**Supplementary Document**

Table 1. BACs used to align whole genome sequencing data from Helicoverpa armigera.

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| --- | --- | --- | --- |
| Name | GenBank Accession Code | Length (kb) | Notes |
| Locus 1 | HQ645847.1 | 43 | Helicoverpa armigera clone BAC P3E13 hypothetical protein, GTPase, parathyroid hormone-responsive B1, caspase-1 (Casp-1), and caspase-2 (Casp-2) genes, complete cds; and hypothetical protein gene, partial cds |
| Locus 2 | FO082297.1 | 91 |  |
| Locus 3 | FP340438.1 | 110 |  |
| Locus 4 | FP340437.1 | 108 |  |
| Locus 5 | FP340436.1 | 123 |  |
| Locus 6 | FP340435.1 | 126 |  |
| Locus 7 | FP340434.1 | 98 |  |
| Locus 8 | FP340433.1 | 114 |  |
| Locus 9 | FP340432.1 | 109 |  |
| Locus 10 | FP340431.1 | 98 |  |
| Locus 11 | FP340430.1 | 119 |  |
| Locus 12 | FP340429.1 | 69 |  |
| Locus 13 | FP340428.1 | 108 |  |
| Locus 14 | FP340427.1 | 119 |  |
| Locus 15 | FP340426.1 | 102 |  |
| Locus 16 | FP340425.1 | 104 |  |
| Locus 17 | FP340424.1 | 119 |  |
| Locus 18 | FP340423.1 | 118 |  |
| Locus 19 | FP340422.1 | 106 |  |
| Locus 20 | FP340421.1 | 113 |  |
| B3 | JQ995292 | 100 | Helicoverpa armigera clone BAC 33J17 cytochrome P450 337B3v1 (CYP337B3v1) gene |
| B1/B2 | JQ995291 | 98 | Helicoverpa armigera clone BAC 18J13 cytochrome P450 337B2v2 (CYP337B2v2) and cytochrome P450 337B1v1 (CYP337B1v1) genes |

Table 2. Results for each BAC analysed individually using smartPCA. The Tracy-Widom statistic was calculated to demonstrate principle components that demonstrate significant population structure. Only principle components below P=0.05 are plotted, while only those below P=1x10-12 should be considered significant and are shown in bold.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Locus** | **Principle Component** | **P-value** | **Variance Explained (%)** |  | **Locus** | **Principle Component** | **P-value** | **Variance Explained (%)** |
| 1 | 1 | 2.31E-11 | 1.974 |  | 11 | 2 | 2.15E-04 | 1.498 |
| 1 | 2 | 2.13E-07 | 1.734 |  | **12** | **1** | **3.80E-15** | **1.74** |
| **2** | **1** | **5.88E-13** | **1.797** |  | 12 | 2 | 2.29E-06 | 1.498 |
| 2 | 2 | 3.96E-08 | 1.595 |  | 12 | 3 | 2.04E-02 | 1.372 |
| 2 | 3 | 0.000599 | 1.45 |  | **13** | **1** | **1.68E-18** | **1.892** |
| 3 | 1 | 3.80E-09 | 1.744 |  | 13 | 2 | 4.30E-11 | 1.629 |
| 3 | 2 | 2.96E-04 | 1.545 |  | 13 | 3 | 1.42E-06 | 1.469 |
| 3 | 3 | 0.002674 | 1.472 |  | **14** | **1** | **1.91E-24** | **2.031** |
| **4** | **1** | **2.45E-25** | **2.469** |  | 14 | 2 | 2.20E-12 | 1.646 |
| 4 | 2 | 1.78E-10 | 1.815 |  | 14 | 3 | 1.08E-06 | 1.465 |
| 4 | 3 | 0.000581 | 1.545 |  | **15** | **1** | **5.37E-15** | **2.272** |
| **5** | **1** | **1.02E-18** | **1.949** |  | 15 | 2 | 1.62E-06 | 1.817 |
| 5 | 2 | 1.35E-07 | 1.596 |  | 15 | 3 | 5.38E-05 | 1.677 |
| 5 | 3 | 0.012343 | 1.427 |  | 15 | 4 | 6.46E-04 | 1.57 |
| 6 | 1 | 3.53E-09 | 1.458 |  | 16 | 1 | 3.51E-03 | 1.617 |
| 6 | 2 | 4.69E-05 | 1.355 |  | 17 | 1 | 1.25E-12 | 1.621 |
| 7 | 1 | 0.000593 | 1.644 |  | 17 | 2 | 2.25E-02 | 1.379 |
| 8 | 1 | 6.26E-09 | 1.876 |  | 18 | 1 | 1.43E-07 | 2.476 |
| **8** | **2** | **2.88E-14** | **1.86** |  | 18 | 2 | 9.45E-09 | 2.322 |
| 8 | 3 | 4.46E-05 | 1.544 |  | 18 | 3 | 1.62E-07 | 2.045 |
| **9** | **1** | **4.77E-15** | **2.392** |  | 18 | 4 | 1.35E-05 | 1.824 |
| 9 | 2 | 3.19E-09 | 1.973 |  | **19** | **1** | **7.46E-16** | **1.89** |
| 9 | 3 | 7.34E-05 | 1.7 |  | 19 | 2 | 1.08E-08 | 1.629 |
| **10** | **1** | **1.81E-15** | **2.071** |  | 19 | 3 | 5.56E-07 | 1.515 |
| 10 | 2 | 3.17E-04 | 1.635 |  | 19 | 4 | 3.97E-02 | 1.359 |
| 10 | 3 | 2.06E-02 | 1.518 |  | 20 | 1 | 1.81E-08 | 1.672 |
| 11 | 1 | 2.14E-10 | 1.698 |  | 20 | 2 | 2.21E-04 | 1.509 |

Figure 1. PCAs plotted for individual BACs listed in Table 1. Associated statistics are listed in table 2 and only principle components below P=0.05 are shown.















