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The Sycp1-Cre Transgenic Mouse and Male Germ Cell Inhibition of NF- κ B

REZA J. RASOULPOUR AND KIM BOEKELHEIDE

From the Department of Pathology and Laboratory Medicine, Brown University, Providence, Rhode Island.

Correspondence to: Dr Kim Boekelheide, Department of Pathology and Laboratory Medicine, 70 Ship Street, Box G-E504, Brown University, Providence, RI 02903 (e-mail: kim_boekelheide@brown.edu).

Successful spermatogenesis requires autocrine, paracrine, and endocrine signaling throughout the testes. The seminiferous tubules contain somatic Sertoli cells in tight association with numerous germ cell populations. To address the *in vivo* biologic roles of genes during spermatogenesis, spatial and temporal restriction of gene inhibition is a useful approach. To this end, Cre-LoxP technology can produce cell-specific knockdowns of genes, allowing dissection of the underlying processes that manifest as functional deficits in whole animals. Here we report the use of the synaptonemal complex protein 1-Cre (Sycp1-Cre) to create germ cell-specific nuclear factor κ B knockdown mice through floxed I κ B kinase β . We observed a LoxP gene recombination rate of approximately 43% using Sycp1-Cre, as determined by offspring genotype. In addition, we confirm that, with multiple generations, the LoxP sites fail to recombine due to epigenetic modification. This detailed examination of the meiotic Sycp1-Cre recombinase activity highlights the obstacles to germ cell-specific gene inhibition through Cre/LoxP technology in the testis. Taken together, these data demonstrate a need for early spermatogonial expression of Cre recombinase, as an alternative to meiotic Cre expression, for the creation of germ cell-specific knockout mice.

Key words: Testis, Cre/LoxP, spermatogenesis

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