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### COMMENTARY

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### REVIEWS

1844 Linking Environmental Exposures to Molecular Pathogenesis in Non-Hodgkin Lymphoma Subtypes
Leah Moubadder, Lauren E. McCullough, Christopher R. Flowers, and Jean L. Koff

1856 The Human Microbiome in Relation to Cancer Risk: A Systematic Review of Epidemiologic Studies
Inge Haybrechts, Semi Zoukouich, Astrid Loosbuyc, Zeger Vandenbulcke, Emily Vogtmann, Silvia Pisanu, Isabel Iguacel, Augustin Scalbert, Vitaly Smelov, Marc J. Gunter, and Nathalie Michels

### CEBP FOCUS

1870 Rethinking Environmental Carcinogenesis
Margaret Kripke, Julia Green Brody, Ernest Hawk, Amanda B. Hernandez, Polly J. Hoppin, Molly M. Jacobs, Ruthann A. Rudel, and Timothy R. Rebbeck

1876 Air Pollution across the Cancer Continuum: Extending Our Understanding of the Relationship between Environmental Exposures and Cancer
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1880 Environmental Carcinogenesis at the Single-Cell Level
Gregory Chang, Kohei Saeki, Hitomi Mori, and Shiuan Chen

1887 The Key Characteristics of Carcinogens: Relationship to the Hallmarks of Cancer, Relevant Biomarkers, and Assays to Measure Them
Martyn T. Smith, Kathryn Z. Guayton, Nicole Kleinsteuerr, Alexandre Borrel, Andres Cardenas, Weihsueh A. Chiu, Dean W. Flesher, Catherine F. Gibbons, William H. Goodson III, Keith A. Houck, Agnes B. Kane, Michele A. La Merrill, Herve Lebrec, Leroy Lowe, Cliona M. McHale, Sheroy Minocherhomij, Linda Rieswijk, Martha S. Sandy, Hideko Sone, Amy Wang, Luoping Zhang, Lauren Zeise, and Mark Fielden

1904 Applying Tobacco, Environmental, and Diet-Related Biomarkers to Understand Cancer Etiology and Evaluate Prevention Strategies
Lisa A. Peterson, Silvia Balbo, Naomi Fujikawa, Dorothy K. Hutsakami, Stephen S. Hecht, Sharon E. Murphy, Irina Stepanov, Natalia Y. Tretyakova, Robert J. Turesky, and Peter W. Villalta

1920 Environmental Quality and Invasive Breast Cancer
Larisa M. Gearhart-Serna, Kate Hoffman, and Gayathri R. Devi

1929 Fine Particulate Matter Air Pollution and Mortality among Pediatric, Adolescent, and Young Adult Cancer Patients
Judy Y. Ou, Heidi A. Hanson, Joemy M. Ramsay, Heydon K. Kaddas, Clive Arden Pope III, Claire L. Leiser, James VanDerslice, and Anne C. Kirchhoff

1940 Using Latent Class Modeling to Jointly Characterize Economic Stress and Multipollutant Exposure
Alexandra Larsen, Viktoria Kolpacoff, Kara McCormack, Victoria Seewaldt, and Terry Hyslop

### RESEARCH ARTICLES

1949 Persistent Poverty and Cancer Mortality Rates: An Analysis of County-Level Poverty Designations
Jennifer L. Moss, Casey N. Pinto, Shobha Srinivasan, Kathleen A. Cronin, and Robert T. Croyle

1955 Head and Neck Cancer Survival Disparities by Race and Rural-Urban Context
Jacob A. Clarke, Alyssa M. Despotis, Ricardo J. Ramirez, Jose P. Zevallos, and Angela L. Mazul
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1962  Chronic Opioid Use and Risk of Cancer in Patients with Chronic Noncancer Pain: A Nationwide Historical Cohort Study  
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Brian L. Rostron, Blair Coleman, Yu-Ching Cheng, Heather L. Kimmel, Olusola Oniijode, Lanqing Wang, and Cindy M. Chang

1973  Verification of a Blood-Based Targeted Proteomics Signature for Malignant Pleural Mesothelioma  
Ferdinando Cerciello, Meena Choi, Sara L. Simicropi-Yao, Katie Lomeo, Joseph M. Aman, Emanuela Felley-Bosco, Rolf A. Stahel, Bruce W.S. Robinson, Jenette Creaney, Harvey I. Pass, Olga Vitek, and David P. Carbone

1983  Genetic Determinants of Lung Cancer Prognosis in Never Smokers: A Pooled Analysis in the International Lung Cancer Consortium  
Jonathan Brhane, Ping Yang, David C. Christiani, Geoffrey Liu, John R. McLaughlin, Paul Brennan, Sanjay Shete, John K. Field, Adonina Tardón, Takashi Kohno, Kouya Shiraishi, Keitaro Matsuo, Yohan Bossé, Christopher I. Amos, and Rayjean J. Hung

1993  Higher Plasma Amyloid-β Levels Are Associated with a Higher Risk of Cancer: A Population-Based Prospective Cohort Study  
Kimberly D. van der Willik, Mohsen Ghanbari, Lana Fani, Annette Compter, Rikje Ruiter, Bruno H.Ch. Stricker, Sanne B. Schagen, and M. Arfan Ikram

