

# 大蒜 *PIFs* 家族基因的鉴定、表达分析及互作

赵玉萍<sup>1, 2</sup> 路海玲<sup>1, 2</sup> 许凯<sup>1, 2</sup> 樊晨晨<sup>2, 3</sup> 梁健<sup>2</sup> 王丽<sup>4</sup> 王乐<sup>2\*</sup>

(1. 青海大学生态环境工程学院, 西宁 810016; 2. 青海大学省部共建三江源生态与高原农牧业国家重点实验室, 西宁 810016; 3. 青海大学农牧学院, 西宁 810016; 4. 青海大学农林科学院, 西宁 810016)

## Identification, Expression Analysis and Interaction of Garlic *PIFs* Family Genes

ZHAO Yu-ping<sup>1,2</sup> LU Hai-ling<sup>1,2</sup> XU Kai<sup>1,2</sup> FAN Chen-chen<sup>2,3</sup> LIANG Jian<sup>2</sup> WANG Li<sup>4</sup> WANG Le<sup>2\*</sup>

(1. College of Eco-Environmental Engineering, Qinghai University, Xining 810016; 2. State Key Laboratory of Plateau Ecology and Agriculture, Qinghai University, Xining 810016; 3. College of Agriculture and Husbandry, Qinghai University, Xining 810016; 4. Academy of Agriculture and Forestry Sciences, Qinghai University, Xining 810016)

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附表 1 *AsPIFs* 家族基因克隆引物  
Table S1 Cloning primers for *AsPIFs* family genes

| 基因名称          | 基因 ID        | 类型   | 序列                      | 长度          |
|---------------|--------------|------|-------------------------|-------------|
| Gene name     | Gene ID      | Type | Sequence (5'–3')        | Length (bp) |
| <i>AsPIF1</i> | Asa1G02508.1 | F    | ATGCAAAGCCAAAGTAACCG    | 20          |
|               |              | R    | TCAACCCAAATGACCATTCTG   | 21          |
| <i>AsPIF4</i> | Asa2G06268.1 | F    | ATGGTTCTCAGGGAAGACC     | 19          |
|               |              | R    | TCACTACCCAAATGACC       | 18          |
| <i>AsPIF5</i> | Asa7G00403.1 | F    | ATGCCTCTCTCTGAAGTCCC    | 20          |
|               |              | R    | TTAAGTGCTCGATCTGTTCCG   | 21          |
| <i>AsPIF7</i> | Asa7G03189.1 | F    | ATGAATCAATGTGTTCCAAGTTG | 23          |
|               |              | R    | CTACTTCAGGTTTGCTGG      | 18          |

附表 2 *AsPIFs* 家族基因载体构建引物 (AD) 和 *AsVQs* 家族基因载体构建引物 (BD)  
Table S2 Vector Construction Primers for *AsPIFs* (AD) and *AsVQs* (BD) Family Genes

| 基因名称          | 酶切位点           | 序列                                                  | 长度          |
|---------------|----------------|-----------------------------------------------------|-------------|
| Gene name     | Digestion site | Sequence (5'–3')                                    | Length (bp) |
| <i>AsPIF1</i> | F: EcoR1       | <u>GCCATGGAGGCCAGTGAATTC</u> ATGCAAAGCCAAAGTAACCG   | 41          |
|               | R: EcoR1       | ATGCCCACCCGGGTGGAATTC <u>CTCAACCCAAATGACCATTCTG</u> | 42          |
| <i>AsPIF4</i> | F: EcoR1       | GCCATGGAGGCCAGTGAATTCATGGTTCTCAGGGAAGACC            | 40          |
|               | R: EcoR1       | <u>ATGCCCACCCGGGTGGAATTC</u> TAAGTGCTCGATCTGTTCCG   | 39          |
| <i>AsPIF5</i> | F: EcoR1       | <u>GCCATGGAGGCCAGTGAATTC</u> ATGCCTCTCTCTGAAGTCCC   | 41          |

