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## **UCT researchers raise R30m for new heart valve start-up** **Bidvest, TIA fund breakthrough towards dramatically lower cost of saving lives**

Research conducted at the University of Cape Town has sparked the formation of two new biotechnology companies, which have attracted investments totalling R30 million towards the development and manufacture of new devices that can replace damaged heart valves without expensive open-heart surgery.

The funds will be used to develop a new technique to assist victims of rheumatic heart disease (RHD), which is estimated to affect up to 78 million people worldwide, particularly in emerging and developing countries.

Southern Access Technologies Holdings (SATH), has raised R18 million from the Bidvest Group. SATH's subsidiary, Southern Access Technologies (SAT) has been granted another R12million by the Technology Innovation Agency (TIA).

SAT was founded by Professor Peter Zilla, the Head of UCT's Christiaan Barnard Department of Cardiothoracic Surgery at Groote Schuur Hospital and the Red Cross War Memorial Children's Hospital in Cape Town; Dr Deon Bezuidenhout, a polymer scientist who specialises in the development of biomaterial scaffolds and biomimetic matrices for tissue engineering and regeneration applications at UCT; and Professor David Williams, one of the world's leading experts in biomaterials and implantable medical devices, with years of experience in this field.

The new technology will add to the Western Cape's growing reputation as a hub for innovative medical device manufacture. Dr Greg Starke, a UCT Biomedical Engineering alumnus who started stent manufacturer Disa Vascular, and Dr Kit Vaughan, the CEO of mammography equipment manufacturer CapeRay, are members of the SAT board of directors.

## **Saving lives, saving money ... and boosting local industry**

SATH's heart valve technology is based on research conducted at UCT, which is a major shareholder in the company. "There is considerable synergy between SAT and many of UCT's initiatives around healthcare for South Africa, which will provide key contacts to other African countries," said Professor Danie Visser, the Deputy Vice-Chancellor overseeing research at UCT.

Professor Visser said: "This technology is a perfect example of the kind of socially responsive research that is a strategic goal of UCT. RHD is a potentially fatal disease that is commonplace among the world's poorest people. This new technique opens the way for treatment at a much lower cost, without complex surgery. And it carries on UCT's tradition of leadership in cardiothoracic surgery, which began with the first human heart transplant, performed by Professor Chris Barnard."

The SATH strategy addresses heart valve diseases through the development of devices that can be deployed under conditions prevalent in developing countries and emerging economies without requiring open-heart surgery and sophisticated operating theatres. SATH will begin immediately to develop prototypes for a heart valve, a delivery device for transcatheter heart valves, and a clip device for the repair of heart valves. Testing of the products is expected to begin in late 2013. Global regulatory approval, clinical trials and marketing in the developed world will be pursued in partnership with multinational companies. The products for the developing world will be manufactured in South Africa, to reduce production costs without compromising quality.

The SATH products will be available at substantially lower cost than those of commercially available, catheter-delivered valves. The procedure to place the valves will be substantially cheaper, as open heart surgery will not be required. The therapies can be conducted in secondary hospitals that now lack the technology needed to treat the same heart condition, thus opening up new markets for heart valve products.

Current heart valve prostheses cost anywhere from \$5,000 for a conventional valve to \$30,000 for a transcatheter valve, with additional costs for the sophisticated infrastructure needed to implant the valves. These products were designed for the aging population of developed countries, whereas in emerging markets most patients are young and would be expected to live longer than the operational life of the prosthesis.

By contrast, the cost of a SATH heart valve is expected to sell at less than \$1000 in developing countries. It is important to note that its deployment device can be used many times, thereby drastically decreasing the cost of this item per procedure. The cost of insertion will be much lower as the procedure is much simpler than open heart surgery. The resultant improvement in the health of the average young patient raises the prospect of another adult who will be better able to work and contribute to the economy. The public health sector is also expected to benefit from the reduced burden of caring for sufferers of RHD over the long term.

Dr Sibongile Gumbi, Group Executive of TIA for Biotechnology, said: "The Technology Innovation Agency is pleased to be part of this ground-breaking project, which is set to have a significant impact on the treatment of heart ailments. South Africa has a long history of working at the forefront of heart disease and we are proud to continue building on this capability. Our investment will not only contribute towards improving the health of our people and create much-needed jobs, but also shows that South Africa can compete in the global arena when it comes to the manufacturing of medical devices."

Bidvest Group's Chief Executive, Brian Joffe, said: "Bidvest is delighted to have been offered the opportunity to invest in this new innovative venture which will make access to heart surgery available to a far greater population of sufferers. We look forward to a successful business relationship with all our partners in the project"

### **Background on RHD**

RHD is the most neglected health condition in emerging markets and developing countries, where 80% of the world population lives. It affects millions of young people who currently die prematurely. The major determinants of RHD are poverty, overcrowding, poor housing and shortage of healthcare resources. New evidence suggests that 62 million to 78 million individuals worldwide have RHD. The only treatment is heart valve replacement – and without treatment, RHD is often fatal. (In contrast, HIV affects 33 million patients for whom the roll-out of anti-retroviral therapy has brought hope.)

Outside South Africa, heart surgery is largely absent on the African continent. It is also hugely underprovided in emerging economies such as India, China, and Brazil as resources are scarce even in the fast growing BRICS countries limiting their ability to import heart valve prostheses that were largely developed and manufactured in the United States.

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