granules appeared intensely bluish, especially in the old rats. The stained granules were larger than those in young rats (figs 1a and 1b). At 15 days of feeding the fat rich chow (group B), the intracellular granules could hardly be stained with hematoxylin eosin, and pale vacuoles of various sizes were prominent. Granules stained with sudan black B were more apparent than in group A. However, the granules in F.G.P. of animals treated with elastase and receiving the fat rich chow, were stainable with eosin and PAS; only the peripheral regions of most granules were stained with sudan black B. The sudan black B-stained granules in F.G.P. were diminished in group B, especially in the old rats. About 30% of granules in F.G.P. were stained intensively with sudan black B in the specimens from the old rats treated with the fat rich chow, while only 10% of granules was stainable in the specimen of the rats receiving the fat rich chow and treated with elastase. Electron microscopy revealed that in rats fed a fat rich chow for 15 days (group B, figs 2 and 5), inclusion bodies with a honeycomb-like structure appeared frequently in F.G.P. The endoplasmic reticulum with ribosomes was sparse and often markedly dilated. Mitochondria looked somewhat swollen and their cristae were irregular (fig. 3). Inclusion bodies fused with each other and reached a large size. These morphological changes were typical for old rats. Similar findings were also seen in the specimens of group A, although the cytoplasmic changes were not so pronounced. All these changes are characteristic for a marked uptake and accumulation of lipid material in F.G.P.; the expansion of the endoplasmic reticulum and the swelling of the mitochondria can be regarded as an exhaustion of the cytoplasm.

From these findings it can be concluded that the quantity of lipid material in F.G.P. depends on the duration of feeding a fat rich diet and on the age of the rats. The increased fat storage in F.G.P. may reflect an increased uptake and/or a diminished digestion capacity of these cells in the old rats. However, the uptake capacity of F.G.P. for intraventricularly administered horseradish peroxidase decreases with age, as described previously[4]. Moreover, many vesicles were observed in the endothelium, indicating vesicular transport of fat through the vascular wall (fig. 4). Therefore, it appears that the specific fat uptake into endothelial cells increases significantly with advancing age. According to Banga and Baló[5], elastase is decreased in the pancreas of the elderly and of patients suffering from arteriosclerosis. Therefore, the marked deposit of fat in F.G.P. of old rats could be related to a decrease of elastase. Thus, this enzyme apparently does not only degrade elastic fibers, but also influences the metabolism of lipid material in the endothelium and in F.G.P. The precise mechanism of elastase activity in F.G.P. awaits further investigation.

1 Acknowledgment. This study was supported in part by a grant in aid for Scientific Research from the Ministry of Education of Japan (No. 448085). The authors also would like to express their hearty thanks to Eisai Co. for a supply of elastase.
2 Mato, M., Ookawara, S., Tooyama, K., and Ishizaki, T., Experientia *37* (1981) 1013.
3 Westergaard, E., and Brightman, M.W., J. comp. Neurol. *152* (1973) 17.
4 Mato, M., and Ookawara, S., Am. J. Anat. *162* (1981) 45.
5 Baló, J., and Banga, I., Acta physiol. hung. *4* (1953) 187.

Establishment of a colony of the mosquito *Culiseta longiareolata* under laboratory conditions

Fatma K. Adham

Department of Entomology, Faculty of Science, Cairo University, Giza (Egypt), 28 December 1981

Summary. A colony of *Culiseta longiareolata* was set up in the laboratory starting with more than 700 larvae and pupae collected from an old well. Procedures for successful establishment of a colony and laboratory maintenance of this mosquito are described.

According to Kirkpatrick[1] the mosquito *Culiseta (Allotheobaldia) longiareolata* Macquart (Diptera, Culicidae) is a Mediterranean species common throughout North Africa and in the Canary Islands, Palestine, Syria, Macedonia, Italy and South and Central France. It has also been recorded from the Sudan, East Africa and Cape Province, from Transcaspia, Mesopotamia, Persia and the Punjab.

As the necessity for research has increased, the need for more efficient rearing techniques has also increased, and over the years investigators have been able to increase the efficiency of mosquito rearing[2-5]. Maintenance of a laboratory colony of *C. longiareolata* Macq. has not been previously reported. This species has been found to be amenable to laboratory colony-formation, and a colony of these mosquitoes has been maintained in the Department of Entomology, Faculty of Science, Cairo University, for 2 years. Many experiments have been performed to determine the best conditions for routine maintenance of a self-perpetuating colony of *C. longiareolata.* Details of the origins of the colony, methods for routine maintenance and observations on the biology of the immature forms are reported in the present paper.

Colony formation. The colony was established using large numbers (more than 700) of 4th instar larvae and pupae collected from an old well in Wadi El-Natroun (Beheira Governorate) about 110 km north west of Cairo, during December 1977 and January 1978. Larvae and pupae were transferred to the laboratory in glass jars along with rotted leaves and dates collected at the larval breeding sites.

Laboratory maintenance. 75 emerging adults of each sex were held in cages $30 \times 30 \times 30$ cm or in small rearing containers $9 \times 15 \times 20$ cm for successful mating (stenogamous). The cages were made with a wooden floor, the roof and 3 sides were made of wire gauze, and the wooden front was provided with a circular hole accomodated with an organdy sleeve to allow the introduction of pupae and sugar solution and the removal of deposited eggs. Each cate was provided with cotton pads soaked with 10% sugar-water solution as a source of carbohydrate for males and females. An ambient temperature of 18–22 °C was maintained, with an ambient relative humidity of 60–70%. In order to maintain the temperature below 20 °C during the summer season a climatized room was used. Attempts to control photoperiod only during the summer season were

necessary in the laboratory to simulate approximately the shortest day of the cear.

