

附表 1 本研究所用的引物序列

Supplementary table 1 Primers used in this study

| 基因名<br>Gene ID | 正向引物序列<br>Forward primer sequence (5'-3')         | 反向引物序列<br>Reverse primer sequence (5'-3')          | 引物用途<br>Purpose of primer |
|----------------|---|--|---------------------------|
| <i>GAPDH</i>   | CACGGCCACTGGAAGCA                                 | TCCTCAGGGTTCCTGATGCC                               |                           |
| <i>FT3</i>     | GCGACGACTGGAGTTTCTTT                              | GAGCTGTTGGAAGAGCAGAA                               | qPCR                      |
| <i>TFL1</i>    | CACCTTCATTGGATCGTGACT                             | ATGTTTGGTCTTGGGCTCTC                               |                           |
| <i>SspFT3</i>  | CAGTGGTCTCACAACATGCAGAGAGGA<br>GATCCTCTTG CAG     | CAGTGGTCTCATACTACATCCTT<br>CTCCTCCTGTTCTG          |                           |
| <i>SoFT3</i>   | AACACGGGGGACTTTGCAACATGCAGA<br>GAGGAGACCCTCTTGTTG | TGAAGACAGAGCTAGTTACTACTAC<br>ATCCTTCTTCCTCCTGTTCTG | 基因克隆<br>Gene cloning      |
| <i>SspTFL1</i> | CAGTGGTCTCACAACATGTCTAGAAGCGT<br>TGAGGCTCTCG      | CAGTGGTCTCATACTCAACGCCTT<br>CTAGTGCTGTTTCC         |                           |
| <i>SoTFL1</i>  | CAGTGGTCTCACAACATGTCTAGGTCAGT<br>GGAGTCTCTCG      | CAGTGGTCTCATACTCAACGCCTT<br>CTAGTGCTGTTTCC         |                           |

附表 2 用于同源基因查找和系统发育树构建的代表性物种 PEBP 蛋白序列

Supplementary table 2 PEBP protein sequences from representative species for homologous gene identification and phylogenetic reconstruction

