

Dendrobium huoshanense chloroplast DNA, complete genome

GenBank: LC269310.1

[FASTA Graphics](#)

LOCUS LC269310 148590 bp DNA circular PLN 24-MAY-2019
DEFINITION Dendrobium huoshanense chloroplast DNA, complete genome.
ACCESSION LC269310
VERSION LC269310.1
KEYWORDS .
SOURCE chloroplast Dendrobium huoshanense
ORGANISM [Dendrobium huoshanense](#)
Eukaryota; Viridiplantae; Streptophyta; Embryophyta; Tracheophyta;
Spermatophyta; Magnoliopsida; Liliopsida; Asparagales; Orchidaceae;
Epidendroideae; Malaxideae; Dendrobiinae; Dendrobium.
REFERENCE 1
AUTHORS Jiajia,P.
TITLE Authenticate of Dendrobium huoshanense
JOURNAL Unpublished
REFERENCE 2 (bases 1 to 148590)
AUTHORS Jiajia,P.
TITLE Direct Submission
JOURNAL Submitted (10-MAY-2017) Contact:Pan Jiajia Nanjing Normal
University, Department of Biology; Wen Yuan, Nanjing 0210000, China
FEATURES Location/Qualifiers
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/organelle="plastid:chloroplast"
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/db_xref="taxon:[154293](#)"
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AQSEGNYAEALQNYEATRPEIDPYDRSYILYNIGLIHTSNGEHTKALEYFRALERN
PFLPQAFNNMAVICHYRGEQAI IQGDSEIAEAWFDQAAEYWKQAIALTPGNYIEAHNW
LKITRRFE"

gene     45251..45337
         /gene="trnS-GGA"

tRNA     45251..45337
         /gene="trnS-GGA"
         /product="tRNA-Ser"

gene     complement(45643..46248)
         /gene="rps4"

tRNA     complement(45643..46248)
         /gene="rps4"
         /note="30S ribosomal protein S4"

gene     complement(46594..46666)

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        /gene="trnT-UGU"
tRNA      complement (46594..46666)
        /gene="trnT-UGU"
        /product="tRNA-Thr"
gene      order (47343..47377,48178..48227)
        /gene="trnL-UAA"
tRNA      join (47343..47377,48178..48227)
        /gene="trnL-UAA"
        /product="tRNA-Leu"
gene      48629..48701
        /gene="trnF-GAA"
tRNA      48629..48701
        /gene="trnF-GAA"
        /product="tRNA-Phe"
misc_feature complement (49355..49804)
        /note="ndhJ"
        /pseudogene="unknown"
gene      complement (order (50553..50589,51171..51209) )
        /gene="trnV-UAC"
tRNA      complement (join (50553..50589,51171..51209) )
        /gene="trnV-UAC"
        /product="tRNA-Val"
gene      51385..51457
        /gene="trnM-CAU"
tRNA      51385..51457
        /gene="trnM-CAU"
        /product="tRNA-Met"
gene      complement (51643..52047)
        /gene="atpE"
CDS       complement (51643..52047)
        /gene="atpE"
        /codon_start=1
        /transl_table=11
        /product="ATP synthase CF1 epsilon chain"
        /protein_id="BBK09513.1"
        /translation="MTLNLCVLTPNRMWDSKVKEIILSTNSGQIGILPNHAPIATAV
DIGLLRIRLNDRWLTVALMGGFARISNNEITILGNGAEISTDIDPQEAQQTLEIAEAN
LSRAEGKRQAIEANLALRRARTRVEAVKVISY"
gene      complement (52044..53540)
        /gene="atpB"
CDS       complement (52044..53540)
        /gene="atpB"
        /codon_start=1
        /transl_table=11

