Identification of the involvement of adipocytes in nivolumab (anti-PD1) response in ipilimumab (anti-CTLA4) resistant melanoma patients using a machine learning model of the immune system

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RECOVERING KNOWN PD-1 BIOLOGY

NOVEL HYPOTHESIS: αCTLA4 RESISTANT αPD1 RESPONSIVE PATIENTS HAVE HIGH ADIPOCYTE CONTENT

Conclusions:
- In anti-CTLA4 naïve anti-PD1 responders we show our ability to recover known mechanisms from the data.
- We recover PD-1 and other cancer immune modulators only after adjusting to melanocyte content which is a major confounder in the data.
- Ipil-resistant and nivo responder patients have significantly higher levels of adipocytes.

The adipocyte-immune interface is associated with GAS6 (TM4 ficolin) and CD96.

Next steps and questions:
- Is it possible to use a machine learning model that includes immune modulators to predict treatment response?
- Can we use this model to identify potential new therapeutic targets?
- How does the interaction between adipocytes and immune cells affect the outcome of cancer treatment?

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