

Why Organisms?

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“He who loves practice without theory is like the sailor who boards ship without a rudder and compass and never knows where he is going”.
(Leonardo da Vinci)

At the beginning of the 21st century, biology is facing an epistemological crisis which anticipates a paradigm change. Reductionism and the molecular analysis it favors have failed to bring about an understanding of complex phenomena in biology. This will require a re-appraisal of old research concepts. The dominant view during the last fifty years has been that development is merely the unfolding of a genetic program. This perception is now being challenged by the resurgence of the once prominent fields of biological inquiry, namely, ecological and evolutionary developmental biology. However, these efforts remain few and far between because they are diluted by a sea of publications still based on reductionist interpretations. Meanwhile, there is no source explicitly committed to a perspective centered on organisms. Thus, there is a need for a journal dedicated to high quality theoretical and experimental work while promoting an interdisciplinary approach to the main topics in biology.

We expect that “ORGANISMS” will fill this gap by addressing biological questions from perspectives different from the currently prevalent one. The philosopher Kant stated that in organisms “every part is thought as owing its presence to the agency of all the remaining parts, and also as existing for the sake of the others and of the whole”. This conception of organisms is as central to biology today as it was when it inspired generations of embryologists, the ones invoked when referring to Müllerian ducts, germ layers, and notochord. From this perspective, the causal determination of biological phenomena is not exclusively bottom-up; the agency of each part implies a complex and reciprocal structure of determination. Research programs based on the ideas advanced by those who favored the molecular biology revolution have unintentionally shown that organisms cannot be analyzed only in terms of genes and molecules. This statement will not surprise physicists, because they do not intend to reduce one theory onto another, say classical or relativistic physics to quantum mechanics. Instead, they strive for unifications, that is, for a new theory encompassing two or more theoretical frames. And yet, mainstream biologists are still

committed to uncovering the molecular mechanisms that according to reductionism will provide an explanation to every biological phenomenon. The technological improvements conceived to address mechanisms have generated an avalanche of data but biologists neither have the theoretical bases nor an adequate language to make sense of them, particularly when trying to explain the advent of new functions, the generation of shapes (morphogenesis), or the ability of the organism to create its own rules. We acknowledge that the language generated by the molecular biology revolution, namely the concepts of information, program, signal, is theoretically laden forcing causal analysis toward molecules supposed to carry information, such as genes and their products. This structure of determination is inimical to the study of organisms. Consequently, a change of theoretical frame will also require that biologists elaborate a different language, free of these connotations. Finally, this journal is neither married to a theory nor does it represent the view of a particular group. Its purpose is to encourage researchers to submit manuscripts that a) make explicit the postulates, principles and perspectives that form the conceptual framework of their research subjects, b) foster theoretical and experimental work in the vast field of biology, and c) promote the salutary effect of "friction" between theory and experiment.