAGTGCAAAAGTATTTTCAGTGACGG	290
EU882988.1P.bracteatum6OMT	TTGGTTACTTCTGCATTGGCTAATGAGTGCAAAAGTATTTTCAGTGACGG	593
P.pseudo-orientale6OMT	TTGGTTACTTCTGCATTGGCTAATGAGTGCAAAAGTATTTTCAGTGACGG	547
EU882980.1P.bracteatum6OMT	TTAGTTACTTTCGGCTTTGGTGAACGAATGCAGAAGTGTTTTCTCCGATGG	837
D29811.1C.japonica6OMT	CTTATTATGTCTGCATTGGTGAAAGAATGTGGAAATATTTT---TAATGG	615
AY610507.1T.flavum6OMT	CTTATTATGTCTGCATTAGTGAAAGAGTGCAGCAGTATGTT---TGATGG	621
	* * * * * * * * * * * * * * * * * * * * *	
P.bracteatum6OMT	AATCAGAACACTGGTGGATGTTCGGCGGCGGTACCGGTACTGCTGTGAAAA	566
AY217335.1P.somniferum6OMT	AATCAGTACACTGGTTGATGTTCGGCGGTGGTACCGGTACTGCAGTGAAAAG	628
P.orientale6OMT	AATCAGAACACTGGTGGATGTTCGGCGGTGGTACCGGTACTGCTGTGAAAA	340
EU882988.1P.bracteatum6OMT	AATCAAAACACTGGTGGATGTTCGGCGGTGGTACCGGTACTGCTGTGAAAA	643
P.pseudo-orientale6OMT	AATCAGAACACTGGTGGATGTTCGGCGGTGGTACCGGTACTGCTGTGAAAA	597
EU882980.1P.bracteatum6OMT	AATTAACACCCTAGTTGATGTTGGTGGTGGTACCGGTACCGCGGTGTCAG	887
D29811.1C.japonica6OMT	TATAACTACACTTGTGGATGTTGGTGGTGGTACTGGAAGTCTGTGAGGA	665
AY610507.1T.flavum6OMT	TATAACTACAATTGTGGATGTGGGTGGTGGTACTGGAAGTCTGTGAGGA	671
	* * * * * * * * * * * * * * * * * * * * * *	
P.bracteatum6OMT	CCATATCTAAAGCTTTTCCGGATATTAAGTGCACTATCTATGATCTTCCT	616
AY217335.1P.somniferum6OMT	CCATATCTAAAGCTTTTCCGGATATTAAGTGCACTATCTATGATCTTCCT	678
P.orientale6OMT	CCATATCTAAAGCTTTTCCGGATATTAAGTGCACTATCTATGATCTTCCT	390
EU882988.1P.bracteatum6OMT	CCATATCTAAAGCTTTTCCGGATATTAAGTGCACTATCTATGATCTTCCT	693
P.pseudo-orientale6OMT	CCATATCTAAAGCTTTTCCGGATATTAAGTGCACTATCTATGATCTTCCT	647
EU882980.1P.bracteatum6OMT	CGATTTCGAAAGCTTTCCCGAATATTCAGTGACACTCTTTGATCTTCCT	937
D29811.1C.japonica6OMT	ATATTGCCAATGCATTTCACATATAAAGTGACTGTTTATGATCTTCCT	715
AY610507.1T.flavum6OMT	ATATTGCAAAAGCATTTCACATATTAAGTGACTGTTTATGATCTTCCT	721
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P.bracteatum6OMT	CATGTCATAGCTGATTCTCCTGAA-ATTCCCAATATTACTAAAATTTCTG	665
AY217335.1P.somniferum6OMT	CATGTCATAGCTGATTCTCCTGAA-ATCCCAATATCACTAAAATTTCTG	727
P.orientale6OMT	CATGTCATAGCTGATTCTCCTGAA-ATTCCCAATATTACTAAAATTTCTG	439
EU882988.1P.bracteatum6OMT	CATGTCATAGCTGATTCTCCTGAA-ATTCCCAATATTACTAAAATTTCTG	742
P.pseudo-orientale6OMT	CATGTCATAGCTGATTCTCCTGAA-ATTCCCAATATTACTAAAATTTCTG	696
EU882980.1P.bracteatum6OMT	CATGTTATAGGTGATTACCTGAA-ATTCCAAATGTTACTAAAACATCTG	986
D29811.1C.japonica6OMT	CATGTCATTGCTGATTCTCCTGGGTACTCCGAA-GTTCATTGCGTGGCAG	764
AY610507.1T.flavum6OMT	CATGTTATTGCTGATTCCTGGCTACACTGAA-ATCAATTCTATCCAAG	770
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P.bracteatum6OMT	GAGATATGTTCAAGTCTATTCCCTAGTGCTGATGCCATCTTCATGAAGTGC	715
AY217335.1P.somniferum6OMT	GAGATATGTTCAAGTCTATTCCCTAGTGCTGATGCCATCTTCATGAAGTGC	777
P.orientale6OMT	GAGATATGTTCAAGTCTATTCCCTAGTGCTGATGCCATCTTCATGAAGTGC	489
EU882988.1P.bracteatum6OMT	GAGATATGTTCAAGTCTATTCCCTAGTGCTGATGCCATCTTCATGAAGTGC	792
P.pseudo-orientale6OMT	GAGATATGTTCAAGTCTATTCCCTAGTGCTGATGCCATCTTCATGAAGTGC	746
EU882980.1P.bracteatum6OMT	GAGATATGTTCCAGTCTATTCCCTAGTGCTGATGCCATCTTCATGAAGAAC	1036
D29811.1C.japonica6OMT	GTGATATGTTCAAGTTCATACCAAAGGCTGATGCTATCATGATGAAGTGC	814
AY610507.1T.flavum6OMT	GAGATATGTTCAAATACATACCAAATGCTGATGCTATCATGATGAAGTGC	820
	* * * * *	
P.bracteatum6OMT	ATACTTCACGACTGGAATGATGAGGAATGCATTCAAATCCTGAAGCGATG	765
AY217335.1P.somniferum6OMT	ATACTTCACGACTGGAACGATGATGAATGCATTCAAATCCTGAAGAGATG	827
P.orientale6OMT	ATACTTCACGACTGGAATGATGAGGAATGCATTCAAATCCTGAAGCGATG	539
EU882988.1P.bracteatum6OMT	ATACTTCACGACTGGAACGACGAGGAATGCATTCAAATCCTGAAGCGATG	842
P.pseudo-orientale6OMT	ATACTTCACGACTGGAGTGATGAGGAATGCATTCAAATCCTGAAGCGATG	796
EU882980.1P.bracteatum6OMT	ATCCTTCACGATTGGAATGATGATGAATGTGTTTAAAGCGCTG	1086
D29811.1C.japonica6OMT	ATCCTTCACGACTGGGATGACAAAGAATGCATTGAAATCTAAAGCGATG	864
AY610507.1T.flavum6OMT	ATCCTTCATGATTGGGACGACAAAGAATGCATTGAAATCCTAAAGAGATG	870
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P.bracteatum6OMT	CAAAGAAGCATTACCA---AAAGATGGCAAAGTTATTATCGTGGATGTCG	812
AY217335.1P.somniferum6OMT	CAAAGAAGCATTACCA---AAAGTTGGCAAAGTTATTATCGTGGATGTCG	874
P.orientale6OMT	CAAAGAAGCATTACCA---AAAGATGGCAAAGTTATTATCGTGGATGTCG	586
EU882988.1P.bracteatum6OMT	CAAAGAAGCATTACCA---AAAGATGGCAAAGTTATTATCGTGGATGTCG	889
P.pseudo-orientale6OMT	CAAAGAAGCATTACCA---AAAGATGGCAAAGTTATTATCGTGGATGTCG	843
EU882980.1P.bracteatum6OMT	CAAAGAAGTAGTGTCT---GTAGGAGGAAAAGTCATACTGGTTGAAATGG	1133
D29811.1C.japonica6OMT	CAAGGAGGCAGTACCAGTCAAAGGCGGAAAGTGATTATAGTCGACATTG	914
AY610507.1T.flavum6OMT	CAAAGATGCAGTACCAAGAGATGGAGGAAAGTTATTATCATCGATATCA	920
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P.bracteatum6OMT	TGATAGACATGGATTTCGACTCATCCATATGCAAAAATTAGACTCACATTG	862
AY217335.1P.somniferum6OMT	TGATAGACATGGATTTCGACTCATCCATATGCAAAAATTAGACTCACACTG	924
P.orientale6OMT	TAATAGACATGGATTTCGACTCATCCATATGCAAAAATTAGACTCACATTG	636
EU882988.1P.bracteatum6OMT	TAATAGACATGGATTTCGACTCATCCATATGCAAAAATTAGACTCACATTG	939
P.pseudo-orientale6OMT	TGATAGACATGGATTTCGACTCATCCATATGCAAAAATTAGACTCACATTG	893
EU882980.1P.bracteatum6OMT	TAATGGACACGGAATTGGCTCATCCGTATTCAAACCTAGACTCACATTG	1183
D29811.1C.japonica6OMT	TCTTAAATGTGCAATCAGAACATCCTTATACCAAGATGAGACTGACTTTG	964
AY610507.1T.flavum6OMT	TATTAGATGTGAAATCAGAACATCCTTACACTAAAATGAGATTGACTTTG	970
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P.bracteatum6OMT	GATTTGGATATGATGCTCAACACTGGTGAAAAAGAGAGAACCAAAGAAGA	912
AY217335.1P.somniferum6OMT	GATTTGGATATGATGCTTAACACTGGTGAAAAAGAGAGAACCAAAGAAGA	974
P.orientale6OMT	GATTTGGATATGATGCTCAACACTGGTGAAAAAGAGAGAACCAAAGAAGA	686
EU882988.1P.bracteatum6OMT	GATTTAGATATGATGCTCAACACTGGTGAAAAAGAGAGAACCAAAGAAGA	989
P.pseudo-orientale6OMT	GATTTGGATATGATGCTCAACACTGGTGAAAAAGAGAGAACCAAAGAAGA	943
EU882980.1P.bracteatum6OMT	GATTTGGATATGCTGGTGAACAATGGAGGAAAAGAGGGAAGTGAAGAGGA	1233
D29811.1C.japonica6OMT	GATTTGGACATGATGCTCAACACTGGAGGAAAAGAGAGGACTGAAGAGGA	1014
AY610507.1T.flavum6OMT	GATTTGGACATGATGCTCAACACTGGAGGAAAAGAGAGAAGTGAAGAAGA	1020
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P.bracteatum6OMT	ATGGAAGATACTTTTTTGATGCCGCTGGTTTTGCAAGCCACAAAGTCACTC	962
AY217335.1P.somniferum6OMT	ATGGAAGACACTTTTTTGATGCCGCTGGTTTTGCTAGCCACAAAGTCACTC	1024
P.orientale6OMT	ATGGAAGATACTTTTTTGATGCCGCTGGTTTTGCAAGCCACAAAGTCACTC	736
EU882988.1P.bracteatum6OMT	ATGGAAGATACTTTTTTGATGCCGCTGGTTTTGCTAGCCACAAAGTCACTC	1039
P.pseudo-orientale6OMT	ATGGAAGATACTTTTTTGATGCCGCTGGTTTTGCAAGCCACAAAGTCACTC	993
EU882980.1P.bracteatum6OMT	ATGGAAGAAATTAATCTATGCAGCTGGTTTACTAGCTACAAGATTACTC	1283
D29811.1C.japonica6OMT	ATGGAAGAAGCTCATCCATGATGCAGGGTACAAAGGGCATAAGATAACAC	1064
AY610507.1T.flavum6OMT	GTGGAAGAAGCTCATTCATGATGCAGGATACAAAGGATATAAAATAACAC	1070
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P.bracteatum6OMT	AGATATCTGCTG-----TCCAATCTGTAATTGAGGCT-ACCCA-AT	1001
AY217335.1P.somniferum6OMT	AGATATCTGCTG-----TCCAATCTGTAATTGAGGCTTACCCCTTAT	1065
P.orientale6OMT	AGAATTCTGCAG-----TCCAATCTGTAATTGAGGCTTACCCCTTAT	748
EU882988.1P.bracteatum6OMT	AGATATCTGCTG-----TCCAATCTGTAATTGAGGCTTACCCCTTAT	1080
P.pseudo-orientale6OMT	AGATATCTGCTG-----TCCAATCTGTAATTGAGGCTTACCCCTTAT	1030
EU882980.1P.bracteatum6OMT	AAATGCTGCAGGTTTTCAGCTCAATCTGTAATTGAGGTTTA-----	1326
D29811.1C.japonica6OMT	AAATTACTGCTG-----TACAATCTGTGATTGAGGCTTATCCATAT	1105
AY610507.1T.flavum6OMT	ATATCTCTGCAG-----TTCAATCTGTGATTGAGGCTTATCCCTTAT	1111
	* * * * *	
P.bracteatum6OMT	C--GGATC-----CCGGG---CCCGTCGACT-----	1022
AY217335.1P.somniferum6OMT	TAAGGAACATTTTAACCGGTTTTCCCTTTGATTAAATTGTTG--CTTTCTC	1113
P.orientale6OMT	-----	
EU882988.1P.bracteatum6OMT	TAA-----	1083
P.pseudo-orientale6OMT	-----	
EU882980.1P.bracteatum6OMT	-----	
D29811.1C.japonica6OMT	TAGATGATAGTTAATCTGGCTTTCATTCCCTCTTTGTGAGTTATTTTTTTT	1155
AY610507.1T.flavum6OMT	TAGATAATCAGAAAAC-----TT	1130

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P.bracteatum6OMT -----
AY217335.1P.somniferum6OMT TTTGGATTATGTTTATGTTTATAACAATTGCAAGATGAATGAATTTCCAA 1163
P.orientale6OMT -----
EU882988.1P.bracteatum6OMT -----
P.pseudo-orientale6OMT -----
EU882980.1P.bracteatum6OMT -----
D29811.1C.japonica6OMT GTTCGATTTTCTGATTTCTTAAATGATTGTAAAATTACTTTCCAAGGAG 1205
AY610507.1T.flavum6OMT GCT-GAGTTTCT----TTTTAAAA-----AAAA----- 1153

P.bracteatum6OMT -----
AY217335.1P.somniferum6OMT CTTGCATTGGATTAAAAAAAAAAAAAAAA----- 1194
P.orientale6OMT -----
EU882988.1P.bracteatum6OMT -----
P.pseudo-orientale6OMT -----
EU882980.1P.bracteatum6OMT -----
D29811.1C.japonica6OMT GCAAGAAGCCCAACTGAGAAAGTGCAACTTGAGATGTTAATGCCATTTTG 1255
AY610507.1T.flavum6OMT --AAAA-----AAAA----- 1162

P.bracteatum6OMT -----
AY217335.1P.somniferum6OMT -----
P.orientale6OMT -----
EU882988.1P.bracteatum6OMT -----
P.pseudo-orientale6OMT -----
EU882980.1P.bracteatum6OMT -----
D29811.1C.japonica6OMT CTTTAAAGTGTT 1267
AY610507.1T.flavum6OMT -----

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Alignments (TNMT gene)

CLUSTAL 2.1 multiple sequence alignment

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P.pseudo-orientaleTNMT -----
EU882993.1P.bracteatumputative -----GTTTGTTT 8
P.bracteatumTNMT -----
EU882994.1P.bracteatumTNMT -----
P.orientaleTNMT -----
DQ028579.1P.somniferumTNMT GGCACGAGATTCTCTCTTGCAATTCATTTTAGTCTTGTCTTCGTAGAAAT 50
EU882977.1E.californicaTNMT -----GCAAAATTGTCT 12

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P.pseudo-orientaleTNMT	-----	
EU882993.1P.bracteatumputative	TTCTCCCTAGTTTACTTTAGCCTAGATTGTCTCATCATGGGTTCAATAGA	58
P.bracteatumTNMT	-----	
EU882994.1P.bracteatumTNMT	-----CACTAGCCTGGATTGTATCAGCATGGGTTCAATAGA	36
P.orientaleTNMT	-----	
DQ028579.1P.somniferumTNMT	CCACTTAGTTTCCTCACTAGCCTAGACTGTATCATTATGGGTTCAATAGA	100
EU882977.1E.californicaTNMT	CTCTCTAGATTTTGTATTGAGAAGGAAATTCGTGATTAGTAAAGAAAA	62
P.pseudo-orientaleTNMT	-----	
EU882993.1P.bracteatumputative	AGAAGTGAAGAAGGAATCTGCAGAGGAAACCCTAGGGAGATTGTTAAGAG	108
P.bracteatumTNMT	-----	
EU882994.1P.bracteatumTNMT	TGAAGTGAAGAAGGAATCAGCAGGGGAAACACTTGGGAGATTGTTGAAAG	86
P.orientaleTNMT	-----	
DQ028579.1P.somniferumTNMT	TGAGGTCAAGAAGGAATCAGCAGGGGAAACACTAGGGAGATTGTTGAAAG	150
EU882977.1E.californicaTNMT	AAAAAGATGGGATCATCAGCTGGGGAGATCATGGGGAGGTTGATGAAAG	112
P.pseudo-orientaleTNMT	-----	
EU882993.1P.bracteatumputative	GAGAGATTAATGATGAGGAATTGAAGAAACTGATTAAGTATCAATTGGAG	158
P.bracteatumTNMT	-----	
EU882994.1P.bracteatumTNMT	GAGAGATTAAAGATGAGGAACGAAGAAGCTGATCAAGTTTCAGTTCGAG	136
P.orientaleTNMT	-----	
DQ028579.1P.somniferumTNMT	GAGAGATTAAAGATGAGGAACGAAGAAGCTGATTAAGTTTCAATTTCGAG	200
EU882977.1E.californicaTNMT	GAGAAATTGAAGATGAAGAACTTAAGAAGCTAATTAGACATCAATGGGAC	162
P.pseudo-orientaleTNMT	-----	
EU882993.1P.bracteatumputative	AAACGTCTTCAATGGGGTTATAAATCATCTCATCAAGAACAACCTCTCCTT	208
P.bracteatumTNMT	---CGTCTGCAATGGGGTTATAAATCATCTCATCAAGAACAACCTCTCCTT	47
EU882994.1P.bracteatumTNMT	AAGCGTCTGCAATGGGGTTATAAATCATCTCATCAAGAACAACCTCTCCTT	186
P.orientaleTNMT	-----TCAGCAAGGGGGTTATAAATCATCTCATCAAGAACAACCTCTCCTT	45
DQ028579.1P.somniferumTNMT	AAACGTCTGCAATGGGGTTATAAATCATCTCATCAAGAACAACCTCTCCTT	250
EU882977.1E.californicaTNMT	AGACGTATCGAATGGGGTTACAAACCCACTCATGAAAAACAATTAGCTTT	212
P.pseudo-orientaleTNMT	-----	
EU882993.1P.bracteatumputative	CAACCTTGACTTCATTAATTCCTTAAAAAAGATGGGTATGTCAGGACAGG	258
P.bracteatumTNMT	CAACCTTGACTTCATTAATTCCTTAAAAAAGATGGAAATGTCAGGAGAGA	97
EU882994.1P.bracteatumTNMT	CAACCTTGACTTCATTAATTCCTTAAAAAAGATGGAAATGTCAGGAGAGA	236
P.orientaleTNMT	CAACCTTGACTTCATTAATTCCTTAAAAAAGATGGAAATGTCAGGAGAGA	95
DQ028579.1P.somniferumTNMT	CAACCTTGACTTCATTAATTCCTTAAAAAAGATGGAAATGTCAGGAGAGA	300
EU882977.1E.californicaTNMT	CAACTTAGACTTCATTAAGGATTGAAAGAGATGGTTATGTCAGGGGAGA	262

P.pseudo-orientaleTNMT	-----	
EU882993.1P.bracteatumputative	TTGAGGCATTACAAACGAAGTCTATGAATTACCGACAGAATGTTTTGAA	308
P.bracteatumTNMT	TTGAGACAATGAACAAGGAACTTATGAATTACCCTCAGAATTCTTAGAG	147
EU882994.1P.bracteatumTNMT	TTGAGACAATGAACAAGGAACTTATGAATTACCCTCAGAATTCTTAGAG	286
P.orientaleTNMT	TTGAGACAATGAACAAGGAACTTATGAATTACCCTCAGAATTCTTAGAG	145
DQ028579.1P.somniferumTNMT	TTGAGACAATGAACAAGGAACTTATGAATTACCCTCAGAATTCTTAGAG	350
EU882977.1E.californicaTNMT	TAGACACAATGAATAAAGAACTTATGAATTACCTACTGCTTTCTTGAG	312

P.pseudo-orientaleTNMT	-----	
EU882993.1P.bracteatumputative	GCAGCTTATGGAAAAAGTATGAACTAAGTGGATGTTACTTTAAACATGA	358
P.bracteatumTNMT	GCAGTTTTTTGGAAAAACAGTCAAGCAAAGTATGTGTTACTTCAAACATGA	197
EU882994.1P.bracteatumTNMT	GCAGTTTTTTGGAAAAACAGTCAAGCAAAGTATGTGTTACTTCAAACATGA	336
P.orientaleTNMT	GCAGTTTTT-GGAAAAACAGTCAAGCAAAGTATGTGTTACTTCAAACATGA	194
DQ028579.1P.somniferumTNMT	GCAGTTTTTTGGGAAAACTGTCAAGCAAAGTATGTGTTACTTCACACATGA	400
EU882977.1E.californicaTNMT	GCAGTTTTTTGGCAAAACTGTCAAACAGAGTTGTTGTTACTTCAAAGACGA	362

