

# Cancer Research

A Journal of the American Association for Cancer Research

Volume 66 • Number 24

December 15, 2006 • Pages 11517–12052

## Reviews

**Quantitating Therapeutic Disruption of Tumor Blood Flow with Intravital Video Microscopy.** Arthur M. Iga, Sandip Sarkar, Kevin M. Sales, Marc C. Winslet, and Alexander M. Seifalian.....11517

**Pathophysiologic Effects of Vascular-Targeting Agents and the Implications for Combination with Conventional Therapies.** Michael R. Horsman and Dietmar W. Siemann.....11520

## Special Workshop Report

**Cancer Chemoprevention and Cancer Preventive Vaccines—A Call to Action: Leaders of Diverse Stakeholder Groups Present Strategies for Overcoming Multiple Barriers to Meet an Urgent Need.** Ronald B. Herberman, Homer L. Pearce, Scott M. Lippman, Bruce S. Pyenson, and David S. Alberts.....11540

## Meeting Report

**Eighteenth Annual Pezcoller Symposium: Tumor Microenvironment and Heterotypic Interactions.** Robert Weinberg and Enrico Mihich.....11550

## Priority Reports

**Ataxia Telangiectasia Mutated Down-regulates Phospho-Extracellular Signal-Regulated Kinase 1/2 via Activation of MKP-1 in Response to Radiation.** Mukesh K. Nyati, Felix Y. Feng, Divya Maheshwari, Sooryanarayana Varambally, Steven P. Zielske, Aarif Ahsan, Patrick Y. Chun, Vinay A. Arora, Mary A. Davis, Mira Jung, Mats Ljungman, Christine E. Canman, Arul M. Chinnaiyan, and Theodore S. Lawrence .....11554

**SLC5A8 Triggers Tumor Cell Apoptosis through Pyruvate-Dependent Inhibition of Histone Deacetylases.** Muthusamy Thangaraju, Elangovan Gopal, Pamela M. Martin, Sudha Ananth, Sylvia B. Smith, Puttur D. Prasad, Esta Sterneck, and Vadivel Ganapathy.....11560

**Tumor Necrosis Factor- $\alpha$  Is a Potent Endogenous Mutagen that Promotes Cellular Transformation.** Bin Yan, Huili Wang, Zahid N. Rabbani, Yulin Zhao, Wenrong Li, Yuqing Yuan, Fang Li, Mark W. Dewhirst, and Chuan-Yuan Li .....11565

**Adrenal Hyperplasia and Adenomas Are Associated with Inhibition of Phosphodiesterase 11A in Carriers of *PDE11A* Sequence Variants That Are Frequent in the Population.** Anelia Horvath, Christoforos Giatzakis, Audrey Robinson-White, Sosipatros Boikos, Elizabeth Levine, Kurt Griffin, Erica Stein, Virginia Kamvissi, Payal Soni, Ioannis Bossis, Wouter de Herder, J. Aidan Carney, Jérôme Bertherat, Peter K. Gregersen, Elaine F. Remmers, and Constantine A. Stratakis.....11571

**Activated Checkpoint Kinase 2 Provides a Survival Signal for Tumor Cells.** Jagadish C. Ghosh, Takehiko Dohi, Christopher M. Raskett, Timothy F. Kowalik, and Dario C. Altieri.....11576

**Nrf2-Deficient Mice Have an Increased Susceptibility to Dextran Sulfate Sodium-Induced Colitis.** Tin Oo Khor, Mou-Tuan Huang, Ki Han Kwon, Jefferson Y. Chan, Bandaru S. Reddy, and Ah-Ng Kong.....11580

**Physical Association with WWOX Suppresses c-Jun Transcriptional Activity.** Eugenio Gaudio, Alexey Palamarchuk, Tiziana Palumbo, Francesco Trapasso, Yuri Pekarsky, Carlo M. Croce, and Rami I. Aqeilan .....11585

