



Dictyostelium discoideum Protocols (Methods in Molecular Biology)

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Dictyostelium discoideum is a simple but fascinating eukaryotic microorganism, whose natural habitat is deciduous forest soil and decaying leaves, where the amoebae feed on bacteria and grow as independent single cells. Exhaustion of the bacterial food source triggers a developmental program, in which up to 100,000 cells aggregate by chemotaxis towards cAMP. Morphogenesis and cell differentiation then culminate in the production of spores enabling the organism to survive unfavorable conditions. Dictyostelium offers unique advantages for studying fundamental cellular processes with the aid of powerful molecular genetic, biochemical, and cell biological tools. These processes include signal transduction, chemotaxis, cell motility, cytokinesis, phagocytosis, and aspects of development such as cell sorting, pattern formation and cell type differentiation. Recently, Dictyostelium was also described as a suitable host for pathogenic bacteria in which one can conveniently study the process of infection. In addition, Dictyostelium has many of the experimental conveniences of *Saccharomyces cerevisiae* and is probably the best experimentally manipulatable protozoan, providing insight into this diverse group of organisms, which includes some of the most dangerous human parasites. The recent completion of the Dictyostelium genome sequencing project strengthens the position of *D. discoideum* as a model organism. The completed genome sequence and other valuable community resources constitute the source for basic biological and biomedical research and for genome-wide analyses.

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Editorial Review

From the Back Cover

Dictyostelium discoideum Protocols presents a comprehensive collection of cutting-edge molecular biological protocols for studying *D. discoideum*, with emphasis on its utility in the study of fundamental cellular processes including signal transduction, chemotaxis, cell motility, cytokinesis, phagocytosis, and aspects of development such as cell sorting, pattern formation, and cell type differentiation. Written by experts in the field, this important guide provides easy access to current methods and techniques for the study of *D. discoideum*. For the newcomer to the field, it offers a complete and inclusive introduction to this important model organism. The book is divided into four main parts, which include an introduction to the organism that provides integral community resources and genome-wide approaches; basic methods and available molecular genetic techniques for study of the organism; imaging and localization methods; and a discussion of *D. discoideum*, with emphasis on its unique advantages as a model system.

This in-depth guide provides a complete introduction to and thorough handbook for the study of *D. discoideum*, including a discussion of the implications of the recently completed *Dictyostelium* genome project in strengthening the position of *D. discoideum* as a model organism for studying fundamental cell processes and aspects of development. Researchers at all levels of experience will benefit from the presentations throughout of the most current, useful, and innovative techniques for the study of *D. discoideum* from leading *Dictyostelium* scientists.

Users Review

From reader reviews:

Tina Olsen:

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