## WHAT WE’RE READING

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**A Sampling of Highlights from the Literature**

### IN THE SPOTLIGHT

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**How to Reprogram Myeloma-Associated Macrophages: Target IKZF1**

Francesco De Sanctis and Vincenzo Bronte

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**Fueling the Revolution: Targeting Metabolism to Enhance Immunotherapy**

Robert D. Leone and Jonathan D. Powell

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**At the Crossroads: COVID-19 and Immune-Checkpoint Blockade for Cancer**

Marina Chiara Garassino and Antoni Ribas

### RESEARCH ARTICLES

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**The IKZF1–IRF4/IRF5 Axis Controls Polarization of Myeloma-Associated Macrophages**

Dimitrios Mougiakakos, Christian Bach, Martin Böttcher, Fabian Beier, Linda Röhner, Andrej Stoll, Michael Rehli, Claudia Gebhard, Christopher Lascher, Martin Eberhardt, Julio Vera, Maike Büttner-Herold, Katrin Bitterer, Heidi Balzer, Magdalena Leffler, Simon Jitschin, Michael Hundemer, Mohamed H.S. Awad, Martin Busch, Steffen Stenger, Simon Vollk, Christian Schütz, Jan Krönke, Andreas Mackensen, and Heiko Bruns

Lenalidomide treatment for multiple myeloma skews M2-like macrophages to an M1 phenotype because lenalidomide triggers IKZF1 degradation, increasing IRF4 expression and decreasing IRF5. Modulating IKZF1 levels might provide a way to control macrophage polarization for cancer treatment.

See related Spotlight, p. 254

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**Antitumor Effects of CAR T Cells Redirected to the EDB Splice Variant of Fibronectin**

Jessica Wagner, Elizabeth Wickman, Timothy I. Shaw, Alejandro Allo Anido, Deanna Langfitt, Jinghui Zhang, Shaina N. Porter, Shonda M. Pruett-Miller, Heather Tillman, Giedre Kreciute, and Stephen Gottschalk

CAR T cells targeting the EDB splice variant of fibronectin, a pan-cancer solid tumor target, have potent antitumor activity in preclinical solid tumor models. They can target not only tumor cells but also the tumor vasculature.

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**ONCR-177, an Oncolytic HSV-1 Designed to Potently Activate Systemic Antitumor Immunity**

Brian B. Haines, Agnieszka Denslow, Peter Grzesik, Jennifer S. Lee, Terry Farkaly, Jacqueline Hewett, Daniel Wambua, Lingxin Kong, Prajna Behera, Judith Jacques, Caitlin Goshert, Michael Ball, Allison Colthart, Mitchel H. Finer, Melissa W. Hayes, Sonia Feau, Edward M. Kennedy, Lorena Lerner, and Christophe Queva

ONCR-177 is a next-generation oncolytic virus being tested in the clinic. Preclinical efficacy and safety are reported and highlight the treatment’s use as a single-agent, as well as in combination with immune checkpoint blockade.

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**IL1β Promotes Immune Suppression in the Tumor Microenvironment Independent of the Inflammasome and Gasdermin D**

Mátié Kiss, Lieselotte Vande Walle, Pedro H.V. Saavedra, Ela Lebegge, Helena Van Damme, Aleksandar Murgaski, Junbin Qian, Manuel Ehlng, Samantha Pretto, Evangelia Bolli, Jiri Keirse, Pauline M.R. Bardet, Sana M. Arnouk, Yvon Elkrim, Maryse Schmoeßen, Jan Brughmans, Ayla Debraekeleer, Amelie Fossoul, Louis Boon, Geert Raes, Geert van Loo, Diether Lambrechts, Massimiliano Massone, Alan Beschin, Andy Wullaert, Mohamed Lamkanfi, Jo A. Van Ginderachter, and Damya Laoui

IL1β is implicated in cancer progression. The authors show that IL1β promotes neutrophil accumulation in tumors and suppresses antitumor immunity independently of the inflammasome, suggesting that therapeutic inflammasome inhibition will not limit IL1β production in certain cancer types.
The Tumor Microenvironment Impairs Th1 IFN-γ Secretion through Alternative Splicing Modifications of Irf1 Pre-mRNA
Antoine Bernard, Christophe Hibos, Corentin Richard, Etienne Viltard, Sandy Chevrier, Sophie Lemoine, Joséphine Melin, Etienne Humblin, Romain Mary, Théo Accogli, Fanny Chalmin, Mélanie Bruchard, Paul Peixoto, Eric Hervouet, Lionel Apetoh, François Ghiringhelli, Frédérique Végran, and Romain Boidot

TGFβ in the tumor microenvironment induces alternative splicing of the transcription factor IRF1, giving rise to a shortened isoform (IRF1Δ7) specifically in CD4⁺ Th1 cells. IRF1Δ7 inhibits Th1 IFN-γ production, highlighting a potential target to boost antitumor responses.

A Machine Learning Approach Yields a Multiparameter Prognostic Marker in Liver Cancer
Xiaoli Liu, Jilin Lu, Guanxiong Zhang, Junyan Han, Wei Zhou, Huan Chen, Henghui Zhang, and Zhiyun Yang

Using a machine learning–based strategy, a multiparametric prognostic model was developed. The constructed 20-feature gradient-boosting survival classifier reproducibly identifies patients with hepatocellular carcinoma (HCC) that are at the greatest risk of HCC-related death.

Notch-Regulated Dendritic Cells Restrain Inflammation-Associated Colorectal Carcinogenesis
Lei Wang, Shuiliang Yu, Ernest R. Chan, Kai-Yuan Chen, Cui Liu, Danian Che, Amad Awadallah, Jay Myers, David Askew, Alex Y. Huang, Ivan Maillard, Dan Huang, Wei Xin, and Lan Zhou

Conventional dendritic cells (DC) play a key role in the antitumor immune response. The data show that Notch2 deletion in all cells or in only DCs promotes inflammation-associated colorectal carcinogenesis; targeting Notch2-controlled DCs could restrain colon cancer.

ABOUT THE COVER

Chimeric antigen receptor (CAR) T cells have limited efficacy against solid tumors. Wagner and colleagues address this problem and show that CAR T cells targeting the EDB (extra domain B) splice variant of fibronectin, a pan-cancer solid tumor target, have potent antitumor activity in preclinical solid tumor models. EDB-targeting CAR T cells kill tumor targets in vitro and in vivo, while also inducing bystander killing and remodeling of the tumor vasculature. EDB-CAR T cells also persist long-term after treatment and protect animals against subsequent tumor challenges. The data highlight a cancer-specific splice variant that can safely be targeted. Read more in this issue on page 279. Original image from Supplementary Fig. S14. Artwork by Lewis Long.