

Fact sheet of reference DNA sequences of *Panax notoginseng* (三七)

Summary	Information
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Type of reference material used for data generation	● Radix Notoginseng (三七) ● Plant voucher specimen
Radix Notoginseng (三七) (number of specimens / locality)	● 17 / Wenshen, Yunnan Province, China
Plant voucher specimen (number of specimens / locality)	● 2 / Yanshan, Yunnan Province, China ● 2 / Wenshen, Yunnan Province, China
Total number of specimen	● 21
Specimen source	● GCMTI collection ● Hong Kong Chinese Materia Medica Standards (HKCMMS) Project
Method for data generation	● GCMTI RD-5:2020
Length of DNA barcode	● Nuclear internal transcribed spacer 2 (ITS2) is 230 bp ● Chloroplast <i>psbA-trnH</i> intergenic spacer (<i>psbA-trnH</i>) is 490 bp ● Chloroplast ribulose biphosphate carboxylase large chain (<i>rbcL</i>) is 553 bp

Reference DNA Sequence

Plant Specimen

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI180918

>RD92-A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGCGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TYGTGCGGTGACCCGTCGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGCTCGACGCGCGCTCCGACCG

Remarks: variation at nucleotide position 160

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI180918

>RD92-A *psbA-trnH*

ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGATACGAGTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTAGTAGTATT
GACTTACCTAGTTTTTTTAAATAAATAAATAAATTTAA
GAAACGTCGTTTTATTTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTTCGTTCTGTATTAATCATTAATCTAGAATTT
AGCTACTTCTTCCCAATCTTTATCTTTGGGAAGTGTTTT
TTAAAAGAAAAATGTTGGACTTTTTACTTAGTTAATACT
TAATATTTTTATCTCGAAAAATAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTTGAACGTAA
GGAAAAAGATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI180918

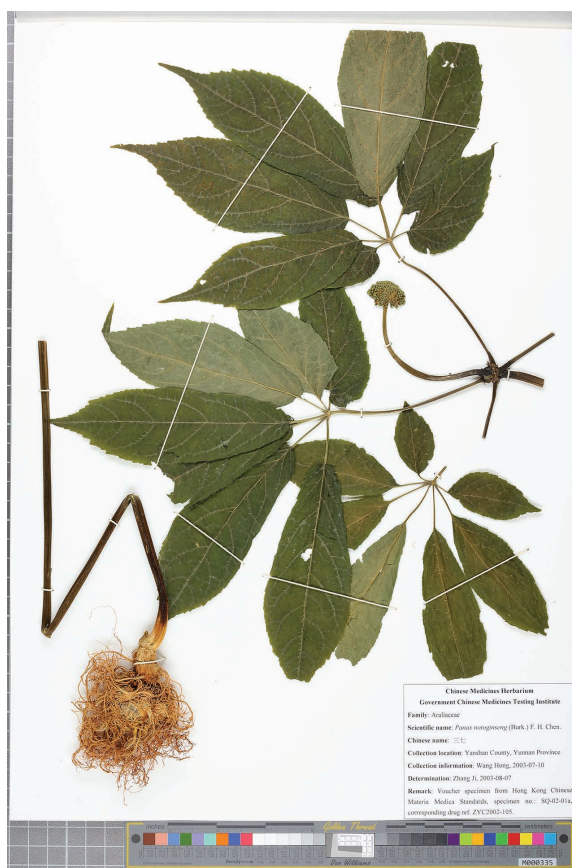
>RD92-A *rbcL*

AAGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATCCGAGTAATCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGTACAAAATAGAG
CCCGTTGCTGGAGAAGAACTCAATTTATTGCTTATGTAG
CTTACCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAAA
GCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAAACCTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC

Reference Detail

Description of reference material	Plant specimen
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD92
Sample mark	RD92-A
Locality	Yanshan, Yunnan Province, China
Corresponding CMM	-
Authenticated	Yes
Remarks	ITS2: 160Y

Image



Reference DNA Sequence

Plant Specimen

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI180918

>RD93-A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGCGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TYGTGCGGTGACCCGTCGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGTCTCGACGCGCGCTCCGACCG

Remarks: variation at nucleotide position 160

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI180918

>RD93-A *psbA-trnH*

ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGATACGAGTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTAGTAGTATT
GACTTACCTAGTTTTTTTAAATAAATTAATAAATTTAA
GAAACGTCGTTTTATTTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTTCGTTCTGTATTAATCATTAATCTAGAATTT
AGCTACTTCTTCCAATCTTTATCTTTGGGAAGTGTTTT
TTAAAAGAAAAAATGTTGGACTTTTTACTTAGTTAATACT
TAATATTTTTATCTCGAAAAATAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTTGAACGTAA
GGAAAAGAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI180918

>RD93-A *rbcL*

AAGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATCCGAGTAACCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAA
GCCCTGCGTGCTACGTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTTGGGTTATCT
GCTAAAACTACGGTAGGGCGGTTTATGAATGTCTC

Reference Detail

Description of reference material	Plant specimen
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD93
Sample mark	RD93-A
Locality	Wenshen, Yunnan Province, China
Corresponding CMM	RD244
Authenticated	Yes
Remarks	ITS2: 160Y

Image



Reference DNA Sequence

Plant Specimen

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI180918-2

>RD102-A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGCGCGGTTGGCCAAATGCGAGTCCTTGGCGATGGAC
GTCACGACAAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TYGTGCGGTGACCCGTCGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGTCTCGACGCGCTCCGACCG

