**Mapping of the pepper purple fruit gene and development of molecular markers based on BSA-seq**

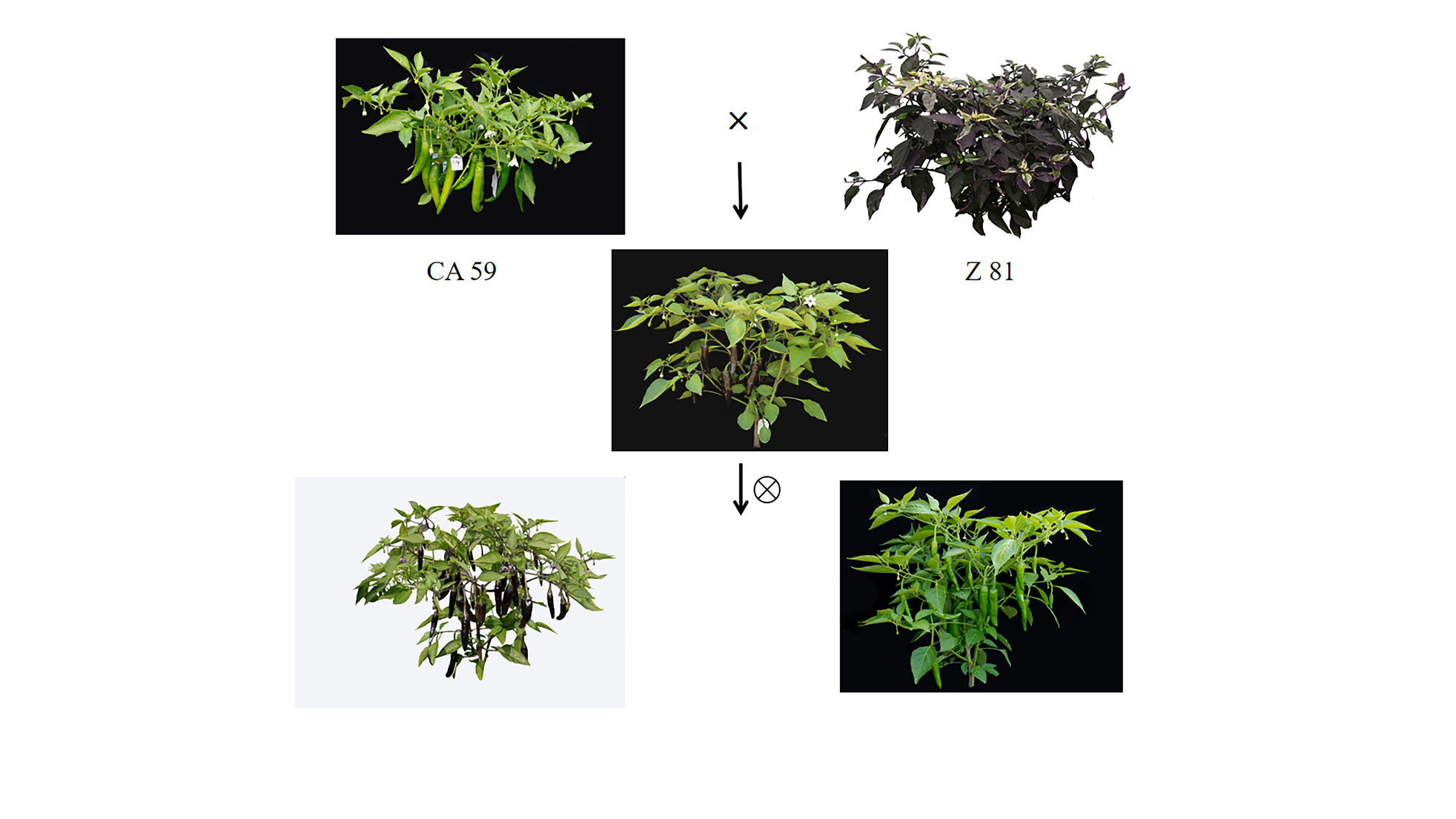
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