Department of Botany,
University of Saugar,
Sagar 470 003 (M.P.), India,
June 15, 1979.

C. D. ATHAYA.
G. P. MISHRA.

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SUCCESS IN EMBRYO TRANSFER IN INDIGENOUS GOATS

THE success in transplantation of embryo from one rabbit to another was first reported by Heape[3]. As a result of intensive research in the last three decades, the transplantation technology has found its place in the rapid multiplication of exceptionally high yielding livestock in developed countries. The feasibility of application of this technology in indigenous goats has been reported in this communication.

The oestrus in sixteen she-goats (Barbari nannies) was synchronized with Melengestrol Acetate (MGA), fed with concentrate mixture @ 0·15 mg/animal for 16 days. Eight goats (donors) were given 400 i.u. PMSG (No. G. 4877, Sigma) intramuscularly on the last day of MGA feeding to enhance ovulation rate and they were artificially inseminated during oestrus. The other eight goats in oestrus were left empty and employed as recipients.

The eggs from the fallopian tubes of donors were collected at 72 hrs post-onset of heat and those exhibiting normal cleavage were transferred to the fallopian tubes of recipients whose luteal stage was coinciding with the age of the eggs at the time of transfer. The collection and transfer of embryos were made by the transfer application of conventional surgical techniques described by Agrawal *et al.*[1].

Observations on ovulation rate, % recovery, cell stage of eggs, % conception, proportions of eggs surviving to term, gestation length, number of kids born and birth weight of kids were recorded.

The ovulation rate in PMSG treated donors and untreated recipient females were $2{\cdot}62 \pm 0{\cdot}37$ and $1{\cdot}37 \pm 0{\cdot}17$ respectively. Sixty-two percent of the eggs were recovered from the fallopian tubes of which 84·6% exhibited normal cleavage. The eggs belonged to 4 to 8 cell stage and $11{\cdot}66 \pm 0{\cdot}14\ \mu$ in diameter. Seventy-five per cent of the recipient goats conceived and carried 54·5% of embryos to full term (gestation length—$146{\cdot}1 \pm 0{\cdot}3$ days). The average birth weight of the kids was $2{\cdot}03 \pm 0{\cdot}12$ kg.

The donor goats responded to PMSG as evidenced by two-fold increase in ovulation rate. The ovulation rate in recipient goats was similar to the normal values in Barbari breed as reported by Prasad *et al.*[6]. The egg recovery rate from donors, conception rate of recipients and survival rate of transplanted embryos to full term in the present study are encouraging and resemble the values on cattle[5] and sheep[2,4].

The exhibition of normal gestation length and normal birth weight of the kids born out of transplantation indicates the feasibility of application of the technology in indigenous goats.

The authors are grateful to Dr. C. M. Singh Director, Indian Veterinary Research Institute Izatnagar, for providing the facilities.

Indian Veterinary
Research Institute,
Izatnagar 243 122,
Uttar Pradesh,
May 31, 1979.

K. P. AGRAWAL.*
I. V. MONGHA.**
N. K. BHATTACHARYYA.*

* *Division of Physiology and Climatology.*
** Division of Experimental Medicine and Surgery.

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A SIMPLE AREA CALCULATING DEVICE (ACD) FOR BIOLOGICAL SYSTEMS

SIZE relations of tissue play important role in solving some of the problems of comparative and developmental anatomy and embryology. The optic illusion has led a number of authors to misinterpret the size of the cells or tissues. Sivaramakrishna[1] measured a number of published illustrations of two-celled embryos and pointed out that the cell which appeared and interpreted to be larger than the other need not be so in actual area. This is a single example out of many noticed and unnoticed instances, to show the importance of area calculation. Area of tissue, in a sectional view can be measured by the point counting using

lattice test system[2]. This is done by drawing them onto the graph paper[3], tracing the test system onto a transparent plastic film and then measuring the area, or cutting the drawing size to size and weighing them to find out the average area[4]. These methods are time-consuming, and there are possibilities of errors. To overcome such difficulties we have designed a new device for an easy and quick area calculation of the tissue.

