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## Impact of natural radioactivity on microorganisms

*lundi 27 juin 2022 14:00 (30 minutes)*

Radiation is present everywhere in the universe and on earth. The role it has played in the emergence and evolution of life is still a completely open question. Within the framework of the ZATU Long-Term Socio-Ecological Research observatory, we have started to explore how microorganisms were impacted by natural radioactivity. In order to suppress cosmic rays, we have first conducted long term evolution experiments in the Modane Underground Laboratory (LSM) at the frontier between France and Italy. These experiments have shown that microorganisms displayed the same evolutionary path when natural radioactivity was reduced by a factor 7 (figure 1)[1].

In a second step, we are now studying microbial biodiversity in radioactive mineral springs which are peculiar ecosystems where physico-chemical and radiological parameters are significantly different from their surroundings and extremely stable over very long periods of time. We recently observed that a significant fraction of the microscopic algae (diatoms) colonizing the most radioactive springs of the Auvergne region (La Montagne spring) displayed stress response through deformation of their exoskeleton (figure 2) [2]. The roles played by both chemical and radiological stresses are currently under investigation in 30 mineral springs in Auvergne and beyond.

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