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/product="ATP synthase CF1 beta chain"
/protein_id="BBK09514.1"
/translation="MRSNPTTSDPVVSTLEEQLGRIAQIIGPVLDVIFPPGKMPNIY
NALVIKSRDTFGQQINVTCEVQQLLGNNRVRAVAMSATDGLMRGMKVIDTGAPLSVPV
GGATLGRIFNVLGEPVDNLGPVDTRTTSPIHRSAPAFIQLDTKFSIFETGIKVVDLLA
PYRRGGKIGLFGGAGVGKTVLIMELINNIKAHGGVSVFGGVGERTREGNDLYMEMKE
SGVINEKNIAESKVALVYGQMNEPPGARMRVGLTALTMAEYFRDVNEQDVLLFIDNIF
RFVQAGSEVSALLGRMPSAVGYPPTLSTEMGSLQERITSTKEGSITSIQAVYVPADDL
TDPAPATTFAHLDDATTVLSRGLAAKGIYPAVDPLDSTSTMLQPRIVGEEHYETAQRVK
QTSQRYKELQDIIAILGLDELSEEDRLTVARARKIERFLSQPFFVAEVFTGSPGKYVG
LAETIRGFQFILSGELDGLPEQSFYLVGNIDEATAKAMNLEESKLKK"
gene      54557..55996
          /gene="rbcL"
CDS       54557..55996
          /gene="rbcL"
          /codon_start=1
          /transl_table=11
          /product="ribulose-1,5-bisphosphate carboxylase/oxygenase
          large subunit"
          /protein_id="BBK09515.1"
          /translation="MSCREGLMSPQTETKASVGFKAGVKDYKLTYYTPDYETKDTDIL
          AAFRVTPQPGVPPEEAGAAVAESSTGTWTTYKGRCYHIEVVLGEENQYIAYVAYPLD
          LFEEGSVTNMFTSIVGNVFGFKALRALRLEDLRIPTSYSKTFQGPPhGIQVERDKLNK
          YGRPLLGCTIKPKLGLSAKNYGRAVYECLRGGLDFTKDDENVNSQPFMRWRDRFLFCA
          EAIFKAQAETGEIKGHYLNATAGTCEEMIKRAVFARELGVPIMVHDYLTGGFTANTSL
          AHYCRDNGLLLHIHRAMHAVIDRQKNHGMHFRVLAKALRMSGGDHIIHAGTVVGKLEGE
          REMTLGFVDLLRDDFIEKDRSGIFFTQDWVSMPGVLPVASGGIHVWHMPALTEIFGD
          DSVLQFGGGTLGHPWGNAPGAVANRVSLACVQARNEGRDLAREGNDIIREAAKWSPE
          LAAACEVWKEITFEFEPVDKVDKVDKETK"
gene      56828..58276
          /gene="accD"
CDS       56828..58276
          /gene="accD"
          /codon_start=1
          /transl_table=11
          /product="acetyl-CoA carboxylase carboxyl transferase"
          /protein_id="BBK09516.1"
          /translation="MEKCWFNSMLSNNKLEHRCGLSKSMDSLDALGHTSGSEETILND
          AEKKITSWHSFSFSNMNYLNYLFDSRNFWSLISDHTFLVRNSNGDTSSVYFDIENQIF
          DIYNASSSLSELEILFPSYLNsgsnssnyyyyysmydtqsnwnnnhinscidSYLRFEI
          SLKSDIYSGIDSYISSFICTESISSIESGNSSIKTSSSSFNIRERSNDLDRNTKYKQL
          WVQCENCYGLNYKKSFSKMNICEHCGYHLKMSSSDRIELFIDPGTWEPMDMDMVSM
          PIEFHSEEEPYIDRISFYQRKTGLTEAVQTGVGQLNSIPIAIGVMDFQFMGGSGMSVV
          GEKITRLIEYATNRSPLVIIVCASGGARMQEGSLSLMQMAKISSASYDYQSKKKLFYV

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SILTSPTTGGVTASFGMLGDIIIAEPNAYIAFAGKRVIEQTLKKTVPDGSQAAEYLFL
KGLFDPIVPRNPLKGVNLNQLHGFPLNQD"

gene 59045..59155
/gene="psaI"

