

New life discovered in the deep Mediterranean

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Scientists have discovered a new group of microbes thriving in extreme conditions deep in the Mediterranean Sea. Their existence in such hostile environments hints at the possibility of life on other planets.

The European consortium carrying out the three-year Biodeep project, which includes researchers from the University of Essex, now plans to test how the microbes tolerate these unique conditions. The group hopes their adaptations could be exploited in medicine, agriculture or other biotechnological applications.

The researchers tested four 'brine lakes' with salt concentrations ten times higher than seawater, a lack of oxygen, and a pressure 400 times greater than atmospheric pressure. These basins in the sea-bed east of Sicily are some 4km below sea level.

The European Commission-funded study aimed to discover whether the brine lakes, because their high densities prevent them mixing with the overlying seawater, represented isolated habitats in which novel life forms had evolved.

The evidence of life in one basin, the Discovery basin, which contained a high concentration of the chemical magnesium chloride, particularly surprised the researchers.

Terry McGenity, the lead scientist of the Essex group, said: 'This preliminary evidence for life in Discovery brine, in combination with the recent finding of magnesium salts on Mars, and the possibility of a magnesium-rich subsurface ocean on Europa, one of the moons of the planet Jupiter, is tantalising, and has interesting implications for possible life on other planets.'

The research consortium, consisting of scientists from institutions in the Netherlands, Italy, Greece, France, Germany and the UK, made three research cruises to carry out the first detailed study

of these deep-sea lakes and to sample and characterize the organisms living there.

Their findings are reported in the current issue (7 January) of the leading research journal *Science*. A number of new types of microbes, including a completely new evolutionary line, the MSBL1 group of Archaea, were discovered.

Professor Ken Timmis, from the University of Essex and the German Research Centre for Biotechnology, said: 'Microbes are the most diverse forms of life, and have proven to be a rich source of products and activities that find applications in biotechnology, such as antibiotics and other drugs used in medicine, enzymes used in the manufacture of chemicals, and metabolites used in the food industry. This new diversity represents new potential for biotechnological applications.'

Source: University of Essex

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