2002  Abnormal and Euthyroid Ranges of Thyroid Hormones in Serum and Liver Cancer Mortality: A Cohort Study  
Won Sohn, Yoosoo Chang, Yong Kyun Cho, Yejin Kim, Brian L. Rostron, Blair Coleman, Yu-Ching Cheng, Heather L. Kimmel, Olusola Oniijode, Lanqing Wang, and Cindy M. Chang

2010  Ovarian Cancer Risk Factor Associations by Primary Anatomic Site: The Ovarian Cancer Cohort Consortium  

2019  Racial/Ethnic Differences in Ovarian Cancer Risk: Results from the Multiethnic Cohort Study  
Danja Sarink, Anna H. Wu, Loïc Le Marchand, Kami K. White, Song-Yi Park, V. Wendy Setiawan, Brenda Y. Hernandez, Lynne R. Wilkens, and Melissa A. Merritt

2026  Stochastic Epigenetic Mutations Are Associated with Risk of Breast Cancer, Lung Cancer, and Mature B-cell Neoplasms  

2038  Influence of Metabolic Syndrome on Risk of Breast Cancer: A Study Analyzing Nationwide Data from Korean National Health Insurance Service  
Ki-Tae Hwang, Kyung-Do Han, Sohee Oh, Bo Kyung Koo, Se Kyung Lee, Jongin Kim, Hwa Jeong Seo, Jiwoong Jung, Byoung Hyuck Kim, and Ho Hur

2048  Breast Cancer Population Attributable Risk Proportions Associated with Body Mass Index and Breast Density by Race/Ethnicity and Menopausal Status  
Michael C.S. Bissell, Karla Kerlikowske, Brian L. Sprague, Jeffery A. Rice, Charlotte C. Gard, Katherine Y. Tossas, Garth H. Rauscher, Amy Trentham-Dietz, Louise M. Henderson, Tracy Onega, Theresa H.M. Keegan, and Diana L. Miglioretti; for the Breast Cancer Surveillance Consortium

2057  Independent and Joint Associations between Serum Calcium, 25-Hydroxy Vitamin D, and the Risk of Primary Liver Cancer: A Prospective Nested Case-Control Study  

2065  Pathway Analysis of Renal Cell Carcinoma Genome-Wide Association Studies Identifies Novel Associations  
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2070  Glomerular Hyperfiltration and Cancer: A Nationwide Population-Based Study  
Yaeirim Kim, Soojin Lee, Yeonhee Lee, Min Woo Kang, Sehoon Park, Sanghyun Park, Kyungdo Han, Jin Hyuk Paek, Woo Yeong Park, Kyubok Jin, Seungryeup Han, Seung Seok Han, Hajeong Lee, Jung Pyo Lee, Kwon Wook Jo, Choo Soo Lim, Yon Su Kim, and Dong Ki Kim
2078 Human Papillomavirus Genotypes in Anal High-Grade Squamous Intraepithelial Lesion (HSIL); Anal Intraepithelial Neoplasia Grades 2 (AIN2) and 3 (AIN3) Are Different
Jennifer M. Roberts, Isobel M. Poynten, Monica Molano, Dorothy A. Machalek, Richard J. Hillman, Patricia Guzman, Fengyi Jin, David J. Templeton, Christopher K. Fairley, Carmella Law, Suzanne M. Garland, Andrew E. Grulich, and Alyssa M. Cornall

2084 Racial Differences in Helicobacter pylori CagA Sero-prevalence in a Consortium of Adult Cohorts in the United States

2093 Tattoos and Hematologic Malignancies in British Columbia, Canada
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2096 Risk of Breast Cancer Associated with Estrogen DNA Adduct Biomarker
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2100 Nut and Peanut Butter Consumption and the Risk of Total Cancer: A Prospective Cohort Study
Lisette Nieuwenhuis and Piet A. van den Brandt

ABOUT THE COVER
The cover is adapted from Figure 1 in the article, “Environmental Quality and Invasive Breast Cancer,” by Gearhart-Serna and colleagues. The figure shows the environmental quality index (EQI) stratified by rural–urban categories by county. To test the hypothesis that the incidence of specific breast cancer stages can vary by demographics in relation to environmental factors, Gearhart-Serna and colleagues utilized EQI datasets to investigate associations between environmental factors and breast cancer compared to carcinoma in situ. Cumulatively, the results suggest that some broad measures of environmental quality are associated with invasive breast cancer, but that associations vary by environmental domain, cancer stage, subtype, and urbanicity. The study demonstrates the strongest positive association for poor land environmental quality and distant metastatic breast cancer. For more information, see the article beginning on page 1920.

The article is included in the CEBP Focus, “Environmental Carcinogenesis: Pathways to Prevention,” published in this issue. The AACR convened a Special Conference entitled, “Environmental Carcinogenesis: Potential Pathway to Prevention,” held June 22 to 24, 2019, in Charlotte, NC, and cochaired by Margaret Kripke, Ernest Hawk, and Timothy Rebbeck. A goal of the meeting was to review and analyze evidence for the role of environmental factors in cancer development and discuss how this information could be applied to prevent cancer. The meeting also provided a forum for discussion of these issues among diverse groups, including cancer biologists, epidemiologists, toxicologists, advocates, community leaders, and communication specialists, who rarely have opportunities to interact. The Focus included in this issue represents but a few of the resulting collaborations. For more information, see the Focus section beginning on page 1869.