

# **Advances in Experimental Medicine and Biology**

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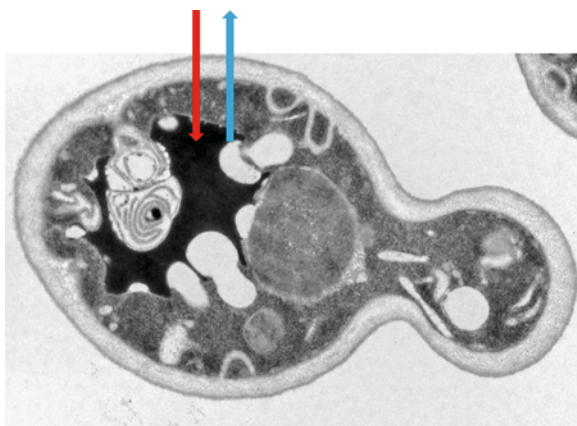
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# Yeast Membrane Transport



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# Preface

All cells need to communicate with their environment, which means exchange information and material across their membranes. To ensure the uptake of nutrients and other necessary compounds or to extrude toxic metabolites, metabolic waste, or chemical signals, cells use transport systems consisting of one or more proteins embedded in the cell membranes. The significance of transport in organisms and their cells was summarized by Daniel C. Tosteson who wrote in his book *Membrane Transport: People and Ideas* (Tosteson 1989): “I conjure a picture of a living organism as an extraordinarily complex, self-replicating, self-assembling, dynamic, open, physicochemical system maintained near the steady state by the continual entry and exit of matter and energy.” Though the indispensability and complexity of cell membrane transport have attracted researchers for more than 100 years, research on membrane transport has made continuous progress in the last decades and remains an active field of scientific investigation. Yeasts, and mainly the model organism *Saccharomyces cerevisiae*, are among the favorite cells for researchers studying all aspects of transport systems and their mechanisms. However, an important amount of knowledge has been obtained when employing the so-called non-conventional and pathogenic yeasts, especially because of their peculiarities and, in some cases, specific transport systems. The transporters mediating uptake of nutrients, fluxes of cations and anions, or the extrusion of toxic compounds across the plasma membrane are discussed together with the transport systems localized in the membranes of cell organelles. Each chapter summarizes our current knowledge on important transport processes in yeasts, and as it is based on the experience of the experts working in the field for many years, it provides both a general overview of the main transport characteristics for a specific substrate or a group of substrates and unique details that only an expert working in the field is able to transmit to the reader.

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