



Scientific Abstract

SU2C–LUNGevity–American Lung Association Lung Cancer Interception Research Team: “Blood-Based Early Interception of Lung Cancer”



[This abstract was provided by the scientists when their application was accepted.]

Invasive lung cancers that have not yet metastasized can often be cured by surgery, and the National Lung Screening Trial demonstrated that low dose CT (LDCT) screening among high risk smokers reduces mortality by 20%. Yet significant obstacles remain in the current approach to screening for lung cancer. The most critical is the poor specificity of LDCT, which adds excess cost and risk for those with false positive results and has led to mixed enthusiasm about screening, as evidenced by its poor uptake within the indicated population.

At the same time, LDCT is unavailable (that is, not reimbursed) for those who don't meet the population criteria studied in NLST trial due to younger age or low smoking history, even though they are the exact population in which lung cancer rates are rising.

Finally, lung nodules detected incidentally during routine medical care present another major hurdle. Since high-resolution imaging is ubiquitous, incidental nodules are plentiful, and imprecise guidelines for care make it a challenge to ensure quality follow-up and expedient diagnoses for those with cancer.

Overall, our Team's fundamental premise is that improving early detection of invasive lung cancers is a solvable technological problem that can be immediately linked to a definitive clinical treatment. Therefore, rapid development of a tool to bridge this technology gap could profoundly reduce lung cancer deaths.

We have assembled a team of pioneering scientists and leading clinicians at Massachusetts General Hospital and Stanford University who have broad, multi-disciplinary expertise in lung cancer and early detection and have developed groundbreaking, innovative technological platforms to establish such a tool.

The team is developing a test, the Lung Cancer Interception Assay (LCIA), to be used in conjunction with low dose CT scans to provide very early detection of lung cancer. The LCIA will be simple for the patient but powerful, selecting from the best blood-based assays that examine circulating tumor cells and circulating tumor DNA. After completing pilot testing as part of this Translational Research Grant, the Team plans to move the LCIA forward to larger, prospective clinical trials where they hope to make lung cancer screening more impactful, more affordable, and more accessible.

