HrβVPE1 通过调控胚乳外层细胞降解影响沙棘种子萌发

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HrβVPE1 Regulates Seed Germination in *Hippophae rhamnoides* by Controlling Degradation in Outer Endosperm Cells

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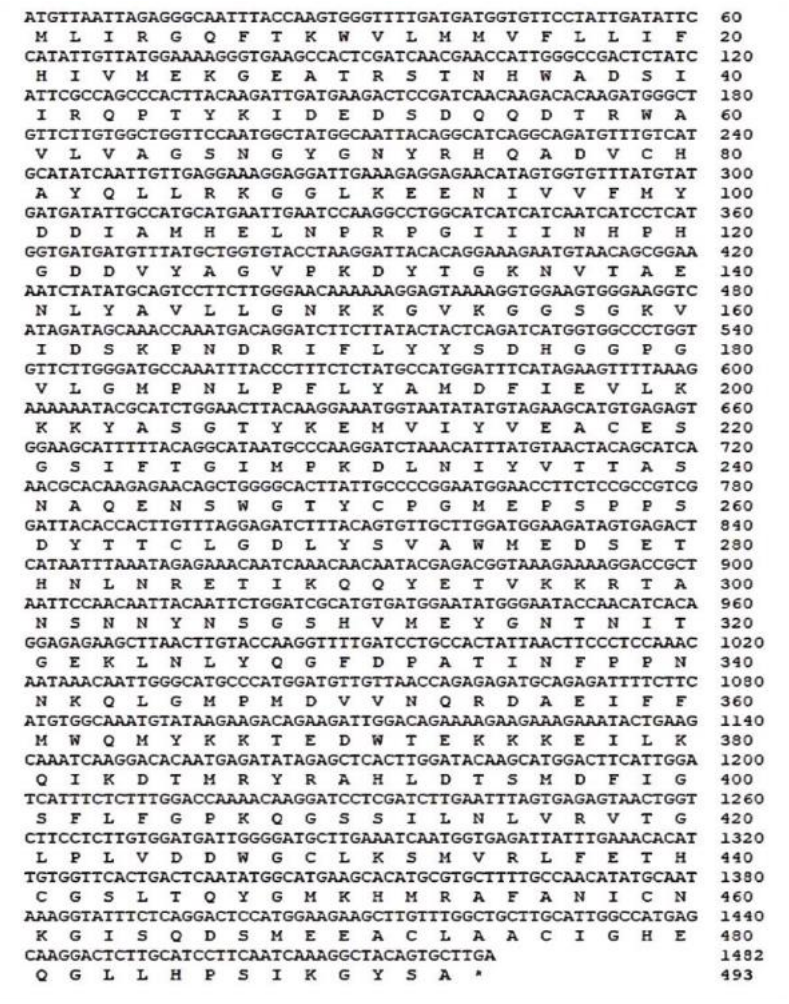
附表 1 qPCR 引物序列

Table 1 qPCR primer sequences

引物名称 Primer name	引物序列 Primer sequence (5′–3′)	大小 Size (bp)
HrVPE1-F	5'-AACAAGACACAAGATGGGC-3'	19
HrVPE1-R	5'-TCAATCCTCCTTTCCTCAAC-3'	20
HrActin2-F	5'-GGTCCTCTTCCAACCATCTCTC -3'	22
HrActin2-R	5'-CTGTGATCTCTTTGCTCATCCTGT -3'	24
AtActin2-F	5'-CTAAGCTCTCAAGATCAAAGGCTTA-3'	25
AtActin2-R	5'-ACTAAAACGCAAAACGAAAGCGGTT-3'	25
AtCEP1-F	5'-TATACGAACGGTGGAGGAGTCACC-3'	24
AtCEP1-R	5'-TCCGCATCTCCCGGTAAACACTCC-3'	24
AtXCP2-F	5'-GACACGACCTACAACAATG-3'	19
AtXCP2-R	5'-GGATAATCTTCTTCCTTGCG-3'	20
AtMYB30-F	5'-TCTGAGGCTTTATCTCCTGC-3'	20
AtMYB30-R	5'-TTGCGTCCTAAGAAACCC-3'	18
AtMC9-F	5'-TCTTGCCATAGTGGTGGTC-3'	19
AtMC9-R	5'-TGTTCGTTGTCTCAATAGCC-3'	20
AtMOD1-F	5'-CAATCCTGGAAACGCTTC-3'	18
AtMOD1-R	5'-AGGGTCTCTTACAAGTTGG-3'	19
AtDAD2-F	5'-GCTTTGATTCAGCAGGTTG-3'	19
AtDAD2-R	5'-ACACGAGAGAACTCCAGAG-3'	19
VPE-TRVII-GFP-F	5'-CTGTGAGTAAGGTTACCGTGATGATGTTTATGCTGGTGTACC-3'	42
VPE-TRVII-GFP-R	5'-TCGGGACATGCCCGGGCCCCACTCTCACATGCTTCTACAT-3'	40
pTRV2-seq-F	5'-GAGTCCCACATATTCGCACG-3'	

