VARIABLE ORIENTATION OF THE EMBRYONIC MASS DURING THE IMPLANTATION OF THE BLASTOCYST IN THE INDIAN FALSE VAMPIRE BAT, *MEGADERMA LYRA LYRA* (GEOFFROY)

The orientation of the embryonic mass of the blastocyst in a given mammal bears a specific relationship to the morphology of the uterus during the implantation of the blastocyst, and this topographical relationship between the blastocyst and the uterus “is usually quite constant in all groups known to be closely related” (Mossman, 1937; 1971). The orientation of the embryonic mass has also a direct bearing on the later development of the foetal membranes in the mammals since the yolk sac is invariably located on the side opposite to the location of the embryonic disc, and the chorio-allantoic placenta is formed on the side of the uterus towards which the embryonic disc faces (Gopalakrishna and Moghe, 1960; Mossman, 1971). Consequently, the orientation of the embryonic mass at nidation has been considered to be a character which is of considerable taxonomic and phylogenetic importance.

Although Chiroptera is one of the largest and one of the most cosmopolitan orders among the mammals, the information concerning the implantation of the blastocyst in bats is extremely limited. Among the seventeen families comprising this

Figs. 1-4. Photomicrographs to illustrate the variable orientation of the embryonic mass in the implanting blastocysts of *Megaderma lyra lyra*. The arrow points towards the mesometrial side in all the figures. Please see text for description. All figures, × 30.
order, the details of the implantation of the blastocyst are known with respect to a few members of the family Vespertilionidae, and inadequate information is available regarding one or two members of a few more families. Nothing is known so far about the implantation of the blastocyst in any member of the family Megadermatidae.

*Megaderma lyra lyra* (Family—Megadermatidae) has a sharply defined breeding season. Copulation takes place during the first two weeks of November. Each female bears a single embryo in one of the uterine cornua (the left cornu being physiologically dominant), and delivers a single young in the first or the second week of April. Many females carrying early developmental stages were captured during November.

The present report is based on the examination of seventeen implanting bilaminar blastocysts. Out of these, the embryonic mass is oriented mesometrially (Fig. 1) in five, laterally (Fig. 2) in eight, between the mesometrial and the lateral sides (Fig. 3) in three, and antimesometrially (Fig. 4) in one. Evidently, the early orientation of the embryonic mass is variable in this species—a phenomenon not known to occur in any other mammal. It is all the more interesting because the final chorio-allantoic placental disc is invariably mesometrially located. Since the chorio-allantoic placenta in all mammals having a discoidal placenta develops in the region of the uterus adjacent to the embryonic disc, it is hard to reconcile a variable embryonic disc with an invariable mesometrical placental disc. The work of Kirby, Potts and Wilson (1967) has revealed that the embryonic mass in the blastocyst of the mouse may migrate actively inside the blastocyst covering. Unless a similar migration of the inner cell mass occurs in *Megaderma lyra lyra* also, it is hard to explain how the chorio-allantoic placenta is formed invariably on the mesometrial side of the uterus even though the orientation of the embryonic disc during implantation is variable.

**Letters to the Editor**

GONIAL AND SPERMATOCYTE CHROMOSOMES OF *EMPOASCA DEVASTANS* (HOMOPTERA, TYFLOCYBINAE)

**Abstract**

The diploid number of chromosomes in the jassid *E. devastans* (Dist.) is 22 in female and 21 in male. The chromosomes are with non-localised centromere. The first spermatocyteic division is reductional but the second equational. The sex determining mechanism is XO : XX. Metrical study of the first spermatocyte chromosomes shows very gradual separation. The X is the largest member of the complement. Results obtained in the present study have been correlated with the published data.

*E. devastans* (Dist.) is a serious pest on *Hibiscus esculentus*, cotton and other crop plants. Nymphs and adults inflict the same type of damage, suck out the plant sap and inject toxin into the plant tissue resulting into 'hopper burn'. This toxin may cause wilting of leaves and ultimately drying up of the whole plant or general mottling accompanied by the curling of the entire lamina with brown necrotic patches. It is also known to transmit virus. This paper records the structure, behaviour and metrical values of the gonial and spermatocyte chromosomes of *E. devastans*.

In this study gonads of several male and female individuals of *E. devastans* were squashed and sectioned and stained either in iron-alum haematoxylin or Fuegen. First spermatocyte metaphase chromosomes were metrically assessed as per the method of Bhattacharya and Manna (1970).

The following observations were made. There were 22 chromosomes in the oogonial (Fig. 1) and 21 in the spermatogonial (Fig. 2) metaphase complements. Chromosomes of these complements were very gradually seriated bean-shaped elements with non-localised centromere. Even then, four in the oogonal and three in the spermatogonial complement were observed as comparatively larger than the rest. In the gonial complements no heteropycnosis was observed so as to pinpoint the sex chromosomes which were two in the female and one in the male.

Chromosomes in the early primary spermatocyte nucleus were oriented in a prominent "bouquet" (Fig. 3). The diakinesis nucleus (Fig. 4) had ten bivalents and an univalent X chromosome both with the same degree of stain intensity. The chiasma frequency was one per bivalent. At metaphase I (Fig. 5) ten dumbbell-shaped bivalents and a spherical X forming an accessory plate were seen. The first division anaphase (Fig. 6) incorporated the X in one pole while the autosomes got evenly distributed, ten each, to both the poles. The second division was equalional for the chromo-

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