

# Cancer Research

A Journal of the American Association for Cancer Research

Volume 67 • Number 5

March 1, 2007 • Pages 1879–2390

## Reviews

**Notch Signaling,  $\gamma$ -Secretase Inhibitors, and Cancer Therapy.** Ie-Ming Shih and Tian-Li Wang.....1879

**The Adaptive Immunologic Microenvironment in Colorectal Cancer: A Novel Perspective.** Jérôme Galon, Wolf-Herman Fridman, and Franck Pagès .....1883

## Priority Reports

**Immunoediting Sculpts Tumor Epitopes during Immunotherapy.** Reshma Singh and Yvonne Paterson .....1887

**Genetic Variation at the *CYP19A1* Locus Predicts Circulating Estrogen Levels but not Breast Cancer Risk in Postmenopausal Women.** Christopher A. Haiman, Laure Dossus, V. Wendy Setiawan, Daniel O. Stram, Alison M. Dunning, Gilles Thomas, Michael J. Thun, Demetrius Albanes, David Altshuler, Eva Ardanaz, Heiner Boeing, Julie Buring, Noël Burt, Eugenia E. Calle, Stephen Chanock, Françoise Clavel-Chapelon, Graham A. Colditz, David G. Cox, Heather Spencer Feigelson, Susan E. Hankinson, Richard B. Hayes, Brian E. Henderson, Joel N. Hirschhorn, Robert Hoover, David J. Hunter, Rudolf Kaaks, Laurence N. Kolonel, Loïc Le Marchand, Per Lenner, Eiliv Lund, Salvatore Panico, Petra H. Peeters, Malcolm C. Pike, Elio Riboli, Anne Tjønneland, Ruth Travis, Dimitrios Trichopoulos, Sholom Wacholder, and Regina G. Ziegler .....1893

**CD4 T-Helper Responses to the Anaplastic Lymphoma Kinase (ALK) Protein in Patients with ALK-Positive Anaplastic Large-Cell Lymphoma.** Kamel Ait-Tahar, Martin C.N. Barnardo, and Karen Pulford .....1898

## Molecular Biology, Pathobiology, and Genetics

**Identification of the Benign Mesenchymal Tumor Gene *HMG2* in Lymphangiomyomatosis.** Jeanine D'Armiento, Kazushi Imai, John Schiltz, Natalya Kolesnekova, David Sternberg, Kathleen Benson, Annie Pardo, Moises Selman, Theresa Smolarek, Murty Vundavalli, Joshua Sonnet, Matthias Szabolcs, and Kiran Chada.....1902

**Reduced Apoptosis and Increased Deletion Mutations at *Aprt* Locus *In vivo* in Mice Exposed to Repeated Ionizing Radiation.** Li Liang, Marc S. Mendonca, Li Deng, Son C. Nguyen, Changshun Shao, and Jay A. Tischfield .....1910

**Elevated Expression of the Oncogene *c-fms* and Its Ligand, the Macrophage Colony-Stimulating Factor-1, in Cervical Cancer and the Role of Transforming Growth Factor- $\beta$ 1 in Inducing *c-fms* Expression.** Nameer Kirma, Luciano S. Hammes, Ya-Guang Liu, Hareesh B. Nair, Philip T. Valente, Shantha Kumar, Lisa C. Flowers, and Rajeshwar Rao Tekmal.....1918

**Inactivation of the Candidate Tumor Suppressor *Par-4* in Endometrial Cancer.** Gema Moreno-Bueno, Pablo J. Fernandez-Marcos, Manuel Collado, Mercedes J. Tendero, Socorro M. Rodriguez-Pinilla, Isabel Garcia-Cao, David Hardisson, Maria T. Diaz-Meco, Jorge Moscat, Manuel Serrano, and Jose Palacios.....1927

**The Asn<sup>418</sup>-Linked N-Glycan of ErbB3 Plays a Crucial Role in Preventing Spontaneous Heterodimerization and Tumor Promotion.** Shunichi Yokoe, Motoko Takahashi, Michio Asahi, Seung Ho Lee, Wei Li, Daisuke Osumi, Eiji Miyoshi, and Naoyuki Taniguchi .....1935

***Intersex-like (IXL)* Is a Cell Survival Regulator in Pancreatic Cancer with 19q13 Amplification.** Riina Kuuselo, Kimmo Savinainen, David O. Azorsa, Gargi D. Basu, Ritva Karhu, Sukru Tuzmen, Spyro Mousses, and Anne Kallioniemi .....1943