P.pseudo-orientaleTNMT	-----GCG	3
EU882993.1P.bracteatumputative	ATCATCAACAATAGACGAAGCAGAAGAAGCTTCACATGAATTATACTGCG	408
P.bracteatumTNMT	ATCAGCAACAATAGACGAAGCAGAAGAAGCTGCACATGAATTATACTGTG	247
EU882994.1P.bracteatumTNMT	ATCAGCAACAATAGACGAAGCAGAAGAAGCTGCACATGAATTATACTGTG	386
P.orientaleTNMT	ATCAGCAACAATAGACGAAGCAGAAGAAGCTGCACATGAATTATACTGTG	244
DQ028579.1P.somniferumTNMT	ATCAGCAACAATAGACGAAGCAGAAGAAGCTGCACATGAATTATACTGTG	450
EU882977.1E.californicaTNMT	GAACCTCGACAATTGACGAAGCAGAGGAAGCAGCCCATGAATTATACTGTG	412
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P.pseudo-orientaleTNMT	AGCGAGCACAAATCAAAGATGGACAAACTGTTCTTGATATCGGTTGCGGT	53
EU882993.1P.bracteatumputative	AGCGAGCACAAATCAAAGATGGACAAACTGTTCTTGATATCGGTTGCGGT	458
P.bracteatumTNMT	AACGAGCACAGATCAAAGATGGACAAACTGTTCTCGACATTGGTTGTGGT	297
EU882994.1P.bracteatumTNMT	AACGAGCACAGATCAAAGATGGACAAACTGTTCTCGACATTGGTTGTGGT	436
P.orientaleTNMT	AACGAGCACAAATCAAAGATGGACAAACTGTTCTCGACATTGGTTGTGGT	294
DQ028579.1P.somniferumTNMT	AACGAGCACAAATCAAAGACGGACAAACTGTTCTTGACATTGGTTGTGGT	500
EU882977.1E.californicaTNMT	AAAGAGCACAAATCAAAGACGGGCAACAGTTCTTGATATCGGTTGCGGT	462
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P.pseudo-orientaleTNMT	CAAGGTGGTCTAGTTCTTATACGTTGCTCAGAAATATAAGAACTGTCATGT	103
EU882993.1P.bracteatumputative	CAAGGTGGTCTAGTTCTTATACGTTGCTCAGAAATATAAGAACTGTCATGT	508
P.bracteatumTNMT	CAAGGTGGTCTAGTTCTTATACATTGCTCGGAAATATAAGAAATGTCATGT	347
EU882994.1P.bracteatumTNMT	CAAGGTGGTCTAGTTCTTATACATTGCTCGGAAATATAAGAAATGTCATGT	486
P.orientaleTNMT	CAAGGTGGTCTAGTTCTTATACATTGCTCAGAAATATAAGAAATGTCATGT	344
DQ028579.1P.somniferumTNMT	CAAGGTGGTCTAGTTCTTATACATTGCTCAGAAATATAAGAACTGCCATGT	550
EU882977.1E.californicaTNMT	CAAGGAGTCTCGTTCTTTATATTGCGGAAAAGTATAAGAACTGTCATGT	512
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P.pseudo-orientaleTNMT	TACAGGGCTCCTAATTCAAAGGAACAAGTGAATTATATAATCAAACAAA	153
EU882993.1P.bracteatumputative	TACAGGGCTTACTAATTCAAAGGAACAAGTAAATTACATACTCAAACAAG	558
P.bracteatumTNMT	TACAGGGCTCCTAATTCAAAGGCACAAGTCAATTACTTACTCAAGCAAG	397
EU882994.1P.bracteatumTNMT	TACAGGGCTCCTAATTCAAAGGCACAAGTCAATTACTTACTCAAGCAAG	536
P.orientaleTNMT	TACAGGGCTCCTAATTCAAAGGCACAAGTCAATTACTTACTCAAGCAAG	394
DQ028579.1P.somniferumTNMT	TACAGGGCTCCTAATTCAAAGGCACAAGTCAATTACTTACTCAAGCAAG	600
EU882977.1E.californicaTNMT	TACAGGTCTTACTAATTCAAAGGCACAAGCAAACACTACATCGAACAAACAGG	562
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P.pseudo-orientaleTNMT	CAGAGAAGCTTGGGCTGAAAAACGTGGACGTCCTACTGGCAGATGTTACT	203
EU882993.1P.bracteatumputative	CAGAGAAGCTTGGGCTGAGAAACGTGGACGTCATACTGGCAGATGTTACT	608
P.bracteatumTNMT	CAGAGAAGCTTGGGCTGACAAATGTCGACGCCATACTAGCAGATGTCACT	447
EU882994.1P.bracteatumTNMT	CAGAGAAGCTTGGGCTGACAAATGTCGACGCCATACTAGCAGATGTCACT	586
P.orientaleTNMT	CAGAGAAGCTTGGGCTGACAAATGTCGACGCCATACTAGCAGATGTCACT	444
DQ028579.1P.somniferumTNMT	CAGAGAAGCTTGGGCTGACAAACGTGACGCCATACTAGCAGATGTTACT	650
EU882977.1E.californicaTNMT	CAGAGAAGCTTGAGTTGACGAACGTTGATGTAATATTTCGCAGATGTTACT	612
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P.pseudo-orientaleTNMT	CAATACGAATCTGACAAGACATACGATCGAATACTTGTAAATTGGAGCTGT	253
EU882993.1P.bracteatumputative	CAATACGAATCTGACAAGACATACGATCGAATACTTGTAAATTGGAGTTGT	658
P.bracteatumTNMT	CAATATGAATCTGACAAGACATACGATCGACTACTTATGATTGAAGCCAT	497
EU882994.1P.bracteatumTNMT	CAATATGAATCTGACAAGACATACGATCGACTACTTATGATTGAAGCCAT	636
P.orientaleTNMT	CAATATGAATCTGACAAGACATACGATCGACTACTTATGATTGAAGCCAT	494
DQ028579.1P.somniferumTNMT	CAGTATGAATCTGACAAGACATACGATCGTCTACTTATGATTGAAGCCAT	700
EU882977.1E.californicaTNMT	AAATTTGACACGGACAAGACATATGATCGGATACTTGTGTTGAAACTAT	662
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P.pseudo-orientaleTNMT	AGAGCACATGAAAAACATACAACCTGTTTATGAAGAACTATCAACCTGGA	303
EU882993.1P.bracteatumputative	AGAGCACATGAAAAACATGCAACTGTTTATAAAGAACTATCAACTTGGA	708
P.bracteatumTNMT	AGAGCACATGAAAAACTTACAACCTGTTTCATGAAGAACTATCAACTTGGA	547
EU882994.1P.bracteatumTNMT	AGAGCACATGAAAAACTTACAACCTGTTTCATGAAGAACTATCAACTTGGA	686
P.orientaleTNMT	AGAGCACATGAAAAACTTACAACCTGTTTCATGAAGAACTATCAACTTGGA	544
DQ028579.1P.somniferumTNMT	AGAGCATATGAAAAACTTACAGCTGTTTCATGAAGAACTATCAACTTGGA	750
EU882977.1E.californicaTNMT	AGAACACATGAAGAACATTCAACTGTTTCATGAAGAAATTGTCAACTTGGA	712
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P.pseudo-orientaleTNMT	TGACCGAAGATAGCTTTCTTTTGTGGATCATCTCTGCCATAAAACATTT	353
EU882993.1P.bracteatumputative	TGGCAGAAGATAGCCTTCTTTTGTGGATCATAGCTGCCATAAAACATTT	758
P.bracteatumTNMT	TGACAGAAGAAAGTCTTCTCTTTGTGGACCATGTCTGCCATAAAACCTTT	597
EU882994.1P.bracteatumTNMT	TGACAGAAGAAAGTCTTCTCTTTGTGGACCATGTCTGCCATAAAACCTTT	736
P.orientaleTNMT	TGACAGAAGAAAGTCTTCTCTTTGTGGACCATATCTGCCATAAAACCTTT	594
DQ028579.1P.somniferumTNMT	TGACAAAAGAAAGTCTTCTCTTTGTGGACCACGTCTGCCACAAAACATTT	800
EU882977.1E.californicaTNMT	TGACAGAAGACAGTCTTCTTTTGTGGATCACATTAGCCACAAAACCTTC	762
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P.pseudo-orientaleTNMT	AGTCACTTATTTGAGGCAATCGACGAGGATGACTGGTACTCTGGTTACAT	403
EU882993.1P.bracteatumputative	AATCACTTTTTTGAGGCAGTCGACGAGGATGACTGGTACTCGGGTTACAT	808
P.bracteatumTNMT	GCTCACTTTTTTGAGGCAGTCGACGAGGATGACTGGTACTCAGGTTTCAT	647
EU882994.1P.bracteatumTNMT	GCTCACTTTTTTGAGGCAGTCGACGAGGATGACTGGTACTCAGGTTTCAT	786
P.orientaleTNMT	GCTCACTTTTTTGAGGCAGTCGACGAGGATGACTGGTACTCAGGTTTCAT	644
DQ028579.1P.somniferumTNMT	GCTCACTTTTTTGAGGCAGTCGATGAGGATGACTGGTACTCAGGTTTCAT	850
EU882977.1E.californicaTNMT	AATCATAACTTTGAGGCAGTCGACGAAGATGACTGGTACTCAGGTTTCAT	812
	*** ***** ** *	
P.pseudo-orientaleTNMT	CTTTTCCCCGGGTGTGCTTACAGTTCTATCTGCTGATAGTCTCCTCTATT	453
EU882993.1P.bracteatumputative	CTTTCCCCCGGGTGTGCTACATTTCTATCTGCTGATAGTCTCCTCTATT	858
P.bracteatumTNMT	CTTCCCCCAGGTTGTGCAACCATACTAGCTGCTAATAGTCTCCTCTATT	697
EU882994.1P.bracteatumTNMT	CTTCCCCCAGGTTGTGCAACCATACTAGCTGCTAATAGTCTCCTCTATT	836
P.orientaleTNMT	CTTCCCCCAGGTTGTGCAACCATACTAGCTGCTAATAGTCTCCTCTATT	694
DQ028579.1P.somniferumTNMT	TTTCCCCCAGGTTGTGCAACCATACTAGCTGCTAATAGTCTCCTCTATT	900
EU882977.1E.californicaTNMT	CTTCCCCAAGGGTGTGCGTGACCATACTGTCATCTTCTACTCTTCTCTACT	862
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P.pseudo-orientaleTNMT	TCCAGGACGATGTTTCCGTTGTGGATCATTGGGTTGTGAACGGGATGCAC	503
EU882993.1P.bracteatumputative	TCCAGGATGATGTTTCCGTTGTGGATCATTGGGTTGTGAACGGAATGCAC	908
P.bracteatumTNMT	TCCAGGATGATGTTTCAGTTGTGGATCATTGGGTTGTCAACGGAATGCAC	747
EU882994.1P.bracteatumTNMT	TCCAGGATGATGTTTCAGTTGTGGATCATTGGGTTGTCAACGGAATGCAC	886
P.orientaleTNMT	TCCAGGATGATGTTTCAGTTGTGGATCATTGGGTTGTCAATGGAATGCAC	744
DQ028579.1P.somniferumTNMT	TCCAGGATGATGTTTCAGTTGTGGATCATTGGGTTGTCAATGGAATGCAC	950
EU882977.1E.californicaTNMT	TTCAGGATGATGTTTCAGCTCTTGATCATTGGGTTGTCAACGGAATGCAC	912
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P.pseudo-orientaleTNMT	ATGGCTCGTACAATGGATGCGTGGAGAAAGAAGCTAGATAAAAAATATGGA	553
EU882993.1P.bracteatumputative	TTTGCTCGTACAGTGGATGCGTGGAGAAAGAAGCTAGATAAAAAATATGGA	958
P.bracteatumTNMT	ATGGCTCGTTCAGTAGACATTTGGAGAAAGGCACTAGACAAAAATATGGA	797
EU882994.1P.bracteatumTNMT	ATGGCTCGTTCAGTAGACATTTGGAGAAAGGCACTAGACAAAAATATGGA	936
P.orientaleTNMT	ATGGCTCGTTCAGTAGACAATTGGAGAAAGGCACTAGACAAAAATATGGA	794
DQ028579.1P.somniferumTNMT	ATGGCTCGTTCAGTAGACATTTGGAGAAAGGCGCTAGACAAAAATATGGA	1000
EU882977.1E.californicaTNMT	ATGGCTCGTTCAGTAGAGGCATGGAGGAAGAACTCGACGAAACCATTGA	962
	* ***** ** * ** ***** ** ** ** **	
P.pseudo-orientaleTNMT	AGCGGTAAAAGAAATTCTATTACCAGGACTTGGTGGAACCATGAAGCAG	603
EU882993.1P.bracteatumputative	AGCGGTAAAAGAAATTCTATTGCCAGGACTTGGTGGAACCATGAAGCAG	1008
P.bracteatumTNMT	AGCTGCAAAAGAAATTCTATTACCTGGACTTGGAGGAAGCCACGAAGCAG	847
EU882994.1P.bracteatumTNMT	AGCTGCAAAAGAAATTCTATTACCTGGACTTGGAGGAAGCCACGAAGCAG	986
P.orientaleTNMT	AGCTGCAAAAGAAATTCTATTACCTGGACTTGGAGGAAGCCACGAAGCAG	844
DQ028579.1P.somniferumTNMT	AGCTGCAAAAGAAATTCTATTACCTGGACTTGGAGGAAGCCACGAACAG	1050
EU882977.1E.californicaTNMT	AGCAGCAAGAGAAATACTTGAACCTGGCCTT---GGAAGTAAAGAAGCAG	1009
	*** * ** ***** ** ** ** ** ** ** ** ** ** * ** *	

P.pseudo-orientaleTNMT	TAAATGGCGTCATTACTCACATCAGGACATTGTGTTGGGAGGGTATGTA	653
EU882993.1P.bracteatumputative	TAAATGGCGTCATTACTCACATCAGGACATGTTGTGTCGGAGGGTATGTA	1058
P.bracteatumTNMT	TAAA-----	851
EU882994.1P.bracteatumTNMT	TAAATGGAGTCGTTACTCACATTAGAACATTCTGTATGGGAGGCTATGAA	1036
P.orientaleTNMT	TGAATGGAGTCGTTACACACATTAGAACATTCTGTATGGGAGGCTATGAA	894
DQ028579.1P.somniferumTNMT	TGAATGGAGTCGTTACTCACATTAGAACATTCTGTATGGGAGGCTATGAA	1100
EU882977.1E.californicaTNMT	TTAACCAAGTCATTACTCACATAAGGACTTTTTGTATAGGAGGGTATGAA	1059
	* **	
P.pseudo-orientaleTNMT	CAATTCTCATTCAACGATGGAGATGAATGGATGAACGCACAACGCTTTT-	702
EU882993.1P.bracteatumputative	CAATTCTCATTGAACGATGGAGATGAATGGATGAATGCACAACGCTTTTT	1108
P.bracteatumTNMT	-----	
EU882994.1P.bracteatumTNMT	CAATTCTCAATGAACGATGGAGATGAGTGGATGGTTGCGCAGCTGCTTTT	1086
P.orientaleTNMT	CAATTCTCAATGAACAATGGAGATGAAGG-----	923
DQ028579.1P.somniferumTNMT	CAATTCTCAATGAACAATGGAGATGAGTGGATGGTTGCGCAGCTGCTTTT	1150
EU882977.1E.californicaTNMT	CAATTCTCATAACAATGGAGAAGAATGGATGATAACACAAATTCCTTTT	1109
P.pseudo-orientaleTNMT	CAAGAAGAAGT-A-----GAA-----	717
EU882993.1P.bracteatumputative	CAAGAAGAAGT-AATGAG---TGGTCTAGGAACATACTCAACCCGCATT	1153
P.bracteatumTNMT	-----	
EU882994.1P.bracteatumTNMT	CAAGAAGAAGT-AGNGNGGCAATTTCCNCGGCAANTGCATTTTCCANAGN	1135
P.orientaleTNMT	-----	
DQ028579.1P.somniferumTNMT	CAAGAAGAAGT-AGTGAGGCCATTTCCACGGCAACTGCATTTTCCAGAGC	1199
EU882977.1E.californicaTNMT	CAAGAAGAAATGAATGAAAACCTTCTTTCACCGAAT-----TGCATT	1151
P.pseudo-orientaleTNMT	-----TCG-----GAT-----CCCGG	728
EU882993.1P.bracteatumputative	TCCGCGCCTTATTATATCA-----AATAATTGCTGGTTGCTTCTCAG	1195
P.bracteatumTNMT	-----	
EU882994.1P.bracteatumTNMT	TGNGTAACAANGTGATCCNCAAGTAACAANAATTNTGGGNTGTATCNCAG	1185
P.orientaleTNMT	-----	
DQ028579.1P.somniferumTNMT	TGTGTAATAATGTGATCCTCAAGTAACAATAATTGTGGGTTGTATCACAG	1249
EU882977.1E.californicaTNMT	TTCATTTTAAGTTCCATCT-----AATAAATG-----GG	1180
P.pseudo-orientaleTNMT	G-----CCGCTCG-----ACT-----	739
EU882993.1P.bracteatumputative	GGGTTTTGCTTGTTGTGCCGTTGTTTCGCATTCCCTAACTCGGATTGAA--G	1243
P.bracteatumTNMT	-----	
EU882994.1P.bracteatumTNMT	GGGTTTGGNNTGTT-TTTNTTGTNTGCATTTTACTTTGTTTTTNTTTT	1234
P.orientaleTNMT	-----	
DQ028579.1P.somniferumTNMT	GGGTTTGCTTGTT-TTTGTTGTCTGCATTTCTACTTTGTTTTTCTTTT	1298
EU882977.1E.californicaTNMT	GGTTTTCTTGTTGAAGAATTGTTTG-----TAATTTGAGGTTT-----	1219

P.pseudo-orientaleTNMT	-----GCAGAGCA-----	747
EU882993.1P.bracteatumputative	AATTTATATTTTT-ATTTTATGTACTTAGTTTCCTAGTAGAACAGAAGAA	1292
P.bracteatumTNMT	-----	
EU882994.1P.bracteatumTNMT	AATTTGGATTCAAGATTTGAANAANTCCNTTTTAAATTATACCA-----	1278
P.orientaleTNMT	-----	
DQ028579.1P.somniferumTNMT	AATTTGGATACAAGATTTGAAGAACTCCATTCGTAATTATATCA-----	1342
EU882977.1E.californicaTNMT	-----ATTGGCTTGATGTTTCGTTA-----	1240

P.pseudo-orientaleTNMT	-----TGC-----	750
EU882993.1P.bracteatumputative	ACTCTTGCACCCCGGCCGGGCAATCGCCTCTATATATTTTCTTCTTTATG	1342
P.bracteatumTNMT	-----	
EU882994.1P.bracteatumTNMT	--TGTAANGGATTTNTNGGAAAAAAAAAAAAAAAAAAAAAAAAAAAA	1326
P.orientaleTNMT	-----	
DQ028579.1P.somniferumTNMT	--TGTAATGGGTTGTCAAATCAACAGGTGTGAGAAAATTGTACCAACATT	1390
EU882977.1E.californicaTNMT	---CCTATTTCTCTTTCGA--AATTGTTGAANTAAGATGCTTCGATTATG	1285

P.pseudo-orientaleTNMT	-----	
EU882993.1P.bracteatumputative	CAATTTATCTCGGATTATATAAACTTTGATGTTGTTTAAAAAAAAAAAA	1392
P.bracteatumTNMT	-----	
EU882994.1P.bracteatumTNMT	-----AAAAAAAAAAAAAAAA	1342
P.orientaleTNMT	-----	
DQ028579.1P.somniferumTNMT	TGCGTTTTCTGTTGTCTAGTTATTTGTTACTTTATATTAAAAAAAAAAAA	1440
EU882977.1E.californicaTNMT	-----TTTGTTTTNTTTTAAAAAAAAAAAA	1311

P.pseudo-orientaleTNMT	-----	
EU882993.1P.bracteatumputative	AAAAAAA-	1399
P.bracteatumTNMT	-----	
EU882994.1P.bracteatumTNMT	AAAAAAA	1350
P.orientaleTNMT	-----	
DQ028579.1P.somniferumTNMT	AAAAAAA	1448
EU882977.1E.californicaTNMT	AAAAAAA	1319

Alignments (*SalAT* gene).

CLUSTAL 2.1 multiple sequence alignment

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P.bracteatumSalAT      -----
FJ200355.1P.bracteatumSalAT -----
P.pseudo-orientaleSalAT -----
AF339913.1P.somniferumSalAT GAGAGTTTCTTCTTATCCAGCTCCTCGCAAATGAAATGATTCCATAATAC 50
FJ200353.1P.somniferumSalAT -----
FJ200354.1P.somniferumSalAT -----
FJ200357.1P.orientaleSalAT -----
FJ200356.1P.bracteatumSalAT -----
FJ200358.1P.orientaleSalAT -----

P.bracteatumSalAT      -----
FJ200355.1P.bracteatumSalAT -----
P.pseudo-orientaleSalAT -----
AF339913.1P.somniferumSalAT CTCTCTAAAAGACTTGGTCATTATATAAGAGAGGGAGACCACGAGCTTCT 100
FJ200353.1P.somniferumSalAT -----
FJ200354.1P.somniferumSalAT -----
FJ200357.1P.orientaleSalAT -----
FJ200356.1P.bracteatumSalAT -----
FJ200358.1P.orientaleSalAT -----

P.bracteatumSalAT      -----
FJ200355.1P.bracteatumSalAT -----
P.pseudo-orientaleSalAT -----
AF339913.1P.somniferumSalAT TCTAAACAACAGAAAGTATCATCTACCATTATCAATCCTGTTAAACAGTT 150
FJ200353.1P.somniferumSalAT -----
FJ200354.1P.somniferumSalAT -----
FJ200357.1P.orientaleSalAT -----
FJ200356.1P.bracteatumSalAT -----
FJ200358.1P.orientaleSalAT -----
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P.bracteatumSalAT	-----	
FJ200355.1P.bracteatumSalAT	-----ATGGCAACAATGTATAGTGCTGCTGTTGAAGTGAT	35
P.pseudo-orientaleSalAT	-----	
AF339913.1P.somniferumSalAT	AAACACTTTGGATATATGGCAACAATGTATAGTGCTGCTGTTGAAGTGAT	200
FJ200353.1P.somniferumSalAT	-----ATGGCAACAATGTATAGTGCTGCTGTTGAAGTGAT	35
FJ200354.1P.somniferumSalAT	-----ATGGCAACAATGTATAGTGCTGCTGTTGAAGTGAT	35
FJ200357.1P.orientaleSalAT	-----ATGGCAACAATGTATAGTGCTGCTGTCGAAGTGAT	35
FJ200356.1P.bracteatumSalAT	-----ATGGCAACAATGTATAGTGCTGCTGTCGAAGTGAT	35
FJ200358.1P.orientaleSalAT	-----ATGGCAACAATGTATAGTGCTGCTGTCGAAGTGAT	35
P.bracteatumSalAT	-----	
FJ200355.1P.bracteatumSalAT	CTCTAAGGAAACCATTAAACCCACAACCTCCAACCCCATCTCAACTTAAAA	85
P.pseudo-orientaleSalAT	-----ACCCCATCTCAACTTAAAA	19
AF339913.1P.somniferumSalAT	CTCTAAGGAAACCATTAAACCCACAACCTCCAACCCCATCTCAACTTAAAA	250
FJ200353.1P.somniferumSalAT	CTCTAAGGAAACCATTAAACCCACAACCTCCAACCCCATCTCAACTTAAAA	85
FJ200354.1P.somniferumSalAT	CTCTAAGGAAACCATTAAACCCACAACCTCCAACCCCATCTCAACTTAAAA	85
FJ200357.1P.orientaleSalAT	CTCCAAGGAAACCATTAAACCCAAAACCTCCAACCTATATCATTTTAAAA	85
FJ200356.1P.bracteatumSalAT	CTCCAAGGAAACCATTAAACCCAAAACCTCCAACCTATATCATTTTAAAA	85
FJ200358.1P.orientaleSalAT	CTCCAAGGAAACCATTAAACCCAAAACCTCCAACCTATATCATTTTAAAA	85
P.bracteatumSalAT	-----	
FJ200355.1P.bracteatumSalAT	ACTTCAATTTGTCACTTCTCGATCAATGTTTTCCCTTTATATTATTATGTT	135
P.pseudo-orientaleSalAT	ACTTCAATTTGTCACTTCTCGATCAATGTTTTCCCTTTATATTATTATGTT	69
AF339913.1P.somniferumSalAT	ACTTCAATCTGTCACTTCTCGATCAATGTTTTCCCTTTATATTATTATGTT	300
FJ200353.1P.somniferumSalAT	ACTTCAATCTGTCACTTCTCGATCAATGTTTTCCCTTTATATTATTATGTT	135
FJ200354.1P.somniferumSalAT	ACTTCAATCTGTCACTTCTCGATCAATGTTTTCCCTTTATATTATTATGTT	135
FJ200357.1P.orientaleSalAT	TCTTCAATCTGTCACTTCTCGATCAATATTATCCTCCATTTTAT---ATT	132
FJ200356.1P.bracteatumSalAT	TCTTCAATCTGTCACTTCTCGATCAATATTATCCTCCATTTTAT---ATT	132
FJ200358.1P.orientaleSalAT	ACTTCAATCTGTCACTTCTCGATCAATATTATCCTCCATTTTAT---ATT	132
P.bracteatumSalAT	-----	
FJ200355.1P.bracteatumSalAT	CCAATCATTTCTTTTCTACCCGGACACCGTCGCTAATAGTACCGGTAGCAG	185
P.pseudo-orientaleSalAT	CCAATCATTTCTTTTCTACCCGGACACCGTCGCTAATAGTACCGGTAGCAG	119
AF339913.1P.somniferumSalAT	CCAATCATTTCTTTTCTACCCAGCCACCGCCGCTAATAGTACCGGTAGCAG	350
FJ200353.1P.somniferumSalAT	CCAATCATTTCTTTTCTACCCAGCCACCGCCGCTAATAGTACCGGTAGCAG	185
FJ200354.1P.somniferumSalAT	CCAATCATTTCTTTTCTACCCAGCCACCGCCGCTAATAGTACCGGTAGCAG	185
FJ200357.1P.orientaleSalAT	CCAACCATTTCTTTTCTACCCTGCCACCGTCGCTAATAATACCGTTAGCAG	182
FJ200356.1P.bracteatumSalAT	CCAACCATTTCTTTTCTACCCTGCCACCGTCGCTAATAATACCGTTAGCAG	182
FJ200358.1P.orientaleSalAT	CCAACCATTTCTTTTCTACCCTGCCACCGTCGCTAATAATACCGTTAGCAG	182

