Table of Contents

January 2014 • Volume 12 • Number 1

Highlights of This Issue 1

REVIEWS

3 Smoking, p53 Mutation, and Lung Cancer
Don L. Gibbons, Lauren A. Byers, and Jonathan M. Kurie

14 Nicotine-Mediated Cell Proliferation and Tumor Progression in Smoking-Related Cancers
Courtney Schaal and Srikumar P. Chellappan

24 Smoking Out Reproductive Hormone Actions in Lung Cancer
Jill M. Siegfried

32 FBXW7 Mediates Chemotherapeutic Sensitivity and Prognosis in NSCLCs
Takehiko Yokobori, Yoro Yokoyama, Akira Mogi, Hideki Endoh, Bolag Altan, Takayuki Kosaka, Ei Yamaki, Toshiki Yajima, Kenji Tomizawa, Yoko Azuma, Ryoichi Onozato, Tatsuya Miyazaki, Shigebumi Tanaka, and Hiroyuki Kuwano

CELL CYCLE AND SENESCENCE

38 CXCR4, but not CXCR7, Discriminates Metastatic Behavior in Non–Small Cell Lung Cancer Cells
Young H. Choi, Marie D. Burdick, Brett A. Strieter, Borna Mehrad, and Robert M. Strieter

48 Autophagy-Dependent Metabolic Reprogramming Sensitizes TSC2-Deficient Cells to the Antimetabolite 6-Aminonicotinamide

CELL DEATH AND SURVIVAL

58 The Impact of miRNA-Based Molecular Diagnostics and Treatment of NR2F2-Stabilized Tumors
Shinsuke Yamamoto, Jun Inoue, Tatsuyuki Kawano, Ken-ichi Kozaki, Ken Omura, and Yoshihisa Izumawara

69 NEDD9 Depletion Leads to MMP14 Inactivation by TIMP2 and Prevents Invasion and Metastasis
Sarah L. McLaughlin, Ryan J. Ice, Anuradha Rajalapati, Polina Y. Kozyulina, Ryan H. Livengood, Varvara K. Kozyreva, Yurij V. Loskutov, Mark V. Culpe, Scott A. Weed, Alexey V. Ivanov, and Elena N. Pugachnova

CHROMATIN, GENE, AND RNA REGULATION

82 Loss of the Nucleosome-Binding Protein HMGN1 Affects the Rate of N-Nitrosodiethylaniline-Induced Hepatocarcinogenesis in Mice
Yuri V. Postnikov, Takashi Funatsawa, Diana C. Haines, Valentina M. Factor, and Michael Bustin

DNA DAMAGE AND REPAIR

91 Cocarcinogenic Effects of Intrahepatic Bile Acid Accumulation in Cholangiocarcinoma Development
Elisa Lozano, Laura Sanchez-Vicente, Maria J. Monte, Elisa Herraez, Oscar Brix, Jesus M. Banales, Jose J.G. Marin, and Rocio I.R. Macias

GENOMICS

101 MiR-335 Inhibits Small Cell Lung Cancer Bone Metastases via IGF-IR and RANKL Pathways
Meng Gong, Junrong Ma, Yan Guillemette, Mengliang Zhou, Yan Yang, Yuan Yang, Janet M. Hock, and Xiuxi Yu

111 ROSI and ALK Fusions in Colorectal Cancer, with Evidence of Intratumoral Heterogeneity for Molecular Drivers
Dara L. Aisner, Teresa T. Nguyen, Diego D. Paskulin, Anh T. Le, Jerry Haney, Nathan Schulte, Fiona Chionh, Jenny Hardingham, John Mariadason, Niall Tebbutt, Robert C. Doebele, Andrew J. Weickhardt, and Marileila Varella-Garcia

ONCOGENES AND TUMOR SUPPRESSORS

119 Mitotic Arrest by Tumor Suppressor RASSF1A Is Regulated via CHK1 Phosphorylation
Lingyan Jiang, Rong Ron, M. Saeed Sheikh, and Ying Huang
The SmgGDS Splice Variant SmgGDS-558 Is a Key Promoter of Tumor Growth and RhoA Signaling in Breast Cancer
Andrew D. Hauser, Carmen Bergom, Nathan J. Schuld, Xiuxu Chen, Ellen L. Lorimer, Jian Huang, Alexander C. Mackinnon, and Carol L. Williams

