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# The Darwinian input into development and carcinogenesis. On the default state of cells.

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## Abstract

Session: Theory of Organisms (Soto, Miquel, Longo, Sonnenschein) Experimental biologists have rendered lip service to the role that evolutionary theory plays in development and in carcinogenesis. Following results of our experimental approach in the context of evolutionary theory, we have concluded that *proliferation* and *motility* are the default state of *all* cells. Here, we will only address the subject of the nature of the default state of cells regarding *proliferation*. The prevalent adopted premise is that *quiescence* is the default state of cells in metazoa. From an evolutionary perspective, multicellular organisms necessarily evolved from unicellular ones. Since all cell cycle components characterized so far from yeast to humans have shown to be highly conserved it becomes counterintuitive to postulate that the default state of *proliferation* inherent to unicellular organisms would have switched to *quiescence* in multicellular ones. This basic misunderstanding has generated significant epistemological conflicts when interpreting data on development and carcinogenesis where the control of cell proliferation plays a prominent role. Finally, the controversies over this subject are due to the adoption, over a century ago, of mistaken premises by those working in the field of experimental biology, and more specifically, in tissue culture. Dobzhansky's 1973 aphorism "Nothing in biology makes sense except in the light of evolution" is yet to be fully acknowledged by biologists at large.

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