P.bracteatumSalAT	-----AGTTCTCTTTCCCAATGTA	19
FJ200355.1P.bracteatumSalAT	TAGCCATCATGATGATCTTGACTTGCTTAAGAGTTCTCTTTCCAAAACAC	235
P.pseudo-orientaleSalAT	TAACCATCATGATGATCTTGACTTGCTTAAGAGTTCTCTTTCCAAAACAC	169
AF339913.1P.somniferumSalAT	TAACCATCATGATGATCTTGACTTGCTTAAGAGTTCTCTTTCCAAAACAC	400
FJ200353.1P.somniferumSalAT	TAACCATCATGATGATCTTGACTTGCTTAAGAGTTCTCTTTCCAAAACAC	235
FJ200354.1P.somniferumSalAT	TAACCATCATGATGATCTTGACTTGCTTAAGAGTTCTCTTTCCAAAACAC	235
FJ200357.1P.orientaleSalAT	TAACCACCATGATGATCTTGACTTGCTTAAGAGTTCTCTTTCTGAAACAC	232
FJ200356.1P.bracteatumSalAT	TAACCACCATGATGATCTTGACTTGCTTAAGAATTCTCTTTCTGAAACAC	232
FJ200358.1P.orientaleSalAT	TAACCACCATGATGATCTTGACTTGCTTAAGAGTTCTCTTTCTGAAACAC	232
	* * * * *	
P.bracteatumSalAT	TAGTTCACCTTTTATCCAATGGATGGCAGATTGATAGACTATATCCTGGTC	69
FJ200355.1P.bracteatumSalAT	TAGTTCACCTTTTATCCAATGGCTGGTAGAATGATAGACAATATCCTGGTC	285
P.pseudo-orientaleSalAT	TAGTTCACCTTTTATCCAATGGCTGGTAGAATGATAGACAATATCCTGGTC	219
AF339913.1P.somniferumSalAT	TAGTTCACCTTTTATCCAATGGCTGGTAGGATGATAGACAATATTTCTGGTC	450
FJ200353.1P.somniferumSalAT	TAGTTCACCTTTTATCCAATGGCTGGTAGGATGATAGACAATATTTCTGGTC	285
FJ200354.1P.somniferumSalAT	TAGTTCACCTTTTATCCAATGGCTGGTAGGATGATAGACAATATTTCTGGTC	285
FJ200357.1P.orientaleSalAT	TAGTTCACCTTTTATCCAATGGCTGGTAGGATGAAAGACAACATCGTGGTC	282
FJ200356.1P.bracteatumSalAT	TAGTTCACCTTTTATCCAATGGCTGGTAGGATGAAAGACAACATCGTGGTC	282
FJ200358.1P.orientaleSalAT	TAGTTCACCTTTTATCCAATGGCTGGTAGGATGAAAGACAACATCGTGGTC	282
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P.bracteatumSalAT	TACTGTCATGACCCAGGGATTGACTTTTACAAAGTAAAAATTAAAGGTAA	119
FJ200355.1P.bracteatumSalAT	GACTGTCATGACCAAGGGATTGACTTTTACAAAGTAAAAATTAGAGGTAA	335
P.pseudo-orientaleSalAT	GACTGTCATGACCAAGGGATTGAATTTTACAAAGTAAAAATTAGAGGTAA	269
AF339913.1P.somniferumSalAT	GACTGTCATGACCAAGGGATTAACTTTTACAAAGTAAAAATTAGAGGTAA	500
FJ200353.1P.somniferumSalAT	GACTGTCATGACCAAGGGATTAACTTTTACAAAGTAAAAATTAGAGGTAA	335
FJ200354.1P.somniferumSalAT	GACTGTCATGACCAAGGGATTAACTTTTACAAAGTAAAAATTAGAGGTAA	335
FJ200357.1P.orientaleSalAT	GACTGTAATGATCAAGGGATTGACTTTTACCAAGTAAAAATTAAATGTAA	332
FJ200356.1P.bracteatumSalAT	GACTGTAATGATCAAGGGATTGACTTTTACCAAGTAAAAATTAAATGTAA	332
FJ200358.1P.orientaleSalAT	GACTGTAATGATCAAGGGATTGACTTTTACCAAGTAAAAATTAAATGTAA	332
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P.bracteatumSalAT	AATGTGTGACTTCATGTCGCAACCGGATGTGCCTCTAAGCCAGCTTCTTC	169
FJ200355.1P.bracteatumSalAT	AATGTGTGACTTCATGTCGCAACCGGATGTGCCTCTAAGCCAGCTTCTTC	385
P.pseudo-orientaleSalAT	AATATGTGACTTCATGTCGCAATCGGATGTGCCTCTAAGCCAGCTTCTTC	319
AF339913.1P.somniferumSalAT	AATGTGTGAGTTTCATGTCGCAACCGGATGTGCCACTAAGCCAGCTTCTTC	550
FJ200353.1P.somniferumSalAT	AATGTGTGAGTTTCATGTCGCAACCGGATGTGCCACTAAGCCAGCTTCTTC	385
FJ200354.1P.somniferumSalAT	AATGTGTGAGTTTCATGTCGCAACCGGATGTGCCACTAAGCCAGCTTCTTC	385
FJ200357.1P.orientaleSalAT	AATGTGTGACTTCATGACACAAACGGATGTGCCACTAAGCCAGCTTCTTC	382
FJ200356.1P.bracteatumSalAT	AATGTATGACTTCATGACACAAACGGATGTGCCACTAAGCCAGCTTCTGC	382
FJ200358.1P.orientaleSalAT	AATGTGTGACTTCATGACACAAACGGATGTGCCACTAAGCCAGCTTCTTC	382
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P.bracteatumSalAT	CATCTGAAGTTGTTTCCGCGAATGTCCCTAAGGAAGCACTGGTGATCGTT	219
FJ200355.1P.bracteatumSalAT	CATCTGAAGTTGTTTCCGCGAATGTCCCTAAGGAAGCACTGGTGATCGTT	435
P.pseudo-orientaleSalAT	CATCTGAAGTTGTTTCCGCGAATGTCTACTAAGGAAGCACTGGTGATCGTT	369
AF339913.1P.somniferumSalAT	CCTCTGAAGTTGTTTCCGCGAGTGTCCCTAAGGAAGCACTGGTGATCGTT	600
FJ200353.1P.somniferumSalAT	CCTCTGAAGTTGTTTCCGCGAGTGTCCCTAAGGAAGCACTGGTGATCGTT	435
FJ200354.1P.somniferumSalAT	CCTCTGAAGTTGTTTCCGCGAGTGTCCCTAAGGAAGCACTGGTGATCGTT	435
FJ200357.1P.orientaleSalAT	CATCCGAAGTTGTTTCCGCGTGTGTGCGCAAGGAAGCACAGGTGATCGTT	432
FJ200356.1P.bracteatumSalAT	CATCCGAAGTTGTTTCCGCGTGTGTGCGCAAGGAAGCACAGGTGATCGTT	432
FJ200358.1P.orientaleSalAT	CATCCGAAGTTGTTTCCGCGTGTGTGCGCAAGGAAGCACAGGTGGTTCGTT	432
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P.bracteatumSalAT	CAAGTGAACATGTTTGACTGTGGTGGAAACAGCCATTTGTTTCGAGTATATC	269
FJ200355.1P.bracteatumSalAT	CAAGTGAACATGTTTGACTGTGGTGGAAACAGCCATTTGTTTCGAGTATATC	485
P.pseudo-orientaleSalAT	CAAGTGAACATGTTTGACTGTGGTGGAAACAGCCATTTGTTTCGAGTATATC	419
AF339913.1P.somniferumSalAT	CAAGTGAACATGTTTGACTGTGGTGGAAACAGCCATTTGTTTCGAGTATATC	650
FJ200353.1P.somniferumSalAT	CAAGTGAACATGTTTGACTGTGGTGGAAACAGCCATTTGTTTCGAGTATATC	485
FJ200354.1P.somniferumSalAT	CAAGTGAACATGTTTGACTGTGGTGGAAACAGCCATTTGTTTCGAGTATATC	485
FJ200357.1P.orientaleSalAT	CAAGTGAACATGTTTGACTGTTTGTGGAAACAGCCATTAGTGTGAGTATATC	482
FJ200356.1P.bracteatumSalAT	CAAGTGAACATGTTTGACTGTTTGTGGAAACAGCCATTAGTGTGAGTATATC	482
FJ200358.1P.orientaleSalAT	CAAGTGAACATGTTTGACTGTTTGTGGAAACAGCCATTAGTGTGAGTATATC	482
	* * * * *	
P.bracteatumSalAT	ACATAAGATTTCCGATGTAGCTACAATGGGTACGTTTCATTCGTAGTTGGG	319
FJ200355.1P.bracteatumSalAT	ACATAAGATTTCCGATGTAGCTACAATGGGTACGTTTCATTCGTAGTTGGG	535
P.pseudo-orientaleSalAT	ACATAAGATTGCCGATGTAGCTACAATGGGTACGTTTCATTCGTAGTTGGG	469
AF339913.1P.somniferumSalAT	ACATAAGATTGCCGATGCAGCTACAATGAGTACGTTTCATTCGTAGTTGGG	700
FJ200353.1P.somniferumSalAT	ACATAAGATTGCCGATGCAGCTACAATGAGTACGTTTCATTCGTAGTTGGG	535
FJ200354.1P.somniferumSalAT	ACATAAGATTGCCGATGCAGCTACAATGAGTACGTTTCATTCGTAGTTGGG	535
FJ200357.1P.orientaleSalAT	TCACAAAATTGCCGATGCAGCTACTATGAGTACATTTCATTCGTAGTTGGG	532
FJ200356.1P.bracteatumSalAT	TCACAAGATTGCCGATGCAGCTACTATGAGTACATTTCATTCGTAGTTGGG	532
FJ200358.1P.orientaleSalAT	TCACAAGATTGCCGATGCAGCTACTATGAGTACATTTCATTCGTAGTTGGG	532
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P.bracteatumSalAT	CAAGCACCAACAAAAACATCTCGTAGCGGGGATGCAACTGC---TGCCGTT	366
FJ200355.1P.bracteatumSalAT	CAAGCACCAACAAAAACATCTCGTAGCGGGGATGCAACTGC---TGCCGTT	582
P.pseudo-orientaleSalAT	CAAGCACCAACAAAAACATCTCGTAGCGGGGATGCAACTGC---TGCCGTT	516
AF339913.1P.somniferumSalAT	CAAGCACCACTAAAAACATCTCGTAGTGGGGGTTCAACTGC---TGCCGTT	747
FJ200353.1P.somniferumSalAT	CAAGCACCACTAAAAACATCTCGTAGTGGGGGTTCAACTGC---TGCCGTT	582
FJ200354.1P.somniferumSalAT	CAAGCACCACTAAAAACATCTCGTAGTGGGGGTTCAACTGC---TGCCGTT	582
FJ200357.1P.orientaleSalAT	CAAGCAACACCAAAAAACATCTCGTAGTGGGGGCGCTATTGCCGATTCAGTT	582
FJ200356.1P.bracteatumSalAT	CAAGCAACACCAAAAAACATCTCGTAGTGGGGGCGCTATTGCCGATTCAGTT	582
FJ200358.1P.orientaleSalAT	CAAGCAACACCAAAAAACATCTCGTAGTGGGGGCGCTATTGCCGATTCAGTT	582
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P.bracteatumSalAT	ATCACAGATCAGAAATTGATTCCCTTCTTTGCGACTCGGCATCTCTATTCCC	416
FJ200355.1P.bracteatumSalAT	ATCACAGATCAGAAATTGATTCCCTTCTTTGCGACTCGGCATCTCTATTCCC	632
P.pseudo-orientaleSalAT	ATCACAGATCAGAAATTGATTCCCTTCTTTGCGACTCGGCATCTCTATTCCC	566
AF339913.1P.somniferumSalAT	A---CAGATCAGAAATTGATTCCCTTCTTTGCGACTCGGCATCTCTATTCCC	794
FJ200353.1P.somniferumSalAT	A---CAGATCAGAAATTGATTCCCTTCTTTGCGACTCGGCATCTCTATTCCC	629
FJ200354.1P.somniferumSalAT	A---CAGATCAGAAATTGATTCCCTTCTTTGCGACTCGGCATCTCTATTCCC	629
FJ200357.1P.orientaleSalAT	ACCACAAACCAGAAGTTGCTTCCTTGTTTCGACTCGGCATCTCTCTTCCC	632
FJ200356.1P.bracteatumSalAT	ACCACAAACCAGAAGTTGCTTCCTTGTTTCGACTCGGCATCTCTCTTCCC	632
FJ200358.1P.orientaleSalAT	ACCACAAACCAGAAGTTTTTCCTTGTTTCGACTCGGCATCTCTATTCCC	632
	* * * * *	
P.bracteatumSalAT	ACCTAGTGAACGATTGGCATCTCCATCAGGGATGGCAGAG-----ATAC	460
FJ200355.1P.bracteatumSalAT	ACCTAGTGAACGATTGGCATCTCCATCAGGGATGGCAGAG-----ATAC	676
P.pseudo-orientaleSalAT	ACCAAGTGAACGATTAGCATCTCCATCAGGGATGGCAGAG-----ATAC	610
AF339913.1P.somniferumSalAT	ACCTAGTGAACGATTGACATCTCCATCAGGGATGTCAGAG-----ATAC	838
FJ200353.1P.somniferumSalAT	ACCTAGTGAACGATTGACATCTCCATCAGGGATGTCAGAG-----ATAC	673
FJ200354.1P.somniferumSalAT	ACCTAGTGAACGATTGACATCTCCATCAGGGATGTCAGAG-----ATAC	673
FJ200357.1P.orientaleSalAT	ACCTAGTGAACAATTGGCATCTCCAGCAGGGATGCCAGTGCCACCAATAC	682
FJ200356.1P.bracteatumSalAT	ACCTAGTGAACAATTGGCATCTCCAGCAGGGATGCCAGTGCCACCAATAC	682
FJ200358.1P.orientaleSalAT	ACCTAGTGAACAATTGCCATCTCCAGCAGGGATGCCAGTGCCACCAATAC	682
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P.bracteatumSalAT	CATTTTCCAGTATCCCGGAGGATACAGAAGATGATAAAACTGTCAGCAAG	510
FJ200355.1P.bracteatumSalAT	CATTTTCCAGTATCCCGGAGGATACAGAAGATGATAAAACTGTCAGCAAG	726
P.pseudo-orientaleSalAT	CATTTTCCAGTATCCCGGAGGATACAGAAGATGATAAAACTGTCAGTAAG	660
AF339913.1P.somniferumSalAT	CATTTTCCAGTACCCCAGAGGATACAGAAGATGATAAAACTGTCAGCAAG	888
FJ200353.1P.somniferumSalAT	CATTTTCCAGTACCCCAGAGGATACAGAAGATGATAAAACTGTCAGCAAG	723
FJ200354.1P.somniferumSalAT	CATTTTCCAGTACCCCAGAGGATACAGAAGATGATAAAACTGTCAGCAAG	723
FJ200357.1P.orientaleSalAT	CAGTTTCTTGTATCCTAGATGATACCGTAGATGATAAAACGGTCAGCAAG	732
FJ200356.1P.bracteatumSalAT	CAGTTTCTTGTATCCTAGATGATACCGTAGATGATAAAACGGTCAGCAAG	732
FJ200358.1P.orientaleSalAT	CAGTTTCTTGTATCCTAGATGATACCGTAGATGACAAAACGGTCAGCAAG	732
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P.bracteatumSalAT	AGATTTGTGTTTCGATTTTGCAAAGATAACATCTGTAAGCGAAAAGCTGCA	560
FJ200355.1P.bracteatumSalAT	AGATTTGTGTTTCGATTTTGCAAAGATAACATCTGTAAGCGAAAAGCTGCA	776
P.pseudo-orientaleSalAT	AGATTTGTGTTTCGATTTTGCAAAGATAACATCTGTACGTGAAAAGCTGCA	710
AF339913.1P.somniferumSalAT	AGATTTGTGTTTCGATTTTGCAAAGATAACATCTGTACGTGAAAAGTTGCA	938
FJ200353.1P.somniferumSalAT	AGATTTGTGTTTCGATTTTGCAAAGATAACATCTGTACGTGAAAAGTTGCA	773
FJ200354.1P.somniferumSalAT	AGATTTGTGTTTCGATTTTGCAAAGATAACATCTGTACGTGAAAAGTTGCA	773
FJ200357.1P.orientaleSalAT	AGATTTGTGTTTGATTTGGTAAAGATAACATCTGTACGAGAAAAGATTCA	782
FJ200356.1P.bracteatumSalAT	AGATTTGTGTTTGATTTGGTAAAGATAACATCTGTACGAGAAAAGATTCA	782
FJ200358.1P.orientaleSalAT	AGATTTGTGTTTGATTTGGTAAAGATAACATCTGTACGAGAAAAGATTCA	782
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P.bracteatumSalAT	AGTATTGATGCATGATAACTACAAAAGCCGCAGGCCAACAAGGGTTGAGG	610
FJ200355.1P.bracteatumSalAT	AGTATTGATGCATGATAACTACAAAAGCCGCAGGCCAACAAGGGTTGAGG	826
P.pseudo-orientaleSalAT	AGTATTGATGCATGATAAATACAAAAGCCGCAGGCCAACAAGGGTTGAGG	760
AF339913.1P.somniferumSalAT	AGTATTGATGCATGATAACTACAAAAGCCGCAGGCCAACAAGGGTTGAGG	988
FJ200353.1P.somniferumSalAT	AGTATTGATGCATGATAACTACAAAAGCCGCAGGCCAACAAGGGTTGAGG	823
FJ200354.1P.somniferumSalAT	AGTATTGATGCATGATAACTACAAAAGCCGCAGGCCAACAAGGGTTGAGG	823
FJ200357.1P.orientaleSalAT	AGAATTGATGCATGATAACTACAAATGCCGCAGGCCAACAAGGGTTGAGG	832
FJ200356.1P.bracteatumSalAT	AGAATTGATGCATGATAACTACAAATGCCGCAGGCCAACAAGGGTTGAGG	832
FJ200358.1P.orientaleSalAT	AGAATTGATGCATGATAACTACAAATGCCGCAGGCCAACAAGGGTTGAGG	832
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P.bracteatumSalAT	TGGTTACTTCTCTAATATGGAAGTCCGTGATGAAATCCACTCCAGCCGGT	660
FJ200355.1P.bracteatumSalAT	TGGTTACTTCTCTAATATGGAAGTCCGTGATGAAATCCACTCCAGCCGGT	876
P.pseudo-orientaleSalAT	TGGTTACTTCTCTAATATGGAAGTCCGTGATGAAATCCACTCCAGCCGGT	810
AF339913.1P.somniferumSalAT	TGGTTACTTCTCTAATATGGAAGTCCGTGATGAAATCCACTCCAGCCGGT	1038
FJ200353.1P.somniferumSalAT	TGGTTACTTCTCTAATATGGAAGTCCGTGATGAAATCCACTCCAGCCGGT	873
FJ200354.1P.somniferumSalAT	TGGTTACTTCTCTAATATGGAAGTCCGTGATGAAATCCACTCCAGCCGGT	873
FJ200357.1P.orientaleSalAT	TGGTTACCTCTTTAATATGGATGTCAGTGATGAAATCAACTCTGGCCGGA	882
FJ200356.1P.bracteatumSalAT	TGGTTACCTCTTTAATATGGATGTCAGTGATGAAATCAACTCTGGCCGGA	882
FJ200358.1P.orientaleSalAT	TGGTTACCTCTTTAATATGGATGTCAGTGATGAAATCAACTCTGGCCGGA	882
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P.bracteatumSalAT	TTTTTACCAGTCGTAGATCATGCCGTGAACCTTAGAAAGAAAATGGACCC	710
FJ200355.1P.bracteatumSalAT	TTTTTACCAGTCGTAGATCATGCCGTGAACCTTAGAAAGAAAATGGACCC	926
P.pseudo-orientaleSalAT	TTTTTACCAGTCGTAGATCATGCCGTGAACCTTAGAAAGAAAATGGACCC	860
AF339913.1P.somniferumSalAT	TTTTTACCAGTGGTACATCATGCCGTGAACCTTAGAAAGAAAATGGACCC	1088
FJ200353.1P.somniferumSalAT	TTTTTACCAGTGGTACATCATGCCGTGAACCTTAGAAAGAAAATGGACCC	923
FJ200354.1P.somniferumSalAT	TTTTTACCAGTGGTACATCATGCCGTGAACCTTAGAAAGAAAATGGACCC	923
FJ200357.1P.orientaleSalAT	TTTTTACCAGTGGTAAATCATGCCGTGAACCTAAGAAAGAAAATGTACCC	932
FJ200356.1P.bracteatumSalAT	TTTTTACCAGTGGTAAATCATGCCGTGAACCTAAGAAAGAAAATGTACCC	932
FJ200358.1P.orientaleSalAT	TTTTTACCAGTGGTAAATCATGCCGTGAACCTAAGAAAGAAAATGTACCC	932
	***** ** ***** ***** *****	
P.bracteatumSalAT	ACCATTACAAGATGCGTCATTTCGGAATCTATCTGTAAGTGTTCGGCGT	760
FJ200355.1P.bracteatumSalAT	ACCATTACAAGATGCGTCATTTCGGAATCTATCTGTAAGTGTTCGGCGT	976
P.pseudo-orientaleSalAT	ACCATTACAAGATTCGTCATTTCGGAATCTATCTGTAAGTGTTCGGCGT	910
AF339913.1P.somniferumSalAT	ACCATTACAAGATGTTTCATTTCGGAATCTATCTGTAAGTGTTCGGCGT	1138
FJ200353.1P.somniferumSalAT	ACCATTACAAGATGTTTCATTTCGGAATCTATCTGTAAGTGTTCGGCGT	973
FJ200354.1P.somniferumSalAT	ACCATTACAAGATGTTTCATTTCGGAATCTATCTGTAAGTGTTCGGCGT	973
FJ200357.1P.orientaleSalAT	ACCACTACAAGATGTGTCATTTCGGAATCTTTCACTGTCTGTTACAGCTT	982
FJ200356.1P.bracteatumSalAT	ACCACTACAAGATGTGTCATTTCGGAATCTTTCACTGTCTGTTACAGCTT	982
FJ200358.1P.orientaleSalAT	ACCATTACAAGATGTGTCATTTCGGAATCTTTCACTGTCTGTTACAGCTT	982
	**** ***** ***** ** * ***** * ** *	

P.bracteatumSalAT	TCTTACCAGCAACAACAAC-----GACAACGACGAATGCGGTCAACAAG	804
FJ200355.1P.bracteatumSalAT	TCTTACCAGCAACAACAAC-----GACAACGACGAATGCGGTCAACAAG	1020
P.pseudo-orientaleSalAT	TCTTACCAGCAACAACAAC-----GACAACGACAAATGGGGTCAACAAG	954
AF339913.1P.somniferumSalAT	TCTTACCAGCAACAACAAC-----GACAACAACAATGCGGTCAACAAG	1182
FJ200353.1P.somniferumSalAT	TCTTACCAGCAACAACAAC-----GACAACAACAATGCGGTCAACAAG	1017
FJ200354.1P.somniferumSalAT	TCTTACCAGCAACAACAAC-----GACAACAACAATGCGGTCAACAAG	1017
FJ200357.1P.orientaleSalAT	TATTACCAGCAACAACAACCATGAAGACGACAATAAATGAGGCCAACAAG	1032
FJ200356.1P.bracteatumSalAT	TATTACCAGCAACAACAACCATGAAGACGACAATAAATGAGGCCAACAAG	1032
FJ200358.1P.orientaleSalAT	TATTACCAGCAACAACAACCATGAAGACGACAATAAATGAGGCCAACAAG	1032
	* * * * *	
P.bracteatumSalAT	ACAATCAATAGTACGAGTAGTGAATCGCAAGTGGTACTTCATGAGTTACA	854
FJ200355.1P.bracteatumSalAT	ACAATCAATAGTACGAGTAGTGAATCGCAAGTGGTACTTCATGAGTTACA	1070
P.pseudo-orientaleSalAT	ACAATCAATAGTACGAGTAGTGAATCGCAAGTGGTACTTCATGAGTTACA	1004
AF339913.1P.somniferumSalAT	ACAATCAATAGTACGAGTAGTGAATCACAAGTGGTACTTCATGAGTTACA	1232
FJ200353.1P.somniferumSalAT	ACAATCAATAGTACGAGTAGTGAATCACAAGTGGTACTTCATGAGTTACA	1067
FJ200354.1P.somniferumSalAT	ACAATCAATAGTACGAGTAGTGAATCACAAGTGGTACTTCATGAGTTACA	1067
FJ200357.1P.orientaleSalAT	ACAATCAATAGTACGAGTAATGAGGTGCAACTGCTACTTCATGAGTTGCA	1082
FJ200356.1P.bracteatumSalAT	ACAATCAATAGTACGAGTAATGAGGTGCAACTGCTACTTCATGAGTTGCA	1082
FJ200358.1P.orientaleSalAT	ACAATCAATAGTACGAGTAATGAGGTGCAACTGCTACTTCATGAGTTGCA	1082
	* * * * *	
P.bracteatumSalAT	TGATTTTATAGCTCAGCTAAGGAGTGAAATAGATAAGGTCAAGGGTGATA	904
FJ200355.1P.bracteatumSalAT	TGATTTTATAGCTCAGCTAAGGAGTGAAATAGATAAGGTCAAGGGTGATA	1120
P.pseudo-orientaleSalAT	TGATTTTATAGCTCAGCTGAGGAGTGAAATAGATAAGGTCAAGGGTGATA	1054
AF339913.1P.somniferumSalAT	TGATTTTATAGCTCAGCTGAGGAGTGAAATAGATAAGGTCAAGGGTGATA	1282
FJ200353.1P.somniferumSalAT	TGATTTTATAGCTCAGCTGAGGAGTGAAATAGATAAGGTCAAGGGTGATA	1117
FJ200354.1P.somniferumSalAT	TGATTTTATAGCTCAGCTGAGGAGTGAAATAGATAAGGTCAAGGGTGATA	1117
FJ200357.1P.orientaleSalAT	TGATTTAATAACTCAACTGAGGAGCGCAATAGATGAGGTCAAGGGTGATA	1132
FJ200356.1P.bracteatumSalAT	TGATTTAATAACTCAACTGAGGAGCGCAATAGATGAGGTCAAGGGTGATA	1132
FJ200358.1P.orientaleSalAT	TGATTTAATAACTCAACTGAGGAGCGCAATAGATGAGGTCAAGGGTGATA	1132
	* * * * *	
P.bracteatumSalAT	AAGGTAGCTTGGAGAAAGTCATTCAAAATTTTGTTCGCGTTATGA---T	951
FJ200355.1P.bracteatumSalAT	AAGGTAGCTTGGAGAAAGTCATTCAAAATTTTGTTCGCGTTATGA---T	1167
P.pseudo-orientaleSalAT	AAGGTAGCTTGGAGAAAGTCATTCAAAATTTTGTTCCTGGTTATGA---T	1101
AF339913.1P.somniferumSalAT	AAGGTAGCTTGGAGAAAGTCATTCAAAATTTTGTTCCTGGTTATGA---T	1329
FJ200353.1P.somniferumSalAT	AAGGTAGCTTGGAGAAAGTCATTCAAAATTTTGTTCCTGGTTATGA---T	1164
FJ200354.1P.somniferumSalAT	AAGGTAGCTTGGAGAAAGTCATTCAAAATTTTGTTCCTGGTTATGA---T	1164
FJ200357.1P.orientaleSalAT	AAGGTTGCATTGAGAAACTCATTTAACATTTTGTAGTGTTATGAGTAC	1182
FJ200356.1P.bracteatumSalAT	AAGGTTGCATTGAGAAACTCATTTAACATTTTGTAGTGTTATGAGTAC	1182
FJ200358.1P.orientaleSalAT	AAGGTTGCCTGGAGAAACTCATTTAACATTTTGTAGTGTTATGAGTAC	1182
	* * * * *	