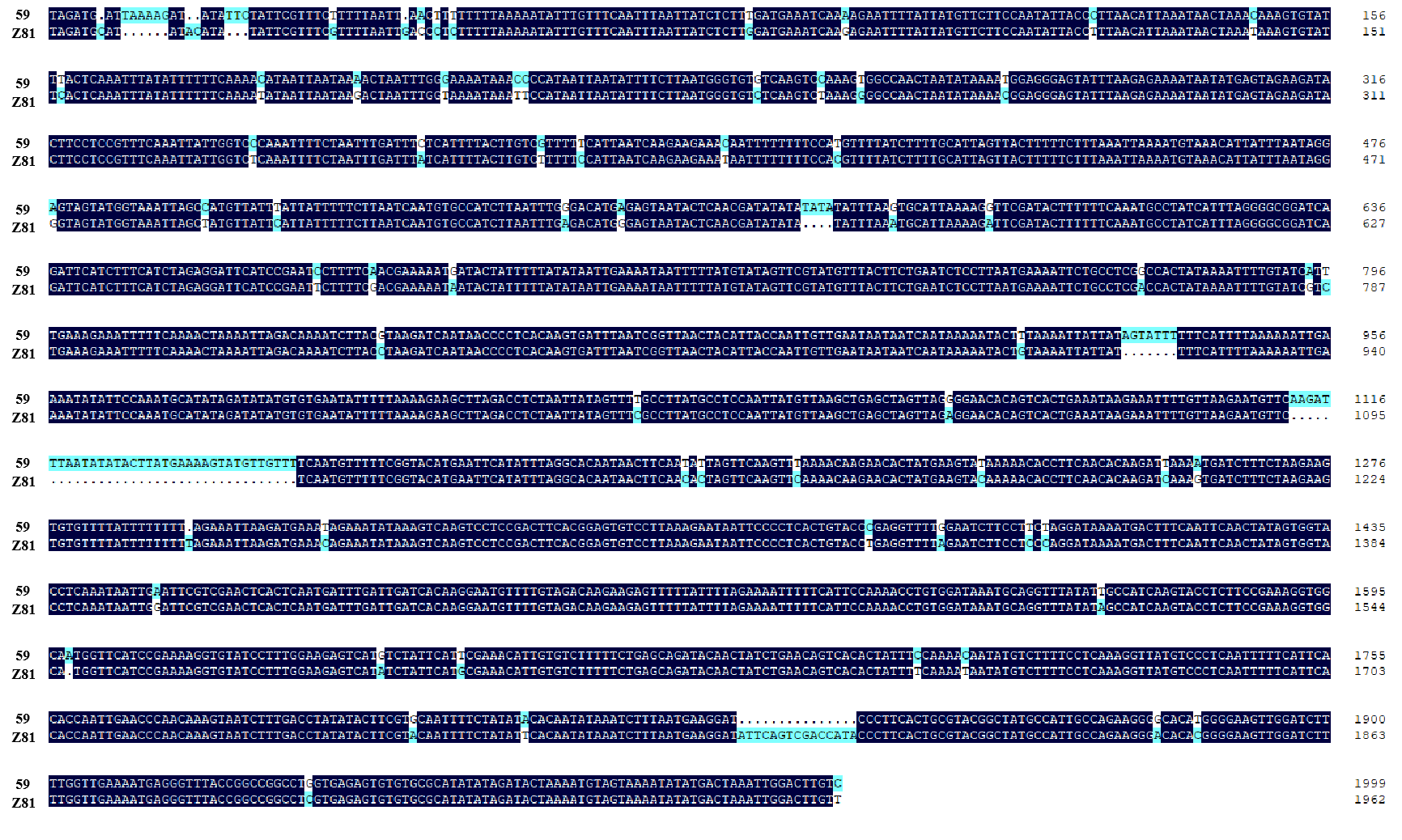
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**Fig.S1** Genetic map of purple fruit in CA59 × Z81 hybrid combination