**Tcl1 Expression in Chronic Lymphocytic Leukemia Is Regulated by *miR-29* and *miR-181*.** Yuri Pekarsky, Urmila Santanam, Amelia Cimmino, Alexey Palamarchuk, Alexey Efanov, Vadim Maximov, Stefano Volinia, Hansjuerg Alder, Chang-Gong Liu, Laura Rassenti, George A. Calin, John P. Hagan, Thomas Kipps, and Carlo M. Croce .....11590

**KAP1, a Novel Substrate for PIKK Family Members, Colocalizes with Numerous Damage Response Factors at DNA Lesions.** David E. White, Dmitri Negorev, Hongzhuang Peng, Alexey V. Ivanov, Gerd G. Maul, and Frank J. Rauscher III .....11594

**Asbestos Redirects Nitric Oxide Signaling through Rapid Catalytic Conversion to Nitrite.** Douglas D. Thomas, Michael G. Espey, Derek A. Pociask, Lisa A. Ridnour, Sonia Donzelli, and David A. Wink .....11600

## Molecular Biology, Pathobiology, and Genetics

**Comparison of Kinome Profiles of Barrett's Esophagus with Normal Squamous Esophagus and Normal Gastric Cardia.** Jantine W.P.M. van Baal, Sander H. Diks, Ronald J.A. Wanders, Agnieskza M. Rygiel, Francesca Milano, Jos Joore, Jacques J.G.H.M. Bergman, Maikel P. Peppelenbosch, and Kausilia K. Krishnadath .....11605

**HMGA1 Is a Determinant of Cellular Invasiveness and *In vivo* Metastatic Potential in Pancreatic Adenocarcinoma.** Siong-Seng Liau, Amarsanaa Jazag, and Edward E. Whang.....11613

**Up-regulation of GPR48 Induced by Down-regulation of *p27<sup>Kip1</sup>* Enhances Carcinoma Cell Invasiveness and Metastasis.** Yun Gao, Kyoko Kitagawa, Yoshihiro Hiramatsu, Hirotohi Kikuchi, Tomoyasu Isobe, Mai Shimada, Chiharu Uchida, Takayuki Hattori, Toshiaki Oda, Keiko Nakayama, Keiichi I. Nakayama, Tatsuo Tanaka, Hiroyuki Konno, and Masatoshi Kitagawa .....11623

**Multiple Interacting Oncogenes on the 8p11-p12 Amplicon in Human Breast Cancer.** Zeng Quan Yang, Katie L. Streicher, Michael E. Ray, Judith Abrams, and Stephen P. Ethier .....11632

**Matrix Metalloproteinase Polymorphisms and Bladder Cancer Risk.** A. Karim Kader, Lina Shao, Colin P. Dinney, Matthew B. Schabath, Yunfei Wang, Jun Liu, Jian Gu, H. Barton Grossman, and Xifeng Wu .....11644

## Contents (*Continued*)

### Identification of Cyclin D1- and Estrogen-Regulated Genes Contributing to Breast Carcinogenesis and Progression.

Chuanwei Yang, Sally Trent, Viviana Ionescu-Tiba, Lan Lan, Toshi Shioda, Dennis Sgroi, and Emmett V. Schmidt .....11649

### DNA Methylation Pathway Alterations in an Autochthonous

**Murine Model of Prostate Cancer.** Shannon R. Morey, Dominic J. Smiraglia, Smitha R. James, Jihnee Yu, Michael T. Moser, Barbara A. Foster, and Adam R. Karpf .....11659

### Activation of DNA Methyltransferase 1 by EBV LMP1 Involves c-Jun NH<sub>2</sub>-Terminal Kinase Signaling.

Chia-Lung Tsai, Hsin-Pai Li, Yen-Jung Lu, Chuen Hsueh, Ying Liang, Chi-Long Chen, Sai Wah Tsao, Ka-Po Tse, Jau-Song Yu, and Yu-Sun Chang.....11668

### Nuclear Localization of PTEN Is Regulated by Ca<sup>2+</sup> through a Tyrosyl Phosphorylation-Independent Conformational

**Modification in Major Vault Protein.** Takeo Minaguchi, Kristin A. Waite, and Charis Eng .....11677

### Reduced Repair of the Oxidative 8-Oxoguanine DNA Damage and Risk of Head and Neck Cancer.

Tamar Paz-Elizur, Rami Ben-Yosef, Dalia Elinger, Akiva Vexler, Meir Krupsky, Alain Berrebi, Adi Shani, Edna Schechtman, Laurence Freedman, and Zvi Livneh .....11683

## Cell, Tumor, and Stem Cell Biology

### Amplification and Overexpression of *CTTN* (*EMS1*) Contribute to the Metastasis of Esophageal Squamous Cell Carcinoma by Promoting Cell Migration and Anoikis Resistance.

