SUMMARY AND CONCLUSION

Sp17 was first described as an autoantigenic testis-specific protein whose function is to bind sperm to the zona pellucida. However, recent studies have detected the Sp17 transcript in normal non-testis tissues, rheumatoid arthritis tissue and neoplastic tissues. In addition, analysis of the Sp17 protein revealed homology to CaM, suggesting an alternative function for Sp17 in non-testis and highly proliferating tissue. Thus, it is important to explore and elucidate the dynamics, regulation and transcription of the Sp17 gene in normal versus highly proliferating tissues.

The published spliced cDNA model of the human Sp17 nucleotide sequence was refuted and a newly proposed modified model of the Sp17 cDNA sequence is proposed. Moreover, the new Sp17 cDNA model is differentiated by an intron-containing (Sp17-1) and an intronless (Sp17-2) gene.

There are several notable features of the Sp17 nucleotide sequence, which may be important in the stability, transcription and regulation of this gene. For example, the Sp17-1 transcript exhibits alternative transcriptional start sites, multiple polyadenylation signals and high gene conservation. Similarly, the Sp17-2 gene, although described as a retroposed, non-functional pseudo-gene, is conserved among higher mammals. The high degree of Sp17 conservation suggests the presence of important regulatory elements, which are resistant to change. However, which, if any, of these mechanisms are important in the regulation and function of Sp17 is not yet known.

The differential detection of the Sp17 transcripts in normal and neoplastic cell lines may also be important in the translation and function of the Sp17 protein. For example, the Sp17-1a and Sp17-1b transcripts are differentially expressed in normal non-testis and neoplastic cell lines. Similarly, the Sp17-2 transcript is exclusive to the genomic DNA from normal tissue but is transcribed in the cDNA of neoplastic cell lines. Moreover, Sp17 mRNA expression is detected in multiple neoplastic cell lines, implicating Sp17 as a potential CT antigen. Collectively, these results suggest a functional role for Sp17 in highly proliferating cells, such as a mediator of signal transduction, cell growth and death, cell recognition and adhesion, angiogenesis, and host immunity. However, the Sp17 protein could not be detected in normal non-testis tissues nor in neoplastic cell lines. Thus, the potentially pathogenic role of the Sp17 gene in normal non-testis and neoplastic tissues has yet to be elucidated. Consequently, the conditions and regulatory mechanisms under which the Sp17 is differentially transcribed and translated should be further investigated in naturally occurring neoplasias.