

# HDAC3-Knockdown Dysregulate Juvenile Hormone and Apoptosis-Related Genes in *Helicoverpa armigera*

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**Table S1. The GenBank accession numbers of sequence used to construct the phylogenetic tree.**

| Abbreviations | GenBank        | Species                            |
|---------------|----------------|------------------------------------|
| AtHDAC3       | AAG28475.1     | <i>Arabidopsis thaliana</i>        |
| SlyHDAC3      | NP_001352081.1 | <i>Solanum lycopersicum</i>        |
| HbHDAC3       | ASU54221.1     | <i>Hevea brasiliensis</i>          |
| SmHDAC19X2    | XP_024526726.1 | <i>Selaginella moellendorffii</i>  |
| OsHDAC3       | AAP47173.1     | <i>Oryza sativa</i> Japonica Group |
| TaHDAC3       | ABG43092.1     | <i>Triticum aestivum</i>           |
| ZmHDAC3       | AAC50038.1     | <i>Zea mays</i>                    |
| ZmaHDAC19     | KMZ66840.1     | <i>Zostera marina</i>              |
| TwHDAC19      | XP_038694164.1 | <i>Tripterygium wilfordii</i>      |
| RaHDAC19      | XP_030552636.1 | <i>Rhodamnia argentea</i>          |
| SoHDAC19      | XP_030450571.1 | <i>Syzygium oleosum</i>            |
| CliHDAC9      | KAF3320763.1   | <i>Carex littledalei</i>           |
| ThHDAC9X1     | XP_010541291.1 | <i>Tarenaya hassleriana</i>        |
| RsHDAC9       | XP_018434438.1 | <i>Raphanus sativus</i>            |
| CrHDAC9       | XP_006279377.1 | <i>Capsella rubella</i>            |
| CsaHDAC9      | XP_010503116.1 | <i>Camelina sativa</i>             |
| EsHDAC9       | XP_006419115.1 | <i>Eutrema salsugineum</i>         |
| NnHDAC9       | XP_010243527.1 | <i>Nelumbo nucifera</i>            |
| PeHDAC9X2     | XP_020571405.1 | <i>Phalaenopsis equestris</i>      |
| CqHDAC19X1    | XP_021757988.1 | <i>Chenopodium quinoa</i>          |
| HcHDAC9       | QBQ34150.1     | <i>Hibiscus cannabinus</i>         |
| DzHDAC9       | XP_022755944.1 | <i>Durio zibethinus</i>            |
| LaHDAC9X1     | XP_019453894.1 | <i>Lupinus angustifolius</i>       |
| GsHDAC9       | XP_028190309.1 | <i>Glycine soja</i>                |
| GmaHDAC9X3    | XP_003538135.1 | <i>Glycine max</i>                 |
| MpHDAC9       | RDY11714.1     | <i>Mucuna pruriens</i>             |
| CcaHDAC9      | XP_020214800.1 | <i>Cajanus cajan</i>               |
| SsuHDAC9      | TKY67096.1     | <i>Spatholobus suberectus</i>      |
| AaeHDAC3      | XP_001655108.1 | <i>Aedes aegypti</i>               |
| TcHDAC3       | XP_969419.1    | <i>Tribolium castaneum</i>         |
| AmHDAC3       | XP_395811.2    | <i>Apis mellifera</i>              |
| ApiHDAC3      | XP_001951271.1 | <i>Acyrtosiphon pisum</i>          |
| DmHDAC3       | NP_651978.2    | <i>Drosophila melanogaster</i>     |
| BmHDAC3       | XP_012552478.1 | <i>Bombyx mori</i>                 |
| HaHDAC3       | AJH76982.1     | <i>Helicoverpa armigera</i>        |
| PbHDAC3       | XP_045518296.1 | <i>Pieris brassicae</i>            |
| MhHDAC3       | XP_034827651.1 | <i>Maniola hyperantus</i>          |
| GmHDAC3       | XP_026754881.1 | <i>Galleria mellonella</i>         |
| HkHDAC3       | XP_026333196.1 | <i>Hyposmocoma kahamanoa</i>       |
| TnHDAC3       | XP_026740888.1 | <i>Trichoplusia ni</i>             |