Man-Li Luo, Xiao-Ming Shen, Yu Zhang, Fang Wei, Xin Xu, Yan Cai, Xun Zhang, Yun-Tian Sun, Qi-Min Zhan, Min Wu, and Ming-Rong Wang.....11690

### RhoA Mediates Cyclooxygenase-2 Signaling to Disrupt the Formation of Adherens Junctions and Increase Cell Motility.

Yu-Wen E. Chang, Jerry W. Marlin, Terry W. Chance, and Rolf Jakobi .....11700

### A Ras Inhibitor Tilts the Balance between Rac and Rho and Blocks Phosphatidylinositol 3-Kinase-Dependent Glioblastoma Cell Migration.

Liat Goldberg and Yoel Kloog.....11709

### A Specific Role for AKT3 in the Genesis of Ovarian Cancer through Modulation of G<sub>2</sub>-M Phase Transition.

Briony E. Cristiano, Joanna C. Chan, Katherine M. Hannan, Nicole A. Lundie, Nelly J. Marmy-Conus, Ian G. Campbell, Wayne A. Phillips, Melissa Robbie, Ross D. Hannan, and Richard B. Pearson .....11718

### Ectopic Doublecortin Gene Expression Suppresses the Malignant Phenotype in Glioblastoma Cells.

Manoranjan Santra, Xuepeng Zhang, Sutapa Santra, Feng Jiang, and Michael Chopp .....11726

### Preconditioning of the Tumor Vasculature and Tumor Cells by Intermittent Hypoxia: Implications for Anticancer Therapies.

Philippe Martinive, Florence Defresne, Caroline Bouzin, Julie Saliez, Florence Lair, Vincent Grégoire, Carine Michiels, Chantal Dessy, and Olivier Feron .....11736

### Collagen I Promotes Metastasis in Pancreatic Cancer by Activating c-Jun NH<sub>2</sub>-Terminal Kinase 1 and Up-regulating N-Cadherin Expression.

Yasushi Shintani, Michael A. Hollingsworth, Margaret J. Wheelock, and Keith R. Johnson .....11745

### Calmodulin-Androgen Receptor (AR) Interaction: Calcium-Dependent, Calpain-Mediated Breakdown of AR in LNCaP

**Prostate Cancer Cells.** Ronald P. Pelley, Kannagi Chinnakannu, Shalini Murthy, Faith M. Strickland, Mani Menon, Q. Ping Dou, Evelyn R. Barrack, and G. Prem-Veer Reddy .....11754

### Human Kallikrein 8 Protease Confers a Favorable Clinical Outcome in Non-Small Cell Lung Cancer by Suppressing Tumor Cell Invasiveness.

Yuh-Pyng Sher, Cheng-Chung Chou, Ruey-Hwang Chou, Han-Ming Wu, Wun-Shaing Wayne Chang, Chun-Houh Chen, Pan-Chyr Yang, Cheng-Wen Wu, Chia-Li Yu, and Konan Peck.....11763

### Tenascin-C Stimulates Glioma Cell Invasion through Matrix Metalloproteinase-12.

Susobhan Sarkar, Robert K. Nuttall, Shuhong Liu, Dylan R. Edwards, and V. Wee Yong.....11771

### Enforced Expression of *NUP98-HOXA9* in Human CD34<sup>+</sup> Cells Enhances Stem Cell Proliferation.

Ki Y. Chung, Giovanni Morrone, Jan Jacob Schuringa, Magdalena Plasilova, Jae-Hung Shieh, Yue Zhang, Pengbo Zhou, and Malcolm A.S. Moore .....11781

### Androgens Regulate Protein Kinase C $\delta$ Transcription and Modulate Its Apoptotic Function in Prostate Cancer Cells.