Remarks: variation at nucleotide position 160

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI180918-2

>RD102-A *psbA-trnH*
ATAAATTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGATACGAGTTTT
TTTGAAATAAAAAAGGAGCAATAACCTCTTCTTGTTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTTATTTAGTAGTATTT
GACTTACCTAGTTTTTTTAAATAAATTAATAAATTTAA
GAAACGTCGTTTTATTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTTCGTTCTGTATTAATCATTAACTAGAAATTT
AGCTACTTCTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TTAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTATCTCGAAAAAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTTGAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI180918-2

>RD102-A *rbcL*
AAGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACCTCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAAA
GCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTATAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC

Reference Detail

Description of reference material	Plant specimen
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD102
Sample mark	RD102-A
Locality	Yanshan, Yunnan Province, China
Authenticated	Yes
Remarks	ITS2: 160Y

Image



Reference DNA Sequence

Plant Specimen

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI180918-2

>RD103-A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGYGCGGTTGGCCCAAATGCGAGTCTTGCGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TCGTGCGGTGACCGTYGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGCTCGAYGCGCGCTCCGACCG

Remarks: observations at nucleotide positions 83, 175, 216

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI180918-2

>RD103-A_psbA-trnH
ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGATACGAGTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTAGTAGTATT
GACTTACCTAGTTTTTTTAAATAAAATTAATTAATTTAA
GAAACGTCGTTTTATTTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTTCGTTCTGTATTAATCATTAATCTAGAATTT
AGCTACTTCTTCCCAATCTTTATCTTTGGGAAGTGTTTT
TTAAAAGAAAAATGTGGACTTTTTACTTAGTTAATACT
TAATATTTTTATCTCGAAAAATAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTAATCTTTTGAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI180918-2

>RD103-A_rbcL
AAGTGTTGGATTCAAAGCTGGTGTTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATCCGAGTAATCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGTACAAAATAGAG
CCCGTTGCTGGAGAAGAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTTGGGTTCAA
GCCCTGCGTGCTACGTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTGGGGTTATCT
GCTAAAAACTACGGTAGGCGGTTTATGAATGTCTC

Reference Detail

Description of reference material	Plant specimen
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD103
Sample mark	RD103-A
Locality	Wenshen, Yunnan Province, China
Corresponding CMM	RD244
Authenticated	Yes
Remarks	ITS2: 83Y, 175Y, 216Y

Image



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190508

```
>RD244-2A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGCGCGGTTGGCCCAAATGCGAGTCTTGCGCATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TCGTGCGGTGACCCGTCGCCAGCAAAAGCTCTCATGACCC
TGTTGCGCTGTCTCGACGCGCGCTCCGACCG
```

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190508

```
>RD244-2A_psbA-trnH
ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGATACGAGTTTT
TTTGAAATAAAAAAGGAGCAATAACCTCTTCTTGTTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTTATTTAGTAGTATT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAAATTTAAA
GAAACGTCGTTTTATTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTTCGTTCTGTATTAATCATTAACTAGAAATTT
AGCTACTTCTTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TTAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTATCTCGAAAAAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTTGAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGG
TCAAGGCAGT
```

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190508

```
>RD244-2A_rbcL
AAGTGTTGGATTCAAAGCTGGTGTTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTTGGGTTCAA
GCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAAACCTAAATTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC
```

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-2A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190508

```
>RD244-3A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGCGCGGTTGGCCAAATGCGAGTCTTGCGCATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAAGCCCTCTTCTCATG
TYGTGCGGTGACCCGTCGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGTCCTCGACGCGCTCCGACCG
```

Remarks: variation at nucleotide position 160

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190508

```
>RD244-3A_psbA-trnH
ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGTATACGAGTTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTTAGTAGTATTT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAATTTAAA
GAAACGTCGTTTTATTTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTTCGTTCTGTATTAATCATTAACTAGAAATTT
AGCTACTTCTTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TTAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTATCTCGAAAAAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTTGAACGTAA
GGAAGAAAGATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT
```

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190508

```
>RD244-3A_rbcL
AAGTGTTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAA
GCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC
```

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-3A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes
Remarks	ITS2: 160Y

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190508

>RD244-4A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGYGCGGTTGGCCCAAATGCGAGTCCTTGCGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TCGTGCGGTGACCGGTGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGCTCGAYGCGCGCTCCGACCG

Remarks: observations at nucleotide positions 83, 175 and 216

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190508

>RD244-4A_psbA-trnH

ATAAATTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGTATACGAGTTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTTAGTAGTATTT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAAATTTAAA
GAAACGTCGTTTTATTTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTTCGTTCTGTATTAATCATTAACTAGAAATTT
AGCTACTTCTTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TTAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTTATCTCGAAAATAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTGAAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190508

>RD244-4A_rbcL

AAGTGTTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAA
GCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTGGGGTTATCT
GCTAAAACTACGGTAGGGCGGTTTATGAATGTCTC

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-4A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes
Remarks	ITS2: 83Y, 175Y, 216Y

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190508

```
>RD244-5A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGCGCGGTTGGCCCAAATGCGAGTCTTGCGGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TYGTGCGGTGACCCGTCGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGTCCTCGACGCGCGCTCCGACCG
```

