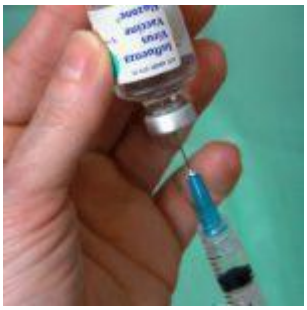
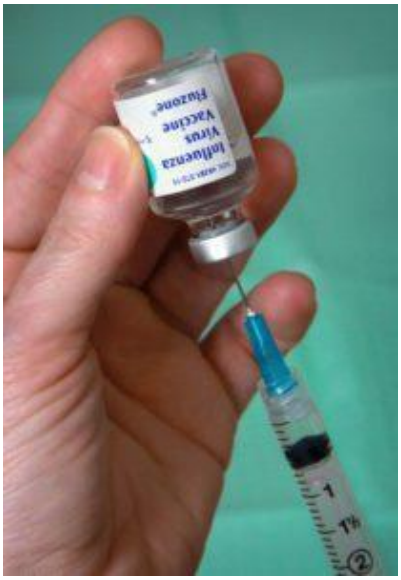
International Remote Conference Highlights: Establishment of memory CD8 cells to influenza





Extracting the Fluzone influenza vaccine (CDC, Wikimedia Commons)

The seasonal variability of influenza makes the development of a universal vaccine challenging. CD8 T cells may be the answer to this dilemma. This is because of their cross-reactive characteristics as T cell epitopes are mostly conserved between influenza strains.

Since memory CD8 T cells are only present for a short time after the influenza virus is cleared, the question still remained on how to make long-lasting, robust T cell responses. Angela Zhou , a PhD candidate under the supervision of Dr Tania Watts, presented her data at the International Remote Conference on how T cell co-stimulation may be the key in producing an effective and sustained T cell response against influenza.

The researchers studied how a protein known as 4-IBB (CD137) could be used to boost CD8 T cells responses against influenza. 4-IIB is part of the TRAF-binding TNFR family of proteins. Lack of this protein has been found to result in the loss of memory T cells in influenza infection.

The researchers used mouse models that would mimic vaccination in adults. They found that 4-IBB was able to augment the number of CD8 cells that were in circulation. Boosting with 4-IBBL (4-IBB ligand) resulted in a survival advantage without any negative pathological consequences.

4-IBBL induced memory T cells which were characteristic of long-lived effector cells. The T cells had low expression of CD62L, high T-bet expression, low expression of TCF-1 and high expression of CD127.

This study highlights the use of 4-IBB in the stimulation of a more robust and long-lived T cell response against influenza. Knowledge of how to induce CD8 T cells against influenza may be useful in informing the design of a universal vaccine.

Journal Article: Zhou et al., 2017. Intrinsic 4-1BB signals are indispensable for the establishment of an influenza-specific tissue-resident memory CD8 T-cell population in the lung. *Mucosal Immunology*

For more information on the conference visit: 2nd Annual International Remote Conference: Science and Society

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