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CLINICAL TRIAL

# New Molecular Strategies for Early Lung Cancer Detection

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## NEED FOR EFFECTIVE EARLY LUNG CANCER DETECTION

Lung cancer is the most common fatal type of cancer in the developed world. Less than a quarter of new cases of lung cancer diagnosed every year are amenable to curative surgery, and even with the best therapeutic approach, less than 10% survive 5 years (1). Significantly better lung cancer clinical management approaches are urgently required. The most promising avenue to reduce lung cancer is the implementation of comprehensive preventive strategies. The overwhelming majority of this disease is caused by exposure to tabacco combustion products (2). Unfortunately, despite any level of success of primary smoking prevention measures, the current burden of tobacco consumption in the world today and the long incubation time of lung cancer augue that the high death rate from this disease will not change for decades. Effective reduction in lung cancer mortality, especially in the near term, will require more than primary (antismoking) prevention measures. The present review deals with the tools and techniques that may help to develop early detection strategies for lung cancer diagnosis.

Over the course of 10–20 years, lung cancer develops from an initiated cell to a clinical evident cancer. Even with smoking cessation, the risk of lung cancer remains elevated over 15 years later (3) because smoking cessation cannot reverse the carcinogenic damage in the airways of former smokers. This 10-year latency period means that an important window of opportunity exists for the application of early detection tools able to diagnose the presence of transformed or precancerous cells.

Despite some improvement in outcome with newer agents, especially with better control of the drug side effects, chemotherapy for metastatic lung cancer is rarely curative. The persistent high mortality of lung cancer is therefore due to the inability of existing diagnostic imaging technology to routinely detect premetastatic lung cancer. This difficulty in detecting the early tumor reflects the progression of lung cancer in the tracheobronchial tree. A small cancer can easily be obscured by the complex anatomy of the thoracic cavity and the intricate