Identification and Mapping of Four New Human Members of the T-box Gene Family: HEOMES, TBX6, TBX18, and TBX19

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Brachyury (T) is a mouse mutation, first described over 70 years ago, which causes defects in mesoderm formation. Recently a series of related genes, the T-box family, have been identified which encode a similar N-terminal DNA binding domain, the T-box, and which play critical roles in human embryonic development. It has been shown that human TBX5 and TBX3, if mutated, cause developmental disorders, Holt-Oram syndrome (OMIM 142900) and ulnar-mammary syndrome (OMIM 181450), respectively. We have identified four new human members of the T-box gene family; HEOMES, TBX6, TBX18 and TBX19. These four new human T-box genes have been mapped to different chromosomal regions by radiation hybrid mapping. HEOMES (human eomesodermin) is likely to play a significant role in early embryogenesis similar to that described in Xeomes (Xenopus eomesodermin) and it may have a function in neuronal and brain development like its human parologue TBR1. Human TBX6 is likely to participate in paraxial mesoderm formation and somitogenesis in human embryo. TBX18 is a novel member of the Tbx1-subfamily which includes human TBX1, TBX10 and TBX15. TBX19 is an orthologue of chick TbxT.