

Super-fast computer aids genetic research

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It may not be able to provide the answer to life, the universe and everything else, but the new million-dollar supercomputer about to arrive at the South African National Bioinformatics Institute (Sanbi) may help find why some Africans are immune to HIV.

The supercomputer, as yet unnamed, will be the first research-orientated machine on the continent. It is being handed over by United States-based company Cray, as part of a collaborative research effort with Sanbi, which is part of the University of the Western Cape.

One reason Sanbi was chosen was the expertise of director Win Hide, who is that still-rare combination of biologist and computer programmer. Bioinformatics is the discipline of developing computer programmes to accelerate biotechnological and genetic research. Genetically derived diagnostic tests and drugs are seen as the way of the future -- and Cray hopes that the computer programmes created at Sanbi will help it grab a big share of this massive and extremely lucrative market.

Supercomputers are incredibly fast -- Cray boasts that one of its machines was the first to achieve one teraflop (one trillion calculations a second) while processing a real-world application.

Hide has a note of triumphant glee in his voice when talking about his new acquisition, which pushes his unit into the really big league where it can compete with research institutions across the world.

"The collaboration with Cray vindicates the leading international role that Sanbi has played in the development of understanding our genome. What really excites me, however, is that African scientists are now in such demand internationally for their expertise in genomic analysis. This collaboration demonstrates clearly just how close to the front of the pack South Africa is becoming in genomics and bioinformatics."

The supercomputer will not also compete, but also collaborate: the Sanbi machine will join the Grid Computing Information, an international network of computer resources that work together on big questions like modelling the molecules in new drugs.

Sanbi already contributes to international research projects. Students at Sanbi wrote a programme that helped map about 1 000 genes in the malaria genome. And a researcher at Sanbi used computer software to discover that the bacteria that causes tuberculosis has managed to acquire plant and fungi genes that probably help it weaken the human immune system.

Although the supercomputer will be primarily dedicated to biological research, the institute will also be able to make money by renting out processing time to private companies and other researchers.