## Highlights from Recent Cancer Literature

### Reviews

1. **Contributions of the Host Microenvironment to Cancer-Induced Bone Disease**
   - Sam W.Z. Olechnowicz and Claire M. Edwards

2. **Optimization of Natural Killer T Cell–Mediated Immunotherapy in Cancer Using Cell-Based and Nanovector Vaccines**
   - C. Faveeuw and F. Trottein

3. **Noncanonical Functions of Telomerase: Implications in Telomerase-Targeted Cancer Therapies**
   - Yinghui Li and Vinay Tergaonkar

### Priority Reports

1. **Universal Marker and Detection Tool for Human Sarcoma Circulating Tumor Cells**
   - **Précis:** This study describes the first universal and specific marker to detect circulating sarcoma cells in the blood, with the capability to detect any type of sarcoma, offering a key prognostic tool to monitor cancer metastasis and relapse in sarcoma patients.

2. **PCAT-1, a Long Noncoding RNA, Regulates BRCA2 and Controls Homologous Recombination in Cancer**
   - Aifu Lin, Hai-long Piao, Li Zhuang, Dos D. Sarbassov, Li Ma, and Boyi Gan
   - **Précis:** A transcription factor that functions in tumor suppression was unexpectedly found to instead promote renal tumor growth under conditions of PI3K–AKT inhibition, with implications on how to improve antitumor responses.

### Integrated Systems and Technologies

1. **Cancer-Associated Mutations in Healthy Individuals: Assessing the Risk of Carcinogenesis**
   - Ignacio A. Rodriguez-Brenes, Natalia L. Komarova, and Dominik Wodarz
   - **Précis:** Understanding how limits on cellular replication influence the fate of altered but nonneoplastic cells in healthy tissue may make it possible to estimate the risk posed by cancer-associated mutations found in healthy individuals.

### Microenvironment and Immunology

1. **Identification of Immune Factors Regulating Antitumor Immunity Using Polymeric Vaccines with Multiple Adjuvants**
   - Omar A. Ali, Catia Verbeke, Chris Johnson, R. Warren Sands, Sarah A. Lewin, Des White, Edward Doherty, Glenn Dranoff, and David J. Mooney
   - **Précis:** This paper utilizes a new method to identify immune components critical to the efficacy of antitumor immune responses to tumors.

### Molecular and Cellular Pathobiology

1. **FoxO Transcription Factors Promote AKT Ser473 Phosphorylation and Renal Tumor Growth in Response to Pharmacologic Inhibition of the PI3K–AKT Pathway**
   - Aifu Lin, Hai-long Piao, Li Zhuang, Dos D. Sarbassov, Li Ma, and Boji Gan
   - **Précis:** A transcription factor that functions in tumor suppression was unexpectedly found to instead promote renal tumor growth under conditions of PI3K–AKT inhibition, with implications on how to improve antitumor responses.

2. **Immune Escape and Survival Mechanisms in Circulating Tumor Cells of Colorectal Cancer**
   - Gunnar Steinert, Sebastian Scholch, Thomas Niemietz, Naoki Iwata, Sebastian A. García, Bianca Behrens, Anita Voigt, Matthias Kloor, Axel Benner, Ulrich Bork, Nuh N. Rahbari, Markus W. Buchler, Nikolas H. Stoecklein, Jürgen Weitz, and Moritz Koch
   - **Précis:** These results show that circulating colon tumor cells are genetically different from the primary colon tumor, exhibiting an immunosuppressive phenotype that enables them to evade immune eradication.
**UTX and ML14 Coordinately Regulate Transcriptional Programs for Cell Proliferation and Invasiveness in Breast Cancer Cells**

Jae-Hwan Kim, Amrish Sharma, Shilpa S. Dhar, Sung-Hun Lee, Bingnan Gu, Chia-Hsin Chan, Hui-Kuan Lin, and Min Gyu Lee  
**Précis:** These findings show how coordinated regulation of gene expression programs by two distinct epigenetic modifiers drives malignant properties in breast cancer cells.

**Neuroplastic Changes Occur Early in the Development of Pancreatic Ductal Adenocarcinoma**

Rachelle E. Stopczynski, Daniel P. Normolle, Douglas J. Hartman, Haoqiang Ying, Jennifer J. DeBerry, Klaus Bielefeldt, Andrew D. Rhim, Ronald A. DePinho, Kathryn M. Albers, and Brian M. Davis  
**Précis:** These studies show that changes in the peripheral nervous system occur early during tumor development and may play an important role in disease progression.