CDS 59045..59155
/gene="psaI"
/codon_start=1
/transl_table=[11](#)
/product="Photosystem I reaction center subunit VIII"
/protein_id="[BBK09517.1](#)"
/translation="MIDLNFPSIFVPLVGLVFPAIAMASLSLYVQRNKIV"

gene 59548..60102
/gene="ycf4"

CDS 59548..60102
/gene="ycf4"
/codon_start=1
/transl_table=[11](#)
/product="Photosystem I assembly protein ycf4"
/protein_id="[BBK09518.1](#)"
/translation="MNRWSEHIWIELITGSRKTSNFCWACILFLGSLGFLVVGTSYLL
GKNLISVFPSQQILFFPQGIVMSFYGIAGLFISSYLWCTISWNVSGYDRFDRKEGIM
SLFRWGFPGRRNRIFLRFLLKDIQSIRMEVREGLFPRRVLYMEIRGQGAIPLTRDEN
LTPREIEQKAAELAYFLRVPIEVF"

gene 60828..61517
/gene="cemA"

CDS 60828..61517
/gene="cemA"
/note="Chloroplast envelope protein"
/codon_start=1
/transl_table=[11](#)
/product="envelope membrane protein"
/protein_id="[BBK09519.1](#)"
/translation="MKKKKALASLPYLVLSILFLPWWVSLSFKKCLETWVLNWWNTRQS
EILLNDIQEKNVLEKFMELEELFLLDEMIKEYSETHMQRLRIGMHKETIQLVQRHNS
HFHIIHFSTNLICFAILSGYFFLGNEELFILNSWIQEFLYNLSDTIKAFSILLVTDL
WIGFHSTHGWELMIGSIYNDFGLAQNDQIISGLVSTFPVILDTIVKYWIFHFLNRVSP
SLVVIYHSMNE"

gene 61753..62715
/gene="petA"

CDS 61753..62715
/gene="petA"
/codon_start=1
/transl_table=[11](#)
/product="cytochrome f"

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/protein_id="BBK09520.1"
/translation="MQNRKTFSWVKEQMTRSIYVSIMYAITRASISNAYPIFAQQGY
ENPREATGRIVCANCHLANKPVDIEVPQAVLPDTVFEAVVRIPYDMQLKQVLANGKKG
ALNVGAVLILPEGFELAPPDRISPEMKEKMGNLSFQFYRPNKRNLVIGFVPGQKYSE
IVFPILSPDPATKKDVHFLKYPIYVGGNRGRGQIYPDGSKSNNTVYNATSAGIVSRIA
RKEKGGYEITIVDASEGRQVVDIIPGPPELLVSEGESIKLDQPLTSNPNVGGFGQGDA
EIVLQDPLRVQGLLLFLASVILAQIFLVLKKKQFEKVQLYEMNF"
gene      complement(63725..63847)
/ gene="psbJ"
CDS       complement(63725..63847)
/ gene="psbJ"
/codon_start=1
/transl_table=11
/product="photosystem II protein J"
/protein_id="BBK09521.1"
/translation="MADTTGRIPLWLIGTVTGITVIGLIGIFFYGSYGLGSSL"
gene      complement(63968..64084)
/ gene="psbL"
CDS       complement(63968..64084)
/ gene="psbL"
/codon_start=1
/transl_table=11
/product="photosystem II protein L"
/protein_id="BBK09522.1"
/translation="MTQSNPNQNVNELNRTSLYWGLLLIFVLAVLFSNYFFN"
gene      complement(64107..64226)
/ gene="psbF"
CDS       complement(64107..64226)
/ gene="psbF"
/codon_start=1
/transl_table=11
/product="cytochrome b559 beta chain"
/protein_id="BBK09523.1"
/translation="MTIDRTYPIFTVRWLAVHGLAVPTVSFLGSISAMQFIQR"
gene      complement(64237..64488)
/ gene="psbE"
CDS       complement(64237..64488)
/ gene="psbE"
/codon_start=1
/transl_table=11
/product="cytochrome b559 alpha chain"
/protein_id="BBK09524.1"
/translation="MSGSTGERSFADIITSIRYWVIHSITIPSLFIAGWLFVSTGLAY
DVFGSPRPNEYFTESRQGIPLITGRFDSLEQLDEFKSKSF"

