# Halophilic microorganisms from mural paintings in old Romanian historical monument church and their interactions with nanomaterials

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The mural painting can be bio-deteriorated by micro-organisms in different ways depending on the taxonomic affiliation of micro-organisms, their biology and succession while on a surface. The rate of bio-deterioration is dependent on microclimate conditions, the chemical structure of deposits, the interrelation between bio-deteriogenes and some chemical processes. During colonization of the mural painting surface, some species of micro-organisms synthesized pigments which could be released into the substrate or remain localized within cells but the mural painting surface appears colored. The bio-pigmentation change esthetical appearance of the mural painting or mortar where micro bio-deteriogenes develop. In our case studies (the refectory of Hurezi Monastery and the pre-nave of Humor Monastery), the pink bio-pigmentation is the result of mural painting colonization by halophilic bacteria, namely new strain of *Garicola* genus and some strains of *Halobacillus* spp. They have the ability to grow in media with negligible salt concentration until saturation (extremely halophilic archaea). Taking into account the complexity of salt composition in mural paintings, it appears that these could be a favorable environment from several moderately halophilic micro-organisms. On the other hand, the investigated halophilic micro-organisms showed various growth answers when their culture medium was supplemented with TiO2 nanoparticles. Such kinds of nanomaterials are currently investigated for their potential use in re-saturation procedures of bio-deteriorated historical monuments.

## Biography

Madalin Enache is working as a Principal Investigator in the field of Halophilic Microorganisms at the Institute of Biology, Bucharest of the Romanian Academy (IBB). He Graduated from the University of Bucharest in Biochemistry field. Currently, he is also acting as Head of Microbiology Department of the IBB – coordinating research and administrative activities of the Department of Microbiology (IBB); research activities in the fields of Microbiology, Biochemistry, Biology and Ecology. He is involved in coordinating laboratory work, dissemination of the scientific results (scientific papers, participation to conferences and symposia – oral and posters presentations), application for research projects, scientific reports and coordinating projects. He has expertise in various techniques of General Microbiology, Microscopy, Biochemistry and Molecular Biology. His research topics include diversity and phylogeny of halophilic microorganisms; ecology of extremely halophilic archaea, enzymology of halophilic microorganisms and; nanobiotechnology.

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