Take two thin glass sheets of the size suitable to requirement. Clean them in mixture of sulphuric acid and chromic acid; rinse in distilled water and allow to drain, and dry. Any spot remaining on the glass surface should be cleaned with lint-free cloth. The sheets must be moisture-free. Flood one surface of one glass sheet with D.P.X. (Fig. 1 A–C) and press a thin graph paper against this surface firmly with utmost care to remove trapped air bubbles. Flood the upper surface of the graph paper, and mount over it another glass sheet very slowly with the help of a needle (Fig. 1 D). The air bubbles must be removed.

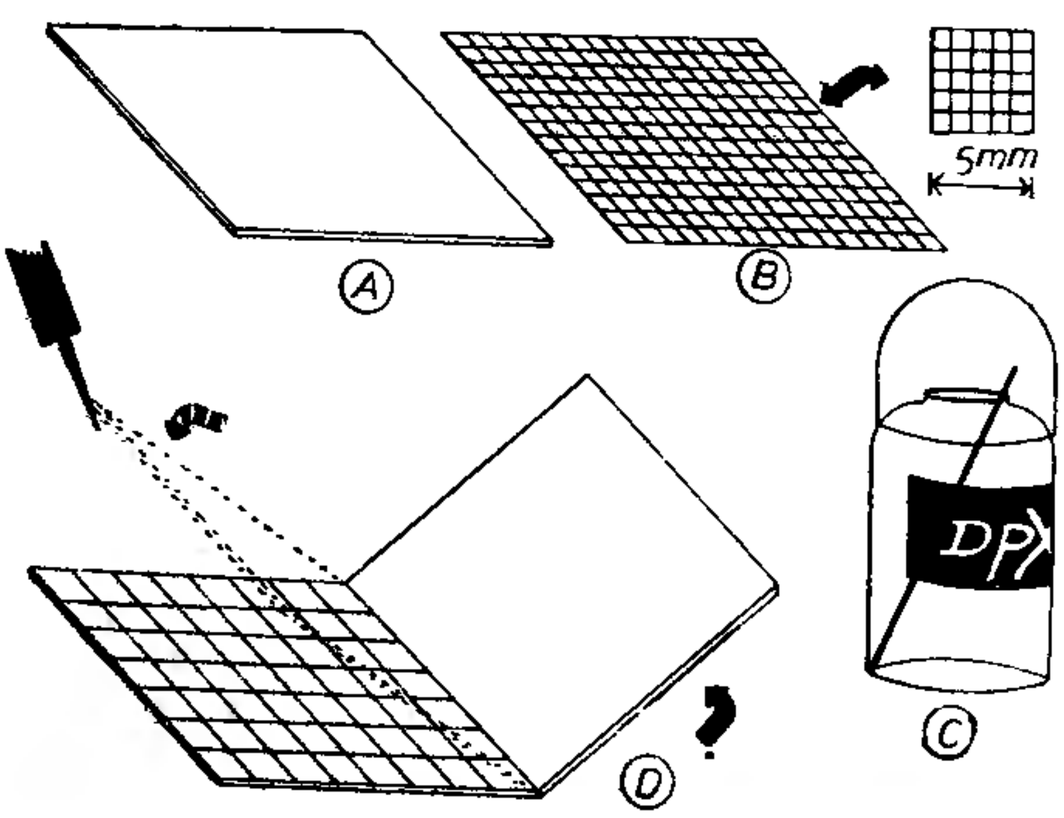

FIG. 1. Preparation of ACD.

