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Micropalaeontology, molecular biology, actuopalaeontology and (palaeo)ecology of the Mesozoic and Cenozoic

Research

Cenozoic coralline algae

Coralline red algae are an essential component in Cenozoic reefs. They are particularly important for (palaeo-)ecological and facial interpretations because shallow water carbonates react sensitively to environmental changes. To gain an adequate basis for these interpretations taxonomic work is done on different coralline algal floras of the Cenozoic. Concerning the latter we have just developed a new model on algal nodule (rhodolith) formation on modern Red Sea coralline algae.

Actuopalaeontology, Facies and Palaeoecology

An integrated study is carried out in the Red Sea in which foraminifera, coral associations and coralline red algae in combination with sedimentological and geochemical parameters are studied, to provide an actuopalaeontological model for fossil counterparts of shallow water carbonates.

Another topic is the distribution of living foraminifera and their relationship to ecological and sedimentological parameters in the Northern Adriatic Sea. Their complex distributional pattern is related to ecological interactions which we try to apply to the fossil record, e.g. the Neogene of the Mediterranean/ Paratethys and the Upper Triassic of the Tethys.

Molecular biology of foraminifera

Foraminifera are well represented throughout the Phanerozoic and one of the most important fossils for applied palaeontology. Introducing molecular techniques into this group we are currently working on intra- and interspecific variations and differences of DNA-sequences to reconstruct (palaeo)biogeographic separation and to establish a basis for phylogenetic relationships of higher taxonomic categories.

Teaching

General Micropaleontology; - Systematic Micropaleontology; - Quantitative Paleontology; - Stratigraphic and Applied Micropalaeontology; - Micropalaeontological Seminar; - Ecology of carbonate rocks; - Facies and Environment; - Carbonate sedimentology; - Field courses and field excursions

International Cooperations

Institut für Mikrobiologie, Universität Kiel (Germany); - Ryukyus Tropical Biosphere Center, University of the Ryukyus (Japan); - University of Geneva, Switzerland; - University of Granada, Spain; - University of California at Berkeley, U.S.A.; - Universities of Qena, Assiut and Ain Shams University Cairo, Egypt

Selected References

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- Langer MR, Lipps JH, Piller WE (1993) Molecular paleobiology of protists: amplification and direct sequencing of foraminiferal DNA. *Micropaleontology* 39: 63-68
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