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gene 65643..65738
 /gene="petL"
 CDS 65643..65738
 /gene="petL"
 /codon_start=1
 /transl_table=[11](#)
 /product="cytochrome b6-f complex subunit VI"
 /protein_id="[BBK09525.1](#)"
 /translation="MPIILTSYFGFLLAASTITPALFIGLNKIRLI"
 gene 65928..66041
 /gene="petG"
 CDS 65928..66041
 /gene="petG"
 /codon_start=1
 /transl_table=[11](#)
 /product="cytochrome b6-f complex subunit V"
 /protein_id="[BBK09526.1](#)"
 /translation="MIEVFLFGIVLGLIPITLTGLFVTAYLQYRRGDQLDL"
 gene complement(66160..66233)
 /gene="trnW-CCA"
 tRNA complement(66160..66233)
 /gene="trnW-CCA"
 /product="tRNA-Trp"
 gene complement(66402..66475)
 /gene="trnP-UGG"
 tRNA complement(66402..66475)
 /gene="trnP-UGG"
 /product="tRNA-Pro"
 gene 66816..66944
 /gene="psaJ"
 CDS 66816..66944
 /gene="psaJ"
 /codon_start=1
 /transl_table=[11](#)
 /product="photosystem I reaction center subunit IX"
 /protein_id="[BBK09527.1](#)"
 /translation="MRDIKTYLSTAPVLTTLWFGSLAGLLIEINRLFPDALSFPFF"
 gene 67548..67748
 /gene="rpl33"
 CDS 67548..67748
 /gene="rpl33"
 /codon_start=1
 /transl_table=[11](#)
 /product="50S ribosomal protein L33"

