

LISTERIA VARIANTS AND METHODS OF USE THEREOF

Tech ID: 33326 / UC Case 2024-036-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Listeria monocytogenes has been used as a therapeutic vaccine in more than 20 cancer clinical trials and administered to more than 1800 patients. However, Listeria monocytogenes vaccines have been less immunogenic in clinical trials. In rare cases, live bacteria were found in patients' blood or on implants, after the administration of live vaccines. Additionally, even attenuated vaccine strains still caused severe adverse events and consequently put clinical trials on hold. Due, in part, to the safety and efficacy concerns of using Listeria monocytogenes as a live vector for cancer immunotherapy, there is a need for safer and more potent strains of Listeria monocytogenes.

UC Berkeley researchers have created a Listeria monocytogenes mutant strain that will likely be a safer and potentially more potent platform for the future development of cancer therapeutics. The strain is auxotrophic for adenosine, a purine nucleoside with extremely low levels in blood and healthy cells. The strain cannot grow in the host cell cytosol and is significantly attenuated in the mouse infection model. The improvement in the safety of this invention is further demonstrated by the poor growth of the mutant strain in host extracellular environments such as mouse gallbladders and human blood. Although attenuated, the invented strain elicits a robust effector CD8+ T cell response in mice and protects mice against lethal-dose challenges of wild-type L. monocytogenes. More importantly, the immunogenicity of this invention is more potent in mice than in previous Listeria monocytogenes vaccine strains. Another facet of this invention is that because of the high concentration of adenosine in tumor microenvironments, the mutant strain could potentially survive and multiply in tumors.

SUGGESTED USES

» therapeutic vaccine

ADVANTAGES

» a safer, more potent therapeutic platform for cancer immunotherapies

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Listeria Engineered To Support Aerobic Growth Using The Non-Mevalonate Pathway
- ▶ DP-L4056 Prophage-Cured Strain Of Listeria Monocytogenes

CONTACT

Terri Sale
terri.sale@berkeley.edu
tel: 510-643-4219.



INVENTORS

» Portnoy, Daniel A.

OTHER INFORMATION

CATEGORIZED AS

- » **Medical**
- » Therapeutics
- » Vaccines

RELATED CASES

2024-036-0

