

Supporting Information

Figure S1. *D. ananassae* HTRs without the MHR domain. **a)** Dot-matrix comparisons of the nucleotide sequence of *Dana\HTRX*, *Dana\HTRY* and *Dana\HTRZ* (Each element is compared with itself) .The three-frame ORF maps are indicated. **b)** Comparison of amino acid sequences from *Dana\HTRX*, *Dana\HTRY*, *Dana\HTRZ* and others *TRs* and *HTRs*. For each protein, the region shown encompasses the MHR domain and the first zinc knuckle.

Figure S2. Dot-matrix comparisons of *Dana\TR2A*, *Dana\HTR2A*, *Dper\TR1A* and *Dper\HTR1A*. Each element is compared with itself. The three-frame ORF maps are indicated. ORF1 appears in green and ORF2 in orange.

Figure S3. Dot-matrix comparisons of *Dper\TR3A*, *Dper\HTR3A*, *Dper\TR3B* and *Dper\HTR3B*. Each element is compared with itself. The three-frame ORF maps are indicated. ORF1 appears in green and ORF2 in orange.

Figure S4. Dot-matrix comparisons of *Dper\TR2A*, *Dper\TR4A*, *Dmoj\TR1Ba* and *Dmoj\HTR2Aa*. Each element is compared with itself. The three-frame ORF maps are indicated. ORF1 appears in green and ORF2 in orange.

Figure S5. Dot-matrix comparisons of *Dmoj\TR1Ab*, *Dmoj\HTR1Ab*, *Dmoj\TR1C* and *Dmoj\HTR1C*. Each element is compared with itself. The three-frame ORF maps are indicated. ORF1 appears in green and ORF2 in orange.

Figure S6. Dot-matrix comparisons of *Dmoj\TR1D*, *Dmoj\HTR1D*, *Dmoj\TR1E* and *Dmoj\HTR1E*. Each element is compared with itself. The three-frame ORF maps are indicated. ORF1 appears in green and ORF2 in orange.

Figure S7. Dot-matrix comparisons of *Dmoj\TR3A*, *Dmoj\HTR3Ba* and *Dmoj\HTR3Ca*. Each element is compared with itself. The three-frame ORF maps are indicated. ORF1 appears in green and ORF2 in orange.

Figure S8. Dot-matrix comparisons of *Dvir\HTR0B*, *Dvir\TR1A*, *Dvir\TR1B*, *Dvir\TR2C*, *Dvir\TR2B* and *Dvir\H'TR2B*. Each element is compared with itself. The three-frame ORF maps are indicated. ORF1 appears in green and ORF2 in orange.

Figure S9. Dot-matrix comparisons of *Dgri\TR2Aa*, *Dgri\HTR2B* and *Dgri\HTR2C*. Each element is compared with itself. The three-frame ORF maps are indicated. ORF1 appears in green and ORF2 in orange.

Figure S10. Sequence alignments of the entire RT domains from ORF2-TRs. The alignments were performed with ClustalX, followed by manual adjustments.

Figure S11. Sequence alignments of the MHR, the zinc knuckles and the leucine zipper-like domains from ORF1-TRs and HTRs. The alignments were performed with ClustalX, followed by manual adjustments.

Figure S12. Nucleotide sequence of the reconstructed *Dyak\TAHRE* and *Dere\TAHRE*. Sequences more than 97% identical to each other were connected.

Table S1. Primers used for PCR amplification and sequencing of TRs and HTRs in the *D. melanogaster* species subgroup.

Table S2. Localization of TRs and HTRs used in this work. In the table appears the name of the element and the coordinates within its corresponding scaffold.