

Flu vaccine, only benefit to prevention of seasonal influenza transmission?

Recent studies showed that flu vaccine might also be beneficial to cancer patients by boosting the immune responsibility.....

Turning on the immune system in just the right way with what's at hand.

There is a great deal of interest in making cold tumors hot. PD-1 and CTLA-4 checkpoint inhibitors can unleash the immune system against cancer, discoveries that led to the Noble Prize in Medicine for James P Allison and Tasuku Honjo in 2018. However, the immune system is often too “cold” inside the microenvironment of tumors for this to work. Instead of immune suppressing Regulatory T cells, regulatory B cells, and myeloid-derived suppressor cells found typically in tumors, CD8+ T cells instead are needed to make it hot, and thus allow checkpoint inhibitors to work.

A recent paper tested an already approved therapy for immune enhancement for doing this trick; the influenza vaccine. The flu vaccine has a long history of use to ward off influenza, a sometimes deadly viral infection. It does so by triggering the immune system. In fact, the vaccine was able to trigger the cold to hot immune transition in tumors with appropriate protocols, but with the frequently stated caveat that experiments were performed in mice. However, the investigators reviewed records of lung cancer patients with hospitalizations due to influenza, and surprisingly found significantly improved mortality in this group. This bodes well for applicability of the flu vaccine to improve outcomes for certain cancers in humans. Since the flu vaccine is already approved for safety, this is a basic research advance that might make its way to the clinic in shorter order.

But the story of influenza and repurposed treatments does not end there. Recently, a ketogenic diet, a diet that usually is prescribed for certain metabolic diseases and epilepsy, was found to protect against the deadly influenza virus in mice by activating the $\gamma\delta$ T cell response. In sum, finding handles to the immune system pays dividends, and some are readily available.....

Reference:

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- 2. Goldberg, E. L., Molony, R. D., Kudo, E., Sidorov, S., Kong, Y., Dixit, V. D., & Iwasaki, A. (2019). Ketogenic diet activates protective $\gamma\delta$ T cell responses against influenza virus infection. Science Immunology, 4(41), eaav2026. <https://doi.org/10.1126/sciimmunol.aav2026>*