

SUMMARY OF GENBANK SEQUENCE SUBMISSION

Wuchereria bancrofti

Wuchereria bancrofti isolate MM07 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674270.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674270>

Wuchereria bancrofti isolate MDA1 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674271.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674271>

Wuchereria bancrofti isolate MM06 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674272.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674272>

Brugia malayi

Brugia malayi isolate NT01 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674273.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674273>

Brugia malayi isolate NT02 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674274.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674274>

Brugia malayi isolate NT08 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674275.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674275>

Brugia pahangi

Brugia pahangi isolate DA08 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674276.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674276>

Brugia pahangi isolate CA12 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674277.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674277>

Brugia pahangi isolate L02 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674278.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674278>

Brugia pahangi isolate L30 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674279.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674279>

Dirofilaria immitis

Dirofilaria immitis isolate Di106 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674280.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674280>

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand

Dirofilaria immitis isolate Di101 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674281.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674281>

Dirofilaria immitis isolate L07 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674282.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674282>

Dirofilaria immitis isolate L14 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674283.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674283>

Dirofilaria immitis isolate L20 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674284.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674284>

Dirofilaria immitis isolate L23 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674285.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674285>

Dirofilaria immitis isolate L25 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674286.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674286>

Dirofilaria immitis isolate L26 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674287.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674287>

Dirofilaria immitis isolate L27 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674288.1

<https://www.ncbi.nlm.nih.gov/nuccore/MT674288>

SEQUENCE INFORMATION

Wuchereria bancrofti isolate MMO7 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674270.1

FASTA Graphics

Go to:

LOCUS MT674270 450 bp DNA linear INV 20-JAN-2021
DEFINITION Wuchereria bancrofti isolate MMO7 beta-tubulin isotype 1 (tub-1)
gene, partial cds.
ACCESSION MT674270
VERSION MT674270.1
KEYWORDS .
SOURCE Wuchereria bancrofti
ORGANISM Wuchereria bancrofti
Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Wuchereria.
REFERENCE 1 (bases 1 to 450)
AUTHORS Intarapuk,A.
TITLE Direct Submission
JOURNAL Submitted (25-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
10530, Thailand
COMMENT ##Assembly-Data-START##
Sequencing Technology :: Sanger dideoxy sequencing
##Assembly-Data-END##
FEATURES
source Location/Qualifiers
1..450
/organism="Wuchereria bancrofti"
/mol_type="genomic DNA"
/isolate="MMO7"
/db_xref="taxon:6293"
gene <1..>450
/gene="tub-1"
mRNA join(<1..114,305..>450)
/gene="tub-1"
/product="beta-tubulin isotype 1"
CDS join(<1..114,305..>450)
/gene="tub-1"
/codon_start=1
/product="beta-tubulin isotype 1"
/protein_id="QQP23390.1"
/translation="HSLGGGTGSGMGTLISKIREEYPDRIMSSFVVPSPKVSVDVVL
EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLANPTYG"

ORIGIN

```

1 cattcacttg gtggcggtag cggttccggt atgggaacat tgctgatctc gaaaatccgt
61 gaggagtatc cggatcgaat tatgagctct ttttcgggtg tgccgctcgc caaagtatgt
121 atttggggtt ttgattatct tggttttaac atctgtttta tctactataa cgcataaaac
181 atagctataa acatagctcc ataactttta agtgggtgatt gtcgcacaaa gtgggtctttt
241 aactatcatt gcttcatttt catagttgaa gaaaaagtat ggtagacgta ttaatgattt
301 ccaggtatca gatgttgtgt tgaacccta caatgcaaca ttatcagtc accaactagt
361 tgaaaacact gacgaaactt tctgcattga taacgaggct ttgtatgaca tctgcttccg
421 aacgttgaag ttggcaaadc caacttacgg

```

//

Wuchereria bancrofti isolate MDA1 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674271.1

FASTA Graphics

LOCUS MT674271 450 bp DNA linear INV 20-JAN-2021
DEFINITION Wuchereria bancrofti isolate MDA1 beta-tubulin isotype 1 (tub-1)
gene, partial cds.

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand

ACCESSION MT674271
 VERSION MT674271.1
 KEYWORDS .
 SOURCE Wuchereria bancrofti
 ORGANISM Wuchereria bancrofti
 Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
 Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Wuchereria.
 REFERENCE 1 (bases 1 to 450)
 AUTHORS Intarapuk,A.
 TITLE Direct Submission
 JOURNAL Submitted (25-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
 University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
 10530, Thailand
 COMMENT ##Assembly-Data-START##
 Sequencing Technology :: Sanger dideoxy sequencing
 ##Assembly-Data-END##
 FEATURES Location/Qualifiers
 source 1..450
 /organism="Wuchereria bancrofti"
 /mol_type="genomic DNA"
 /isolate="MDA1"
 /db_xref="taxon:6293"
 gene <1..>450
 /gene="tub-1"
 mRNA join(<1..114,305..>450)
 /gene="tub-1"
 /product="beta-tubulin isotype 1"
 CDS join(<1..114,305..>450)
 /gene="tub-1"
 /codon_start=1
 /product="beta-tubulin isotype 1"
 /protein_id="QQP23391.1"
 /translation="HSLGGGTGSGMGTLLISKIREEYPDRIMSSFSVVPSPKVSDDVVL
 EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLANPTYG"
 ORIGIN
 1 cattcacttg gtggcggtac cggttccggt atgggaacat tgctgatctc gaaaatccgt
 61 gaggagtatc cggatcgaat tatgagctct ttttcggttg tgccgctgcc caaagtatgt
 121 atttgggttt ttgattatct tggttttaac atctgtttta tctactataa cgcataaaac
 181 atagctataa acatagctcc ataactttaac agtggtgatt gtcgcacaaa gtggtctttt
 241 aactatcatt gcttcatttt catagttgaa gaaaaagtat ggtagacgta ttaatgattt
 301 ccaggtatca gatgttgtgt tggaaacctt caatgcaaca ttatcagtc accaactagt
 361 tgaaaacact gacgaaactt tctgcattga taacgaggct ttgtatgaca tctgcttccg
 421 aacgttgaag ttggcaaadc caacttacgg
 //

Wuchereria bancrofti isolate MMO6 beta-tubulin isotype 1 (tub-1) gene, partial cds
 GenBank: MT674272.1

FASTA Graphics

Go to:

LOCUS MT674272 450 bp DNA linear INV 20-JAN-2021
 DEFINITION Wuchereria bancrofti isolate MMO6 beta-tubulin isotype 1 (tub-1)
 gene, partial cds.
 ACCESSION MT674272
 VERSION MT674272.1
 KEYWORDS .
 SOURCE Wuchereria bancrofti
 ORGANISM Wuchereria bancrofti
 Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
 Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Wuchereria.
 REFERENCE 1 (bases 1 to 450)
 AUTHORS Intarapuk,A.