**Breaking Chemoresistance and Radioresistance with [<sup>213</sup>Bi]anti-CD45 Antibodies in Leukemia Cells.** Claudia Friesen, Gerhard Glattig, Bernd Koop, Klaus Schwarz, Alfred Morgenstern, Christos Apostolidis, Klaus-Michael Debatin, and Sven N. Reske.....1950

**The p53 Isoform  $\Delta$ p53 Lacks Intrinsic Transcriptional Activity and Reveals the Critical Role of Nuclear Import in Dominant-Negative Activity.** Wan Mui Chan and Randy Y.C. Poon .....1959

**Twist and Epithelial-Mesenchymal Transition Are Induced by the EBV Oncoprotein Latent Membrane Protein 1 and Are Associated with Metastatic Nasopharyngeal Carcinoma.** Toshiyuki Horikawa, Jing Yang, Satoru Kondo, Tomokazu Yoshizaki, Irene Joab, Mitsuru Furukawa, and Joseph S. Pagano .....1970

**Twist Transcriptionally Up-regulates AKT2 in Breast Cancer Cells Leading to Increased Migration, Invasion, and Resistance to Paclitaxel.** George Z. Cheng, Joseph Chan, Qi Wang, Weizhou Zhang, Calvin D. Sun, and Lu-Hai Wang.....1979

**Curcumin, a Dietary Component, Has Anticancer, Chemosensitization, and Radiosensitization Effects by Down-regulating the *MDM2* Oncogene through the PI3K/mTOR/ETS2 Pathway.** Mao Li, Zhuo Zhang, Donald L. Hill, Hui Wang, and Ruiwen Zhang.....1988

***RIL*, a LIM Gene on 5q31, Is Silenced by Methylation in Cancer and Sensitizes Cancer Cells to Apoptosis.** Yanis A. Bumber, Yutaka Kondo, Xuqi Chen, Lanlan Shen, Vazganush Gharibyan, Kazuo Konishi, Elihu Estey, Hagop Kantarjian, Guillermo Garcia-Manero, and Jean-Pierre J. Issa .....1997

**PARC and CUL7 Form Atypical Cullin RING Ligase Complexes.** Jeffrey R. Skaar, Laurence Florens, Takeya Tsutsumi, Takehiro Arai, Adriana Tron, Selene K. Swanson, Michael P. Washburn, and James A. DeCaprio.....2006

**Cyclooxygenase-2 Inhibits UVB-Induced Apoptosis in Mouse Skin by Activating the Prostaglandin E<sub>2</sub> Receptors, EP2 and EP4.** Kyung-Soo Chun, Jacqueline K. Akunda, and Robert Langenbach .....2015

## Cell, Tumor, and Stem Cell Biology

**Effect of the Silybin-Phosphatidylcholine Complex (IdB 1016) on the Development of Mammary Tumors in HER-2/*neu* Transgenic Mice.** Mauro Provinciali, Francesca Papalini, Fiorenza Orlando, Sara Pierpaoli, Alessia Donnini, Paolo Morazzoni, Antonella Riva, and Arianna Smorlesi .....2022

## Contents (Continued)

**Engagement of Collagen-Binding Integrins Promotes Matrix Metalloproteinase-9-Dependent E-Cadherin Ectodomain Shedding in Ovarian Carcinoma Cells.** Jaime Symowicz, Brian P. Adley, Kara J. Gleason, Jeffrey J. Johnson, Supurna Ghosh, David A. Fishman, Laurie G. Hudson, and M. Sharon Stack.....2030

**Chronic Suppression of Angiogenesis following Radiation Exposure Is Independent of Hematopoietic Reconstitution.** Taturu Udagawa, Amy E. Birsner, Mark Wood, and Robert J. D'Amato .....2040

**Differential Constitutive Activation of the Epidermal Growth Factor Receptor in Non-Small Cell Lung Cancer Cells Bearing *EGFR* Gene Mutation and Amplification.** Takafumi Okabe, Isamu Okamoto, Kenji Tamura, Masaaki Terashima, Takeshi Yoshida, Taroh Satoh, Minoru Takada, Masahiro Fukuoka, and Kazuhiko Nakagawa .....2046

**Deletion of *p37<sup>Ingl1</sup>* in Mice Reveals a *p53*-Independent Role for *Ingl1* in the Suppression of Cell Proliferation, Apoptosis, and Tumorigenesis.** Andrew H. Coles, Huiling Liang, Zhiqing Zhu, Concetta G.A. Marfella, Joonsoo Kang, Anthony N. Imbalzano, and Stephen N. Jones .....2054

