
Longitudinal differentiation among planktic foraminiferal populations in the Indo-Pacific Warm Pool

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Résumé

Evolutionary processes of pelagic planktons would have largely been dependent on the oceanic circulation system, which transports them between populations inhabiting water masses in sea-surface. Particularly, gene flow by oceanic currents flowing in the longitudinal direction may efficiently impede genetic differentiation of pelagic populations without confounding effects of climate. However, it has poorly been understood how responsible oceanic currents are for geographic distribution and evolution of pelagic plankton. We examined the phylogeography of a planktic foraminifer *Pulleniatina obliquiloculata* in the Indo-Pacific Warm Pool (IPWP) area by using partial small subunit ribosomal DNA (SSU rDNA) sequences. Three novel genetic types constituted different population structure among water masses. We found longitudinal clines in frequencies of these types within a narrow latitudinal range in the IPWP area. Populations inhabiting longitudinally distant water masses at the Pacific and Indian sides of the IPWP were genetically differentiated. Their divergence time suggests that these clines have been established according to development of the modern IPWP system. The present results exemplify that populations of a pelagic micro-plankton has been genetically differentiated within a single climate zone and suggest that changes of the oceanic circulation system impact on the geographic patterns of migration and divergence in pelagic organisms.

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