P.bracteatumSalAT	GCTTCAATAAAGAAAATCAATGATGTTGAAGATAAGGTGATAAACTTTTG	1001
FJ200355.1P.bracteatumSalAT	GCTTCAATAAAGAAAATCAATGATGTTGAAGATAAGGTGATAAACTTTTG	1217
P.pseudo-orientaleSalAT	GCTTCAATAAAGAAAATCAATGATGTTGAAGATAAGGTGATAAACTTTTG	1151
AF339913.1P.somniferumSalAT	GCTTCAATAAAGAAAATCAATGATGTTGAA-----GTGATAAACTTTTG	1373
FJ200353.1P.somniferumSalAT	GCTTCAATAAAGAAAATCAATGATGTTGAA-----GTGATAAACTTTTG	1208
FJ200354.1P.somniferumSalAT	GCTTCAATAAAGAAAATCAATGATGTTGAA-----GTGATAAACTTTTG	1208
FJ200357.1P.orientaleSalAT	GCTTCCACAGAGAGAAAAAATGATGTTGAATATGAAATGATAACCTTGTT	1232
FJ200356.1P.bracteatumSalAT	GCTTCCACAGAGAGAAAAAATGATGTTGAATATGAAATGATAACCTTGTT	1232
FJ200358.1P.orientaleSalAT	GCTTCCACAGAGAGAAAAAATGATGTTGAATATGAAATGATAACCTTGTT	1232
	***** * * *** ** *****	***** *** *
P.bracteatumSalAT	GATAAGTAGCTGGTGCAGGATGGGATTATACGAGATTGATTTTGGTTGGG	1051
FJ200355.1P.bracteatumSalAT	GATAAGTAGCTGGTGCAGGATGGGATTATACGAGATTGATTTTGGTTGGG	1267
P.pseudo-orientaleSalAT	GATAAGTAGCTGGTGCAGGATGGGATTATACGAGATTGATTTTGGTTGGG	1201
AF339913.1P.somniferumSalAT	GATAAGTAGCTGGTGCAGGATGGGATTATACGAGATTGATTTTGGTTGGG	1423
FJ200353.1P.somniferumSalAT	GATAAGTAGCTGGTGCAGGATGGGATTATACGAGATTGATTTTGGTTGGG	1258
FJ200354.1P.somniferumSalAT	GATAAGTAGCTGGTGCAGGATGGGATTATACGAGATTGATTTTGGTTGGG	1258
FJ200357.1P.orientaleSalAT	GATGACTAGCTGGTGCAGGATGGGATTTTACGAGATTGATTTTGGTTGGG	1282
FJ200356.1P.bracteatumSalAT	GATGACTAGCTGGTGCAGGATGGGATTTTACGAGATTGATTTTGGTTGGG	1282
FJ200358.1P.orientaleSalAT	GATGACTAGCTGGTGCAGGATGGGATTTTACGAGATTGATTTTGGTTGGG	1282
	*** * *****	***** *****
P.bracteatumSalAT	GAAAGCCAATTTGGGTTACAATTGATCCAAATATCAAGCCGAATAAGAAT	1101
FJ200355.1P.bracteatumSalAT	GAAAGCCAATTTGGGTTACAATTGATCCAAATATCAAGCCGAATAAGAAT	1317
P.pseudo-orientaleSalAT	GAAAGCCAATTTGGGTTACAATTGATCCAAATATCAAGCCGAATAAGAAT	1251
AF339913.1P.somniferumSalAT	GAAAGCCAATTTGGGTTACAATTGATCCAAATATCAAGCCGAATAAGAAT	1473
FJ200353.1P.somniferumSalAT	GAAAGCCAATTTGGGTTACAATTGATCCAAATATCAAGCCGAATAAGAAT	1308
FJ200354.1P.somniferumSalAT	GAAAGCCAATTTGGGTTACAATTGATCCAAATATCAAGCCGAATAAGAAT	1308
FJ200357.1P.orientaleSalAT	GAAATCCAGTTTGGGTAACGACTGATCCAAATATCAAGCCAAACAAAAAC	1332
FJ200356.1P.bracteatumSalAT	GAAAGCCAGTTTGGGTAACGACTGATCCAAATATCAAGCCAAACAAAAAC	1332
FJ200358.1P.orientaleSalAT	GAAAGCCAGTTTGGGTAACGACTGATCCAAATATCAAGCCAAACAAAAAC	1332
	**** ** ***** ** *****	** ** **
P.bracteatumSalAT	TGTCCTTTTCATGAATGATACGAAATGTGGTCAAGGAATAGAAGTTTGGGC	1151
FJ200355.1P.bracteatumSalAT	TGTCCTTTTCATGAATGATACGAAATGTGGTCAAGGAATAGAAGTTTGGGC	1367
P.pseudo-orientaleSalAT	TGTCCTTTTCATGAATGATACGAAATGTGGTCAAGGAATAGAAGTTTGGGC	1301
AF339913.1P.somniferumSalAT	TGTTTTTTTCATGAATGATACGAAATGTGGTGAAGGAATAGAAGTTTGGGC	1523
FJ200353.1P.somniferumSalAT	TGTTTTTTTCATGAATGATACGAAATGTGGTGAAGGAATAGAAGTTTGGGC	1358
FJ200354.1P.somniferumSalAT	TGTTTTTTTCATGAATGATACGAAATGTGGTGAAGGAATAGAAGTTTGGGC	1358
FJ200357.1P.orientaleSalAT	TTTATTTTCATGAGTGATACGAGATGTGGTGAAGGAATAGAAGTTTGGGC	1382
FJ200356.1P.bracteatumSalAT	CTTATTTTCATGAATGATACGAGATGTGGTGAAGGAATAGAAGTTTGGGC	1382
FJ200358.1P.orientaleSalAT	TTTATTTTCATGAATGATACGAGATGTGGTGAAGGAATAGAAGTTTGGGC	1382
	* *****	***** *****

P.bracteatumSalAT	GAGCTTTCTTGAGGATGATATGGCTAAGTTC-----	1182
FJ200355.1P.bracteatumSalAT	GAGCTTTCTTGAGGATGATATGGCTAAGTTCGAGCTTCACCTAAGTGAAA	1417
P.pseudo-orientaleSalAT	GAGCTTTCTTGAGGATGATATGGCTAAGT-----	1330
AF339913.1P.somniferumSalAT	GAGCTTTCTTGAGGATGATATGGCTAAGTTCGAGCTTCACCTAAGTGAAA	1573
FJ200353.1P.somniferumSalAT	GAGCTTTCTTGAGGATGATATGGCTAAGTTCGAGCTTCACCTAAGTGAAA	1408
FJ200354.1P.somniferumSalAT	GAGCTTTCTTGAGGATGATATGGCTAAGTTCGAGCTTCACCTAAGTGAAA	1408
FJ200357.1P.orientaleSalAT	GTGCTTTCTTGAGGATGATATGGCTAAGTTCGAGCTTCACCTAAGCGAAA	1432
FJ200356.1P.bracteatumSalAT	GTGCTTTCTTGAGGATGATATGGCTAAGTTCGAGCTTCACCTAAGCGAAA	1432
FJ200358.1P.orientaleSalAT	GTGCTTTCTTGAGGATGATATGGCTAAGTTCGAGCTTCACCTAAGCGAAA	1432
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P.bracteatumSalAT	-----	
FJ200355.1P.bracteatumSalAT	TCCTTGAATTGATTTGA-----	1434
P.pseudo-orientaleSalAT	-----	
AF339913.1P.somniferumSalAT	TCCTTGAATTGATTTGATATTGCATTATCTACATGTGTCCGTAATCATG	1623
FJ200353.1P.somniferumSalAT	TCCTTGAATTGATTTGA-----	1425
FJ200354.1P.somniferumSalAT	TCCTTGAATTGATTTGA-----	1425
FJ200357.1P.orientaleSalAT	TCCTTGAATTGATTTGA-----	1449
FJ200356.1P.bracteatumSalAT	TCCTTGAATTGATTTGA-----	1449
FJ200358.1P.orientaleSalAT	TCCTTGAATTGATTTGA-----	1449
P.bracteatumSalAT	-----	
FJ200355.1P.bracteatumSalAT	-----	
P.pseudo-orientaleSalAT	-----	
AF339913.1P.somniferumSalAT	ATTTTCTCCATTTCCCTTTCCGTAGTTGGTTACAAAGAACCAAATAAAGG	1673
FJ200353.1P.somniferumSalAT	-----	
FJ200354.1P.somniferumSalAT	-----	
FJ200357.1P.orientaleSalAT	-----	
FJ200356.1P.bracteatumSalAT	-----	
FJ200358.1P.orientaleSalAT	-----	
P.bracteatumSalAT	-----	
FJ200355.1P.bracteatumSalAT	-----	
P.pseudo-orientaleSalAT	-----	
AF339913.1P.somniferumSalAT	AAAAGAAAAAAGTTGTACTGCTCGATGCTTTGACATTTTCCATGTTTCATC	1723
FJ200353.1P.somniferumSalAT	-----	
FJ200354.1P.somniferumSalAT	-----	
FJ200357.1P.orientaleSalAT	-----	
FJ200356.1P.bracteatumSalAT	-----	
FJ200358.1P.orientaleSalAT	-----	

P.bracteatumSalAT	-----	
FJ200355.1P.bracteatumSalAT	-----	
P.pseudo-orientaleSalAT	-----	
AF339913.1P.somniferumSalAT	CGTAAATTCCCATCAGAAAAGAGTTTCAAATATTAGGGTATTAAAAAAA	1773
FJ200353.1P.somniferumSalAT	-----	
FJ200354.1P.somniferumSalAT	-----	
FJ200357.1P.orientaleSalAT	-----	
FJ200356.1P.bracteatumSalAT	-----	
FJ200358.1P.orientaleSalAT	-----	

P.bracteatumSalAT	-----	
FJ200355.1P.bracteatumSalAT	-----	
P.pseudo-orientaleSalAT	-----	
AF339913.1P.somniferumSalAT	AAAAAAAAAAAA	1785
FJ200353.1P.somniferumSalAT	-----	
FJ200354.1P.somniferumSalAT	-----	
FJ200357.1P.orientaleSalAT	-----	
FJ200356.1P.bracteatumSalAT	-----	
FJ200358.1P.orientaleSalAT	-----	

Alignments (*COR* gene)

CLUSTAL 2.1 multiple sequence alignment

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FJ596169.1P.rhoeasCOR      -----ATGGAGAGTAATGGTGTACCAATGGTCACTTTGAGCT-CGGGCAT 44
FJ596168.1P.rhoeasCOR      -----ATGGAGAGTAATGGTGTACCAATGGTTACTCTAAGCT-CGGGCAT 44
P.orientaleCOR             -----AAAATGG-GTACCAGTGATCAGTTTAAGCTTCGGGCGT 37
FJ596162.1P.bracteatumCOR  -----ATGGAGAGTAATGGTGTACCTATGATCACTCTCAGTT-CCGGCAT 44
FJ596163.1P.bracteatumCOR  -----ATGGAGAGTAATGGTGTACCTATGATCACTCTCAGTT-CCGGCAT 44
P.bracteatumCOR            -----
P.pseudo-orientaleCOR      -----
FJ596167.1P.orientaleCOR    -----ATGGAGAGTAATGGTGTACCTATGATCACTCTCAGTT-CCGGCAT 44
FJ596166.1P.orientaleCOR    -----ATGGAGAGTAATGGTGTACCTATGATCACTCTCAGCT-CCGGCAT 44
FJ596159.1P.somniferumCOR   -----ATGGAGAGTAATGGTGTACCTATGATCACTCTCAGTT-CCGGCAT 44
FJ596158.1P.somniferumCOR   -----ATGGAGAGTAATGGTGTACCTATGATCACTCTCAGTT-CCGGCAT 44
AF108435.1P.somniferumCOR   -----ATGGAGAGTAATGGTGTACCTATGATCACTCTCAGTT-CCGGCAT 44
FJ596161.1P.somniferumCOR   -----ATGGAGAGTAATGGTGTACCTATGATCACTCTCAGTT-CCGGCAT 44
AF108434.1P.somniferumCOR   -----ATGGAGAGTAATGGTGTACCTATGATCACTCTCAGTT-CCGGCAT 44
AF108432.1P.somniferumCOR   GAAAAATGGAGAGTAATGGTGTACCTATGATCACTCTCAGTT-CCGGCAT 49
AF108433.1P.somniferumCOR   -----ATGGAGAGTAATGGTGTACCTATGATCACTCTCAGTT-CCGGCAT 44
FJ596160.1P.somniferumCOR   -----ATGGAGAGTAATGGTGTACCTATGATTACTCTCAGTT-CCGGCAT 44
FJ596164.1P.nudicauleCOR    -----ATGGAGAGTAATGGTGTACCTGTGATAACTCTCAGCT-CGGGCAT 44
FJ596165.1P.nudicauleCOR    -----ATGGAGAGTAATGGTGTACCTGTGATAACTCTCAGCT-CGGGCAT 44
AF108438.1P.somniferumCOR   --AGAATGGAGATCGGTGGTGTACCTGTAGTCACTCTGAGCT-CCGGCAG 47

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FJ596169.1P.rhoeasCOR	TCTG-ATGCCTGCTTTAGGTATGGGAACAGCTGAAACAATGGAAAAAGGA	93
FJ596168.1P.rhoeasCOR	TCTG-ATGCCTGCTTTAGGTATGGGAACAGCTGAAACCATGGAAAAAGGA	93
P.orientaleCOR	TTGGGATGCCTGCTTTAGGTATGGGAACAGCTGAAACCATGGAAAAAGGA	87
FJ596162.1P.bracteatumCOR	TCGG-ATGCCTGCTTTAGGTATGGGAACAGTTGAAACAATGGAAAAAGGA	93
FJ596163.1P.bracteatumCOR	TCGG-ATGCCTGCTTTAGGTATGGGAACAGTTGAAACAATGGAAAAAGGA	93
P.bracteatumCOR	-----AAACAATGGAAAAAGGA	17
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	TCGG-ATGCCTGCTTTAGGTATGGGAACAGTTGAAACAATGGAAAAAGGA	93
FJ596166.1P.orientaleCOR	TCGG-ATGCCTGCTTTAGGTATGGGAACAGCTGAAAAAATGGTTAAAGGA	93
FJ596159.1P.somniferumCOR	TCGG-ATGCCTGCTTTAGGTATGGGAACAGCTGAAACCATGGAAAAAGGA	93
FJ596158.1P.somniferumCOR	TCGG-ATGCCTGCTTTAGGTATGGGAACAGCTGAAACCATGGAAAAAGGA	93
AF108435.1P.somniferumCOR	TCGG-ATGCCTGCTTTAGGTATGGGAACAGCTGAAACAATGGTAAAAGGA	93
FJ596161.1P.somniferumCOR	TCGG-ATGCCTGCTTTAGGTATGGGAACAGCTGAAACAATGGTAAAAGGA	93
AF108434.1P.somniferumCOR	TCGG-ATGCCTGCTTTAGGTATGGGAACAGCTGAAACAATGGTAAAAGGA	93
AF108432.1P.somniferumCOR	TCGG-ATGCCTGCTTTAGGTATGGGAACAGCTGAAACAATGGTAAAAGGA	98
AF108433.1P.somniferumCOR	TCGG-ATGCCTGCTTTAGGTATGGGAACAGTTGAAACAATGGAAAAAGGA	93
FJ596160.1P.somniferumCOR	TCGG-ATGCCTGCTTTAGGTATGGGAACAGTTGAAACAATGGAAAAAGGA	93
FJ596164.1P.nudicauleCOR	TGGG-ATGCCTGTTTTAGGCATGGGAACAGCTGAAAAACTTATTTAAAGGA	93
FJ596165.1P.nudicauleCOR	TGGG-ATGCCTGTTTTAGGCATGGGAACAGCTGAAAAACTTATTTAAAGGA	93
AF108438.1P.somniferumCOR	-GGGCATGCCTATTTTAGGTATGGGAACAGCTGAAAATAATCTTCAAGGG	96

FJ596169.1P.rhoeasCOR	ACTGATAGAGAGAGATTGGCTTTTTTGAAGCGATAGAGGTCGGTTACAG	143
FJ596168.1P.rhoeasCOR	ACTGATAGAGAGAGATTGGCTTTTTTGAAGCGATAGAGGTCGGTTACAG	143
P.orientaleCOR	ACCGACAGAGAGAGATCAGCGTTTTTGAAGCGATTGAGGTCGGTTACAG	137
FJ596162.1P.bracteatumCOR	ACAGAAAGAGAGAAATTGGCGTTTTTGAAGCGATAGAGGTCGGTTACAG	143
FJ596163.1P.bracteatumCOR	ACAGAAAGAGAGAAATTGGCGTTTTTGAAGCGATAGAGGTCGGTTACAG	143
P.bracteatumCOR	ACAGAAAGAGAGAAATTGGCGTTTTTGAAGCGATAGAGGTCGGTTACAG	67
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	ACAGAAAGAGAGAAATTAGCGTTTTTGAAGCGATAGAGGTCGGTTACAG	143
FJ596166.1P.orientaleCOR	ACAGAAAGAGAGAAATTGGCGTTTTTGAAGCGATAGAGGTCGGTTACAG	143
FJ596159.1P.somniferumCOR	ACTGAAACAGAGAGATTGGCGTTTTTGAAGCGATAGAGGTCGGTTACAG	143
FJ596158.1P.somniferumCOR	ACTGAAACAGAGAGATTGGCGTTTTTGAAGCGATAGAGGTCGGTTACAG	143
AF108435.1P.somniferumCOR	ACAGAAAGAGAGAAATTGGCGTTTTTGAAGCGATAGAGGTCGGTTACAG	143
FJ596161.1P.somniferumCOR	ACAGAAAGAGAGAAATTGGCGTTTTTGAAGCGATAGAGGTCGGTTACAG	143
AF108434.1P.somniferumCOR	ACAGAAAGAGAGAAATTGGCGTTTTTGAAGCGATAGAGGTCGGTTACAG	143
AF108432.1P.somniferumCOR	ACAGAAAGAGAGAAATTGGCGTTTTTGAAGCGATAGAGGTCGGTTACAG	148
AF108433.1P.somniferumCOR	ACAGAAAGAGAGAAATTGGCGTTTTTGAATGCGATAGAGGTCGGTTACAG	143
FJ596160.1P.somniferumCOR	ACTGAAAGAGAGAAATTGGCGTTTTTGAAGCGATAGAGGTCGGTTACAG	143
FJ596164.1P.nudicauleCOR	TCTGAAAGAGAGAAGTTGGCGTTTTTGAAGGCGATGGAGCTGGGTTACAG	143
FJ596165.1P.nudicauleCOR	TCTGAAAGAGAGAAGTTGGCGTTTTTGAAGGCGATGGAGCTGGGTTACAG	143
AF108438.1P.somniferumCOR	TCTGAAAGAGTGAATTTGGCGATCCTGAAAGCAATAGAGGTGGGTTATAG	146

FJ596169.1P.rhoeasCOR	ACACTTCGATACAGCTGCTGCATACCAAAGTGAAGAGTGTCTTGGTGAAG	193
FJ596168.1P.rhoeasCOR	ACACTTCGATACAGCTGCTGCATACCAAAGTGAAGAGTGTCTTGGTGAAG	193
P.orientaleCOR	GCACCTTCGATACAGCTGCTGCTTATCAAAGTGAAGAGTGTCTTGGTGAAG	187
FJ596162.1P.bracteatumCOR	ACATTTTCGATACAGCTGCTGCATACCAAAGTGAAGAGTGTCTTGGTGAAG	193
FJ596163.1P.bracteatumCOR	ACATTTTCGATACAGCTGCTGCATACCAAAGTGAAGAGTGTCTTGGTGAAG	193
P.bracteatumCOR	ACATTTTCGATACAGCTGCTGCATACCAAAGTGAAGAGTGTCTTGGTGAAG	117
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	ACATTTTCGATACAGCTGCTGCATACCAAAGTGAAGAGTGTCTTGGTGAAG	193
FJ596166.1P.orientaleCOR	ACGCTTCGATACAGCTGCTGCATACCAAAGTGAAGAGTGTCTTGGTGAAG	193
FJ596159.1P.somniferumCOR	ACACTTCGATACAGCTGCTGCATACCAAAGTGAAGAGTGTCTTGGTGAAG	193
FJ596158.1P.somniferumCOR	ACACTTCGATACAGCTGCTGCATACCAAAGTGAAGAGTGTCTTGGTGAAG	193
AF108435.1P.somniferumCOR	ACACTTCGATACAGCTGCTGCATACCAAAGTGAAGAGTGTCTTGGTGAAG	193
FJ596161.1P.somniferumCOR	ACACTTCGATACAGCTGCTGCATACCAAAGTGAAGAGTGTCTTGGTGAAG	193
AF108434.1P.somniferumCOR	ACACTTCGATACAGCTGCTGCATACCAAAGTGAAGAGTGTCTTGGTGAAG	193
AF108432.1P.somniferumCOR	ACACTTCGATACAGCTGCTGCATACCAAAGTGAAGAGTGTCTTGGTGAAG	198
AF108433.1P.somniferumCOR	ACACTTCGATACAGCTGCTGCATACCAAAGTGAAGAGTGTCTTGGTGAAG	193
FJ596160.1P.somniferumCOR	ACACTTCGATACAGCTGCTGCATACCAAAGTGAAGAGTGTCTTGGTGAAG	193
FJ596164.1P.nudicauleCOR	ACACTTCGACACAGCTGCTATTTACCAAAGTGAAGAGTGTCTTGGTGAAG	193
FJ596165.1P.nudicauleCOR	ACACTTCGACACAGCTGCTATTTACCAAAGTGAAGAGTGTCTTGGTGAAG	193
AF108438.1P.somniferumCOR	ACACTTCGATACAGCTTTTGTATACCAGACAGAAGGGTCTCTTGGTGAAG	196

FJ596169.1P.rhoeasCOR	CTATAGCAGAAGCACTTCAACTTGGTTTAATAAAAATCCCGAGATGAACTC	243
FJ596168.1P.rhoeasCOR	CTATAGCTGAAGCACCTCAACTTGGTTTAATAAAAATCTCGACATGAACTC	243
P.orientaleCOR	CTATAGCTGAAGCACTTCAACTTGGTCTAATTAATCTCGAGATGAACTC	237
FJ596162.1P.bracteatumCOR	CTATAGCTGAAGCACTTCAACTCGGTCTAATAAAAATCTCGAGAGGAACTC	243
FJ596163.1P.bracteatumCOR	CTATAGCTGAAGCACTTCAACTTGGTCTAATAAAAATCTCGAGAGGAACTC	243
P.bracteatumCOR	CTATAGCTGAAGCACTTCAACTTGGTCTAATAAAAATCTCGAGAGGAACTC	167
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	CTATAGCTGAAGCACTCCAACTTGGTCTAATAAAAATCTCGAGAGGAACTC	243
FJ596166.1P.orientaleCOR	CTATAGCTGAAGCACTTCAACTTGGTCTAATAAAAATCTCGAGATGAACTC	243
FJ596159.1P.somniferumCOR	CTATAGCTGAAGCACTTCAACTTGGTCTAATAAGATCTCGGGATGAACTC	243
FJ596158.1P.somniferumCOR	CTATAGCTGAAGCACTTCAACTTGGTCTAATAAGATCTCGGGATGAACTC	243
AF108435.1P.somniferumCOR	CTATAGCTGAAGCACTTCAACTTGGTTTAATAAAAATCTCGAGATGAACTC	243
FJ596161.1P.somniferumCOR	CTATAGCTGAAGCACTTCAACTTGGTTTAATAAAAATCTCGAGATGAACTC	243
AF108432.1P.somniferumCOR	CTATAGCTGAAGCACTTCAACTTGGTCTAATAAAAATCTCGAGATGAACTC	248
AF108433.1P.somniferumCOR	CTATAGCTGAAGCACTTCAACTTGGTTTAATAAAAATCTCGAGATGAACTC	243
FJ596160.1P.somniferumCOR	CTATAGCTGAAGCACTTCAACTTGGTCTAATAAAAATCTCGAGATGAACTC	243
FJ596164.1P.nudicauleCOR	CTATAGCTGAAGCACTTCAAAATTGGCCTAATCAAATCTCGAGATGAACTT	243
FJ596165.1P.nudicauleCOR	CTATAGCTGAAGCACTTCAAATTTGGCCTAATCGAAATCTCGAGATGAACTC	243
AF108438.1P.somniferumCOR	CTGTAGCTGAAGCACTTCAAAATGGCCTAATCAAATCTCGAGATGAACTC	246