| 蛋白名 Protein ID   | 物种 Species             | 蛋白序列<br>Protein sequence   |
|------------------|------------------------|--|
| AtMFT            | 拟南芥 <i>Arabidopsis</i> | MAASVDPLVVGRVIGDVLDMFIPTANMSVYFGPKHITNGCEIKPSTAVNPPKVNISGHSDELYTLV<br>MTDPDAPSPSEPNMREWVHVVDIPGGTNPSRGKEILPYMEPRPPVGIHRYILVLFQRNSPVGLM<br>VQQPPSRANFSTRMFAGHFGLPVATVYFNAQKEPASRRR*   |
| AtFT             | 拟南芥 <i>Arabidopsis</i> | MQIRNSINMCRGFMPMIQIKEAETKTSKTETINTEKPPVCSRKMSINIRDPLIVSRVVDVLDPFN<br>RSITLKVTYGQREVTNGLDLRPSQVQNKPRVEIGGEDLRNFYTLVMVDPDVPSPSNPHLREYLHW<br>LVTDIPATTGTTFNEIVCYENPSPTAGIHRVVFILFRQLGRQTVYAPGWRQNFNTREFAEIYNLGL<br>PVAAVFYNCQRESGCGRRR* |
| AtATC            | 拟南芥 <i>Arabidopsis</i> | MARISSDPLMVGRVIGDVVDNCLQAVKMTVTYNSDKQVYNGHELFPSSVVTYKPKVEVHGDMR<br>SFFTLVMTDPDVPSPDPYLRHLHWIVTDIPGTTDVSFGKEIIGYEMPRNIGIHRFVYLLFKQTR<br>RGSVSVSPSYRDQFNTREFAHENDLGLPVAAVFFNCQRETAARRR*  |
| AtTSF            | 拟南芥 <i>Arabidopsis</i> | MSLSRRDPLVVGSVVDVLDPFTRLVSLKVTYGHREVTNGLDLRPSQVNLKPIVEIGGDDFRNFY<br>TLVMVDPDVPSPSNPHQREYLHWLVTDIPATTGNAFGNEVVCYESPRPPSGIHRIVLVLFRQLGRQ<br>TVYAPGWRQQFNTREFAEIYNLGLPVAASFYNCQRENGCGGRRT*  |
| AtTFL1           | 拟南芥 <i>Arabidopsis</i> | MENMGTRVIEPLIMGRVVDVLDFFPTTKMNVSYNKKQVSNGHELFPSSVSSKPRVEIHGGDLR<br>SFFTLVMIDPDVPGSPDPFLKEHLHWIVTNIPGTTDATFGKEVVSVELPRPSIGIHRFVFLFRQKQR<br>RVIFPNIPSRDHFNTRKFAVEYDLGLPVAAVFFNAQRETAARKR*  |
| AtBFT            | 拟南芥 <i>Arabidopsis</i> | MSREIEPLIVGRVIGDVLEMFNPSVTMRVTFNSNTIVSNGHELAPLSLLSKPRVEIGGQDLRSFFTLI<br>MMDPDAPSPSNPYMREYLHWMVTDIPGTTDASFGREIVRYETPKPVAGIHRVYFALFKQRGRQA<br>VKAAPETRECFTNAFSSYFGLSQPVAAVFYFNAQRETAPRRRPSY*   |
| LOC_Os01g02120.1 | 水稻 <i>Oryza sativa</i> | MARFVDPLVVGRVIGEVVDLFPVPSISMTAAYGDRDISNGCLVRPSAADYPLVRISGRRN<br>DLYTLIMTDPDAPSPDPSMREFLHWIVVNIPGGTDASKGEEMVEYMGRPRTVGIHRYVL<br>VLYEQKARFVDGALMPPADRPNFNTRAFAYHQLGLPTAVVHFNSQREPANRRR*  |
| LOC_Os04g33570.1 | 水稻 <i>Oryza sativa</i> | MSRVLEPLVVGKVIQEVVDNFNPTVKMTATYSSNKQVFNGHELFPSSAVVSKPRVEVQGGD<br>LRSFFTLVMTDPDVPSPDPYLRHLHWIVTDIPGTTDASFGREVVSYESPKNIGIHRF<br>VLVLFKQKRRQAVTPSSRDYFSTRFAADNDLGLPVAAVFYFNAQRETAARRR*  |
| LOC_Os04g41130.1 | 水稻 <i>Oryza sativa</i> | MSRDPLVVGHVVDLDPFNKASLKVLYNNKELTNGSELKPSQVANEPRIEAGRDIRN<br>LYTLVMVDPDPSPSNPTKREYLHWLVTDIPESANASYGNEVVSYESPKPTAGIHRFVFI<br>LFRQYVQQTIIYAPGWRPNFNTRDFSALYNLGGPPVAAVFFNCQRENGCGGRYIR*  |
| LOC_Os06g06300.1 | 水稻 <i>Oryza sativa</i> | MAGSGRDDPLVVGRIVDVLDPFVTRITNLSVSYGARIVSNGCELKPSMVTQQPRVVVGGN<br>DMRTFYTLVMVDPDAPSPSNPNLREYLHWLVTDIPGTTGATFGQEVMCYESPRPTMGIHR<br>LVFVLFQQLGRQTVYAPGWRQNFSTRFAELYNLGGSPVATVYFNCQREAGSGGRVYP*   |
| LOC_Os01g54490.1 | 水稻 <i>Oryza sativa</i> | MSGVPTVEPLVLAHVHDVLDPFRTMPLRITYNDRLLLAGAELKPSATVHKPRVDIGGT<br>DLRVFYTLVLDVDPDAPSPSNPSLSEMVIDIPGTTGVNQCQLMLYERPELRYGIHRMVFVL<br>FRQLGRGTVFAPEMRHNFHCRSFAQQYHLDIVAATYFNCQREAGSGGRFRSESS*   |
| LOC_Os02g39064.1 | 水稻 <i>Oryza sativa</i> | MSRDPLVVGNVVDLDPFIKASLRLVLYSNRELNGSELKPSQVANEPRIEAGRDMRT<br>LYTLVMVDPDPSPSNPTKREYLHWLVTDIPETNASFGNEIVSYESPKPTAGIHRFVFI<br>LFRQSVQQTIIYAPGWRQNFNTRDFSALYNLGGPPVAAVFFNCQRENGCGGRYIR*   |
| LOC_Os12g13030.1 | 水稻 <i>Oryza sativa</i> | MSMSRDPLVVGSIQVDVDFHGASALLRLFYNHREMTSGSELRPSQVAGEPAVQITGGRDGRAL<br>YTLVMVDPDAPSPSNPSKREYLHWLVTDVPEGGDTSKGTEVVAYESPRPTAGIHRVLFVFRQTV  |

