

SA scientist nails TB bug

Mar 31 2002



Radical Stuff: Junaid Gamielien, who struggled for years to get his work published. Picture: Ambrose Peters

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A South African scientist has made a breakthrough that could lead to the development of better drugs to treat the killer disease tuberculosis. Using sophisticated computer software, Dr Junaid Gamielien discovered that the TB bacterium has stolen genes from plants and fungi.

At first the 30-year-old Capetonian's research was considered so radical that it was rejected by international science journals. He had to wait more than three years, until January this year, to have his and co-author Professor Winston Hide's findings published in an international genetics journal.

His discovery suggests that a subset of the poached genes allows the TB organism to alter the sensitive steroid balance in humans. Sex steroids are broken down, which produces an ineffective immune response and prolongs the infection.

"It's an important component of the TB bug's arsenal," Gamielien said. "This gives us a better understanding of how the organism does what it does."

Tuberculosis is the world's biggest epidemic, prompting the World Health Organisation in 1993 to take the unprecedented step of declaring it a global emergency.

In South Africa, which is ranked ninth in the world in terms of the number of cases, TB kills about 12 000 people every year, and it is the leading cause of death in HIV-positive individuals. It is estimated that 66% of South Africans have been infected with dormant TB, and past sufferers include high-profile people like Nelson Mandela, Desmond Tutu, former beauty queen Margaret Gardiner and, more recently, TV personality Gerry Rantseli.

Gamielien's work showed there was a completely new way of finding genes that can be targeted with drugs or vaccines, said Hide.

It also explodes the notion that countries such as South Africa must rely on the US and Europe for insight

into genetics.

Bioinformatics is a relatively new research discipline that involves the development of software used to speed up genetic and biotechnology research.

Gamieldien hopes that drug companies will be able to use his findings to develop new strategies to fight TB. Unfortunately, South Africa has little infrastructure to develop drugs itself.

Gamieldien and others at the institute are now looking at other organisms. Using a new software tool, they have found new possible drug targets in the bug that causes stomach ulcers - findings that have been validated by Harvard University in the US.

The new technology has also been used to identify possible drug and vaccine targets in the malaria parasite.