

# Components of the Wnt-Beta-catenin paracrine signaling pathway as predictive biomarkers for cancer immunotherapy

## Value Proposition

Immunotherapy is a promising approach for the treatment of many cancers. However, despite early success, majority of patients with advanced cancer fail to respond or become resistant. In even the most immunogenic cancer like melanoma, the response rate remains below 40%. There are currently no biomarkers that reliably predict which cancer patients will respond or be resistant to immunotherapies such as checkpoint inhibitor immunotherapy. Clinically useful biomarkers capable of predicting which patients may respond to immunotherapy strategies would streamline treatment plans, thereby assigning more effective therapies to patients sooner while avoiding the use of costly therapies that will ultimately fail in the clinic. This would optimize clinical outcomes for patients while lowering health care costs.

## Technology

This technology is for predictive biomarkers of cancer immunotherapy. The inventors have shown that paracrine Wnt signaling promotes local immune tolerance and drives adaptive resistance to anti-PD-1 antibody immunotherapy. They have shown that inhibition of Wnt ligand signaling is capable promoting immune-mediated responses to cancer *in vivo* and suppressing their progression when administered in combination with anti-PD-1 antibody therapy. Therefore, molecules of the Wnt-signaling pathway may be predictive markers of anti-PD-1 therapy response as well as general immunotherapy responses. In addition, Wnt-signaling biomarkers may be particularly useful in predicting responses to clinically relevant Wnt pathway inhibitors. This invention has tremendous potential to aid in clinical decision making and optimize patient outcomes.

## Advantages

- Predictive biomarkers to anti-PD-1 therapy
- Predictive biomarkers to immunotherapies for the treatment of a variety of cancers

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