

What optimise microorganisms to produce its dynamical networks ? The example of bioleaching of copper

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A living organism or a community of living organisms configure different dynamical networks to live. Among them one distinguishes regulatory and metabolic networks. Much of these networks emerge from the consolidation of a series of interactions that occur at a local level. Of course the environment plays a key role in this process. Many questions remains open about the way such networks are produced, in particular, does it exists some optimisation process leading to them ? In this talk we explore different mathematical directions to understand this question in communities of bacteria. As a toy example we use a community of five bacteria that working together are able at industrial level to help in the process of bleaching of copper.