Remarks: variation at nucleotide position 160

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190508

```
>RD244-5A_psbA-trnH
ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGTATACGAGTTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTTAGTAGTATTT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAAATTTAAA
GAAACGTCGTTTTATTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTCGTTCTGTATTAATCATTAACTAGAAATTT
AGCTACTTCTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TAAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTATCTCGAAAAAAGAAAGATAAGAAAGAA
ATAATGATGAATGTTAAAAATTTAATCTTTGAAACGTAA
GAAAAAGAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT
```

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190508

```
>RD244-5A_rbcL
AAGTGTTGGATTCAAAGCTGGTGTTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAA
GCCCTGCGTGCTCTACGTCGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC
```

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-5A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes
Remarks	ITS2: 160Y

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190508

>RD244-6A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGCGCGGTTGGCCCAAATGCGAGTCTTGCGGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TYGTGCGGTGACCCGTCGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGCTCGACGCGCGCTCCGACCG

Remarks: variation at nucleotide position 160

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190508

>RD244-6A_psbA-trnH

ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGTATACGAGTTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTTAGTAGTATT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAAATTTAAA
GAAACGTCGTTTTATTTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTCGTTCTGTATTAATCATTAACTAGAAATT
AGCTACTTCTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TAAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTTATCTCGAAAAAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTGAAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190508

>RD244-6A_rbcL

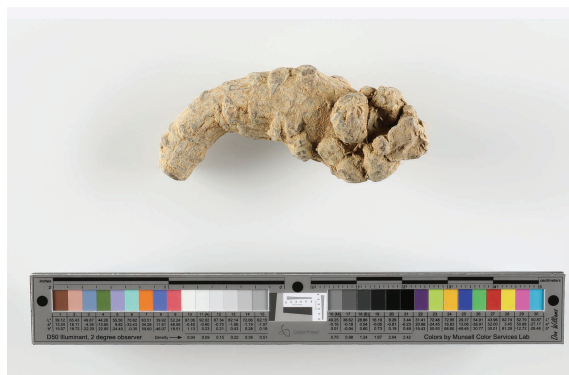
AAGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAA
GCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-6A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes
Remarks	ITS2: 160Y

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190508

>RD244-7A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGCGCGGTTGGCCCAAATGCGAGTCTTGCGGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAAGCCCTCTTCTCATG
TYGTGCGGTGACCCGTCGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGCTCGACGCGCGCTCCGACCG

Remarks: variation at nucleotide position 160

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190508

>RD244-7A_psbA-trnH

ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGTATACGAGTTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTGTTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTTAGTAGTATTT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAAATTTAAA
GAAACGTCGTTTTATTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTCGTTCTGTATTAATCATTAATCTAGAATTT
AGCTACTTCTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TAAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTATCTCGAAAAAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTGAAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190508

>RD244-7A_rbcL

AAGTGTTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAA
GCCCTGCGTGCTCTACGTCGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-7A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes
Remarks	ITS2: 160Y

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190508

```
>RD244-8A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGCGCGGTTGGCCCAAATGCGAGTCTTGCGGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TYGTGCGGTGACCCGTCGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGCTCGACGCGCGCTCCGACCG
```

Remarks: variation at nucleotide position 160

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190508

```
>RD244-8A_psbA-trnH
ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGATACGAGTTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTTAGTAGTATT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAAATTTAAA
GAAACGTCGTTTTATTTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTCGTTCTGTATTAATCATTAATCTAGAATTT
AGCTACTTCTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TTAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTTATCTCGAAAAAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTGAAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT
```

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190508

```
>RD244-8A_rbcL
AAGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAA
GCCCTGCGTGCTCTACGCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC
```

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-8A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes
Remarks	ITS2: 160Y

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190508

>RD244-9A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGYGCGGTTGGCCCAAATGCGAGTCCTTGCGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TYGTGCGGTGACCCGTYGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGTCCTCGAYGCGCGCTCCGACCG

Remarks: observations at nucleotide positions 83, 160, 175 and 216

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190508

>RD244-9A_psbA-trnH

ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGTATACGAGTTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTTAGTAGTATTT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAATTTAAA
GAAACGTCGTTTTATTTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTTCGTTCTGTATTAATCATTAACTAGAAATTT
AGCTACTTCTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TTAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTTATCTCGAAAAAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTGAAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190508

>RD244-9A_rbcL

AAGTGTTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAA
GCCCTGCGTGCTCTACGCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAAACTTTCCAAGGCCGCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTGGGGTTATCT
GCTAAAACTACGGTAGGGCGGTTTATGAATGTCTC

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-9A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes
Remarks	ITS2: 83Y, 160Y, 175Y, 216Y

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190508

>RD244-10A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGYGCGGTTGGCCCAAATGCGAGTCCTTGCGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TCGTGCGGTGACCCGTGCGCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGCTCGAYGCGCGCTCCGACCG

Remarks: observations at nucleotide positions 83, 175 and 216

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190508

>RD244-10A_psbA-trnH

ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGTATACGAGTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTTAGTAGTATT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAATTTAAA
GAAACGTCGTTTTATTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTTCGTTCTGTATTAATCATTAACTAGAAATT
AGCTACTTCTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TTAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTATCTCGAAAAATAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTGAAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190508

>RD244-10A_rbcL

AAGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAA
GCCCTGCGTGCTCTACGCTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAAACCTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-10A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes
Remarks	ITS2: 83Y, 175Y, 216Y

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190508-2

```
>RD244-11A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGCGCGGTTGGCCCAAATGCGAGTCTTGGCGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TCGTGCGGTGACCCGTCGCCAGCAAAAGCTCTCATGACCC
TGTTGCGCTGTCTCGACGCGCTCCGACCG
```

