

Moving from off-the-shelf cancer vaccines to shots personalized to your genetic makeup

In recent years, we have seen great advances in disease diagnosis through biomarkers and, increasingly, gene sequencing.

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This progress has resulted in the development of a number of successful immuno-oncology approaches to cancer therapy such as checkpoint inhibitors and chimeric antigen receptor (CAR) T cell-based products. We are also seeing the development of cancer vaccines, which aim to train the immune system to target tumor-specific antigens.

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Although off-the-shelf vaccines are easier to manufacture, they require the incorporation of many irrelevant epitopes, potentially compromising efficacy. Also, they may benefit only selected patients. In contrast, personalized vaccines are potentially applicable across tumor types and for all patient populations. However, they can be difficult and costly to develop and manufacture.

The personalized approach is built around increasing sequencing capabilities and the use of algorithms to predict multiple MHC class I epitopes specific to an individual patient's tumor. Then it is necessary to manufacture vaccines that are, essentially, targeted to an individual patient's tumor. Doing so requires an extra degree of precision.

Despite these challenges, several companies, such as Roche/Genentech, Evaxion Biotech, EpiVax, and Geneos Therapeutics, have products that are in clinical trials or have already completed clinical trials.

[**This is an excerpt. Read the original post here**](#)