

New research lights up chronic bacterial infection inside bone

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A new report demonstrates how a sensitive imaging technique gives scientists the upper hand in seeking out bacteria in chronic infections.

Listeria monocytogenes is a type of pathogenic bacteria that can cause severe illness and death. *Listeria* outbreaks recently claimed twenty lives in Canada. Additionally, *Listeria* infection is the third most common cause of bacterial meningitis in newborns, and can cause abortion and stillbirth. When the infection is caught in time, treatment can be difficult and take weeks to clear with intravenous administration of antibiotics.

Therefore, in order to understand how this pathogen can be so elusive and difficult to treat, a research team from Stanford University School of Medicine studied mice infected with *Listeria*. Their report published in the journal *Disease Models & Mechanisms (DMM)*, dmm.biologists.org describes how they use a technique called in vivo bioluminescence to light up bacteria and allow them to see extremely tiny amounts of bacterial cells in living animals. Using this method, they found that small persistent patches of *Listeria* took up residence inside bone marrow in the mice. This is significant because it is thought that the bone marrow can act as a reservoir to the brain and spinal cord, potentially causing life-threatening infections, such as in bacterial meningitis in newborns.

Another interesting aspect of this study is due to the use of specially designed *Listeria* stains in treating cancer. Clinical trials are currently underway in which non-disease-causing strains of *Listeria* are

administered to cancer patients to generate immune responses against tumors. The researchers thus also looked at these attenuated strains, and found that they too could be harbored in bone marrow. It is still unclear, however, if such bacterial persistence will increase or decrease therapeutic effects.

Source: The Company of Biologists

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