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190508-2

```
>RD244-11A_psbA-trnH
ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGATACGAGTTT
TTTGAAATAAAAAAGGAGCAATAAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTTATTTAGTAGTATT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAATTTAAA
GAAACGTCGTTTTATTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTTCGTTCTGTATTAATCATTAACTAGAAAT
AGCTACTTCTTCCAATCTTTATCTTTTGGGAAGTGTTTT
TAAAAAGAAAAATGTGGACTTTTACTTAGTTAATACT
TAATATTTTATCTCGAAAAAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTTGAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGG
TCAAGGCAGT
```

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190508-2

```
>RD244-11A_rbcL
AAGTGTGGATTCAAAGCTGGTGTTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGTACAAAATAGAG
CCCGTTGCTGGAGAAGAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTGAAGAAGGTTCTGTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTTGGGTTCAA
GCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTAAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAAACCTAAATGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC
```

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-11A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190508-2

>RD244-12A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGCGCGGTTGGCCCAAATGCGAGTCTTGGCGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TYGTGCGGTGACCCGTCGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGTCTCGACGCGCGCTCCGACCG

Remarks: variation at nucleotide position 160

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190508-2

>RD244-12A_psbA-trnH

ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGTATACGAGTTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTTAGTAGTATTT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAAATTTAAA
GAAACGTCGTTTTATTTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTCGTTCTGTATTAATCATTAACTAGAAATTT
AGCTACTTCTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TAAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTTATCTCGAAAAAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTGAAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190508-2

>RD244-12A_rbcL

AAGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAA
GCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-12A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes
Remarks	ITS2: 160Y

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190508-2

>RD244-13A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGCGCGGTTGGCCAAATGCGAGTCCTTGGCGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAAGCCCTCTTCTCATG
TYGTGCGGTGACCCGTCGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGTCTCGACGCGCGCTCCGACCG

Remarks: variation at nucleotide position 160

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190508-2

>RD244-13A *psbA-trnH*

ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGTATACGAGTTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTTAGTAGTATTT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAAATTTAAA
GAAACGTCGTTTTATTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTCGTTCTGTATTAATCATTAACTAGAAATTT
AGCTACTTCTTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TAAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTATCTCGAAAAAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTTGAACGTAA
GGAAGAAAGATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190508-2

>RD244-13A *rbcL*

AAGTGTTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAA
GCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAAACCTAAATTTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-13A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes
Remarks	ITS2: 160Y

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190508-2

>RD244-14A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGYGCGGTTGGCCCAAATGCGAGTCCTGGCGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TYGTGCGGTGACCCGTYGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGCTCGAYGCGCGCTCCGACCG

Remarks: observations at nucleotide positions 83, 160, 175 and 216

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190508-2

>RD244-14A_psbA-trnH

ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGTATACGAGTTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTTAGTAGTATTT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAATTTAAA
GAAACGTCGTTTTATTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTTCGTTCTGTATTAATCATTAACTAGAAATTT
AGCTACTTCTTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TTAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTATCTCGAAAAAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTGAAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190508-2

>RD244-14A_rbcL

AAGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAA
GCCCTGCGTGCTCTACGCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-14A
Locality	Wenshen, Yunnan Province, china
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes
Remarks	ITS2: 83Y, 160Y, 175Y, 216Y

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190508-2

>RD244-15A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGYGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TCGTGCGGTGACCCGTGCGCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGCTCGAYGCGCGCTCCGACCG

Remarks: observations at nucleotide positions 83, 175 and 216

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190508-2

>RD244-15A_psbA-trnH

ATAAATTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGTATACGAGTTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTTAGTAGTATTT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAAATTTAAA
GAAACGTCGTTTTATTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTTCGTTCTGTATTAATCATTAACTAGAAATTT
AGCTACTTCTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TTAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTATCTCGAAAAAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTGAAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190508-2

>RD244-15A_rbcL

AAGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCCGCGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAA
GCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-15A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes
Remarks	ITS2: 83Y, 175Y, 216Y

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190508-2

>RD244-16A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGCGCGGTTGGCCCAAATGCGAGTCTTGCGGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAGCCCTCTTCTCATG
TYGTGCGGTGACCCGTCGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGCTCGACGCGCGCTCCGACCG

Remarks: variation at nucleotide position 160

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190508-2

>RD244-16A_psbA-trnH

ATAAATTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGTATACGAGTTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTTAGTAGTATTT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAAATTTAAA
GAAACGTCGTTTTATTTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTCGTTCTGTATTAATCATTAACTAGAAATTT
AGCTACTTCTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TAAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTTATCTCGAAAAAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTGAAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190508-2

>RD244-16A_rbcL

AAGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAA
GCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-16A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes
Remarks	ITS2: 160Y

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190617

>RD244-17A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGCGCGGTTGGCCCAAATGCGAGTCTTGCGGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAAGCCCTCTTCTCATG
TYGTGCGGTGACCGCTCGCCAGCAAAAGCTCTCATGACC
CTGTTGYGCTGCTCTCGACGCGCGCTCCGACCG

