

Scientists use an 'ice lolly' to find polar bacteria in their own back yard

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To study the bacteria which survive in extreme cold, scientists no longer have to go to extreme environments, such as Antarctic lakes and glaciers. Bacteria previously isolated from polar climates, and have properties which allow them to survive in extreme cold, have been isolated from soil in temperate environments.

Professor Virginia Walker and her colleagues at Queen's University, Canada, have developed a technique to isolate bacteria which have properties to interact with, and modify, ice. This technique involved the formation of an 'ice finger' (or lolly) to select for bacteria which will adsorb to ice. These bacteria were then cultured and identified using their DNA.

The bacteria can modify ice and water in a number of ways. One of the species identified, *Chryseobacterium* sp., demonstrated Ice Recrystallisation Inhibition (IRI), a property that can be exploited in the production of ice-cream to prevent it from recrystallising and becoming 'crunchy'.

Other species isolated in this study promote the formation of ice crystals at temperatures close to melting, a property which is useful in the production of artificial snow.

Pseudomonas borealis is one species which is not only ice-forming, it is also thought to be tolerant to cold and could therefore have advantages for snow-making in artificial environments such as ski centres and in

waste-water purification.

“Selecting for rare microbes that seem to stick to ice has been fun, but now the real work begins to find out what genes are responsible for this attraction” Said Professor Walker.

These findings will decrease the costs involved in the further study of such bacteria and their properties, as scientists will no longer need expeditions to the poles in order to isolate the bugs; they can find them in their own backyards.

Citation: Ice-active characteristics of soil bacteria selected by ice-affinity, by Sandra L. Wilson, Deborah L. Kelley and Virginia K. Walker. Published in *Environmental Microbiology*, Volume 8, Issue 10, pg. 1816 – 1824, October 2006

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