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Title

Growth of chromidia-forming vahlkampfiid amoebae from Laguna Figueroa, Baja California del Norte, Mexico and Eel Pond, Woods Hole, Massachusetts, U.S.A. under limited oxygen gas conditions

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Abstract

Paratetramitus jugosus, a vahlkampfiid amoebomastigote, was isolated into monoprotist/monobacterial (*Bacillus* sp.), cultures from laminated microbial mats (Laguna Figueroa, Baja California Norte, Mexico) and muds (Eel Pond, Woods Hole, Massachusetts). Chromidia, roughly spherical (2-4 μm in diameter) were released from both walled spherical cysts (10-12 μm) and phagocytotic amoebic forms. Desiccation-resistant walled chromidia, at first spherical, resorb their walls and develop into small pleiomorphic phagocytotic amoeba. Small amoebae feed and mature into typical monopodial vahlkampfiid adults confirming previous work (Dobell, 1913, and especially the analysis of a larger encysting vahlkampfiid amoeba associated with Long Island oyster disease studied at Woods Hole by Mary Jane Hogue, 1914). I show here that *P. jugosus* reproduces and develops through its life history stages of chromidia, mature monopodial amoebae, and cysts as rapidly and abundantly under low oxygen levels as at ambient atmospheric oxygen concentrations. Anoxia was achieved in the laboratory by incubation of entirely desiccated inocula from old mat or mud samples in Brewer jars with or without gas packs to control atmospheric conditions. Three sets of experiments yielded the same results: vigorous growth on bacillus food occurred on manganese acetate media by two weeks on the surface of agar plates under ambient oxic or hypoxic to anoxic conditions. Preliminary investigations of similar amoeba from geographically distinct field sites in Europe, North America, and the Caribbean were made. From them, I suggest it is likely these coastal amoebomastigotes that propagate by small desiccation resistant, oxygen-independent, manganese tolerant chromidia are genuinely cosmopolitan in its distribution.

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