# Halobacteria - An Anti-Salt Bomb

Lopes, Maria Joao (School: Escola Secundaria Julio Dinis)
Barata, Ana Catarina (School: Escola Secundaria Julio Dinis)
Silva, Raquel (School: Escola Secundaria Julio Dinis)

The aim of this project was to verify the influence of halobacteria on the development and germination of lettucein extreme salt conditions. This hypothesis could be the solution to minimize the worlwide hunger by revitalizing land that has no use in the bio economy due to the contamination by salt. To prove our problem, we first verified the negative influence of salinity on the germination and development of lettuce and lettuce seeds by testing on saline solutions of 6 ‰, 12 ‰ and 18 ‰ (control with distilled water). We continued our experiences by isolating halobacterias of the roots of halophytes of Ria de Aveiro and by purchasing the active principles of betaine and ectoine, two osmoprotector solutes produced by them. We added this substances and microorganisms in the germination of lettuce seeds and in the development of adult plants (same concentrations of salt and control).The replicates were all in the same luminosity and temperature conditions and were watered with the same amount of solution.The results showed an increase in the number of germinated seeds and photosynthetic levels of plants (mesured with a chlorophyll meter) in saline environment, evidencing, therefore, indications of osmoprotection in both cases. Thus, we conclude that the hypothesis proposed is viable and can revolutionize modern agriculture and bio economy nowadays as well as reducing one of the world biggest problems- hunger- by adding this bacterias/solutes in the agricultural watering systems, giving use to abandoned lands.

**Awards Won:**