**HDAC2 Provides a Critical Support to Malignant Progression of Hepatocellular Carcinoma through Feedback Control of mTORC1 and AKT**

Ji Heon Noh, Hyun Jin Bae, Jung Woo Eun, Qingyu Shen, Se Jin Park, Hyung Seok Kim, Boas Nam, Woo Chan Shin, Eun Kyung Lee, Kyungbun Lee, Ja-Jun Jang, Won Sang Park, Jung Young Lee, and Suk Woo Nam  
**Précis:** This study of a histone deacetylase that is essential for mitogenic signaling in liver cancers may offer a new interventional target for more effective therapy.

**p16INK4A Impairs Homologous Recombination–Mediated DNA Repair in Human Papillomavirus–Positive Head and Neck Tumors**

Ruveyda Dok, Peter Kalev, Evert Jan Van Limbergen, Layka Abbasi Ashagh, Iria Vázquez, Esther Hauben, Anna Sabina, and Sandra Nuñes  
**Précis:** These findings reveal an unexpected function of the tumor suppressor p16INK4A in promoting the homologous recombination pathway of DNA repair, suggesting that p16INK4A status in head and neck cancer patients may offer an independent marker to predict their response to radiotherapy.

**Genetic Validation of the Protein Arginine Methyltransferase PRMT5 as a Candidate Therapeutic Target in Glioblastoma**

**Précis:** This study presents a novel candidate prognostic and therapeutic target in aggressive brain cancers, with implications for understanding the basis for poor patient survival.

**ATDC/TRIM29 Phosphorylation by ATM/MAPKAP Kinase 2 Mediates Radioresistance in Pancreatic Cancer Cells**

Lidong Wang, Huibin Yang, Phillip L. Palmbos, Gina Ney, Taylor Ann Detzler, Dawn Coleman, Jacob Leflein, Mary Davis, Min Zhang, Wenhua Tang, J. Kevin Hicks, Corey M. Helchowski, Jayendra Prasad, Theodore S. Lawrence, Liang Xu, Xiaochun Yu, Christine E. Canman, Mats Ljungman, and Diane M. Simeone  
**Précis:** These findings link a TRIM family protein that binds DNA and p53 to radioresistance in pancreatic cancer, suggesting its candidacy as a therapeutic target to improve the efficacy of DNA-damaging treatments used to treat this disease.
**Table of Contents**

1789  
Alarmin IL-33 Acts as an Immunoadjuvant to Enhance Antigen-Specific Tumor Immunity  
Daniel O. Villarreal, Megan C. Wise, Jewell N. Walters, Emma L. Reuschel, Min Joung Choi, Nyamekye Obeng-Adjei, Jian Yan, Matthew P. Morrow, and David B. Weiner  
**Precise:** These findings offer a preclinical proof of concept that IL-33 improves the immune potency of tumor vaccines, promoting tumor cell clearance and regressions to fully empower cancer immunotherapy.

1801  
miR-30-5p Functions as a Tumor Suppressor and Novel Therapeutic Tool by Targeting the Oncogenic Wnt/β-Catenin/BCL9 Pathway  
Jian-Jun Zhao, Jianhong Lin, Di Zhu, Xujun Wang, Daniel Brooks, Ming Chen, Zhang-Bo Chu, Kohichi Takada, Bryan Ciccarelli, Samir Admin, Jianguo Tao, Yu-Tzu Tai, Steven Teon, Geraldine Pinkus, Winston Patrick Kuo, Teru Hideshima, Mary Bouxsein, Nikhil Munshi, Kenneth Anderson, and Ruben Carrasco  
**Precise:** These findings offer a preclinical rationale to explore delivery of a tumor-suppressive microRNA as an effective therapeutic strategy to eradicate multiple myeloma cells.

**TUMOR AND STEM CELL BIOLOGY**

1814  
Chromosome 10, Frequently Lost in Human Melanoma, Encodes Multiple Tumor-Suppressive Functions  
Lawrence N. Kwong and Lynda Chin  
**Precise:** These results show how regional aberrations in chromosome copy number can lead to loss of multiple important tumor-suppressor functions in cancer.