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
 Nongchok, Bangkok 10530, Thailand

```

TITLE      Direct Submission
JOURNAL    Submitted (25-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
           University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
           10530, Thailand
COMMENT    ##Assembly-Data-START##
           Sequencing Technology :: Sanger dideoxy sequencing
           ##Assembly-Data-END##
FEATURES   Location/Qualifiers
   source   1..450
            /organism="Wuchereria bancrofti"
            /mol_type="genomic DNA"
            /isolate="MMO6"
            /db_xref="taxon:6293"
   gene     <1..>450
            /gene="tub-1"
   mRNA     join(<1..114,305..>450)
            /gene="tub-1"
            /product="beta-tubulin isotype 1"
   CDS      join(<1..114,305..>450)
            /gene="tub-1"
            /codon_start=1
            /product="beta-tubulin isotype 1"
            /protein_id="QQP23392.1"
            /translation="HSLGGGTGSGMGTLISKIREEYPDRIMSSFVSPKVSDDVVL
            EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLANPTYG"
ORIGIN
   1 cattcacttg gtggcggtag cggttccggg atgggaacat tgctgatctc gaaaatccgt
   61 gaggagtatc cggatcgaat tatgagctct ttttcgggtg tgccgctgcc caaagtatgt
  121 atttgggttt ttgattatct tggttttaac atctgtttta tctactataa cgcataaaaac
  181 atagctataa acatagctcc ataactttta agtgggtgatt gtcgcacaaa gtgggtctttt
  241 aactatcatt gttcattttt catagttgaa gaaaaagtat ggtagacgta ttaatgattt
  301 ccaggtatca gatgttggtg tggaaacctt caatgcaaca ttatcagtc accaactagt
  361 tgaaaacact gacgaaactt tctgcattga taacgaggct ttgtatgaca tctgcttccg
  421 aacgttgaag ttggcaaatc caacttacgg
//

```

Brugia malayi isolate NT01 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674273.1

FASTA Graphics

```

LOCUS      MT674273                425 bp    DNA        linear    INV 20-JAN-2021
DEFINITION Brugia malayi isolate NT01 beta-tubulin isotype 1 (tub-1) gene,
           partial cds.
ACCESSION  MT674273
VERSION    MT674273.1
KEYWORDS   .
SOURCE     Brugia malayi
   ORGANISM Brugia malayi
           Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
           Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Brugia.
REFERENCE  1 (bases 1 to 425)
   AUTHORS  Intarapuk,A.
   TITLE    Direct Submission
   JOURNAL  Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
           University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
           10530, Thailand
COMMENT    ##Assembly-Data-START##
           Sequencing Technology :: Sanger dideoxy sequencing
           ##Assembly-Data-END##
FEATURES   Location/Qualifiers
   source   1..425
            /organism="Brugia malayi"
            /mol_type="genomic DNA"

```

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand

```

        /isolate="NT01"
        /db_xref="taxon:6279"
        /PCR_primers="fwd_name: bt91, fwd_seq:
        ggatccggatttcaactaacg, rev_name: bt123, rev_seq:
        gaattccaaatggttgaggtca"
gene      <1..>425
        /gene="tub-1"
mRNA      join(<1..114,280..>425)
        /gene="tub-1"
        /product="beta-tubulin isotype 1"
CDS       join(<1..114,280..>425)
        /gene="tub-1"
        /codon_start=1
        /product="beta-tubulin isotype 1"
        /protein_id="QQP23393.1"
        /translation="HSLGGGTGSGMGTLLISKIREEYPDRIMSSFSVVPSPKVS DVVL
        EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLANPTYG"
ORIGIN
1 cattcacttg gtggtggtac cgttccggc atgggaacat tgctgatctc gaaaattcgt
61 gaggagtatc cagatcgaat tatgagctct ttttcggttg tgccatcgcc caaagtatat
121 atttgaattt ctgattctta tttttaacat ctggttatatc tattttaaac atagctccat
181 aacttttaag tggcgattgt ctcaaaagt ggtttttcgg ctatcatatc attttcatag
241 ttgaagaaaa agtatgctag acgtattaat gatttccagg tatcagatgt tgtggttgaa
301 ccctacaatg caacattatc agtccaccaa ctagttgaaa aacttgacga aactttctgc
361 attgataacg aggctttgta tgacatctgc ttccgaacgt tgaagttggc aaatccaact
421 tacgg
//

```

Brugia malayi isolate NT02 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674274.1

FASTA Graphics

Go to:

LOCUS MT674274 425 bp DNA linear INV 20-JAN-2021

DEFINITION Brugia malayi isolate NT02 beta-tubulin isotype 1 (tub-1) gene,
partial cds.

ACCESSION MT674274

VERSION MT674274.1

KEYWORDS .

SOURCE Brugia malayi

ORGANISM Brugia malayi

Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Brugia.

REFERENCE 1 (bases 1 to 425)

AUTHORS Intarapuk,A.

