AUTOSOMAL GENES CONTROLLING THE FORMATION OF THE *kl-3* Y-CHROMOSOME LOOP OF *Drosophila melanogaster*

Politi M.G.[1], Bonaccorsi S.[1], Pisano C.[1], Piergentili R.[1], Hackstein J.[2] and Gatti M[1].
[1]Dipartimento di Genetica e Biologia Molecolare e Centro di Genetica Evoluzionistica del CNR, Universita' di Roma "La Sapienza".
[2]Dept. Microbiol., Catholic University, Nijmegen/The Netherland.

Primary spermatocyte nuclei of *D. melanogaster* exhibit three giant lampbrush-like loops formed by the *kl-5*, *kl-3* and *ks-1* Y-chromosome fertility factors (1). these structures contain and abundantly transcribe highly repetitive, simple sequence DNAs and accumulate large amounts of non-Y-encoded proteins (1,2). It has been recently shown that the *kl-3* loop accumulates a tektin-like polypeptide which is also present in the sperm flagellum (3).

The biological role of the Y-chromosome loops is still largely unknown (4). They may accumulate non-Y-encoded proteins involved in spermiogenesis (1-3), harbor genes encoding for axonemal components (5), or both (4,6). To obtain insight into the structure and function of the Y loops, we cytologically screened more than 700 male-sterile mutants with the aim of identifying genes controlling loop formation. This analysis led to the isolation of 5 mutants at 4 autosomal loci that suppress the *kl-3* loop development, without affecting the unfolding of *kl-5* and *ks-1* loops. Statistical and deficiency mapping experiments permitted precise localization of the genes specified by these mutants, and showed that at least two of them are specifically required during spermatogenesis.

The identification of genes that control the *kl-3* loop formation, coupled with the finding that it binds a tectin-like protein, suggests that the Y loops are complex genetic entities. The *kl-3* loop corresponds to a single Y-linked complementation group but its formation and functioning requires at least 5 autosomal gene products. We believe that the molecular characterization of these products will be instrumental to elucidate the functional role of this still largely enigmatic structure.

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