Signal Transduction

Integrin α3β1 Can Function to Promote Spontaneous Metastasis and Lung Colonization of Invasive Breast Carcinoma
Bo Zhou, Katherine N. Gibson-Corley, Mary E. Herndon, Yihan Sun, Elisabeth Gustafson-Wagner, Melissa Teoh-Fitzgerald, Frederick E. Domann, Michael D. Henry, and Christopher S. Stipp

Interaction of Delta-like 1 Homolog (Drosophila) with Prohibitins and Its Impact on Tumor Cell Clonogenicity
Asma Begum, Qun Lin, Chanye Yu, Yuri Kim, and Zhong Yun

Table of Contents

130 The SmgGDS Splice Variant SmgGDS-558 Is a Key Promoter of Tumor Growth and RhoA Signaling in Breast Cancer
Andrew D. Hauser, Carmen Bergom, Nathan J. Schuld, Xiuxu Chen, Ellen L. Lorimer, Jian Huang, Alexander C. Mackinnon, and Carol L. Williams

143 Integrin α3β1 Can Function to Promote Spontaneous Metastasis and Lung Colonization of Invasive Breast Carcinoma
Bo Zhou, Katherine N. Gibson-Corley, Mary E. Herndon, Yihan Sun, Elisabeth Gustafson-Wagner, Melissa Teoh-Fitzgerald, Frederick E. Domann, Michael D. Henry, and Christopher S. Stipp

Integration of Delta-like 1 Homolog (Drosophila) with Prohibitins and Its Impact on Tumor Cell Clonogenicity
Asma Begum, Qun Lin, Chanye Yu, Yuri Kim, and Zhong Yun

Table of Contents

130 The SmgGDS Splice Variant SmgGDS-558 Is a Key Promoter of Tumor Growth and RhoA Signaling in Breast Cancer
Andrew D. Hauser, Carmen Bergom, Nathan J. Schuld, Xiuxu Chen, Ellen L. Lorimer, Jian Huang, Alexander C. Mackinnon, and Carol L. Williams

143 Integrin α3β1 Can Function to Promote Spontaneous Metastasis and Lung Colonization of Invasive Breast Carcinoma
Bo Zhou, Katherine N. Gibson-Corley, Mary E. Herndon, Yihan Sun, Elisabeth Gustafson-Wagner, Melissa Teoh-Fitzgerald, Frederick E. Domann, Michael D. Henry, and Christopher S. Stipp

Interaction of Delta-like 1 Homolog (Drosophila) with Prohibitins and Its Impact on Tumor Cell Clonogenicity
Asma Begum, Qun Lin, Chanye Yu, Yuri Kim, and Zhong Yun

ABOUT THE COVER

With regard to incidence and mortality, lung cancer is one of the most common and deadliest cancers worldwide. Interestingly, early epidemiologic and clinical studies suggested an association between tobacco and lung cancer. By the 1950s and 1960s, it was evident that smoking, primarily from cigarettes, is a major contributor to lung cancer, thus prompting the first report of the Surgeon General’s Advisory Committee on Smoking and Health on January 11, 1964. Since that time, a multitude of studies have demonstrated that cigarettes produce more than 60 compounds that have carcinogenic potential. To combat these and other environmental carcinogens, normal cells employ the p53 tumor suppressor, which regulates cell growth and death to prevent cancer. Because p53 is considered a guardian against genomic insult, it is not surprising that it is one of the most frequently mutated genes in many cancers and lung cancer is no exception. In this issue, Gibbons and colleagues mark the 50th anniversary of the Surgeon General’s Report on Smoking and Health by reviewing the evidence of smoking, p53 mutations, and lung cancer. The cover shows an artistic representation of the percentage of hotspot p53 mutations in a human population of lung squamous cell carcinoma and adenocarcinoma. For additional insight and details, please see the article by Gibbons and colleagues on page 3.