

Detectschisto: Setting Up an Early Diagnostic Tool for Schistosomiasis

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Schistosomiasis is a chronic parasitic disease caused by blood flukes of the genus *Schistosoma*. *S. mansoni* is the most prevalent species in Africa and South America. It has a high infection rate (20 million new cases per year) and is co-endemic with other pathogens, such as HIV and malaria. Transmission typically occurs when infected individuals contaminate freshwater reservoirs with fecal matter containing parasite eggs, which subsequently hatch in water. The resultant cercariae

penetrates the skin, developing into adult schistosomes within the body. These adults reside in the mesenteric veins around the liver, where females release eggs. If left untreated, schistosomiasis can lead to significant morbidity and mortality. Therefore, due to the absence of early diagnostic tests, our objective is to develop a portative one. During its life cycle, *S. mansoni* produces 29 isoforms of Venom Allergen-Like proteins, which are differentially expressed as the parasite develops. Our research focuses on those VALs exhibiting early expression levels. We have expressed two of them and are currently characterizing them using biophysical techniques such as NMR, SAXS and CD. In parallel, we have generated and immobilized on gold beads their cognate antibodies and we are investigating their interaction with the VALs through NMR, SAXS, SPR, MX, Impedance Spectroscopy and Native-MS.