|               |          |                                                       |    |
|---------------|----------|-------------------------------------------------------|----|
| <i>AsPIF7</i> | R: EcoR1 | <u>ATGCCCACCCGGGTGGAATTCTTAAGT</u> GCTCGATCTGTTTCGC   | 42 |
|               | F: EcoR1 | <u>GCCATGGAGGCCAGTGAATTC</u> ATGAATCAATGTGTTCCAAGTTG  | 44 |
| <i>AsVQ5</i>  | R: EcoR1 | <u>ATGCCCACCCGGGTGGAATTCT</u> ACTTCAGGTTTGCTGG        | 39 |
|               | F: EcoR1 | <u>ATGGCCATGGAGGCCGAATTC</u> ATGGATCAGAGAAACAACCACCAC | 45 |
| <i>AsVQ6</i>  | R: EcoR1 | <u>TCGACGGATCCCCGGAATTC</u> ACTTATCCCTCCACCTCG        | 41 |
|               | F: EcoR1 | <u>ATGGCCATGGAGGCCGAATTC</u> ATGAAACAACAACAACAAC      | 43 |
| <i>AsVQ9</i>  | R: EcoR1 | <u>TCGACGGATCCCCGGAATTC</u> TATATGACCTGTGCTTCTCCA     | 43 |
|               | F: EcoR1 | <u>ATGGCCATGGAGGCCGAATTC</u> ATGGACTATTACCGTCTCTCC    | 43 |
| <i>AsVQ28</i> | R: EcoR1 | <u>TCGACGGATCCCCGGAATTC</u> TAAGAATCAAGAAAAGCAGCGGT   | 45 |
|               | F: EcoR1 | <u>ATGGCCATGGAGGCCGAATTC</u> ATGGAACCCAGCTACAATCTCCA  | 45 |
|               | R: EcoR1 | <u>TCGACGGATCCCCGGAATTC</u> TAATTAGCAGGTGAAGATTCTGG   | 45 |

注：下划线部分为同源臂序列

Note: The underlined portions represent homologous arm sequences

附表 3 内参和 *AsPIFs* 家族基因 qPCR 引物设计

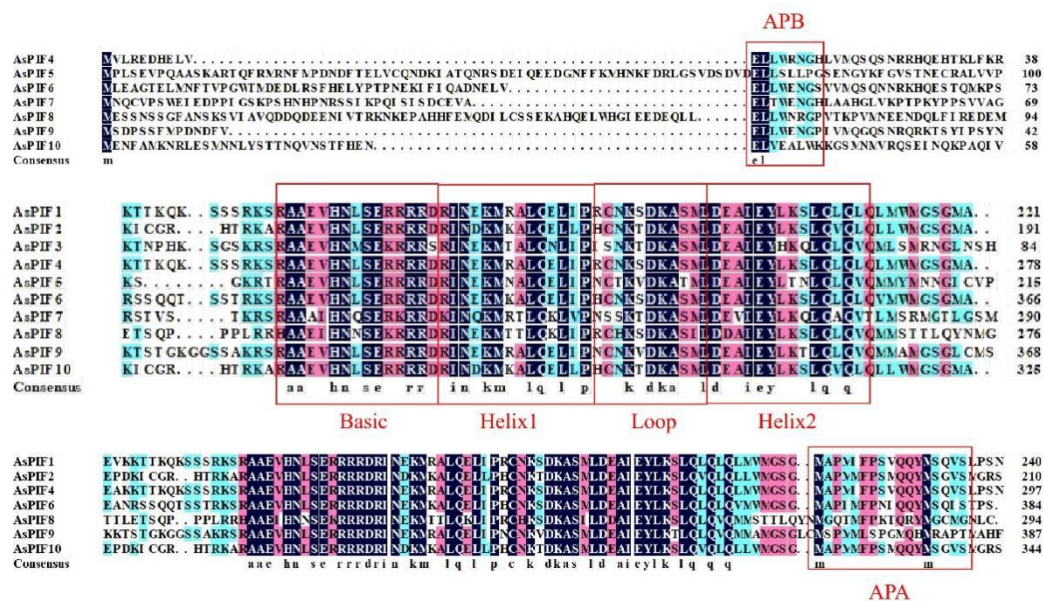
Table S3 qPCR primer design for reference genes and *AsPIFs* family genes

