Leishmania is a protozoan parasite of vertebrates transmitted by the bite of infected phlebotomine sandflies. In humans, it causes a disease called leishmaniasis, which ranks as one of the most serious neglected tropical diseases. In the vectorial part of the life cycle, the crucial moment is when the flagellate forms (promastigotes) attach to the midgut epithelium of the sandfly. For most leishmania species, little is known about which types of phlebotomine receptors and leishmania surface antigens participate in the binding.

Phage display was used to screen for *Leishmania mexicana* peptide ligands which may play a role in such binding. By affinity selection of phages incubated with promastigote cells, 16 unique peptides were identified. Fluorescent labelling of peptide-bearing phages indicated their putative binding sites on the leishmania surface. Based on the hypothesis that the identified peptides may be a part of receptors found in the phlebotomine midgut, experiments were performed where the sandflies were infected with promastigotes whose binding sites were blocked by two different peptide-bearing phages. The extent of the infection was different between the two cases. However, no statistically significant difference from the control group was observed. Despite unsuccessful attempts to identify a molecule that could clarify the phage-leishmania binding, the optimization of the phage display methodology may lead to a successful outcome in the future.