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## A biomarker-based diagnostic algorithm for lung cancer early detection

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Lung cancer is primarily caused by cigarette smoking and the leading cancer killer in the USA and across the world. Early detection of lung cancer by low-dose CT (LDCT) can reduce the mortality. However, LDCT dramatically increases the number of indeterminate pulmonary nodules (PNs), leading to over diagnosis. Having a definitive pre-operative diagnosis of malignant PNs is clinically important. Using microarray and droplet digital PCR to directly profile plasma miRNA expressions of 135 patients with PNs, we identified 11 plasma miRNAs that displayed a significant difference between patients with malignant versus benign PNs. Using multivariate logistic regression analysis of the molecular results and clinical/radiological characteristics, we developed an integrated classifier comprising two miRNA biomarkers and one radiological characteristic for distinguishing malignant from benign PNs. The classifier had 89.9% sensitivity and 90.9% specificity, being significantly higher compared with the biomarkers or clinical/radiological characteristics alone (all  $p < 0.05$ ). The classifier was validated in two independent sets of patients. We have for the first time shown that the integration of plasma biomarkers and radiological characteristics could more accurately identify lung cancer among indeterminate PNs. Future use of the classifier could spare individuals with benign growths from the harmful diagnostic procedures, while allowing effective treatments to be immediately initiated for lung cancer, thereby reduces the mortality and cost. Nevertheless, further prospective validation of this classifier is warranted.

### Biography

Feng Jiang is a Professor for Pathology, Genetics & Genomic Medicine and Oncology at University of Maryland, USA. His research interests are in the field of identifying and understanding genomic and molecular genetic aberrations that lead to tumor formation and translating the resultant new technologies and information into clinic for diagnosis and therapeutic interventions of cancer.

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