

Yeast as a cognitive system

***Ladislav Kováč, Faculty of Natural Sciences, Comenius University,
Bratislava, Slovakia***

Cognitive biology aims at a synthesis of data of various scientific disciplines within a single framework of conceiving life as an epistemic unfolding of the universe (the epistemic principle) (1). In its conception, biological evolution as a whole is the evolution of cognition. It adheres to a principle of minimal complexity, which stipulates that the most effective way to study any trait of life is by studying it at the simplest level at which it occurs. Any living system is a subject, a cognizer. The simplest subject is a molecular cognizer, consisting of two entities, sensor and effector. A sensor assigns significance to a specific feature of the environment. Any sensor comprises receptor module and transmitter module, enabling molecular sensing. The receptor module is involved in reception (molecular recognition), which consists in a specific, teleonomic, molecular interaction. By virtue of the intact sensor, only a portion of binding energy is dissipated as heat and another portion is used for the work of signal transmission. The final stage, an effector's appropriate action on the environment, is the inseparable part of cognition. As in other fields of scientific inquiry, yeast is a suitable organism for the elucidation of the nature of cognition.

(1) Kováč, L. (2000) Fundamental principles of cognitive biology. *Evolution and Cognition* 6, 51-69