M. Veronica Gavrielides, Anatilde M. Gonzalez-Guerrico, Natalia A. Riobo, and Marcelo G. Kazanietz .....11792

### Endothelins Induce CCR7 Expression by Breast Tumor Cells via Endothelin Receptor A and Hypoxia-Inducible Factor-1.

Julia L. Wilson, Joy Burchell, and Matthew J. Grimshaw.....11802

### G-Quadruplexes Induce Apoptosis in Tumor Cells.

Haiyan Qi, Chao-Po Lin, Xuan Fu, Laurence M. Wood, Angela A. Liu, Yuan-Chin Tsai, Yongjie Chen, Christopher M. Barbieri, Daniel S. Pilch, and Leroy F. Liu.....11808

### Activation of p53 in Cervical Cancer Cells by Human Papillomavirus E6 RNA Interference Is Transient, but Can Be Sustained by Inhibiting Endogenous Nuclear Export-Dependent p53 Antagonists.

Riku Koivusalo, Antoine Mialon, Hanna Pitkänen, Jukka Westermarck, and Sakari Hietanen .....11817

### Proteomic Profiling of Primary Breast Cancer Predicts Axillary Lymph Node Metastasis.

Taku Nakagawa, Sharon K. Huang, Steve R. Martinez, Andy N. Tran, David Elashoff, Xing Ye, Roderick R. Turner, Armando E. Giuliano, and Dave S.B. Hoon .....11825

### Cross-talk between G Protein-Coupled Receptor and Epidermal Growth Factor Receptor Signaling Pathways Contributes to Growth and Invasion of Head and Neck Squamous Cell Carcinoma.

Sufi Mary Thomas, Neil E. Bholra, Qing Zhang, Sarah C. Contrucci, Abbey L. Wentzel, Maria L. Freilino, William E. Gooding, Jill M. Siegfried, Daniel C. Chan, and Jennifer Rubin Grandis .....11831

## Experimental Therapeutics, Molecular Targets, and Chemical Biology

### Retargeted Oncolytic Measles Strains Entering via the EGFRvIII Receptor Maintain Significant Antitumor Activity against Gliomas with Increased Tumor Specificity.

Cory Allen, Sompong Vongpunsawad, Takafumi Nakamura, C. David James, Mark Schroeder, Roberto Cattaneo, Caterina Giannini, James Krempski, Kah-Whye Peng, Jenny M. Goble, Joon H. Uhm, Stephen J. Russell, and Evanthis Galanis .....11840

## Contents (Continued)

**Sorafenib Blocks the RAF/MEK/ERK Pathway, Inhibits Tumor Angiogenesis, and Induces Tumor Cell Apoptosis in Hepatocellular Carcinoma Model PLC/PRF/5.** Li Liu, Yichen Cao, Charles Chen, Xiaomei Zhang, Angela McNabola, Dean Wilkie, Scott Wilhelm, Mark Lynch, and Christopher Carter .....11851

**Cross-talk between Peroxisome Proliferator-Activated Receptor  $\delta$  and Cytosolic Phospholipase A<sub>2</sub> $\alpha$ /Cyclooxygenase-2/Prostaglandin E<sub>2</sub> Signaling Pathways in Human Hepatocellular Carcinoma Cells.** Lihong Xu, Chang Han, Kyu Lim, and Tong Wu.....11859

**N-Glycosylation of MDA-7/IL-24 Is Dispensable for Tumor Cell-Specific Apoptosis and "Bystander" Antitumor Activity.** Moira Sauane, Pankaj Gupta, Irina V. Lebedeva, Zao-zhong Su, Devanand Sarkar, Aaron Randolph, Kristoffer Valerie, Rahul V. Gopalkrishnan, and Paul B. Fisher.....11869