Remarks: observations at nucleotide positions 160 and 204

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190617

>RD244-17A *psbA-trnH*

ATAACTTCCCTCTAGACCTAGTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGATACGAGTCTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGGCGGTATTGCTCCTTTTTTATTTAGTAGTATT
GACTTACCTAGTTTTTTTTAAATAAAATTAATAAAATTTAAA
GAAACGTCGTTTTATTTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTTCGTTCTGTATTAATCATTAACTAGAAATTT
AGCTACTTCTTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TTAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTTATCTCGAAAAATAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTTGAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190617

>RD244-17A *rbcL*

AAGTGTTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTTGGGTTCAA
GCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-17A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes
Remarks	ITS2: 160Y, 204Y

Image

Front view



Back view



Reference DNA Sequence

Chinese Materia Medica (CMM)

DNA Information

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2)

Batch ID. BI190617

```
>RD244-18A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGA
GTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCA
CCGYGCGGTTGGCCCAAATGCGAGTCCTTGCGATGGAC
GTCACGACAAGTGGTGGTTGTTAAAAAGCCCTCTTCTCATG
TCGTGCGGTGACCCGTYGCCAGCAAAAGCTCTCATGACC
CTGTTGCGCTGTCCTCGAYGCGCGCTCCGACCG
```

Remarks: observations at nucleotide positions 83, 175 and 216

Chloroplast *psbA-trnH* intergenic spacer (*psbA-trnH*)

Batch ID. BI190617

```
>RD244-18A_psbA-trnH
ATAACTTCCCTCTAGACCTAGCTGCTGTCGAAGCTCCATC
TACAAATGGATAAGACCCGGTCTTAGTGATACGAGTTTT
TTTGAAATAAAAAGGAGCAATAACCTCTTCTTGTCTAT
CAAGAGGGCGGTATTGCTCCTTTTTTATTTAGTAGTATTT
GACTTACCTAGTTTTTTTAAATAAAATTAATAAATTTAAA
GAAACGTCGTTTTATTTTATCGGTTGGTTCATGAGTGAG
TATCATGCTTTCGTTCTGTATTAATCATTAACTAGAAATT
AGCTACTTCTTCCCAATCTTTATCTTTTGGGAAGTGTTTT
TTAAAAGAAAAAATGTTGGACTTTTACTTAGTTAATACT
TAATATTTTATCTCGAAAAATAAGAAAGATAAGAAAGAA
ATAATGATGAATGGTAAAAATTTAATCTTTTGAACGTAA
GGAAAAAGAAATAGTAGGGGGGCGGATGTAGCCAAGTGGA
TCAAGGCAGT
```

Chloroplast ribulose biphosphate carboxylase large chain (*rbcL*)

Batch ID. BI190617

```
>RD244-18A rbcL
AAGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTG
ACTTATTATACTCCTGACTATGACCCCAAAGATACTGATA
TCTTGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCC
AGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTC
TACTGGTACATGGACAACCTGTGTGGACCGATGGACTTACC
AGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAG
CCCGTTGCTGGAGAAGAAACTCAATTTATTGCTTATGTAG
CTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAA
CATGTTTACTTCCATTGTAGGTAATGTATTGGGTTCAA
GCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTG
TTGCTTATGTTAAAACTTTCCAAGGCCCGCCTCATGGCAT
CCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCC
CCTGTTGGGATGTACTATTAACCTAAATTGGGGTTATCT
GCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC
```

Reference Detail

Description of reference material	Radix Notoginseng
Scientific name	<i>Panax notoginseng</i> (Burk.) F.H.Chen.
Laboratory number	RD244
Sample mark	RD244-18A
Locality	Wenshen, Yunnan Province, China
Corresponding plant voucher specimen	RD93 and RD103
Authenticated	Yes
Remarks	ITS2: 83Y, 175Y, 216Y

Image

Front view



Back view



Reference DNA sequences in FASTA format

Internal transcribed spacer 2 of nuclear ribosomal RNA (ITS2) sequence of plant voucher specimen of *Panax notoginseng* and Chinese Materia Medica (CMM) *Notoginseng* Radix et Rhizome

```
>RD92-A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
CGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTYGTGC
GGTGACCCGTCGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGACGCGCGCTCCGACCG

>RD93-A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
CGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTYGTGC
GGTGACCCGTCGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGACGCGCGCTCCGACCG

>RD102-A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
CGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTYGTGC
GGTGACCCGTCGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGACGCGCGCTCCGACCG

>RD103-A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
YGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTCGTGC
GGTGACCCGTYGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGAYGCGCGCTCCGACCG

>RD244-2A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
CGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTCGTGC
GGTGACCCGTCGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGACGCGCGCTCCGACCG

>RD244-3A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
CGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTYGTGC
GGTGACCCGTCGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGACGCGCGCTCCGACCG

>RD244-4A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
YGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTCGTGC
GGTGACCCGTYGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGAYGCGCGCTCCGACCG

>RD244-5A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
CGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTYGTGC
GGTGACCCGTCGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGACGCGCGCTCCGACCG

>RD244-6A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
CGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTYGTGC
GGTGACCCGTCGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGACGCGCGCTCCGACCG

>RD244-7A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
CGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTYGTGC
GGTGACCCGTCGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGACGCGCGCTCCGACCG

>RD244-8A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
CGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTYGTGC
GGTGACCCGTCGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGACGCGCGCTCCGACCG

>RD244-9A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
YGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTYGTGC
GGTGACCCGTYGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGAYGCGCGCTCCGACCG

>RD244-10A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
YGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTCGTGC
GGTGACCCGTYGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGAYGCGCGCTCCGACCG

>RD244-11A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
CGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTCGTGC
GGTGACCCGTCGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGACGCGCGCTCCGACCG

>RD244-12A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
CGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTYGTGC
GGTGACCCGTCGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGACGCGCGCTCCGACCG

>RD244-13A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
CGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTYGTGC
GGTGACCCGTCGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGACGCGCGCTCCGACCG

>RD244-14A ITS2
CGCATCGCGTCGCCCCCAACCCATCATTCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTCACCG
YGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTYGTGC
GGTGACCCGTYGCCAGCAAAAGCTCTCATGACCCTGTTGCGTGTCTCGAYGCGCGCTCCGACCG

>RD244-15A ITS2
```