FJ596169.1P.rhoeasCOR	TTCATCACTTCCAAGCTCTGGTGTACTGATGCTCACGCTGATCTTGTACT	293
FJ596168.1P.rhoeasCOR	TTCATCACTTCCAAGCTCTGGTGCCTGATGCTCACGCTGATCTTGTCT	293
P.orientaleCOR	TTCATCACTTCCAAGCTCTGGTGCCTGATGCTCACGCTGATCTCGTCCT	287
FJ596162.1P.bracteatumCOR	TTCATCACTTCCAAGCTCTGGTGCCTGATGCTCACGCTGATCTTGTCT	293
FJ596163.1P.bracteatumCOR	TTCATCACTTCCAAGCTCTGGTGCCTGATGCTCACGCTGATCTTGTCT	293
P.bracteatumCOR	TTCATCACTTCCAAGCTCTGGTGCCTGATGCTCACGCTGATCTTGTCT	217
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	TTCATCGCTTCCAAGCTCTGGTGCCTGATGCTCACGCTGATCTTGTCT	293
FJ596166.1P.orientaleCOR	TTCATCACTTCCAAGCTCTGGTGCCTGATGCTCACGCTGATCTTGTCT	293
FJ596159.1P.somniferumCOR	TTCATCACTTCCAAGCTCTGGTGCCTGATGCTCACGCTGATCTTGTCT	293
FJ596158.1P.somniferumCOR	TTCATCACTTCCAAGCTCTGGTGCCTGATGCTCACGCTGATCTTGTCT	293
AF108435.1P.somniferumCOR	TTCATCACTTCCAAGCTCTGGTGCCTGATGCTCACGCTGATCTTGTCT	293
FJ596161.1P.somniferumCOR	TTCATCACTTCCAAGCTCTGGTGCCTGATGCTCACGCTGATCTTGTCT	293
AF108434.1P.somniferumCOR	TTCATCACTTCCAAGCTCTGGTGCCTGATGCTCACGCTGATCTTGTCT	293
AF108432.1P.somniferumCOR	TTCATCACTTCCAAGCTCTGGTGCCTGATGCTCACGCTGATCTTGTCT	298
AF108433.1P.somniferumCOR	TTCATCACTTCCAAGCTCTGGTGCCTGATGCTCACGCTGATCTTGTCT	293
FJ596160.1P.somniferumCOR	TTCATCACTTCCAAGCTCTGGTGCCTGATGCTCACGCTGATCTTGTCT	293
FJ596164.1P.nudicauleCOR	TTCATCACTTCCAAGCTCTGGTGCCTGATGCTCACCTGATCGTGTCT	293
FJ596165.1P.nudicauleCOR	TTCTGCTCACTTCCAAGCTCTGGTGCCTGATGCTCACCTGATCTTGTCT	293
AF108438.1P.somniferumCOR	TTCATCACTTCCAAGCTATGGTGCCTGATGCTTACCCTGATCATGTCT	296
FJ596169.1P.rhoeasCOR	TCCTGCTCTTCAGAATCACTGAGGTAAAAATATTTTGGTGCAAAAATTG	343
FJ596168.1P.rhoeasCOR	CCCTGCTCTTCAGAATTCTCTGAGGTAAAAATATTTTGGTGCAAAAATTG	343
P.orientaleCOR	CCCTGCTCTTCAGAATTCTCTGAGG-----	312
FJ596162.1P.bracteatumCOR	CCCTGCTCTTCAGAATTCTCTGAGGTAAAAATATTTTGGTGCAAAAATTG	343
FJ596163.1P.bracteatumCOR	CCCTGCTCTTCAGAATTCTCTGAGGTAAAAATATTTTGGTGCAAAAATTG	343
P.bracteatumCOR	CCCTGCTCTTCAGAATTCTCTGAGG-----	242
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	CCCTGCTCTTCAGAATTCTCTGAGGTAAACATATTTTGGTGCAAAAATTG	343
FJ596166.1P.orientaleCOR	CCCTGCTCTTCAG-----AGGTAAAAATATTTTGGTGAAAAAATTG	334
FJ596159.1P.somniferumCOR	CCCTGCTCTTCAGAATTCTCTGAGGTAAACTATTTTGGTGCAAAAATTG	343
FJ596158.1P.somniferumCOR	CCCTGCTCTTCAGAATTCTCTGAGGTAAACTATTTTGGTGCAAAAATTG	343
AF108435.1P.somniferumCOR	CCCTGCTCTTCAGAATTCTCTGAGG-----	318
FJ596161.1P.somniferumCOR	CCCTGCTCTTCAGAATTCTCTGAGGTAAAAATATTTTGGTGCAAAA--TCG	341
AF108434.1P.somniferumCOR	CCCTGCTCTTCAGAATTCTCTGAGG-----	318
AF108432.1P.somniferumCOR	CCCTGCTCTTCAGAATTCTCTGAGG-----	323
AF108433.1P.somniferumCOR	CCCTGCTCTTCAGAATTCTCTGAGG-----	318
FJ596160.1P.somniferumCOR	CCCTGCTCTTCAGAATTCTCTGAGGTAAAAATATTTTGGTGCAAAAATTG	343
FJ596164.1P.nudicauleCOR	CCCCGCTATTTCGGAATTCTCTCAGGTAAGAAAA--TTTGGTGCAAAA--TTG	340
FJ596165.1P.nudicauleCOR	CCCCGCTCTTCGGAATTCCCTCAGGTAAGAAAA--TTTGGTGCAAAA--TTG	339
AF108438.1P.somniferumCOR	CCCTGCTCTTCAGAATTCCCTGAGG-----	321

FJ596169.1P.rhoeasCOR	AACCTGA-GCTTATGTGCAT-----	362
FJ596168.1P.rhoeasCOR	AACCTGAAGCTTATCTGCAT-----	363
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	AACCCAAGGCTGATGTACATAGGCATGCACCACAAC-----	379
FJ596163.1P.bracteatumCOR	AACCCAAGGCTGATGTACATAGGCATGCACCACAAC-----	379
P.bracteatumCOR	-----	
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	AACCTAAGGCTGATGTACATAGGCATGCACCACAAC-----	379
FJ596166.1P.orientaleCOR	AACCTATCAT-----AGGCACCACAAC-----	356
FJ596159.1P.somniferumCOR	AACCTGATGCTTATGGGCGT---AGGCACCACAAC-----	375
FJ596158.1P.somniferumCOR	AACCTGATGCTTATGGGCGT---AGGCACCACAAC-----	375
AF108435.1P.somniferumCOR	-----	
FJ596161.1P.somniferumCOR	AACCTATCTAAGGCTTATGTACATAGGCACCACAACC-----	378
AF108434.1P.somniferumCOR	-----	
AF108432.1P.somniferumCOR	-----	
AF108433.1P.somniferumCOR	-----	
FJ596160.1P.somniferumCOR	AACCTATCTAAGGCTTATGTACATAGGCACCACAACC-----	380
FJ596164.1P.nudicauleCOR	AACCAAAGGCTTATGTGCAT---AGTTACTACAAC-----AAAC	376
FJ596165.1P.nudicauleCOR	AACCAAAGGCTTATGTGCAT---AGTTACTGTATCTGGAGTTCTTAAAC	385
AF108438.1P.somniferumCOR	-----	
FJ596169.1P.rhoeasCOR	-----AGTCTGGACC---AGTGGACCGTA-----AAAC-----	387
FJ596168.1P.rhoeasCOR	-----AGTCTGGACTGTAAACATACTATATTTGAAAACTCAAACT	405
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	-----AGTTCTTAAACATCTATATATAGAACTTCAGAATATTCAA--	419
FJ596163.1P.bracteatumCOR	-----AGTTCTTAAACATCTATATATAGAACTTCAGAATATTCAA--	419
P.bracteatumCOR	-----	
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	-----AGTTCTTAAACATCTATATATAGAACTTCAGAATATTCAA--	419
FJ596166.1P.orientaleCOR	-----GGTTCTTAAACATCTATATATAGAACTTCAGAATATTCAA--	396
FJ596159.1P.somniferumCOR	-----AGTTCTTAAACATCTATATATAGAACTTCAGAAAATTCAA--	415
FJ596158.1P.somniferumCOR	-----AGTTCTTAAACATCTATATATAGAACTTCAGAAAATTCAA--	415
AF108435.1P.somniferumCOR	-----	
FJ596161.1P.somniferumCOR	-TGGACTGAGTTCTTAAACATCTATATATAAACTACAGAATATTAAA--	425
AF108434.1P.somniferumCOR	-----	
AF108432.1P.somniferumCOR	-----	
AF108433.1P.somniferumCOR	-----	
FJ596160.1P.somniferumCOR	-TGGACTGAGTTCTTAAACATCTATATATAGAACTTCAGAA-ATTCAA--	426
FJ596164.1P.nudicauleCOR	ATCTATCAAATTCTGAAACATTCAAATTGATTGACAAGGAATGTGAAGTT	426
FJ596165.1P.nudicauleCOR	-TTTATCTAATTCTGAAACATTCAAATTGATTGACAAGGAATGCGAA---	431
AF108438.1P.somniferumCOR	-----	

FJ596169.1P.rhoeasCOR	-----ATCTAACTATCTCTGTCTTGTTCCTATAGGAATCTTAAATT	429
FJ596168.1P.rhoeasCOR	C--ATTGTATCTAACTATGTTTGTCTTGTGCTATAGGAATCTTAAATT	453
P.orientaleCOR	-----AATCTTAAATT	323
FJ596162.1P.bracteatumCOR	---ATTGATATTAATTCATCTTGTTTTTGTGCATAAAGGAATCTCAAATT	466
FJ596163.1P.bracteatumCOR	---ATTGATATTAATTCATCTTGTTTTTGTGCATAAAGGAATCTCAAATT	466
P.bracteatumCOR	-----AATCTCAAATT	253
P.pseudo-orientaleCOR	-----AGGAATCTCAAATT	14
FJ596167.1P.orientaleCOR	---ATTGATATTAATTCATCTTGTTTTTGTGTCATATAGGAATCTCAAATT	466
FJ596166.1P.orientaleCOR	---ATTGATATTAATTCATCTTGTTTTTGTGTCATATAGGAATCTCAAATT	443
FJ596159.1P.somniferumCOR	---ATTCATATTAATTCGTCCTTGTTTTTATGTCACATAGGAATCTCAAATT	462
FJ596158.1P.somniferumCOR	---ATTCATATTAATTCATCTTGTTTTTATGTCACATAGGAATCTCAAATT	462
AF108435.1P.somniferumCOR	-----AATCTCAAATT	329
FJ596161.1P.somniferumCOR	---ATTGATATTAATTCATCTTGTTTTTGTGTCATATAGGAATCTCAAATT	472
AF108434.1P.somniferumCOR	-----AATCTTAAATT	329
AF108432.1P.somniferumCOR	-----AATCTTAAATT	334
AF108433.1P.somniferumCOR	-----AATCTCAAATT	329
FJ596160.1P.somniferumCOR	---ATTGATATTAATTCATCTTGTTTTTGTGTCATATAGGAATCTCAAATT	473
FJ596164.1P.nudicauleCOR	GTGATCCTCATCTAGTCATCCTGTTTT-TGCAATATAGGAATCTTAAAGCT	475
FJ596165.1P.nudicauleCOR	-----CCTCAACTAGTCATCCTGTTTTGTGCAATATAGGAATCTTAAATT	476
AF108438.1P.somniferumCOR	-----AATCTTAAAGTT	332
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FJ596169.1P.rhoeasCOR	GGAGTATCTTGATCTATATTTGATACACTTTCCGCTGAGCCTGAAACCAG	479
FJ596168.1P.rhoeasCOR	GGAGTATCTTGATCTATATTTGATACACTTTCCGCTAAGCCTGAAACCAG	503
P.orientaleCOR	GGAGTATCTGGATCTATATTTGATACACTTTCCGGTAAGCTTGAAGCCAG	373
FJ596162.1P.bracteatumCOR	GGAGTATCTTGATCTATATTTGATACACTTTCCGGTAAGCTTGAAGCCAG	516
FJ596163.1P.bracteatumCOR	GGAGTATCTTGATCTATATTTGATACACTTTCCGGTAAGCTTGAAGCCAG	516
P.bracteatumCOR	GGAGTATCTTGATCTACATTTGATACACTTTCCGGTAAGCTTGAAGCCAG	303
P.pseudo-orientaleCOR	GGAGTATCTTGATCTATATTTGATACACTTTCCGGTAAGCTTGAAGCCAG	64
FJ596167.1P.orientaleCOR	GGAGTATCTTGATCTATATTTGATACACTTTCCGGTAAGCTTAAAGCCAG	516
FJ596166.1P.orientaleCOR	GGAGTATCTTGATCTATATTTGATACACTTTCCGATAAGCTTGAAGCCAG	493
FJ596159.1P.somniferumCOR	GGAGTATCTT-----GATACACTTTCCGGTAAGCTTGAAGCCAG	501
FJ596158.1P.somniferumCOR	GGAGTATCTT-----GATACACTTTCCGGTAAGCTTGAAGCCAG	501
AF108435.1P.somniferumCOR	GGAGTATCTTGATCTATATTTGATACACCATCCGGTAAGCTTGAAGCCAG	379
FJ596161.1P.somniferumCOR	GGAGTATCTTGATCTATATTTGATACACCATCCGGTAAGCTTGAAGCCAG	522
AF108434.1P.somniferumCOR	GGACTATCTTGATCTATATTTGATACACCATCCGGTAAGCTTGAAGCCAG	379
AF108432.1P.somniferumCOR	GGACTATCTTGATCTATATTTGATACACCATCCGGTAAGCTTGAAGCCAG	384
AF108433.1P.somniferumCOR	GGAGTACCTTGATCTATATTTGATACACCATCCGGTAAGCTTGAAGCCAG	379
FJ596160.1P.somniferumCOR	GGACTATCTGGATCTATATTTGATACACCATCCGGTAAGCTTGAAGCCAG	523
FJ596164.1P.nudicauleCOR	GGAGTATCTTGATTTTATATCTTATACACTATCCGGCAAGACTCCAGCCAG	525
FJ596165.1P.nudicauleCOR	GGAGTATCTTGATTTTATATCTGATACACTATCCGGCAAGACTCAAGCCAG	526
AF108438.1P.somniferumCOR	GGAGTATCTGGATCTATATTTGATACATTGGCCAGTAAGCTTGAAGCCAG	382
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FJ596169.1P.rhoeasCOR	GGAAGATTGTTAACGATATACCAAAGGATCAAATGCTTCCGATGGACTAC	529
FJ596168.1P.rhoeasCOR	GGAAGATTGTTAACGATATACCAAAGGATCAAATGCTTCCAATGGACTAC	553
P.orientaleCOR	GGAAGATTGTTAACGAAATACCAAAGGATCAAATGCTTCCAATGGACTAC	423
FJ596162.1P.bracteatumCOR	GGAAGATTGTTAGCGATATACCAAAGGATCAAATGCTTCCAATGGACTAC	566
FJ596163.1P.bracteatumCOR	GGAAGATTGTTAGCGATATACCAAAGGATCAAATGCTTCCAATGGACTAC	566
P.bracteatumCOR	GGAAGATTGTTAGCGATATACCAAAGGATCAAATGCTTCCAATGGACTAC	353
P.pseudo-orientaleCOR	GGAAGATTGTTAGCGATATACCAAAGGATCAAATGCTTCCAATGGACTAC	114
FJ596167.1P.orientaleCOR	GGAGGATTGTTAGCGATATACCAAAGGATCAAATGCTTCCAATGGACTAC	566
FJ596166.1P.orientaleCOR	GGAAGATTGTCAACGATATACCGAAGGATCAAATGCTTCCAATGGACTCC	543
FJ596159.1P.somniferumCOR	GGAAGATTGTTAACGAAATACCAAAGGATCATATGCTTCCAATGGACTAC	551
FJ596158.1P.somniferumCOR	GGAAGATTGTTAACGAAATACCAAAGGATCATATGCTTCCAATGGACTAC	551
AF108435.1P.somniferumCOR	GGAAATTTGTTAACGAAATACCAAAGGATCATATTCTTCCAATGGACTAC	429
FJ596161.1P.somniferumCOR	GGAAATTTGTTAACGAAATACCAAAGGATCATATTCTTCCAATGGACTAC	572
AF108434.1P.somniferumCOR	GGAAATTTGTTAACGAAATACCAAAGGATCATATCCTTCCAATGGACTAC	429
AF108432.1P.somniferumCOR	GGAAATTTGTTAACGAAATACCAAAGGATCATATCCTTCCAATGGACTAC	434
AF108433.1P.somniferumCOR	GGAAATTTGTTAACGAAATACCAAAGGATCATATTCTTCCAATGGACTAC	429
FJ596160.1P.somniferumCOR	GGAAGTTTGTAAACGAAATACCAAAGGATCATATCCTTCCAATGGACTAC	573
FJ596164.1P.nudicauleCOR	GGGAGATTGTTCTCGATGTGCCAGGGTATGAAATACTTCCGATGGACTAC	575
FJ596165.1P.nudicauleCOR	GGGAGATTGTTGTCTCGATGTGCCAGGGTATGAAATACTTCCGATGGACTAC	576
AF108438.1P.somniferumCOR	GGAAGTTTGTGCATCTTATACCGAAGGATGAAATATTTCCAATTGACTAC	432
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FJ596169.1P.rhoeasCOR	AAATCTGTATGGGCAGCCATGGAAGAGTGTGCAACCCTTGGATTAACCAA	579
FJ596168.1P.rhoeasCOR	AAATCTGTATGGGCAGCCATGGAAGAGTGTGCAACCCTTGGATTAACCAA	603
P.orientaleCOR	AAATCTGTGTGGGCAGCCATGGAAGAGTGTGCGACCCTTGGCTTCACTAG	473
FJ596162.1P.bracteatumCOR	AAATCTGTATGGGTAGCCATGGAAGAGTGTGAGACCCTTGGCTTCACTAG	616
FJ596163.1P.bracteatumCOR	AAATCTGTATGGGTAGCCATGGAAGAGTGTGAGACCCTTGGCTTCACTAG	616
P.bracteatumCOR	AAATCTGTATGGGTAGCCATGGAAGAGTGTGAGACCCTTGGCTTCACTAG	403
P.pseudo-orientaleCOR	AAATCAGTATGGGCAGCCATGGAAGAGTGTGAGACCCTTGGCTTCACTAG	164
FJ596167.1P.orientaleCOR	AAATCTGTATGGGCAGCCATGGAAGAGTGTGAGACCCTTGGCTTCACTAG	616
FJ596166.1P.orientaleCOR	AAATCTGTATGGGCAGCCATGGAAGAGTGTGAGACCCTTGGCTTCACTAG	593
FJ596159.1P.somniferumCOR	AAGTCTGTATGGGCAGCCATGGAAGAGTGTGAGACCCTTGGCTTCACTAG	601
FJ596158.1P.somniferumCOR	AAGTCTGTATGGGCAGCCATGGAAGAGTGTGAGACCCTTGGCTTCACTAG	601
AF108435.1P.somniferumCOR	AAATCTGTATGGGCAGCCATGGAAGAGTGTGAGACCCTTGGCTTCACTAG	479
FJ596161.1P.somniferumCOR	AAATCTGTATGGGCAGCCATGGAAGAGTGTGAGACCCTTGGCTTCACTAG	622
AF108434.1P.somniferumCOR	AAATCTGTATGGGCAGCCATGGAAGAGTGTGAGACCCTTGGCTTCACTAG	479
AF108432.1P.somniferumCOR	AAATCTGTATGGGCAGCCATGGAAGAGTGTGAGACCCTTGGCTTCACTAG	484
AF108433.1P.somniferumCOR	AAATCTGTATGGGCAGCCATGGAAGAGTGTGAGACCCTTGGCTTCACTAG	479
FJ596160.1P.somniferumCOR	AAATCTGTATGGGCAGCCATGGAAGAGTGTGAGACCCTTGGCTTCACTAG	623
FJ596164.1P.nudicauleCOR	AGGTCTGTATGGGCAGCGATGGAAGAGTGTGAGAACCTTGGCTTCACTAA	625
FJ596165.1P.nudicauleCOR	AGGTCTGTATGGGCAGCGATGGAAGAGTGTGAGAACCTTGGCTTCACTAA	626
AF108438.1P.somniferumCOR	AAGTCTGTATGGGCAGCCATGGAAGAGTGTGAGATGCTTGGATTAACCAA	482
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FJ596169.1P.rhoeasCOR	GGCAATCGGTGTCAGCAATTTCTCATGCAAAAAGCTTCAAGAGTTGATGG	629
FJ596168.1P.rhoeasCOR	GGCAATCGGTGTCAGCAATTTCTCATGCAAAAAGCTTCAAGAGTTGATGG	653
P.orientaleCOR	GGCAATCGGTGTCAGCAATTTCTCATGCAAAAAGCTTCAAGAGTTGATGG	523
FJ596162.1P.bracteatumCOR	GGCAATCGGTGTCAGTAATTTTTCATGCAAAAAGCTTCAAGAGTTGATGG	666
FJ596163.1P.bracteatumCOR	GGCAATCGGTGTCAGTAATTTTTCATGCAAAAAGCTTCAAGAGTTGATGG	666
P.bracteatumCOR	GGCAATCGGTGTCAGTAATTTTTCATGCAAAAAGCTTCAAGAGTTGATGG	453
P.pseudo-orientaleCOR	GGCAATCGGTGTCAGTAATTTTTCATGCAAAAAGCTTCAAGAGTTGATGG	214
FJ596167.1P.orientaleCOR	GGCAATCGGTGTCAGTAATTTTTCATGCAAAAAGCTTCAAGAGTTGATGG	666
FJ596166.1P.orientaleCOR	GGCAATCGGTGTCAGTAATTTTTCATGCAAAAAGCTTCAAGAGTTGATGG	643
FJ596159.1P.somniferumCOR	GGAAATCGGTGTCAGTAATTTCTCATGCAAAAAGCTTCAAGAGTTGATGG	651
FJ596158.1P.somniferumCOR	GGAAATCGGTGTCAGTAATTTCTCATGCAAAAAGCTTCAAGAGTTGATGG	651
AF108435.1P.somniferumCOR	GGCAATCGGTGTCAGTAATTTCTCATGCAAAAAGCTTCAAGAGTTGATGG	529
FJ596161.1P.somniferumCOR	GGCAATCGGTGTCAGTAATTTCTCATGCAAAAAGCTTCAAGAGTTGATGG	672
AF108434.1P.somniferumCOR	GGCAATCGGGTCTGTAATTTCTCATGCAAAAAGCTTCAAGAGTTGATGG	529
AF108432.1P.somniferumCOR	GGCAATCGGGTCTGTAATTTCTCATGCAAAAAGCTTCAAGAGTTGATGG	534
AF108433.1P.somniferumCOR	GGCAATCGGTGTCAGTAATTTCTCATGCAAAAAGCTTCAAGAGTTGATGG	529
FJ596160.1P.somniferumCOR	GGCAATCGGGTCTGTAATTTCTCATGCAAAAAGCTTCAAGAGTTGATGG	673
FJ596164.1P.nudicauleCOR	GTCTATTGGTGTGTCAGCAATTTTTCGTGCAAAAAGATTCAAGAGTTGATGG	675
FJ596165.1P.nudicauleCOR	GTCTATTGGTGTGTCAGCAATTTTTCGTGCAAAAAGATTCAAGAGTTGATGG	676
AF108438.1P.somniferumCOR	GTGATCGGGTGTGTCAGCAATTTTTCGTGCAAGAAGCTTCATTATCTAATGG	532
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FJ596169.1P.rhoeasCOR	CGACAGCCAAAAGCCCTCCAGTTGTAAATGAAGTGAGTACAAAGTAGTC-	678
FJ596168.1P.rhoeasCOR	CGACAGCCAAAAGCCCTCCAGTTGTAAATGAAGTGAGTACAAAGTAGTC-	702
P.orientaleCOR	CGACAGCTAATAGCCCTCCAGTGGAATGAAGTG-----	558
FJ596162.1P.bracteatumCOR	CGACAGCCAACAGCCCTCCAGTTGTAAATGAAGTGAGTACAAATTAGTCC	716
FJ596163.1P.bracteatumCOR	CGACAGCCAACAGCCCTCCAGTTGTAAATGAAGTGAGTACAAATTAGTCC	716
P.bracteatumCOR	CGACAGCCAACAGCCCTCCAGTTGTAAATGAAGTG-----	488
P.pseudo-orientaleCOR	CGACAGCCAACAGCCCTCCAGTTGTAAATGAAGTG-----	249
FJ596167.1P.orientaleCOR	CGACAGCCAACAGCCATCCAGTTGTAAATGAAGTGAGTACAAATTAGTCC	716
FJ596166.1P.orientaleCOR	CGACAGCCAACAGCCCTCCAGTTGTAAATGAAGTGAGTACAAATTAGTTC	693
FJ596159.1P.somniferumCOR	CGACAGCCAACACCCCTCCAGTTATAAATGAAGTGAGTACAAATTAGTC-	700
FJ596158.1P.somniferumCOR	CGACAGCCAACACCCCTCCAGTTATAAATGAAGTGAGTACAAATTAGTC-	700
AF108435.1P.somniferumCOR	CAGCAGCCAAGATCCCTCCAGTTGTGAATCAAGTG-----	564
FJ596161.1P.somniferumCOR	CAGCAGCCAAGATCCCTCCAGTTGTGAATCAAGTGAGTACAAATTGTTCC	722
AF108434.1P.somniferumCOR	CAGCAGCCAAGATCCCTCCAGTTGTGAATCAAGTG-----	564
AF108432.1P.somniferumCOR	AAACAGCCAACAGCCCTCCAGTTGTGAATCAAGTG-----	569
AF108433.1P.somniferumCOR	CAACAGCCAAGATCCCTCCAGTTGTGAATCAAGTG-----	564
FJ596160.1P.somniferumCOR	CAACAGCCAACAGCCCTCCAGTTGTGAATCAAGTGAGTACAAATTAGTCA	723
FJ596164.1P.nudicauleCOR	CGACAGCCAACATCCCTCCAGTTGTAAATCAAGTAAGTATCAA-----	718
FJ596165.1P.nudicauleCOR	CGACAGCCAACATCCCTCCAGTTGTAAATCAAGTAAGTATCAA-----	719
AF108438.1P.somniferumCOR	CCACTGCCAACATCCCTCCGGCTGTTAATCAGGTG-----	567
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FJ596169.1P.rhoeasCOR	-----CTTACTTCAACGTTTTGATAAAAAATAGTGG---CCTTATTAGA	719
FJ596168.1P.rhoeasCOR	-----CTTACTTCAACGTTTTGATAAAAAATAATGG---CCTTATTAGA	743
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	TTAATTCTTACTTCAATGTGTGGATAAAAAATTAGTGGTTGCCTTGTTCTGA	766
FJ596163.1P.bracteatumCOR	TTAATTCTTACTTCAATGTGTGGATAAAAAATTAGTGGTTGCCTTGTTCTGA	766
P.bracteatumCOR	-----	
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	TTAATTCTTACTTCAACGTTGTGGATAAAAAATTAGTGGTTGCCTTGTTCTCGG	766
FJ596166.1P.orientaleCOR	TTAATTCTTACTGCAACGTTGTGGATAAAAAATTAGTGGTTGCCTTGTTCTCGG	743
FJ596159.1P.somniferumCOR	-----ACTTCAACGTTTGGATAAAAAATTGGTGGTTGGCATGTTCAA	741
FJ596158.1P.somniferumCOR	-----ACTTCAACGTTTGGATAAAAAATTGGTGGTTGGCATGTTCAA	741
AF108435.1P.somniferumCOR	-----	
FJ596161.1P.somniferumCOR	TTAATTCTTACTACAACGTTTGGATAAAAAATTAGTGGTTGCCTTGTTCTGA	772
AF108434.1P.somniferumCOR	-----	
AF108432.1P.somniferumCOR	-----	
AF108433.1P.somniferumCOR	-----	
FJ596160.1P.somniferumCOR	TTAATTCTTACTACAACGTTTGGATAAAAAATTAGTGGTTGCCTTGTTCTGA	773
FJ596164.1P.nudicauleCOR	-----AAAATTAGTGGTTTCCTTATTCTGA	742
FJ596165.1P.nudicauleCOR	-----AAAATTAGTGGTTTCCTTATTCTGA	743
AF108438.1P.somniferumCOR	-----	
FJ596169.1P.rhoeasCOR	CCTT-GTGGATACATGATGC-----TATTA-----	743
FJ596168.1P.rhoeasCOR	CCTT-GTGGATACATGACGC-----TATTA-----	767
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	CCTT-GACGCCATTTGTTG-----GAATGTTATAAATGCCCTCC	804
FJ596163.1P.bracteatumCOR	CCTT-GACGCCATTTGTTG-----GAATGTTATAAATGCCCTCC	804
P.bracteatumCOR	-----	
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	CCTT-GACGCCATTTGTTG-----GAATGTTATAAATGTCCTCC	804
FJ596166.1P.orientaleCOR	CCTT-GGCGCCATTTGTTG-----GAATGTTATAAATGCCCACC	781
FJ596159.1P.somniferumCOR	CCTT-GGCGATAGTTAATG-----CTATATT-----	766
FJ596158.1P.somniferumCOR	CCTT-GGCGATAGTTAATG-----CTATATT-----	766
AF108435.1P.somniferumCOR	-----	
FJ596161.1P.somniferumCOR	CCTTTGACGATAGTTAATGCCCATTTTTTCGAATATTATAAACACCCTCC	822
AF108434.1P.somniferumCOR	-----	
AF108432.1P.somniferumCOR	-----	
AF108433.1P.somniferumCOR	-----	
FJ596160.1P.somniferumCOR	CCTTTGACCATAATTAATGCC-ATTTGTTCTGAATATTATAAATACCCTCC	822
FJ596164.1P.nudicauleCOR	CCTT-GAAGAGACTTATTGC-----AAATG-----	766
FJ596165.1P.nudicauleCOR	CCTT-GAAGAGACTTATTGC-----AAATG-----	767
AF108438.1P.somniferumCOR	-----	

