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Letter to the Editor

The Vectorial Potential of *Lutzomyia (Nyssomyia) intermedia* and *Lutzomyia (N.) whitmani* in the Transmission of *Leishmania (V.) braziliensis* Can Also Be Related to Proteins Attaching

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We read with great interest the report by Soares et al. [1] on the potential of *Leishmania (Viannia) braziliensis* to attach to the midgut of the sand flies *Lutzomyia (N.) whitmani* and *Lutzomyia (N.) intermedia*. This manuscript assesses relevant information concerning the biomolecular phenomena between *Leishmania* promastigotes and the midgut of *Lutzomyia* species that act as vectors of American Cutaneous Leishmaniasis (ACL). However, it is necessary to comment that the basis of these physiological processes is not directly driven by glycolipid lipophosphoglycan (LPG) only. Other *L. (V.) braziliensis* promastigotes surface components, as proteins, can also be implicated in many steps of the midgut attachment.

Since 2007 we have been investigating the potential of heparin binding proteins (HPBs) from *L. (V.) braziliensis* promastigotes in the attachment of parasites to gut proteins from *L. (N.) intermedia* and *L. (N.) whitmani* [2]. We have indicated the existence of physicochemical conditions for the binding between the gut proteins from *Lutzomyia* spp. and the HPBs—a new macromolecule class involved in the recognition of the sand fly gut epithelium by *L. (V.) braziliensis*. We proposed that the five HPB ligands (67.0, 62.1, 59.5, 56.0, and 47.5 kDa) observed in both *L. (N.) intermedia* and *L. (N.) whitmani* are involved with the promastigote attachments to sand fly gut epithelium. Also, we suggested that the physicochemical conditions for the interaction between HBP and their ligands are more favourable in the midgut of *L. (N.) whitmani* than in *L. (N.) intermedia*. Furthermore, heparin similar molecules, synthesized by cells of midgut epithelium seem to act as anchoring sites for *L. (V.) braziliensis* promastigotes.

The ability of promastigotes to adhere to epithelial microvillii of the *Phlebotominae* digestorium tube is an essential stage for the maintenance of the parasite life cycle, being a factor of distinction between infective and noninfective stains. Similarly to LPG, the HBPs are related to the infective forms of the parasite [3, 4]. In such a way, its presence can be an essential factor for the setting of promastigotes in the digestorium tube and for the continuity of the life cycle, since parasites unable to adhere to the intestinal epithelium would be rejected together with the "feces" of the insect vector [5].

In addition, *L. (N.) intermedia* and *L. (N.) whitmani* are related to *L. (V.) braziliensis* transmission in the same endemic area [6]. The detection of ligands with similar molecular weights in the digestorium tube of both insect species is a biochemical indicative of vectorial homogeneity of these species in the transmission of ACL. The mapping of the interactions between molecules from both parasite and vector molecules can help in the understanding of adhesion to epithelial cells through the parasite surface.

Thus, our results considered together with the recent findings by Soares et al. [1] present biochemical indicatives of the epidemiological relevance of *L. (N.) whitmani* as a primary vector of ACL in Brazil.

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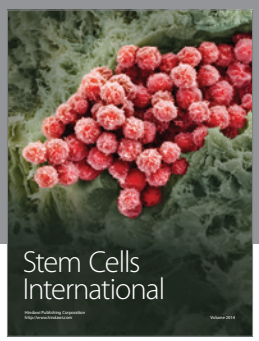

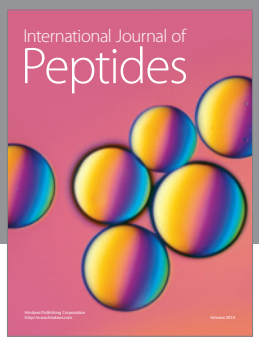

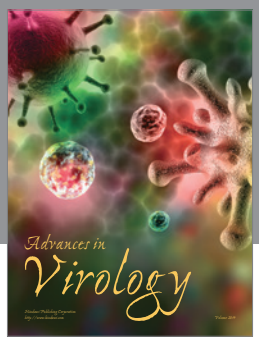

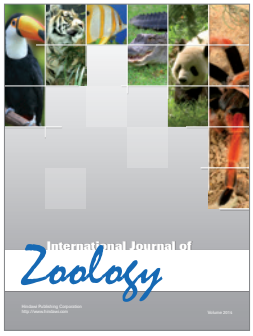

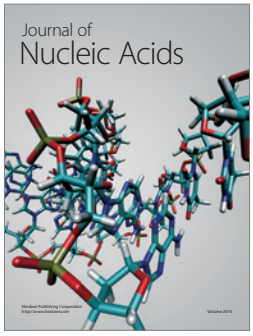

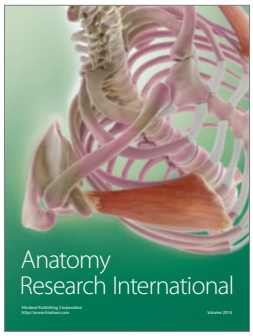

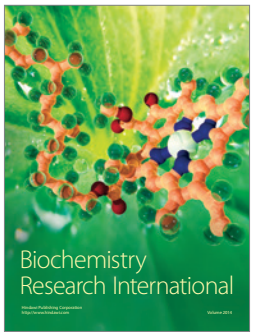

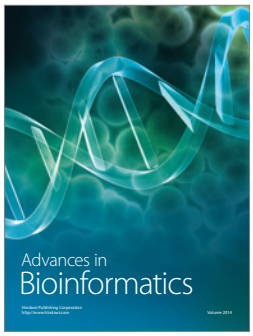

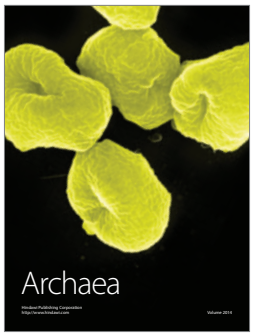

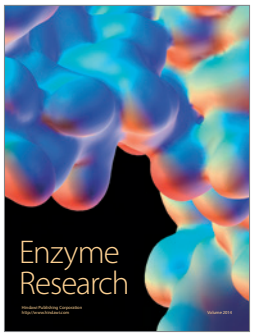

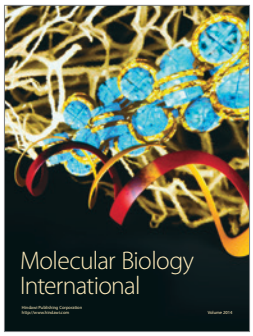

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