

LUNGevity Research Study Profile

Spring, 2009



Study Title:
**Diagnostic Test Development for
Non-Small Cell Lung Cancer**

Study Investigator:
Jeffrey A. Borgia, PhD
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Lung cancer kills more Americans per year than cancers of the breast, colon and rectum, pancreas, and prostate combined. Non-small cell lung cancer (NSCLC) accounts for 80-85% of all lung cancer cases. At present, surgical removal of the tumor with lymph node dissection, to identify localized metastases for removal, remains the patient's best chance for a cure.

Unfortunately, given that NSCLC is virtually asymptomatic in its early stages, an overwhelming majority of patients escape detection until they have advanced-stage disease, which usually has spread to other sites and is not operable. Improved methods to detect tumors early, while patients are still good candidates for resection (surgery), are urgently needed.

The research community's approach for the development of these diagnostic tests is based on the premise that patients with NSCLC have unique molecular "signatures" present in their bloodstream, molecules that emanate from the tumor and are indicative of the various stages of disease progression. These molecular signatures can be detected through simple blood tests that have the potential to impact every stage of care received by patients with NSCLC.

Along these lines, Dr. Jeffrey Borgia of Rush University Medical Center in Chicago, with funding from LUNGevity Foundation matched by Partnership for Cures and others, has developed a first-generation blood test that is capable of correctly diagnosing 87% of patients with early-stage NSCLC

against an age- and sex-matched patient population without cancer. Further refinement of this diagnostic panel through a better appreciation of molecules shed by the tumor into the bloodstream will allow us to improve the detection of NSCLC in its earliest stages, when curative surgery is still a viable option. Dr. Borgia has also developed a second blood test that will allow us to more accurately determine how far the disease has progressed upon diagnosis and will help guide the clinician as to whether an individual truly is a good candidate for the aforementioned surgery.

Further refinement of this NSCLC 'staging' assay is also underway to improve our ability to more accurately assess patients with diagnosed disease as surgical candidates. Beyond these blood tests are several others in development that will not only improve the physician's ability to better diagnose NSCLC at the various stages of disease progression, but will also serve as a basis to select a treatment strategy optimized for an individual patient, based on knowledge gained from one of our blood tests. This rationalized approach to NSCLC treatment promises to improve the overall quality of care a patient receives, thereby, improving survival.

At the end of the proposed funding period by LUNGeVity and Partnership for Cures, we will have established diagnostic blood tests for NSCLC that will allow the physician to not only better detect early-stage disease in high risk patients, but also more accurately determine how far the disease has advanced and which treatment option will provide the most benefit to the patient. All of our blood tests are expected to considerably improve the diagnostic information available to the physician, leading to better patient care and improved cure rates. Put another way, we are pioneering an entirely new means for physicians to detect and treat NSCLC.