

Description

Inventors at the Medical College of Wisconsin (MCW) have developed a novel gene expression panel to accurately predict whether a candidate for immunotherapy will respond to treatment. This panel that takes advantage of a gene expression signature from specific subsets of immune cells (TREM2^{hi} macrophages and gammadelta T cells), being referred to as ImmuneCells.Sig.

Problem Solved

While immunotherapy treatments are a major development in cancer treatment, large numbers of patients fail to respond. Up to 80% of immunotherapy patients do not respond to the treatment and there has not been a clear mechanism to predict who will respond and who won't respond. This can lead to wasted time if the wrong treatment is selected, missed opportunities, unnecessary toxicity to patients, and even development of hyperprogressive disease.

ImmuneCells.Sig has been validated with external data sets and clearly outperforms other prediction signatures of immunotherapy treatment of melanoma patients. The area under the curve, measuring sensitivity and specificity, is between 0.86 and 0.98 across four datasets

Application

The ImmuneCell.Sig gene expression panel would be a strong foundation for a Companion Diagnostic (CDx) used to aid PD-1 or CTLA-4 immunotherapy decisions.

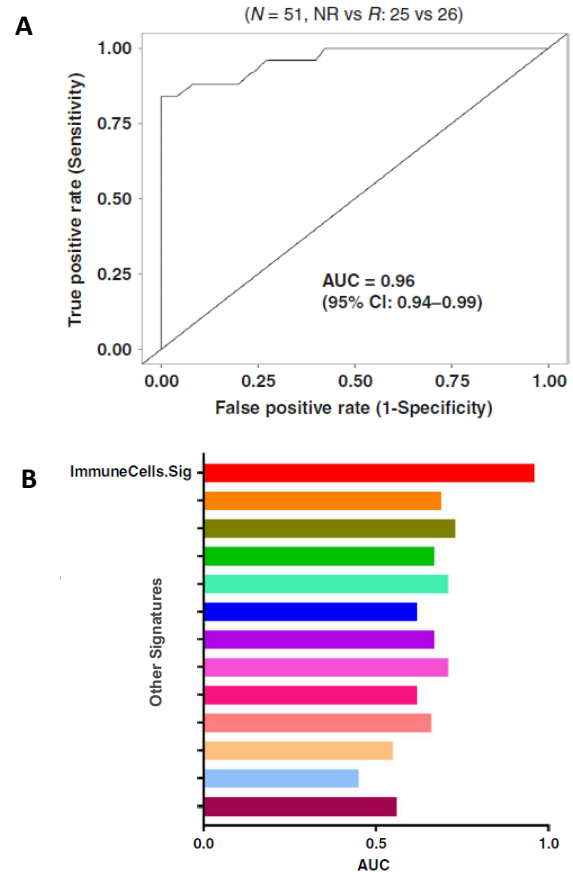


Figure: (A) ImmuneCells.Sig has high prognostic values for immunotherapy outcomes in validation datasets (one of three shown). (B) ImmuneCells.Sig outperforms other immunotherapy response predictors. AUC values are represented by barplots.

Key Advantages

- Accurate prediction of response to immunotherapy
- Panel compatible with modern diagnostic techniques
- Based on novel immune cell RNA expression

Stage of Development:
Validated in external dataset

Intellectual Property Status:
Provisional Application Filed
August, 2020

More Information

Publication:

Nature Communications,

[A gene expression signature of TREM2^{hi} macrophages and \$\gamma\delta\$ T cells predicts immunotherapy response](#)

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