Vaxine’s Background
Vaxine Pty Ltd (Vaxine) was founded in June 2002 in Canberra, Australia by Professor Nikolai Petrovsky, then Director of the National Health Sciences Center. Vaxine’s mission is to produce new and improved human vaccines to prevent infectious disease, allergy, autoimmunity and cancer by applying Vaxine’s proprietary vaccine technologies. The advanced technology developed by Vaxine is able to dramatically enhance immune responses to existing vaccines by up to 100 fold, while at the same time, making the vaccines safer and better tolerated. Vaccines incorporating this technology are almost painless to administer, which contrasts to the common problem of local stinging and pain associated with other injected vaccines. Another advantage conferred by Vaxine’s technologies as described below is that they make vaccines more effective, thereby opening up the opportunity to take vaccines beyond their traditional roles in prevention of infections, to exciting new possibilities in the areas of therapeutic anti-viral vaccines, allergy, autoimmunity and cancer.

Vaxine’s Technology
The leading technology developed by Vaxine relates to vaccine adjuvant formulations at the core of which is microparticulate inulin (MPI). The use of adjuvants based on MPI enables the production of vaccines that are not only safer and better tolerated than more traditional vaccines but also exhibit greater effectiveness. This is because MPI adjuvants stimulate all arms of the immune response not just the antibody response stimulated by currently registered vaccine adjuvants. In collaboration with national and international partners, Vaxine is developing completely novel vaccines for diseases including Hepatitis B and C, shigella, Japanese encephalitis, and influenza, amongst others. In addition to its MPI and infectious vaccine technologies, Vaxine is also developing novel approaches to the use of vaccines in prevention of type 1 diabetes (using a derivative of Q fever) and the treatment of cancer.
**Vaxine's Business**

Vaxine is already a well established player in the vaccine adjuvant arena. It has received multi-million dollar grants from the US and Australian governments to apply Vaxine’s proprietary vaccine adjuvant technologies, to the development of improved bioterrorism and influenza vaccines. Vaxine is currently completing a Phase 1 trial of a Hepatitis B vaccine based on its MPI technology and has a large pipeline of other vaccine projects soon to enter the clinical phase. Vaxine is keen to work through collaborations and partnerships to apply its vaccine technologies to both improve existing products and develop novel vaccines. A range of opportunities to partner with Vaxine are available including technology licenses, joint ventures, and scientific collaborations. In addition to its vaccine development expertise, Vaxine is well positioned to move products through product registration in Australia and is therefore interested in in-licensing or acting as an agent for overseas biotechnology products for which it can develop a market in Australia and/or New Zealand.

**Vaxine's People**

Professor Nikolai Petrovsky, MBBS, FRACP, Ph.D. Professor Petrovsky is the founder, chairman and chief scientific officer of Vaxine. After obtaining a Medical degree from University of Tasmania and Ph.D. from Melbourne University, Dr Petrovsky trained as a clinical endocrinologist. He is professor of Medicine and director of Endocrinology at Flinders Medical Center/Flinders University. He is a Fellow of the Australian Institute of Company Directors. Past experience includes director of the National Health Sciences Center (2000-2004), managing director of Australian Innovation Limited (1996-97), a venture capital company listed on the Australian Stock Exchange, director of Cybergraphic Systems (1995-97), a developer of newspaper publishing systems software and Chairman of Tasmanian Univalve (1996-97). Particular research interests are vaccine adjuvants, autoimmunity and immunomics. He is secretary general of the International Immunomics Society, editor-in-chief of Immunome Research and past treasurer of the Australasian Society of Immunology and has authored over 70 peer-reviewed immunology research papers.

Mr Stapinski has responsibility for building up this spin off company into a commercial operation as the research and development progresses. Mr Stapinski was the managing director of an ANU spin-off company, Auspace, which successfully built space hardware for the shuttle-based Australian UV space telescope, the European series of environmental satellites (ERS-1), communications satellites and others. He then, for three years, led a consortium launching a remote
sensing company. He is a non-executive director of another ANU spin-off company, Australian Scientific Instruments, and has provided international marketing and strategic planning for this company. Mr Stapinski has over thirty years experience in the management of major scientific projects across a wide range of scientific disciplines. This includes providing leadership of the scientists as well as the cost and schedule control of the project. He graduated in electronic engineering with honours at University of Queensland (1968) and a Masters of Engineering Science at University of NSW (1974). He is a fellow of the Academy of Technology Sciences and Engineering and of the Institution of Engineers Australia as well as being a recipient of the Centenary Medal.

Dr Peter Cooper is an Honours graduate in Chemistry from London University (1945) and completed his PhD (1949) at the Wright-Fleming Institute of St Mary's Hospital, London and his Doctor of Science degree from London University in 1968, and a formal qualification in Microbiology (Member of the Australian Society for Microbiology) in 1976. After working on the growth of poliovirus in culture in the UK, he joined the JCSMR, ANU in 1962 as a senior fellow ANU. In 1978, he turned his interest to the ways in which cancer starts, then in 1982 to a possible treatment for cancer using ‘activated’ serum. This turned out to be due to activation of the alternative pathway of complement, and led to the discovery of gamma inulin as a feasible clinical treatment tool. Gamma inulin was new to science and has been patented worldwide. He served periods as National President of his professional society (Australian Society for Microbiology), chairman of the A.C.T. Cancer Society, Chairman of the International Picornavirus Study Group, and member of various international and national councils and in-university committees. In 1989, he was awarded the National Australia Day Medal for Outstanding Achievement in Microbiology, and in the following year, Honorary Life Membership of both the Australian Society for Microbiology and the Clinical Oncological Society of Australia. He now works as a consultant to Vaxine.

**Vaccine Adjuvant Market**

As of Feb 2006, aluminium salts remain the only vaccine adjuvants approved by the US Food and Drug Administration (FDA). The vaccine’s market is currently experiencing rapid growth further fueled by public concerns of the risks of epidemics or pandemics of human and avian influenza, SARS and potential terrorist released pathogens. Aluminium salts are not only weak adjuvants for many vaccine but also suffer from major safety and toxicity concerns. Hence, there is a major unmet need in global markets for new adjuvant technologies more effective, safer and less toxic than aluminium salts. Vaxine’s MPI technology is ideally positioned to take over the role of aluminium salts in the majority of the world’s vaccines as well as opening up new possibilities for vaccines against allergy and cancer.
Vaxine’s Future

In August 2005, through Flinders University, Vaxine received a major multimillion dollar grant contract from the US National Institute of Health (NIH) to develop vaccines to protect against bioterrorist threats. Even more recently, it was awarded a further grant through the Australian government funded NHMRC to apply its unique vaccine technology to avian influenza vaccine development. It has also been successful in grant funding from the Australian government’s Commercial Ready program to conduct human clinical trials of its novel Hepatitis B vaccine. Vaxine plans to seek further opportunities for grants and licensing revenues to drive forward its vaccine and vaccine adjuvant projects. Vaxine is ready to partner with vaccine researchers, not-for-profit vaccine institutes and commercial vaccine companies to apply its vaccine and adjuvant technologies to the production of the next generation of safe and effective vaccines.