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Blood Cell Origin of Circulating MicroRNAs: A Cautionary Note for Cancer Biomarker Studies
Colin C. Pritchard, Evan Kroh, Brent Wood, Jason D. Arroyo, Katy J. Dougherty, Melanie M. Miyaji, Jonathan F. Tait, and Muneesh Tewari

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ABOUT THE COVER

Anchorage-independent growth in semisolid medium and the formation of xenografts in immunocompromised mice are generally considered to be informative for assessing human cell tumorigenicity. Long-term treatment with cigarette smoke condensate (CSC) significantly increases (versus DMSO control or no treatment) the anchorage-independent growth of A549 lung adenocarcinoma cells. A549 cells were treated with CSC for 300 days (mimicking long-term cigarette smoking) and were allowed to grow for 14 days in soft agarose. The cover features a phase-contrast micropictogram (40× magnification) of colonies of these cells that do not require a solid substratum for growth, an important characteristic feature of cancer cells. 300-Day CSC treated cells were injected s.c. into athymic nude mice, producing tumors of significantly increased volume (P < 0.001) and rate of development (P < 0.01) at 12 weeks versus injected 300-day DMSO or parental (no-treatment) cells, not shown]. These oncogenic effects were due partly to down-regulation of Smad3. Immortalized bronchial epithelial HPL1A cells, however, did not exhibit similar phenotypes, putatively because these cells may require a longer period of CSC treatment to undergo the additional genetic or epigenetic changes necessary to become tumorigenic. See article by Samanta et al. (beginning on page 453) for more information.