Submission
No 22

INQUIRY INTO NANOTECHNOLOGY IN NEW SOUTH WALES

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EnGeneIC Pty Ltd

Standing Committee on State Development
Parliament House
MacQuarie St,
Sydney,
NSW 2000

Monday 31st March

Dear Committee Members

Re: Submission to the "Inquiry into Nanotechnology in NSW"

We are writing to you following your invitation to make a submission to the Committee regarding its enquiry into nanotechnology. We are the Joint Managing Directors of EnGeneIC Pty Ltd which is a young biotechnology company engaged in researching and developing a biologically derived nanocell or minicell for use as a delivery vehicle for chemotherapeutic drugs in cancer.

Definitions of nanotechnology and nanoparticles vary and are inconsistent, particularly where size is concerned. The National Nanotechnology Initiative (NNI) of the US federal government defines nanotechnology as "research and technology development at the atomic, molecular or macromolecular levels, in the length scale of approximately 1 - 100 nanometer range", as well as "creating and using structures, devices and systems that have novel properties and functions because of their small and/or intermediate size". Other definitions describe any particle less than 1micrometre. While our nanocell, the EnGeneIC Delivery Vehicle (EDV) does not come under the NNI definition, at 400 nanometres, it is certainly less than 1 micrometre in size.

Nanotechnology describes an extremely heterogeneous group of technologies which, we believe, cannot be considered together when assessing health, safety and environmental risks. Additionally, the end use for the particular technology is also important when establishing a nanotechnology strategy.

An emerging area in nanomedicine is that of drug delivery. If one considers the risk/benefit ratio of EnGeneIC's nanocells, it is heavily weighted on the benefit side.

- **EDVs are naturally occurring and not synthetic, being buds derived from bacteria. They cannot reproduce, nor cause disease. The EDVs which are made under the Office of the Gene Regulator's guidelines in a PC2 laboratory can be loaded with any chemotherapeutic drug and specifically targeted to a variety of tumours. We have done extensive safety assessment in monkeys and have shown dramatic tumour regression in preclinical studies.**
- **The EDVs carry hundreds of times less drug than conventional chemotherapy and because they are targeted, only the cancer cells receive the drug dose. This means that morbidity and mortality and hospital stays due to chemotherapy treatment and side effects are drastically reduced with substantial savings to health providers and the wider community.**

- **Targeted EDVs for cancer pave the way for personalised medicine. A patient can receive EDVs loaded with the drug that their tumour is sensitive to, rather than the scattergun approach that is employed presently.**

We would also like to comment on the level of community understanding of nanotechnology with particular reference to drug delivery.
In mid 2007, we published a paper on our EDV technology in the journal, Cancer Cell. That article generated 23,000 hits on our website and a plethora of lay press and the paper and reprints from New Scientist and The Bulletin are attached. Following that, we now have a database of nearly 1000 Australians with cancer who are volunteering for a clinical trial of our technology. These people have a clear understanding of what our nanocell is and it seems that when a member of the public is faced with a terminal disease and nanotechnology may provide an answer, then there is no issue.

Once again, we would ask you to consider nanotechnologies individually, rather than as a single technology. In particular, we believe that nanomedicine and particularly nanoparticles for drug delivery, are already proving to be safe and exciting new modalities for the treatment of diseases such as cancer.

Thank you for the opportunity to put our views to the Committee.

Yours Sincerely,

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