

HIGHLIGHTS FROM THE LITERATURE

- 121 What We're Reading

MEETING REPORT

- 122 **Report on the NCI Microbial-Based Cancer Therapy Conference**
Colleen S. Curran, Avraham Rasooly, Min He, Ben Prickril, Magdalena Thurin, and Elad Sharon

RESEARCH ARTICLES

- 127 **Soluble SLAMF6 Receptor Induces Strong CD8⁺ T-cell Effector Function and Improves Anti-Melanoma Activity *In Vivo***
Galit Eisenberg, Roni Engelstein, Anat Geiger-Maor, Emma Hajaj, Sharon Merims, Shoshana Frankenburg, Ronny Uzana, Abraham Rutenberg, Arthur Machlenkin, Gabi Frei, Tamar Peretz, and Michal Lotem
Treatment of tumor-bearing mice with the ectodomain of SLAMF6, an immune receptor, improved tumor-infiltrating CD8⁺ lymphocyte persistence and function. Ectodomain-treated mice had enhanced tumor clearance, suggesting that converting the SLAMF6 interaction from inhibitory to stimulatory could be therapeutic.
- 139 **Radiotherapy and CTLA-4 Blockade Shape the TCR Repertoire of Tumor-Infiltrating T Cells**
Nils-Petter Rudqvist, Karsten A. Pilonas, Claire Lhuillier, Erik Wennerberg, John-William Sidhom, Ryan O. Emerson, Harlan S. Robins, Jonathan Schneck, Silvia C. Formenti, and Sandra Demaria
Tumor-targeted radiotherapy can synergize with CTLA-4 blockade to induce T cell-mediated rejection of tumors refractory to CTLA-4 blockade alone. The resultant T-cell repertoire has unique characteristics that suggest a diverse T-cell response is critical for tumor rejection.
- 151 **ImmunoMap: A Bioinformatics Tool for T-cell Repertoire Analysis**
John-William Sidhom, Catherine A. Bessell, Jonathan J. Havel, Alyssa Kosmides, Timothy A. Chan, and Jonathan P. Schneck
TCR sequencing provides insight into antigen-specific immune responses, but biologically meaningful conclusions are difficult to infer. ImmunoMap is a bioinformatics tool that reconciles TCR repertoire function and structure by quantifying the "relatedness" of the response by sequence homology.

- 163 **TUSC2 Immunogene Therapy Synergizes with Anti-PD-1 through Enhanced Proliferation and Infiltration of Natural Killer Cells in Syngeneic *Kras*-Mutant Mouse Lung Cancer Models**
Ismail M. Meraz, Mourad Majidi, Xiaobo Cao, Heather Lin, Lerong Li, Jing Wang, Veera Baladandayuthapani, David Rice, Boris Sepesi, Lin Ji, and Jack A. Roth
Provision of the TUSC2 gene via nanoparticles plus checkpoint inhibition enhanced the efficacy of antitumor responses in local and metastatic models of NSCLC. NK cells were required for this effect. Clinical trials of this combination may be warranted.
- 178 **Peptide Blocking of PD-1/PD-L1 Interaction for Cancer Immunotherapy**
Chunlin Li, Nengpan Zhang, Jundong Zhou, Chen Ding, Yaqing Jin, Xueyuan Cui, Kefeng Pu, and Yimin Zhu
A PD-L1-targeting peptide, TPP-1, was identified by bacterial surface display methods. TPP-1 was found to block PD-1/PD-L1 interactions, leading to T-cell reactivation, improved responses, and inhibition of tumor growth in a xenograft model.
- 189 **Robust Antitumor Responses Result from Local Chemotherapy and CTLA-4 Blockade**
Charlotte E. Ariyan, Mary Sue Brady, Robert H. Siegelbaum, Jian Hu, Danielle M. Bello, Jamie Rand, Charles Fisher, Robert A. Lefkowitz, Kathleen S. Panageas, Melissa Pulitzer, Marissa Vignali, Ryan Emerson, Christopher Tipton, Harlan Robins, Taha Merghoub, Jianda Yuan, Achim Jungbluth, Jorge Blando, Padmanee Sharma, Alexander Y. Rudensky, Jedd D. Wolchok, and James P. Allison
Immunotherapy success depends on inflamed tumor microenvironments. In tumor models, inflammation induced by chemotherapy, combined with CTLA-4 blockade, improved survival rates. In a clinical trial, patients with melanoma showed a durable response to such combined therapy.
- 201 **Antigen-Specific Antitumor Responses Induced by OX40 Agonist Are Enhanced by the IDO Inhibitor Indoximod**
Zuzana Berrong, Mikayel Mkrtychyan, Shamim Ahmad, Mason Webb, Eslam Mohamed, Grigori Okoev, Adelaida Matevosyan, Rajeev Shrimali, Rasha Abu Eid, Scott Hammond, John E. Janik, and Samir N. Khleif
Tumors can suppress immune responses. Inhibition of immunosuppression with the IDO inhibitor indoximod improved response to an antitumor vaccine. Combined immunotherapy with anti-OX40 and indoximod led to both increased numbers and improved functionality of vaccine-induced effector T cells.