TITLE Direct Submission

JOURNAL Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
10530, Thailand

COMMENT ##Assembly-Data-START##

Sequencing Technology :: Sanger dideoxy sequencing

##Assembly-Data-END##

FEATURES Location/Qualifiers

source

1..425

/organism="Brugia malayi"

/mol_type="genomic DNA"

/isolate="NT02"

/db_xref="taxon:6279"

/PCR_primers="fwd_name: bt91, fwd_seq:

ggatccggatttcaactaacg, rev_name: bt123, rev_seq:

gaattccaaatggttgaggtca"

gene

<1..>425

/gene="tub-1"

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand

```

mRNA      join(<1..114,280..>425)
          /gene="tub-1"
          /product="beta-tubulin isotype 1"
CDS       join(<1..114,280..>425)
          /gene="tub-1"
          /codon_start=1
          /product="beta-tubulin isotype 1"
          /protein_id="QQP23394.1"
          /translation="HSLGGGTGSGMGTLISKIREEYPDRIMSSFSVVPSPKVSDDVVL
          EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLANPTYG"
ORIGIN
1 cattcacttg gtggtggtac cgttccggc atgggaacat tgctgatctc gaaaattcgt
61 gaggagtatc cagatcgaat tatgagctct ttttcggttg tgccatcgcc caaagtatat
121 atttgaattt ctgattctta tttttaacat ctggttatatc tattttaaac atagctccat
181 aacttttaag tggcgattgt ctcaaaagt ggtttttcgg ctatcatatc attttcatag
241 ttgaagaaaa agtatgctag acgtattaat gatttccagg tatcagatgt tgtggttgaa
301 ccctacaatg caacattatc agtccaccaa ctagtggaaa aacttgacga aactttctgc
361 attgataacg aggctttgta tgacatctgc ttccgaacgt tgaagttggc aatccaact
421 tacgg
//

```

Brugia malayi isolate NT08 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674275.1

FASTA Graphics

Go to:

LOCUS MT674275 425 bp DNA linear INV 20-JAN-2021

DEFINITION Brugia malayi isolate NT08 beta-tubulin isotype 1 (tub-1) gene,
partial cds.

ACCESSION MT674275

VERSION MT674275.1

KEYWORDS .

SOURCE Brugia malayi

ORGANISM Brugia malayi

Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Brugia.

REFERENCE 1 (bases 1 to 425)

AUTHORS Intarapuk,A.

TITLE Direct Submission

JOURNAL Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
10530, Thailand

COMMENT ##Assembly-Data-START##

Sequencing Technology :: Sanger dideoxy sequencing

##Assembly-Data-END##

FEATURES Location/Qualifiers

source

1..425

/organism="Brugia malayi"

/mol_type="genomic DNA"

/isolate="NT08"

/db_xref="taxon:6279"

/PCR_primers="fwd_name: bt91, fwd_seq:

ggatccggatttcaactaacg, rev_name: bt123, rev_seq:

gaattccaaatggttgaggtca"

gene

<1..>425

/gene="tub-1"

mRNA

join(<1..114,280..>425)

/gene="tub-1"

/product="beta-tubulin isotype 1"

CDS

join(<1..114,280..>425)

/gene="tub-1"

/codon_start=1

/product="beta-tubulin isotype 1"

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand

```

/protein_id="QQP23395.1"
/translation="HSLGGGTGSGMGTLISKIREEYPDRIMSSFVSPKVSVDVVL
EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLANPTYG"
ORIGIN
  1 cattcacttg gtggtggtac cggttccggc atgggaacat tgctgatctc gaaaattcgt
  61 gaggagtatc cagatcgaat tatgagctct ttttcggttg tgccatcgcc caaagtatat
 121 atttgaatct ctgattctta tttttaacat ctggttatatc tatttttaaac atagctccat
 181 aacttttaag tggcgattgt ctcacaaagt ggtttttcgg ctatcataatc attttcatag
 241 ttgaagaaaa agtatgctag acgtattaat gatttccagg tatcagatgt tgtggttgaa
 301 ccctacaatg caacattatc agtccaccaa ctagttgaaa aacttgacga aactttctgc
 361 attgataacg aggctttgta tgacatctgc ttccgaacgt tgaagttggc aaatccaact
 421 tacgg
//

```

Brugia pahangi isolate DA08 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674276.1

FASTA Graphics

Go to:

```

LOCUS           MT674276                425 bp    DNA        linear   INV 20-JAN-2021
DEFINITION     Brugia pahangi isolate DA08 beta-tubulin isotype 1 (tub-1) gene,
                partial cds.
ACCESSION      MT674276
VERSION        MT674276.1
KEYWORDS       .
SOURCE         Brugia pahangi
  ORGANISM     Brugia pahangi
                Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
                Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Brugia.
REFERENCE      1 (bases 1 to 425)
AUTHORS        Intarapuk,A.
TITLE          Direct Submission
JOURNAL        Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
                University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
                10530, Thailand
COMMENT        ##Assembly-Data-START##
                Sequencing Technology :: Sanger dideoxy sequencing
                ##Assembly-Data-END##
FEATURES             Location/Qualifiers
   source            1..425
                    /organism="Brugia pahangi"
                    /mol_type="genomic DNA"
                    /isolate="DA08"
                    /db_xref="taxon:6280"
                    /PCR_primers="fwd_name: bt91, fwd_seq:
                    ggatccggatttcaactaacg, rev_name: bt123, rev_seq:
                    gaattccaaatggttgagggtca"
   gene              <1..>425
                    /gene="tub-1"
   mRNA              join(<1..114,280..>425)
                    /gene="tub-1"
                    /product="beta-tubulin isotype 1"
   CDS               join(<1..114,280..>425)
                    /gene="tub-1"
                    /codon_start=1
                    /product="beta-tubulin isotype 1"
                    /protein_id="QQP23396.1"
                    /translation="HSLGGGTGSGMGTLISKIREEYPDRIMSSFVSPKVSVDVVL
                    EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLANPTYG"

```

```

ORIGIN
  1 cattcacttg gtggtggtac cggttccggc atgggaacat tgctgatctc gaaaattcgt
  61 gaggagtatc cagatcgaat tatgagctct ttttcggttg tgccatcgcc caaagtatat
 121 atttgaatct ctgattctta tttttaacat ctggttatatc tatttttaaac atagctccat

```

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand


```

181 aacttttaag tggcggttgt ctcaaaagt ggtttttcgg ctatcatttc attttcatag
241 ttgaagaaaa agtatgctag acgtattaat gatttccagg tatcagatgt tgtggtggaa
301 ccctacaatg caacattatc agtccaccaa ctagttgaaa aacttgacga aactttctgc
361 attgataacg aggctttgta tgacatctgc ttccgaacgt tgaagttggc aaatccaact
421 tacgg

