

LONG LIFE TO THE Y-CHROMOSOME

The view of the Y chromosome as a functional desert has shifted in the last decades. Sex-chromosome evolutionary studies and the identification of Y-linked spermatogenic genes have revealed the importance of this tiny chromosome in testis differentiation and spermatogenesis. Nevertheless, the repetitive nature of the Y-chromosome involves several technical limitations that have restricted the number of studies devoted to uncovering the functionality of Y-linked genes. Accordingly, most of them have not yet been assigned to specific functions.

A recent review in [eLife](https://doi.org/10.1093/elfe/1.1.1)¹ summarized how evolutionary forces have led to the heteromorphic nature of the current mammalian X and Y chromosomes, and how these differences trigger two crucial events, namely, meiotic sex chromosomes inactivation (MSCI), and X-chromosome inactivation (XCI). Besides, the article summarizes the pros and cons of the different strategies for the study of the functionality of the Y-linked genes: from the limitations of classic gene targeting strategies to perform knockouts, to the relative usefulness of transgene complementation approaches. The authors highlight how new gene-editing techniques and advances in Y-chromosome sequence information have opened new avenues for the dissection of Y-gene functions.

The application of these new strategies for the individual study of Y-linked genes will be crucial to know which ones are essential for male fertility deepening the understanding of the link between Y genes and spermatogenesis.

1. <https://elifesciences.org/articles/67345>