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Abstract Submission Form

Poster Title: **Identifying Gene Signatures Indicative of Trained Immunity in NK Cells within the Breast Tumor Microenvironment**

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Category: **Cancer Research/Basic Science**

Cancer remains a significant public health concern worldwide, and despite the availability of various cancer treatments, the five-year survival rate for some cancers remains low. Innovative therapeutic strategies are urgently needed to improve cancer treatment outcomes. One such approach is the use of sepiapterin (L-SEP), an anti-cancer drug that has shown promising results in preclinical studies. Recent evidence suggests that the microbiome can influence cancer treatment outcomes by regulating the immune response, including the development and function of NK cells. NK cell maturation and activation are regulated by various factors, including cytokines, chemokines, and cell surface receptors. L-SEP has been shown to modulate the immune response by activating NK cells through the production of cytokines and chemokines or transcription factors that regulate NK cell development and function. In this study, we aim to identify immune memory regulators that may play a role in the immune response following treatment with L-SEP and microbiome-associated molecular patterns (MAMPs). Through the analysis of differentially expressed gene profiles and conducting functional enrichment analysis on NK cells treated with L-SEP and MAMPs, our study revealed three noteworthy candidates that significantly regulated the memory NK cell population. These candidates include candidate (1), which is a cell surface receptor, candidate (2), a transcription factor, and candidate (3), a cytokine. Their regulatory roles in memory NK cells were found to be statistically significant. By gaining a deeper understanding of these candidates and their involvement in the modulation of NK cell function and development, our research holds the potential to provide valuable insights into the complex mechanisms underlying cancer pathogenesis. Moreover, these findings have the potential to pave the way for the development of innovative immunotherapeutic strategies that can enhance the immune response against cancer. This study contributes to the growing body of knowledge in the field and may ultimately lead to improved treatment outcomes and better patient care in the realm of cancer therapeutics.

Key words: Gene Signatures, Memory NK cell, Breast Tumor, Microenvironment, L-SEP, MAMPs