Table of Contents

209 **The Immune Checkpoint Modulator OX40 and Its Ligand OX40L in NK-Cell Immunosurveillance and Acute Myeloid Leukemia**

Tina Nuebling, Carla Emilia Schumacher, Martin Hofmann, Ilona Hagelstein, Benjamin Joachim Schmiedel, Stefanie Maurer, Birgit Federmann, Kathrin Rothfelder, Malte Roerden, Daniela Dörfel, Pascal Schneider, Gundram Jung, and Helmut Rainer Salih
The TNFR-family member OX40 is expressed on AML cells, influencing various AML cellular functions as well as immunosurveillance by OX40L-expressing NK cells. These effects should be considered when developing OX40-targeted approaches for cancer immunotherapy.

222 **T-cell Responses in the Microenvironment of Primary Renal Cell Carcinoma—Implications for Adoptive Cell Therapy**

Rikke Andersen, Marie Christine Wulff Westergaard, Julie Westerlin Kjeldsen, Anja Müller, Natasja Wulff Pedersen, Sine Reker Hadrup, Özcan Met, Barbara Seliger, Bjarne Kromann-Andersen, Thomas Hasselager, Marco Donia, and Inge Marie Svane
TILs isolated from primary RCC specimens could recognize tumors. However, their immune responses were weaker than TILs from metastatic melanoma and displayed a mono-/oligo-functional pattern. The ability to select and expand poly-functional T cells may improve cell therapy for RCC.

236 **Exosomes Associated with Human Ovarian Tumors Harbor a Reversible Checkpoint of T-cell Responses**

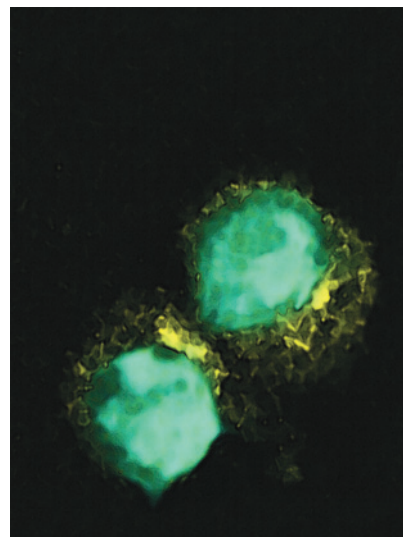
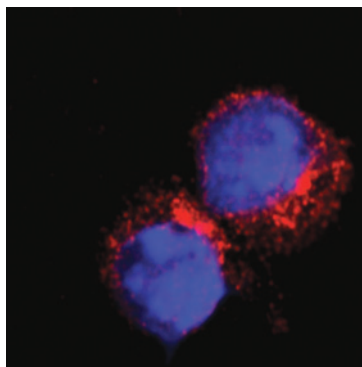
Gautam N. Shenoy, Jenni Loyall, Orla Maguire, Vandana Iyer, Raymond J. Kelleher Jr, Hans Minderman, Paul K. Wallace, Kunle Odunsi, Sathy V. Balu-Iyer, and Richard B. Bankert
Exosomes derived from ovarian cancer tumors repress the function and proliferation of T cells in the tumor microenvironment. T cells can be reactivated after exosomes are removed, which may point to exosomes as a target for checkpoint modulation.

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ABOUT THE COVER

Cytotoxic T cells rely on a complex system of checks and balances that modulates their activation, functional capabilities, and survival. One surface protein, SLAMF6, binds to itself in a homotypic fashion. Eisenberg and colleagues created a reagent from the ectodomain of SLAMF6 that interfered with this binding, resulting in increased activation of CD8⁺ T cells and stronger effector functions, even prolonging the survival *in vivo* of adoptively transferred CD8⁺ T cells, without the addition of IL2. This work provides evidence that when SLAMF6 is engaged via cell–cell contact it has an inhibitory effect on CD8⁺ T cells, which is relieved by the competitive binding of its soluble form. Read more in this issue, starting on page 127. The original confocal image is of human T cells activated with anti-CD3, with SLAMF6 (red) clustering at sites of cell–cell contact. Artwork by Lewis Long.



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