```

//

Brugia pahangi isolate CA12 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674277.1

FASTA Graphics

Go to:

```

LOCUS      MT674277                425 bp    DNA        linear    INV 20-JAN-2021
DEFINITION Brugia pahangi isolate CA12 beta-tubulin isotype 1 (tub-1) gene,
            partial cds.
ACCESSION  MT674277
VERSION    MT674277.1
KEYWORDS   .
SOURCE     Brugia pahangi
ORGANISM   Brugia pahangi
            Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
            Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Brugia.
REFERENCE  1 (bases 1 to 425)
AUTHORS    Intarapuk,A.
TITLE      Direct Submission
JOURNAL    Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
            University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
            10530, Thailand
COMMENT    ##Assembly-Data-START##
            Sequencing Technology :: Sanger dideoxy sequencing
            ##Assembly-Data-END##
FEATURES   Location/Qualifiers
            source          1..425
                        /organism="Brugia pahangi"
                        /mol_type="genomic DNA"
                        /isolate="CA12"
                        /db_xref="taxon:6280"
                        /PCR_primers="fwd_name: bt91, fwd_seq:
                        ggatccggatttcaactaacg, rev_name: bt123, rev_seq:
                        gaattccaaatggttgagggtca"
            gene            <1..>425
                        /gene="tub-1"
            mRNA            join(<1..114,280..>425)
                        /gene="tub-1"
                        /product="beta-tubulin isotype 1"
            CDS             join(<1..114,280..>425)
                        /gene="tub-1"
                        /codon_start=1
                        /product="beta-tubulin isotype 1"
                        /protein_id="QQP23397.1"
                        /translation="HSLGGGTGSGMGTLLISKIREEYPDRIMSSFSVVPSPKVSDDVVL
                        EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLANPTYG"

```

ORIGIN

```

1  cattcacttg gtggtggtac cggttccggc atgggaacat tgctgatctc gaaaattcgt
61  gaggagtatc cggatcgaat tatgagctct ttttcggttg tgccatcgcc caaagtatgt
121  atttgaatth ctgattctta tttttaacat ctggttatatc tattttaaac atagctccat
181  aacttttaag tggcggttgt ctcaaaagt ggtttttcgg ctatcatttc attttcatag
241  ttgaagaaaa agtatgctag acgtattaat gatttccagg tatcagatgt tgtggtggaa
301  ccctacaatg caacattatc agtccaccaa ctagttgaaa aacttgacga aactttctgc
361  attgataacg aggctttgta tgacatctgc ttccgaacgt tgaagttggc aaatccaact
421  tacgg

```

//

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand

Brugia pahangi isolate L02 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674278.1

FASTA Graphics

Go to:

LOCUS MT674278 425 bp DNA linear INV 20-JAN-2021
DEFINITION Brugia pahangi isolate L02 beta-tubulin isotype 1 (tub-1) gene,
partial cds.
ACCESSION MT674278
VERSION MT674278.1
KEYWORDS .
SOURCE Brugia pahangi
ORGANISM Brugia pahangi
Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Brugia.
REFERENCE 1 (bases 1 to 425)
AUTHORS Intarapuk,A.
TITLE Direct Submission
JOURNAL Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
10530, Thailand
COMMENT ##Assembly-Data-START##
Sequencing Technology :: Sanger dideoxy sequencing
##Assembly-Data-END##
FEATURES Location/Qualifiers
source 1..425
/organism="Brugia pahangi"
/mol_type="genomic DNA"
/isolate="L02"
/db_xref="taxon:6280"
/PCR_primers="fwd_name: bt91, fwd_seq:
ggatccggatttcaactaacg, rev_name: bt123, rev_seq:
gaattccaaatggttgagggtca"
gene <1..>425
/gene="tub-1"
mRNA join(<1..114,280..>425)
/gene="tub-1"
/product="beta-tubulin isotype 1"
CDS join(<1..114,280..>425)
/gene="tub-1"
/codon_start=1
/product="beta-tubulin isotype 1"
/protein_id="QQP23398.1"
/translation="HSLGGGTGSGMGTLISKIREEYPDRIMSSFVSPKVSDDVVL
EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLANPTYG"

ORIGIN

```

1 cattcacttg gtggtggtac cggttccggc atgggaacat tgctgatctc gaaaattcgt
61 gaggagtatc cggatcgaat tatgagctct ttttcgggtg tgccatcgcc caaagtatgt
121 atttgaattt ctgattctta tttttaacat ctggttatatc tattttaaac atagctccat
181 aacttttaag tggcggttgt ctcaaaagt ggtttttcgg ctatcatttc attttcatag
241 ttgaagaaaa agtatgctag acgtattaat gatttccagg tatcagatgt tgtgttgaa
301 ccctacaatg caacattatc agtccaccaa ctagttgaaa aacttgacga aactttctgc
361 attgataacg aggccttgta tgacatctgc ttccgaacgt tgaagttggc aaatccaact
421 tacgg

```

//

Brugia pahangi isolate L30 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674279.1

FASTA Graphics

Go to:

