



Università degli Studi di Napoli Federico II

PhD in Biotechnology - 34th cycle

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***Biology and applications of Industrial
microorganism***

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Microorganisms isolated from extreme environments often possess the capability to biosynthesize enzymes of biotechnological and industrial interest. These bacteria are able to survive to harsh conditions as high temperatures, extreme pH, high salt concentrations and so their enzymes are stable at several stresses. Moreover, they can produce new molecules with special characteristics required by various bio-industries, for their applications in the processing of substrates and raw materials.

Aim of this PhD project is the isolation and identification of halophilic spore-forming bacteria as they: i) survive to a vast range of stresses, including high salinity; ii) have a low cost of production; iii) are easy to manipulate and to store. Moreover, halophilic bacteria have the potential for several biotechnological applications.

Not only do many of them produce compounds of industrial interest (enzymes, polymers, and osmoprotectants), but also they possess useful physiological properties which can facilitate their exploitation for commercial purposes. These bacteria can be used, for example, in food industries for food preservation, as bio-controllers for plant pathogens and in chemical industries for their enzymatic properties[1]. In this PhD project, the bacteria will be selected and characterized for enzymatic activities or secondary metabolites production of biotechnology interest, as hydrolytic enzymes and anti-microbial molecules. Finally, their industrial potential applications will be evaluated.

References

1. Kushner, D. J., and M. Kamekura. 1988. Physiology of halophilic eubacteria, p. 109–138. In F. Rodriguez-Valera (ed.), *Halophilic bacteria*, vol. I. CRC Press, Inc., Boca Raton, Fla