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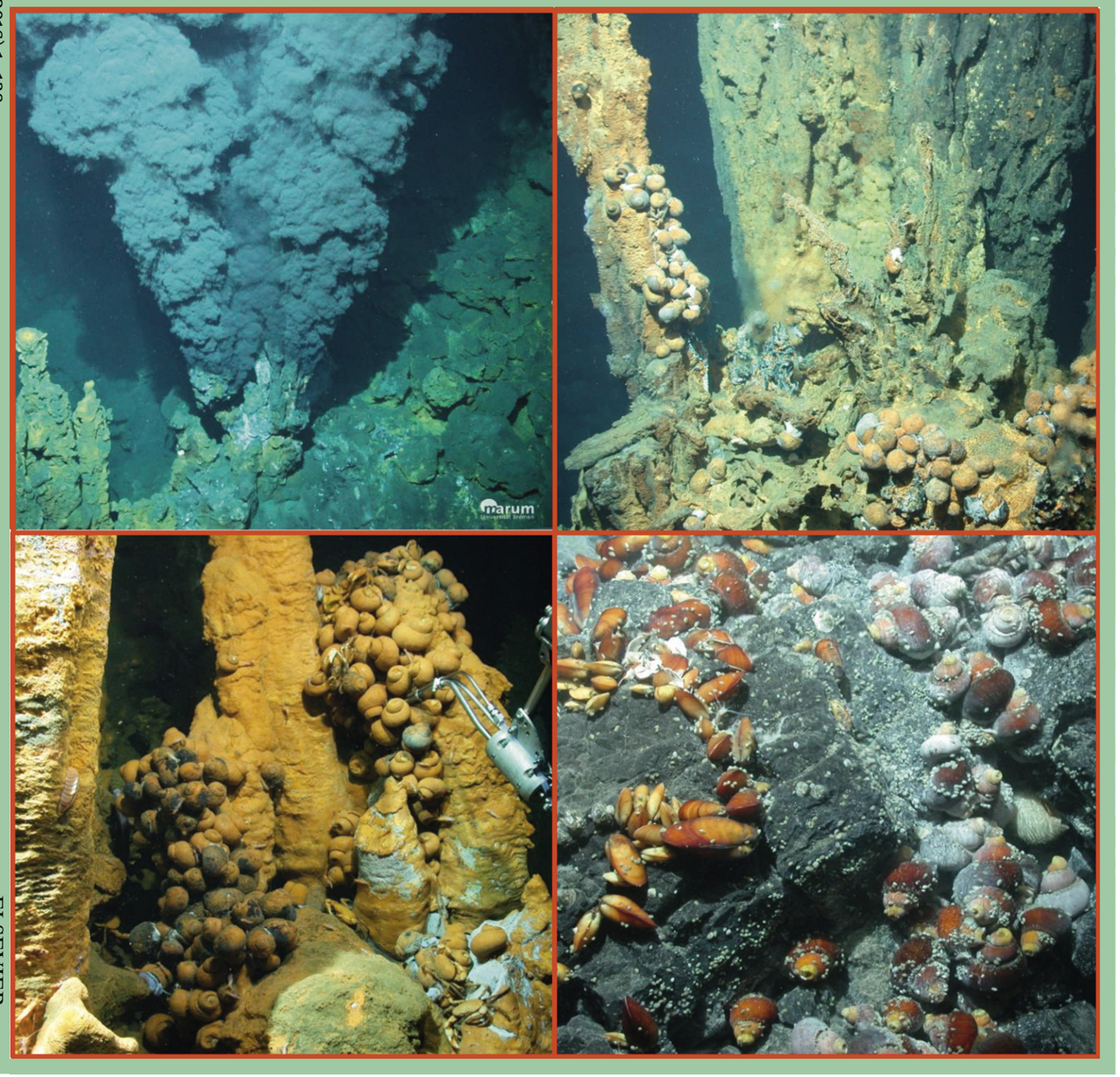

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Cover Image: Deep-sea hydrothermal vent organism tissues can contain organic forms of arsenic such as arsenobetaine and arsenosugars (i.e., arsenoribosides), in addition to inorganic forms such as arsenite and arsenate. The inorganic forms are most likely bioaccumulated from vent fluids and/or seawater. Their primary food source, microbial mats, thus far have not been shown to contain organoarsenic species. Thus, to date it is unclear if deep-sea vent organisms bioaccumulate these compounds through the food web or directly biosynthesize them through some as yet unidentified pathway. Previous work on arsenoribosides suggest they are synthesized by photosynthesizing algae, whereas the biosynthesis pathway for arsenobetaine is unclear, even for near-surface organisms. Price et al. (this volume) describes the potential pathways by which deep-sea vent organisms can obtain organoarsenicals. Several fields in the Eastern Manus Basin were sampled during the RV Sonne cruise SO-216, including Roman Ruins and the Papua New Guinea-Australia-Canada-Manus hydrothermal system. The top left image shows a black smoker from Roman Ruins. Vent biota are mostly found around lower temperature areas near the base of black smokers and associated with diffuse vent fluids. The vent biota analyzed for the Price et al. study included the hairy gastropods Alviniconcha hessleri (top right), Ifremeria nautilei gastropods (bottom left) living on the flanks of a black smoker in the Roman Ruins hydrothermal field in low temperature shimmering hydrothermal fluids, and the mollusk Bathymodiolus manusensis (bottom right). All photos from MARUM©.

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