BREAKING ADVANCES

3193 Highlights from Recent Cancer Literature

REVIEWS

3195 Galectin-Binding O-Glycosylations as Regulators of Malignancy
Charles J. Dimitroff

3203 Mitochondrial DNA in Tumor Initiation, Progression, and Metastasis: Role of Horizontal mtDNA Transfer
Michael V. Berridge, Lanfeng Dong, and Jiri Neuzil

PRIORITY REPORT

3209 Interleukin-6 Prevents the Initiation but Enhances the Progression of Lung Cancer
Zhaoxia Qu, Fan Sun, Jingjiao Zhou, Liwen Li, Steven D. Shapiro, and Gutian Xiao
Précis: These findings reveal complexity in the role of IL6 signaling at different stages of lung cancer development, improving pathophysiological understanding in this disease and rationalizing IL6/STAT3 targeting therapies there.

CLINICAL STUDIES

3216 Tumor-Specific Effector CD8+ T Cells That Can Establish Immunological Memory in Humans after Adoptive Transfer Are Marked by Expression of IL7 Receptor and c-myc
Précis: The discovery of two cell intrinsic biomarkers that can predict long-term host persistence of tumor-specific T cells that are adoptively transferred to cancer patients has direct and immediate implications for improving adoptive T-cell immunotherapies.

INTEGRATED SYSTEMS AND TECHNOLOGIES

3227 Discovery and Validation of Biomarkers That Distinguish Mucinous and Nonmucinous Pancreatic Cysts
Jisook Park, Hwan Sic Yun, Kwang Hyuck Lee, Kyu Taek Lee, Jong Kyun Lee, and Soo-Youn Lee
Précis: This study illustrates the usefulness of MS-based comprehensive proteomics methodologies to identify candidate biomarkers that can distinguish mucinous cysts in the pancreas at a time when more successful therapeutic interventions may be possible.

3236 Investigation of Optical Coherence Microelastography as a Method to Visualize Cancers in Human Breast Tissue
Brendan F. Kennedy, Robert A. McLaughlin, Kelsey M. Kennedy, Lixin Chin, Philip Wijesinghe, Andrea Curatolo, Alan Tien, Maxine Ronald, Bruce Latham, Christobel M. Saunders, and David D. Sampson
Précis: A novel noninvasive imaging technology may improve monitoring of human breast tissue microarchitecture for benign and malignant lesions, including for rapid, intraoperative assessment of tumor margins during surgery.

3246 An Autoimmune Response Signature Associated with the Development of Triple-Negative Breast Cancer Reflects Disease Pathogenesis
Hiroyuki Katayama, Clayton Boldt, Jon J. Ladd, Melissa M. Johnson, Timothy Chao, Michela Capello, Jinfeng Suo, Jianming Mao, JoAnn E. Manson, Ross Prentice, Francisco Esteva, Hong Wang, Mary L. Disis, and Samir Hanash
Précis: Humoral responses to ‘triple negative’ breast cancers, which occur in patients themselves, are composed of a dynamic repertoire of autoimmune antigens, illustrating the nature of cancer pathogenesis as an abortive autoimmune response against altered-self.

3255 Endothelial Thermotolerance Impairs Nanoparticle Transport in Tumors
Alexander F. Bagley, Ruth Scherz-Shouval, Peter A. Galie, Angela Q. Zhang, Jeffrey Wyckoff, Luke Whitesell, Christopher S. Chen, Susan Lindquist, and Sangeeta N. Bhattacharya
Précis: Nanomaterials that assist the delivery of therapeutics into solid tumors are desired, but molecular adaptations in the tumor endothelium may counteract these effects, with direct consequences for therapeutic efficacy.
A Polymer-Based Antibody–Vinca Drug Conjugate Platform: Characterization and Preclinical Efficacy
Alexander V. Yurkovetskiy, Mao Yin, Natalya Bodak, Cheri A. Stevenson, Joshua D. Thomas, Charles E. Hammond, Liuliang Qin, Bangmin Zhu, Dmitry R. Gumerov, Elena Ter-Ovanesyan, Alex Uttard, and Timothy B. Lowinger

This study shows how efficacious antibody-drug conjugates can be prepared based on a novel, polymer-based conjugation approach that overcomes physicochemical limitations, enabling higher drug-antibody ratios and therefore uses for less potent drug payloads.

Depleting MET-Expressing Tumor Cells by ADCC Provides a Therapeutic Advantage over Inhibiting HGF/MET Signaling
Anna Hultberg, Virginia Morello, Leander Huyghe, Natalie De Jonge, Christophe Blanchetot, Valerie Hanssens, Gitte De Boeck, Karen Silence, Els Festjens, Raimond Heukers, Benjamin Roux, Fabienne Lamballe, Christophe Ginestier, Emmanuelle Charafe-Jauffret, Flavio Maina, Peter Brouckaert, Michael Saunders, Alain Thibault, Torsten Dreier, Hans de Haard, and Paolo Michieli

These findings offer evidence that killing MET-expressing cancer cells by ADCC is therapeutically more advantageous than simply inhibiting HGF/MET signaling, based on studies of a novel ADCC-enhanced anti-MET antibody entering clinical development.

Oncogenic G Protein GNAQ Induces Uveal Melanoma and Intravasation in Mice
Jenny Li-Ying Huang, Oscar Urtatiz, and Catherine D. Van Raamsdonk

This study reports the first transgenic mouse model of uveal melanoma, one of the most aggressive cancers, which will be useful for developing in vivo understanding of etiology and metastatic progression of this disease.

Diverse Targets of β-Catenin during the Epithelial–Mesenchymal Transition Define Cancer Stem Cells and Predict Disease Relapse
Yi-Wen Chang, Ying-Jhen Su, Michael Hsiao, Kuo-Chen Wei, Wei-Hsin Lin, Chi-Jung Liang, Shin-Cheh Chen, and Jia-Lin Lee

In discovering that Wnt signaling must accompany the epithelial-mesenchymal transition to generate cancer stem-like cells, this study defines a five-gene signature for these cells that may be a valuable prognostic marker in lung cancer patients.

PML/RARα-Regulated miR-181a/b Cluster Targets the Tumor Suppressor RASSF1A in Acute Promyelocytic Leukemia
Daniela Bräuer-Hartmann, Jens-Uwe Hartmann, Alexander Arthur Wurm, Dennis Gerloff, Christiane Katzerke, Maria Vittoria Verga Falzacappa, Pier Giuseppe Pellici, Carsten Müller-Tidow, Daniel G. Tenen, Dietger Niederwieser, and Gerhard Behre

These findings identify a pivotal microRNA cluster and tumor suppressor gene as determinants of the outgrowth versus effective therapeutic control of acute promyelocytic leukemias.
ABOUT THE COVER

Radiation-induced gastrointestinal toxicity is highly relevant to the treatment of pancreatic cancer with radiation. To determine if pharmacological ascorbate changes the response of the gastrointestinal tract following radiation in a clinically meaningful way, a crypt cell assay was performed. The addition of pharmacological ascorbate partially reversed the decreases in jejunal crypt regeneration in both the 10 Gy and 13 Gy groups of mice, suggesting that ascorbate may protect the gastrointestinal tract from the damaging effects of radiation. For details, see article by Du and colleagues on page 3314.
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