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Beyond bacteria

While current scientific technologies allow for the early detection of bacteria, infections of *Clostridium difficile* increase each year, with hospitals acting as a primary source of contagion, especially among sick individuals and patients.

In addition to preventing initial infection, one of the greatest clinical challenges in treating this bacterium is eliminating the incidence of recurring infections. According to Dr. Daniel Paredes-Sabja, investigator from the Department of Biological Sciences at the Universidad Andrés Bello, "Even after clinical symptoms are no longer present, statistical data indicate that three of every ten patients will present a second infection. In fact, it is highly probable that these patients will have relapses capable of causing irreversible intestinal damage or even death."

The reason for these relapses is due to the survival mechanism employed by *C. difficile*, where liberated spores hide in the epithelium. Once clinical symptoms have been controlled through treatment, these spores are released and cause a recurrent infection.

"These spores are metabolically inactive, impermeable to any antibiotic, and are unaffected by attacks from the immune system. These characteristics make it impossible to combat these spores during clinical presentation of the disease, and they can only be eliminated once relapse has occurred," adds Dr. Paredes-Sabja.

Considering this situation, Dr. Paredes-Sabja, together with a team of pre- and post-graduate students from UNAB, are working on an ambitious project to identify the molecular components involved in the interaction between the spore and the host cells.

"If we are able to identify and inhibit the process by which *C. difficile* spores enter epithelial cells, we can decrease or even eliminate recurrences of this bacterial infection," emphasizes Dr. Daniel Paredes-Sabja.