**Systemic Stromal Effects of Estrogen Promote the Growth of Estrogen Receptor-Negative Cancers.** Piyush B. Gupta, David Proia, Oya Cingoz, Janusz Weremowicz, Stephen P. Naber, Robert A. Weinberg, and Charlotte Kuperwasser .....2062

**Serine-Arginine Protein Kinase 1 Overexpression Is Associated with Tumorigenic Imbalance in Mitogen-Activated Protein Kinase Pathways in Breast, Colonic, and Pancreatic Carcinomas.** Gregory M. Hayes, Patricia E. Carrigan, and Laurence J. Miller .....2072

**Lung Cancer Cell Lines Harboring *MET* Gene Amplification Are Dependent on *Met* for Growth and Survival.** Bart Lutterbach, Qinwen Zeng, Lenora J. Davis, Harold Hatch, Gaozhen Hang, Nancy E. Kohl, Jackson B. Gibbs, and Bo-Sheng Pan .....2081

**Osteopontin Promotes Integrin Activation through Outside-In and Inside-Out Mechanisms: *OPN-CD44<sub>v</sub>* Interaction Enhances Survival in Gastrointestinal Cancer Cells.** Jia-Lin Lee, Mei-Jung Wang, Putty-Reddy Sudhir, Gen-Der Chen, Chin-Wen Chi, and Jeou-Yuan Chen .....2089

**K-Ras Promotes Growth Transformation and Invasion of Immortalized Human Pancreatic Cells by Raf and Phosphatidylinositol 3-Kinase Signaling.** Paul M. Campbell, Angela L. Groehler, Kwang M. Lee, Michel M. Ouellette, Vladimir Khazak, and Channing J. Der .....2098

**The Possible Role of Cytokeratin 8 in Cadmium-Induced Adaptation and Carcinogenesis.** Andy T.Y. Lau and Jen-Fu Chiu .....2107

**GATA-1 Is Essential in EGF-Mediated Induction of Nucleotide Excision Repair Activity and ERCC1 Expression through ERK2 in Human Hepatoma Cells.** Lise O. Andrieux, Alain Fautrel, Anne Bessard, André Guillouzo, Georges Baffet, and Sophie Langouët .....2114

**Insulin Receptor Substrate-1 Regulates the Transformed Phenotype of BT-20 Human Mammary Cancer Cells.** Ozlem Dalmizrak, An Wu, Jia Chen, Hongzhi Sun, Fransiscus E. Utama, Diana Zambelli, Thai H. Tran, Hallgeir Rui, and Renato Baserga .....2124

### Experimental Therapeutics, Molecular Targets, and Chemical Biology

**Leukemia Inhibitory Factor: A Newly Identified Metastatic Factor in Rhabdomyosarcomas.** Marcin Wysoczynski, Katarzyna Miekus, Kacper Jankowski, Jens Wanzeck, Salvatore Bertolone, Anna Janowska-Wieczorek, Janina Ratajczak, and Mariusz Z. Ratajczak .....2131

**Down-regulation of Apurinic/Apyrimidinic Endonuclease 1/Redox Factor-1 Expression by Soy Isoflavones Enhances Prostate Cancer Radiotherapy *In vitro* and *In vivo*.** Julian J. Raffoul, Sanjeev Banerjee, Vinita Singh-Gupta, Zvi E. Knoll, Alemu Fite, Hao Zhang, Judith Abrams, Fazlul H. Sarkar, and Gilda G. Hillman .....2141

**Metabolomics by Proton Nuclear Magnetic Resonance Spectroscopy of the Response to Chloroethylnitrosourea Reveals Drug Efficacy and Tumor Adaptive Metabolic Pathways.** Daniel Morvan and Aicha Demidem .....2150

**Mammalian Target of Rapamycin Inhibitors as Possible Adjuvant Therapy for Microscopic Residual Disease in Head and Neck Squamous Cell Cancer.** Cherie-Ann O. Nathan, Nazanin Amirghahari, Xiaohua Rong, Tony Giordano, Don Sibley, Mary Nordberg, Jonathan Glass, Anshul Agarwal, and Gloria Caldito .....2160

**High-Throughput Screening Identifies Novel Agents Eliciting Hypersensitivity in Fanconi Pathway-Deficient Cancer Cells** Eike Gallmeier, Tomas Hucl, Jonathan R. Brody, David A. Dezentje, Khola Tahir, Jana Kasparkova, Viktor Brabec, Kurtis E. Bachman, and Scott E. Kern .....2169

**Synthetic Affibody Molecules: A Novel Class of Affinity Ligands for Molecular Imaging of HER2-Expressing Malignant Tumors.** Anna Orlova, Vladimir Tolmachev, Rikard Pehrson, Malin Lindborg, Thuy Tran, Mattias Sandström, Fredrik Y. Nilsson, Anders Wennborg, Lars Abrahamsén, and Joachim Feldwisch .....2178

