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Can the hemoglobin characteristics of vesicomid clam species influence their distribution in deep-sea sulfide-rich sediments? A case study in the Angola Basin

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Abstract

Vesicomids live in endosymbiosis with sulfur-oxidizing bacteria and therefore need hydrogen sulfide to survive. They can nevertheless live in a wide range of sulfide and oxygen levels and depths, which may explain the exceptional diversity of this clam family in deep-sea habitats. In the Gulf of Guinea, nine species of vesicomid clams are known to live in cold-seep areas with pockmarks from 600 to 3200m deep, as well as in the organic-rich sediments of the Congo deep-sea fan at 5000 m deep. Our previous study showed that two species living in a giant pockmark have different oxygen carriers, suggesting different adaptations to hypoxia. Here, we studied the hemoglobin structure and oxygen affinity in three other species, *Calyptogena valdiviae*, *Elenaconcha guiness* and *Abyssogena southwardae* to determine whether the characteristics of their oxygen carriers contribute to their distribution in sulfide-rich sediments at a regional scale. Documenting pairwise species associations

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