As adults emerged in the cages they were left for 2-3 days for mating. Mating usually took place in late afternoon. Fertilization was established by dissection and found to occur before feeding. Fertilized females were allowed to feed on human arms, guinea-pigs and pigeons. Difficulty was experienced initially in blood feeding of the adult females in the cage during the day time. It soon became apparent that if the adults were kept in the dark (overnight), they fed better on the sugar-water solution, as evinced by an abundance of fluid in their abdomens. The females were then induced to take a blood meal from a human arm during the night, but only 8 adults out of 300 fed. A similar observation was made by Storey[6]. This record was noted only once during establishment of the colony. A guinea-pig was also tried unsuccessfully. In a later attempt to induce the females to take a blood meal, a pigeon was taped overnight on top of the cage. Using this method female mosquitoes engorged.

3 days after the 1st blood meal small beakers (500 ml) containing distilled water were placed in the cages as an oviposition site. 4-8 days (mean 5.61 days) after feeding, oviposition began. We blood-fed adults daily for 10 days, to allow all emerging adults to have a blood meal, and collected eggs over a 12-14-day period. The greatest number of eggs produced by an individual female was 214 eggs and the least was 80 eggs. The egg rafts were removed daily from the cage and kept in small beakers until hatching, which took place within 3 days.

Larvae were reared in lots of 200 larvae in distilled water (500 ml) in large white enamel pans (40 cm in diameter). Larvae were fed on finely ground fish food (Tetramin®)[7]. A small amount was supplied to newly hatched larvae and thereafter an increasing amount as the larvae grew. There should be enough to provide some excess, but not so much as to facilitate bacterial growth and clouding of water. Distilled water was added to compensate for the water loss by evaporation. Overcrowding of larvae was avoided to prevent cannibalism and to avoid the adults being undersized. Larvae left in that medium under laboratory conditions pupated after 11-16 days. Lower temperatures markedly affect the larval development: at 8 °C newly hatching larvae reached the 2nd instar and died, while at 12 °C great mortality was observed among the 3rd stage larvae.

As pupae appeared they were collected daily and transferred to small plastic cups three quarters filled with distilled water in the rearing cages for adult emergence. The pupal stage lasted 4 days under laboratory conditions.

1 Kirkpatrick, T.W., XIV Plates. Government Press, Cairo 1925.
2 Dame, D.A., Haile, D.G., Lofgren, C.S., Bailey, D.L., and Munroe, W.L., Mosq. News *38* (1978) 68.
3 Ford, H.R., and Green, E., Mosq. News *32* (1972) 509.
4 Rozeboom, L.E., Am. J. trop. Med. Hyg. *16* (1936) 471.
5 Shute, P.G., J. trop. Med. Hyg. *39* (1936) 233.
6 Storey, G., Bull. Soc. ent. Égypte *12* (1918) 84.
7 Pappas, L.G., Mosq. News *33* (1973) 604.

Announcements

Honors

Professor Franz Oesch, Department of Pharmacology, University of Mainz/FRG, has been awarded the **Robert-Koch-Prize 1982.** The Managing Editors and the members of the Editorial Board of Experientia congratulate their Advisory Board member for this great honor.

Corrigenda

L. Fiume, A. Mattioli, C. Busi, G. Spinosa and Th. Wieland: Conjugates of 9-β-D-arabinofuranoside monophosphate (ara-AMP) with lactosaminated homologous albumin are not immunogenic in the mouse, Experientia *38* (1982) 1087-1089.

There are two printing errors in the paper. The title reads correctly .... 9-β-D-arabinofuranoside ... as above. On page 1089, lines 54 and 55 of the left column should read: .... mice. None of the mice, treated with L-MSA-ara-AMP conjugate and tested for cell-mediated hypersensitivity .....

P. P. T. Pun, S. M. Ginn and E. M. Flint: Regulation of ppApp synthesis during sporulation of a conditionally asporogenous rifampin mutant of *Bacillus subtilis,* Experientia *38* (1982) 663.

While the figure legends are correct, the figures themselves have been reversed.

Federal Republic of Germany

3rd international symposium on invertebrate reproduction

Tübingen, August 22-27, 1983

The symposium is organized by the International Society of Invertebrate Reproduction (ISIR), with 5 sessions with invited speakers covering: 1. Cellular differentiation and cellular events in invertebrate reproduction, especially gametogenesis and fertilization; 2. endocrine control of invertebrate reproduction; 3. environmental adaptations of invertebrate reproduction; 4. population dynamics, reproductive strategies of invertebrate reproduction and their genetical background; 5. manipulation and control of invertebrate reproduction.

Further information by Prof. Dr W. Engels, LS Entwicklungsphysiologie, Auf der Morgenstelle 28, D-7400 Tübingen/FRG.

29th international congress of pure and applied chemistry

Cologne, June 5-10, 1983

The 29th IUPAC congress, organized by the Gesellschaft Deutscher Chemiker, will present main lectures on 'New advances in inorganic chemistry', 'New advances in organic chemistry', 'New advances in physical and theoretical chemistry', 'Progress in the production of chemical basic materials', and 'Education in chemistry'. Plenary lectures on 'Removal of chemical wastes' and 'Removal of wastes of origin other than chemical industry'.

Further information by the General Secretariat, c/o Dr W. Fritsche, P.O. Box 900440, D-6000 Frankfurt a.M. 90/FRG.