|          |                |                            |
|----------|----------------|----------------------------|
| SIHDAC3  | XP_022831573.1 | Spodoptera litura          |
| CsHDAC3  | RVE44174.1     | Chilo suppressalis         |
| PaHDAC3  | XP_039752448.1 | Pararge aegeria            |
| MsHDAC3  | KAG6455343.1   | Manduca sexta              |
| AtrHDAC3 | XP_013193311.1 | Amyelois transitella       |
| ApHDAC3  | CAB3219866.1   | Arctia plantaginis         |
| BaHDAC3  | XP_023947594.1 | Bicyclus anynana           |
| PaHDAC3  | XP_039752448.1 | Pararge aegeria            |
| AaHDAC3  | XP_041972205.1 | Aricia agestis             |
| LsHDAC3  | VVD00622.1     | Leptidea sinapis           |
| VtHDAC3  | XP_026489054.1 | Vanessa tameamea           |
| McHDAC3  | XP_045454150.1 | Melitaea cinxia            |
| BiHDAC3  | CAH0713927.1   | Brenthis ino               |
| XtHDAC3  | NP_001016883.1 | Xenopus tropicalis         |
| CcHDAC3  | XP_041049995.1 | Carcharodon carcharias     |
| DrHDAC3  | NP_957284.1    | Danio rerio                |
| CmHDAC3  | XP_036425068.1 | Colossoma macropomum       |
| PfHDAC3  | XP_039668920.1 | Perca fluviatilis          |
| TalHDAC3 | XP_044218859.1 | Thunnus albacares          |
| BbHDAC3  | XP_040297402.1 | Bufo bufo                  |
| GdHDAC3  | NP_990078.2    | Gallus gallus domesticus   |
| PvHDAC3  | XP_020654852.1 | Pogona vitticeps           |
| AmiHDAC3 | XP_006265553.1 | Alligator mississippiensis |
| PmHDAC3  | XP_015684433.1 | Protophthalmos reticulatus |
| MmuHDAC3 | XP_044883899.1 | Mauremys mutica            |
| TgHDAC3  | XP_025244269.1 | Theropithecus gelada       |
| CgHDAC3  | XP_003508244.1 | Cricetulus griseus         |
| MmHDAC3  | XP_028705021.1 | Macaca mulatta             |
| ChHDAC3  | XP_005683119.1 | Capra hircus               |
| SsHDAC3  | NP_001230756.1 | Sus scrofa                 |
| EcHDAC3  | XP_001504028.1 | Equus caballus             |
| BtHDAC3  | NP_001193172.1 | Bos taurus                 |
| HsHDAC3  | AAC98927.1     | Homo sapiens               |
| RnHDAC3  | NP_445900.2    | Rattus norvegicus          |
| ClfHDAC3 | XP_038514649.1 | Canis lupus familiaris     |
| FcHDAC3  | XP_011280921.3 | Felis catus                |
| PyHDAC3  | XP_040310374.1 | Puma yagouaroundi          |
| AjHDAC3  | XP_014918986.1 | Acinonyx jubatus           |
| CIHDAC3  | XP_005380780.1 | Chinchilla lanigera        |
| GaHDAC3  | XP_044518501.1 | Gracilinanus agilis        |
| PsHDAC3  | XP_032484400.1 | Phocoena sinus             |
| LcHDAC3  | XP_030176237.1 | Lynx canadensis            |
| VpHDAC3  | XP_006204584.1 | Vicugna pacos              |
| Pt HDAC3 | XP_007077979.1 | Panthera tigris            |