**Fig. S2** Comparison of *CaMYB1* promoter sequences of capsicum CA59 and Z81

**Table S1** Primer information for InDel marker of Chr09 location interval of purple fruit

|  |  |  |
| --- | --- | --- |
| Primer name | Physical location | sequence（5'-3'） |
| InDel 47 | 30,139,584 | F：ACTATCCTTTAGCTTGGGCC |
| R：GTCCAAAGTGAAGAAGGAGATG |
| InDel 52 | 30,317,505 | F：TATGGATTCACCCCCGC |
| R：GGGATGTAAGTGGAGATGCTT |
| InDel 19 | 49,354,808 | F：GGGATAGGATACTTATATCGAGG |
| R：TGAAACCCTTACTCAGTAGATCC |
| InDel 39 | 49,394,949 | F：TGGAGCAAACATAAAGGACAAC |
| R：TGGCTCACTACCTACATGAAGAC |
| InDel 40 | 67,962,860 | F：CTGCCATTTTCATGTGCTTC |
| R：CCATTCATCATCAACACCTGA |
| InDel 33 | 85,481,968 | F：AGGTTAAGGACTTAGCTGATGAC |
| R：ATGGCAAGGTTGACGGA |
| InDel 3 | 148,198,714 | F：CCATAATAGTTAAGCTCCGT |
| R：GGTCCAGCCCAAGATACA |
| InDel 4 | 198,112,666 | F：TGTGATTTTGAGACGGTAAG |
| R：AATTGAGGTGCCAATACGA |

**Table S2** Primer information used for InDel labeling of Chr10 localization interval of purple fruit

|  |  |  |
| --- | --- | --- |
| Primer name | Physical location | sequence（5'-3'） |
| InDel 21 | 49,889,674 | F：GTACATATTGTGTCACTCTGGGG |
| R：TCTAGCCCTGTATAGCCTCAGA |
| InDel 15 | 50,849,619 | F：CAAGACATAAAACCCAACCACC |
| R：GATCTACCAAACCCCAACAAGT |
| InDel 16 | 75,122,544 | F：AAGGTAGTTTCAGTAGAAGCCATAG |
| R：CCCACGATAAGGGAACTCAC |
| InDel 22 | 99,138,983 | F：TATTGAGAAAAGGGCTACTTGG |
| R：ACTGGGGCAAGTTTTAAGAAC |
| InDel 9 | 100,085,765 | F：TGAGACCGAGGACGAATGC |
| R：CCCCAGTTTCTCATCTTCTCT |
| InDel 25 | 150,053,011 | F：AGAGGCTATGTGATAAGGCTG |
| R：CTGAAAAAGAAGTAACTGGGG |
| InDel 38 | 160,548,634 | F：GTTCTTTTGTAAGTTGTCCTCTCC |
| R：GTGTAAAACTAATACTCTCTGCCTC |
| InDel 45 | 165,929,330 | F：CCCTTCTTTGGCGGTATTA |
| R：ATCCATGTTACACTTCAACGTC |
| InDel 76 | 170,671,885 | F：AGTGGAATGAAAATGGAGGTC |
| R：TGGAGTGGTATGAAGTGTGATGT |
| InDel 28 | 170,685,087 | F：TTGATTTGAAGGACTTGGAGG |
| R：GTTTAAGTAGCATGCATTGAGG |
| InDel 57 | 170,851,458 | F：TACTATGGTAGTCAAGCCCAGG |
| R：CATCATGTGTAAACACAAGCCA |
| InDel 58 | 171,454,792 | F：AAACAGCCTCTCTACTTCGTT |
| R：GGACAGGGAGCTCTATCTTATTAC |
| InDel 53 | 173,084,344 | F：GGAGTACCAGTAAGATCCTCAGA |
| R：GCTACGCTTCATTAGATTGTAGG |

