Morphology of Higher Plants

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Research Areas

Comparative morphology and ontogeny

Our investigations relate to the general structure and differentiation of the plant body, the inflorescences and the flowers of Angiosperms, particularly of tropical groups. A holistic approach is envisaged, using modern technical facilities such as scanning electron microscopy, transmission electron microscopy (in cooperation with the department of electron microscopy), and electronic data services. Selection of topics: growth patterns and their functional bearing in South-East-Asian rain-forest herbs and hydrophytes; analysis of anisophyllous plants; epiphyllous inflorescences; floral ontogeny of orchids, Aristolochiaceae, Balanophoraceae, Melastomataceae etc., androecium development in Rosaceae and allied families.

Functional and ecological morphology

Research topics under this heading are the functional aspects of morphological structures, especially in the reproductive region. Structures relevant for pollination and actual pollination are studied in indigenous and tropical plants, including kinematographic methods of documentation and analysis. Fruit and seed structure is studied in various systematic groups.

Systematics

This research area aims at the elucidation of relationships and evolutionary differentiation of certain plant groups, particulary of tropical origin, e.g., Gesneriaceae, Melastomataceae, Zingiberaceae, Scrophulariaceae etc.

Teaching

In regular intervals lectures and lab courses relating to the following topics are provided:
The research subjects listed above: Developmental morphology of angiosperms (L + P), Structure and function of the vegetative organs (L + P), Analysis of inflorescences (L + P), Flower and floral ecology (L + P), Flora, vegetation and ecology of the SE-Asian tropics (L), Discussion of current research topics in structural and functional morphology (S).
Courses relating to the methods and techniques of botanical research (SEM-work, photography, graphics etc.): investigations of plant ontogeny by means of SEM (P).
Training of students of pharmacy: Systematic botany with special reference to medicinal plants (L); Botanical practical for pharmacists (P); Botanical excursions for pharmacists (P).

International Cooperations

with universities and research institutions in the USA, Australia, South Africa, Malaysia, Indonesia, England, Germany, Switzerland etc.

Selected References

Weber A (1988) Contributions to the morphology and systematics of Klugieae-Loxonieae (Gesneriaceae). X. Development and interpretation of the inflorescences of *Epithema*. Beitr Biol Pflanzen 63: 431-451

Weber A (1989) *Didymocarpus geitleri*, a remarkable new species of Gesneriaceae with deceptive pollen flowers. Pl Syst Evol 165: 95-100

Weber A (1989) Family position and conjectural affinities of *Charadrophila capensis* MARLOTH. Bot Jahrb Syst 111: 87-119

Kurzweil H, Weber A (1991) Floral morphology of Southern African genera of the orchid tribe Orchideae. Nord J Bot 11: 155-178

Weber A (1993) Struktur, Antheseverlauf und Bestäubung der Blüte von *Nigella arvensis* (Ranunculaceae). Verhandl Zool - Bot Ges Österr 130: 99-125

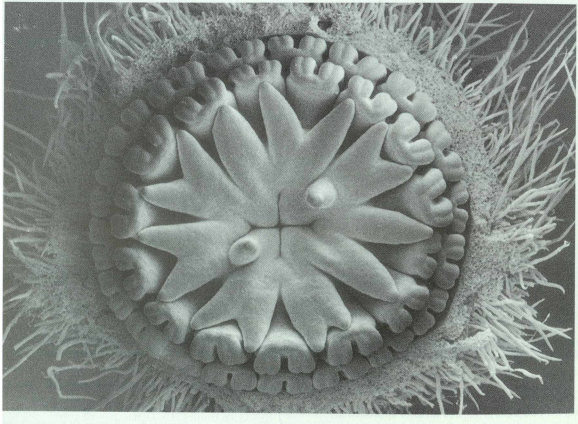

Fig. *Thottea grandiflora* (Aristolochiaceae). Young flower showing stamen whorls and the stigma complex (perianth removed)