**Table S2. List of primers used in this work.**

| Gene               | Primer                     |
|--------------------|----------------------------|
| qHaHDAC3-57-F      | CCGTTGAAAGAAGGGATTGA       |
| qHaHDAC3-57-R      | GCGTTGATAGCGAGAAGCA        |
| RPS15-F            | CTGAGGTCGATGAAACTCTC       |
| RPS15-R            | CTCCATGAGTTGCTCATTG        |
| B5X24_HaOG203563-F | CGTTGTGAATGGGAATGTTATG     |
| B5X24_HaOG203563-R | CAGCGAGGGAGAGGGTGA         |
| B5X24_HaOG216055-F | TCAGACAATCCAGCCACTACCC     |
| B5X24_HaOG216055-R | GTCCAAATACGAGCATAACCAT     |
| B5X24_HaOG205211-F | GTTTGGCTAAGGATGACACGC      |
| B5X24_HaOG205211-R | CCGAGAAAGGTATGAGAACAGGT    |
| B5X24_HaOG201382-F | CGAAGTACCCAGCAACAAAGA      |
| B5X24_HaOG201382-R | TGGTCCAAATACGAGCATAAC      |
| B5X24_HaOG201284-F | GACCTTCGGTGGAGCAGATAA      |
| B5X24_HaOG201284-R | TACTTTTGTGTTCCTCGTCTAAT    |
| B5X24_HaOG211835-F | GGATTCCAGGAGCAACCAC        |
| B5X24_HaOG211835-R | GGGCACTTGAAACCCGTAG        |
| B5X24_HaOG201522-F | TGTGACACCAGCAAATGAATCT     |
| B5X24_HaOG201522-R | TCTAAATGCGGCAGGTAAGC       |
| B5X24_HaOG211924-F | CGTTGTGGGCTATGACCTGT       |
| B5X24_HaOG211924-R | AATGTGGGACTGTCGTGCTG       |
| B5X24_HaOG201584-F | GTATGTGACCGAGGAACGAAT      |
| B5X24_HaOG201584-R | CGATGATGTAGAACTGAGCGA      |
| B5X24_HaOG206924-F | GAAGACCAAACACGAGGCT        |
| B5X24_HaOG206924-R | CAGAGGCAGTCCAGAACGA        |
| B5X24_HaOG215220-F | CTGGAAACAACGGGAATGG        |
| B5X24_HaOG215220-R | CGGAGGCTGTATGAAGGGC        |
| B5X24_HaOG215985-F | ATGGTGGCTATGGACCTTACA      |
| B5X24_HaOG215985-R | GGTCCGATGTACTCGTAGAAGC     |
| B5X24_HaOG209860-F | ATGCGAGATTGGATGATAAGAAAG   |
| B5X24_HaOG209860-R | TGAAGTAGTGTTGGCAAGTAGACG   |
| B5X24_HaOG206479-F | ACAGGAGATGCTCGCAATAGG      |
| B5X24_HaOG206479-R | TGGGTCCATCAACGAATCTG       |
| B5X24_HaOG205578-F | TATCACATAGGTCCGCAGCAT      |
| B5X24_HaOG205578-R | TTCACCCGCAATCCAAGTC        |
| B5X24_HaOG214348-F | CGCCGTGCCACCATACTT         |
| B5X24_HaOG214348-R | CACTGCCGCCGCTGA            |
| B5X24_HaOG212099-F | TTCCCACCAGACTACCCATACT     |
| B5X24_HaOG212099-R | TGAGATCACGGATAGCAGCAC      |
| B5X24_HaOG209406-F | AAGTTATCTTTGTGGCTTATTGTCTG |
| B5X24_HaOG209406-R | GCTGAGCAATGGACGGACTAA      |
| B5X24_HaOG211565-F | ACGCCCCGAGTAGTCTCCAA       |
| B5X24_HaOG211565-R | GGCTCTGTTCCGAAGTATCCTGTT   |
| B5X24_HaOG215799-F | AAAGCATAAGAAAGCCAACAAG     |
| B5X24_HaOG215799-R | TGGAGCAGGTCGGGTAGAT        |

**Table S3. siRNA sequence information.**

| <b>Name</b>          | <b>Sequence</b>              |
|----------------------|------------------------------|
| siRNA-1: sense:      | 5'-AAGGAACCACCAGUUGAGAAC-3'  |
| siRNA-1: Anti-sense: | 5'-GUUCUCAACUGGUGGUUCCUU-3'  |
| siRNA-2: sense:      | 5'-AAGAACGAAUUCUAUGAAGAC-3'  |
| siRNA-2: Anti-sense: | 5'-GUCUUCAUAGAAUUCGUUCUU-3'  |
| siRNA-3: sense:      | 5'-AACUGGUCCGGAGGUCUACAU-3'  |
| siRNA-3: Anti-sense: | 5'-AUGUAGACCUCCGGACCAGUU-3'  |
| siRNA-4: sense:      | 5'-AACAUUGUGUACGACAACCUCA-3' |
| siRNA-4: Anti-sense: | 5'-UGAGGUUGUCGUACACAUGUU-3'  |
| siRNA-5: sense:      | 5'-AAACCAUAUAGAGCCAGUGCU-3'  |
| siRNA-5: Anti-sense: | 5'-AGCACUGGCUCUAUAUGGUUU-3'  |
| siNC: sense:         | 5'-UUCUCCGAACGUGUCACGUTT-3'  |
| siNC: Anti-sense:    | 5'-ACGUGACACGUUCGGAGAATT-3'  |