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**Cancer Research**

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**MICROENVIRONMENT AND IMMUNOLOGY**

6408  Direct Chemosensitivity Monitoring Ex Vivo on Undissociated Melanoma Tumor Tissue by Impedance Spectroscopy

Heinz-Georg Jahnke, Sarah Poenick, Jan Maschke, Michael Kendler, Jan C. Simon, and Andrea A. Robitzki

**Précis:** This study presents a novel and more accurate tissue-based method to determine chemotherapeutic drug sensitivity using small fragments of tumor tissue, addressing a need to personalize therapy for patients to improve treatment outcomes.

6419  CXM: A New Tool for Mapping Breast Cancer Risk in the Tumor Microenvironment

Michael J. Flister, Bradley T. Endres, Nathan Rudemiller, Allison B. Sarkis, Stephanie Santarriaga, Ishan Roy, Angela Lemke, Aron M. Geurts, Carol Moreno, Sophia Ran, Shing-Wern Tsaih, Jeffery De Pons, Daniel F. Carlson, Wenfang Tan, Scott C. Fahrenkrug, Zelmira Lazarova, Jozef Lazar, Paula E. North, Peter S. LaViolette, Michael B. Dwinell, James D. Shull, and Howard J. Jacob

**Précis:** These results establish the utility of a novel model of breast cancer that can localize genetic variants that affect breast cancer risk through actions on the tumor microenvironment, rather than the tumor cell itself.

6430  Ag-Presenting CpG-Activated pDCs Prime Th17 Cells That Induce Tumor Regression

Leslie Guéry, Juan Dubrot, Carla Lippens, Dale Brighouse, Pauline Malinge, Magali Irla, Caroline Pot, Walter Reith, Jean-Marc Waldburger, and Stéphanie Hugues

**Précis:** This study identifies a new antigen-presenting strategy that may improve cancer immunotherapy involving Th17 cells.

6441  SA-4-1BBL and Monophosphoryl Lipid A Constitute an Efficacious Combination Adjuvant for Cancer Vaccines

Abhishek K. Srivastava, Gunes Dinc, Rajesh K. Sharma, Esma S. Yolcu, Hong Zhao, and Haval Shirwan

**Précis:** These results offer preclinical proof of concept for the use of a powerful new adjuvant system for tumor antigen-based cancer vaccines, with immediate implications for its clinical evaluation in the oncology clinic.
Host Deficiency in Caveolin-2 Inhibits Lung Carcinoma Tumor Growth by Impairing Tumor Angiogenesis

Yajun Liu, Sungchan Jang, Leike Xie, and Grzegorz Sowa

Précis: Loss of a protein that helps organize lipid rafts on the plasma membrane reduces cancerous cell growth, with possible implications for a generalized approach to cancer targeting.

MOLECULAR AND CELLULAR PATHOBIOLOGY

Histone H1.3 Suppresses H19 Noncoding RNA Expression and Cell Growth of Ovarian Cancer Cells

Magdalena Medrzycki, Yunzhe Zhang, Weijia Zhang, Kaixiang Cao, Chenyi Pan, Nathalie Lailler, John F. McDonald, Eric E. Bouhassira, and Yuhong Fan

Précis: These results provide new information about the regulation of a noncoding RNA in ovarian cancer cells, advancing work in a timely new area of RNA physiology and cancer.

Oncogenic Properties of a Spermatogenic Meiotic Variant of Fer Kinase Expressed in Somatic Cells

Etai Yaffe, Elad Hikri, Yoav Elkis, Ortal Cohen, Ariela Segal, Adar Makovski, Alexander Varvak, Sally Shpungin, and Uri Nir

Précis: This provocative study reveals a molecular alteration in the mitochondria of cancer cells that may represent a common pathophysiological root, with possible implications for broad-based treatments.

BRG1/SMARCA4 Inactivation Promotes Non–Small Cell Lung Cancer Aggressiveness by Altering Chromatin Organization

Tess Orvis, Austin Hepperla, Vonn Walter, Shuie Song, Jeremy Simon, Joel Parker, Matthew D. Wilkerson, Nosarg Desai, Michael B. Major, D. Neil Hayes, Ian J. Davis, and Bernard Weissman

Précis: These results offer direct evidence of a tumor suppressor role for a core ATPase found in SWI/SNF chromatin regulatory complexes, the inactivation of which contributes to lung cancer aggressiveness by altering nucleosome positioning and expression at many cancer-associated genes.

