

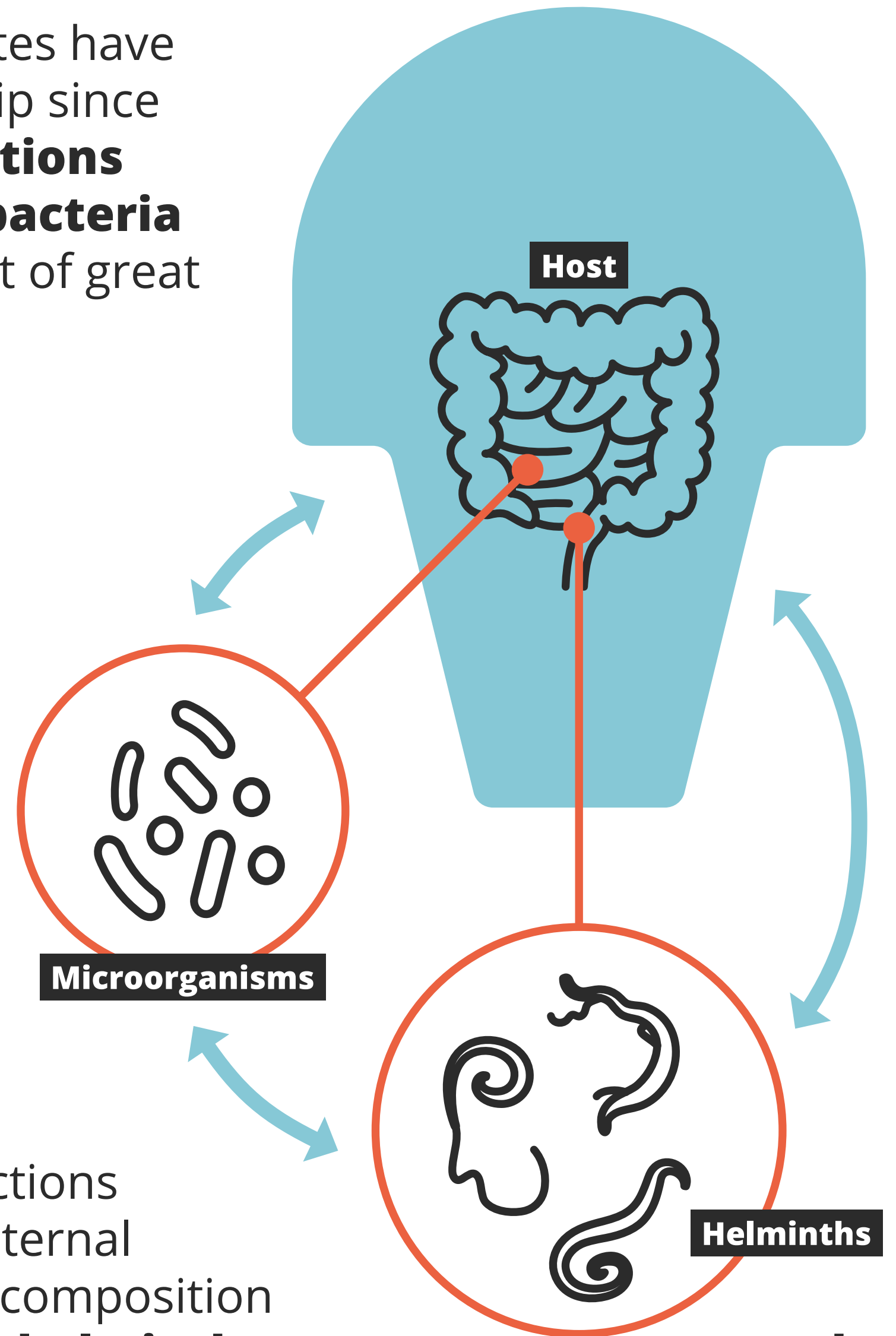
Unbalanced relationships: insights into the interaction between gut microbiota, geohelminths, and schistosomiasis

BACKGROUND

Hosts and their microbiota and parasites have co-evolved in an adaptive relationship since ancient times. **The impact of interactions between parasites and intestinal bacteria on hosts' health** is currently a subject of great research interest.

HELMINTHS & MICROORGANISMS


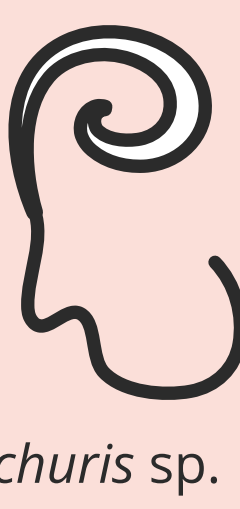

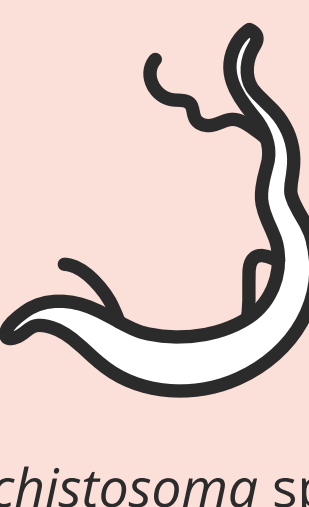
Therapeutic interventions can include manipulating the structure of the intestinal microbiota, which interact and are important for modulating the host's immune system and reducing inflammation. Most helminths are intestinal parasites; the intestinal environment provides complex interactions with other microorganisms in which internal and external factors can influence the composition of the intestinal microbiota. Moreover, **helminths and intestinal microorganisms can modulate the host's immune system either beneficially or harmfully.**



COMPLEX INTERACTIONS

In this study, it was found that the interaction between microbiota and parasites is complex and needs attention.

***A. lumbricoides*, *T. trichiura*, *N. americanus*, *A. duodenale*, and *S. mansoni* interact differently with the host's microbiota, but share some mechanisms for activating immune defense.** While most of them (e.g., *Ascaris* sp. and *Trichuris* sp.) can modify the gut microbiota, others (such as *N. americanus*) appear not to influence it.

	Host-microbiota interaction	Immune response change	Effects on the human host
 <i>Ascaris</i> sp.	Can modulate the human gut microbiota	Immune system and metabolic activities are influenced by nematode's Excretory-Secretory products	Related to the induction of depression symptoms
 <i>Trichuris</i> sp.	Can modulate mouse intestinal microflora	May influence children's immune systems and significantly reduce their allergen skin test reactivity	Regulation of chronic responses from parasite infection and potentially lasting immunological tolerance of intestinal dysbiosis reduce the development of asthma later in childhood
 <i>Necator americanus</i> / <i>Ancylostoma duodenale</i>	Appears not to influence depletion of microbiota diversity	Could be related to allergic or immunological disarrangement alleviation	Low-dose of hookworm administration is being used as therapeutic interventions for certain human chronic diseases
 <i>Schistosoma</i> sp.	Can modulate the human gut microbiota	Immune system and metabolic activities are influenced by nematode's Excretory-Secretory products	Despite antibiotics and anti-mycotics reduce both gut microbiota and inflammation significantly, resulting in less granuloma development, the association of bacteria with <i>S. mansoni</i> enables prolonged bacterial infections, the development of antibiotic resistance, and the ineffective treatment of both infections