

First Light Biosciences, Inc.

First Light's MultiPath Platform

First Light Biosciences is addressing two critical issues in healthcare: the rise in superbugs that are re-sistant to most antibiotics and the epidemic of hospital acquired infections. Today, a large fraction of life threatening infections seen in hospitals are caused by pathogens that are resistant to multiple anti-biotics. Effective treatment and cure requires rapid diagnostics to detect infections and select appropriate antibiotics for treatment. Unfortunately, no such tests exist today. We propose to develop tests based on First Light's MultiPath technology that can rapidly and affordably detect a broad range of in-fectious agents, accurately identify the infectious agents, and determine the appropriate antibiotic for treat-ment. The MultiPath platform consists of an automated benchtop analyzer that accommodates a broad menu of application-specific consumable cartridges. The MultiPath technology is quantitative. In only 15 min it detects infections and identifies pathogens including bacteria, fungi, viruses, toxins, human cells, and biomarkers. The technology can determine the correct antibiotic therapy in just 4 hours in contrast to the several days required by current methods. While as sensitive as high performance cen-tral laboratory tests, the MultiPath tests are as rapid and as easy-to-use as point-of-care tests and re-quire no sample preparation. The proprietary MultiPath technology achieves high sensitivity and quan-tification by using digital non-magnified imaging to count fluorescently labeled cellular and molecular targets. The MultiPath Platform eliminates labile enzymatic reagents, biochemical purification, and liq-uid handling (including wash steps), reducing complexity and cost while increasing throughput. We pro-pose to develop high-performance easy-to-use tests for important diagnostic applications for initial commercialization in the hospital setting. The platform and tests will also have commercial and medical advantages in outpatient settings. For Step 2, we plan to: (1) develop MultiPath assays for *Clostridium difficile* (*C. difficile*) diagnostics, multi-drug resistant Staphylococcus aureus (MRSA) surveillance, and urinary tract infection (UTI) diagnostics, (2) develop the MultiPath consumable cartridges for the three tests, (3) develop the benchtop automated MultiPath Analyzer, and (4) demonstrate the performance of the integrated MultiPath Analyzer and MultiPath Tests.