

Is *SRY* the Testis-Determining Factor?

The initiation of male development in mammals requires 1 or more genes on the Y chromosome. A recently isolated gene, termed *SRY* in humans and *Sry* in the mouse, has many of the genetic and biologic properties expected of a Y-located testis-determining factor (TDF) gene. The *SRY* gene lies in the 35-kb interval near the Y pseudoautosomal boundary. A number of genes have been isolated in this region and it is the *SRY* gene that is consistently present in XY individuals who are male.¹ Abnormalities in the *SRY* gene have been found in several XY females.^{1,3} In addition, the *Sry* gene is expressed during testes development in the mouse.⁴ Expression of the *SRY* gene is confined to gonadal tissue. The gene is highly conserved across species.

Recently, Koopman and colleagues⁵ have demonstrated that the *Sry* gene contained in a 14-kb genomic DNA fragment is sufficient to induce testis differentiation and subsequent male development when introduced into

chromosomally female mouse embryos. Sequencing failed to detect any other gene sequences in the 14-kb fragment. Since this fragment alone was able to cause sex reversal, the authors postulate that it contains the entire *Sry* gene, including all of the regulatory elements required for appropriate embryonic expression. Interestingly, these phenotypically male XX mice proved to be sterile despite normal mating behavior, as have all other XX males tested.

Editor's comment: *The search for TDF has been a long and hard one. While there may be multiple factors involved in complete sexual differentiation (as evidenced by the failure of maturation of the germ cells in the XX males),⁵ these recent developments provide compelling evidence that the *Sry* gene is necessary and sufficient for external male development, at least in the mouse. This topic will be covered more fully by Dr. B. McGillivray in GGH Volume 8, Number 2.*

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References

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