RQSIYAPGWRSNFNTRDFAACYSLGSPVAAAYFNCQREGCGGRRYRS\*

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| LOC_Os12g05590.1 | 水稻 <i>Oryza sativa</i>       | MSRSVEPLVVGRRVIGVIDSFNPCTKMIVTYNSNKLVFNGHEFYPSAVVSKPRVEVQGGD<br>MRSFFTLVMTDPDVPGPSDPYLREHLHWIVTDIPGTTDASFGREIISYESPKPSIGHRF<br>VFVLFKQKRRQAVVVPSSRDHFNTRQFAEENELGLPVAAVYFNAQRETAARRR*<br>MAGSGRDRDPLVVGRRVVGVDLDAFVRSTNLKVTYGSKTVSNGCELKPSMVTHQPRVEVGGND |
| LOC_Os06g06320.1 | 水稻 <i>Oryza sativa</i>       | MRTFYTLVMVDPDAPSPDPNLREYLHWLVTDIPGTTAASFGQEVCMCYESPRPTMGIHRLVFLV<br>QQLGRQTVYAPGWRQNFNTKFAELYNLGGSPVAAVYFNCQREAGSGGRRVYP*<br>MDPLYLSQIIPDVLDPFISTISLRVTYNSRLLLAGAALKPSAVVSKPQVDVGGNDMRVSY  |
| LOC_Os05g44180.1 | 水稻 <i>Oryza sativa</i>       | TLVLVDPDAPSPDPSLREYLHWMVTDIPETTSISFGEELILYEKPEPRSGIHRMVFLV<br>RQLGRRTVFAPEKRHNFCRIFARQHHLNIVAATYFNCQREAGWGGRKFAPEGP*<br>MSRSVEPLVVGRRVIGEVLDTFNPKMKMIVTYNSNKLVFNGHELIPSAVVSKPRVEVQGGD  |
| LOC_Os11g05470.1 | 水稻 <i>Oryza sativa</i>       | LRSFFTLVMTDPDVPGPSDPYLREHLHWIVTDIPGTTDASFGREVISYESPKPNIGIHRF<br>IFVLFKQKRRQTVIVPSFRDHFNTRRFAEENDLGLPVAAVYFNAQRETAARRR*<br>MANDSLTRSHIVGDVLDQFSNSVPLTVMYDGRPVFNGKEFRSSAVSMKPRVEIGDDFRF  |
| LOC_Os06g35940.1 | 水稻 <i>Oryza sativa</i>       | AYTLVMVDPDAPNPNPTLREYLHWMVTDIPSSTDDSFGREIVTYESPSPTMGIHRIVMV<br>LYQQLGRGTVFAPQVRQNFNLRSFARRFNLGKPVAAAMYFNCQRPTGTGGRRPT*<br>MSRVLEPLIVGKVIGEVLDNPNPTVKMTATYGANKQVFNHGFPSAVAGKPRVEVQGGD   |
| LOC_Os02g32950.1 | 水稻 <i>Oryza sativa</i>       | LRSFFTLVMTDPDVPGPSDPYLREHLHWIVTDIPGTTDASFGREVVSYESPRPNIGIHRF<br>ILVLFKQKRRQAVSPPPSRDRFSTRQFAEDNDLGLPVAAVYFNAQRETAARRR*<br>MSSANSLVLRVIGDVVDLFSPEVTLRVMYNGVRVNGEDLRPSAVSARPSVEVMVDPDA   |
| LOC_Os01g10590.1 | 水稻 <i>Oryza sativa</i>       | PNPNPTLREYLHWLVTDIPGTTDANYGREVVICYESPRPAAGIHRVAVVLFQRMARGGVD<br>QPPLLRHNFSTRGFADDHALGAPVAAAFTCKPEGGTGGRFRPPSRHS*<br>MANDSLATGRVIGDVLDPFISTVDLTVMYGDDGMPVISGVELRAPVAEKPVVEVGGDDLRAVY  |
| LOC_Os02g13830.1 | 水稻 <i>Oryza sativa</i>       | TLVMVDPDAPNPNPTLREYLHWMVTDIPASTDATYGREVVICYESPNPTTGIHRMVLVLFQRLGR<br>ETVYAPAVRHNFTRAFARRYNLGAAPVAAVYFNCQQRQAGSGGRRFTGPYTSRRRQA*<br>MTGSSCPADSSQLLYPRRGAPTTTTTSRPLHPLIAHAPYDVVLHRSVVLSSARDQAE   |
| LOC_Os01g11940.1 | 水稻 <i>Oryza sativa</i>       | LASFWCYIRLGGGASAKRAAGEDDRSRSSLTAARGGGGETMSGRGRGDPLVLRVVGDDVDPF<br>VRRVALRVAYGAREVANGCELPSAVADQPRVAVGGPDMRTFYTLVMVDPDAPSPDPNLREY<br>LHWLVTDIPATTGVSGTEVVCYESPRPVLGHRVFLLEQLGRQTVYAPGWRQNFSTRDFAEL<br>YNLGLPVAAVYFNCQRESGTGGRM*                            |
| LOC_Os09g33850.1 | 水稻 <i>Oryza sativa</i>       | MSRGRDPLALSQVIGDVLDPFIKSAAMRINYGEKEITNGTGVSSAVFTAPHVEIEGRDQTKLYTL<br>VMVDPDAPSPSKPEYREYLHWLVTDIPEAIDARFGNEIVPYEAPRPPAGIHRVFLVLFKQEARQTV<br>YAPGWRQNFNDRDFAFYNLGPPVAAALYFNCQKESGVGGRR*  |
| LOC_Os11g18870.1 | 水稻 <i>Oryza sativa</i>       | MSRDPLVVGHVVDIVDPFVTTASLRVFNYSKEMTNGSELKPSQVLNQPRIYIEGRDMRT<br>LYTLVMVDPDAPSPSNPTKREYLHWMVTDIPETTDARFGNEIVPYESPRPTAGIHRFVFI<br>LFRQSVRQTTYAPGWRQNFNTRDFAELYNLGGSPVAAALFFNCQRENGCGGRRRCVR*  |
| LOC_Os06g30370.1 | 水稻 <i>Oryza sativa</i>       | MASHVDPLVVGRRVIGDVVDLFPVTTAMSVRFGTKDLTNGCEIKPSVAAAAPPVQIAGRVELFAL<br>VMTDPDAPSPSEPTMREWLHWLVVNIPGGTDPSQGDVVVPYMGPRPPVGIHRYVMVLFQKAR<br>VAAPPDEDAARARFSTRAFADRHDGLPVAAALYFNAQKAPANRRRRY*  |
| SbFT1            | 高粱<br><i>Sorghum bicolor</i> | MAGSGRERETLVVGRRVVGVDLDPFVRTNLRVSYGTRTVSNGCELKPSMVVNQPRVEVGGPDM<br>RTFYTLVMVDPDAPSPDPNLREYLHWLVTDIPGTTGAAGFQEVICYESPRPTMGIHRVFLVLFQ<br>LGRQTVYAPGWRQNFNTRDFAELYNLGGPPVAAVYFNCQREAGSGGRRMYS*  |