**Continuing Table S2** Primer information used for InDel labeling of Chr10 localization interval of purple fruit

|  |  |  |
| --- | --- | --- |
| Primer name | Physical location | sequence（5'-3'） |
| InDel 54 | 174,380,012 | F：ACCAACATCCTAAAGTGGCA |
| R：GTAGGAACCTCAATGGCATAT |
| InDel 18 | 175,186,254 | F：TGAGACCGAGGACGAATGC |
| R：CCCCAGTTTCTCATCTTCTCT |
| InDel 34 | 180,507,714 | F：GATCTTACCTCTCACGGCATT |
| R：ACCCTGGACTCAAGAGGTG |
| InDel 36 | 185,224,155 | F：TCCTCCCCTTCCTCTTTTATG |
| R：CGACTGCTGGTCGCTTTT |
| InDel 59 | 185,282,698 | F：TTCCACCAAATTGTCCCAG |
| R：GCTTCCATCAACGCATCG |
| InDel 55 | 185,318,828 | F：CACAAACAGAGGGCAACAA |
| R：CCTAATTGAAAGCCCTAATGTG |
| InDel 66 | 185,411,816 | F：GTTCTGGCAACATCAGTTCC |
| R：CTCAAAATAACGAGCGCAT |
| InDel 67 | 185,664,068 | F：TGGGAGGTGTGTGTATATAATGG |
| R：GCCTCACCTTATCATATACCCT |
| InDel 75 | 186,514,350 | F：TCCGTCAACTCATTTCATCAC |
| R：TTACTCGTTTCCATCGGTGT |
| InDel 74 | 186,893,100 | F：ACTCTTACCAAGAAGCAAACC |
| R：CACCTCTATGAATGCCCTGT |
| InDel 73 | 187,604,997 | F：AAGTTGAAACATGTTTCCGCTC |
| R：TTCCCATGATGACATCCTT |
| InDel 72 | 188,063,546 | F：AAGTGCTACGATATTAGATCCG |
| R：CTTGATATAAATAAGGGCGGAG |
| InDel 62 | 193,242,416 | F：AGTCGTGAGTTCTATCTTGGTCA |
| R：CGGACTCTCCGAATATCAAG |

**Continuing Table S2** Primer information used for InDel labeling of Chr10 localization interval of purple fruit

|  |  |  |
| --- | --- | --- |
| Primer name | Physical location | sequence（5'-3'） |
| InDel 68 | 193,242,416 | F：AGTCGTGAGTTCTATCTTGGTCA |
| R：CGGACTCTCCGAATATCAAG |
| InDel 49 | 194,065,279 | F：GCTCGTGCACTACATCATTCA |
| R：ACCTAGATTCCTAAGCAACTGC |
| InDel 12 | 201,460,099 | F：ACTAGTTACCCAGTTGCGTAGTAAC |
| R：CAGAGTCAAATTATCAAGCAGCC |

**Table S3** Fluorescence quantitative PCR reaction system

|  |  |
| --- | --- |
| constituent | Usage amount |
| SYBR qPCR Master Mix | 5 μL |
| Forward primer | 0.5 μL |
| Reverse primer | 0.5 μL |
| cDNA template | 1 μL |
| ddH2O | To 10 μL |

**Table S4** *CaMYB1* gene full-length cloning primer

|  |  |
| --- | --- |
| Primer name | sequence（5'→3'） |
| *CaMYB1*- F | TTTGGTTGAAAATGAGGGTTTACC |
| *CaMYB1*- R | TCATCAAGATAACAATTAAGACGTTAAATT |

**Table S5** Gene cloning PCR reaction system

|  |  |
| --- | --- |
| constituent | Usage amount |
| 2×Hieff Canace® Gold PCR Master Mix | 25 μL |
| Forward primer | 2 μL |
| Reverse primer | 2 μL |
| DNA template (concentration 100 ng/μL) | 5 μL |
| ddH2O | To 50 μL |

**Table S6** Summary of genome resequencing data of capsicum purple fruit traits

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| sample | Total reads | Base number(Gb) | Q20(%) | Q30(%) | GC content(%) |
| CA59 | 233,617,298 | 36.78 | 98.9 | 91.9 | 35.8 |
| Z81 | 233,615,036 | 35.04 | 97.2 | 91.3 | 35.5 |
| Green fruit mixing pool | 1,060,207,642 | 159.03 | 95.9 | 88.8 | 35.7 |
| Purple fruit mixed pool | 939,967,584 | 141.00 | 95.8 | 88.4 | 35.7 |

