Highlights from Recent Cancer Literature

Why Your Preferred Targeted Drugs May Become Unaffordable

The Emerging Role of Immunosurveillance in Dictating Metastatic Spread in Breast Cancer

The CpG Island Methylator Phenotype: What’s in a Name?

Cetuximab Attenuates Its Cytotoxic and Radiosensitizing Potential by Inducing Fibronectin Biosynthesis

Complementary Populations of Human Adipose CD34⁺ Progenitor Cells Promote Growth, Angiogenesis, and Metastasis of Breast Cancer

Dysregulated Hematopoiesis Caused by Mammary Cancer Is Associated with Epigenetic Changes and Hox Gene Expression in Hematopoietic Cells

Adenomatous Polyps Are Driven by Microbe-Instigated Focal Inflammation and Are Controlled by IL-10–Producing T Cells

Constitutive β-Catenin Activation Induces Male-Specific Tumorigenesis in the Bladder Urothelium

FGFR4 Promotes Stroma-Induced Epithelial-to-Mesenchymal Transition in Colorectal Cancer

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Downregulation of microRNA-515-5p by the Estrogen Receptor Modulates Sphingosine Kinase 1 and Breast Cancer Cell Proliferation

Precis: This study links the estrogen receptor and a microRNA implicated in breast cancer risk to a key lipid kinase that is essential for maintaining continuous cell proliferation in breast cancer.

Nm23-H1 Binds to Gelsolin and Inactivates Its Actin-Severing Capacity to Promote Tumor Cell Motility and Metastasis
Natascia Marino, Jean-Claude Marshall, Joshua W. Collins, Ming Zhou, Yongzhen Qian, Timothy Veenstra, and Patricia S. Steeg

Precis: A protein with protean and somewhat confusing functions in cancer is found to limit the metastasis in breast cancer by blocking the action of an actin-severing protein in breast cancer cells.

Cyclin D1-Dependent Induction of Luminal Inflammatory Breast Tumors by Activated Notch3
Hua Ling, Jean-Rene Sylvestre, and Paul Jolicouer

Precis: Activated forms of Notch3 may preferentially induce expansion of luminal progenitor cells in the mammary gland that can contribute to inflammatory breast cancer, a particularly aggressive and poorly managed disease.

Notch1 Is Required for Kras-Induced Lung Adenocarcinoma and Controls Tumor Cell Survival via p53
Silvia Lacicuili, Jacqueline L. Avila, Linda Hanlon, Scott Troutman, Matteo Cesaroni, Smitha Kota, Brian Keith, M. Celeste Simon, Ellen Puné, Fred Radtke, Anthony J. Capobianco, and Joseph L. Kissil

Precis: These findings define a novel role for the Notch1 receptor in lung cancer, offering a molecular basis for observations related to patient prognosis and reinforcing the notion that Notch1 is a worthy therapeutic target in this setting.

Chemoprevention of Prostate Cancer by D,L-Sulforaphane Is Augmented by Pharmacological Inhibition of Autophagy
Avani R. Vyas, Eun-Ryeong Hahm, Julie A. Arlotti, Simon Watkins, Donna Beer Stolz, Dhimant Desai, Shantu Amin, and Shivendra V. Singh

Precis: Autophagic inhibitors may leverage the chemoprevention of prostate cancer, perhaps also delaying the progression of early, noninvasive lesions to more advanced cancers, addressing an important clinical challenge.

Telomere Length in Peripheral Blood Lymphocytes Contributes to the Development of HPV-Associated Oropharyngeal Carcinoma
Yang Zhang, Erich M. Sturgis, Kristina R. Dahlstrom, Juyi Wen, Hongliang Liu, Qingyi Wei, Guojun Li, and Zhensheng Liu

Precis: Individuals with HPV16 exposure plus shorter telomere lengths in their blood lymphocytes may have a higher risk of developing oral cancers, compared with those with either HPV16 exposure or shorter telomere lengths alone.

Indirubin Derivative 6BIO Suppresses Metastasis
Simone Braig, Christine A. Kressirer, Johanna Liebl, Fabian Bischoff, Stefan Zahler, Laurent Meijer, and Angelika M. Vollmar

Precis: These findings highlight the antimetastatic activity of a compound that blocks multiple kinase pathways involved in metastasis, supporting a concept termed "polypharmacology" in developing drugs to attack this most deadly aspect of cancer.

Combination of Antibody That Inhibits Ligand-Independent HER3 Dimerization and a p110a Inhibitor Potently Blocks PI3K Signaling and Growth of HER2+ Breast Cancers

Precis: These preclinical findings suggest a strategy to effectively manage HER2-overexpressing cancers that have progressed on the HER2-targeted drug trastuzumab, addressing a key clinical challenge.
An Antibody That Locks HER3 in the Inactive Conformation Inhibits Tumor Growth Driven by HER2 or Neuregulin

Precis: HER3 is a member of the EGFR family that mediates oncogenic functions of other family members, thereby offering a target that can more generally shut down signaling by this common cell system.

TUMOR AND STEM CELL BIOLOGY

Double Minute Chromosomes in Glioblastoma Multiforme Are Revealed by Precise Reconstruction of Oncogenic Amplicons
J. Zachary Sanborn, Sofie R. Salama, Mia Griford, Cameron W. Brennan, Tom Mikkelsen, Suresh Jhanwar, Sol Katzman, Lynda Chin, and David Haussler

Precis: Oncogenic amplicons, a feature of many glioblastomas, were precisely reconstructed by high-throughout sequencing data, a process that could be useful for diagnosis and monitoring of disease.

MicroRNA-218 Inhibits Glioma Invasion, Migration, Proliferation, and Cancer Stem-like Cell Self-Renewal by Targeting the Polycomb Group Gene Bmi1
Yanyang Tu, Xingchun Gao, Gang Li, Hualin Fu, Daxiang Cui, Hui Liu, Weilin Jin, and Yongsheng Zhang

Precis: A tumor-suppressive microRNA acts by regulating a central transcriptional corepressor molecule implicated in glioblastoma, from which insights into its downstream targets in stem cell populations have emerged recently.

CORRECTIONS

Correction: A Novel Class of Anticancer Compounds Targets the Actin Cytoskeleton in Tumor Cells

Correction: Constitutive HER2 Signaling Promotes Breast Cancer Metastasis through Cellular Senescence

Correction: PTK6 Activation at the Membrane Regulates Epithelial–Mesenchymal Transition in Prostate Cancer
ABOUT THE COVER

Tumor cells evolve by interacting with the local microenvironment. In this study, an FGF receptor (FGFR4) is found to be pivotal for the process by which the tumor stromal microenvironment triggers conversion of epithelial cancer cells to mesenchymal phenotypes that are more invasive and metastatic. Tumor-associated fibroblasts-mediated FGFR4 activation is strongly related to a high risk of tumor metastasis and poor patient outcome, suggesting novel therapeutic opportunities for the treatment of colorectal cancer. For details, see article by Liu and colleagues on page 5926.