**Blockade of Hedgehog Signaling Inhibits Pancreatic Cancer Invasion and Metastases: A New Paradigm for Combination Therapy in Solid Cancers.** Georg Feldmann, Surajit Dhara, Volker Fendrich, Djahida Bedja, Robert Beaty, Michael Mullendore, Collins Karikari, Hector Alvarez, Christine Iacobuzio-Donahue, Antonio Jimeno, Kathleen L. Gabrielson, William Matsui, and Anirban Maitra .....2187

**Computational Modeling and Experimental Evaluation of a Novel Prodrug for Targeting the Extracellular Space of Prostate Tumors.** Pavel Pospisil, Ketai Wang, Ayman F. Al Aowad, Lakshmanan K. Iyer, S. James Adelstein, and Amin I. Kassiss .....2197

***In vitro* Biological Characterization of a Novel, Synthetic Diaryl Pyrazole Resorcinol Class of Heat Shock Protein 90 Inhibitors.** Swee Y. Sharp, Kathy Boxall, Martin Rowlands, Chrisostomos Prodromou, S. Mark Roe, Alison Maloney, Marissa Powers, Paul A. Clarke, Gary Box, Sharon Sanderson, Lisa Patterson, Thomas P. Matthews, Kwai-Ming J. Cheung, Karen Ball, Angela Hayes, Florence Raynaud, Richard Marais, Laurence Pearl, Sue Eccles, Wynne Aherne, Edward McDonald, and Paul Workman .....2206

**Vincristine Induces Dramatic Lysosomal Changes and Sensitizes Cancer Cells to Lysosome-Destabilizing Siramesine.** Line Groth-Pedersen, Marie Stampe Ostenfeld, Maria Høyer-Hansen, Jesper Nylandsted, and Marja Jäättelä .....2217

**Identification of Candidate Molecular Markers Predicting Sensitivity in Solid Tumors to Dasatinib: Rationale for Patient Selection.** Fei Huang, Karen Reeves, Xia Han, Craig Fairchild, Suso Platero, Tai W. Wong, Francis Lee, Peter Shaw, and Edwin Clark .....2226

**Phenethyl Isothiocyanate Inhibits Angiogenesis *In vitro* and *Ex vivo*.** Dong Xiao and Shivendra V. Singh .....2239

**MG-132 Sensitizes TRAIL-Resistant Prostate Cancer Cells by Activating *c-Fos*/*c-Jun* Heterodimers and Repressing *c-FLIP(L)*.** Wenhua Li, Xiaoping Zhang, and Aria F. Olumi .....2247

**Histone Deacetylase Inhibitors Synergize *p300* Autoacetylation that Regulates Its Transactivation Activity and Complex Formation.** Daniel P. Stiehl, Donna M. Fath, Dongming Liang, Yubao Jiang, and Nianli Sang .....2256

## Contents (*Continued*)

**CD28 Costimulation Overcomes Transforming Growth Factor- $\beta$ -Mediated Repression of Proliferation of Redirected Human CD4<sup>+</sup> and CD8<sup>+</sup> T Cells in an Antitumor Cell Attack.** Heike Koehler, David Kofler, Andreas Hombach, and Hinrich Abken.....2265

**Homeodomain-Interacting Protein Kinase 2 Is the Ionizing Radiation-Activated p53 Serine 46 Kinase and Is Regulated by ATM.** Ilka Dauth, Jana Krüger, and Thomas G. Hofmann .....2274

**Targeting the Oligomerization Domain of ETO Interferes with RUNX1/ETO Oncogenic Activity in t(8;21)-Positive Leukemic Cells.** Christian Wichmann, Linping Chen, Markus Heinrich, Daniela Baus, Edith Pfitzner, Martin Zörnig, Oliver G. Ottmann, and Manuel Grez.....2280

**Attenuation of the Glucocorticoid Response during Ad5IL-12 Adenovirus Vector Treatment Enhances Natural Killer Cell-Mediated Killing of MHC Class I-Negative LNCaP Prostate Tumors.** Claudia Raja Gabaglia, Yaiza Diaz de Durana, Frank L. Graham, Jack Gaudie, Eli E. Sercarz, and Todd A. Braciak .....2290

**Metabotropic Glutamate Receptor 1 and Glutamate Signaling in Human Melanoma.** Jin Namkoong, Seung-Shick Shin, Hwa Jin Lee, Yari E. Marin, Brian A. Wall, James S. Goydos, and Suzie Chen.....2298

