

### **List of supplementary data:**

**Figure S1:** Display of the dynamics of expression of the *Phallusia mammillata* *FoxA* gene, Phmamm.g00001891, during embryogenesis.

The RNA-seq page for each *Ciona robusta*, *Phallusia mammillata* and *Halocynthia roretzi* gene shows interactive displays of a FPKM/RPKM normalization of expression data (top), an unlogged RLE normalization (centre), and a global description of the RNA-seq experiments (bottom). The displays are indicative, as mentioned in the warning notes.

**Table S1:** Orthology relationships between tunicate and human and between tunicate orders (stolidobranch vs Phlebobranch).

**Supplementary methods:** Inference of gene homology relationships between ascidians, vertebrates and three deuterostome outgroups.