BREAKING ADVANCES

Highlights from Recent Cancer Literature

REVIEWS

Long Intergenic Noncoding RNAs: New Links in Cancer Progression
Miao-Chih Tsai, Robert C. Spitale, and Howard Y. Chang

Fetal Cell Microchimerism and Cancer: A Nexus of Reproduction, Immunology, and Tumor Biology
Lisa R. Kallenbach, Kirby L. Johnson, and Diana W. Bianchi

PRIORITY REPORT

Lactate Dehydrogenase B Is Critical for Hyperactive mTOR-Mediated Tumorigenesis
Xiaojun Zha, Fang Wang, Ying Wang, Shaozong He, Yanling Jing, Xueyan Wu, and Hongbing Zhang

Précis: Findings offer preclinical proof-of-concept for targeting a key glycolytic enzyme as a therapeutic strategy to attack cancers driven by mTOR signaling.

CLINICAL STUDIES

Glioblastoma Recurrence after Cediranib Therapy in Patients: Lack of "Rebound" Revascularization as Mode of Escape
Emmanuelle di Tomaso, Matija Snuderl, Walid S. Kamoun, Dan G. Duda, Pavan K. Auluck, Ladan Fazlollahi, Ovidiu C. Andronisi, Matthew P. Frosch, Patrick Y. Wen, Scott R. Plotkin, E. Tessa Hedley-Whyte, A. Gregory Sorensen, Tracy T. Batchelor, and Rakesh K. Jain

Précis: Glioblastomas switch their growth pattern after anti-VEGF therapy in the absence of a second wave of angiogenesis.

INTEGRATED SYSTEMS AND TECHNOLOGIES

Genetic and Structural Variation in the Gastric Cancer Kinome Revealed through Targeted Deep Sequencing
Zhi Jiang Zang, Choom Kiat Ong, Joana Cutcutache, Willie Yu, Shen Li Zhang, Dachuan Huang, Lian Dee Ler, Karl Dykema, Anna Gan, Jiong Tao, Siyu Lim, Yujing Liu, P. Andrew Futreal, Heike Grabsch, Kyle A. Furge, Liang Kee Goh, Steve Rozen, Bin Tean Teh, and Patrick Tan

Précis: Deep sequencing of the gastric cancer cell genome identifies hundreds of new kinase variants, revealing new extremes of genetic complexity in cancer development and progression.

MICROENVIRONMENT AND IMMUNOLOGY

Endothelial Cell-Specific Deletion of Transcription Factor FoxM1 Increases Urethane-Induced Lung Carcinogenesis
David Balli, Yufang Zhang, Jonathan Snyder, Vladimir V. Kalinichenko, and Tanya V. Kalin

Précis: A known oncogene in lung tumorigenesis functions in an opposing manner as a tumor suppressor in endothelial cells, acting to restrict pulmonary inflammation and canonical Wnt signaling.

Tamoxifen, Flaxseed, and the Lignan Enterolactone Increase Stroma- and Cancer Cell-Derived IL-1Ra and Decrease Tumor Angiogenesis in Estrogen-Dependent Breast Cancer
Gabriel Lindahl, Niina Saarinen, Annelie Abrahamsson, and Charlotta Dabrosin

Précis: Antiestrogen therapies may act in part by depriving an inflammatory signal that supports angiogenesis, through a mechanism that might also be targeted by the IL-1 receptor antagonist anakinra, a clinically approved agent.

In vivo Antitumor Activity of a Recombinant IL-7/HGFβ Hybrid Cytokine in Mice
Laijun Lai, Jingjun Jin, and Irving Goldschneider

Précis: Findings offer preclinical proof-of-concept for use of a naturally occurring cytokine heterodimer as a potentially universal biological therapy in cancer treatment.
MOLECULAR AND CELLULAR PATHOBIOLGY

68  BRCA2 and Nucleophosmin Coregulate Centrosome Amplification and Form a Complex with the Rho Effector Kinase ROCK2
Hui-Feng Wang, Katsuya Takenaka, Akira Nakanishi, and Yoshio Miki

Précis: Findings suggest that interactions between BRCA2 and NPM mediate suppression of hereditary breast and ovarian cancer.

78  Identification of New MicroRNAs in Paired Normal and Tumor Breast Tissue Suggests a Dual Role for the ERBB2/Her2 Gene
Helena Persson, Anders Kvist, Natalia Rego, Johan Staaf, Johan Vallon-Christersson, Lena Luts, Niklas Loman, Goran Jonsson, Hugo Naya, Mattias Hoglund, Ake Borg, and Carlos Rovira

Précis: Characterization of known and new microRNAs leads to the discovery of a new gene within the human ERBB2 oncogene.

