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## **Research by UCT's Figaji to transform brain injury treatment globally**

*Fellowship to advance childhood brain research*



Professor Anthony Figaji

Photo: Supplied

The groundbreaking research by University of Cape Town's (UCT) paediatric neurosurgeon, Professor Anthony Figaji – who has been awarded the prestigious Harry Oppenheimer Fellowship – has the potential to transform the understanding and treatment of brain injury not only in Africa but globally too.

Professor Figaji was awarded the prestigious Harry Oppenheimer Fellowship for his pioneering research into childhood brain injury. His new groundbreaking research was recognised at an award ceremony on Tuesday, 15 July 2025.

The Harry Oppenheimer Fellowship is one of the most sought-after academic honours on the continent. Figaji and his research group, [African Brain Child \(ABC\)](#), based at the Red Cross War Memorial Children's Hospital (RCWMCH) and UCT's [Neuroscience Institute \(NI\)](#), are striving to decode the physiology and improve treatment of brain injury in children.

This long-standing fellowship, which recognises established researchers, has previously been awarded to nine UCT academics. Professor Figaji becoming the tenth recipient makes UCT the institution with the most awardees. The 2024/2025 fellowships were awarded to both Figaji and the University of the Witwatersrand physicist, Professor Andrew Forbes.

### **How prevalent are brain injuries?**

Children are especially vulnerable to traumatic brain injury (TBI), which is the leading cause of death and disability from injury around the world. Figaji's research explores how the brain responds to injury in real-time, what biological mechanisms contribute to recovery or further damage, and what treatment options are most effective.

Figaji seeks to understand how medications penetrate the brain, which, unlike other organs, is protected by physiological barriers that make drug delivery notoriously difficult.

### **Developing methods to monitor the injured paediatric brain**

Figaji's project draws on a world-leading dataset, the largest of its kind, built over several years at RCWMCH. Using continuous monitoring of children with various forms of brain injury has enabled him to collect complex physiological and biochemical data directly from the brain, providing insights at a previously unattainable scale.

In analysing this data, he will focus on brain physiology, metabolism and inflammation, drug activity in the brain, and building research capacity in South Africa.

By examining the brain's own chemistry, oxygenation levels, inflammation markers and real-time drug concentrations, the project aims to prevent 'secondary brain injury' – the damaging cascade of events that unfolds after the initial trauma.

"We've developed techniques to repeatedly sample both total and active drug levels directly from the brain," said Figaji. "This will let us better predict what works, where and how – in a way that's never been done before."

The fellowship will enable Figaji's ABC team to collaborate with specialists in complex systems and data science to process the immense volume of information collected – millions of datapoints per patient. The findings will contribute to new diagnostic and predictive tools to improve patient outcomes, with possible implications for a wide range of brain diseases. "This research has the potential to transform how we understand and treat brain injury – not just in Africa, but globally," Figaji added.

### **Fostering Africa's 'brain gain'**

The fellowship follows several major accolades for Figaji and his team, including the Wellcome Trust Discovery Award and the National Research Foundation's (NRF) 2024 Science Team Award. It strongly recognises the opportunity to lead world-class neuroscience right here in Africa, where there is a high burden of TBI and half the population is under 19 years of age.

The ABC research group is in a unique position to make a difference where it is most needed. Their work in neurotrauma, brain infections, and brain tumours has consistently blended clinical care, cutting-edge monitoring and fundamental neuroscience in an innovative, interdisciplinary model, leading to their increasing recognition as global leaders in paediatric brain research.

Professor Graham Fieggen, holder of the Mauerberger Chair of Neurosurgery and director of the NI, described the accolade as richly deserved. "Professor Figaji's work demonstrates the opportunity we have to do world-leading science in South Africa through addressing major health priorities, such as the epidemic of trauma we face as a nation. Building on our established strengths in clinical practice, and growing capacity through international collaboration.

"He has established UCT as a world leader in the field of brain injury. This has not only strengthened our capacity in neuroscience research, but most significantly had the impact we care about most – improved patient outcomes," added Fieggen.

The ABC group's efforts extend beyond the lab and the operating theatre. For the last few years, the team has been creating public awareness about the particular risk that TBI poses to children's brains with their [Be Quick to Click](#) campaign. In October 2024, this campaign evolved into a carseat collection and donation drive and event, in partnership with WheelWell and SupaQuick.

With an estimated 55 million people worldwide living with TBI-related disability, the burden is staggering – particularly for children, whose brain injuries can have lifelong consequences.

"When a child suffers a brain injury, the effects often extend into adulthood – impacting education, behaviour, employment, financial stability and even increasing risks of criminal involvement," said Figaji. "Understanding the brain's response is critical if we're to change these trajectories."

Figaji said this research has the potential for widespread continental and global impact, and can also touch one life in a deeply profound and lasting capacity. He said it is certainly worth investing in.

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