From dandruff to deep sea vents, an ecologically hyper-diverse fungus

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A ubiquitous skin fungus linked to dandruff, eczema and other itchy, flaky maladies in humans has now been tracked to even further global reaches—including Hawaiian coral reefs and the extreme environments of arctic soils and deep sea vents.

A review in the scientific journal *PLOS Pathogens* considers the diversity, ecology, and distribution of the fungi of the genus *Malassezia* in light of new insights gained from screening environmental sequencing datasets from around the world.

University of Hawai'i at Mānoa scientist Anthony Amend discovered that members of this genus encompass a species and ecological diversity far greater than previously credited, and appear to have diversified repeatedly into and out of marine environments. Until recently, these fungi were assumed to have evolved to inhabit mammalian skin.

"We have found multiple new examples of these fungi on corals, sponges and algae and in water samples, deep sea thermal vents and sediments from Hawai'i and around the world," Amend said. "Equally as remarkable, a single strain of the noted human associate, *Malassezia restricta*, is found in some of the most extreme and disconnected habitats on the planet, including arctic soils and hydrothermal vents."

Scratching your head yet? We're not the only ones. Marine mammals like seals, as well as fish, lobsters, sponges, plankton, and corals apparently also have that *Malassezia* itch. In fact, the fungus appears to

dominate certain marine environments.

Emerging evidence even suggests that an interaction with warming ocean waters is linked to a reef banding disease observed at Palmyra Atoll for which a new *Malassezia* is implicated.

"Residence in such a broad range of habitats is exceptional and clearly ranks this dandruff-causing fungus as one of the most ecologically diverse on the planet," Amend said. "Marine *Malassezia* should most certainly be the focus of future research into the diversity and distribution of this enigmatic group."

More information: Amend A (2014) From Dandruff to Deep-Sea Vents: Malassezia-like Fungi Are Ecologically Hyper-diverse. *PLoS Pathog* 10(8): e1004277. doi:10.1371/ journal.ppat.1004277

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