LOCUS MT674279 425 bp DNA linear INV 20-JAN-2021
DEFINITION Brugia pahangi isolate L30 beta-tubulin isotype 1 (tub-1) gene,
Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand

```

partial cds.
ACCESSION   MT674279
VERSION     MT674279.1
KEYWORDS    .
SOURCE      Brugia pahangi
            ORGANISM Brugia pahangi
                Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
                Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Brugia.
REFERENCE   1 (bases 1 to 425)
AUTHORS     Intarapuk,A.
TITLE       Direct Submission
JOURNAL     Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
            University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
            10530, Thailand
COMMENT     ##Assembly-Data-START##
            Sequencing Technology :: Sanger dideoxy sequencing
            ##Assembly-Data-END##
FEATURES             Location/Qualifiers
     source           1..425
                     /organism="Brugia pahangi"
                     /mol_type="genomic DNA"
                     /isolate="L30"
                     /db_xref="taxon:6280"
                     /PCR_primers="fwd_name: bt91, fwd_seq:
                     ggatccggatttcaactaacg, rev_name: bt123, rev_seq:
                     gaattccaaatggttgagggtca"
     gene             <1..>425
                     /gene="tub-1"
     mRNA             join(<1..114,280..>425)
                     /gene="tub-1"
     CDS              join(<1..114,280..>425)
                     /gene="tub-1"
                     /codon_start=1
                     /product="beta-tubulin isotype 1"
                     /protein_id="QQP23399.1"
                     /translation="HSLGGGTGSGMGTLISKIREEYPDRIMSSFVSPKVS DVVL
                     EPYNATLSVHQLVENTDETFCIDNEALYDICTFRLLKLANPTYG"
ORIGIN
1 cattcacttg gtggtggtac cggttccggc atgggaacat tgctgatctc gaaaattcgt
61 gaggagtatc cggatcgaat tatgagctct ttttcggttg tgccatcgcc caaagtatgt
121 atttgaattt ctgattctta tttttaacat ctggttatatc tattttaaac atagctccat
181 aacttttaag tggcggttgt ctcaaaagt ggtttttcgg ctatcatttc attttcatag
241 ttgaagaaaa agtatgctag acgtattaat gatttccagg tatcagatgt tgtggttgaa
301 ccctacaatg caacattatc agtccacca ctagtggaaa aactgtacga aactttctgc
361 attgataacg aggctttgta tgacatctgc ttccgaacgt tgaagttggc aaatccaact
421 tacgg
//

```

Dirofilaria immitis isolate Di106 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674280.1

FASTA Graphics

Go to:

```

LOCUS       MT674280                434 bp    DNA     linear   INV 20-JAN-2021
DEFINITION  Dirofilaria immitis isolate Di106 beta-tubulin isotype 1 (tub-1)
            gene, partial cds.
ACCESSION   MT674280
VERSION     MT674280.1
KEYWORDS    .
SOURCE      Dirofilaria immitis (dog heartworm nematode)
            ORGANISM Dirofilaria immitis
                Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;

```

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand

```

REFERENCE      Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Dirofilaria.
                1 (bases 1 to 434)
AUTHORS        Intarapuk,A.
TITLE          Direct Submission
JOURNAL        Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
                University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
                10530, Thailand
COMMENT        ##Assembly-Data-START##
                Sequencing Technology :: Sanger dideoxy sequencing
                ##Assembly-Data-END##
FEATURES       Location/Qualifiers
    source      1..434
                /organism="Dirofilaria immitis"
                /mol_type="genomic DNA"
                /isolate="Di106"
                /db_xref="taxon:6287"
                /PCR_primers="fwd_name: bt93, fwd_seq:
                ggatccggattccaactgact, rev_name: bt26, rev_seq:
                gaattccaagtgattgagatcg"
    gene        <1..>434
                /gene="tub-1"
    mRNA        join(<1..114,289..>434)
                /gene="tub-1"
                /product="beta-tubulin isotype 1"
    CDS         join(<1..114,289..>434)
                /gene="tub-1"
                /codon_start=1
                /product="beta-tubulin isotype 1"
                /protein_id="QQP23400.1"
                /translation="HSLGGGTGSGMGTLLISKIREEYPDRIMSSFVSPKVSVDVVL
                EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLTNPTYG"
ORIGIN
    1 cattcacttg gaggtggtac aggttctggt atgggaacat tgcttatctc gaagatccgt
    61 gaggaatata cagatcggat tatgagctct ttttcggttg tgccatcacc taaagtatgt
    121 atatttggtg cttactagt ttgatttaat tttcttggtt catacctttt cgttatttag
    181 aagcatcat tttatttgct tcaaattcat gaatgaagtg aacactatct gacgagatga
    241 ttttaactctg tccctatttc cttttgaat gcaagggttg tttttcaggt atcagatggt
    301 gtgttggac cttacaatgc aacgttatca gtgcatcaat tagttgaaaa cactgatgaa
    361 actttctgca ttgataatga agctttatat gatatctgct tccgaacatt gaaattgac
    421 aatccaactt acgg
//

```

Dirofilaria immitis isolate Di101 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674281.1

FASTA Graphics

Go to:

```

LOCUS          MT674281                434 bp    DNA        linear    INV 20-JAN-2021
DEFINITION     Dirofilaria immitis isolate Di101 beta-tubulin isotype 1 (tub-1)
                gene, partial cds.
ACCESSION      MT674281
VERSION        MT674281.1
KEYWORDS       .
SOURCE         Dirofilaria immitis (dog heartworm nematode)
    ORGANISM   Dirofilaria immitis
                Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
                Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Dirofilaria.
REFERENCE      1 (bases 1 to 434)
AUTHORS        Intarapuk,A.
TITLE          Direct Submission
JOURNAL        Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
                University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
                10530, Thailand

```

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand

```

COMMENT      ##Assembly-Data-START##
              Sequencing Technology :: Sanger dideoxy sequencing
              ##Assembly-Data-END##
FEATURES     Location/Qualifiers
   source    1..434
              /organism="Dirofilaria immitis"
              /mol_type="genomic DNA"
              /isolate="Di101"
              /db_xref="taxon:6287"
              /PCR_primers="fwd_name: bt93, fwd_seq:
              ggatccggattccaactgact, rev_name: bt26, rev_seq:
              gaattccaagtgattgagatcg"
   gene      <1..>434
              /gene="tub-1"
   mRNA      join(<1..114,289..>434)
              /gene="tub-1"
              /product="beta-tubulin isotype 1"
   CDS       join(<1..114,289..>434)
              /gene="tub-1"
              /codon_start=1
              /product="beta-tubulin isotype 1"
              /protein_id="QQP23401.1"
              /translation="HSLGGGTGSGMGTLLISKIREEYPDRIMSSFSVVPSPKVSDDVVL
              EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLTNPTYG"
ORIGIN
   1 cattcacttg gagtggttac aggttctggt atgggaacat tgcttatctc gaagatccgt
   61 gaggaatata cagatcggat tatgagctct ttttcggttg tgccatcacc taaagtatgt
  121 atatttgtgt cttaactagt ttgatttaat tttcttggtt catacctttt cgttatttag
  181 aagccatcat tttatttgct tcaaattcat gaatgaagtg aacactatct gacgagatga
  241 ttttaactctg tccctatttc cttttgaaat gcaagggttg tttttcaggt atcagatggt
  301 gtgttggaa cttacaatgc aacgttatca gtgcatcaat tagttgaaaa cactgatgaa
  361 actttctgca ttgataatga agctttatat gatatctgct tccgaacatt gaaattgacg
  421 aatccaactt acgg

