A NOVEL SCAVENGER RECEPTOR DOMAIN CONTAINING GENES DIFFERENTIALLY EXPRESSED IN THE EMBRYONIC MOUSE TESTIS

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Sex in mammals is determined by the constitution of the sex chromosomes: two X-chromosomes results in the development of ovaries and a female phenotype, while an X and a Y chromosome result in testis development and a male phenotype. The SRY gene on the Y chromosome has been identified as the genetic switch, which initiates testis formation. The importance of SRY and the related SOX9 gene in sex determination has been well characterised in humans and mouse. Mutations in SRY and SOX9 account for approximately 20% of sex reversed XY-female patients suggesting that other genes are required for normal testis development. The mouse model was used to identify and characterise differentially expressed genes in the embryonic testis/ovary that may represent new sex determining candidates.

A suppression subtraction hybridisation screen was conducted on testes/ovaries mouse cDNA between 12.0-12.5 dpc. Differential clones were sequenced, bioinformatic analysis was performed and expression patterns verified by whole mount in situ hybridisation (WISH) on 12.5 dpc mouse partial embryos.

We identified a novel gene (B7) containing a scavenger receptor domain of unknown function. B7 was expressed in the gonads of both sexes from 11.5-12.0 dpc. From 12.5 -13.5 dpc, B7 expression was present in the testis but not in the ovary. We termed B7 Testis Expressed Scavenger Receptor (Tesr). Expression of Tesr was also seen in the mouse brain, eye, head, heart, neural arch and cartilage primordium. Furthermore, Tesr expression was analysed in the chicken embryo. Low expression was seen in the male gonads and mesonephric tubules from day 3.5-7.5. Tesr was expressed in chicken embryo’s heart, notochord, neural tube, dorsal aorta and the somites at day 3.5 and 4.5.

Tesr may play a role in phagocytosis of apoptotic cells and may be involved in scavenger, adhesion, defence functions and immune responses. Another possible role for Tesr in the developing testis may be cholesterol delivery for steroidogenesis.

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