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## **UCT funding to support cost-effective manufacturing of pharmaceuticals in South Africa**

The manufacturing and availability of medicines in sub-Saharan Africa will receive a major boost with the injection of R13 million to the University of Cape Town's (UCT) Holistic Drug Discovery and Development Centre (H3D).

The funding has been made possible by the United States Agency for International Development (USAID) through [MATRIX](#), a USAID project to advance the research and development of innovative HIV prevention products for women. The awarded Integrated Special Project (ISP) will support a pilot project aimed at evaluating an innovative continuous flow technology for cost-effective manufacturing of active pharmaceutical ingredients (APIs) in South Africa.

Pharmaceutical manufacturing primarily takes place outside Africa, mainly in high-income countries where collaborating organisations, technology, infrastructure and a critical mass of skilled scientists and technicians are more readily available. In South Africa, the pharmaceutical formulation industry is well developed and produces more than half the final pharmaceutical product consumed locally, though it has not yet developed the capacity to synthesise and manufacture the APIs. In fact, the vast majority of APIs for use as medicines on the African continent must be imported. During the COVID-19 pandemic it became apparent that the local manufacture of APIs should be a high priority.

MATRIX initiated the ISP programme to support projects that will add value to and strengthen the capacity of research and development to be conducted in the Global South.

To address this unmet need, an international group of scientists, led by UCT's Professor Kelly Chibale, founding director and CEO of the H3D Foundation and director of the [H3D](#) centre, developed a creative approach that, if successful, could revolutionise the manufacturing of medicines in South Africa, and the rest of the continent. The other partners are the [Oak Crest Institute of Science](#) in the United States (US), [Chemical Process Technologies Pharma](#) (CPT Pharma) in South Africa, and [KinetiChem](#) in the US, the developer of the enabling technology underlying the ambitious project, KinetiChem's patented chemical synthesis system, the Synthetron™ flow reactor technology.

The pilot project consists of technology transfer and capacity building, facilitated by Oak Crest, to UCT scientists who will deploy a Synthetron system at UCT for the rapid and efficient synthesis of antiretroviral agents used to prevent and treat HIV. Once proof-of-principle has been demonstrated, the technology will be evaluated further by CPT Pharma for possible adoption.

The team is confident that successful completion of this pilot project will lead to eventual widespread, decentralised manufacturing of medicines throughout South Africa. Integration with the existing pharmaceutical formulation infrastructure is hoped to eventually democratise access to medicines in South Africa and beyond and reduce dependence on outside sources.

“It is one thing to talk about local manufacturing, it is another to have the relevant technology and skills. This collaboration will facilitate both technology transfer and on-the-job-training skills development. It also illustrates the importance of research and development creating the demand and playing a crucial role in seeding new industrial development that is so crucial for absorbing the abundant labour force available in South Africa,” said Professor Chibale.

The Synthetron reactor technology allows for continuous flow chemical synthesis, and compared to conventional methods, requires very small reaction volumes (0.25 mL, approximately five drops) to complete a chemical reaction, and in only fractions of a second. These highly efficient systems facilitate rapid scale-up of reactions, with bench-scale systems producing multi-kilogram quantities of product in less than one hour. These systems take up a fraction of the space that typical batch reactors require (typically less than a 1×2-meter footprint), can accommodate a wide range of reaction conditions, and require a much lower capital investment than traditional batch manufacturing systems.

“A successful API manufacturing industry in South Africa requires cost competitive technology. Without that, local manufacturing is not feasible. To develop and implement new manufacturing technologies requires skills that are currently not freely available on the African continent. We are very excited to be part of this project, which will address both critical success factors for our business and industry,” said Dr Hannes Malan, managing director of CPT Pharma.



New innovative technology for pharmaceuticals



Photos: Supplied

***Ends***

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