```

//

Dirofilaria immitis isolate L07 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674282.1

FASTA Graphics

Go to:

```

LOCUS       MT674282                434 bp    DNA     linear   INV 20-JAN-2021
DEFINITION  Dirofilaria immitis isolate L07 beta-tubulin isotype 1 (tub-1)
              gene, partial cds.
ACCESSION  MT674282
VERSION    MT674282.1
KEYWORDS   .
SOURCE     Dirofilaria immitis (dog heartworm nematode)
   ORGANISM  Dirofilaria immitis
              Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
              Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Dirofilaria.
REFERENCE  1 (bases 1 to 434)
   AUTHORS  Intarapuk,A.
   TITLE    Direct Submission
   JOURNAL  Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
              University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
              10530, Thailand
COMMENT    ##Assembly-Data-START##
              Sequencing Technology :: Sanger dideoxy sequencing
              ##Assembly-Data-END##
FEATURES   Location/Qualifiers
   source  1..434
              /organism="Dirofilaria immitis"
              /mol_type="genomic DNA"

```

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand

```

        /isolate="L07"
        /db_xref="taxon:6287"
        /PCR_primers="fwd_name: bt93, fwd_seq:
        ggatccggattccaactgact, rev_name: bt26, rev_seq:
        gaattccaagtgattgagatcg"
gene      <1..>434
        /gene="tub-1"
mRNA      join(<1..114,289..>434)
        /gene="tub-1"
        /product="beta-tubulin isotype 1"
CDS       join(<1..114,289..>434)
        /gene="tub-1"
        /codon_start=1
        /product="beta-tubulin isotype 1"
        /protein_id="QQP23402.1"
        /translation="HSLGGGTGSGMGTLLISKIREEYPDRIMSSFSVVPSPKVS DVVL
        EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLTNPTYG"
ORIGIN
1  cattcacttg gagtggtac aggttctggt atgggaacat tgcttatctc gaagatccgt
61 gaggaatata cagatcggat tatgagctct ttttcggttg tgccatcacc taaagtatgt
121 atatttggtg cttaactagt ttgatttaat tttcttggtt catacctttt cgttatttag
181 aagcatcat  tttatttctg tcaaattcat gaatgaagtg aacactatct gacgagatga
241 ttttaactctg tccctatttc cttttgaaat gcaagggttg tttttcaggt atcagatggt
301 gtggttgaac cttacaatgc aacgttatca gtgcatcaat tagttgaaaa cactgatgaa
361 actttctgca ttgataatga agctttatat gatatctgct tccgaacatt gaaattgacg
421 aatccaactt acgg
//

```

Dirofilaria immitis isolate L14 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674283.1

FASTA Graphics

Go to:

LOCUS MT674283 434 bp DNA linear INV 20-JAN-2021

DEFINITION *Dirofilaria immitis* isolate L14 beta-tubulin isotype 1 (tub-1)
gene, partial cds.

ACCESSION MT674283

VERSION MT674283.1

KEYWORDS .

SOURCE *Dirofilaria immitis* (dog heartworm nematode)

ORGANISM *Dirofilaria immitis*

Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; *Dirofilaria*.

REFERENCE 1 (bases 1 to 434)

AUTHORS Intarapuk,A.

TITLE Direct Submission

JOURNAL Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
10530, Thailand

COMMENT ##Assembly-Data-START##

Sequencing Technology :: Sanger dideoxy sequencing

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..434

/organism="*Dirofilaria immitis*"

/mol_type="genomic DNA"

/isolate="L14"

/db_xref="taxon:6287"

/PCR_primers="fwd_name: bt93, fwd_seq:

ggatccggattccaactgact, rev_name: bt26, rev_seq:

gaattccaagtgattgagatcg"

gene <1..>434

/gene="tub-1"

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand

```

mRNA      join(<1..114,289..>434)
          /gene="tub-1"
          /product="beta-tubulin isotype 1"
CDS       join(<1..114,289..>434)
          /gene="tub-1"
          /codon_start=1
          /product="beta-tubulin isotype 1"
          /protein_id="QQP23403.1"
          /translation="HSLGGGTGSGMGTLISKIREEYPDRIMSSFSVVPSPKVSDDVVL
          EPYNATLSVHQLVENTDETFDCIDNEALYDICFRTLKLTNPTYG"
ORIGIN
1 cattcacttg gagtggttac aggttctggt atgggaacat tgcttatctc gaagatccgt
61 gaggaatata cagatcggat tatgagctct ttttcggttg tgccatcacc taaagtatgt
121 atatttgtgt cttaactagt ttgatttaat tttcttggtt catacctttt cgttatttag
181 aagccatcat tttatttctg tcaaattcat gaatgaagtg aacactatct gacgagatga
241 ttttaactctg tccctatttc cttttgaaat gcaagggttg tttttcaggt atcagatggt
301 gtggttgaac cttacaatgc aacgttatca gtgcatcaat tagttgaaaa cactgatgaa
361 actttctgca ttgataatga agctttatat gatatctgct tccgaacatt gaaattgacg
421 aatccaactt acgg
//

```

Dirofilaria immitis isolate L20 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674284.1

FASTA Graphics

Go to:

LOCUS MT674284 434 bp DNA linear INV 20-JAN-2021

DEFINITION *Dirofilaria immitis* isolate L20 beta-tubulin isotype 1 (tub-1)
gene, partial cds.

ACCESSION MT674284

VERSION MT674284.1

KEYWORDS .

SOURCE *Dirofilaria immitis* (dog heartworm nematode)

ORGANISM *Dirofilaria immitis*

Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; *Dirofilaria*.

REFERENCE 1 (bases 1 to 434)

AUTHORS Intarapuk,A.

