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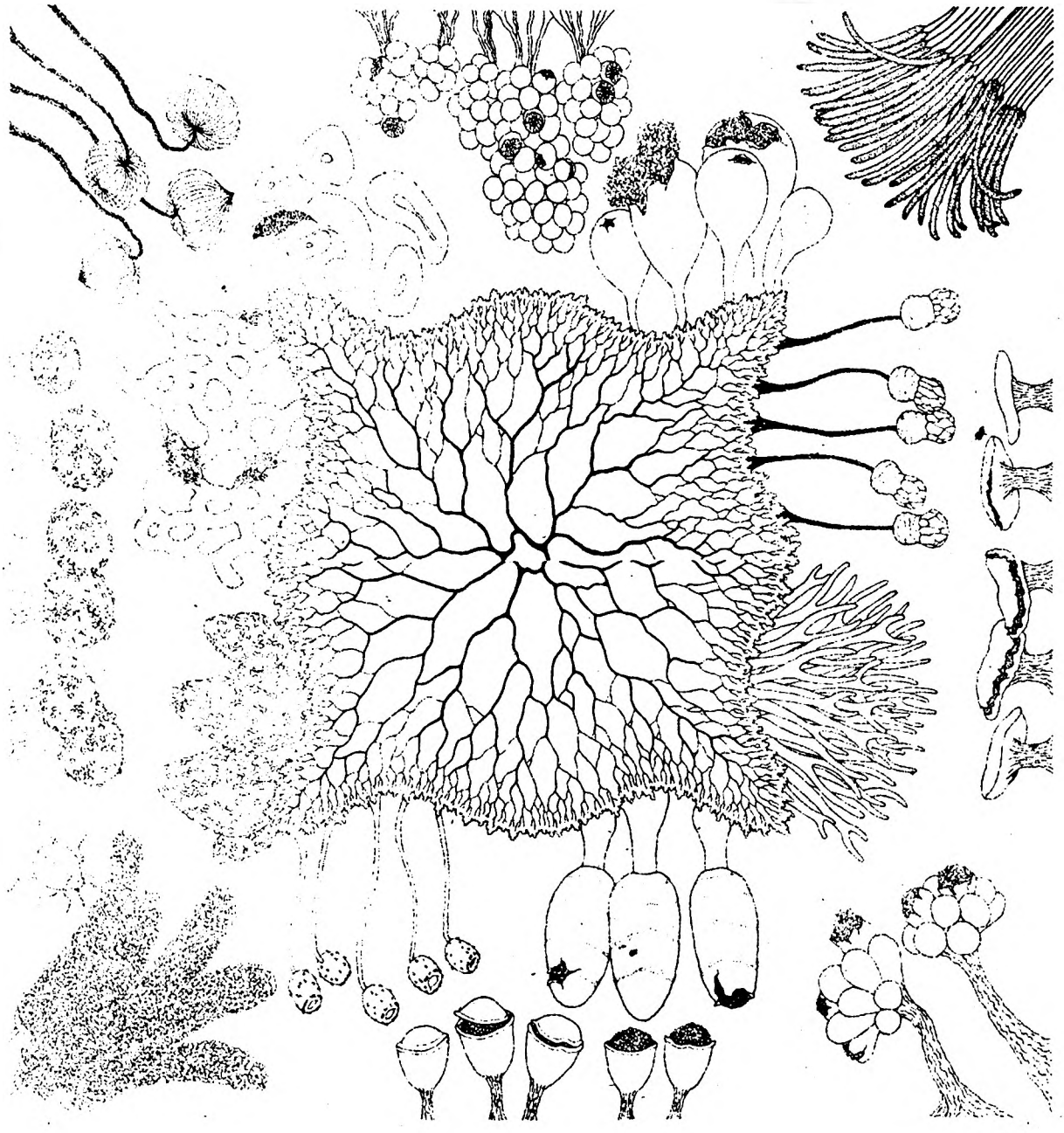
ICSEM



Program and Abstracts

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The Organizing Committee of ICSEM9
The Japanese Society of Myxomycetology

Co-organization

Tanabe City
The Executive Committee for Minakata Kumagusu 150th anniversary commemoration project
The Mycological Society of Japan

Cooperation

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Towards a new, phylogenetically based classification of myxomycetes

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It was already long suspected that the traditional five-order system of myxomycetes cannot be maintained in the light of molecular investigations, since it does not properly reflect evolutionary relationships within the group. Summarizing the still fragmentary phylogenetic information currently available, we propose a revised hierarchical classification of the myxomycetes. A phylogeny of the Amoebozoa, based on complete SSU sequences, shows that the genus *Ceratiomyxa* is a separate high ranking taxonomic entity that is sister to myxomycetes and dictyostelids. The remaining myxogastria bifurcate in a dark-spored and a bright-spored clade, usually recognized as the superorders Columellidia and Lucisporidia. We propose to consider them as subclasses, each consisting of two superorders. Within the dark-spored subclass, one superorder is proposed for the traditional Echinosteliales (with the exception of *Clastoderma*), and another includes four orders: the Clastodermatales, the Meridermatales, a more narrowly circumscribed Stemonitidales, and the Physarales. The latter encompasses most of the former members of the traditional Stemonitidales with durable peridia (*Lamproderma* and allied genera) plus all members of the traditional Physarales. For the bright-spored myxomycetes, the first superorder encompasses the Cribrariales, the second superorder unites the Reticulariales, a more narrowly circumscribed Liceales, and the Trichiales. Molecular data provide evidence that conspicuous characters such as solitary versus compound fructifications or presence versus absence of a stalk or a capillitium were overestimated in the traditional classification. In contrast, the structure of the capillitium and peridium, and especially how these structures are connected to each other, seem to reflect evolutionary relationships among taxa much better than many characters which have been used in the past.