A longitudinal survey in the wild reveals major shifts in fish host microbiota after parasite infection

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Abstract

Recent studies have highlighted associations between diseases and host microbiota. However, the role of microbe in infection process is yet to be clarified between host microbiota promoting future infections, or changes in host microbiota resulting from infections. We longitudinally surveyed, in the wild, the microbiota of individual fish hosts (Leuciscus burdigalensis) both before and after infection by a crustacean ectoparasite (Tracheliastes polycolpus). We found a striking association between parasite infection and the host microbiota composition restricted to the fins the parasite anchored. We clearly demonstrated that infections by the parasite induced a shift in (and did not result from) the host fin microbiota. Fin microbiota further got similar to that of the adult stage, and the free-living infective stage of the parasite during infection with a predominance of the Burkholderiaceae bacteria family. This suggests that Burkholderiaceae bacteria is involved in a co-infection process and possibly facilitate T. polycolpus infection.

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