**Table S7** Gene function annotation in the candidate regions of purple fruit traits of capsicum

|  |  |
| --- | --- |
| Gene ID | Functional annotation |
| Capann\_59V1aChr10g016200 | PREDICTED: transcription factor *MYB1-like* [*Capsicum annuum*] |
| Capann\_59V1aChr10g016210 | PREDICTED: uncharacterized LOC107856655 [*Capsicum annuum*] |
| Capann\_59V1aChr10g016220 | FBK29\_ARATH F-box/kelch-repeat protein At1g74510[*Capsicum annuum*] |
| Capann\_59V1aChr10g016230 | PREDICTED: uncharacterized LOC107854819 [*Capsicum annuum*] |

**Table S8** *CaMYB1* promoter cis-acting element

|  |  |  |  |
| --- | --- | --- | --- |
| Cis-acting element | motif（5'→3'） | function | source |
| ABRE | ACGTG | cis-acting element involved in the abscisic acid responsiveness | PlantCARE |
| AAGAA-motif | GAAAGAA |  | PlantCARE |
| AE-box | AGAAACAA | part of a module for light response | PlantCARE |
| AT~TATA-box | TATATA |  | PlantCARE |
| ATC-motif | AGTAATCT | part of a conserved DNA module involved in light responsiveness | PlantCARE |
| ATCT-motif | AATCTAATCC | part of a conserved DNA module involved in light responsiveness | PlantCARE |
| Box 4 | ATTAAT | part of a conserved DNA module involved in light responsiveness | PlantCARE |
| CAAT-box | CCAAT | common cis-acting element in promoter and enhancer regions | PlantCARE |
| CAT-box | GCCACT | cis-acting regulatory element related to meristem expression | PlantCARE |
| ERE | ATTTTAAA |  | PlantCARE |
| G-Box | CACGTT | cis-acting regulatory element involved in light responsiveness | PlantCARE |
| GT1-motif | GGTTAA | light responsive element | PlantCARE |
| LTR | CCGAAA | cis-acting element involved in low-temperature responsiveness | PlantCARE |
| MYB | CAACCA |  | PlantCARE |
| MYC | CAATTG |  | PlantCARE |
| Sp1 | GGGCGG | light responsive element | PlantCARE |
| STRE | AGGGG |  | PlantCARE |
| TATA | TATAAAAT |  | PlantCARE |

**Continuing table S8** *CaMYB1 promoter cis-acting element*

|  |  |  |  |
| --- | --- | --- | --- |
| Cis-acting element | motif（5'→3'） | function | source |
| TATA-box | TATA | core promoter element around -30 of transcription start | PlantCARE |
| TCA | TCATCTTCAT |  | PlantCARE |
| TCA-element | TCAGAAGAGG | cis-acting element involved in salicylic acid responsiveness | PlantCARE |
| TCT-motif | TCTTAC | part of a light responsive element | PlantCARE |
| TGA-element | AACGAC | auxin-responsive element | PlantCARE |
| Unnamed\_\_1 | CGTGG |  | PlantCARE |
| Unnamed\_\_4 | CTCC |  | PlantCARE |
| W box | TTGACC |  | PlantCARE |
| WRE3 | CCACCT |  | PlantCARE |
| WUN-motif | AAATTTCTT |  | PlantCARE |
| - | motif\_sequence | short\_function | PlantCARE |

**Table S9** Difference of cis-acting elements of CaMYB1 promoter between CA59 and Z81 capsicum

|  |  |  |
| --- | --- | --- |
| Cis-acting element | The number of peppers in CA59 | The number of peppers in Z81 |
| AE-box | 1 | - |
| AT~TATA-box | 10 | 8 |
| CAAT-box | 46 | 41 |
| CAT-box | 2 | - |
| ERE | 2 | 1 |
| MYC | 7 | 5 |
| TATA | 2 | 1 |
| TCT-motif | 2 | 1 |
| TGA-element | 1 | - |
| ABRE | - | 1 |
| G-Box | - | 1 |
| TCA-element | 1 | 2 |