Deubiquitination of γ-Tubulin by BAP1 Prevents Chromosome Instability in Breast Cancer Cells

Rehanah Zarrizi, Julien Albert Menard, Mattias Belting, and Ramin Massoumi

Précis: These findings illuminate a core mechanism preventing genomic instability, with implications for understanding malignant progression.

The Notch Pathway Inhibits TGFβ Signaling in Breast Cancer through HEY1-Mediated Crosstalk

Liangfeng Han, Adam Diehl, Nguyen K. Nguyen, Preehi Korangath, Weiwen Ye, Soonweng Cho, Scott Kominsky, David L. Huso, Lionel Feigenbaum, Alan Rein, Pedram Argani, Goran Landberg, Manfred Gessler, and Saraswati Sukumar

Précis: These findings identify a particular mechanism of TGFβ signaling as a key element in the development of drug resistance in breast cancer.

STAT1 Drives Tumor Progression in Serous Papillary Endometrial Cancer

Budiman Kharma, Tsukasa Baba, Noriomi Matsumura, Hyun Sook Kang, Junzo Hamanishi, Ryusuke Murakami, Melissa M. McConney, Samuel Leung, Ken Yamaguchi, Yuku Hosoe, Yumiko Yoshioka, Susan K. Murphy, Masaki Mandai, David G. Hunstman, and Ikuo Konishi

Précis: This study identifies a molecular signature and root oncogenic driver of serous papillary endometrial cancer, a relatively rare and poorly characterized form of uterine cancer that arises in post-menopausal women, with implications for improving its prognosis and treatment.

IGF2 Preserves Osteosarcoma Cell Survival by Creating an Autophagic State of Dormancy That Protects Cells against Chemotherapeutic Stress


Précis: This study provides a mechanistic rationale for blunting IGF/insulin-mediated survival signals in osteosarcoma, a pediatric tumor notorious for its intrinsic therapeutic resistance, as a strategy to improve treatment outcomes.
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**PREVENTION AND EPIDEMIOLOGY**

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  - Précis: This large cohort study reveals that high levels of iron in blood serum is a risk marker for a variety of adult cancer, most dramatically in conferring a 3-fold increased risk for liver cancer.

**THERAPEUTICS, TARGETS, AND CHEMICAL BIOLOGY**

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  - Précis: This study offers preclinical proof of concept for the use of antibodies that neutralize hepatocyte growth factor along with MET-targeting agents as a more effective therapeutic strategy to treat MET-dependent tumors.

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MPHOSPH1: A Potential Therapeutic Target for Hepatocellular Carcinoma

Xinran Liu, Yafan Zhou, Xinyuan Liu, Anlin Peng, Hao Gong, Lizi Huang, Kaige Ji, Robert B. Petersen, Ling Zheng, and Kun Huang

Précis: These results highlight a critical role for a mitotic kinesin as a critical oncogenic driver and candidate therapeutic target in liver cancer.

Plk1 Inhibition Enhances the Efficacy of Androgen Signaling Blockade in Castration-Resistant Prostate Cancer

Zhe Zhang, Xianzeng Hou, Chen Shao, Junjie Li, Ji-Xin Cheng, Shihuan Kuang, Nihal Ahmad, Timothy Ratliff, and Xiaoqi Liu

Précis: These results offer a mechanistic rationale for evaluating Plk1 inhibitors in clinical development to enhance the efficacy of androgen signaling inhibitors in patients with castration-resistant prostate cancer.

MicroRNA100 Inhibits Self-Renewal of Breast Cancer Stem–like Cells and Breast Tumor Development

Lu Deng, Li Shang, Shoumin Bai, Ji Chen, Xueyan He, Rachel Martin-Trevino, Shanshan Chen, Yao-lian Li, Xiaoqiong Meng, Bin Yu, Xiaolin Wang, Yajing Liu, Sean P. McDermott, Alexa E. Ariazi, Christophe Ginestier, Ingrid Ibarra, Jia Ke, Tahra Luther, Shawn G. Clouthier, Liang Xu, Ge Shan, Erwei Song, Herui Yao, Gregory J. Hannon, Stephen J. Weiss, Max S. Wicha, and Suling Liu

Précis: These studies provide insight into the mechanisms by which a microRNA gene regulates the self-renewal and tumor-forming potential of cancer stem-like cells, suggesting therapeutic applications for this microRNA in identifying and targeting these cells for cancer treatment.

