



NYU



A Novel Blood Marker for Prognostication and Treatment of Non-Small Cell Lung Cancer (NSCLC)

Accurate, sensitive, easy, and cost-effective method to predict post resection recurrence risk in early-stage NSCLC adenocarcinoma.

Technology

NYU innovators have demonstrated that circulating Interleukin 18 (IL 18) levels in pre operative blood plasma can be used to prognosticate recurrence in early stage non small cell lung cancer adenocarcinoma (NSCLC) after complete resection (R0). IL 18 is a pro inflammatory cytokine involved in lung inflammation and emphysema, but it also has complex roles in angiogenesis, tumor suppression, and immune modulation. In 224 NYU Langone Stage I NSCLC patients that underwent R0 resection, a pre-operative plasma IL 18 cut-off around 33 ng/mL distinguished non-recurrent vs recurrent patients at a sensitivity around 84% and a specificity around 95%. IL 18 levels were significantly elevated pre resection in Stage I adenocarcinoma patients who later recurred. The IL 18 elevation was associated with recurrence across all progression types (locoregional, systemic, second primary). In patients with ≥ 5 year follow up (recurred < 5 years vs confirmed non recurrent ≥ 5 years), IL 18 achieved sensitivity around 87% and specificity around 99%. Correctly prognosticating recurrent prevents both overtreatment and undertreatment. Low-risk patients will be able to avoid unnecessary cancer treatments (e.g. radiation) that can cause severe side effects. High-risk patients will be able to receive preventive care earlier in the disease progression.

Background

Lung cancer is one of the most common forms of malignancies in the U.S., comprising ~11% of all new cancers. Its five-year survival rate is only ~30%, but is much higher if the disease is diagnosed before it has spread to other organs. Given the high recurrence rate of ~20%, prognostication is crucial. NSCLC is the most abundant form of lung cancer. Currently, NSCLC progression prognosis is based on histology and conventional imaging. However, these markers are not precise. As a result, many patients receive adjuvant therapy unnecessarily, while others at high risk are undertreated.

Development Stage

The innovators have validated the biomarker in a cohort of patients. They are looking for an industry partner with more stratified specimens to further test IL18-guided post-resection treatment.

Applications

Technology ID

PAS02-13

Category

Life Sciences/Diagnostics

Life

Sciences/Therapeutics/Oncology

Life

Sciences/Therapeutics/Immunolo

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- **Improved accuracy:** More accurate than current methods of assessing cancer recurrence, which are mostly based on histological analyses.
- **Prevents overtreatment and undertreatment:** Complementing histology, CT scans, and PET scans, early-stage prognosis based on plasma IL-18 levels enables caregivers to predict which patients are likely to regress and personalize their treatment regimen.
- **Easy and cost-effective:** A simple blood-based assay to predict whether disease progression is likely to happen in an early-stage NSCLC patient. Subtype-independent: Prognostication works across all types of disease progression.

Advantages

- **Prognostic:** Predicts recurrence in early-stage NSCLC patients after complete resection.
- **Precision medicine:** Prognosis allows personalized treatment that avoids both overtreatment and undertreatment.
- **Therapeutic discovery:** The newly discovered association between plasma IL-18 levels and lung cancer can lead to the discovery of IL-18-related drug targets.

Intellectual Property

NYU has an issued US patent covering the method of using circulating IL-18 levels to prognosticate recurrence of and treat NSCLC ([US12553897B2](#)).