

Leishmania braziliensis s. lat., Isolated from *Lutzomyia panamensis* in Panama

Biagi et al. (1965, Prensa Med. Mex. **39**: 267-272) added *Lutzomyia flaviscutellata* to the list of 15 Neotropical phlebotomine species found naturally infected with promastigote (leptomonad) flagellates (Adler, 1964, Adv. Parasit. **2**: 35-96). Some workers tend to equate such flagellates isolated from wild-caught phlebotomines with *Leishmania*. However, promastigote forms responsible for American cutaneous leishmaniasis have been demonstrated in only four wild-caught, New World phlebotomine species: (1) *Lu. trapidoi* (Johnson et al., 1962, J. Parasit. **48**: 158; McConnell, 1963, Exp. Parasit. **14**: 123-128), (2) *Lu. ylephiletrix* (McConnell, 1963, loc. cit.), (3) *Lu. gomezi* (Schneider and Hertig, 1966, Exp. Parasit. **18**: 25-34) in Panama, and (4) *Lu. flaviscutellata* in Mexico (Biagi et al., 1965, loc. cit.), British Honduras (Disney, 1968, J. Appl. Ecol. **5**: 1-59), and Brazil (Lainson

and Shaw, 1968, Tr. Roy. Soc. Trop. Med. Hyg. **62**: 385-395).

Although the overall promastigote infection rate among anthropophilic phlebotomines in Panama may exceed 10% (Johnson, 1963, Exp. Parasit. **14**: 107-122), the majority of flagellates tested did not infect hamsters (McConnell, 1963, loc. cit.). The criterion used by our laboratory to distinguish leishmanial from other promastigote flagellates isolated from wild-caught phlebotomine sandflies is the ability of the parasite to become established and multiply in the nasal dermal tissues of the golden hamster following inoculation of the promastigotes. Demonstration of tissue forms of the parasite (Leishman-Donovan bodies) from the site of inoculation after a suitable incubation period is an indispensable requisite for diagnosis.

A total of 1,748 wild-caught phlebotomine

sandflies were dissected from September 1966 to April 1969 in search for additional infections of *L. braziliensis* s. lat. The flies were collected from nine widely separate localities within the Republic of Panama. Four out of 306 *Lu. panamensis* dissected had flagellate infections. In three cases the flagellates were confined to the regions of the hindgut and rectal ampulla, and appeared to be epimastigote forms. The fourth *Lu. panamensis* (WC-8780), collected unfed from a horse used as bait near the village of Achiote, Colon Province 28 January 1969, showed a massive promastigote infection throughout the midgut. The anterior end of the cardia was obscured by the thoracic sclerites and not seen clearly. A rupture in the wall of the midgut liberated innumerable motile flagellates into the saline dissecting medium. Only two motile flagellates were observed in the rectal ampulla, and none throughout the hindgut except for the triangular-shaped region just posterior to the malpighian tubules (hind-triangle) which contained many nonmotile forms. Each of five tubes containing Senekji's culture medium and antibiotics inoculated at the time of dissection showed abundant promastigote growth after 7 days. A heavy inoculum from the first subculture was subsequently injected into the noses of two golden hamsters. Leishman-Donovan bodies were found in smears taken from scrapings of the noses of these animals, both of which showed conspicuous swellings, 18 days later. The morphology of this isolate, as well as its behavior both in vitro and

in vivo, are indistinguishable from those of the parasite responsible for human cutaneous leishmaniasis in Panama, and it is therefore considered to be *Leishmania braziliensis* s. lat. This strain of *L. braziliensis* is being maintained in the laboratory in culture and in the hamster. In none of the cultures have the promastigotes shown the elongate morphology reported by McConnell (1963, loc. cit.) to occur in several strains previously isolated from Panamanian phlebotomines.

This isolation raises to five the number of phlebotomine species found naturally infected with promastigote flagellates responsible for cutaneous leishmaniasis in the New World. Isolations in four of these species have been made only in Panama. All of the Panamanian species involved are common man-biters (McConnell, 1963, loc. cit.), and are known to feed also on a variety of forest mammals (Thatcher and Hertig, 1966, Ann. Ent. Soc. Amer. **59**: 46-52). Any one or all of these species might play an important role in maintaining the leishmanial infection among forest mammals, as well as transmitting it to man upon his ingress into endemic foci of this zoonosis.

This work was supported in part by a research grant (AI-01251) from the NIAID, NIH, USPHS.

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