A Systematic Approach to Defining the microRNA Landscape in Metastasis

Giridhar Maddulu, Mohammed Abba, Jasmin Balliner, Nitin Patil, Maike Scharp, Taral R. Lunavat, Jörg Hendrik Leupold, Olga Oleksiuk, Dilafruz Juraeva, Wilko Thiele, Melanie Rightley, Axel Benner, Yimun Ben-Netia, Jonathan Sleeman, and Heike Allgayer

Précis: This article offers a systematic definition of the entire metastasis-associated miRNA landscape using an unbiased profiling approach of metastasis tissues from patients.

Novel Cell-Penetrating Peptide-Based Vaccine Induces Robust CD4+ and CD8+ T Cell-Mediated Antitumor Immunity

Madiha Derouazi, Wilma Di Berardino-Besson, Elodie Belnoue, Sabine Hoepner, Romy Walther, Mahdia Benkhoucha, Patrick Teta, Yannick Dufour, Céline Yacoub Maroun, Andres M. Salazar, Denis Martinvalet, Pierre-Yves Dietrich, and Paul R. Walker

Précis: These results offer preclinical proof of concept for the use of a cell-penetrating peptide vaccine with robust antitumor activity in multiple aggressive tumor models.

Neuroendocrine Transdifferentiation in Human Prostate Cancer Cells: An Integrated Approach

Marianna Cerasuolo, Debora Paris, Fabio A. Iannotti, Dominique Melck, Roberta Verde, Enrico Mazzarella, Andrea Motta, and Alessia Ligresti

Précis: These provocative findings show how depriving androgen-dependent prostate cancer cells of androgen not only compromises cell survival, but also helps create a nonmalignant neuroendocrine phenotype in surviving cells that can ultimately support the outgrowth of androgen-independent tumors.

Confirmation of Prognostic Groups in High-Grade Serous Ovarian Cancer Treated with Platinum–Taxane Chemotherapy

Ping Chen, Kaisa Huhtinen, Katja Kaipio, Piia Mikkonen, Viljami Aittomäki, Rony Lindell, Johanna Hyninniemi, Aninka Aurinen, Seija Grénman, Rainer Lehtonen, Olli Carpén, and Sampsa Hautaniemi

Précis: This study introduces a novel computational method that may accurately predict whether a patient with high-grade ovarian cancer will benefit from first-line chemotherapy.

IDH1 Mutation Induces Reprogramming of Pyruvate Metabolism


Précis: Beyond their other effects, IDH1 mutations in brain tumors confer an imageable reduction in pyruvate dehydrogenase activity that is essential for proliferation of malignant cells, a finding with therapeutic implications.

Neuroblastoma Arginase Activity Creates an Immunosuppressive Microenvironment That Impairs Autologous and Engineered Immunity

Francis Mussai, Sharon Egan, Stuart Hunter, Hannah Webber, Jonathan Fisher, Rachel Wheat, Carmel McConville, Yordan Shirkov, Kate Wheeler, Gavin Bendle, Kevin Petrie, John Anderson, Louis Chesler, and Carmela De Santo

Précis: These findings show how pediatric neuroblastomas inactivate antitumor immune responses, including in the setting of immunotherapy, correlating with a worse patient survival.
Tristetraprolin Limits Inflammatory Cytokine Production in Tumor-Associated Macrophages in an mRNA Decay–Independent Manner
Franz Kratochvill, Nina Grat, Joseph E. Qualli, Lee-Ann Van De Veld, Hongbo Chi, Pavel Kovarik, and Peter J. Murray

MOLECULAR AND CELLULAR PATHOBIOLOGY

Cytomegalovirus Immediate-Early Proteins Promote Stemness Properties in Glioblastoma
Liliana Soroceanu, Lisa Matlaf, Sabeena Khan, Armin Akhavan, Eric Singer, Vladimir Bezrrookove, Stacy Decker, Salena Ghanny, Piotr Hadaczek, Henrik Bengtsson, Johnohlfe, Maria-Gloria Luciani-Torres, Lualhati Harkins, Arie Perry, Hong Guo, Patricia Soteropoulos, and Charles S. Cobbs

EGF Receptor Promotes Prostate Cancer Bone Metastasis by Downregulating miR-1 and Activating TWIST1
Yung-Sheng Chang, Wei-Yu Chen, Juan Juan Yin, Heather Sheppard-Tillman, Jiaoti Huang, and Yen-Nien Liu