**New Soft Alkylating Agents with Enhanced Cytotoxicity against Cancer Cells Resistant to Chemotherapeutics and Hypoxia.** Alexandre Patenaude, Réna G. Deschesnes, Jean L.C. Rousseau, Éric Petitclerc, Jacques Lacroix, Marie-France Côté, and René C.-Gaudreault .....2306

**Stable Overexpression of Smad7 in Human Melanoma Cells Impairs Bone Metastasis.** Delphine Javelaud, Khalid S. Mohammad, Christopher R. McKenna, Pierrick Fournier, Flavie Luciani, Maryla Niewolna, Jocelyne André, Véronique Delmas, Lionel Larue, Theresa A. Guise, and Alain Mauviel.....2317

**Epidermal Growth Factor Receptor Mutants from Human Lung Cancers Exhibit Enhanced Catalytic Activity and Increased Sensitivity to Gefitinib.** Roseann Mulloy, Audrey Ferrand, Youngjoo Kim, Raffaella Sordella, Daphne W. Bell, Daniel A. Haber, Karen S. Anderson, and Jeffrey Settleman .....2325

### Immunology

**Fractalkine (CX3CL1)- and Interleukin-2-Enriched Neuroblastoma Microenvironment Induces Eradication of Metastases Mediated by T Cells and Natural Killer Cells.** Yan Zeng, Nicole Huebener, Stefan Fest, Silke Weixler, Ulrike Schroeder, Gerhard Gaedicke, Rong Xiang, Alexander Schramm, Angelika Eggert, Ralph A. Reisfeld, and Holger N. Lode .....2331

**Tumor Cells Expressing Anti-CD137 scFv Induce a Tumor-Destructive Environment.** Yi Yang, Shilin Yang, Zhengmao Ye, Jade Jaffar, Yifeng Zhou, Erin Cutter, Andre Lieber, Ingegerd Hellström, and Karl Erik Hellström .....2339

### Clinical Research

**Overexpression of Dicer in Precursor Lesions of Lung Adenocarcinoma.** Simion Chiosea, Elena Jelezcova, Uma Chandran, Jianhua Luo, Geeta Mantha, Robert W. Sobol, and Sanja Dacic .....2345

**A Novel Small-Molecule Inhibitor of Transforming Growth Factor  $\beta$  Type I Receptor Kinase (SM16) Inhibits Murine Mesothelioma Tumor Growth *In vivo* and Prevents Tumor Recurrence after Surgical Resection.** Eiji Suzuki, Samuel Kim, H.-Kam Cheung, Michael J. Corbly, Xiamei Zhang, Lihong Sun, Feng Shan, Juswinder Singh, Wen-Cheng Lee, Steven M. Albelda, and Leona E. Ling .....2351

**Paternally Inherited Submicroscopic Duplication at 11p15.5 Implicates Insulin-like Growth Factor II in Overgrowth and Wilms' Tumorigenesis.** Elizabeth M. Algar, Luke St. Heaps, Artur Darmanian, Vinod Dagar, Dirk Prawitt, Greg B. Peters, and Felicity Collins .....2360

### Epidemiology and Prevention

**Estrogen Receptors  $\alpha$  and  $\beta$  Are Inhibitory Modifiers of *Apc*-Dependent Tumorigenesis in the Proximal Colon of Min/+ Mice.** Nancy L. Cho, Sara H. Javid, Adelaide M. Carothers, Mark Redston, and Monica M. Bertagnolli.....2366

**High Levels of Heat Shock Protein Hsp72 in Cancer Cells Suppress Default Senescence Pathways.** Julia A. Yaglom, Vladimir L. Gabai, and Michael Y. Sherman.....2373

**Infectious Mononucleosis, Childhood Social Environment, and Risk of Hodgkin Lymphoma.** Henrik Hjalgrim, Karin Ekström Smedby, Klaus Rostgaard, Daniel Molin, Stephen Hamilton-Dutoit, Ellen T. Chang, Elisabeth Ralfkiaer, Christer Sundström, Hans-Olov Adami, Bengt Glimelius, and Mads Melbye.....2382

### Corrections

**Correction: Genomic Survey of Gliomas .....2389**

**Correction: Antagonist of Dishevelled Suppressing Tumor Cell Growth.....2389**

# Cancer Research

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

## 67 (5)

*Cancer Res* 2007;67:1879-2389.

**Updated version** Access the most recent version of this article at:  
<http://cancerres.aacrjournals.org/content/67/5>

**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/67/5>. Click on "Request Permissions" which will take you to the Copyright Clearance Center's (CCC) Rightslink site.