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTACCG
YGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTCGTGC
GGTGACCCGTYGCCAGCAAAAGCTCTCATGACCCTGTTGCGCTGTCCTCGAYGCGCGCTCCGACCG

>RD244-16A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTACCG
CGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTYGTGC
GGTGACCCGTCGCCAGCAAAAGCTCTCATGACCCTGTTGCGCTGTCCTCGACGCGCGCTCCGACCG

>RD244-17A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTACCG
CGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTYGTGC
GGTGACCCGTCGCCAGCAAAAGCTCTCATGACCCTGTTGYGCTGTCCTCGACGCGCGCTCCGACCG

>RD244-18A ITS2

CGCATCGCGTCGCCCCCAACCCATCATTCCCTCGCGGGAGTCGATGCGGAGGGGCGGATAATGGCCTCCCGTGTCTACCG
YGCGGTTGGCCCAAATGCGAGTCCTTGGCGATGGACGTCACGACAAGTGGTGGTTGTAAAAAGCCCTCTTCTCATGTCGTGC
GGTGACCCGTYGCCAGCAAAAGCTCTCATGACCCTGTTGCGCTGTCCTCGAYGCGCGCTCCGACCG

>RD244-8A psbA-trnH

[illegible]

ATGTTGGACTTTTTACTTAGTTAATACTTAATATTTTTATCTCGAAAATAAGAAAGATAAGAAAGAAATAATGATGAATGGTA
AAAATTTAATCTTTTGAAACGTAAGGAAAAGAATAGTAGGGGGCGGATGTAGCCAAGTGGATCAAGGCAGT

Partial chloroplast ribulose biphosphate carboxylase large chain (*rbcL*) sequence of plant voucher specimen of *Panax notoginseng* and Chinese Materia Medica (CMM) *Radix Notoginseng*

>RD92-A_rbcL

AAGTGTGGATTCAAAGCTGGTGTTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
TACATGGACAACCTGTGTGGACCGATGGACTTACCAGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAGCCCCTTGCT
GGAGAAGAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGTATTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCCAAGGCCCGCCTCATGGCATCCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCCCTGTTGGGATGTACTATTA
AACCTAAATTGGGGTTATCTGCTAAAACTACGGTAGGGCGGTTTATGAATGTCTC

>RD93-A_rbcL

AAGTGTGGATTCAAAGCTGGTGTTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
TACATGGACAACCTGTGTGGACCGATGGACTTACCAGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAGCCCCTTGCT
GGAGAAGAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGTATTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCCAAGGCCCGCCTCATGGCATCCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCCCTGTTGGGATGTACTATTA
AACCTAAATTGGGGTTATCTGCTAAAACTACGGTAGGGCGGTTTATGAATGTCTC

>RD102-A_rbcL

AAGTGTGGATTCAAAGCTGGTGTTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
TACATGGACAACCTGTGTGGACCGATGGACTTACCAGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAGCCCCTTGCT
GGAGAAGAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGTATTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCCAAGGCCCGCCTCATGGCATCCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCCCTGTTGGGATGTACTATTA
AACCTAAATTGGGGTTATCTGCTAAAACTACGGTAGGGCGGTTTATGAATGTCTC

>RD103-A_rbcL

AAGTGTGGATTCAAAGCTGGTGTTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
TACATGGACAACCTGTGTGGACCGATGGACTTACCAGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAGCCCCTTGCT
GGAGAAGAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGTATTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCCAAGGCCCGCCTCATGGCATCCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCCCTGTTGGGATGTACTATTA
AACCTAAATTGGGGTTATCTGCTAAAACTACGGTAGGGCGGTTTATGAATGTCTC

>RD244-2A_rbcL

AAGTGTGGATTCAAAGCTGGTGTTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
TACATGGACAACCTGTGTGGACCGATGGACTTACCAGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAGCCCCTTGCT
GGAGAAGAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGTATTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCCAAGGCCCGCCTCATGGCATCCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCCCTGTTGGGATGTACTATTA
AACCTAAATTGGGGTTATCTGCTAAAACTACGGTAGGGCGGTTTATGAATGTCTC

>RD244-3A_rbcL

AAGTGTGGATTCAAAGCTGGTGTTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
TACATGGACAACCTGTGTGGACCGATGGACTTACCAGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAGCCCCTTGCT
GGAGAAGAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGTATTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCCAAGGCCCGCCTCATGGCATCCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCCCTGTTGGGATGTACTATTA
AACCTAAATTGGGGTTATCTGCTAAAACTACGGTAGGGCGGTTTATGAATGTCTC

>RD244-4A_rbcL

AAGTGTGGATTCAAAGCTGGTGTTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
TACATGGACAACCTGTGTGGACCGATGGACTTACCAGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAGCCCCTTGCT
GGAGAAGAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGTATTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCCAAGGCCCGCCTCATGGCATCCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCCCTGTTGGGATGTACTATTA
AACCTAAATTGGGGTTATCTGCTAAAACTACGGTAGGGCGGTTTATGAATGTCTC