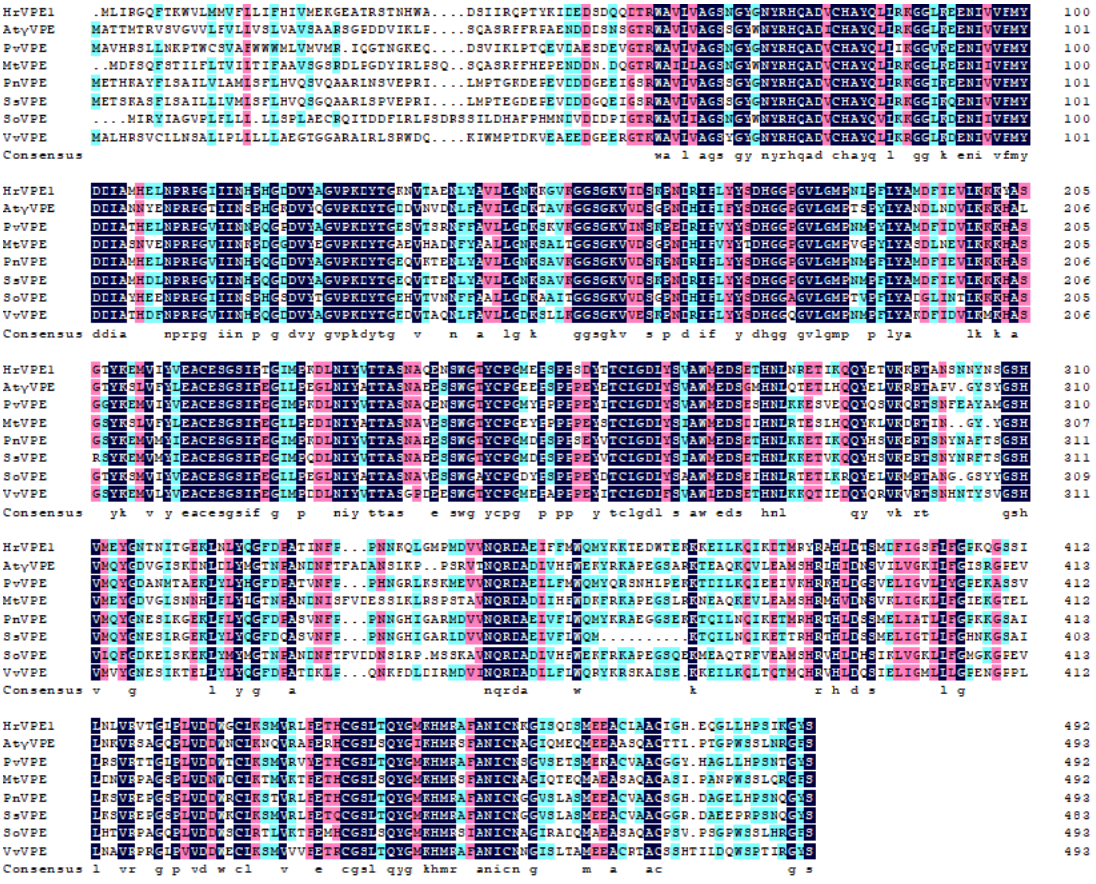


上方序列为核苷酸序列，下方为对应的氨基酸序列；起始密码子为 ATG，终止密码子为 TGA；该编码区序列全长 1482 bp，编码 493 个氨基酸

The nucleotide sequence (upper row) and the corresponding amino acid sequence in single-letter code (lower row) are shown. The initiation (ATG) and termination (TGA) codons are indicated. The coding sequence is 1,482 bp in length and encodes a protein of 493 amino acids.

附图 1　*HrβVPE1* CDS 的核苷酸和氨基酸序列

Fig. 1 Nucleotide and amino acid sequences of the *HrβVPE1* coding sequence.



HrβVPE1 与 AtγVPE、PvVPE、MtVPE、PnVPE、SsVPE、SoVPE、VvVPE 序列多重比对；深蓝色部分代表相同的氨基酸残基

Multiple sequence alignment of HrβVPE1 with AtγVPE、PvVPE、MtVPE、PnVPE、SsVPE、SoVPE and VvVPE sequences. The dark blue regions indicate identical amino acid residues.

附图 2　不同物种 VPE 序列多重比对

Fig. 2 Multiple Alignment of VPE Sequences from Different Species.