FJ596169.1P.rhoeasCOR	-----	
FJ596168.1P.rhoeasCOR	-----	
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	ATTTTAGTTG-----ACCTTGCACA	824
FJ596163.1P.bracteatumCOR	ATTTTAGTTGGAATGTTATAAATGCCCTCCATTTTAGTTGACCTTGCACA	854
P.bracteatumCOR	-----	
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	ATTTTAGTTG-----ACCTTGCACA	824
FJ596166.1P.orientaleCOR	ATTTTAGTTG-----ACGTTACGCA	801
FJ596159.1P.somniferumCOR	-----	
FJ596158.1P.somniferumCOR	-----	
AF108435.1P.somniferumCOR	-----	
FJ596161.1P.somniferumCOR	ATTTTAGTTG-----ACCTTGTATA	842
AF108434.1P.somniferumCOR	-----	
AF108432.1P.somniferumCOR	-----	
AF108433.1P.somniferumCOR	-----	
FJ596160.1P.somniferumCOR	ATTTTAGTTG-----ATTTTGTATA	842
FJ596164.1P.nudicauleCOR	-----	
FJ596165.1P.nudicauleCOR	-----	
AF108438.1P.somniferumCOR	-----	

FJ596169.1P.rhoeasCOR	-----	
FJ596168.1P.rhoeasCOR	-----	
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	AATATCCCCGAGGTAAAAAATAATATTTTGGAGTCTGACTTAAGACGG	874
FJ596163.1P.bracteatumCOR	AATATCCCCGAGGTAAAAAATAATATTTTGGAGTCTGACTTAAGACGG	904
P.bracteatumCOR	-----	
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	AATATCCCCGAGGTAAAAAATAATATTTTGGAGTCTGACTTAAGACGG	874
FJ596166.1P.orientaleCOR	AATATCCCCGAAGTAAAAAATAATATTTTGGAGTC-GATTTAAGACGG	850
FJ596159.1P.somniferumCOR	-----	
FJ596158.1P.somniferumCOR	-----	
AF108435.1P.somniferumCOR	-----	
FJ596161.1P.somniferumCOR	AATATCCCCGAGTAAAAAATAATATTTTGGATATCAACTTAAGACAG	892
AF108434.1P.somniferumCOR	-----	
AF108432.1P.somniferumCOR	-----	
AF108433.1P.somniferumCOR	-----	
FJ596160.1P.somniferumCOR	AAGATTTCCCGGAATAAAAAAATAATAATTTTGAAGTCAATTTAAGATAG	892
FJ596164.1P.nudicauleCOR	-----	
FJ596165.1P.nudicauleCOR	-----	
AF108438.1P.somniferumCOR	-----	

FJ596169.1P.rhoeasCOR	-----	
FJ596168.1P.rhoeasCOR	-----	
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	TTTGTTTTTACTTTTCGAGACAACTTGAGATGGTTGTTTCCACTTTTAGA	924
FJ596163.1P.bracteatumCOR	TTTGTTTTTACTTTTCGAGACAACTTGAGATGGTTGTTTCCACTTTTAGA	954
P.bracteatumCOR	-----	
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	TTTTTTTTTATTTTTCGAGACAACTTGAGATGGCTGTTTCCACTTTTAGA	924
FJ596166.1P.orientaleCOR	TT-GTTTTTATTTTGGAGACAACTTGAGATTGTTGCTTCCACTTTTAGA	899
FJ596159.1P.somniferumCOR	-----	
FJ596158.1P.somniferumCOR	-----	
AF108435.1P.somniferumCOR	-----	
FJ596161.1P.somniferumCOR	TT-GTTTCCATTTTGGAGTCAAGTTGAGACAATTGCTTCCACTATTGGA	941
AF108434.1P.somniferumCOR	-----	
AF108432.1P.somniferumCOR	-----	
AF108433.1P.somniferumCOR	-----	
FJ596160.1P.somniferumCOR	TT-GTTTTCATTTTGGAGTCAACTTGAGACAGTTGCTTCCACTTTTAGA	941
FJ596164.1P.nudicauleCOR	-----	
FJ596165.1P.nudicauleCOR	-----	
AF108438.1P.somniferumCOR	-----	
FJ596169.1P.rhoeasCOR	-----	
FJ596168.1P.rhoeasCOR	-----	
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	GTC-AACTTGTATAAAGTTGGGTCCGTTCTGGGAACAACTTGTGCTAGTT	973
FJ596163.1P.bracteatumCOR	GTC-AACTTGTATAAAGTTGGGTCCGTTCTGGGAACAACTTGTGCTAGTT	1003
P.bracteatumCOR	-----	
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	GTC-AACTTGTATAAAGTTGGGTCTGTTCTGGGAACAACTTGTGCTAGTT	973
FJ596166.1P.orientaleCOR	GTCTAACTTGCATAAAGTTGGGTCCGTTCTAGGAACAACTTGAGATGGTT	949
FJ596159.1P.somniferumCOR	-----	
FJ596158.1P.somniferumCOR	-----	
AF108435.1P.somniferumCOR	-----	
FJ596161.1P.somniferumCOR	GTC-AACTTGTATTAAGTTGGATCCG-----GGAATAAGTTGTGCTAACT	985
AF108434.1P.somniferumCOR	-----	
AF108432.1P.somniferumCOR	-----	
AF108433.1P.somniferumCOR	-----	
FJ596160.1P.somniferumCOR	GTC-AATTGTATTAAGTTGGGTCCG-----GGAACAACCTGTGCTAGTT	985
FJ596164.1P.nudicauleCOR	-----	
FJ596165.1P.nudicauleCOR	-----	
AF108438.1P.somniferumCOR	-----	

FJ596169.1P.rhoeasCOR	-----	
FJ596168.1P.rhoeasCOR	-----	
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	GCTTCCACTTTTAGAAGGTATGTGTATTTTAAACTTTGAATAAGGGCAT	1023
FJ596163.1P.bracteatumCOR	GCTTCCACTTTTAGAAGGTATGTGTATTTTAAACTTTGAATAAGGGCAT	1053
P.bracteatumCOR	-----	
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	GCTTCCACTTTTAGAAGGTATGTGTATTTTAAACGTTGAATAAGGGCAT	1023
FJ596166.1P.orientaleCOR	GCTTCCACTTTTAGAAGGTATGGGTATTTGTGAATGTTGAATAAGGGCAT	999
FJ596159.1P.somniferumCOR	-----	
FJ596158.1P.somniferumCOR	-----	
AF108435.1P.somniferumCOR	-----	
FJ596161.1P.somniferumCOR	GCTTCCACTTTTAGAAGATATGGGTATT--TAAAAGTTGAATAAGGGCAT	1033
AF108434.1P.somniferumCOR	-----	
AF108432.1P.somniferumCOR	-----	
AF108433.1P.somniferumCOR	-----	
FJ596160.1P.somniferumCOR	GCTACCCTTTTAGAACATATGGGTATT--TAAAAGTTGAATAAGGACAT	1033
FJ596164.1P.nudicauleCOR	-----	
FJ596165.1P.nudicauleCOR	-----	
AF108438.1P.somniferumCOR	-----	
FJ596169.1P.rhoeasCOR	-----GAAT	747
FJ596168.1P.rhoeasCOR	-----GAAT	771
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	ATTCCAAGAGTTAGATTTTAAAGGGTATTTAAATAAGTTTCCCA-TAAAT	1072
FJ596163.1P.bracteatumCOR	ATTCCAAGAGTTAGATTTTAAAGGGTATTTAAATAAGTTTCCCA-TAAAT	1102
P.bracteatumCOR	-----	
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	ATTCCAAGAGTTTCGATTTAAAGGGTATTTGAATAAGTTTCCCA-TAAAT	1072
FJ596166.1P.orientaleCOR	ATTCCAAGAGTTAGATTTTAAAGG-TATTTAAATAAGTTTCCCA-TAAAT	1047
FJ596159.1P.somniferumCOR	-----CAAAT	771
FJ596158.1P.somniferumCOR	-----CAAAT	771
AF108435.1P.somniferumCOR	-----	
FJ596161.1P.somniferumCOR	AATCAGAGGGTTAGATTTTAAAGCCTATTTAAATAGGTTGCCTATCAAAT	1083
AF108434.1P.somniferumCOR	-----	
AF108432.1P.somniferumCOR	-----	
AF108433.1P.somniferumCOR	-----	
FJ596160.1P.somniferumCOR	ATTCCGAGGGGTAGATTTTGAAGGGTATTTAAATAGGTTTGTATCAAAT	1083
FJ596164.1P.nudicauleCOR	-----AAAT	770
FJ596165.1P.nudicauleCOR	-----AAAT	771
AF108438.1P.somniferumCOR	-----	

FJ596169.1P.rhoeasCOR	TTCTACCATGTTATAAACTTATAACCCATCTTTGCATTAGAACTCTTATA	797
FJ596168.1P.rhoeasCOR	TTCTACCATGTTATAAACTTATAACCCATCTTTGCATTAGAACTCATATA	821
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	TACCACCATTTGACCAGCATTTAGCCCATGTTTCGCATTAGAAATCTTACA	1122
FJ596163.1P.bracteatumCOR	TACCACCATTTGACCAGCATTTAGCCCATGTTTCGCATTAGAAATCTTACA	1152
P.bracteatumCOR	-----	
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	TACCACCATTTGACCAGCATTTAGCCCATGTTTCGCATTAGAAATCTTACA	1122
FJ596166.1P.orientaleCOR	TACCACCATTTGACAAGCATTTAGCCCATGTTTCGCATTAGAAATCTTACA	1097
FJ596159.1P.somniferumCOR	TACTACCTTTTGACAAGCATTTAGTCCATGTTTCGCATTAGAAATTTTACA	821
FJ596158.1P.somniferumCOR	TACTACCTTTTGACAAGCATTTAGTCCATGTTTCGCATTAGAAATTTTACA	821
AF108435.1P.somniferumCOR	-----	
FJ596161.1P.somniferumCOR	TACCACCATTTGACAAGCATTTAGCCCGTATTTCGCATTAGAAATCTTACA	1133
AF108434.1P.somniferumCOR	-----	
AF108432.1P.somniferumCOR	-----	
AF108433.1P.somniferumCOR	-----	
FJ596160.1P.somniferumCOR	TACCACCATTTGACAAGCATTTAGCCCGTATTTCGCATTGAAATCTTACA	1133
FJ596164.1P.nudicauleCOR	TTCCACCATTTGACAAGCACATACCCAGTATTACAT--AAAATTCTAC-	817
FJ596165.1P.nudicauleCOR	TCCACCATTTGACAAGCACATACCCAACATTACAT--AAAATTCTAC-	818
AF108438.1P.somniferumCOR	-----	
FJ596169.1P.rhoeasCOR	ATGTTGATTGCTATATGATTAAGGTGGAGATGAGCCCTACTTTACAACAA	847
FJ596168.1P.rhoeasCOR	ATGTTGATTGCTATATGATTAAGGTGGAGATGAGCCCTACTTTACAACAA	871
P.orientaleCOR	-----GAGATGAGCCCCACTTTACATCAA	582
FJ596162.1P.bracteatumCOR	ATGTT-ATTGCT-TATGATTAAGGTGGAGATGAGCCCGGTTTTCCAACAA	1170
FJ596163.1P.bracteatumCOR	ATGTT-ATTGCT-TATGATTAAGGTGGAGATGAGCCCGGTTTTCCAACAA	1200
P.bracteatumCOR	-----GAGATGAGCCCGGTTTTCCAACAA	512
P.pseudo-orientaleCOR	-----GAGATGATCCCGGTTTTCCAACAA	273
FJ596167.1P.orientaleCOR	ATGTT-ATTGCT-TACGATTAAGGTGGAGATGAGCCCGGTTTTCCAACAA	1170
FJ596166.1P.orientaleCOR	ATGTT-ATTGCT-TACGATCAAGGTGGAGATGAGCCCGATTTTCCAACAA	1145
FJ596159.1P.somniferumCOR	ATGTTGATTGCT-TACGATTAAGGTGGAGATGAGCCAGACTTTCCAACAA	870
FJ596158.1P.somniferumCOR	ATGTTGATTGCT-TACGATTAAGGTGGAGATGAGCCAGACTTTCCAACAA	870
AF108435.1P.somniferumCOR	-----GAGATGAGCCCTACTTTACATCAA	588
FJ596161.1P.somniferumCOR	ATGTTGATTGCT-TACGATTAAGGTGGAGATGAGCCCTACTTTACATCAA	1182
AF108434.1P.somniferumCOR	-----GAGATGAGCCCGACTTTACATCAA	588
AF108432.1P.somniferumCOR	-----GAGATGAGCCCGACTTTACATCAA	593
AF108433.1P.somniferumCOR	-----GAGATGAGCCCGACTTTACATCAA	588
FJ596160.1P.somniferumCOR	AAGTGGATTCT-TACGATTAAGGTGGAGATGAGCCCGACTTTACATCAA	1182
FJ596164.1P.nudicauleCOR	-----TCTTATATGATTAAGGTGGAGATGAGCCCGACATTCCAACAA	859
FJ596165.1P.nudicauleCOR	-----TCTTATATGATTAAGGTGGAGATGAGCCCGACATTCCAACAA	860
AF108438.1P.somniferumCOR	-----GAGATGAACCCAATATGGCAACAA	591
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FJ596169.1P.rhoeasCOR	AAAAATCTGAGAGAATATTGCAAGGCCAATAATATCATGATCACGGCGTA	897
FJ596168.1P.rhoeasCOR	AAAAATCTGAGAGAATATTGCAAGGCCAATAATATCATGATCACGGCGTA	921
P.orientaleCOR	AAAAATCTGAGAGAATATTGCAAGGCCAATAATATCATGATCATTGCATA	632
FJ596162.1P.bracteatumCOR	AAAAATTTGAGAGCATATTGCAAGGCCAATAATATCATGATCACTGCATA	1220
FJ596163.1P.bracteatumCOR	AAAAATTTGAGAGCATATTGCAAGGCCAATAATATCATGATCACTGCATA	1250
P.bracteatumCOR	AAAAATTTGAGAGCATATTGCAAGGCCAATAATATCATGATCACTGCATA	562
P.pseudo-orientaleCOR	AAAAATTTGAGAGCATATTGCAAGGCCAATAATATCATGATCACTGCATA	323
FJ596167.1P.orientaleCOR	AAAAATTTGAGAGCATATTGCAAGGCCAATAATATCATGATCACTGCATA	1220
FJ596166.1P.orientaleCOR	AAAAATTTGAGAGCATATTGCAAGGCCAATAATATCATGATCACTGCATA	1195
FJ596159.1P.somniferumCOR	AAGAATTTGAGAGCATATTGCAAGGCCAATAATATCATGATCACCGCATA	920
FJ596158.1P.somniferumCOR	AAGAATTTGAGAGCATATTGCAAGGCCAATAATATCATGATCACCGCATA	920
AF108435.1P.somniferumCOR	AAAAATCTGAGGGAATATTGCAAGGCCAATAATATCATGATCACTGCACA	638
FJ596161.1P.somniferumCOR	AAAAATCTGAGGGAATATTGCAAGGCCAATAATATCATGATCACTGCACA	1232
AF108434.1P.somniferumCOR	AAAAATCTGAGGGAATATTGCAAGGCCAATAATATCATGATCACTGCACA	638
AF108432.1P.somniferumCOR	AAAAATCTGAGGGAATATTGCAAGGCCAATAATATCATGATCACCGCACA	643
AF108433.1P.somniferumCOR	AAAAATCTGAGGGAATATTGCAAGGCCAATAATATCATGATCACTGCACA	638
FJ596160.1P.somniferumCOR	AAAAATCTGAGGGAATATTGCAAGGCCAACAATATCATGATCACCGCACA	1232
FJ596164.1P.nudicauleCOR	AAA-ATCTGAGAGAATATTGCAAGGCTAATAATATCATGATCAGTGCATA	908
FJ596165.1P.nudicauleCOR	AAATATCTGAGAGAATATTGCAAGGCTAATAATATCATGATCAGTGCATA	910
AF108438.1P.somniferumCOR	CAGAACTAAGGGATTACTGTAAGACCAACAATATCATGGTTACTGCATA	641
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FJ596169.1P.rhoeasCOR	CTCGGTTTTGGGAGCCAGAGGAACCGGGTGGGCCAGCAATGCAGTTATGG	947
FJ596168.1P.rhoeasCOR	CTCGGTTTTGGGAGCCAGAGGAACCGGGTGGGCCAGCAATGCAGTTATGG	971
P.orientaleCOR	CTCGGTTTTGGGAGCCAGAGGAACCGGATGGGGCAGCAACGCAGTTATGG	682
FJ596162.1P.bracteatumCOR	CTCGGTTTTGGGAGCCAGAGGAGCCGCATGGGGCAGCAATGCAGTTATGG	1270
FJ596163.1P.bracteatumCOR	CTCGGTTTTGGGAGCCAGAGGAGCCGCATGGGGCAGCAATGCAGTTATGG	1300
P.bracteatumCOR	CTCGGTTTTGGGAGCCAGAGGAGCCGCATGGGGCAGCAATGCAGTTATGG	612
P.pseudo-orientaleCOR	CTCGGTTTTGGGATCCGGAGGAGCCGCATGGGGCAGCAATGCAGTTATGG	373
FJ596167.1P.orientaleCOR	CTCGGTTTTGGGAGCCAGAGGAGCCGCATGGGGCAGCAATGCAGTTATGG	1270
FJ596166.1P.orientaleCOR	CTCGGTTTTGGGATCCAGAGGAGCCGCATGGGGCAGCAATGCAGTTATGG	1245
FJ596159.1P.somniferumCOR	CTCGGTTTTGGGAGCCCGAGGAGCCGCATGGGGCAGCAATGCAGTTATGG	970
FJ596158.1P.somniferumCOR	CTCGGTTTTGGGAGCCCGAGGAGCCGCATGGGGCAGCAATGCAGTTATGG	970
AF108435.1P.somniferumCOR	CTCGGTTTTGGGAGCCATAGGTGCTCCATGGGGCAGCAATGCAGTTATGG	688
FJ596161.1P.somniferumCOR	CTCGGTTTTGGGAGCCATAGGTGCTCCATGGGGCAGCAATGCAGTTATGG	1282
AF108434.1P.somniferumCOR	CTCGGTTTTGGGAGCCATATGTGCTCCATGGGGCAGCAATGCAGTTATGG	688
AF108432.1P.somniferumCOR	CTCAGTTTTGGGAGCCGTAGGTGCCGCTGGGGCACCAATGCAGTTATGC	693
AF108433.1P.somniferumCOR	CTCGGTTTTGGGAGCCATAGGTGCTCCATGGGGCAGCAACGCAGTTATGG	688
FJ596160.1P.somniferumCOR	CTCAGTTTTGGGAGCCGTAGGTGCCGCTGGGGCACCAAGCAGTTATGC	1282
FJ596164.1P.nudicauleCOR	CTCGATCTTGGGATCGAAAGGAACATTTGGGGATCCAATGCAATCATGG	958
FJ596165.1P.nudicauleCOR	CTCGATCTTGGGATCGAAAGGAACATTTGGGGATCCAATGCAATCATGG	960
AF108438.1P.somniferumCOR	CTCGCCTTTGGGAGCCAAAGGAACATATGTGGGGCTCCAGTGGAGTTATGG	691
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FJ596169.1P.rhoeasCOR	ATTCTAAGGTGCTTCACCAGATTGCTGCGGCCAGAGGAAAAATCTGTTGCT	997
FJ596168.1P.rhoeasCOR	ATTCTAAGGTGCTTCACCAGATTGCTGCGGCCAGAGGAAAAATCTGTTGCT	1021
P.orientaleCOR	ATTCTAAGGTGCTTCACCAGATTGCTGTGGCCAGAGGAAAAATCTGTTGCT	732
FJ596162.1P.bracteatumCOR	ATTCTAAGGTGCTTCACCAGATTGCTGTGGCCAGAGGAAAAATCTGCTGCC	1320
FJ596163.1P.bracteatumCOR	ATTCTAAGGTGCTTCACCAGATTGCTGTGGCCAGAGGAAAAATCTGTTGCC	1350
P.bracteatumCOR	ATTCTAAGGTGCTTCACCAGATTGCTGTGGCCAGAGGAAAAATCTGTTGCC	662
P.pseudo-orientaleCOR	ATTCTAAGGTGCTTCACCAGATTGCTGTGGCCAGAGGAAAAATCTGTTGCC	423
FJ596167.1P.orientaleCOR	ATTCTAAGGTGCTTCACCAGATTGCTGTGGCCAGAGGAAAAATCTGTTGCC	1320
FJ596166.1P.orientaleCOR	ATTCTAAGGTGCTTCACCAGATTGCTGTGGCCATAGGAAAAATCTGTTGCT	1295
FJ596159.1P.somniferumCOR	ATTCTAAAGTGCTTCACCAGATTGCTGTGGCCAGAGGAAAAATCTGTTGCG	1020
FJ596158.1P.somniferumCOR	ATTCTAAAGTGCTTCACCAGATTGCTGTGGCCAGAGGAAAAATCTGTTGCG	1020
AF108435.1P.somniferumCOR	ATTCTAAGGTGCTTCACCAGATTGCTGTGGCAAGAGGAAAAATCTGTTGCC	738
FJ596161.1P.somniferumCOR	ATTCTAAGGTGCTTCACCAGATTGCTGTGGCAAGAGGAAAAATCTGTTGCC	1332
AF108434.1P.somniferumCOR	ATTCTAAGGTGCTTCACCAGATTGCTGTGGCAAGAGGAAAAATCTGTTGCC	738
AF108432.1P.somniferumCOR	ATTCTAAGGTGCTTCACCAGATTGCTGTGGCCAGAGGAAAAATCTGTTGCC	743
AF108433.1P.somniferumCOR	ATTCTAAGGTGCTTCACCAGATTGCTGTGGCAAGAGGAAAAATCTGTTGCC	738
FJ596160.1P.somniferumCOR	ATTCTAAGGTGCTTCACCAGATTGCTGTGGCCAGAGGAAAAATCTGTTGCC	1332
FJ596164.1P.nudicauleCOR	GTTCTGAGGTGCTTCACCAGATTGCTGTGGCCAGAGGAAAAATCTATTGCT	1008
FJ596165.1P.nudicauleCOR	GTTCTGATGTGCTTCACCAGATTGCTGTGGCCAGAGGAAAAATCTATTGCT	1010
AF108438.1P.somniferumCOR	ACTCCGAGGTGCTGAACCAGATTTCCAGGTGTCAGAGGAAAAATCTGTTGCT	741
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FJ596169.1P.rhoeasCOR	CAGGTTGGTTGAATTAATTCAGCCCTTGTTTAACATGTAT-----	1037
FJ596168.1P.rhoeasCOR	CAGGTTGGTTGAATTAATTCAGCCCTTGTTTAACATGTAT-----	1061
P.orientaleCOR	CAGGTT-----	738
FJ596162.1P.bracteatumCOR	CAGGTTGGTTGAATT--CTCCTC-TTCCAATCACATGTAT-----	1357
FJ596163.1P.bracteatumCOR	CAGGTTGGTTGAATT--CTCCTC-TTCCAATCACATGTAT-----	1387
P.bracteatumCOR	CAGGTT-----	668
P.pseudo-orientaleCOR	CAGGTT-----	429
FJ596167.1P.orientaleCOR	CAGGTTGGTTGAATT--CTCCTC-TTCCAATCACATGTAT-----	1357
FJ596166.1P.orientaleCOR	CAGGTTGGTTGAATT--CTCCCCCTTGAATCACATGTAT-----	1333
FJ596159.1P.somniferumCOR	CAGGTTGGTTAAATT--TTCCCC-TTCCAATCACATGTAT-----	1057
FJ596158.1P.somniferumCOR	CAGGTTGGTTAAATT--TTCCCC-TTCCAATCACATGTAT-----	1057
AF108435.1P.somniferumCOR	CAGGTT-----	744
FJ596161.1P.somniferumCOR	CAGGTTGGTTGTACT--CTCCTC-TTCCAATCACATGTAT-----	1369
AF108434.1P.somniferumCOR	CAGGTT-----	744
AF108432.1P.somniferumCOR	CAGGTT-----	749
AF108433.1P.somniferumCOR	CAGGTT-----	744
FJ596160.1P.somniferumCOR	CAGGTTGGTTGAATT--CTCCTC-TTCCAATCCCATGTAT-----	1369
FJ596164.1P.nudicauleCOR	CAGGTTGGTCAAATT---TCCCGCTTTGCATCACATGCATCTCCTTATAC	1055
FJ596165.1P.nudicauleCOR	CAGGTTGGTCAAATT---TCCCGCTTTGCATCACATGCATCTCCTTATAC	1057
AF108438.1P.somniferumCOR	CAGGTT-----	747