TITLE Direct Submission

JOURNAL Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
10530, Thailand

COMMENT ##Assembly-Data-START##

Sequencing Technology :: Sanger dideoxy sequencing

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..434

/organism="*Dirofilaria immitis*"

/mol_type="genomic DNA"

/isolate="L20"

/db_xref="taxon:6287"

/PCR_primers="fwd_name: bt93, fwd_seq:

ggatccggattccaactgact, rev_name: bt26, rev_seq:

gaattccaagtgattgagatcg"

gene <1..>434

/gene="tub-1"

mRNA join(<1..114,289..>434)

/gene="tub-1"

/product="beta-tubulin isotype 1"

CDS join(<1..114,289..>434)

/gene="tub-1"

/codon_start=1

/product="beta-tubulin isotype 1"

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand

```

/protein_id="QQP23404.1"
/translation="HSLGGGTGSGMGTLISKIREEYPDRIMSSFVSPKVSVDVVL
EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLTNPTYG"

```

ORIGIN

```

1 cattcacttg gagtggttac aggttctggt atgggaacat tgcttatctc gaagatccgt
61 gaggaatatac cagatcggat tatgagctct ttttcggttg tgccatcacc taaagtatgt
121 atatttgtgt cttacttagt ttgatttaat tttcttggtt catacctttt cgttatttag
181 aagccatcat tttatttctg tcaaattcat gaatgaagtg aacactatct gacgagatga
241 ttttaactctg tccctatttc cttttgaaat gcaagggttg tttttcaggt atcagatggt
301 gtggttgaac cttacaatgc aacgttatca gtgcatcaat tagttgaaaa cactgatgaa
361 actttctgca ttgataatga agctttatat gatatctgct tccgaacatt gaaattgacg
421 aatccaactt acgg

```

//

Dirofilaria immitis isolate L23 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674285.1

FASTA Graphics

Go to:

```

LOCUS           MT674285                434 bp    DNA     linear   INV 20-JAN-2021
DEFINITION     Dirofilaria immitis isolate L23 beta-tubulin isotype 1 (tub-1)
                gene, partial cds.
ACCESSION     MT674285
VERSION       MT674285.1
KEYWORDS      .
SOURCE        Dirofilaria immitis (dog heartworm nematode)
  ORGANISM    Dirofilaria immitis
                Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
                Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Dirofilaria.
REFERENCE     1 (bases 1 to 434)
AUTHORS       Intarapuk,A.
TITLE         Direct Submission
JOURNAL       Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
                University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
                10530, Thailand
COMMENT       ##Assembly-Data-START##
                Sequencing Technology :: Sanger dideoxy sequencing
                ##Assembly-Data-END##
FEATURES             Location/Qualifiers
   source             1..434
                        /organism="Dirofilaria immitis"
                        /mol_type="genomic DNA"
                        /isolate="L23"
                        /db_xref="taxon:6287"
                        /PCR_primers="fwd_name: bt93, fwd_seq:
                        ggatccggattccaactgact, rev_name: bt26, rev_seq:
                        gaattccaagtgattgagatcg"
   gene               <1..>434
                        /gene="tub-1"
   mRNA              join(<1..114,289..>434)
                        /gene="tub-1"
                        /product="beta-tubulin isotype 1"
   CDS               join(<1..114,289..>434)
                        /gene="tub-1"
                        /codon_start=1
                        /product="beta-tubulin isotype 1"
                        /protein_id="QQP23405.1"
                        /translation="HSLGGGTGSGMGTLISKIREEYPDRIMSSFVSPKVSVDVVL
                        EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLTNPTYG"

```

ORIGIN

```

1 cattcacttg gagtggttac aggttctggt atgggaacat tgcttatctc gaagatccgt
61 gaggaatatac cagatcggat tatgagctct ttttcggttg tgccatcacc taaagtatgt
121 atatttgtgt cttacttagt ttgatttaat tttcttggtt catacctttt cgttatttag

```

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand


```

181 aagccatcat tttatttgct tcaaattcat gaatgaagtg aacctatct gacgagatga
241 ttttaactctg tccctatttc cttttgaaat gcaagggttg tttttcaggt atcagatggt
301 gtggttgaac cttacaatgc aacgttatca gtgcatcaat tagttgaaaa cactgatgaa
361 actttctgca ttgataatga agctttatat gatatctgct tccgaacatt gaaattgacg
421 aatccaactt acgg

```

//

Dirofilaria immitis isolate L25 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674286.1

FASTA Graphics

Go to:

```

LOCUS      MT674286                434 bp    DNA        linear    INV 20-JAN-2021
DEFINITION Dirofilaria immitis isolate L25 beta-tubulin isotype 1 (tub-1)
            gene, partial cds.
ACCESSION  MT674286
VERSION    MT674286.1
KEYWORDS   .
SOURCE     Dirofilaria immitis (dog heartworm nematode)
  ORGANISM Dirofilaria immitis
            Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
            Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Dirofilaria.
REFERENCE  1 (bases 1 to 434)
AUTHORS    Intarapuk,A.
TITLE      Direct Submission
JOURNAL    Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
            University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
            10530, Thailand
COMMENT    ##Assembly-Data-START##
            Sequencing Technology :: Sanger dideoxy sequencing
            ##Assembly-Data-END##
FEATURES   Location/Qualifiers
  source   1..434
            /organism="Dirofilaria immitis"
            /mol_type="genomic DNA"
            /isolate="L25"
            /db_xref="taxon:6287"
            /PCR_primers="fwd_name: bt93, fwd_seq:
            ggatccggattccaactgact, rev_name: bt26, rev_seq:
            gaattccaagtgattgagatcg"
  gene     <1..>434
            /gene="tub-1"
  mRNA     join(<1..114,289..>434)
            /gene="tub-1"
            /product="beta-tubulin isotype 1"
  CDS      join(<1..114,289..>434)
            /gene="tub-1"
            /codon_start=1
            /product="beta-tubulin isotype 1"
            /protein_id="QQP23406.1"
            /translation="HSLGGGTGSGMGTLLISKIREEYPDRIMSSFVVPSPKVS DVVL
            EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLTNPTYG"

```

ORIGIN

```

1  cattcacttg gagtggttac aggttctggt atgggaacat tgcttatctc gaagatccgt
61 gaggaatata cagatcggat tatgagctct ttttcggttg tgccatcacc taaagtatgt
121 atatttgtgt cttacttagt ttgatttaat tttcttggtt catacctttt cgttatttag
181 aagccatcat tttatttgct tcaaattcat gaatgaagtg aacctatct gacgagatga
241 ttttaactctg tccctatttc cttttgaaat gcaagggttg tttttcaggt atcagatggt
301 gtggttgaac cttacaatgc aacgttatca gtgcatcaat tagttgaaaa cactgatgaa
361 actttctgca ttgataatga agctttatat gatatctgct tccgaacatt gaaattgacg
421 aatccaactt acgg

```

//

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand

Dirofilaria immitis isolate L26 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674287.1

FASTA Graphics

Go to:

LOCUS MT674287 434 bp DNA linear INV 20-JAN-2021

DEFINITION *Dirofilaria immitis* isolate L26 beta-tubulin isotype 1 (tub-1)
gene, partial cds.

