

New life found in ancient tombs

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Life has been discovered in the barren depths of Rome's ancient tombs, proving catacombs are not just a resting place for the dead. The two new species of bacteria found growing on the walls of the Roman tombs may help protect our cultural heritage monuments, according to research published in the September issue of the *International Journal of Systematic and Evolutionary Microbiology*.

The Catacombs of Saint Callistus are part of a massive graveyard that covers 15 hectares, equivalent to more than 20 football pitches. The underground tombs were built at the end of the 2nd Century AD and were named after Pope Saint Callistus I. More than 30 popes and martyrs are buried in the catacombs.

"Bacteria can grow on the walls of these underground tombs and often cause damage," said Professor Dr Clara Urzì from the University of Messina in Italy. "We found two new species of bacteria on decayed surfaces in the catacombs and we think the bacteria, which belong to the Kribbella group, may have been involved in the destruction."

By studying bacteria that ruin monuments, the researchers hope to develop methods of protecting cultural heritage sites such as the catacombs in Rome. The two new bacterial species discovered in the tombs also have the potential to produce molecules that have useful properties, like enzymes and antibiotics.

"The special conditions in the catacombs have allowed unique species to evolve," said Professor Dr Urzì. "In fact, the two different Kribbella

species we discovered were taken from two sites very close to each other; this shows that even small changes in the micro-environment can lead bacteria to evolve separately."

Kribbella species are found in many different locations all over the world, from a racecourse in South Africa to a medieval mine in Germany. The genus was only discovered in 1999 but since then several species have been found. The two species discovered in the Roman catacombs have been named *Kribbella catacumbae* and *Kribbella sancticallisti*.

"The worldwide existence of the genus *Kribbella* raises questions about the path of evolution," said Professor Dr Urzì. "If the bacteria are very old, does the wide geographical distribution prove the genus is stable? Or have similar bacteria evolved in parallel to one another in different places? The questions are made even more interesting by the discovery of these two different bacteria in the Roman tombs."

Source: Society for General Microbiology

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