Value Proposition

Multi-drug resistant (MDR) pathogens, so-called “superbugs”, are a major problem and are typically seen in patients with hospital-acquired infections (HAI). Every year HAI affects 2 million people and kills 23,000. We have a novel method to detect HAI early, accurately, and with low cost. Our patent pending method, called Spiral DNA Replication (SPIDR), can detect HAI in 1 hour or less (vs 2-3 days), with 99% accuracy and at 10% of current costs.

Market Opportunity

The global in vitro diagnostics (IVD) market is expected to be $69 billion by 2017, up from $49 billion in 2012 (CAGR 7%). Infectious disease testing is a driving force behind this growth, and will grow to 22% of this market by 2016 (Frost & Sullivan 2011). Hospital acquired infections (HAI) with MDR pathogens are the main drivers of this growth.

Additionally, the SPIDR technology can be used for Point-of-Care (POC) testing, which had a market in the US of over $2 billion in 2009. These users are hospitals, doctor’s offices, rural clinics, and home-based testing.

Competitive Landscape

Several diagnostic nucleic acid amplification tests (NAAT)s and immune-assays are distributed by companies like BD, Qiagen, Roche, and Gen-Probe.

The Roche Amplicor and COBAS platforms are quantitative real-time PCR assays that require expensive equipment and personnel resources. The BD Biosciences ProbeTec and the Gen-Probe AptaTma are widely used isothermal NAAT (INAAT) tests, but are not offered as POC tests (slow central lab turnaround times). Others are less sensitive. SPIDR will be the only system offering highly sensitive, fast, and affordable POC tests.

Technology

Our solution, called SPIDR, is based on IP that involves a patent pending DNA amplification method using a novel spiral configuration of DNA primers, which gives the assays very high sensitivity, specificity and rate of amplification. It accommodates a variety of samples without the need for DNA extraction; such as: CSF; Urine; Blood or Culture medium.

SPDR uses a simple testing device (patents filed), for which a prototype has been developed and tested. It costs <$100 and uses Optical Signal Amplification and Detection and the data is transferred to a mobile device for analysis, geotagging and result transmission.

Stage of Development

We have performed alpha testing in over 1000 patient samples and found a sensitivity of 98.4% and specificity of 99%. We are now ready for beta testing.

IP Status

US Patent Application. No. 14/125,450 (Pitt Ref No. 01958) for “SPIDR”


Funding

Abhay N. Vats, MD

Dr. Vats is a pediatric nephrologist by training but has been working in the area of novel molecular diagnostic techniques and solutions for over 15 years. He has successfully commercialized BK viral PCR assays in the past through technology transfer to start-up. These assays are now standard of care in transplant centers all over the USA.

Education
MBBS 1985
MD: 1989
MRCP (UK): 1991
Pediatric Nephrology Fellowship: 1997

Publications


William E. Stanchina, PhD

Dr. Stanchina is Professor and Chair of the Department of Electrical and Computer Engineering. His expertise is in microelectronics and optoelectronics. Prior to joining Pitt 9 years ago, he conducted and directed microelectronics R&D at HRL Laboratories (21 years). This included low volume production of state-of-the-art microelectronic integrated circuits.

Education
BSEE, 1971: Univ. of Notre Dame
MSEE/PhD, 1975/1978; Univ. of Southern California

Publications