KIAA1324 Suppresses Gastric Cancer Progression by Inhibiting the Oncoprotein GRP78
Jin-Muk Kang, Su-Jin Park, Staci Jakyong Kim, Hyojung Kim, Bona Lee, Junil Kim, Jinah Park, Shin Tae Kim, Han-Kwang Yang, Woo Ho Kim, and Seong-Jin Kim

INTERLEUKIN-6 STIMULATES DEFECTIVE ANGIOGENESIS
Ganga Gopinathan, Carla Milagre, Oliver M.T. Pearce, Louise E. Reynolds, Kairbaan Hodivala-Dille, David A. Leinster, Hailong Zhong, Robert E. Hollingsworth, Richard Thompson, James R. Whiteford, and Frances Ballwill

PREVENTION AND EPIDEMIOLOGY

Implication of a Chromosome 15q15.2 Locus in Regulating UBR1 and Predisposing Smokers to MGMT Methylation in Lung

THERAPEUTICS, TARGETS, AND CHEMICAL BIOLOGY

Erlotinib Pretreatment Improves Photodynamic Therapy of Non–Small Cell Lung Carcinoma Xenografts via Multiple Mechanisms
Shannon M. Gallagher-Colombo, Joann Miller, Keith A. Cengel, Mary E. Putt, Sergei A. Vinogradov, and Theresa M. Busch

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Minor Changes in Expression of the Mismatch Repair Protein MSH2 Exert a Major Impact on Glioblastoma Response to Temozolomide
José L. McFarline-Figueroa, Christian J. Braun, Monica Stanciu, Zachary D. Nagel, Patrizia Mazzucato, Dewakar Sangaraju, Edvinas Cerinauskas, Kelly Barford, Amanda Vargas, Yimin Chen, Natalia Treyakova, Jacqueline A. Lees, Michael T. Hemann, Forest M. White, and Leona D. Samson
Précis: Modest decreases in DNA mismatch repair factor MSH2 can dramatically alter chemosensitivity to a drug used commonly to treat aggressive cancers, with little effect on the mismatch repair itself, suggesting that subtle mismatch repair changes mediating drug resistance may be more prevalent than appreciated.

Identification of Oncogenic and Drug-Sensitizing Mutations in the Extracellular Domain of FGFR2
Précis: Based on other advances in targeting FGF receptors in cancer, the novel mutations identified in this study in the extracellular domain of the FGF receptor FGFR2 could offer therapeutic targets in a variety of solid tumors.

Improving Drug Penetrability with iRGD Leverages the Therapeutic Response to Sorafenib and Doxorubicin in Hepatocellular Carcinoma
Précis: These findings establish a clinically tractable method to safely widen the therapeutic window for chemotherapy in patients with liver cancer, along with a noninvasive method to identify candidate subjects, offering immediate translational impact for evaluation in human trials.

CASC15-S Is a Tumor Suppressor lncRNA at the 6p22 Neuroblastoma Susceptibility Locus
Précis: This unbiased genetic association study identifies the involvement of a long noncoding RNA in initiating pediatric neuroblastoma, helping explain the low somatic mutation rates in protein coding genes observed in this lethal malignancy and suggesting new directions for therapeutic intervention.

TP53 Silencing Bypasses Growth Arrest of BRAFV600E-Induced Lung Tumor Cells in a Two-Switch Model of Lung Tumorigenesis
Anny Shai, David Dankort, Joseph Juan, Shon Green, and Martin McMahon
Précis: This study describes new mouse models for temporal dissociation of genetic events in lung carcinogenesis and establishes a core role for the p53 pathway in restricting lung cancer development.

Amplification of Long Noncoding RNA ZFAS1 Promotes Metastasis in Hepatocellular Carcinoma
Tao Li, Junjie Xie, Chuan Shen, Dongfeng Cheng, Yuan Shi, Zhichong Wu, Xiaoxing Deng, Hao Chen, Baiyong Shen, Chenghong Peng, Hongwei Li, Qian Zhan, and Zhecheng Zhu
Précis: These findings illuminate the oncogenic function of a noncoding RNA that acts by opposing tumor-suppressive effects of miR-150, suggesting utility as a prognostic biomarker or target for clinical management of HCC.
ABOUT THE COVER

The immunofluorescence image is of an aortic ring treated with IL6 stained for vessels (green), pericytes (red), and cell nuclei (blue). Here, it is shown that IL6 stimulates angiogenesis with defective pericyte coverage. Treatment of peritoneal xenografts of ovarian cancer with an anti-IL6 antibody restored pericyte coverage of the tumor blood vessels. The authors' findings have implications for the use of cancer therapies that target IL6 and for understanding abnormal angiogenesis in cancers, chronic inflammatory disease, and stroke. For details, see article by Gopinathan and colleagues on page 3098.