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ABOUT THE COVER

The cover features an image of RNA sequencing (RNA-Seq) results for a processed transcript of the mucin 5AC gene (*MUC5AC*, foreground), a potentially important smoking- and lung cancer-related gene. The output is superimposed on an image of human ciliated columnar bronchial epithelial cells obtained by endoscopic brushings of the mainstem bronchi (100X, modified Wright-Giemsa stain). The *MUC5AC* read coverage plot displays reads aligning to the transcript normalized by the total number of reads on the y-axis versus the genomic coordinates on the x-axis. The *MUC5AC* processed transcript shows marked upregulation in healthy current smokers compared with never smokers and downregulation in smokers with lung cancer compared with smokers having benign lung disease. The detection of *MUC5AC* expression highlights the advantage of RNA-Seq because the transcript is not annotated in RefSeq and there are no probes on the Affymetrix Exon 1.0 ST microarray to interrogate it. RNA-Seq is one of several cutting-edge next-generation sequencing platforms producing tremendous advances in the biology of cancer and premalignancy that promise to lead to new, effective approaches for cancer therapy and prevention. See articles by Beane et al. (beginning on page 803) and Blackburn (beginning on page 787) for more information.

