Transphagocytic T cells as anti cancer immunotherapy

CSIC’s research group, in collaboration with scientists from the Centre of Molecular Biology “Severo Ochoa” (CBMSO-CSIC), the Autónoma University of Madrid and the Health Research Institute of the “La Princesa” University Hospital, developed a new method for anti-cancer immunotherapy based on transphagocytic lymphocytes (tiCD4+ T cells)

Companies interested in a patent license or investors for creation of a start-up are being sought.

An offer for Patent Licensing

CD4+ T cells are novel and potent tools in cancer immunotherapy

The results shows, for the first time, that CD4+ T cells, the paradigm of adaptive immune cells, and contrary to the current view, are bona fide antigen presenting cells.

It has recently shown that CD4+ T cells capture (and kill) bacteria from infected dendritic cells (DCs) in a process termed transinfection. Now, they have showed that CD4+ T cells process and cross-present bacterial antigens to naïve CD8+ T cells, which massively proliferate and become cytotoxic, triggering an immune response to cancer and infectious diseases.

The therapeutic potential of this potent activation of CD8+ T cells was tested using an aggressive melanoma tumor model (B-16OVA). They have showed that mice vaccinated with tiCD4+ T cells capturing bacteria (Listeria monocytogenes) expressing tumor antigens (OVA) are protected against tumor formation, which highlights the potential of tiCD4+ T cells as a potential tool for cancer immunotherapy.

Main innovations and advantages

- The invention can be used to prevent/treat tumours and/ or stimulation of an immune response against tumour antigens.
- tiCD4+ T cells (trained by bacteria) are newly defined antigen-presenting cells that can be useful as a cancer immunotherapy tool.
- tiCD4+ T cells mediated antigen presentation potently cross-prime naïve CD8+ T cells.
- tiCD4+ T cells mediated antigen presentation generates central memory CD8+ T cells with very low levels of PD-1.
- The anti-tumour activity of tiCD4+ T cells has been tested in mouse melanoma models. The invention can be applied for melanoma and other highly immunogenic tumours.

Patent Status

Patent filed in USA, Canada, Australia and EU

For more information, please contact:

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