| 基因名称          | 基因 ID        | 类型   | 序列 (5'-3')                  | 长度 (bp)     |
|---------------|--------------|------|-----------------------------|-------------|
| Gene name     | Gene ID      | Type | Sequence (5'-3')            | Length (bp) |
| AsActin       |              | F    | TGCTCTGGATTATGAACAGGAACTTGA | 27          |
|               |              | R    | CAATCATTGAAGGCTGGAACAACAC   | 25          |
| <i>AsPIF1</i> | Asa1G02508.1 | F    | CAGCTAATGTGGATGGGAAG        | 20          |
|               |              | R    | GTGGGAAAATGAGCTGGATT        | 20          |
| <i>AsPIF3</i> | Asa2G05912.1 | F    | GCAAAAGAGCGAGAAAGGAACAG     | 23          |
|               |              | R    | CAAACAAGCAAACCTCAGCATCAT    | 23          |
| <i>AsPIF5</i> | Asa7G00403.1 | F    | CAGAGCTAGTGTGCCAAAAT        | 20          |
|               |              | R    | GCAGCAAACCTCAGTAACTCA       | 20          |
| <i>AsPIF7</i> | Asa7G03189.1 | F    | AGTAGAATGGGTACTACTGGG       | 20          |
|               |              | R    | GACATATCCATCATGCCCAC        | 21          |
| <i>AsPIF9</i> | Asa8G03334.1 | F    | GCAAAAGGGGAAATGAAAGC        | 20          |
|               |              | R    | GATCACTAGAAGCTGCCATG        | 20          |

附表 4 *AsPIFs* 家族蛋白的三级结构

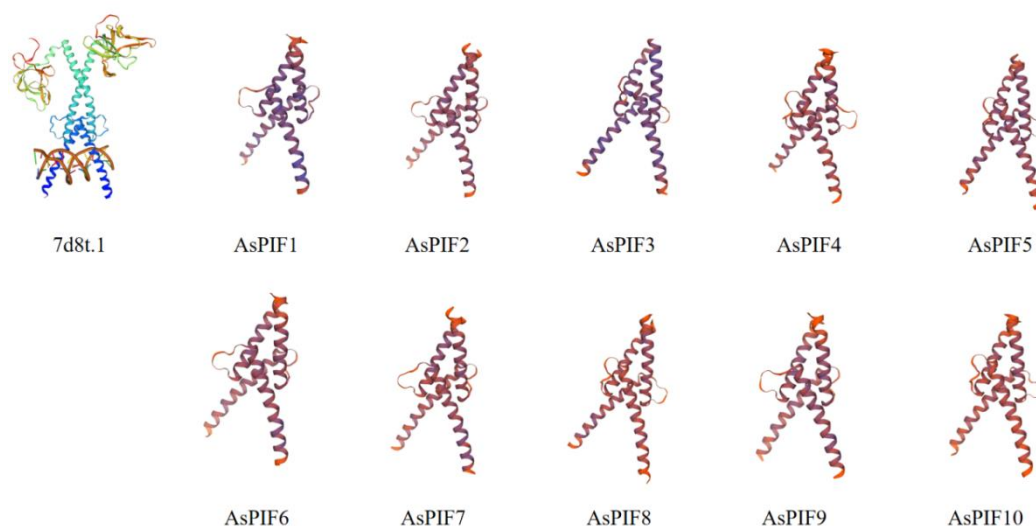
Table S4 Tertiary structure of *AsPIFs* family proteins

| 基因名称           | α 螺旋 (个)      | α 螺旋        | β 折叠 (个)   | β 折叠       | 与 7d8t.1 的相似度        |
|----------------|---------------|-------------|------------|------------|----------------------|
| Gene name      | α Screw (pcs) | α Screw (%) | Fold (pcs) | β Fold (%) | Similarity to 7d8t.1 |
| <i>AsPIF1</i>  | 99            | 79.51       | 0          | 0          | 35.00%               |
| <i>AsPIF2</i>  | 99            | 79.84       | 0          | 0          | 34.43%               |
| <i>AsPIF3</i>  | 103           | 80.47       | 0          | 0          | 30.65%               |
| <i>AsPIF4</i>  | 99            | 79.84       | 0          | 0          | 35.59%               |
| <i>AsPIF5</i>  | 102           | 79.69       | 0          | 0          | 34.43%               |
| <i>AsPIF6</i>  | 99            | 79.84       | 0          | 0          | 36.67%               |
| <i>AsPIF7</i>  | 95            | 79.17       | 0          | 0          | 29.03%               |
| <i>AsPIF8</i>  | 101           | 78.91       | 0          | 0          | 31.25%               |
| <i>AsPIF9</i>  | 97            | 79.51       | 0          | 0          | 33.90%               |
| <i>AsPIF10</i> | 100           | 80.65       | 0          | 0          | 35.00%               |



附图 1 大蒜 PIFs 家族成员氨基酸序列比对图

Fig. S1 Amino acid sequence alignment of garlic PIF family members.



附图 2 AsPIFs 蛋白三级结构预测

Fig. S2 Tertiary structure prediction of AsPIFs proteins