FJ596169.1P.rhoeasCOR	-----AATGAATGAA--CTTCCTAGTTT-AACTAATATTTGG-GTTA	1075
FJ596168.1P.rhoeasCOR	-----AATGAATGAA--CTTCCTAGTTT-AACTAATATTTGG-GTTA	1099
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	-----AATGGA-----CTTCTTAGTTT-AACTTATATTTGT-GTTA	1391
FJ596163.1P.bracteatumCOR	-----AATGGA-----CTTCTTAGTTT-AACTTATATTTGT-GTTA	1421
P.bracteatumCOR	-----	
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	-----AATGGA-----CTTCTTAGTTT-AACTTATATTTGT-GTTA	1391
FJ596166.1P.orientaleCOR	-----AATGAA-----CTTCGTAGTTTAACTAATATTTAT-GTTA	1368
FJ596159.1P.somniferumCOR	-----AATTAA-----CTTCTTAGTTT-AACTTATATTTGT-AT--	1089
FJ596158.1P.somniferumCOR	-----AATTAA-----CTTCTTAGTTT-AACTTATATTTGT-AT--	1089
AF108435.1P.somniferumCOR	-----	
FJ596161.1P.somniferumCOR	-----AATGAA-----CTTCTTAGTTT-AACTTATATTTGT-GTTA	1403
AF108434.1P.somniferumCOR	-----	
AF108432.1P.somniferumCOR	-----	
AF108433.1P.somniferumCOR	-----	
FJ596160.1P.somniferumCOR	-----AATGAA-----CTTCTTAGTTT-CACTTATATTTGT-GTTA	1403
FJ596164.1P.nudicauleCOR	TAATGTCTAATTAATAACATTTTCTTAATTT-AACATACATTTCTTATTA	1104
FJ596165.1P.nudicauleCOR	TAATGTCTAATTAATAACATTTTCTTAATTT-AACATACATTTCTTATTA	1106
AF108438.1P.somniferumCOR	-----	

FJ596169.1P.rhoeasCOR	TAT----TTCGTCTTTCCAGGTTAGTATGAGATGGGTTTACCAGCAAGGT	1121
FJ596168.1P.rhoeasCOR	TAT----TTCGTCTTTTCAGGTTAGTATGAGATGGGTTTACCAGCAAGGT	1145
P.orientaleCOR	-----AGCATGAGATGGGTTTACCAGCAAGGT	765
FJ596162.1P.bracteatumCOR	TAT----TTCGTCTGTTTCAGGTTAGTATGAGATGGGTTTACCAGCAAGGC	1437
FJ596163.1P.bracteatumCOR	TAT----TTCGTCTGTTTCAGGTTAGTATGAGATGGGTTTACCAGCAAGGC	1467
P.bracteatumCOR	-----AGTATGAGATGGGTTTACCAGCAAGGC	695
P.pseudo-orientaleCOR	-----AGTATGAGATGGGTTTACCAGCAAGGC	456
FJ596167.1P.orientaleCOR	TAT----TTCGTCTGTTTCAGGCTAGTATGAGATGGGTTTACCAGCAAGGC	1437
FJ596166.1P.orientaleCOR	TATATATTTTCGTCTGTTTCAGGTTAGCATGAGATGGGTTTACCAGCAAGGT	1418
FJ596159.1P.somniferumCOR	-----GTTTTTTCAGGTTAGTATGAGATGGGTTTACCAGCAAGGT	1129
FJ596158.1P.somniferumCOR	-----GTTTTTTCAGGTTAGTATGAGATGGGTTTACCAGCAAGGT	1129
AF108435.1P.somniferumCOR	-----AGTATGAGATGGGTTTACCAGCAAGGC	771
FJ596161.1P.somniferumCOR	TAT----TTCGTCTGTTTCAGGTTAGTATGAGATGGGTTTACCAGCAAGGC	1449
AF108434.1P.somniferumCOR	-----AGTATGAGATGGGTTTACCAGCAAGGC	771
AF108432.1P.somniferumCOR	-----AGTATGAGATGGGTTTACCAGCAAGGC	776
AF108433.1P.somniferumCOR	-----AGTATGAGATGGGTTTACCAGCAAGGC	771
FJ596160.1P.somniferumCOR	TAT----TTCGTCTGTTTCAGGTTAGTATGAGATGGGTTTACCAGCAAGGC	1449
FJ596164.1P.nudicauleCOR	TAT----TTCATCTGTTTCAGGTTAGTATGAGGTGGGTTTACGAGCAAGGT	1150
FJ596165.1P.nudicauleCOR	TAT----TTCATCTGTTTCAGGTTAGTATGAGGTGGGTTTACGAGCAAGGT	1152
AF108438.1P.somniferumCOR	-----AGTCTAAGATGGGTATACGAGCAAGGC	774

*** * ** ***** *** *****

FJ596169.1P.rhoeasCOR	GCGAGTCTTGTGGTAAAAAGTTACAATGAAGAGAGGATGAAGGAAAACCT	1171
FJ596168.1P.rhoeasCOR	GCGAGTCTTGTGGTAAAAAGTTACAATGAAGAGAGGATGAAGGAAAACCT	1195
P.orientaleCOR	GCGTGTCTTGTGGTAAAAAGTTTCAATGAAGAGAGGAGGAAGG-----	808
FJ596162.1P.bracteatumCOR	GCGTGTCTTGTGGTAAAAAGTTTCAATGAAGAGAGGATGAAGGAAAACCT	1487
FJ596163.1P.bracteatumCOR	GCGTGTCTTGTGGTAAAAAGTTTCAATGAAGAGAGGATGAAGGAAAACCT	1517
P.bracteatumCOR	GCGTGTCTTGTGGTAAAAAGTTTCAATGAAGAGAGGATGAAGGAAAACCT	745
P.pseudo-orientaleCOR	GCGTGTCTTGTGGTAAAAAGTTTCAATGAAGAGAGGATGAAGGAAAACCT	506
FJ596167.1P.orientaleCOR	GCGTGTCTTGTGGTAAAAAGTTTCAATGAAGAGAGGATGAAGGAAAACCT	1487
FJ596166.1P.orientaleCOR	GCGTGTCTTGTGGTAAAAAGTTTCAATGAAGGAGGATGAAGGAAAACCT	1468
FJ596159.1P.somniferumCOR	GCGAATCTTGTGGTAAAAAGTTTCAATGAAGAGAGGATGAAGGAAAACCT	1179
FJ596158.1P.somniferumCOR	GCGAATCTTGTGGTAAAAAGTTTCAATGAAGAGAGGATGAAGGAAAACCT	1179
AF108435.1P.somniferumCOR	GCGAGTCTTGTGGTAAAAAGTTTCAATGAAGGAGGATGAAGGAAAACCT	821
FJ596161.1P.somniferumCOR	GCGAGTCTAGTGGTAAAAAGTTTCAATGAAGGAGGATGAAGGAAAACCT	1499
AF108434.1P.somniferumCOR	GCGAGTCTAGTGGTAAAAAGTTTCAATGAAGGAGGATGAAGGAAAACCT	821
AF108432.1P.somniferumCOR	GCGAGTCTTGTGGTAAAAAGTTTCAATGAAGCAGGATGAAGGAAAACCT	826
AF108433.1P.somniferumCOR	GCGAGTCTTGTGGTAAAAAGTTTCAATGAAGCAGGATGAAGGAAAACCT	821
FJ596160.1P.somniferumCOR	GCGAGTCTTGTGGTAAAAAGTTTCAATGAAGCAGGATGAAGGAAAACCT	1499
FJ596164.1P.nudicauleCOR	GTGATTCTTATAGTGAAAAAGTTTAAATGAAGAGAGGATGAGGGAAAACCT	1200
FJ596165.1P.nudicauleCOR	GTGTTTCTTATAGTGAAAAAGTTTAAATGAAGAGAGGATGAGGGAAAACCT	1202
AF108438.1P.somniferumCOR	GCGAGTCTTTTGGTAAAAAGTTTCAATGAAGAGAGGATGAAGGAGAACCT	824
	* * * * *	

FJ596169.1P.rhoeasCOR	TAAATATTCGATTGGGAATTAACGGAAGAAGACATGGATAAGATCAGTA	1221
FJ596168.1P.rhoeasCOR	TAACATATTCGATTGGGAATTAACGGAAGAAGACATGGATAAGATCAGTA	1245
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	TAAGATATTCGATTGGGAATATCAGCAGAAGACATGGAAAAGATCAGTG	1537
FJ596163.1P.bracteatumCOR	TAAGATATTCGATTGGGAATATCAGCAGAAGACATGGAAATGATCAGTG	1567
P.bracteatumCOR	TAAGATATTCGATTGGGAATATCAGCAGAAGACATGGAAAAGATCAGAG	795
P.pseudo-orientaleCOR	TAAGATATTCGATTGGGAATATCGGCAGAAGACATGGAAAAGATCAGTG	556
FJ596167.1P.orientaleCOR	TAAGATATTCGATTGGGAATATCGGCAGAAGACATGGAAAAGATCAGTG	1537
FJ596166.1P.orientaleCOR	TAAATATTCGATTGGGAATTAACGGAAGAAGACATGTATAAGATCAGTG	1518
FJ596159.1P.somniferumCOR	TAAGATATTCGATTGGGAATTAACGGCAGAAGACATGGAAAAAATCAGTG	1229
FJ596158.1P.somniferumCOR	TAAGATATTCGATTGGGAATTAACGGCAGAAGACATGGAAAAAATCAGTG	1229
AF108435.1P.somniferumCOR	TAAGATATTTGATTGGGAATTAACGGCAGAAGATATGGAAAAGATCAGTG	871
FJ596161.1P.somniferumCOR	TAAGATATTTGATTGGGAATTAACGGCAGAAGATATGGAAAAGATCAGTG	1549
AF108434.1P.somniferumCOR	TAAGATATTTGATTGGGAATTAACGGCAGAGAATATGGAAAAGATCAGTG	871
AF108432.1P.somniferumCOR	TAAGATATTTGATTGGGAATTAACGGCAGAAGACATGGAAAAGATCAGTG	876
AF108433.1P.somniferumCOR	TAAGATATTTGATTGGGAATTAACGGCAGAAGATATGGAAAAGATCAGTG	871
FJ596160.1P.somniferumCOR	TAAGATATTTGATTGGGAATTAACGGCAGAAGACATGGAAAAGATCAGTG	1549
FJ596164.1P.nudicauleCOR	AAAGATATTCGATTGGGAATGACTCCAGACGACTTGAAAAGATCGGTG	1250
FJ596165.1P.nudicauleCOR	AAAGATATTCGATTGGGAATGACTCCAGACGACTTGAAAAGATCGGTG	1252
AF108438.1P.somniferumCOR	GAAGATATTCGACTGGGAATGAGCCCAGAAGACTTGAAAAATATCAGTG	874

FJ596169.1P.rhoeasCOR	ACATTCGCAATCCAGAGCACTATCTGCTGATTTCTTGTTATCACCGACT	1271
FJ596168.1P.rhoeasCOR	ACATTCGCAATCCAGAGCACTATCTGCTGATTTCTTGTTATCACCGACC	1295
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	AAATTCGCAATGTAGAACAGCTCTGCTGATTTCTTGTTATCACCGACT	1587
FJ596163.1P.bracteatumCOR	AAATTCGCAATGTAGAACAGCTCTGCTGATTTCTTGTTATCACCGACT	1617
P.bracteatumCOR	AAATTCGCAATGTAGAACAGCTCTGCTGATTTCTTGTTATCACCGACT	845
P.pseudo-orientaleCOR	AAATTCGCAATGTAGAACAGCTCTGCTGATTTCTTGTTATCACCGACT	606
FJ596167.1P.orientaleCOR	AAATTCGCAATGTAGAACAGCTCTGCTGATTTCTTGTTATCACCGACT	1587
FJ596166.1P.orientaleCOR	AGATTCGCAATCCAGAACAGTCTCTGCTGATTTCTTGTTATCACCGACT	1568
FJ596159.1P.somniferumCOR	AGATTCGCAATCTAGAACAGTCTCTGCTGATTTCTTGTTATCACCAACT	1279
FJ596158.1P.somniferumCOR	AGATTCGCAATCTAGAACAGTCTCTGCTGATTTCTTGTTATCACCAACT	1279
AF108435.1P.somniferumCOR	AGATTCGCAATCTAGAACAGCTCTGCTGCTTTCTTGTTATCACCGACT	921
FJ596161.1P.somniferumCOR	AGATTCGCAATCTAGAACAGCTCTGCTGATTTCTTGTTATCACCGACT	1599
AF108434.1P.somniferumCOR	AGATTCGCAATCTAGAACAGCTCTGCTGATTTCTTGTTATCACCGACT	921
AF108432.1P.somniferumCOR	AGATTCGCAATCTAGAACAGCTCTGCTGCTTTCTTGTTATCACCGACT	926
AF108433.1P.somniferumCOR	AGATTCGCAATCTAGAACAGCTCTGCTGATTTCTTGTTATCACCGACT	921
FJ596160.1P.somniferumCOR	AGATTCGCAATCTAGAACAGCTCTGCTGCTTTCTTGTTATCACCGACT	1599
FJ596164.1P.nudicauleCOR	AGATTCCTCAATGCAGAACAGTGAGTGGAGATTTTTTGATATCAGCTAGC	1300
FJ596165.1P.nudicauleCOR	AGATTCCTCAATGCAGAACAGTGAGTGGAGATTTTTTGATATCAGCTAGC	1302
AF108438.1P.somniferumCOR	AGCTCCCAACGCAGAGTGTCACCGGTGATCCTTTTGCTCCATTAAT	924
FJ596169.1P.rhoeasCOR	GGACCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAGGATTGA-----	1316
FJ596168.1P.rhoeasCOR	GGACCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAGGATTGA-----	1340
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	GGGCCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAGGATTGA-----	1632
FJ596163.1P.bracteatumCOR	GGGCCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAGGATTGA-----	1662
P.bracteatumCOR	GGGCCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAG-----	884
P.pseudo-orientaleCOR	GGGCCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAGAATCGGATCCC	656
FJ596167.1P.orientaleCOR	GGGCCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAGGATTGA-----	1632
FJ596166.1P.orientaleCOR	GGACCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAGGATTGA-----	1613
FJ596159.1P.somniferumCOR	GGACCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAGGATTGA-----	1324
FJ596158.1P.somniferumCOR	GGACCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAGGATTGA-----	1324
AF108435.1P.somniferumCOR	GGACCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAGGATTGA-----	966
FJ596161.1P.somniferumCOR	GGACCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAGGATTGA-----	1644
AF108434.1P.somniferumCOR	GGACCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAGGATTGA-----	966
AF108432.1P.somniferumCOR	GGACCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAGGATTGAACAT	976
AF108433.1P.somniferumCOR	GGACCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAGGATTGA-----	966
FJ596160.1P.somniferumCOR	GGACCTTTCAAAACTGAAGAAGAGTTCTGGGATGAGAAGGATTGA-----	1644
FJ596164.1P.nudicauleCOR	GGACCTTTCAATCCTTAGAAGAGCTCTGGGATGAGAAGGATTGA-----	1345
FJ596165.1P.nudicauleCOR	GGACCTTTCAATCCTTAGAAGAGCTCTGGGATGAGAAGGATTGA-----	1347
AF108438.1P.somniferumCOR	GGGCCCTTCAATCTGTTGAAGAACTCTGGGATGACGAAGTCTGAAACCA	974

FJ596169.1P.rhoeasCOR	-----	
FJ596168.1P.rhoeasCOR	-----	
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	-----	
FJ596163.1P.bracteatumCOR	-----	
P.bracteatumCOR	-----	
P.pseudo-orientaleCOR	GGGCCCCGTCGACTGCAGAG-----	675
FJ596167.1P.orientaleCOR	-----	
FJ596166.1P.orientaleCOR	-----	
FJ596159.1P.somniferumCOR	-----	
FJ596158.1P.somniferumCOR	-----	
AF108435.1P.somniferumCOR	-----	
FJ596161.1P.somniferumCOR	-----	
AF108434.1P.somniferumCOR	-----	
AF108432.1P.somniferumCOR	CAATTATAGATGGTAAGTGAGGACTGTCAAAAAAGTAATCAGTTTTTCCC	1026
AF108433.1P.somniferumCOR	-----	
FJ596160.1P.somniferumCOR	-----	
FJ596164.1P.nudicauleCOR	-----	
FJ596165.1P.nudicauleCOR	-----	
AF108438.1P.somniferumCOR	ATCCATCCATCCTATTTTATAAAAAAAGTTATCAGTACTTTGTACTTCTT	1024

FJ596169.1P.rhoeasCOR	-----	
FJ596168.1P.rhoeasCOR	-----	
P.orientaleCOR	-----	
FJ596162.1P.bracteatumCOR	-----	
FJ596163.1P.bracteatumCOR	-----	
P.bracteatumCOR	-----	
P.pseudo-orientaleCOR	-----	
FJ596167.1P.orientaleCOR	-----	
FJ596166.1P.orientaleCOR	-----	
FJ596159.1P.somniferumCOR	-----	
FJ596158.1P.somniferumCOR	-----	
AF108435.1P.somniferumCOR	-----	
FJ596161.1P.somniferumCOR	-----	
AF108434.1P.somniferumCOR	-----	
AF108432.1P.somniferumCOR	TCCGTTTTG-----	1035
AF108433.1P.somniferumCOR	-----	
FJ596160.1P.somniferumCOR	-----	
FJ596164.1P.nudicauleCOR	-----	
FJ596165.1P.nudicauleCOR	-----	
AF108438.1P.somniferumCOR	CTCTGCCAATTAAATGAAACCTTTT	1049

Supplementary Document 4

>*P.bracteatum*4OMT

1414 nucleotides, 471 amino acids, structure: Csequence

```
1 SFLSPIA*IV *LHSQMLSTL SYQIRSRSIY GKFFMVLLIL LFCAAL*RLE SRILSKTMMG
61 QSHLHNLQRN YQFRMSVLIT CTELWRYLVH LKILAQETCN GGVEKVYSLK PVGTLLLRGC
121 RKESMVP MIL GMTQKDFMFS WHFMKEGLGN GSTTAFEKGM GMDIWKYLEG NPDQSQLFNE
181 GMAGETRLLT KTLIEDCRDT FQGLDSLVDI GGGNGTTIKA IHEAFPHIKC TLYDLPHVVS
241 NSHDLPNIGK SSRVIWFKFC SKVLQAILTQ GLIFAPTGT**RVLWSTSLK RSGQRRPIPG
301 KRQGIKWIIS GIVGTLRRRI PNH*TFTQRQ EFDSFGYLDI GWVNTGGRE R TADDWENLLK
361 RAGFRSQLGS DPFALFSLYI EAI FRGLVKA LRSTLLLSKK RLC*AKITLW LPISQRKNFF
421 LLPFSDPLI* ILFSAELYFS L**DVKHMAF *RYATNFIFV PLFSPGGPN* K
```

>*P.orientale*4OMT

909 nucleotides, 303 amino acids, structure: sequence

```
1 IFYGPADSLV LRCAVEIGIA DIIKNNDGAI TLAQLASKLP VPNVSSDYLY RMVRYLVHLN
61 ILAQETCNGG VEKVYSLKPV GTLLLRDAER SMVPMILGMT QKDFMVS WTF HERRIRKWKY
121 DCI*ERNNG YMEVFRR*S* SEPVV**RNG WRNKTVN*NS DRRL*DLFKV WIHLLMLVEE
181 MYNNQGNP*S FSSYQMYAL* SSSCCCQLS* SP*HQKSSR* YVQVCSQCSG CLTQVCLARL
241 D**GVSQHPK EMQRSNPERD RESDYSGCST *RRIQP*TYK DKIDS*Y*HV GEYWW*RENC
301 RGG
```

CLUSTAL 2.1multiplesequencealignment

```

AY217334.1P.somniferum4-OMT2cd      MGSLDAKPAAATQEVS IKDQAQLWNI IYGFADSLVLRCAVEIGIADI IKN 50
P.orientale4-OMT                    -----IFYGPADSLVLRCAVEIGIADI IKN 25
AY217333.1P.somniferum4-OMT1cd      ---MGSSIDAETHEVDIKDQAQLWNI IYGYADSLVLRCTVEIGIADI IKN 47
P.bracteatum4-OMT                   -----RLESRI LS-----KT 10
                                     : * : * * .

AY217334.1P.somniferum4-OMT2cd      NDGAI TL AQLAAKLPITNVSSDYLRMVRYLVHLNII EQETCNGGVEKVY 100
P.orientale4-OMT                    NDGAI TL AQLASKLPVPNVSSDYLRMVRYLVHLNII EQETCNGGVEKVY 75
AY217333.1P.somniferum4-OMT1cd      NNGSITLSELVSKLPLSNVNSDNLRYLLRYLVHLNII LGGQTCAAGVDRVY 97
P.bracteatum4-OMT                   MMGQSHLHNL RQNYQFRMSVLI TCTELWRYLVHLKILAQETCNGGVEKVY 60
                                     * * : * : . . : * * * * : * : * * : * *

AY217334.1P.somniferum4-OMT2cd      SLKPVGTLLLRDAER-SMVP MILGMTQKDFMVSWHFMKEGLGNGSTTAFE 149
P.orientale4-OMT                    SLKPVGTLLLRDAER-SMVP MILGMTQKDFMVSWTFHERRIRK----- 117
AY217333.1P.somniferum4-OMT1cd      SLKPVGTLLLRKDSER-SMAPVILGLSQKDFLFVWNFVKEGLGTGSTTAFE 146
P.bracteatum4-OMT                   SLKPVGTLLLRGCRKESMVP MILGMTQKDFMFSWHFMKEGLGNGSTTAFE 110
                                     * * * * * : . . : * * : * * : * * : * * : * *

AY217334.1P.somniferum4-OMT2cd      KGMGMDIWKYLEGNPDQSQLFNEGMAGETRLLTKTLIEDCRDTFQGLDSL 199
P.orientale4-OMT                    -----WKY-----DCI----- 123
AY217333.1P.somniferum4-OMT1cd      KAMGMDMWKYLEVNPNQSQLFDEGQAGETRLLTKTLVDCRDTFQGMDSL 196
P.bracteatum4-OMT                   KGMGMDIWKYLEGNPDQSQLFNEGMAGETRLLTKTLIEDCRDTFQGLDSL 160
                                     * * * * * * *

AY217334.1P.somniferum4-OMT2cd      VDIGGGNGTTIKAIYEAFPHIKCTLYDLPHVVANSHDLPNIEKVPGDMFK 249
P.orientale4-OMT                    -----
AY217333.1P.somniferum4-OMT1cd      VDVGGGNGTTIKAIHEAFPHIKCTLYDLPHVIANSDDHPNIIKVPGDMFM 246
P.bracteatum4-OMT                   VDIGGGNGTTIKAIHEAFPHIKCTLYDLPHVVSNSHDLPNIGKSS----- 205

AY217334.1P.somniferum4-OMT2cd      SVPSAQAILLKLILHDWTDEECVNILKKCKEAI PKETGKVIIVDVALEEE 299
P.orientale4-OMT                    -----
AY217333.1P.somniferum4-OMT1cd      SVPSAQVLLKCVLHDWTDEHCVNILKKCKEAI PKETGKVIIVDVALEEE 296
P.bracteatum4-OMT                   -----RVIWFKFC SKVLQAILTQGLIFAPTGT----- 232

AY217334.1P.somniferum4-OMT2cd      SNHELT KTRLILDIDMLVNTGGRE RTADDWENLLK RAGFRSHKIRPIRAI 349
P.orientale4-OMT                    -----
AY217333.1P.somniferum4-OMT1cd      SEHELT KARLILDIDMLVNTGGRE RTAEDWENLLK RAGFRSHKIRPIRAI 346
P.bracteatum4-OMT                   -----

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AY217334.1P.somniferum4-OMT2cd      QSVIEAFP 357
P.orientale4-OMT                    -----
AY217333.1P.somniferum4-OMT1cd      QSVIEAFP 354
P.bracteatum4-OMT                    -----

```

>*P.bracteatum*6OMT

1022 nucleotides, 340 amino acids, structure: AsequenceT

```

1 AKIWKQIYGL AESIVLKCAV QLEIAETLHN NVKPM1SLSEL ASKLPVAQPV NEDRLFRIM1R
61 YLVHM1ELFKI DATTQKYSLA PPAKYLLRGW EKS1MVDSILC INDKDFLAPW HHLGDGLTGN
121 CDAFEKALGK SIWVYM1SENP EKNQLFNAA1M ACDTRLVTSA LANECKSIFS DGIRTLVDVG
181 GGTGTAVKTI SKAFPDIKCT IYDLPHVIAD SPEIPNITKI SGDM1FKSIPS ADAIF1MKCIL
241 HDWNDEECIQ ILKRCKEALP KDGKVIIVDV VID1MDSTHPY AKIRLTLDLD MM1LNTGGKER
301 TKEEWKILFD AAGFASHKVT QISAVQSVIE ATQSDPGPVD