ACCESSION MT674287

VERSION MT674287.1

KEYWORDS .

SOURCE *Dirofilaria immitis* (dog heartworm nematode)

ORGANISM *Dirofilaria immitis*

Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; *Dirofilaria*.

REFERENCE 1 (bases 1 to 434)

AUTHORS Intarapuk,A.

TITLE Direct Submission

JOURNAL Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
10530, Thailand

COMMENT ##Assembly-Data-START##

Sequencing Technology :: Sanger dideoxy sequencing

##Assembly-Data-END##

FEATURES Location/Qualifiers

source 1..434
/organism="*Dirofilaria immitis*"
/mol_type="genomic DNA"
/isolate="L26"
/db_xref="taxon:6287"
/PCR_primers="fwd_name: bt93, fwd_seq:
ggatccggattccaactgact, rev_name: bt26, rev_seq:
gaattccaagtgattgagatcg"

gene <1..>434
/gene="tub-1"

mRNA join(<1..114,289..>434)
/gene="tub-1"
/product="beta-tubulin isotype 1"

CDS join(<1..114,289..>434)
/gene="tub-1"
/codon_start=1
/product="beta-tubulin isotype 1"
/protein_id="QQP23407.1"
/translation="HSLGGGTGSGMGTLLISKIREEYPDRIMSSFSVVPSPKVSDDVVL
EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLTNPTYG"

ORIGIN

```

1 cattcacttg gagtggttac aggttctggt atgggaacat tgcttatctc gaagatccgt
61 gaggaatata cagatcggat tatgagctct ttttcggttg tgccatcacc taaagtatgt
121 atatttggtg cttaactagt ttgatttaat tttcttggtt catacctttt cgttatttag
181 aagccatcat tttatttgct tcaaattcat gaatgaagtg aacactatct gacgagatga
241 ttttaactcg tcctatattc cttttgaaat gcaagggttg tttttcaggt atcagatggt
301 gtggttggaa cttacaatgc aacgttatca gtgcatcaat tagttgaaaa cactgatgaa
361 actttctgca ttgataatga agctttatat gatatctgct tccgaacatt gaaattgacg
421 aatccaactt acgg

```

//

Dirofilaria immitis isolate L27 beta-tubulin isotype 1 (tub-1) gene, partial cds
GenBank: MT674288.1

FASTA Graphics

Go to:

LOCUS MT674288 434 bp DNA linear INV 20-JAN-2021

DEFINITION *Dirofilaria immitis* isolate L27 beta-tubulin isotype 1 (tub-1)

Intarapuk A. Faculty of Veterinary Medicine, Mahanakorn University of Technology, 140 Chan Sampan rd.,
Nongchok, Bangkok 10530, Thailand

```

gene, partial cds.
ACCESSION   MT674288
VERSION     MT674288.1
KEYWORDS    .
SOURCE      Dirofilaria immitis (dog heartworm nematode)
            ORGANISM   Dirofilaria immitis
                Eukaryota; Metazoa; Ecdysozoa; Nematoda; Chromadorea; Rhabditida;
                Spirurina; Spiruromorpha; Filarioidea; Onchocercidae; Dirofilaria.
REFERENCE   1 (bases 1 to 434)
AUTHORS     Intarapuk,A.
TITLE       Direct Submission
JOURNAL     Submitted (26-JUN-2020) Faculty of Veterinary Medicine, Mahanakorn
            University of Technology, 140 Chan Sampan rd., Nongchok, Bangkok
            10530, Thailand
COMMENT     ##Assembly-Data-START##
            Sequencing Technology :: Sanger dideoxy sequencing
            ##Assembly-Data-END##
FEATURES             Location/Qualifiers
     source           1..434
                     /organism="Dirofilaria immitis"
                     /mol_type="genomic DNA"
                     /isolate="L27"
                     /db_xref="taxon:6287"
                     /PCR_primers="fwd_name: bt93, fwd_seq:
                     ggatccggattccaactgact, rev_name: bt26, rev_seq:
                     gaattccaagtgattgagatcg"
     gene             <1..>434
                     /gene="tub-1"
     mRNA             join(<1..114,289..>434)
                     /gene="tub-1"
                     /product="beta-tubulin isotype 1"
     CDS              join(<1..114,289..>434)
                     /gene="tub-1"
                     /codon_start=1
                     /product="beta-tubulin isotype 1"
                     /protein_id="QQP23408.1"
                     /translation="HSLGGGTGSGMGTLLISKIREEYPDRIMSSFSVVPSPKVS DVVL
                     EPYNATLSVHQLVENTDETFCIDNEALYDICFRTLKLTNPTYG"
ORIGIN
1  cattcacttg gagtggttac aggttctggt atgggaacat tgcttatctc gaagatccgt
61 gaggaatata cagatcggat tatgagctct ttttcggttg tgccatcacc taaagtatgt
121 atatttgtgt cttactagat ttgatttaat tttcttggtt catacctttt cgttatttag
181 aagccatcat tttatttctg tcaaattcat gaatgaagtg aacactatct gacgagatga
241 ttttaactct tcctatattc cttttgaaat gcaagggttg tttttcaggt atcagatggt
301 gtggttgaac cttacaatgc aacggttatca gtgcatcaat tagttgaaaa cactgatgaa
361 actttctgca ttgataatga agctttatat gatatctgct tccgaacatt gaaattgacg
421 aatccaactt acgg
//

```