

■ **CONVENTIONAL VACCINES HAVE PROTECTED MILLIONS OF PEOPLE FROM INFECTIOUS DISEASES BY STIMULATING THE BODY'S OWN IMMUNE SYSTEM.**

- Vaccines have cut deaths by a stunning 99% for diseases including diphtheria, pertussis, tetanus, polio, measles, mumps, rubella, invasive Haemophilus influenzae type b, acute hepatitis B, hepatitis A, chickenpox, Streptococcus pneumoniae and smallpox.¹

■ **NEXT-GENERATION VACCINES REPRESENT MULTI-BILLION DOLLAR MARKET POTENTIAL TO TREAT AND PREVENT CANCERS AND COMPLEX INFECTIONS.**

- Extending the benefits of vaccines to cancers and chronic infectious diseases could represent a market opportunity of 400M existing patients (US & EU), expanding by approximately 17M new incidences annually.
- Key disease targets include HIV, hepatitis C, hepatitis B, human papilloma virus, cytomegalovirus, melanoma and prostate, breast, ovarian, colorectal, and lung cancers.
- \$13 billion global vaccine business predicted to grow 18%/year to \$30 billion in 2011, 4 times the 4.4% growth of the drug industry.²

■ **CONVENTIONAL VACCINES HAVE RELATIVELY LIMITED SCOPE.**

- Conventional vaccines are effective at triggering an antibody response.
- Antibodies are effective at preventing infection of cells when they can recognize and kill infectious organisms before they enter cells.
- Antibodies *cannot* address cancerous cells, which do not enter the body as a “foreign” organism. The body will often see cancerous cells as being “self”, i.e. being part of the body.
- What may be achievable is a more powerful therapeutic approach: stimulating the body’s immune system to develop a strong T-cell response that can be effective in destroying cells after they are affected by these diseases.

■ **IN CONTRAST TO CONVENTIONAL VACCINES, DNA VACCINES CAN ELICIT ALL-IMPORTANT T-CELL IMMUNE RESPONSES.**

- DNA vaccines are effective in stimulating not only antibody responses but also T-cell responses, and therefore show potential promise against cancers and infectious diseases such as HIV and hepatitis C.
- One key challenge to the further advancement of DNA vaccines is a safe and efficient method to enable dramatic cellular uptake of the vaccine.

■ **ELECTROPORATION HAS SHOWN TO BE A SAFE AND HIGHLY EFFICIENT METHOD TO TEMPORARILY CREATE PORES IN A CELL'S MEMBRANE, SAFELY ALLOWING DRAMATIC UPTAKE OF A DNA VACCINE INTO THE CELL.**

- Applying milli-second electrical pulses to a cell will allow dramatic cellular uptake of a locally injected biopharmaceutical material such as a DNA vaccine.
- The cell may then produce the protein that the plasmid DNA vaccine was designed to “express”, which the body will then recognize as a foreign antigen and attack.

■ **INOVIO'S PROPRIETARY ELECTROPORATION PLATFORM HAS TO DATE BEEN A SAFE AND EFFECTIVE TECHNOLOGY FOR DELIVERING DNA VACCINES.**

- Inovio has two delivery systems, the MedPulser® Delivery System and Elgen® DNA Delivery System, for delivering DNA vaccines.
- The MedPulser system consists of a separate electrical pulse generator and needle electrode applicator. After the DNA vaccine is separately injected, the applicator is inserted into the target tissue and pulses are applied for a very brief duration.
- The *next-generation* Elgen system includes a pulse generator and integrated applicator consisting of two syringes containing the DNA vaccine and two needles that form the electrical field that creates the pores.

■ **PRECLINICAL AND CLINICAL STUDIES USING INVIO'S ELECTROPORATION TECHNOLOGY HAVE PRODUCED COMPELLING SAFETY AND EFFICIENCY RESULTS.**

- Preclinical and interim clinical results have shown that Inovio's systems can achieve levels of gene expression (i.e. production of the encoded antigenic proteins) 100x greater and, more importantly, levels of immune response one or two hundred-fold greater than for a DNA plasmid without electroporation.
- Four Phase I and Phase I/II studies have completed enrolment. Three (University of Southampton/prostate; Moffitt Cancer Center/melanoma; and Vical/melanoma) reported interim results in the spring of 2007, all positive with respect to safety, tolerability and immune responses. They are expected to report additional results in the first half of 2008. A fourth (Merck/breast, colorectal, ovarian, and lung cancers) is expected to report mid-2008.
- As further validation of the merits of Inovio's DNA delivery platforms, Tripep of Sweden initiated the first clinical study using Inovio technology for a DNA vaccine against an infectious disease—hepatitis C virus—in November 2007.
- In December 2007, Merck filed an Investigational New Drug (IND) application for a second DNA vaccine clinical trial using Inovio's DNA delivery technology, triggering a \$2 million milestone payment.

■ **SOURCES FOR ABOVE FACTS AND INFORMATION**

- ¹ *Researchers at the Centers for Disease Control and Prevention reported these data in the November 2007 issue of JAMA.*
- ² www.forbes.com/business/global/2007/11/24/124.html

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This document contains forward-looking statements, including statements concerning the capabilities of our technology, clinical trials and product development programs, evaluation of potential opportunities, the level of corporate expenditures, the assessment of Inovio's technology by potential corporate partners, capital market conditions, timing of events, cash consumption and other subjects. Information concerning factors that could cause actual results to differ materially from those set forth in our Annual report on Form 10-K for the year ended December 31, 2006, and our Quarterly Reports on Form 10-Q and other regulatory filings.