**Additional file 3 Table S2a** Characteristics of subfamily Ⅱ *GH3* in *G. arboreum* and *G. raimondii.*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Gene name | LocusID | ORF | Introns | Chr. | Position |  | Deduced polypeptide |
| Start | End | Strand | Length(aa) | Wm(Da) | pI |
| GaGH3.1 | Cotton\_A\_21697 | 1794 | 2 | chr8 | 39254294 | 39256290 | + |  | 598 | 67.775.51 | 6.41 |
| GaGH3.2 | Cotton\_A\_24589 | 1791 | 2 | chr6 | 31541886 | 31543863 | + |  | 597 | 67.972.59 | 6.19 |
| GaGH3.3 | Cotton\_A\_20976 | 1806 | 2 | chr8 | 64011176 | 64013721 | + |  | 602 | 68.039.54 | 5.43 |
| GaGH3.4 | Cotton\_A\_26931 | 1770 | 2 | chr10 | 45860251 | 45862205 | - |  | 590 | 67.177.11 | 5.83 |
| GaGH3.5 | Cotton\_A\_26579 | 1818 | 2 | chr4 | 23704018 | 23706037 | - |  | 606 | 68.491.46 | 5.55 |
| GaGH3.6 | Cotton\_A\_21669 | 1839 | 2 | chr7 | 126647480 | 126649556 | + |  | 613 | 69.484.43 | 5.97 |
| GaGH3.7 | Cotton\_A\_21671 | 1839 | 2 | chr7 | 126807160 | 126809321 | + |  | 613 | 69.241.17 | 6.08 |
| GaGH3.8 | Cotton\_A\_08935 | 1845 | 2 | chr5 | 9512417 | 9514465 | + |  | 615 | 69.035.05 | 5.51 |
| GaGH3.9 | Cotton\_A\_23308 | 1785 | 3 | chr4 | 26984170 | 26987339 | - |  | 595 | 67.017.07 | 5.58 |
| GaGH3.17 | Cotton\_A\_30234 | 1851 | 3 | chr13 | 21905343 | 21907539 | - |  | 617 | 70.185.47 | 5.73 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| GrGH3.1 | Cotton\_D\_gene\_10016436 | 1794 | 2 | chr10 | 4338979 | 4341532 | - |  | 598 | 67.725.41 | 6.55 |
| GrGH3.2 | Cotton\_D\_gene\_10038257 | 1794 | 2 | chr8 | 66334542 | 66336525 | - |  | 598 | 67.865.49 | 5.97 |
| GrGH3.3 | Cotton\_D\_gene\_10029471 | 1806 | 2 | chr13 | 38763908 | 38766907 | - |  | 602 | 67.995.43 | 5.59 |
| GrGH3.4 | Cotton\_D\_gene\_10032960 | 1794 | 3 | Chr7 | 51464567 | 51472472 | - |  | 598 | 67.649.48 | 5.53 |
| GrGH3.5 | Gorai.007G219500.1 | 1821 | 2 | Chr7 | 25218502 | 25220988 | + |  | 606 | 68.478.51 | 5.53 |
| GrGH3.6 | Cotton\_D\_gene\_10011277 | 1839 | 2 | Chr2 | 42358333 | 42360409 | - |  | 613 | 69.446.48 | 5.91 |
| GrGH3.7 | Cotton\_D\_gene\_10011274 | 1620 | 2 | Chr2 | 42192566 | 42194506 | - |  | 540 | 60.754.56 | 5.79 |
| GrGH3.8 | Cotton\_D\_gene\_10029688 | 1845 | 2 | Chr5 | 38751899 | 38754698 | - |  | 615 | 69.169.19 | 5.32 |
| GrGH3.9 | Cotton\_D\_gene\_10035892 | 1785 | 3 | Chr7 | 45925795 | 45929197 | + |  | 595 | 66.937.73 | 5.36 |
| GrGH3.17 | Cotton\_D\_gene\_10014730 | 1851 | 3 | Chr5 | 36262036 | 36264240 | - |  | 617 | 70.246.60 | 6.28 |

NOTE: Detailed characteristics of *GH3s* in two diploid cottons are shown. Locus\_ID and sequence of *GrGH3.5* in *G. raimondii* (BGI, v1.0) was replaced by that of its analogue in *G. raimondii* (JGI, v2.0) due to the abnormal length possibly caused by improper genomic assembly.