87  Molecular Pathobiology of Human Cervical High-Grade Lesions: Paracrine STAT3 Activation in Tumor-Instructed Myeloid Cells Drives Local MMP-9 Expression
Nadine Schroer, Jennifer Pahe, Barbara Walch, Claudia Wickenhauser, and Sigrun Smola

Précis: Findings define a molecular cascade that mechanistically rationalizes the design of new adjuvant therapies to treat cervical precancerous lesions and prevent their malignant progression.

98  Appearance of the Novel Activating FI174S ALK Mutation in Neuroblastoma Correlates with Aggressive Tumor Progression and Unresponsiveness to Therapy
Tommy Martinsson, Therese Eriksson, Jonas Abrahamsson, Helena Caren, Magnus Hansson, Per Kogner, Sattu Kamaraj, Christina Schönherr, Joel Weinmar, Kristina Rauth, Ruth H. Palmer, and Bengt Hallberg

Précis: Mutation of a critical kinase in neuroblastoma progression may be missed in the initial tumor biopsy, requiring testing later at progression.
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<td>MiR-26a Inhibits Cell Growth and Tumorigenesis of Nasopharyngeal Carcinoma through Repression of EZH2</td>
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**Précis:** A PET imageable marker for tumor angiogenesis could enable noninvasive monitoring of dynamic changes in patients, helping guide treatment strategies, optimal dose finding, and drug combination studies.

**Précis:** Findings offer preclinical proof-of-concept for an effective combination of proapoptotic therapies that can eradicate malignant glioma cells in vitro and in vivo.

**Précis:** Findings support the important concept that concomitant targeting of the tumor and tumor stroma can confer a far more effective approach to block bone metastasis in cancer.

**Précis:** Preclinical proof-of-concept rationalizes application of small molecule inhibitors of TGF-ß receptor signaling to prevent and treat osteolytic bone metastases in melanoma.

**Précis:** SMART compounds are as efficacious as currently approved antitubulin drugs for cancer treatment, but unlike these drugs they can circumvent P-glycoprotein-mediated drug resistance.

**Précis:** This study contributes significant new information concerning the molecular pathogenesis of nasopharyngeal carcinoma, a major cancer in China where it is associated with Epstein-Barr virus infection.
Phosphatase PRL-3 Is a Direct Regulatory Target of TGF-β in Colon Cancer Metastasis
Yanjun Jiang, Xiao-Qiong Liu, Ashwani Rajput, Liying Geng, Melanie Ongchin, Qi Zeng, Gregory S. Taylor, and Jing Wang
Précis: Findings link TGF-β signaling in cancer progression to upregulation of a survival pathway that could be a determinant of metastasis, with implications for its therapeutic attack.

Snail2 is an Essential Mediator of Twist1-Induced Epithelial Mesenchymal Transition and Metastasis
Esmeralda Casas, Jihoon Kim, Andrés Bendesky, Lucila Ohno-Machado, Cecily J. Wolfe, and Jing Yang
Précis: Findings identify an essential regulatory relationship between two key factors that control the EMT program to promote metastasis.

Higher miRNA Tolerance in Immortal Li-Fraumeni Fibroblasts with Abrogated Interferon Signaling Pathway
Qunfang Li and Michael A. Tainsky
Précis: Results reveal the first solid evidence that disruption of IFN signaling is a checkpoint tolerizing cells to deregulation of miRNA expression, providing new insight into how certain transcription factors in innate immunity can promote cellular immortalization.

hTERT Overexpression Alleviates Intracellular ROS Production, Improves Mitochondrial Function, and Inhibits ROS-Mediated Apoptosis in Cancer Cells
Inthra R. Indran, Manoor P. Hande, and Shazib Pervaiz
Précis: Findings define a novel function for TERT in alleviating cellular ROS levels, endowing cancer cells with an additional mechanism to evade cell death stimuli.

Plasminogen Activator uPA is a Direct Transcriptional Target of the JAG1-Notch Receptor Signaling Pathway in Breast Cancer
Mamiko Shimizu, Brenda Cohen, Pavel Goldvasser, Hal Berman, Carl Virtanen, and Michael Reedijk
Précis: Important new mechanistic findings link two pathways of poor prognosis in breast cancer.

Fish Oil Exacerbates Colitis in SMAD3 Mice
Lesley M. Butler and Mimi C. Yu

Correction: F3-Targeted Cisplatin-Hydrogel Nanoparticles as an Effective Therapeutic that Targets Both Murine and Human Ovarian Tumor Endothelial Cells In vivo

Correction: Induction of Human Epithelial Stem/Progenitor Expansion by FOXM1