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| SbFT2  | 高粱<br><i>Sorghum bicolor</i> | MQRGDPLVVGRIIGDVVDPFVRRVPLRVAYAAAREISNGCELRPSAIADQPRVEVGGPDMRTFYTL<br>VMVDPDAPSPSDPNLREYLHWLVTDIPATTGVSGTEVVCYESPRPVLGIHRMVFLFLQQLGRQT<br>VYAPGWRQNFSTRDFAELYNLGLPVAAVVFNQCRESGTGRRM*            |
| SbFT3  | 高粱<br><i>Sorghum bicolor</i> | MSRDPLVVGHVVDILDPIFKTASLKVLYNNKELTNGSELKPSQVANEPRIEIGGRDMRNLTYTLV<br>MVDPDSPSPSNPTKREYLHWLVTDIPESANASYGNEIVSYENPKPTAGIHRFVFLFRQSVQQTIVY<br>APGWRQNFNTRDFSALYNLGPVAAVFNQCQRENGCGGRRYIR*           |
| SbFT4  | 高粱<br><i>Sorghum bicolor</i> | MSRDPLVVGNVVDILDPIFKSASLRVLYNNREL TNGSELKPSQVANEPRIEAGHDMRTLYTLV<br>MVDPDSPSPSNPTKREYLHWLVTDIPESTNVSYGNEVSVYESPKPSAGIHRFVFLFRQSVRQTIY<br>APGWRQNFNTRDFSALYNLGPVAAVFNQCQRENGCGGRRYIR*             |
| SbFT5  | 高粱<br><i>Sorghum bicolor</i> | MFNMSRDPLVVGHVVDIVDPFITASLRVLYNNKEMTNGSDLKPSQVMNEPRVHISGRDMRTL<br>YTLVMVDPDAPSPSNPTKRENHLHWLVTDIPETTDASFGNEIVPYESPRPTAGIHRFAFVFLFRQSVRQ<br>TTYAPGWRSNFNTRDFAAIYNLGPVAAVFNQCQRENGCGGRRYIR*        |
| SbFT6  | 高粱<br><i>Sorghum bicolor</i> | MSRGRDPLALSQVIGDVLDPFIKATMRINYGDKEITNGTGLRASAVFNAPHVEIEGHDQTKLYTL<br>VMVDPDAPSPSPKPEYREYLHWLVTDIPEARDIRFGNEIVPYESPRPPAGIHRFVFLFKQARQTVY<br>APGWRQNFNIRDFSAIYNLGPVAAALYFNQCQKESGVGGRRFLGSS*       |
| SbFT7  | 高粱<br><i>Sorghum bicolor</i> | MANDSLVTARVIGDVLDPFYSSIDLMLVFNMGPIVSGMELRAPTVSERPRVEIGDDYRVAYTLV<br>MVDPDAPNPSNPTLREYLHWMVTDIPASTDDTYGREVMCYEAPNPTGIHRMVFLVFLRQLGRET<br>VYAPSWRHNFNTRGFARRYNLGPVAAAMYFNQCQRQNGSGGRRFTGAYTGGRHG*  |
| SbFT8  | 高粱<br><i>Sorghum bicolor</i> | MTDVEPLVLAHVIRDVLDSFTPTIPLRIA YNNRLLLAGVELKPSAVVNNPRVDVGGTDLRFYTL<br>VLVDPDAPSPSNPSLREYLHWMVIDIPGTTGANFGQELMFYERPEPRSGIHRMVFLFRQLGRGTV<br>FAPDMRHNFNCKNFARQYHLDIVAATYFNQCQREAGSGGRRFRPESS*       |
