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BiomX Presents In Vivo Data on Bacteriophage Delivery to Intra-Tumor Bacteria

Data presented at the Fifth CRI-CIMT-EATI-AACR International Cancer Immunotherapy Conference

Study results represent a first step to altering tumor microenvironment using synthetically engineered phage

NESS ZIONA, Israel, Sept. 30, 2019 /PRNewswire/ --BiomX Ltd., a microbiome company developing both natural and engineered phage therapies, today presented new data from the company's colorectal cancer synthetic biology program at the Fifth CRI-CIMT-EATI-AACR International Cancer Immunotherapy Conference in Paris, France. BiomX's colorectal cancer program is targeting bacteria that are naturally present in tumors, with the aim to convert 'cold' tumors to 'hot' by releasing an immunostimulatory payload and eradicating tumor-protective bacteria.

Recent studies have shown that the bacterial species *Fusobacterium nucleatum* (*F. nucleatum*) is enriched in colorectal cancer tumors, binds to tumor cells and may play a pathologic role by protecting the tumor from the host's immune system. A higher abundance of *F. nucleatum* in the tumor has been associated with advanced tumor stage and poor prognosis in patients with colorectal carcinoma. In this study, BiomX's researchers were able to isolate phage that specifically target *F. nucleatum* and demonstrate that IV-administered *Fusobacterium*-targeting phage could reach and successfully infect intra-tumoral *F. nucleatum* in a mouse model of colorectal cancer.

These results represent a first step in BiomX's strategy to alter the tumor microenvironment (TME), turning 'cold' tumors 'hot' through the use of a synthetically engineered phage therapy. 'Cold' tumors have poor responses to most immuno-oncology therapies because they are largely devoid of immune cells. The engineered phage under development are designed to improve responsiveness using a two-pronged approach: first, by delivering a genetic payload to induce production of immuno-stimulatory proteins (such as cytokines) in their target bacteria; and second, by inducing phage-mediated bacterial lysis (cell death).

This approach eliminates the bacteria's pathologic functions and releases an immune-activating payload into the TME upon the bacteria's death, alerting the immune system to the existence of an otherwise concealed tumor.

"Using synthetic biology, we can create phage therapies that exploit the co-existence of specific bacteria within cancerous tumors to induce a focused anti-tumor immune response. Moreover, these phage therapies will potentially boost the effect of immunotherapies, which are spearheading the future of cancer treatment," said Jonathan Solomon, BiomX's CEO. "These results show early promise for our colorectal cancer program and for future targeting of bacteria in additional cancer types."

About BiomX

BiomX is a preclinical stage microbiome company developing both natural and engineered phage cocktails designed to target and destroy bacteria that affect the appearance of skin, as well as harmful bacteria in chronic diseases, such as IBD, PSC, and cancer. BiomX discovers and validates proprietary bacterial targets and customizes phage compositions against these targets.

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