

December 15, 2019 • Volume 79 • Number 24

BREAKING INSIGHTS

- 6055** Highlights from Recent Cancer Literature

REVIEWS

- 6057** Mitohormesis, UPR^{mt}, and the Complexity of Mitochondrial DNA Landscapes in Cancer
Timothy C. Kenny, Maria L. Gomez, and Doris Germain
- 6067** Circulating Tumor Cell-Neutrophil Tango along the Metastatic Process
Massimo Saini, Barbara M. Szczerba, and Nicola Aceto


CANCER RESEARCH HIGHLIGHTS


- 6074** Targeting Mitochondrial Fission to Trigger Cancer Cell Death
V. Ashutosh Rao
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- 6076** RadioGx: A New Preclinical Tool to Model Intrinsic Radiosensitivity
Daniel E. Spratt and Corey Speers
See related article, p. 6227

CONTROVERSY AND CONSENSUS

- 6079** E-Cigarettes: Unstandardized, Under-Regulated, Understudied, and Unknown Health and Cancer Risks
Ernest T. Hawk and Karen Colbert Maresso

GENOME AND EPIGENOME

- 6084** Epigenomic Profiling Discovers Trans-lineage SOX2 Partnerships Driving Tumor Heterogeneity in Lung Squamous Cell Carcinoma
 Takashi Sato, Seungyeul Yoo, Ranran Kong, Abhilasha Sinha, Prashanth Chandramani-Shivalingappa, Ayushi Patel, Maya Fridrikh, Osamu Nagano, Takashi Masuko, Mary Beth Beasley, Charles A. Powell, Jun Zhu, and Hideo Watanabe
Significance: Epigenomic profiling reveals a novel subtype of lung squamous cell carcinoma with neural differentiation.

- 6101** Histone-Related Genes Are Hypermethylated in Lung Cancer and Hypermethylated *HIST1H4F* Could Serve as a Pan-Cancer Biomarker
 Shihua Dong, Wei Li, Lin Wang, Jie Hu, Yuanlin Song, Baolong Zhang, Xiaoguang Ren, Shimeng Ji, Jin Li, Peng Xu, Ying Liang, Gang Chen, Jia-Tao Lou, and Wenqiang Yu
Significance: These findings identify a new biomarker for cancer detection and show that hypermethylation of histone-related genes seems to persist across cancers.

MOLECULAR CELL BIOLOGY


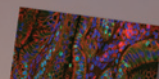
- 6113** Follistatin-like Protein 1 Inhibits Lung Cancer Metastasis by Preventing Proteolytic Activation of Osteopontin
 Jean Chiou, Yu-Chan Chang, Hsing-Fang Tsai, Yuan-Feng Lin, Ming-Shyan Huang, Chih-Jen Yang, and Michael Hsiao
Significance: These findings describe the novel interaction between FSTL1 and SPP1 and its role in the metastatic progression of lung adenocarcinoma.
- 6126** Mcl-1 Interacts with Akt to Promote Lung Cancer Progression
Guo Chen, Dongkyoo Park, Andrew T. Magis, Madhusmita Behera, Suresh S. Ramalingam, Taofeek K. Owonikoko, Gabriel L. Sica, Keqiang Ye, Chao Zhang, Zhengjia Chen, Walter J. Curran, and Xingming Deng
Significance: These findings indicate that targeting Mcl-1/Akt interaction by employing small molecules such as PH-687 represents a potentially new and effective strategy for cancer treatment.
- 6139** MK5 Regulates YAP Stability and Is a Molecular Target in YAP-Driven Cancers
Jimyung Seo, Min Hwan Kim, Hyowon Hong, Hyunsoo Cho, Seongyeol Park, Sang Kyum Kim, and Joon Kim
Significance: These findings reveal MK5 is a novel kinase that regulates YAP in a LATS-independent manner and can be targeted for cancer therapy.

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TUMOR BIOLOGY AND IMMUNOLOGY

6153 PGC1 α Suppresses Prostate Cancer Cell Invasion through ERR α Transcriptional Control

Lorea Valcarcel-Jimenez, Alice Macchia, Eva Crosas-Molist, Ariane Schaub-Clerigué, Laura Camacho, Natalia Martín-Martín, Paolo Cicogna, Cristina Viera-Bardón, Sonia Fernández-Ruiz, Irene Rodríguez-Hernandez, Ivana Hermanova, Ianire Astobiza, Ana R. Cortazar, Jon Corres-Mendizabal, Antonio Gomez-Muñoz, Victoria Sanz-Moreno, Verónica Torrano, and Arkaitz Carracedo

Significance: These findings describe how downregulation of the prostate tumor suppressor PGC1 drives invasiveness and migration of prostate cancer cells.

