

NATURAL OCCURRENCE OF A MOSQUITO IRIDESCENT VIRUS IN *Aedes sollicitans*

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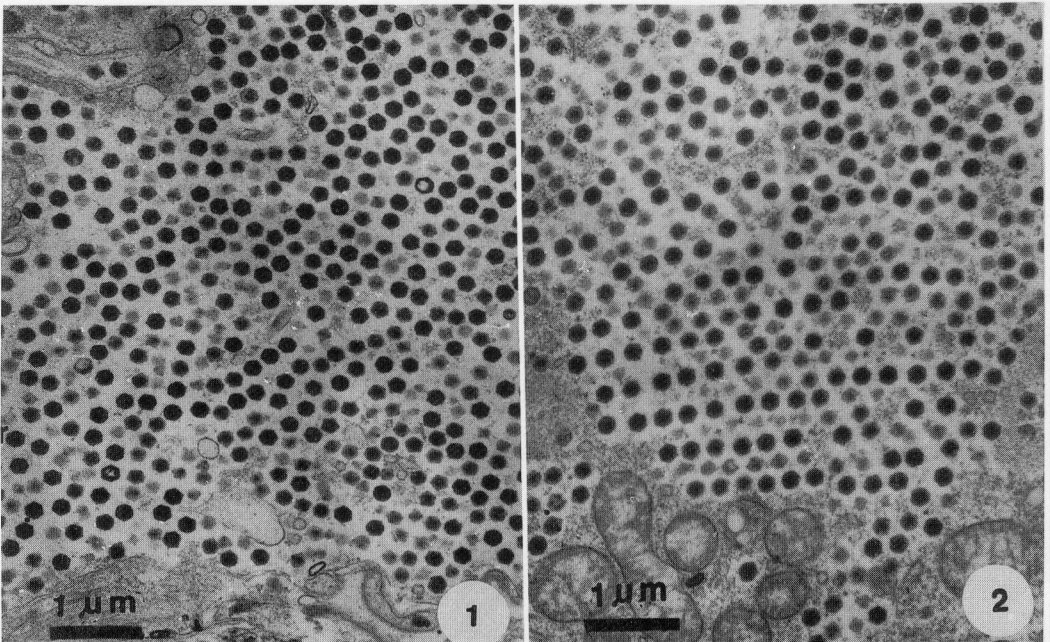
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Mosquito iridescent virus (MIV) causes a yellow to green iridescence in its larval mosquito host and was first reported by Clark et al. (1965) from the mosquito *Aedes taeniorhynchus* (Wied). In that same year, Weiser (1965) described an MIV from *Ae. annulipes* (Meigen) and *Ae. cantans* (Meigen) from Czechoslovakia. Subsequently, MIV was reported in Louisiana by Chapman et al. (1966) from *Ae. taeniorhynchus*, *Ae. fulvus pallens* Ross, *Ae. vexans* (Meigen) and *Psorophora ferox* (von Humboldt) and later from *Ae. sticticus* (Meigen), *Ps. horrida* (Dyar and Knab) and *Ps. varipes* (Coq.), now *Ps. mathesoni* Belkin and Heinemann (Chapman et al. 1969), and finally from *Ps. columbiae* (Dyar and Knab), reported as *Ps. confinnis* (Lynch Arribalzaga) by Chapman (1974). Matta and Lowe (1970) designated the originally isolated virus in *Ae. taeniorhynchus* as RMIV (R = regular) to separate it from a spontaneously formed laboratory strain of the virus in *Ae. taeniorhynchus* which was designated as TMIV (T = turquoise). Recently, RMIV has been

placed in the family Iridoviridae, representing the type species for the genus *Chloridovirus* and assigned the type number IV-3 (Matthews 1982). Turquoise mosquito iridescent virus is apparently a mutant strain of IV-3 (RMIV) and has never been collected from the field (Hall 1985).

In laboratory studies with IV-3, Woodard and Chapman (1968) readily transmitted the IV-3 to *Ae. sollicitans* (Walker) but not to other mosquitoes tested. It was noted by these researchers that larvae of *Ae. sollicitans* had not been detected from the field with patent infections of IV-3 even though they often coinhabit areas which produced infected *Ae. taeniorhynchus*. This report documents the first time an MIV has been isolated from a natural population of *Ae. sollicitans* and transmitted to *Ae. taeniorhynchus*.

During a routine survey of *Ae. sollicitans* from Cameron Parish in southwestern Louisiana, one larva with a mottled, brownish-yellow iridescent appearance was isolated and suspected of being



Figs. 1 and 2. Electron micrographs of the mosquito iridescent virus from *Aedes sollicitans* in the mosquitoes *Ae. taeniorhynchus* (1) and *Ae. sollicitans* (2).

infected with a virus. A small piece of infected tissue was fixed in 2.5% glutaraldehyde in cacodylate buffer (pH 7.4) followed by 1% osmium tetroxide (w/v), dehydrated in an ascending ethanol series into acetone and embedded in epon-araldite. Thin sections were poststained in uranyl acetate followed by lead citrate and examined with a Hitachi H-600 electron microscope. The remainder of the larva was homogenized in deionized water, and this inoculum was used to expose first instar *Ae. taeniorhynchus* larvae obtained from a laboratory colony. Infected *Ae. taeniorhynchus* larvae were processed for electron microscopy in the same manner as the infected *Ae. sollicitans*.

Aedes taeniorhynchus larvae which became infected after exposure to the inoculum from *Ae. sollicitans* exhibited an iridescence characteristic of the R-strain of IV-3. Ultrastructural investigations of both infected *Ae. taeniorhynchus* (Fig. 1) and *Ae. sollicitans* (Fig. 2) verified crystalline arrays of icosahedral particles similar in morphology but somewhat smaller in size (110 nm as compared with 190 nm) than previously published micrographs of IV-3 from *Ae. taeniorhynchus* (Anthony and Hall 1970). The reasons for this size difference are unclear. Hall (1985) noted that considerable variation in the size of the same virus is often due to the use of different techniques. He concluded that a standard method for size determination of iridescent viruses is required if size is to be used as a criterion for classification.

Isolation of iridescent virus from both *Ae. sollicitans* and *Ae. taeniorhynchus* for serological studies are necessary to determine whether this represents a new type or a new host record for IV-3. Fukuda and Chapman (1973) first noted and reported the mottled (spotted) iridescence when IV-3 was transmitted in the laboratory from *Ae. taeniorhynchus* to both *Ae. sollicitans* and *Ae. nigromaculis* (Ludlow) Therefore, the characteristic IV-3 yellow to green iridescence observed with this MIV in *Ae. taeniorhynchus*

and the mottled iridescence in *Ae. sollicitans* suggests this virus may be IV-3 being expressed differently in another host. This could possibly explain why IV-3 has not previously been detected in *Ae. sollicitans*.

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