

## **Additional File 5. Unrooted phylogenetic tree for gnathostome Dact proteins.**

Phylogenetic, maximum likelihood tree of Dact protein sequences from humans (Hs), opossum (Md), chicken (Gg), Anole lizard (Ac), the Western painted turtle (Cpb), *Xenopus tropicalis* (Xt), coelacanth (Lc), the spotted gar (Lo), zebrafish (Dr), Fugu (Tr), Tilapia (On), and elephant shark (Cm).

Asterisks indicate sequences with only partial information. Bootstrap values are indicated for all branch points (100 repeats). Sequences are annotated using the abbreviation for the species, followed by the Dact ortholog number. The gnathostome paralog groups are colour-coded: Dact1 (red), Dact3 (pink), Dact2 (turquoise) and Dact4 (green). The division between the Dact1/3 and Dact2/4 metagroups is well supported with a bootstrap value of 100%.