RABL6A Promotes G1–S Phase Progression and Pancreatic Neuroendocrine Tumor Cell Proliferation in an Rb1-Dependent Manner


Précis: These findings provide insights into Rb1 regulation and cell proliferation in pancreatic neuroendocrine tumors, potentially offering new targets for diagnosis and therapy of this disease.

A Hypusine–eIF5A–PEAK1 Switch Regulates the Pathogenesis of Pancreatic Cancer

Ken Fujimura, Tracy Wright, Jan Strnad, Sharmeela Kaushal, Cristina Metildi, Andrew M. Lowy, Michael Bouvet, Jonathan A. Kelber, and Richard L. Klemke

Précis: A selective posttranslational modification important for the development of pancreatic cancers may offer a new therapeutic strategy to treat this disease.

CD66+ Cells in Cervical Precancers Are Partially Differentiated Progenitors with Neoplastic Traits

Chitra Pattabiraman, Shiyuan Hong, Vignesh K. Gunasekharan, Annapurna Prasantharhi, Jeevisha Bajaj, Sweta Srivastava, H. Krishnamurthy, Aswathy Ammothumkandy, Venkat G. Giri, Laimonis A. Laimins, and Sudhir Krishna

Précis: Neoplastic cell subsets in cervical cancer emerge early in the disease and are linked to the life cycle of HPV virus, which drives this disease.

TRAP1 Is Involved in BRAF Regulation and Downstream Attenuation of ERK Phosphorylation and Cell-Cycle Progression: A Novel Target for BRAF-Mutated Colorectal Tumors

Valentina Condelli, Annamaria Piscazzi, Lorenza Sisini, Danilo Swann Matassa, Francesca Maddalena, Giacomo Lettini, Vittorio Simeon, Giuseppe Palladino, Maria Rosaria Amoroso, Stefania Trino, Franca Esposito, and Matteo Landriscina

Précis: This study illuminates the regulation of the BRAF oncoprotein at the level of its posttranslational ubiquitination.

Tumor-Derived Osteopontin Suppresses Antitumor Immunity by Promoting Extramedullary Myelopoiesis

Eun-Kyung Kim, Insu Jeon, Hyungseok Seo, Young-Jun Park, Boyeong Song, Kyoo-A Lee, Yongwoo Jang, Yeonseok Chung, and Chang-Yuil Kang

Précis: These findings unveil a novel immunosuppressive role for a factor widely associated with the inflammatory tumor microenvironment, with implications for a general therapeutic strategy in cancer treatment.
6717  GPx2 Suppression of H2O2 Stress Links the Formation of Differentiated Tumor Mass to Metastatic Capacity in Colorectal Cancer
Benjamin L. Emmink, Jamila Laoukili, Anna P. Kipp, Jan Koster, Klaas M. Govaert, Szabolcs Fatrai, Andre Verheem, Ernst J.A. Steller, Regina Brigelius-Flohé, Connie R. Jimenez, Inne H.M. Borel Rinkes, and Onno Kranenburg
Précis: Results reveal an unexpected redox-controlled link between formation of a tumor mass and its capacity for metastasis.

RETRACTION

6731  Retraction: Novel HSP90 Inhibitor NVP-HSP990 Targets Cell-Cycle Regulators to Ablate Olig 2-Positive Glioma Tumor-Initiating Cells

CORRECTIONS

6733  Correction: Diffusion-Weighted Imaging in Cancer: Physical Foundations and Applications of Restriction Spectrum Imaging

6734  Correction: A Novel Wnt Regulatory Axis in Endometrioid Endometrial Cancer

ABOUT THE COVER

CD8⁺ T cells are critical for elimination of cancer. A major limitation of therapeutic cancer vaccines is their inability to activate and mobilize CD8⁺ T cells for infiltration into tumor. A vaccine formulation containing SA-4-1BBL and MPL as a novel adjuvant system shows robust efficacy in activating and recruiting CD8⁺ T cells into the tumor, with subsequent effective tumor destruction in preclinical models. For details, see article by Srivastava and colleagues on page 6441.