```

>*P.pseudo-orientale*6OMT

1030 nucleotides, 342 amino acids, structure: AAsequenceCC

```

1 TVSKIDQQNQ AKIWKQIYGF AESIVLKCAV QLEIAETLHN NVKPM1SLSEL ASKLPVAQPV
61 NEDRLFRIM1R YLVHM1ELFKI DATTQKYSLA PPAKYLLRGW EKS1MVDSILC INDKDFLAPW
121 HHLGDGLTGN CDAFEKALGK SIWVYM1SENP EKNQLFNAA1M ACDTRLVTSA LANECKSIFS
181 DGIRTLVDVG GGTGTAVKTI SKAFPDIKCT IYDLPHVIAD SPEIPNITKI SGDM1FKSIPS
241 ADAIF1MKCIL HDWSDEECIQ ILKRCKEALP KDGKVIIVDV VID1MDSTHPY AKIRLTLDLD
301 MM1LNTGGKER TKEEWKILFD AAGFASHKVT QISAVQSVIE AY

```

>P.orientale6OMT

748 nucleotides, 249 amino acids, structure: sequenceG

```

1 KYSLAPPAKY LLRGWEKSMV DSILCINDKD FLAPWHHLGD GLTGNCDAFE KALGKSIWVY
61 MSENPEKNQL FNAAMACDTR LVTSALANEC KSIFSDGIRT LVDVGGGTGT AVKTISKAFP
121 DIKCTIYDLP HVIADSPEIP NITKISGDMF KSIPSADAIK MKCILHDWND EECIQILKRC
181 KEALPKDGKV IIVDVVIDMD STHPYAKIRL TLDLDMMLNT G GKERTKEEW KILFDAAGFA
241 SHKVTQNSA

```

CLUSTAL 2.1multiplesequencealignment

```

P.bracteatum6-OMT      -----AKIWKQIYGLAESLVLKCAVQLEIAETLHNNVKPMSLS 38
P.orientale6-OMT      -----
P.pseudo-orientale6-OMT --TVSKIDQQNQAKIWKQIYGFAESLVLKCAVQLEIAETLHNNVKPMSLS 48
AY268894.1P.somniferum6-OMT METVSKIDQQNQAKIWKQIYGFAESLVLKCAVQLEIAETLHNNVKPMSLS 50

P.bracteatum6-OMT      ELASKLPVAQPVNEDRLFRIMRYLVHMELFKIDATTQKYSLAPPAKYLLR 88
P.orientale6-OMT      -----KYSLAPPAKYLLR 13
P.pseudo-orientale6-OMT ELASKLPVAQPVNEDRLFRIMRYLVHMELFKIDATTQKYSLAPPAKYLLR 98
AY268894.1P.somniferum6-OMT ELASKLPVAQPVNEDRLFRIMRYLVHMELFKIDATTQKYSLAPPAKYLLR 100
                        *****

P.bracteatum6-OMT      GWEKSMVDSILCINDKDFLAPWHHLGDGLTGNCDAFEKALGKSIWVYMSE 138
P.orientale6-OMT      GWEKSMVDSILCINDKDFLAPWHHLGDGLTGNCDAFEKALGKSIWVYMSE 63
P.pseudo-orientale6-OMT GWEKSMVDSILCINDKDFLAPWHHLGDGLTGNCDAFEKALGKSIWVYMSE 148
AY268894.1P.somniferum6-OMT GWEKSMVDSILCINDKDFLAPWHHLGDGLTGNCDAFEKALGKSIWVYMSV 150
                        *****

P.bracteatum6-OMT      NPEKNQLFNAAMACDTRLVTSALANECKSIFSDGIRTLVDVGGGTGTAVK 188
P.orientale6-OMT      NPEKNQLFNAAMACDTRLVTSALANECKSIFSDGIRTLVDVGGGTGTAVK 113
P.pseudo-orientale6-OMT NPEKNQLFNAAMACDTRLVTSALANECKSIFSDGIRTLVDVGGGTGTAVK 198
AY268894.1P.somniferum6-OMT NPEKNQLFNAAMACDTRLVTSALANECKSIFSDGISTLVDVGGGTGTAVK 200
                        *****

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P.bracteatum6-OMT	TISKAFPDIKCTIYDLPHVIADSPEIPNITKISGDMFKSIPSADAI FMKC	238
P.orientale6-OMT	TISKAFPDIKCTIYDLPHVIADSPEIPNITKISGDMFKSIPSADAI FMKC	163
P.pseudo-orientale6-OMT	TISKAFPDIKCTIYDLPHVIADSPEIPNITKISGDMFKSIPSADAI FMKC	248
AY268894.1P.somniferum6-OMT	AISKAFPDIKCTIYDLPHVIADSPEIPNITKISGDMFKSIPSADAI FMKC	250
	:*****	
P.bracteatum6-OMT	ILHDWNDEECIQILKRCKEALPKDGKVIIVDVVIDMDSTHPYAKIRLTLD	288
P.orientale6-OMT	ILHDWNDEECIQILKRCKEALPKDGKVIIVDVVIDMDSTHPYAKIRLTLD	213
P.pseudo-orientale6-OMT	ILHDWSDEECIQILKRCKEALPKDGKVIIVDVVIDMDSTHPYAKIRLTLD	298
AY268894.1P.somniferum6-OMT	ILHDWNDEECIQILKRCKEALPKGGKVIIVDVVIDMDSTHPYAKIRLTLD	300
	*****.*:*****.******	
P.bracteatum6-OMT	LDMMLNTGGKERTKEEWKILFDAAGFASHKVTQISAVQSVIEATQSDPGP	338
P.orientale6-OMT	LDMMLNTGGKERTKEEWKILFDAAGFASHKVTQNSA-----	249
P.pseudo-orientale6-OMT	LDMMLNTGGKERTKEEWKILFDAAGFASHKVTQISAVQSVIEAY-----	342
AY268894.1P.somniferum6-OMT	LDMMLNTGGKERTKEEWKTLFDAAGFASHKVTQISAVQSVIEAYPY----	346
	***** **	
P.bracteatum6-OMT	VD	340
P.orientale6-OMT	--	
P.pseudo-orientale6-OMT	--	
AY268894.1P.somniferum6-OMT	--	

>*P.bracteatum*TNMT

851 nucleotides, 283 amino acids, structure: sequenceAA

```

1 RLQWGYKSSH QEQLSFNLDF IKSLLKMEMS GEIETM NKET YELPSEFLEA VFGKTVKQSM
61 CYFKHESATI DEAEAAHEL YCERAQIKDG QTVLDIGCGQ GGLVLYIARK YKKCHVTGLT
121 NSKAQVNYLL KQAEKLGLTN VDAILADVTQ YESDKTYDRL LMIEAIEHMK NLQLFMKKLS
181 TWMTESLLF VDHVCHKTFA HFFEAVDEDD WYSGFIFPPG CATILAANSL LYFQDDVSVV
241 DHWVVNGMHM ARSVDIWRKA LDKNMEAAKE ILLPGLGGSH EAV

```

>*P.pseudo-orientale*TNMT

750 nucleotides, 249 amino acids, structure: GCsequenceC

```

1 ERAQIKDGQT VLDIGCGQGG LVLYVAQKYK NCHVTGLTNS KEQVNYIIKQ TEKLGLKNVD
61 VLLADVTQYE SDKTYDRILV IGAVEHMKNI QLFMKKLSTW MTEDSFLFVD HLCHKTFSHL
121 FEAIDEDDWY SGYIFSPGCL TVLSADSLLY FQDDVSVVDH WVNGMHMAR TMDAWRKKLD
181 KNMEAVKEIL LPGLGGNHEA VNGVITHIRT LCLGGYVQFS FNDGDEWNA QLLSRRSRIG
241 SRARRLQSM

```

>*P.orientale*TNMT

921 nucleotides, 306 amino acids, structure: AsequenceGG

```

1 ARG1*IISSR TTLLQP*LH* ILEKDGNVRR D*DNEQGNL* ITLRILRGSF GKTVKQSMCY
61 FKHEATIDE AEEAAHELYC ERAQIKDGQT VLDIGCGQGG LVLYIAQKYK KCHVTGLTNS
121 KAQVNYLLKQ AEKLGLTNVD AILADVTQYE SDKTYDRLLM IEAIEHMKNL QLFMKKLSTW
181 MTEESLLFVD HICHKTFAHF FEAVDEDDWY SGFIFPPGCA TILAANSLLY FQDDVSVVDH
241 WVNGMHMAR SVDNWRKALD KNMEAAKEIL LPGLGGSHEA VNGVVTHIRT FCMGGYEQFS
301 MNNGDE

```

CLUSTAL 2.1multiplesequencealignment

DQ028579.1P.somniferumTNMT	MGSIDEVKKESAGETLGRLLKGEIKDEELKKLIKQFEKRLQWGYKSSHQ	50
P.bracteatumTNMT	-----RLQWGYKSSHQ	11
P.orientaleTNMT	-----ARG	3
P.pseudo-orientaleTNMT	-----	
DQ028579.1P.somniferumTNMT	EQLSFNLDFIKSLKKMEMSGEIETMNKETYELPS-EFLEAVFGKTVKQSM	99
P.bracteatumTNMT	EQLSFNLDFIKSLKKMEMSGEIETMNKETYELPS-EFLEAVFGKTVKQSM	60
P.orientaleTNMT	LIISRTTLLQPLHILEKDGNVRRDDNEQGNLITLRILRGSF	53
P.pseudo-orientaleTNMT	-----	

DQ028579.1P.somniferumTNMT	CYFTHESATIDEAEEAAHELYCERAQIKDGQTVLDIGCGQGGLVLYIAQK	149
P.bracteatumTNMT	CYFKHESATIDEAEEAAHELYCERAQIKDGQTVLDIGCGQGGLVLYIARK	110
P.orientaleTNMT	CYFKHESATIDEAEEAAHELYCERAQIKDGQTVLDIGCGQGGLVLYIAQK	103
P.pseudo-orientaleTNMT	-----ERAQIKDGQTVLDIGCGQGGLVLYVAQK	28
	*****:~*~	
DQ028579.1P.somniferumTNMT	YKNCHVTGLTNSKAQVNYLLKQAEKLGLTNVDAILADVTQYESDKTYDRL	199
P.bracteatumTNMT	YKKCHVTGLTNSKAQVNYLLKQAEKLGLTNVDAILADVTQYESDKTYDRL	160
P.orientaleTNMT	YKKCHVTGLTNSKAQVNYLLKQAEKLGLTNVDAILADVTQYESDKTYDRL	153
P.pseudo-orientaleTNMT	YKNCHVTGLTNSKEQVNYIIKQTEKLGLKNVDVLLADVTQYESDKTYDRI	78
	~***~**~**~**~**~**~**~**~**~**~**~**~**~**~**~**~	
DQ028579.1P.somniferumTNMT	LMIEAIEHMKNLQLFMKKLSTWMTKESLLFVDHVCHKTFAHFFEAVDEDD	249
P.bracteatumTNMT	LMIEAIEHMKNLQLFMKKLSTWMTESLLFVDHVCHKTFAHFFEAVDEDD	210
P.orientaleTNMT	LMIEAIEHMKNLQLFMKKLSTWMTESLLFVDHICHKTFAHFFEAVDEDD	203
P.pseudo-orientaleTNMT	LVIGAVEHMKNIQLFMKKLSTWMTEDSFLFVDHLCHKTFSHLFEAIDEDD	128
	*~	
DQ028579.1P.somniferumTNMT	WYSGFIFPPGCATILAANSLLYFQDDVSVVDHWVVGNGMHMARSVDIWRKA	299
P.bracteatumTNMT	WYSGFIFPPGCATILAANSLLYFQDDVSVVDHWVVGNGMHMARSVDIWRKA	260
P.orientaleTNMT	WYSGFIFPPGCATILAANSLLYFQDDVSVVDHWVVGNGMHMARSVDNWRKA	253
P.pseudo-orientaleTNMT	WYSGYIFSPGCLTVLSADSLLYFQDDVSVVDHWVVGNGMHMARTMDAWRKK	178
	****~**~	
DQ028579.1P.somniferumTNMT	LDKNMEAAKEIILLPGLGGSSETVNGVVTHIRTFMGGYEQFSMNNGDEWM	349
P.bracteatumTNMT	LDKNMEAAKEIILLPGLGGSHEAV-----	283
P.orientaleTNMT	LDKNMEAAKEIILLPGLGGSHEAVNGVVTHIRTFMGGYEQFSMNNGDE--	301
P.pseudo-orientaleTNMT	LDKNMEAVKEIILLPGLGGNHEAVNGVITHIRTLCLGGYVQFSFNDGDEWM	228
	*****~*****~**~*~	
DQ028579.1P.somniferumTNMT	VAQLLFKKK-----	358
P.bracteatumTNMT	-----	
P.orientaleTNMT	-----	
P.pseudo-orientaleTNMT	NAQLLSRRSRIGSRARRLQSM	249

>*P.bracteatum*SalAT

1182 nucleotides, 394 amino acids, structure: sequence

```

1  SSLSQCIVHF  YPMDGRLIDY  ILVYCHDPGI  DFYKVKIKGK  MCDFM SQPDV  PLSHLLPSEV
61 VSANVPKEAL  VIVQVNM FDC  GGTAICSSIS  HKISDVATMG  TFIRSWASTT  KTSRSGDATA
121 AVITDQKLIP  SFDSASLFPP  SERLASPSGM  AEIPFSSIPE  DTEDDKTVSK  RFVFDFAKIT
181 SVSEKLQVLM  HDNYKSRRPT  RVEVVTSLIW  KSVMKSTPAG  FLPVVDHAVN  LRKKMDPPLQ
241 DASFGNLSVT  VSAFLPATTT  TTTNAVNKTI  NSTSSESQVV  LHELHDFIAQ  LRSEIDKVKG
301 DKGSLEKVIQ  NFVSGYDASI  KkindVEDKV  INFWISSWCR  MGLYEIDFGW  GKPIWVTIDP
361 NIKPNKNCLF  MNDTKCGQGI  EVWASFLEDD  MAK

```

>*P.pseudo-orientale*SalAT

1330 nucleotides, 443 amino acids, structure: sequenceT

```

1  TPSQLKNFNL  SLLDQCFPLY  YYVPIILFYP  DTVANSTGSS  NHHDDL DLLK  SSLSKTLVHF
61 YPMAGRMIDN  ILVDCHDQGI  EFYKVKIRGK  ICDFMSQSDV  PLSQLLPSEV  VSANVTKEAL
121 VIVQVNM FDC  GGTAICSSIS  HKIADVATMG  TFIRSWASTT  KTSRSGGATA  AVITDQKLIP
181 SFDSASLFPP  SERLASPSGM  AEIPFSSIPE  DTEDDKTVSK  RFVFDFAKIT  SVREKLQVLM
241 HDKYKSRRPT  RVEVVTSLIW  KSVMKSTPAG  FLPVVDHAVN  LRKKMDPPLQ  DSSFGNLSVT
301 VSAFLPATTT  TTTNGVNKTI  NSTSSESQVV  LHELHDFIAQ  LRSEIDKVKG  DKGSLEKVIQ
361 NFVSGYDASI  KkindVEDKV  INFWISSWCR  MGLYEIDFGW  GKPIWVTIDP  NIKPNKNCLF
421 MNDTKCGQGI  EVWASFLEDD  MAK

```

CLUSTAL 2.1multiplesequencealignment

```

P.bracteatumSalAT      -----
P.pseudo-orientaleSalAT -----TPSQLKNFNL SLLDQCFPLYYYVPIILF 28
AF339913.1P.somniferum MATMYSAAVEVISKETIKPTTPSQLKNFNL SLLDQCFPLYYYVPIILF 50

P.bracteatumSalAT      -----SSLSQCIVHFYPMDGRLIDYILVYCHDP 28
P.pseudo-orientaleSalAT YPDTVANSTGSSNHHDDL DLLKSSLSKTLVHFYPMAGRMIDNILVDCHDQ 78
AF339913.1P.somniferum YPATAANSTGSSNHHDDL DLLKSSLSKTLVHFYPMAGRMIDNILVDCHDQ 100
                        ****: :***** **: ** *** **

```

P.bracteatumSalAT	GIDFYKVKIKGKMCDFMSQPDVPLSHLLPSEVVVSANVPKEALVIVQVNMF	78
P.pseudo-orientaleSalAT	GIEFYKVKIRGKICDFMSQSDVPLSQLLPSEVVVSANVTKEALVIVQVNMF	128
AF339913.1P.somniferum	GINFYKVKIRGKMCEFMSQPDVPLSQLLPSEVVVSASVPKEALVIVQVNMF	150
	:	
P.bracteatumSalAT	DCGGTAICSSISHKISDVATMGTFIRSWASTTKTSRSGDATAAAVITDQKL	128
P.pseudo-orientaleSalAT	DCGGTAICSSISHKIADVATMGTFIRSWASTTKTSRSGGATAAAVITDQKL	178
AF339913.1P.somniferum	DCGGTAICSSVSHKIADAATMSTFIRSWASTTKTSRSGGSTAAVT-DQKL	199
	*****:**	
P.bracteatumSalAT	IPSFDSASLFPPSERLASPSGMAEIPFSSIPEDTEDDKTVSKRFVDFFAK	178
P.pseudo-orientaleSalAT	IPSFDSASLFPPSERLASPSGMAEIPFSSIPEDTEDDKTVSKRFVDFFAK	228
AF339913.1P.somniferum	IPSFDSASLFPPSERLTSPSGMSEIPFSSTPEDTEDDKTVSKRFVDFFAK	249
	*****:*:*:*:*:*:*:*:*:*:*:*:*:*:*:*:*:*:*:**	
P.bracteatumSalAT	ITSVSEKLQVLMHDNYKSRPRTREVVVTSLIWKSVMKSTPAGFLPVVDHA	228
P.pseudo-orientaleSalAT	ITSVREKLQVLMHDKYKSRPRTREVVVTSLIWKSVMKSTPAGFLPVVDHA	278
AF339913.1P.somniferum	ITSVREKLQVLMHDNYKSRQTRVEVVTSLIWKSVMKSTPAGFLPVVHHA	299
	**** *****:*:*:* ***** ***** ***** *	
P.bracteatumSalAT	VNLRKKMDPPLQDASFGNLSVTVSAFLPATTTTTTNAVNTINSTSSEQ	278
P.pseudo-orientaleSalAT	VNLRKKMDPPLQDSSFGNLSVTVSAFLPATTTTTTNGVNKTINSTSSEQ	328
AF339913.1P.somniferum	VNLRKKMDPPLQDVSFGNLSVTVSAFLPATTTTTTNAVNTINSTSSEQ	349
	***** ***** ***** *	
P.bracteatumSalAT	VVLHELHDFIAQLRSEIDKVKGDGKSLEKVIQNFVSGYDASIKKINDVED	328
P.pseudo-orientaleSalAT	VVLHELHDFIAQLRSEIDKVKGDGKSLEKVIQNFVSGYDASIKKINDVED	378
AF339913.1P.somniferum	VVLHELHDFIAQMRSEIDKVKGDGKSLEKVIQNFASGHDASIKKINDVE-	398
	*****:*:*:******:**:******	
P.bracteatumSalAT	KVINFWISSWCRMGLYEIDFGWGKPIWVTIDPNIKPNKNCLFMNDTKCGQ	378
P.pseudo-orientaleSalAT	KVINFWISSWCRMGLYEIDFGWGKPIWVTIDPNIKPNKNCLFMNDTKCGQ	428
AF339913.1P.somniferum	-VINFWISSWCRMGLYEIDFGWGKPIWVTIDPNIKPNKNCFMNDTKCGE	447
	*****:*:*:******:**:******:	
P.bracteatumSalAT	GIEVWASFLEDDMAKF-----	394
P.pseudo-orientaleSalAT	GIEVWASFLEDDMAK-----	443
AF339913.1P.somniferum	GIEVWASFLEDDMAKFELHLSEILELI	474

>*P.bracteatum*COR

884 nucleotides, 294 amino acids, structure: AAsequence

```
1 TMEKGTEREK LAFLKAIEVG YRHFDTAAAY QTEECLGEAI AEALQLGLIK SREELFITSK
61 LWCTDAHADL VLPALQNSLR NLKLEYLDLH LIHFPVSLKP GKIVSDIPKD QMLPMDYKSV
121 WVAMEECQTL GFTRAIGVSN FSCKKLQELM ATANSPPVVN EVEMSPVFQQ KNLRAYCKAN
181 NIMITAYSVL GARGAAWGSN AVMDSKVLHE IAVARGKSA QVSMRWVYQQ GACLVVKSFN
241 EERMKENLKI FDWELSAEDM EKIREIPQCR TSSADFLLS TGPFKTEEEF WDEK
```

>*P.pseudo-orientale*COR

675 nucleotides, 225 amino acids, structure: sequence

```
1 RNLKLEYLDL YLIHFPVSLK PGKIVSDIPK DQMLPMDYKS VWAAMEECQT LGFTRAIGVS
61 NFSCCKLQEL MATANSPPVV NEVEMIPVFQ QKNLRAYCKA NNIMITAYSV LGSGGAWGS
121 NAVMDSKVLH EIAVARGKSV AQVSMRWVYQ QGACLVVKSF NEERMKENLK IFDWELSAED
181 MEKISEIPQC RTGSADFLLS PTGPFKTEEE FWDEKNRIPG PSTAE
```

>*P.orientale*COR

808 nucleotides, 269 amino acids, structure: sequenceG

```
1 KMGTSQDFKL RAFGMPALGM GTAETMEKGT DRERSAFLKA IEVGYRHFDT AAAYQTEECL
61 GEAIAEALQL GLIKSRDELF ITSKLWCTDA HADLVLPALQ NSLRNLKLEY LDLYLIHFPV
121 SLKPGKIVNE IPKDQMLPMD YKSVWAAMEE CRTLGFTRAI GVSNFSCCKL QELMATANS
181 PNVNEVEMSP TLHQKNLREY CKANNIMIA YSVLGARGTG WGSNAVMDSK VLHQIIVARG
241 KSVAVQVSMRW VYQQGACLVV KSFNEERRK
```

CLUSTAL 2.1 multiple sequence alignment

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FJ596161.1P.somniferumCOR      MESNGVPMITLSSGIRMPALGMGTAETMVKGTEREKLAFLKAIEVGYRHF  50
P.orientaleCOR                  --KMGTSQDFKLRAFGMPALGMGTAETMEKGTDRERSAFLKAIEVGYRHF  48
P.bracteatumCOR                 -----TMEKGTREKLAFLKAIEVGYRHF  24
P.pseudo-orientaleCOR          -----

FJ596161.1P.somniferumCOR      DTAAAYQSEECLEGEAIAEALQLGLIKSRDELFIITSKLWCADAHADLVLP  100
P.orientaleCOR                  DTAAAYQTEECLEGEAIAEALQLGLIKSRDELFIITSKLWCTDAHADLVLP  98
P.bracteatumCOR                 DTAAAYQTEECLEGEAIAEALQLGLIKSREELFIITSKLWCTDAHADLVLP  74
P.pseudo-orientaleCOR          -----

FJ596161.1P.somniferumCOR      LQNSLRNLKLEYLDLYLIHHPVSLKPGKFVNEIPKDHILPMDYKTVWAAM  150
P.orientaleCOR                  LQNSLRNLKLEYLDLYLIHFPVSLKPGKIVNEIPKQMLPMDYKSVWAAM  148
P.bracteatumCOR                 LQNSLRNLKLEYLDLHLIHFVSLKPGKIVSDIPKQMLPMDYKSVWVAM  124
P.pseudo-orientaleCOR          ----RNLKLEYLDLYLIHFPVSLKPGKIVSDIPKQMLPMDYKSVWAAM  45
                                *****.*.*.*****.*.:****.:*****.*.*.*

FJ596161.1P.somniferumCOR      EECQTLGFTRAIGVSNFSCKKLQELMAAAKIPPVNQVEMSPTLHQKNLR  200
P.orientaleCOR                  EECRTLGFTRAIGVSNFSCKKLQELMATANSPPVVNEVEMSPTLHQKNLR  198
P.bracteatumCOR                 EECQTLGFTRAIGVSNFSCKKLQELMATANSPPVVNEVEMSPVFQQKNLR  174
P.pseudo-orientaleCOR          EECQTLGFTRAIGVSNFSCKKLQELMATANSPPVVNEVEMIPVFQQKNLR  95
                                ***:*****.*.*.*****.*.: *****.*.* *.:*****

FJ596161.1P.somniferumCOR      EYCKANNIMITAHSVGLGAIGAPWGSNAVMDSKVLHQIAVARGKSVAQVSM  250
P.orientaleCOR                  EYCKANNIMI IAYSVLGARGTGWGSNAVMDSKVLHQIAVARGKSVAQVSM  248
P.bracteatumCOR                 AYCKANNIMITAYSVLGARGAAWGSNAVMDSKVLHEIAVARGKSVAQVSM  224
P.pseudo-orientaleCOR          AYCKANNIMITAYSVLGSGAAWGSNAVMDSKVLHEIAVARGKSVAQVSM  145
                                ***** *:****: *: *****:*****

FJ596161.1P.somniferumCOR      RWVYQQGASLVVKSFNNEGRMKENLKIFDWELTAEDMEKISEIPQSRRTSS  300
P.orientaleCOR                  RWVYQQGACL VVKSFNNEERRK-----  269
P.bracteatumCOR                 RWVYQQGACL VVKSFNNEERMKENLKIFDWELSAEDMEKIREIPQCRRTSS  274
P.pseudo-orientaleCOR          RWVYQQGACL VVKSFNNEERMKENLKIFDWELSAEDMEKISEIPQCRGTSS  195
                                *****.*.*.*.* *

FJ596161.1P.somniferumCOR      DFLLSPTGPFKTEEEFWDEKD-----  321
P.orientaleCOR                  -----
P.bracteatumCOR                 DFLLSPTGPFKTEEEFWDEK-----  294
P.pseudo-orientaleCOR          DFLLSPTGPFKTEEEFWDEKNRIPGPSTAE  225

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