

### **GreenPharm™ gets the green light**

#### **Deal concluded that will see tobacco plants become green factories to combat rabies**

A contract has been signed and sealed for an investment of R15m by South Africa's Innovation Fund for the final phases of development aimed at the establishment of a start-up venture that will produce rabies virus neutralising antibodies through tobacco plants. This sees the formal birth of GreenPharm™, which is being incubated at the CSIR, from where the intellectual property originates and the further development is being done.



Dr Rachel Chikwamba

Rabies is a viral disease, transmitted through the bite of rabid animals, most often dogs. The virus infects the central nervous system, causing inflammation of the brain and is fatal once symptoms have developed.

GreenPharm™ hopes to bring its first product, a rabies drug (RabiVir™) that will be taken post-exposure, to the clinic by 2012. Over the next three years, the CSIR will conduct the R&D and intends to bulk up on the plant tissue needed and refine the extraction process; take into use a clinical supplies unit that complies with good manufacturing practices; as well as validate the product prototype and produce clinical batches of the product.

Rachel Chikwamba, principal investigator of the project, explains the significance of this development: "We intend bringing a safer and cheaper alternative to the market. The current rabies immune globulin uses either horse or human blood plasma, with the accompanying risk - in the case of human serum - of blood borne infectious diseases such as HIV and the dependence on blood donations."

Preliminary data generated by the CSIR and St Georges, University of London, proved that the antibodies produced via tobacco were more efficacious in cell tests than plasma-produced counterparts and were cheaper to make.

Chikwamba says tobacco proved to have many advantages over other plants in terms of producing monoclonal antibodies. The plants produce lots of the protein needed (it has high expression levels); respond very well to genetic engineering; and have a good public acceptance profile because the tobacco plant is a non-food crop.

She explains that commercialisation requires both the development of upstream and downstream processes - scientists will continue with the development of a stable, genetically transformed line that produces the antibody in high concentrations while technologists will develop manufacturing facilities where the target molecules are isolated and purified. They will be supported by a project and commercial managers. The company (GreenPharm™) will be spun out from the CSIR in three years' time.

This research began in 2003 when the CSIR plant biotechnology research group entered into the molecular farming arena and, with funding from the South African Department of Science and Technology, joined the

international Pharmaplanta project. The knowledge gained during the five-year life span of the project is being extended to other areas.

In December last year, the project was named the inaugural winner of the SA Bio Business Plan Competition. The SA Bio Business Plan Competition is an initiative of the Innovation Fund in partnership with Emory University in the USA with the ultimate aim of helping to promote the creation of new, venture capital friendly biotechnology companies based in South Africa. The competition commenced in April 2008 and the entries were judged by an international panel of venture capitalists from the USA and Switzerland, most of whom have participated in biotechnology start-ups up to initial public offering. The R15 million investment is a direct result of being named the competition winner.

Commenting on the investment decision, lead manager on the project for the Innovation Fund, Bethuel Nthangeni, says: "We are very excited to be associated with GreenPharm™. It is an excellent technology to showcase the investment aspirations of the Innovation Fund which include investing in novel local technologies that have potential to be developed into sustainable businesses and contribute in the growth of the national economy."

- Alida Britz

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