

**CytoViva<sup>TM</sup>**

*Executive Summary*

## **CytoViva, Inc.**

CytoViva, Inc. ("CytoViva"), a subsidiary of Aetos Technologies, Inc. ("Aetos"), was incorporated on September 14, 2006 under the laws of the state of Alabama. CytoViva was formed for the purpose of developing, manufacturing and marketing research-grade optical microscopy technology granted through a sub-license of the technology from Aetos.

Aetos is a technology development company founded to bridge the gap between university-based research and the commercial market. Auburn University, which is an equity partner with Aetos, granted the company exclusive commercial rights to a large body of its research, including the technology behind CytoViva, when the company was formed in October 2003. The microscopy technology, initially developed at the Auburn University School of Veterinary Medicine by Dr. Vitaly Vodyanoy, was introduced to the market in 2004 by Aetos under the brand name CytoViva™.

CytoViva, Inc. formed as a subsidiary under the Aetos Development Partnership Subsidiary Program. Aetos continues to own eighty percent of the company and is under contract to provide executive management services to CytoViva, Inc.

## **CytoViva Technology**

The CytoViva product system is comprised of a CytoViva High Resolution Adapter (CytoViva adapter) and the Dual Mode Fluorescence Module (DMF module). They are both based on light microscopy technology developed by Dr. Vodyanoy over the course of his twenty-five year career. During this time, Dr. Vodyanoy created methods to greatly increase the performance and utility of dark field microscopy in order to resolve very small biological entities, live and in real-time. He achieved this by mounting an improved optical condenser and various high-energy light sources onto existing research grade microscopes. This ultimately allowed him to achieve resolution below 100 nanometers (nm) and detection below 50nm, well below the previously accepted 250nm limit of resolution for light microscopy. This improvement in resolution has allowed the live imaging of very small bacteria and even some larger viruses, again improving considerably upon the limits of conventional light microscopy.

The original CytoViva adapter system, consisting of the High Resolution Adapter, liquid light guide and metal-halide light source, was introduced to the microscopy and microanalysis device market by Aetos in December 2004. Customer feedback garnered during the first half of 2005 indicated the need to combine a fluorescent imaging capability with the increased resolving power. In response to this feedback, the Dual Mode Fluorescence (DMF) module was developed in late 2005 and introduced into the market in early 2006. This module, positioned between the light source and the CytoViva adapter, allows the user to not only obtain excellent fluorescent images, but to combine them with the highly detailed morphological data available through the increased resolution. This capability is unique to the CytoViva system and is unequalled by any other technique available in the market.

Both the CytoViva adapter and the DMF module are easy to use and install. The entire system can be attached to a typical research grade microscope in less than five minutes. Whereas most competing technologies require lengthy set-up and a great deal of user expertise in order to operate effectively, both the CytoViva adapter and the DMF module operate intuitively, thus making it easy to train all laboratory personnel in their set-up and use. This is a tremendous advantage in that it allows everyone in the lab to obtain very high quality images and allows the work of the lab to accelerate. These traits are very important to our customers working in the competitive world of research technology funded by either outside grants or limited corporate research budgets.

The CytoViva system (i.e. the adapter and DMF module) has received external recognition and validation from some very prestigious sources since its introduction. In late June 2006, the CytoViva system was recognized with the very prestigious R&D 100 Award. This award, sponsored by *R&D Magazine*, recognizes the one-hundred most technically significant inventions of the prior year and is

commonly referred to as the "Oscars of Invention." This is featured in the September 2006 issue of *R&D Magazine*. Furthermore, Dr. Vodyanoy received notice that the American Optical Society had recognized the groundbreaking nature of his work by accepting his peer review paper explaining the physics behind CytoViva for publication in *Optics Letters*. This third party recognition, combined with ongoing, positive feedback from noted microscopy experts, clearly illustrates the significance of the CytoViva system and indicates its growing role as a leader in the microscopy industry.

### **Market Opportunity**

The light microscopy market has traditionally been dominated by four major companies: Olympus®, Nikon®, Zeiss®, and Leica®, with smaller specialty vendors selling supporting equipment such as cameras. Retail prices for the typical, well-equipped light microscope can range from \$45,000 to well over \$200,000. Other competing technologies, such as confocal microscopes, start at \$100,000 and can go as high as \$500,000. In contrast to these systems, the CytoViva adapter with the DMF module and an appropriate light source can be purchased for approximately \$25,000. Even if the customer purchases a microscope (approximately \$10,000) to use with the CytoViva system, it is positioned well below potential competitors while still providing a very healthy operating margin.

The light microscopy market is large, with the United States accounting for over \$650 million in sales and one-third of the world market. Asia, led by Japan, represents approximately 36% of the market with the European Union representing the remainder. Inside of this market, it is estimated that there are approximately 9,000 research-grade microscopes sold worldwide each year, on top of an installed base ten times as large (90,000).

During the course of the last eighteen months, Management has identified three key areas of application where the CytoViva adapter and the DMF module are especially well suited. In general, the CytoViva adapter and the DMF module excel in applications that require detailed imaging of the interactions between and within cells or similarly sized non-biological structures. Specifically targeted market segments include infectious disease, biotechnology-drug discovery and nano-technology.

The study of infectious diseases (bacteriology and virology), oncology and hematology are the biological sciences applications that fit best with the CytoViva system's capabilities. These market segments are large and tend to be well funded. The vast majority of the installed base of light microscopes exists in biological laboratories. Materials sciences applications are centered largely on the study of nano-particles and their behavior in both biological and non-biological environments. Nano-science, in general, is one of the most well funded market segments in science today. The CytoViva system is the tool best positioned to allow researchers in this area to utilize light microscopy. This represents an entirely new market opportunity for light microscopy.

Pro forma sales numbers are based on an approximate .4% penetration of the worldwide market in 2007, growing to approximately 1.5% in 2011. These estimates are based on the existing installed base and do not represent overall market growth driven by the expansion of nano-technology. Management believes these numbers are appropriately conservative and are achievable given modest growth in sales and marketing resources.

### **Summary**

CytoViva has an exciting future. The biological sciences portion of the market is large, established and well funded. Worldwide, the materials sciences portion is viewed as a key, strategic technology and thus is growing exponentially in size and funding levels. The system has received prestigious third party recognition. There is an experienced, capable team in place that knows both the product and the market, and there is a robust product pipeline in place to provide further growth. CytoViva represents a unique opportunity to be involved in technology that can have a significant impact on science as well as provide the investor with an attractive return on capital.

