This research tests the theory that, contrary to conventional wisdom, malaria was introduced to the Americas thousands of years before Europeans arrived in the late 15th century. This theory is supported by a careful analysis of the factors regulating the introduction, maintenance, and transmission of malaria in human populations. When viewed holistically, skeletal, paleoenvironmental, archaeological and historical data strongly suggest the presence of a chronic, non-lethal strain of malaria, such as *Plasmodium vivax,* in prehistoric Latin America and the Caribbean. Hemozoin, an insoluble biomarker produced by all malaria species, sequesters and preserves in skeletal remains thousands of years old. Thirty individuals from Yale’s Caribbean collection of skeletal remains (300 BC-600 AD) and (1200 AD- 1500 AD), were sampled and analyzed using Matrix Assisted Laser Desorption Ionization Time of Flight Mass Spectrometry to test for molecular signatures of hemozoin. Scanning Electron Microscopy will aid in species determination for the samples testing positive for hemozoin. If *P. vivax* malarial hemozoin, distinguishable from other hemozoins using SEM analysis, were identified, this would confirm an earlier introduction of malaria to the New World. These methods have the potential to contribute new data toward the generation of a more complete epidemiological curve for *Plasmodium vivax*, and a more dynamic understanding of the biogeographical contexts in which malaria is transmitted across time and space. These data will enhance our understanding of the early spread of malaria in the Americas, and contribute to studies on hemozoin detection as a method for identification of malaria in prehistoric populations.