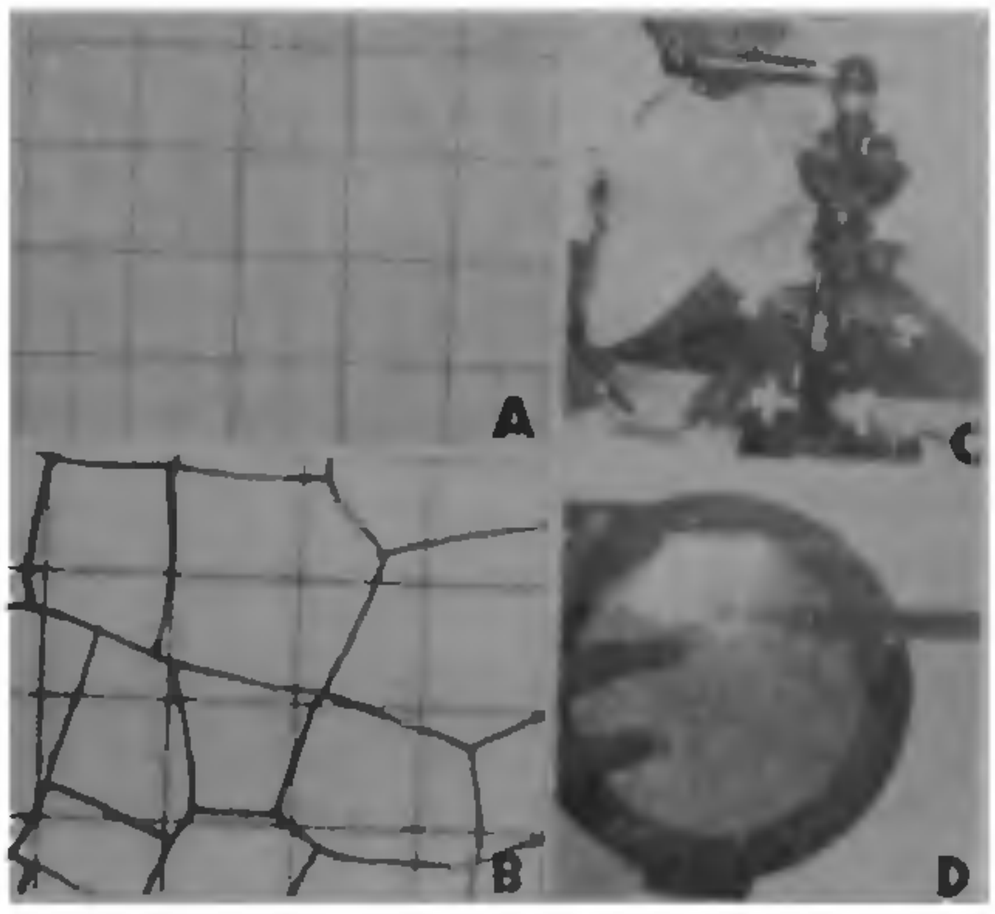

FIG. 2. Uses of ACD.

Allow to dry. Clean the three-ply ACD on all its surfaces to remove extra mountant.

The ACD thus prepared (Fig. 2 A) can be utilized in a variety of ways. Area of the tissue from the camera lucida drawing can be measured by placing the ACD over the drawing and counting the smallest squares of the ACD covering the area of interest (Fig. 2 B). Place the ACD on the table top over a white paper sheet below the camera lucida. View through the camera lucida and count the area of ACD covering the tissue to be measured (Fig. 2 C). The ACD can be placed over the viewing glass screen of the projection microscope to measure the image directly (Fig. 2 D). The actual area of the tissue can be calculated by using the following formula :

$$\text{Actual area in } \mu m^2 = \frac{\text{Area of tissue covered by ACD} \times 10^6}{(\text{Magnification of image})^2}$$

Department of Biosciences,
Sardar Patel University,
Vallabh Vidyanagar 388 120,
June 22, 1979.

R. R. CHAVAN.
I. L. KOTHARI.
J. D. PATEL.

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KARYOLOGY OF TWO SPECIES OF HILLSTREAM FISHES, *BARILIUS BENDELISIS* AND *RASBORA DANICONIUS* (FAM.: CYPRINIDAE)

ALTHOUGH chromosomal study has so far been carried out on some 800 species of fishes inhabiting both freshwaters and saltwaters[3] yet similar work is lacking on the hillstream fishes of India. Hence the present work was undertaken.

10 living specimens, 4 females and 6 males, of *Barilius bendelisis*, collected from the Ushri Falls off Giridih, Bihar and 4 female specimens of *Rasbora daniconius*, collected from the Yamuna River off Kulhal, U.P., form the materials for the present study. Kidneys and gills from both the sexes and testes from the males of the colchicinized specimens were processed according to the citrate-flame drying-Giemsa stain schedule described elsewhere[1]. The chromosomes of 3 well-spread metaphase complements in each sex were individually measured and their centrometic indices determined in order to ascribe the morphology as suggested by Levan *et al.*[2].