

## THE ORIGINS, ACQUISITION AND TRANSMISSION OF *LEISHMANIA* IN THE DISTANT PAST

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*Theories on when, where and how sand flies first acquired leishmanial parasites and began transmitting them to vertebrates are discussed. New fossil evidence based on the discovery of trypanosomatids inside the gut of Early Cretaceous sand fly larvae is used as the basis of a new theory on how Leishmania was first acquired by sand flies. This theory proposes that free-living trypanosomatids ingested by sand fly larvae were carried through the pupal and into the adult stage and then were introduced into a vertebrate during blood feeding. The establishment of these trypanosomes in the vertebrate and their re-acquisition by adult sand flies resulted in the dixenous life cycle present today.*

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