# Cancer Immunology Research

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### What We’re Reading

1109  
A Sampling of Highlights from the Literature

### In the Spotlight

1110  
Putting On the Gas and Taking Off the Brakes: A Novel Combinatorial Strategy to Enhance Tumor-Infiltrating Lymphocytes

Martin Felices and Jeffrey S. Miller  
See related article, p. 1141

### Research Articles

1111  
**A. Muciniphila Suppresses Colorectal Tumorigenesis by Inducing TLR2/NLRP3-Mediated M1-Like TAMs**

Lina Fan, Chaochao Xu, Qiwei Ge, Yifeng Lin, Chi Chun Wong, Yadong Qi, Bin Ye, Qingwu Lian, Wei Zhuo, Jianmin Si, Shujie Chen, and Liangjing Wang  
The authors show that *A. muciniphila* can induce M1-like macrophages through a TLR2/NF-κB/NLRP3 pathway to suppress colorectal cancer progression, suggesting a new potential therapeutic strategy for colorectal cancer prevention and treatment.

1125  
The Ratio of Exhausted to Resident Infiltrating Lymphocytes Is Prognostic for Colorectal Cancer Patient Outcome

Momeneh Foroutan, Ramyar Molania, Aline Pfefferle, Corina Behrenbruch, Sebastian Scheer, Axel Kallies, Terence P. Speed, Joseph Carson, and Nicholas D. Huntington  
The authors identify tumor mutations and tumor microenvironmental factors that drive residency programs in infiltrating lymphocytes, impairing their antitumor function and patient outcomes. Understanding how tumor lymphocyte residency is regulated might offer new approaches for therapeutic intervention.

1141  
An Engineered IL15 Cytokine Mutein Fused to an Anti-PD1 Improves Intratumoral T-cell Function and Antitumor Immunity

To overcome challenges associated with cytokine-based immunotherapies, the authors engineered a fusion protein of a single, potency-reduced, IL15 mutein and a PD1-specific antibody. The agent preferentially activates intratumoral CD8⁺ T cells and demonstrates potent preclinical antitumor efficacy.

See related Spotlight, p. 1110

1158  
Bispecific CAR T Cells against EpCAM and Inducible ICAM-1 Overcome Antigen Heterogeneity and Generate Superior Antitumor Responses

Yanping Yang, Jaclyn E. Mccluskey, Huan Yang, Janusz Puc, Yago Alcaina, Yomgúa Vedvys, Angel A. Gomez Gallegos, Elizabeth Ortiz-Sánchez, Elisa de Stanchina, Irene M. Min, Eric von Hofe, and Moonsoo M. Jin  
Generation of EpCAM/ICAM-1 dual CAR T cells improves the efficacy of single-targeting EpCAM CAR T cells in multiple tumor models. The data highlight a broadly applicable strategy to boost the activity of single antigen-specific CAR T-cell therapy.
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1175  iPSC-Derived Neotumor-Specific CTL Therapy for Ewing Sarcoma
Midori Ishii, Jun Ando, Satoshi Yamazaki, Tokuko Toyota, Kazuo Ohara, Yoshiaki Furukawa, Yoshiyuki Suehara, Mahito Nakanishi, Kazutaka Nakashima, Koichi Oshihama, Hiromitsu Nakauchi, and Miki Ando

Functionally rejuvenated iPSC-derived CTLs targeting the EWS/FLI1 fusion gene product are efficacious against Ewing sarcoma. These cells have a stem cell memory phenotype and potent antitumor effects, permitting potential use in therapy.

1187  Context-Dependent Immunomodulatory Effects of MEK Inhibition Are Enhanced with T-cell Agonist Therapy
Lauren Dennison, Amanda Ruggieri, Aditya Mohan, James Leatherman, Kayla Cruz, Skylar Woolman, Nilofar Azad, Gregory B. Lesinski, Elizabeth M. Jaffe, and Mark Yarchoan

The authors distinguish tumor-mediated and tumor-independent mechanisms of MEK inhibitor immunomodulation. Pharmacologic MEK inhibition enhances tumor immunogenicity but impairs T-cell activation. Antitumor activity with pharmacologic MEK inhibition is enhanced by combination with T-cell agonist therapy.

1202  TMB and Inflammatory Gene Expression Associated with Clinical Outcomes following Immunotherapy in Advanced Melanoma
F. Stephen Hodi, Jedd D. Wolchok, Dirk Schadendorf, James Larkin, Georgina V. Long, Xiaoqing Liu, Abdul Saci, Tina C. Young, Sujaya Srinivasan, Han Chang, Hao Tang, Megan Wind-Rotolo, Jasmine L. Rizzo, Donald G. Jackson, and Paolo A. Ascierto

This exploratory analysis investigating biomarkers of response to nivolumab and ipilimumab in melanoma patients demonstrates that combined assessment of tumor mutational burden, an inflammatory gene signature, and BRAF mutation status has the potential to predict response to immunotherapy.

1214  Combining an Alarmin HMGN1 Peptide with PD-L1 Blockade Results in Robust Antitumor Effects with a Concomitant Increase of Stem-Like/Progenitor-Exhausted CD8\(^+\) T Cells

An alarmin HMGN1 peptide combined with PD-L1 blockade improves antitumor responses in multiple murine tumor models. This combination alters specific CD8\(^+\) T-cell subsets in the tumor microenvironment and confers protection from subsequent tumor challenges.

1229  Hijacking TYRO3 from Tumor Cells via Trogocytosis Enhances NK-cell Effector Functions and Proliferation
Ting Lu, Rui Ma, Zhenlong Li, Anthony G. Mansour, Kun-Yu Teng, Li Chen, Jianying Zhang, Tasha Barr, Michael A. Caligiuri, and Jianhua Yu

The authors show TYRO3 is transferred to natural killer (NK) cells via trogocytosis from feeder cells, improving NK-cell proliferation \(\text{ex vivo}\). This provides a potential novel strategy to manufacture NK cells for adoptive-cell transfer cancer immunotherapy.

ABOUT THE COVER

The identity and frequency of immune cells in the tumor microenvironment impact outcomes for patients with colorectal cancer. Using single-cell RNA sequencing data, Foroutan et al. identify signatures of residency and exhaustion for tumor-infiltrating CD8\(^+\), CD4\(^+\), and natural killer (NK) cells. Different signature combinations associated with distinct patient outcomes; for example, signatures of high NK-cell exhaustion and low NK-cell residency were associated with improved survival. The data provide new insight into the characteristics of tumor-mutational burden, an inflammatory gene signature, and BRAF mutation status has the potential to predict response to immunotherapy.

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