TRANSLATIONAL SCIENCE

6166 A Novel MYCN-Specific Antigen Oligonucleotide Deregulates Mitochondria and Inhibits Tumor Growth in MYCN-Amplified Neuroblastoma

Luca Montemurro, Salvatore Raieli, Silvia Angelucci, Damiano Bartolucci, Camilla Amadesi, Silvia Lampis, Anna Lisa Scardovi, Leonardo Venturelli, Giammarco Nieddu, Lucia Cerisoli, Matthias Fischer, Gabriella Teti, Mirella Falconi, Andrea Pession, Patrizia Hrelia, and Roberto Tonelli

Significance: A second generation antigen peptide oligonucleotide targeting MYCN induces mitochondrial damage and inhibits growth of MYCN-amplified neuroblastoma cells.

6178 A Microbial Siderophore-Inspired Self-Gelling Hydrogel for Noninvasive Anticancer Phototherapy

Seungbeom Ko, Joo Yeon Park, and Yu-Kyoung Oh

Significance: These findings provide new insights into noninvasive anticancer phototherapy using self-gelling hydrogels. Application of these hydrogels in preclinical models reduces the sizes of solid tumors and skin cancers without surgery, radiation, or chemotherapy.

6190 Parallel Signaling through IRE1 α and PERK Regulates Pancreatic Neuroendocrine Tumor Growth and Survival

Paul C. Moore, Jenny Y. Qi, Maike Thamsen, Rajarshi Ghosh, Justin Peng, Micah J. Gliedt, Rosa Meza-Acevedo, Rachel E. Warren, Annie Hiniker, Grace E. Kim, Dustin J. Maly, Bradley J. Backes, Feroz R. Papa, and Scott A. Oakes

Significance: The UPR is upregulated in pancreatic neuroendocrine tumors and its inhibition significantly reduces tumor growth in preclinical models, providing strong rationale for targeting the UPR in these cancers.

6204 YAP1 Mediates Resistance to MEK1/2 Inhibition in Neuroblastomas with Hyperactivated RAS Signaling

Grace E. Coggins, Alvin Farrel, Komal S. Rathi, Colin M. Hayes, Laura Scolaro, Jo Lynne Rokita, and John M. Maris

Significance: High-risk neuroblastomas with hyperactivated RAS signaling escape the selective pressure of MEK inhibition via YAP1-mediated transcriptional reprogramming and may be sensitive to combination therapies targeting both YAP1 and MEK.

6215 MFF Regulation of Mitochondrial Cell Death Is a Therapeutic Target in Cancer

Jae Ho Seo, Young Chan Chae, Andrew V. Kossenkov, Yu Geon Lee, Hsin-Yao Tang, Ekta Agarwal, Dmitry I. Gabrilovich, Lucia R. Languino, David W. Speicher, Prashanth K. Shastrula, Alessandra Maria Storaci, Stefano Ferrero, Gabriella Gaudio, Manuela Caroli, Davide Tosi, Massimo Giroda, Valentina Vaira, Vito W. Rebecca, Meenhard Herlyn, Min Xiao, Dylan Fingerman, Alessandra Martorella, Emmanuel Skordalakes, and Dario C. Altieri

Significance: These findings describe mitochondrial fission regulation using a peptidomimetic agent that disturbs the MFF-VDAC complex and displays anticancer activity in multiple tumor models.

See related commentary, p. 6074

RESOURCE REPORTS

6227 Modeling Cellular Response in Large-Scale Radiogenomic Databases to Advance Precision Radiotherapy

Venkata SK. Manem, Meghan Lambie, Ian Smith, Petr Smirnov, Victor Kofia, Mark Freeman, Marianne Koritzinsky, Mohamed E. Abazeed, Benjamin Haibe-Kains, and Scott V. Bratman

Significance: The RadioGx computational platform enables integrative analyses of cellular response to radiation with drug responses and genome-wide molecular data.

See related commentary, p. 6076

6238 Comprehensive Benchmarking and Integration of Tumor Microenvironment Cell Estimation Methods

Alejandro Jiménez-Sánchez, Oliver Cast, and Martin L. Miller

Significance: This work shows an independent and comprehensive benchmarking of recently developed and widely used tumor microenvironment cell estimation methods based on bulk expression data and integrates the tools into a consensus approach.

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The Journal of Cancer Research (1916–1930) | The American Journal of Cancer (1931–1940)

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