1822  
Id2 Mediates Oligodendrocyte Precursor Cell Maturation Arrest and Is Tumorigenic in a PDGF-Rich Microenvironment  
Matthew C. Havrda, Brenton R. Paolella, Cong Ran, Karola S. Jering, Christina M. Wray, Jaclyn M. Sullivan, Audrey Nailor, Yasuyuki Hitoshi, and Mark A. Israel  
**Precise:** This study of distinct subsets of adult tissue progenitors points to a maturation arrest of oligodendrogial precursor cells in the pathogenesis of PDGF-dependent brain tumors.

1833  
Sox2 Is Required to Maintain Cancer Stem Cells in a Mouse Model of High-Grade Oligodendroglioma  
Rebecca Favaro, Irene Appolloni, Serena Pellegratta, Alexandra Badiola Sangà, Pierfrancesco Pagella, Eleonora Gambini, Federica Pisati, Sergio Otolenghi, Maria Foti, Gaetano Finocchiaro, Paolo Malatesta, and Silvia K. Nicolì  
**Precise:** These findings define an immunotherapeutic target for treatment of a form of brain malignancy, which acts by depleting cancer stem-like cells required to sustain the malignancy in a mouse model system.

1845  
Expression of Variant Isoforms of the Tyrosine Kinase SYK Determines the Prognosis of Hepatocellular Carcinoma  
Jian Hong, Yunfei Yuan, Jianping Wang, Yadi Liao, Ruibai Zou, Chuanlong Zhu, Binkui Li, Yi Liang, Pinzhu Huang, Zongwei Wang, Wenyu Lin, Yixin Zeng, Jia Le Dai, and Raymond T. Chung  
**Precise:** These findings define opposing functions of the two isoforms of the SYK kinase in liver cancer, with the larger isoform enhancing invasion and the smaller isoform enhancing metastasis, patterns that in patient specimens offer strong predictors of overall survival.

1857  
MET Signaling in Colon Cancer Stem-like Cells Blunts the Therapeutic Response to EGFR Inhibitors  
Paolo Luraghi, Gigliola Reato, Elia Cipriano, Francesco Sassi, Francesca Orzan, Viola Bigatto, Francesca De Bacco, Elena Menietti, May Han, William M. Rideout III, Timothy Perera, Andrea Bertotti, Livio Trusolino, Paolo M. Comoglio, and Carla Boccaccio  
**Precise:** Using cancer stem-like cells isolated directly from metastatic colorectal patients, this study reveals the importance of both EGFR and MET signaling and offers a strong preclinical proof of concept for concurrent targeting of both of these receptors in the clinical setting.

1870  
p300 Acetyltransferase Regulates Androgen Receptor Degradation and PTEN-Deficient Prostate Tumorigenesis  
Jian Zhong, Liya Ding, Laura R. Bohrer, Yunqian Pan, Ping Liu, Jun Zhang, Thomas J. Sebo, R. Jeffrey Karnes, Donald J. Tindall, Jan van Deursen, and Haojie Huang  
**Precise:** This article identifies a key determinant in degradation of the androgen receptor, highlighting its importance as a candidate therapeutic target in managing prostate cancers marked by loss of the tumor suppressor PTEN.
Corrections

1881 Correction: EPR Oxygen Images Predict Tumor Control by a 50% Tumor Control Radiation Dose

AC icon indicates Author Choice
For more information please visit www.aacrjournals.org

About the Cover

Pancreas from a 12-week-old KPCT (p16−/−; p53−/−; LSL-KrasG12D; Rosa26; LSL-tdTomato) mouse with precancerous PanIN lesions but no tumor. tdTomato-label (red) marks pancreas epithelial-derived cells, in this case normal-appearing acinar cells. PGP 9.5 antibody (green) was used to stain nerve fibers that exhibit hypertrophy and sprouting within pancreatic tissue, beginning at histologic precancer stages and increasing as the disease progresses. For details, see article by Stopczynski and colleagues on page 1718.

Updated version
Access the most recent version of this article at:
http://cancerres.aacrjournals.org/content/74/6

E-mail alerts
Sign up to receive free email-alerts related to this article or journal.

Reprints and Subscriptions
To order reprints of this article or to subscribe to the journal, contact the AACR Publications Department at pubs@aacr.org.

Permissions
To request permission to re-use all or part of this article, contact the AACR Publications Department at permissions@aacr.org.