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/protein_id="BBK09528.1"
/translation="MAKGKDIRIIVILECTCCVRKGVNKESPGISRYITQKNRHNTPN
RLEFRKFCRYCQKYTIHGEIKK"
gene      67940..68245
          /gene="rps18"
CDS       67940..68245
          /gene="rps18"
          /codon_start=1
          /transl_table=11
          /product="30S ribosomal protein S18"
/protein_id="BBK09529.1"
/translation="MDKSKQPFRKSKRSFRRRLPPIGSGDRIDYRNMSLISRFLSEQG
KILSRRTNRLTLKQQRLLITIAIKQARILSSLPFRNNEQLERVESIPRTTGPRTKNK"
gene      complement(68506..68880)
          /gene="rpl20"
CDS       complement(68506..68880)
          /gene="rpl20"
          /codon_start=1
          /transl_table=11
          /product="50S ribosomal protein L20"
/protein_id="BBK09530.1"
/translation="MTRVKRGYTARRRRKKIRLFASTFIGAHSRLTRTTTQQRMRALV
SSHRDRSRKKRDFRRLWITRINAVTREDRIFYSYSLFIHNLKYKQLLLNRKILAQIAL
SNKNCFDIISNKIKYKSNKIKE"
gene      complement(69640..69753)
          /gene="5'rps12"
misc_feature complement(69640..69753)
          /gene="5'rps12"
gene      complement(69908..72135)
          /gene="clpP"
CDS       complement(join(69908..70138,70809..71100,72065..72135))
          /gene="clpP"
          /codon_start=1
          /transl_table=11
          /product="clpP-like protease"
/protein_id="BBK09531.1"
/translation="MPIGVPKVPFRSPGEEDAAWVDVYNRLHRERLLFLGQEVDSSEIS
NQLVGLMVYLSIEDDTRDLYLFINSPGGWVIPGIAIYDTMQFVSPDVHTICMGLAASM
GSFILVGGEITKRLAFPHARVMIHQPASSFYEAQAGEFILEAEELLKLRETLTKVYVQ
RTGNPLWVISEDMERDVFMSATEAQAHGIVDLVAVEN"
gene      72742..74196
          /gene="psbB"
CDS       72742..74196
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/codon_start=1
/transl_table=11
/product="photosystem II p680 chlorophyll A apoprotein"
/protein_id="BBK09532.1"
/translation="MGLPWYRVHTVVLNDPGRLLSVHIMHTALVSGWAGSMALYELAV
FDPSDPVLDPMWRQGMFVIPFMTRLGITNSWGGWSISGGTITNPGIWSYEGVAGAHIL
FSGLCFLAAIWHWVYWDLEIFCDERTGKPSLDLPKIFGIHLFLSGVACFGFGAFHVTG
LYGPGI WVSDPYGLTGKVQSVNPAWGAEGFDPFVPGGIASHHIAAGTLGILAGLFHLS
VRPPLAAFVVAGTMWYGSATTPIELFGPTRYQWDQGYFQQEIYRRVGAGLAENLSLSE
AWSKIPEKLAIFYDYIGNNPAKGGLFRAGSMDNGDGIAGVWLGHPIFRDKEGRELFVRR
MPTFFETFPVVLVDGDGIVRADVPFRAESKYSVEQVGVTVFEFYGGELNGVIYSDPAT
VKKYARRAQLGEIFELDRATLKSDGVFRSSPRGWFTFGHATFALLFFFGHIWHGARTL
FRDVFAGIDPDLDAQVEFGAFQKLGDPTTRQVV"
gene      74613..74714
          /gene="psbT"
CDS       74613..74714
          /gene="psbT"
          /codon_start=1
          /transl_table=11
          /product="photosystem II protein T"
          /protein_id="BBK09533.1"
          /translation="MEALVYTFLLVSTLGIIFFAIFFREPPKVPTKK"
gene      complement(74783..74914)
          /gene="psbN"
CDS       complement(74783..74914)
          /gene="psbN"
          /codon_start=1
          /transl_table=11
          /product="photosystem II protein N"
          /protein_id="BBK09534.1"
          /translation="METATLVAISISGLLVSTGYALYTAFGQPSQKL RDPFEEHGD"
gene      75026..75247
          /gene="psbH"
CDS       75026..75247
          /gene="psbH"
          /codon_start=1
          /transl_table=11
          /product="photosystem II 10 kDa phosphoprotein"
          /protein_id="BBK09535.1"
          /translation="MATKTVESSSRSGPRRTGVGSLLKPLNSEYGKVAPGWGTTPLMG
VAMALFAIFLSIILEIYNSSVLLDGISMN"
gene      order(75424..75429,76159..76800)
          /gene="petB"
CDS       join(75424..75429,76159..76800)

