BREAKING ADVANCES

Highlights from Recent Cancer Literature

REVIEWS

Signaling-Mediated Regulation of MicroRNA Processing
Jia Shen and Mien-Chie Hung

Fearful Symmetry: Subversion of Asymmetric Division in Cancer Development and Progression
Jeevisha Bajaj, Bryan Zimdahl, and Tannishtha Reya

The Emerging Protumor Role of γδ T Lymphocytes: Implications for Cancer Immunotherapy
Margarida Rei, Daniel J. Pennington, and Bruno Silva-Santos

PERSPECTIVES

Breast Cancer Prevention: Lessons to be Learned from Mechanisms of Early Pregnancy–Mediated Breast Cancer Protection
Fabienne Meier-Abt, Mohamed Bentires-Alj, and Christoph Rohlich

Redundancy: A Critical Obstacle to Improving Cancer Therapy
Orit Lavi

MOLECULAR AND CELLULAR PATHOBIOLOGY

Long Noncoding RNA HULC Modulates Abnormal Lipid Metabolism in Hepatoma Cells through an miR-9–Mediated RXRA Signaling Pathway
Ming Cui, Zelin Xiao, Yue Wang, Minying Zheng, Tiaqiang Song, Xiaoli Cai, Baodi Sun, Lihong Ye, and Xiaodong Zhang

Précis: These results elucidate a long noncoding RNA-facilitated pathway of aberrant lipid metabolism that contributes to the development of liver cancer, with potential clinical implications for its prevention and management.

Akt–Girdin Signaling in Cancer-Associated Fibroblasts Contributes to Tumor Progression
Yumiko Yamamura, Naoya Asai, Atsushi Enomoto, Takuya Kato, Shinji Mii, Yuji Kondo, Kaori Ushida, Kaoru Niimi, Nobuyuki Tsunoda, Masato Nagino, Shu Ichihara, Koichi Furukawa, Kengo Maeda, Toyohito Murohara, and Masahide Takahashi

Précis: Tumor pathogenesis relies upon PI3K/Akt signaling not only in tumor cells but also in cells of the tumor microenvironment, as shown here in cancer-associated fibroblasts through a mechanism involving activation of an actin-binding protein that drives the invasive behavior of nearby cancer cells.
Single-Strand DNA-Binding Protein SSB1 Facilitates TERT Recruitment to Telomeres and Maintains Telomere G-Overhangs
Raj K. Pandita, Tracy T. Chow, Durga Udayakumar, Amanda L. Bain, Liza Cubeddu, Clayton R. Hunt, Wei Shi, Nobuo Horikoshi, Yong Zhao, Woodring E. Wright, Kum Kum Khanna, Jerry W. Shay, and Tej K. Pandita

Précis: These findings offer an explanation for how telomerase is recruited to telomeres, a crucial step in maintaining telomere ends and cell viability in all cancer cells.

A Central Role for Heme Iron in Colon Carcinogenesis Associated with Red Meat Intake

Précis: Elevated risk of colon cancer associated with red meat consumption is linked to heme iron, which may initiate carcinogenesis by enabling lipid peroxidation, providing a possible etiologic basis to understand this connection.

Crosstalk between KIT and FGFR3 Promotes Gastrointestinal Stromal Tumor Cell Growth and Drug Resistance
Nathalie Javidi-Sharifi, Elie Traer, Jacqueline Martinez, Anu Gupta, Takehiro Taguchi, Jennifer Dunlap, Michael C. Heinrich, Christopher L. Corless, Brian P. Rubin, Brian J. Druker, and Jeffrey W. Tyner

Précis: These findings provide a mechanistic rationale for use of existing FGFR inhibitors and multikinase inhibitors that target FGFR3 as strategies to improve treatment of gastrointestinal stromal tumors that exhibit resistance to imatinib mesylate, with immediate implications for clinical evaluation.

The analysis of circulating tumor cells will contribute to personalized medicine by tailoring anticancer therapies to the genetic and phenotypic characteristics of metastatic cells in individual cancer patients.

The analysis of circulating tumor cells will contribute to personalized medicine by tailoring anticancer therapies to the genetic and phenotypic characteristics of metastatic cells in individual cancer patients.
ABOUT THE COVER

The high concentration of extracellular ATP in inflammatory lesions activates the purinergic P2RX7 receptor, which is expressed on immune and nonimmune cells of the gastrointestinal tract. The P2RX7 receptor participates in the initiation as well as the regulation of the inflammatory response and consequently can favor colon carcinogenesis. Using both genetic and pharmacological models of P2RX7 inactivation, we found that P2RX7 acted at an early stage to suppress the development of colitis-associated cancer. For details, see the article by Hofman and colleagues on page 835.