>RD244-5A_rbcL

AAGTGTGGATTCAAAGCTGGTGTTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
TACATGGACAACCTGTGTGGACCGATGGACTTACCAGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAGCCCCTTGCT
GGAGAAGAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGTATTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCCAAGGCCCGCCTCATGGCATCCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCCCTGTTGGGATGTACTATTA
AACCTAAATTGGGGTTATCTGCTAAAACTACGGTAGGGCGGTTTATGAATGTCTC

>RD244-6A_rbcL

AAGTGTGGATTCAAAGCTGGTGTTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
TACATGGACAACCTGTGTGGACCGATGGACTTACCAGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAGCCCCTTGCT
GGAGAAGAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGTATTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCCAAGGCCCGCCTCATGGCATCCAAGTTGAGAGAGATAAATTGAACAAGTATGGTCGTCCCTGTTGGGATGTACTATTA
AACCTAAATTGGGGTTATCTGCTAAAACTACGGTAGGGCGGTTTATGAATGTCTC

>RD244-7A rbcL

AAGTGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTGACTTATTATACTCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCATTCCGAGTAATCACTCCCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
TACATGGACAACCTGTGTGGACCGTAGGACTTACCAGCCCTTGACTGTACAAAGGGCGATGCTACAAATAAGACGCCGTTGCT
GGAGAAGAAACTCAATTATTGCTTATGTAGCTTACCCATTAGACCTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGTATTTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGCAATCCCTGTTGCTTATGTTAAAC
TTTCCAAGGGCCCGCTTACGGCATCCCAAGTTGAGAGAGATAAAATTGAACAAGTATGGTCGTCCTGTTGGGATGTACTATTA
AACCTAAATTGGGGTTATCTGCTAAAAACTACGGTAGGGCGGTTTATGAATTGCTC

>RD244-8A rbcL

AAGTGTGTGGATTCAAAGCTGGTGGTTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCATTCCGAGTAACCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
TACATTGGACAACCTGTGTGGACCGTAGACTTACCAGCCTTGATCGTTACAAAGGGCGTAGCTACAAATAAGACCCGTTGCT
GGAGAAGAAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGTATTTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCAAAGGCCCGCCTTAGGCTCAACAGTTACGAGAGATAAAATTGAACAAGTATGGTCGTCCTGTTGGGATGTACTATTA
AACCTAAAGTGGGGTTATCTGCTAAAAACTAGCGTAGGGCGGTTTATGAATTGCTC

>RD244-9A rbcL

AAGTGTGTGGATTCAAAGCTGGTGTATAAGATTACAAATTGACTTATTATACTCTGACTATGACCCCAAGATACTGATATCT
TGCGCAGCATTCGAGTAACCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGCCGCGGTAGCTGCCGAATCTTCTACTGTG
TACATGGCAAACTGTGTGGACCGTAGTACTACCGCTTGATCGTTACAAAGGGCGTGTCAAAAATAGAGCCCGTTGCT
GGAGAAGAAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTACATGTTTACTTCC
ATTGTAGGTAATGTATTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGAAGAAGATCTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCAAGGCCCGGCTCTATGGCCTCAAGTTGAGAGAGATAAAATTGACAAGTATGGTCGTCCTGTTGGGATGTACTATTA
AACCTAAAGTGGGGTTATCTGCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC

>RD244-10A rbcL

AAGTGTGGATTCAAAGCTGGIGTTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCATTCCGAGTAACCTCAACCTGGAGITCCACGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTCTACTGG
TACATGGACAACCTGTGTGGACCGTAGGACTTACCAGCCTTGACTGTTACAAAGGGCGATGCTACAAATAAGACGCCGTTGG
GGAGAAGAAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGATTGTTGGGTTCAAAGCCCTGCGTGCTCTACGTTGGAAGATGTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCCAAGGCCCGCTCTACGGCATCAACCTGAGAGAGATAAAATTGAACAAGATGTGTCGTCGCCCTGTTGGGATGTACTATTA
AACCTAAATTGGGGTTATCTGCTAAACCACTACGGTAGGGGCGGTTTATGAATTGCTC

>RD244-11A rbcL

AAGTGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCATTCCGAGTAACCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
TACATGGACAACTGTGTGGACCGTAGACTACCGACCTTGATCTTACAAAGGGCGTAGCTACAAATAAGACCCGTTGCT
GGAGAAGAAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGTATTTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCCAAGGCGCCGCTCATGGCATAACAGTTGAGAGAGATAAAATTGAACAAGTATGGTCGTCCTGTTGGGATGTACTATTA
AACCTAAAGTTGGGGTTATCTGCTAAAAACTACGGTAGGGCGGTTTATGAATTGCTC

>RD244-12A rbcL

AAGTGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTGACTTATTATACTCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCAATCCGAGTAACCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGGCCGCGTAGCTGCCGAATCTTCTACTGG
TACATGGACAACCTGTGTGGACCGTAGGACTTACCAGCCCTTGACTGTTACAAAGGGCGTAGCTACAAATAAGACGCCGTTGCT
GGAGAAGAAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGTATTTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCCAAGGCCCGCTCATGGCATCAACCTGAAGAGAGATAAAATTGAACAAGATGTGGTCGTCCTGTTGGGATGTACTATTA
AATCTAAATTTGGGGTTATCTGTCTAAAAAACACGGTAGGGGCGGGTTTATGAATGTCTC