**Cationic Albumin-Conjugated Pegylated Nanoparticles Allow Gene Delivery into Brain Tumors via Intravenous Administration.** Wei Lu, Qing Sun, Jin Wan, Zhenjue She, and Xin-Guo Jiang.....11878

**Dimethylfumarate Impairs Melanoma Growth and Metastasis.** Robert Loewe, Teresa Valero, Silvia Kremling, Barbara Pratscher, Rainer Kunstfeld, Hubert Pehamberger, and Peter Petzelbauer .....11888

**Elevated E2F1 Inhibits Transcription of the Androgen Receptor in Metastatic Hormone-Resistant Prostate Cancer.** Joanne N. Davis, Kirk J. Wojno, Stephanie Daignault, Matthias D. Hofer, Rainer Kuefer, Mark A. Rubin, and Mark L. Day .....11897

**Tumor-Suppressive Effects of MBP-1 in Non-Small Cell Lung Cancer Cells.** Asish K. Ghosh, Robert Steele, Jan Ryerse, and Ratna B. Ray .....11907

**Dendrimer-Encapsulated Camptothecins: Increased Solubility, Cellular Uptake, and Cellular Retention Affords Enhanced Anticancer Activity *In vitro*.** Meredith T. Morgan, Yuka Nakanishi, David J. Kroll, Aaron P. Griset, Michael A. Carnahan, Michel Wathier, Nicholas H. Oberlies, Govindarajan Manikumar, Mansukh C. Wani, and Mark W. Grinstaff .....11913

**A Novel Pathway Involving Melanoma Differentiation Associated Gene-7/Interleukin-24 Mediates Nonsteroidal Anti-inflammatory Drug-Induced Apoptosis and Growth Arrest of Cancer Cells.** Luiz F. Zerbini, Akos Czibere, Yihong Wang, Ricardo G. Correa, Hasan Otu, Marie Joseph, Yuko Takayasu, Moriah Silver, Xuesong Gu, Kriangsak Ruchusatsawat, Linglin Li, Devanand Sarkar, Jin-Rong Zhou, Paul B. Fisher, and Towia A. Libermann .....11922

**Endocytic Ark/Prk Kinases Play a Critical Role in Adriamycin Resistance in Both Yeast and Mammalian Cells.** Tsutomu Takahashi, Takemitsu Furuchi, and Akira Naganuma .....11932

**DNA Damage by Benzo(a)pyrene in Human Cells Is Increased by Cigarette Smoke and Decreased by a Filter Containing Rosemary Extract, Which Lowers Free Radicals.** Kroum Alexandrov, Margarita Rojas, and Christian Rolando .....11938

## Immunology

**Therapeutic Expression of an Anti-Death Receptor 5 Single-Chain Fixed-Variable Region Prevents Tumor Growth in Mice.** Juan Shi, Yanxin Liu, Yong Zheng, Yabin Guo, Jinchun Zhang, Pik-to Cheung, Ruian Xu, and Dexian Zheng .....11946

## Endocrinology

**Diverse Gene Expression and DNA Methylation Profiles Correlate with Differential Adaptation of Breast Cancer Cells to the Antiestrogens Tamoxifen and Fulvestrant.** Meiyun Fan, Pearly S. Yan, Cori Hartman-Frey, Lei Chen, Henry Paik, Samuel L. Oyer, Jonathan D. Salisbury, Alfred S.L. Cheng, Lang Li, Phillip H. Abbosh, Tim H-M. Huang, and Kenneth P. Nephew .....11954

**Mammary-Specific Ron Receptor Overexpression Induces Highly Metastatic Mammary Tumors Associated with  $\beta$ -Catenin Activation.** Glendon M. Zinser, Mike A. Leonis, Kenya Toney, Peterson Pathrose, Megan Thobe, Sarah A. Kader, Belinda E. Peace, Shirelyn R. Beaman, Margaret H. Collins, and Susan E. Waltz .....11967

**Peroxisome Proliferator-Activated Receptor  $\gamma$  Is a Zac Target Gene Mediating Zac Antiproliferation.** Thomas Barz, Anke Hoffmann, Markus Panhuysen, and Dietmar Spengler .....11975

