Sreerama Reddy, G. and N.B. Krishnamurthy.
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Mysore, India. Photomap of the salivary gland chromosomes of D. ananassae.

For the first time, a photomap of the salivary gland chromosomes of Drosophila ananassae of a homozygous strain from Perumalmalai (South India) has been made. The salivary gland chromosome complement consists of six arms radiating from a conspicuous chromocenter. The two short arms represent X-chromosome and the remaining four arms represent the second and third chromosomes. The fourth chromosome being heterochromatic is incorporated into the chromocenter.

The photomap of six arms of the salivary gland chromosomes (Figure 1) is divided into 1/166 sections, approximately of equal lengths. The numbering of sections is continuous, starts from the terminal end of the left arm of the X-chromosome and ends at the tip of the right arm of the third chromosome. The number of sections in each arm indicates the relative length of that arm. For instance, the longest arm 2L has 43 sections while the shortest arm XR has only 11 sections. Of the remaining four arms, XL has 20 sections, 2R-32, 3L-35 and 3R has 23 sections. The diagnostic features of each arm are:

XL is divided into 1/20 sections. It can be easily recognised by a flared tip followed by a puff with two dark bands in the region 1, a large roundish and constant puff in the region 4, which is followed by another small puff in the region 5. Other notable features of this arm are the presence of an oval puff with three dark bands in the region 11, a round puff with a dark band and faintly stained dot band in the region 15, a rectangular puff with four dark bands in the region 19 and a bulb at the basal region followed by a dark band and a thin band in the region 20.

XR is the shortest arm with sections 21 to 31. The guiding features of this arm are the presence of three puffs each in the regions 24, between 27 and 28 and 30. The distal end is fan-shaped, followed by two dark bands. Another diagnostic feature of this arm is the vase-shaped puff in the proximity of the chromocenter.

2L is the longest of all the arms with sections 32 to 75. The characteristic bell-shaped terminal end is one of the constant features of this arm. This is followed by a dark band in the constricted portion of the region 32. Certain remarkably constant puffs are noticed in the regions 37, 39, 42 and 53. The puff in the region 42 has four well-defined dark capsules. Other prominent features of this arm are the presence of two large puffs in the regions 64 and 65 and thick dark bands in the regions 66, 67, 68 and 70. The basal region of this arm shows the presence of two small puffs in the regions 73 and 74 which form important land marks in the identification of this arm.

2R is intermediate in length between 2L and 3L. The sections are from 76 to 108. A small puff-like enlargement between 77 and 78, followed by three distinct dark bands in the region 79, an oval puff in the region 80 and two constant oval puffs each in the regions 93 and 97 are some of the diagnostic features of this arm. In addition, the terminal portion of this arm can be easily recognised by three small puffs in the regions 104, 106 and 107. The arm ends with a slightly flared tip containing small indistinguishable vesicles.

3L is the second longest arm, with sections from 109 - 143. The notable features of this arm are three consecutive puffs in the regions 112, 113 and one between 114 and 115. The puff present in region 113 has two shields. The region 118 has a roundish puff with a central thick dot band and a thin band on either side of it. One of the additional features of this arm is the presence of a series of dark bands and chain bands between the regions 123 and 129, of which the region 127 and 129 are characteristically enlarged to form round puffs. The basal region is characterised by three large puffs of which the first one is present in the region between 135 and 136 and the other two are in the regions 138 and 140. The puff present in the region 140 is highly diagnostic with a thick chain band in the middle and a thin band on either side of it followed by a thin dot band.

3R is shorter than 2R and the sections are from 144 - 166. This arm can be easily identified by the presence of prominent bands throughout its length. The guiding features of this arm are three dark bands at a little distance from the chromocenter in the region 145, a puff in the region 147, followed by conspicuous dark bands in the regions 148 and 149. Other marked features of this arm are the presence of four distinct dark bands in the region 159 followed by a hat-like puff in the region 160. Two moderately large puffs behind the terminal end in the regions 166 and 165 are also of great importance in identifying this arm.

The photomap made and presented here permits more precise characterisation of the natural configurations of the bands and puffs and is helpful in localising with precision the varied gene arrangements found in this species.

(See photomap next page)

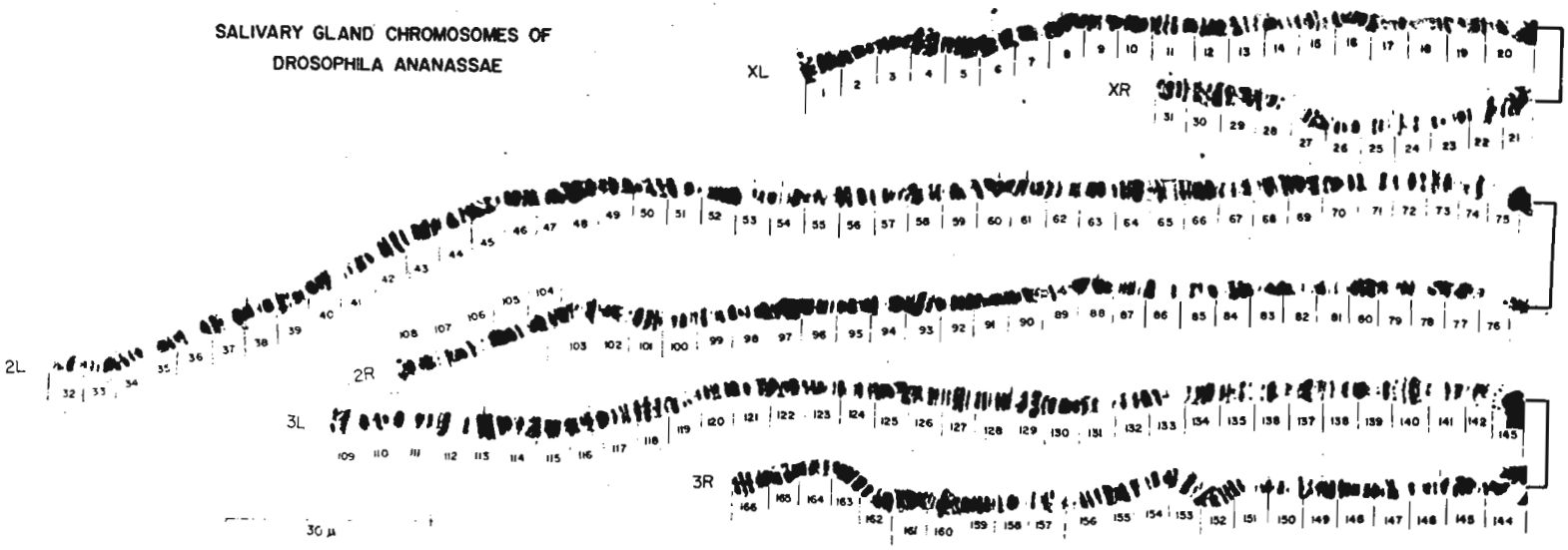


Fig.1

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