>RD244-13A rbcL

AAGTGTGGATTCAAAGCTGGTGGTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
 TGGCAGCACTCCGAGTAACATCCCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
 TACATGGACAACCTGTGTGGACCGTAGGACTTACCAGCCTTGACTGTTACAAAGGGGCGATGCTACAAAATAGAGCCCGTTGCT
 GGAGAAGAAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTGAAGAAGGTTCTGTTACTAACATGTTTAACTTCC
 ATTGTAGGTAATGATTGTTGGGTTCAAAGCCCTGCGTGCTCTACGTGTGGAAGATCTGCGAATCCCTGTTGCTTATGTTAAAC
 TTCCAAGGCCCGCTCATGGCATCCAAAGTTGAGAGAGATAAAATTGAACAAGATGCGTCGTCCTGTTGGGATGTACTATTA
 AACTTAAATTTGGGGTTATCTGTCTAAAGAACTACGGTAGGGGCGGTTTATGAATGTCTC

>RD244-14A rbcL

AAGTGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTGACTTATTATACTCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCATTCCGAGTAACCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
TACATGGACAACTGTGTGGACCGTAGGACTTACCAGCCTTGACTGTACAAAGGGCGATGCTACAAATAAGACGCCGTTGCT
GGAGAAGAAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGTATTTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATGTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCCAAGGCCCGCTTACGGCATGCAAGTTGAGAGAGATAAAATTGAACAAGTATGGTCGTCCTGTTGGGATGTACTATTA
AATCTAAAGTTGGGGTTATCTGCTAAAACTACGGTAGGGGCGGTTTATGAATGTCTC

>RD244-15A rbcL

AAGTGTGTGGATTCAAAGCTGGTGTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
TGGCAGCATTCCGAGTAGTACTCCCACTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGCGCGGTAGCTGCCGAATCTTCTACTGG
TACATGGACAACTGATGTGGACCGTAGGACTTACCAGCCTTGACTGTACAAAGGGCGTAGCTACAAATAGAGCCCGTTGCT
GGAGAAGAAACTCAATTATTGCTTATGTAGCTTACCCATTAGACCTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
ATTGTAGGTAATGTATTGGGTTCAAAGCCCTGCGTGTCTTACGTGTGGAAGATGTGCGAATCCCTGTTGCTTATGTTAAAC
TTTCAAGGCCCGCCTCATGGCATCCAAAGTTGAGAGAGATAAAATTGAACAAGATGTGTCGTCGCCCTGTTGGGATGTACTATTA
AATCTAAATTGGGGTTATCTGTCTAAACACTACGGTAGGGGCGGGTTTATGAATTGTCTC

>RD244-16A rbcL

AAGTGTGGATTCAAAGCTGGTGTAAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAAGATACTGATATCT
TGGCAGCATTCCGAGTAACTCCTCAACCTGGAGTCCAGCTGAAGAAGCAGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG

TACATGGACAACCTGTGTGGACCGATGGACTTACCAGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAGCCCGTTGCT
 GGAGAAGAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
 ATTGTAGGTAATGTATTTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTGTTGCTTATGTAAAAAC
 TTTCCAAGGCCCGCCTCATGGCATCCAAGTTGAGAGAGATAAAATTGAACAAGTATGGTCGTCCCTGTTGGGATGTACTATTA
 AACCTAAATTGGGGTTATCTGCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC

>RD244-17A_rbcL

AAGTGTTGGATTCAAAGCTGGTGTTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
 TGGCAGCATTCGAGTAACTCCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
 TACATGGACAACCTGTGTGGACCGATGGACTTACCAGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAGCCCGTTGCT
 GGAGAAGAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
 ATTGTAGGTAATGTATTTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTGTTGCTTATGTAAAAAC
 TTTCCAAGGCCCGCCTCATGGCATCCAAGTTGAGAGAGATAAAATTGAACAAGTATGGTCGTCCCTGTTGGGATGTACTATTA
 AACCTAAATTGGGGTTATCTGCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC

>RD244-18A_rbcL

AAGTGTTGGATTCAAAGCTGGTGTTAAAGATTACAAATTGACTTATTATACTCCTGACTATGACCCCAAAGATACTGATATCT
 TGGCAGCATTCGAGTAACTCCTCAACCTGGAGTTCCAGCTGAAGAAGCAGGGGCCGCGGTAGCTGCCGAATCTTCTACTGG
 TACATGGACAACCTGTGTGGACCGATGGACTTACCAGCCTTGATCGTTACAAAGGGCGATGCTACAAAATAGAGCCCGTTGCT
 GGAGAAGAACTCAATTTATTGCTTATGTAGCTTACCCATTAGACCTTTTTGAAGAAGGTTCTGTTACTAACATGTTTACTTCC
 ATTGTAGGTAATGTATTTGGGTTCAAAGCCCTGCGTGCTCTACGTCTGGAAGATCTGCGAATCCCTGTTGCTTATGTAAAAAC
 TTTCCAAGGCCCGCCTCATGGCATCCAAGTTGAGAGAGATAAAATTGAACAAGTATGGTCGTCCCTGTTGGGATGTACTATTA
 AACCTAAATTGGGGTTATCTGCTAAAAACTACGGTAGGGCGGTTTATGAATGTCTC