

Description of Additional Supplementary Files

File Name: **Supplementary Data 1**

Description: **Markers and Primers for gene association study on the *h* locus**

File Name: **Supplementary Data 2**

Description: **Statistics of the genome assemblies**

File Name: **Supplementary Data 3**

Description: **Raw count data, statistics and annotations of the RNA-seq analyses in the *h* locus candidate region**

File Name: **Supplementary Data 4**

Description: **Motif enrichment in the upper noncoding regions of *pannier* in *H.axyridis* and *C. septempunctata***

File Name: **Supplementary Data 5**

Description: **DNA sequences used in the molecular phylogenetic analyses**
a, The aligned nucleotide sequences of *pannier* ORF before trimming gapped and shifted regions. **b**, The aligned nucleotide sequences of *pannier* ORF after trimming. **c**, The aligned nucleotide sequences of the conserved intronic regions of *pannier* (concatenated three blocks) before trimming gapped and shifted regions. **d**, The aligned nucleotide sequences of the conserved intronic regions of *pannier* after trimming. A dash indicates a gap.

File Name: **Supplementary Data 6**

Description: **Oligo sequences used in the Flexible ddRAD-seq**