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/gene="petB"
/codon_start=1
/transl_table=11
/product="cytochrome b6"
/protein_id="BBK09536.1"
/translation="MSKVYDWFEEERLEIQAIADDITSKYVPPHVNIFYCLGGITLTCE
LVQVATGFAMTFYYRPTVTEAFSSVQYIMTEANFGWLIRSVHRWSASMMVLMMLHVF
RVYLTGGFKKPRELTWVTGVVLAVLTASFGVTGYSLPRDQIGYWAVKIVTGVPEAPI
IGSPLVELLRGSASVGQSTLTRFYSLHTFVLPLLTAVFMLMHFSMIRKQGIGISGPL"
gene      order(76986..76993,77855..78338)
/gene="petD"
CDS       join(76986..76993,77855..78338)
/gene="petD"
/codon_start=1
/transl_table=11
/product="cytochrome b6-f complex subunit IV"
/protein_id="BBK09537.1"
/translation="MGVTKKPDNDPVLRAKLAKGMGHNYGEPAWPNDLLYIFPVVI
LGTIACTVGLAVLEPSMIGEPADPFATPLEILPEWYFFPVFQILRTVPNKLLGVLLMV
SVPIGLLTVPFLENVNKFQNPFRPVATTVFLIGTAVALWLGIGATLPIEKSLTLGLF
QID"
gene      complement(78518..79537)
/gene="rpoA"
CDS       complement(78518..79537)
/gene="rpoA"
/codon_start=1
/transl_table=11
/product="DNA-directed RNA polymerase alpha chain"
/protein_id="BBK09538.1"
/translation="MVREEVAGSTRTLQWKCVESRVDSKRLLYYGRFVLSPLMKGQAYT
IGIAMRRALLGEIEGTYITRAKSENVLHEYSTIAGIEESVHEILINLKEIVLRNLYG
VRDASICVRGPKYITAQDIISPPSVEIVDTTQHIANLTEPIDLCIELQIKRDRGYRMK
STNDSDGSGYPIDIVSMPVRNANHSIHSYGNNGNEKQEILFLEIWTNGSLTPKEALYEA
SRNLIDLLIPFLHAEEDMNFKENENRWNLPFSFQDRFTNLKKNKKGIPLTCIFIDQ
SELSSRTYNCLKRSNIHTLLDLLSHSQEDLMKMEDFRIEDVKQILGTIQLKHFAINLPK
KKFSF"
gene      complement(79621..80037)
/gene="rps11"
CDS       complement(79621..80037)
/gene="rps11"
/codon_start=1
/transl_table=11
/product="30S ribosomal protein S11"
/protein_id="BBK09539.1"

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/translation="MTKPIAKIGLRKNARIGSNKNERRIPKGVIVHQASFNNTIVTVT
DVRGRVVSASAGTSGFRGTRKGTYPYAAQAAAFNAIRTLVDQGMQRAEVMIKGPGLGR
DAALRAIRRNGMLLSFVRDVTMPHNGCRPPKKRRV"
gene      complement(80196..80309)
          /gene="rpl36"
CDS       complement(80196..80309)
          /gene="rpl36"
          /codon_start=1
          /transl_table=11
          /product="50S ribosomal protein L36"
          /protein_id="BBK09540.1"
          /translation="MKIRASVRKICEKCRLIRRRGRIIVICSNPRHKQRQG"
gene      complement(80426..80659)
          /gene="infA"
CDS       complement(80426..80659)
          /gene="infA"
          /codon_start=1
          /transl_table=11
          /product="Initiation factor 1"
          /protein_id="BBK09541.1"
          /translation="MKEQKLIHEGLITESLPNGMFRVRLDNEDLILGYISGRIRRSFI
RILPGDRVKIEMSRYDSTRGRIIYRLRKDSND"
gene      complement(80773..81168)
          /gene="rps8"
CDS       complement(80773..81168)
          /gene="rps8"
          /codon_start=1
          /transl_table=11
          /product="30S ribosomal protein S8"
          /protein_id="BBK09542.1"
          /translation="MGRDIIADIITSIRNADIDQKGRVQIVSTNITKNIVKILLREGF
IENVRKHQESKKDFVLTLRHRKTRKGNKMILKRISRPLRIYSNYQRIPKILGGMGI
VILSTSRGIMTDREARLEKIGGEILCYIW"
gene      complement(81393..81761)
          /gene="rpl14"
CDS       complement(81393..81761)
          /gene="rpl14"
          /codon_start=1
          /transl_table=11
          /product="50S ribosomal protein L14"
          /protein_id="BBK09543.1"
          /translation="MIQPQTLLNVADNSGAQELMCIRIIGTGNHRYAHIGDVIVAVIK
EAVPNMPLERSEIIRAVIVRTCKELKRDNGMIIRYDDNAAVIIDQEGNPKGTRIFGAI
ARELRQLNFTKIVSLAPEVL"