## Clinical Research

**The Tumor Metastasis Suppressor Gene *Drg-1* Down-regulates the Expression of Activating Transcription Factor 3 in Prostate Cancer.** Sucharita Bandyopadhyay, Ying Wang, Rui Zhan, Sudha K. Pai, Misako Watabe, Megumi Iizumi, Eiji Furuta, Sonia Mohinta, Wen Liu, Shigeru Hirota, Sadahiro Hosobe, Taisei Tsukada, Kunio Miura, Yukio Takano, Ken Saito, Therese Commes, David Piquemal, Tsonwin Hai, and Kounosuke Watabe .....11983

**Antitumor Effect of 2-Methoxyestradiol in a Rat Orthotopic Brain Tumor Model.** Seung-Hee Kang, Heidi T. Cho, Sarojini Devi, Zhaobin Zhang, Daniel Escuin, Zhongxing Liang, Hui Mao, Daniel J. Brat, Jeffrey J. Olson, Jonathan W. Simons, Theresa M. LaVallee, Paraskevi Giannakakou, Erwin G. Van Meir, and Hyunsuk Shim .....11991

**Mitogenic Action of the Androgen Receptor Sensitizes Prostate Cancer Cells to Taxane-Based Cytotoxic Insult.** Janet K. Hess-Wilson, Hannah K. Daly, William A. Zagorski, Christopher P. Montville, and Karen E. Knudsen .....11998

## Epidemiology and Prevention

**Identification of Biomarkers Modulated by the Rexinoid LGD1069 (Bexarotene) in Human Breast Cells Using Oligonucleotide Arrays.** Hee-Tae Kim, Gu Kong, David DeNardo, Yuxin Li, Ivan Uray, Sunita Pal, Syed Mohsin, Susan G. Hilsenbeck, Reid Bissonnette, William W. Lamph, Karen Johnson, and Powel H. Brown.....12009

**A Systematic Assessment of Common Genetic Variation in *CYP11A* and Risk of Breast Cancer.** Veronica Wendy Setiawan, Iona Cheng, Daniel O. Stram, Elena Giorgi, Malcolm C. Pike, David Van Den Berg, Loreall Pooler, Noel P. Burt, Loic Le Marchand, David Altshuler, Joel Hirschhorn, Brian E. Henderson, and Christopher A. Haiman .....12019

**Anti-Aromatase Activity of Phytochemicals in White Button Mushrooms (*Agaricus bisporus*).** Shiuan Chen, Sei-Ryang Oh, Sheryl Phung, Gene Hur, Jing Jing Ye, Sum Ling Kwok, Gayle E. Shrode, Martha Belury, Lynn S. Adams, and Dudley Williams .....12026

## Contents (*Continued*)

### Obituaries

**Howard Earle Skipper: In Memoriam (1915–2006).**  
Linda Simpson-Herren and Glynn P. Wheeler.....12035

**Joseph H. Burchenal: In Memoriam (1912–2006).** .....12037

*Cancer Research* will no longer print author and subject indexes for each yearly volume. The majority of our readers report that they now use online search capabilities to find articles (<http://cancerres.aacrjournals.org>).

### Correction

**MEN1 Interacts with CHES1 in DNA Damage Response.** .....12039

### Acknowledgment to Reviewers

**Acknowledgement to Reviewers.** .....12040

# Cancer Research

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

## 66 (24)

*Cancer Res* 2006;66:11517-12039.

**Updated version** Access the most recent version of this article at:  
<http://cancerres.aacrjournals.org/content/66/24>

**E-mail alerts** [Sign up to receive free email-alerts](#) related to this article or journal.

**Reprints and Subscriptions** To order reprints of this article or to subscribe to the journal, contact the AACR Publications Department at [pubs@aacr.org](mailto:pubs@aacr.org).

**Permissions** To request permission to re-use all or part of this article, use this link  
<http://cancerres.aacrjournals.org/content/66/24>.  
Click on "Request Permissions" which will take you to the Copyright Clearance Center's (CCC) Rightslink site.