| SbFT9  | 高粱<br><i>Sorghum bicolor</i> | MANDSLTRGHIIGDVLDPFTSSVPLTVMYDGRPVFDGMEFRASAVSVKPRVEIGDDDFRVAYTLV<br>MVDPDAPNPSNPTLREYLHWMVTDIPASTDDSFRELIPYENPSPTMGIHRVFLVLYQLGRGTVF<br>APQVRQNFNLRNFARRFNLGKPVAAAMYFNQCQRQTGTGGRFT*            |
| SbFT10 | 高粱<br><i>Sorghum bicolor</i> | MSATNPLVTAHVIQDVLDPFTPTIPLRIA YNNKLLLASAELKPSAVVSKPRVDVGGNDMRAFYTL<br>VLIDPDAPSPSHPSLREYLHWMVTDIPETTSVNFQELVFYERPDPRSGIHRVFLVFLRQLGRGTVF<br>APEMRHNFNCRSFARQYHLSVATATYFNQCQREGGSGGRRFREE*        |
| SbFT11 | 高粱<br><i>Sorghum bicolor</i> | MSSRDPLVVGSIVDIVDYSASALLRVMYGGREITCGSELRPSQVAGEPTVHITGGRRDGTAPFY<br>TLLMLDPDAPSPSNPTKREYLHWLVTDIPEGAGANHGNEVVAYESPRPSAGIHRFVFLFRQAIHQ<br>SIYAPGWRANFNTRDFAACYSLGPVAAATYFNQCQREGGCGGRRYIR*        |
| SbFT12 | 高粱<br><i>Sorghum bicolor</i> | MAANDSLVTAHVIGDVLDPFYTTVDMMLFDGTPIISGMELRAPAVSDRPRVEIGDDYRVAYTL<br>VMVDPDAPNPSNPTLREYLHWMVTDIPASTDNTYGREMMC YEPAPSTGIHRMVFLVFLQQLGRD<br>TVFAAPSRHNFNTRAFARRYNLGPVAAAMFNQCQRQTGSGGPRFTGPYTSRRRAG* |
| SbFT13 | 高粱<br><i>Sorghum bicolor</i> | MSRDPLVVGNVVDILDPIFKSASLRVLYNNREL TNGSELKPSQVANEPRIEAGHDMRTLYTLV<br>MVDPDSPSPSNPTKREYLHWLVTDIPESTNVSYGNEVSVYESPKPSAGIHRFVFLFRQSVRQTIY<br>APGWRQNFNTRDFSALYNLGPVAAVFNQCQRENGCGGRRYIR*             |
| SbMFT1 | 高粱<br><i>Sorghum bicolor</i> | MARFVDPLVVGRIIGDVVDPFVRRVPLRVAYAAAREISNGCELKPSATAAPPLVRISGRNRNDLYTLI<br>MTDPDAPSPSDPTMREYLHWLVTDIPGTTDASKGEEVVEYMGPRPPVGIHRYVFLVFLFEQKTRVHA<br>EAPRERANFNTRAFAAAHELGLPTAVVYFNAQKEPANRRR*         |
| SbMFT2 | 高粱<br><i>Sorghum bicolor</i> | MAAHVDPLVVGRIIGDVVDFVPTVAMSVRFGTKDVTNGCEIKPSLTAAPVVIAGRANDLFT<br>LVMTDPDAPSPSEPTMRELIHWLVVNIPEGADPSQGETVMPYLGPCPPVGIHRYVFLVYVYQKARF<br>RAPPVLAPGAEVEASRARFRNRAFADRHDGLPVAAMYFNAQKEPANRHRHY*      |
| SbTFL1 | 高粱<br><i>Sorghum bicolor</i> | MSRVLEPLIVGKIVIGELVDFHFNPTVKMVTYNSNKQVFNHGHEFFPSAVTAKPRVEVQGGDLRSFF<br>TLVMTDPDVPGPSDPYLRHLHWLVTDIPGTTDASFGREVVSYETPKPNIGIHRFVFLFRQKRRQA   |

