

Emerging crop pathogenic fungi *Fusarium* threats hatching success in freshwater turtles – The impact of healthy egg microbiomes in pathogen resistance

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The *Fusarium solani* species complex (FSSC), a large genus of globally distributed filamentous fungi found predominantly in soil, decomposed organic matter and plants, are well known for causing invasive diseases in humans (fusariosis) and severe economic losses of crops (e.g. cereal, cacao, oil palms). They occur as trans-kingdom pathogens and are listed as fungal priority pathogens by the WHO since 2022. For about a decade, FSSC has been known to cause fusariosis in sea turtle eggs, leading to hatching failure and mass hatchling mortalities worldwide. In 2019, we reported for the first time fusariosis infections in a freshwater turtle species, the yellow-spotted Amazon River turtle (*Podocnemis unifilis*), which inhabits a pristine environment in the Ecuadorian Amazon (Carranco et al. 2022, *Transboundary and Emerging Diseases*). Differences in the microbial composition of symptomatic and asymptomatic eggs suggest that *Fusarium* pathogens interact with the internal egg microbiota. Moreover, the egg microbiome is influenced by river sand and water environment (Carranco et al. 2022, *Mol Ecol*), which shapes the microbial composition and impacts egg health. With this prior knowledge we show the critical role of the host-associated internal egg microbiota in hatching success, pathogen resistance, and turtle health. Taken together, host-associated microbiota remains a neglected component of the One Health framework, albeit their significant role for host and environment health.

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Yes, I am a Junior Scientist.

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