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gene      complement(81898..83474)
          /gene="rpl16"
CDS       complement(join(81898..82296,83466..83474))
          /gene="rpl16"
          /codon_start=1
          /transl_table=11
          /product="50S ribosomal protein L16"
          /protein_id="BBK09544.1"
          /translation="MLSPKRTFRKQHRGRMKGISCRGNHICFGRYALQALEPAWITA
RQIEAGRRAMTRYARRGGKIWVRIFPDKPVTVRPTETRMGSGKGSPEYWVSVPKPGRI
LYEMSGVSETVAKTAMEIAACKMPIRTQFVISG"

gene      complement(83665..84321)
          /gene="rps3"
CDS       complement(83665..84321)
          /gene="rps3"
          /codon_start=1
          /transl_table=11
          /product="30S ribosomal protein S3"
          /protein_id="BBK09545.1"
          /translation="MGQKINPLGFR LGTTQSHHSFWFAKPKNFSKGLQEDERIRNCIK
DYVKKNKRISSGFEGIAIYIVIQKRIDLIVIIYIGFPNLLIEGRTRGIEELQMNVQKE
FHSVNRRLNIAITRIEKPYPQPNILAEYIALQLKNRVSRKAMKKAIELTEQTGTGKI
QVQIAGRIDGKEIARVEWIREGRVPLQTIRAKIDHCSHTIRTIIYGVLGIKIWIFVNQE
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gene      complement(84366..84731)
          /gene="rpl22"
CDS       complement(84366..84731)
          /gene="rpl22"
          /codon_start=1
          /transl_table=11
          /product="50S ribosomal protein L22"
          /protein_id="BBK09546.1"
          /translation="MIKNENS DREAKVLAQHICMSVFKARRVIDQIRGRSYEETLMIL
ELMPYRASYPILKLVYSAAANASHNMGLNEADLFISKAENVNGAIVKKLRPRARGRSY
LIKTTCHIKIFLKEKSKF"

repeat_region 84695..110660
              /rpt_type=inverted
gene      complement(84941..85219)
          /gene="rps19"
CDS       complement(84941..85219)
          /gene="rps19"
          /codon_start=1
          /transl_table=11
          /protein_id="BBK09547.1"

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/translation="MTRSLKKNPFVANHLAGRIEKLNRREEKEIIVTWSRASTIIPTM
IGHTIAIHNGKEHLPIYITDRMVGHKLGEFAPTLTFVRHARNDNKSRR"
gene      85343..85416
/gene="trnH-GUG"
tRNA      85343..85416
/gene="trnH-GUG"
/product="tRNA-His"
gene      complement(85460..86944)
/gene="rpl2"
misc_feature complement(join(85460..85890,86554..86944))
/gene="rpl2"
gene      complement(86963..87232)
/gene="rpl23"
CDS       complement(86963..87232)
/gene="rpl23"
/codon_start=1
/transl_table=11
/product="50S ribosomal protein L23"
/protein_id="BBK09548.1"
/translation="MDGIKYAVFTEKSIRLLGNNQYTSNVESGSTRTEIKHWVELFFG
VKVIAMNSHRLPGKGRMGHTMHYRRMIITLQPGYSIPPLIEKRT"
gene      complement(87398..87471)
/gene="trnI-CAU"
tRNA      complement(87398..87471)
/gene="trnI-CAU"
/product="tRNA-Ile"
gene      87540..94421
/gene="ycf2"
CDS       87540..94421
/gene="ycf2"
/codon_start=1
/transl_table=11
/product="Ycf2"
/protein_id="BBK09549.1"
/translation="MKRHQFKSWIFELREILREIKNSHYFLDSWIKFDSVGSFTHIFF
HQERFMKLFDPRIWSILLSRDSQGATSNRYFTIKGVVLLVVVVLISRINNREMKD
LYLMGLLPIMPNSIGPRKETLEESFWSSNRNRLIVSLLYLPKRKKISESCFMDPQEST
WVLPRKKKRIMPESNRGSRWWRNRIGKKRDSSCQISNETVAGIEISFKEKDSKYLEFL
FLSYTDDPIRKDHDWELFDRLSPRKKRNIINLNSGQLFEILGKDLICYLMSAFREKRP
IQGESFFKQQGAGATMQSNDIEHVSHLFSRNKWGISLQNC AQFHMWQFRQDLFVSWGK
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