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| SbTFL2 | 高粱<br><i>Sorghum bicolor</i> | VNPPSSKDRFSTRQFAEDNDLGLPVAAVYFNAQRETAARRR*<br>MSRSVEPLIVGRVIGEVLDSEFNPCVKMIVTYNSNKLVEFNGHEIYPSAVVSKPRVEVQGGDLRSFFT<br>LVMTDPDVPGSPDPYLREHLHWIVTDIPGTTDASFGREVISYESPRPNIGIHRFIFVLFKQKGRQTVT<br>VPSSRDHFNTRQFAEENDLGLPVAAVYFNAQRETAARRR* |
| SbTFL3 | 高粱<br><i>Sorghum bicolor</i> | MSRSVESLIVGRVIGEVLDSEFSPCVKMVVTYNSNKLVEFNGHEIYPSAVVSKPRVEVQGGDLRSFFT<br>LVMTDPDVPGSPDPYLREHLHWIVTDIPGTTDASFGREVISYESPRPSIGIHRFIFVLFKQKRRQTVA<br>MPSSRDHFITRQFAEENDLGLPVAAVYFNAQRETAARRR*   |
| SbTFL4 | 高粱<br><i>Sorghum bicolor</i> | MSRVLEPLVVGKVIGEVLDNFNPTVKMTVTYGSNNQVFNHGHEFFPSAVLSKPRVEVQGDDMRSFF<br>TLVMTDPDVPGSPDPYLREHLHWIVTDIPGTTDASFGTELAMYESPYPYIGIHRFVFLFKQKSRQ<br>SVRPPSSRDYFSTRRFAADNDLGLPVAAVYFNAQRETAARRR*   |

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