What We're Reading

Article Recommendations from Our Deputy and Senior Editors

Neoantigen landscape dynamics during human melanoma–T-cell interactions

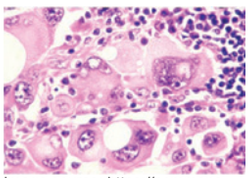

Image source: https://commons.wikimedia.org/wiki/File:Melanoma_%287%29.jpg

Tumors and their infiltrating T-cell populations reciprocally pressure each other—tumors to avoid recognition, and T cells to spot neoantigens. Longitudinal examination allowed tracking of the dynamic emergence–response relationship between neoepitope expression and T-cell reactivity.

Verdegaal EM, de Miranda NF, Visser M, Harryvan T, van Buuren MM, Andersen RS, et al. Nature 2016;536:91–5.

Targeting focal adhesion kinase renders pancreatic cancers responsive to checkpoint immunotherapy

Image source: https://en.wikipedia.org/wiki/PTK2

For the immune system to successfully eradicate tumors, T cells must first penetrate them. Jiang and colleagues found that FAK induces fibrosis. Inhibiting FAK allowed immune cells to infiltrate, greatly increasing the effectiveness of various immuno- and chemotherapies.

Jiang H, Hegde S, Knolhoff BL, Zhu Y, Herndon JM, Meyer MA, et al. Nat Med 2016;22:851–60.

Systemic RNA delivery to dendritic cells exploits antiviral defence for cancer immunotherapy

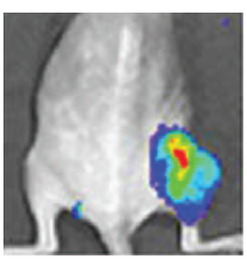

Image source: http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0041647

Multiple approaches to tumor vaccines are in clinical trials. Kranz and colleagues devised an RNA nanoparticle that, regardless of the antigen, is taken up by DCs. The ensuing innate and adaptive immune responses successfully rejected tumors in an IFNα-dependent process.

Kranz LM, Diken M, Haas H, Kreiter S, Loquai C, Reuter KC, et al. Nature 2016;16;534:396–401.

Identification of shared TCR sequences from T cells in human breast cancer using emulsion RT-PCR

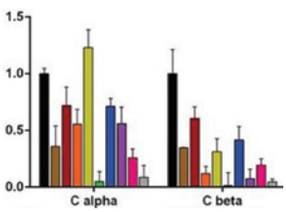

Image source: Munson et al., PNAS

Knowledge of the T-cell receptors used in antitumor responses could enhance immunotherapy. Munson and colleagues developed an enhanced single-cell emulsion RT-PCR assay that identifies TCR pairs, giving insight into antitumor TCR repertoires and potentially identifying tumor antigens.

Munson DJ, Egelston CA, Chiotti KE, Parra ZE, Bruno TC, Moore BL, et al. Proc Natl Acad Sci U S A 2016;113:8272–7.

Mutations associated with acquired resistance to PD-1 blockade in melanoma

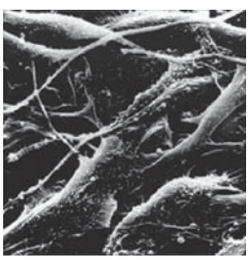

Image source: https://visualsonline.cancer.gov/details.cfm?imageid=1760

Immune-based cancer therapies are promising, but not always permanent, with potential outgrowth of tumor cells insensitive to the treatment. Genetic analysis of resistance to a checkpoint blockade revealed mutations that led to loss of IFNγ expression or HLA surface expression.

Zaretsky JM, Garcia-Diaz A, Shin DS, Escuin-Ordinas H, Hugo W, Hu-Lieskovan S, et al. N Engl J Med 2016 Jul 13; doi: 10.1056/NEJMoa1604958.

Inhibition of T cell receptor signaling by cholesterol sulfate, a naturally occurring derivative of membrane cholesterol

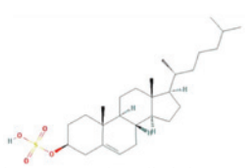

Image source: https://pubchem.ncbi.nlm.nih.gov/compound/Cholesterol_sulfate

Successful cancer immunotherapies require a firm understanding of the environmental signals affecting T-cell activation and regulation. Wang and colleagues found a ubiquitous cholesterol derivative that physiologically functions to inhibit TCR activation by disrupting the TCR-CD3 nanoclusters necessary for T-cell activation.

Wang F, Beck-García K, Zorzin C, Schamel WW, Davis MM. Nat Immunol 2016;17:844–50.

Cancer Immunology Research

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Cancer Immunol Res 2016;4:717.