

# Exorcising AIDS

BY ADEL ISKANDAR

Fifteen years after the diagnosis of the first AIDS case, research to develop a cure for the world's most mind-boggling human syndrome in recent history has finally renewed hope for the disease's eradication.

HIV, the virus that causes AIDS, was believed to remain dormant during its initial phase of infection for up to ten years. This belief was the foundation on which anti-HIV drug administration was built. Patients were put on these drugs months or even years after their initial exposure to HIV.

However, Dr. David Da-i Ho and his colleagues at the Aaron Dia-

mond AIDS Research Centre in New York City have recently proved otherwise. Dr. Ho's work proved that there is no period of true dormancy in the HIV virus' life-cycle. Upon its invasion of the body, HIV replicates, thereby creating approximately one billion copies of itself every twenty-four hours.

This ground-breaking discovery helped Dr. Ho provide a new protocol for the administration of anti-viral drugs against HIV. This protocol is a "cocktail" of AZT, the first AIDS drug, and several recently approved powerful medications known as protease inhibitors that are administered upon infection. This system of drug therapy was tested on twenty-one HIV-

positive individuals, with astounding results. After only three weeks of therapy, all twenty-one patients showed no traces of the virus in their blood.

Yet, one should not be overwhelmed since the cocktail is still in its experimental stages. As well, with the drugs costing up to \$200,000 a year, they are unaffordable for all but the wealthiest and best-insured patients. Yet the least fortunate are the 20 million people infected with HIV in developing countries who have little access to quality health care, let alone the cocktail.

The drugs have also been tested with late cases of AIDS, with less promising results. With

many of these patients, the drugs proved ineffective, even detrimental to those who could not tolerate their strength.

Even with those patients who showed remarkable results, Dr. Ho remains sceptical. The virus may no longer be in the blood but may be hidden in the patient's visceral (internal) organs waiting for the appropriate moment to re-attack the body's defences.

The HIV virus relies on the body cells' ability to reproduce to replicate itself. It does so by inserting its genetic material into these cells thereby creating millions of copies of itself in a matter of hours.

This past summer, researchers

isolated a gene that appears to protect its carriers from the HIV virus, even after repeated exposure. This discovery is central in the search for genetic therapies against AIDS.

Obviously, 1996 has been the year of AIDS. Thereby, in accordance with all the revolutionary research, TIME magazine selected Dr. David "the Exorcist" Ho as its Man of the Year for his pioneering contribution in the battle against AIDS. Dr. Ho beat a list of political newsmakers to this honourable title. Despite the scepticism around Ho's work, the renewed attention on AIDS leaves us with nothing but optimism for the future.

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# Genomics: the search for the biological grail

BY NATALIE MACLELLAN

What makes us human, and not chimpanzee, is a difference in only one per cent of our respective genomes.

The human genome, the collection of all the genes contained in human cells, has often been referred to as the "grail of human genetics." Our genes contain all the information that define us as human. In the words of Linus Pauling, "We came from chemistry." Humans have an estimated 50,000 to 100,000 genes that contribute to our physical characteristics, development, behaviours and diseases.

The search for the biological grail commenced with Gregor Mendel's genetic studies on pea plants in the late 19th century, and has continued since the re-

discovery of Mendel's work in the year 1900. The search has now culminated in the Human Genome Project that aims to decode all of the genes in the human genome. With the bulk of the research centred in Europe, Japan, and the United States, the Human Genome Project is organized by the Human Genome Mapping Organization (HUGO).

The mapping of the entire human genome will revolutionize our understanding of human development, both physiologically normal (organ function) and abnormal (disease). It will allow us to predict, and eventually enhance or prevent our genetic fate.

Genetic knowledge is invaluable in the event that a disease is caused by a defective gene. It is nearly impossible to understand the disease unless we can understand the cause. Finding the genes that cause disorders such as Huntington's Disease will mean spending less money on research.

Many biochemists spent their entire careers trying to unravel the problem of cancer, only to fail. It wasn't until the effect of DNA alteration was uncovered that scientists and doctors made giant steps in understanding how tumours arise and cause their effects on the body.

Scientists are also hoping that

knowledge of the human genome will lead to developments in the psychological studies of manic depression, schizophrenia, and alcoholism; all are believed to have some genetic causation.

The biological grail is not without its ethical complications. Without laws to protect an individual's DNA from becoming public, many personal freedoms may be threatened. If someone could look at your DNA and see that you are liable to die of cancer at an early age, you may be denied a job or insurance. Prenatal diagnosis of a disease for which no cure exists — such as sickle cell anemia — raises the question of whether the child should be mercifully aborted or allowed to live what could be a productive, though short, life.

Geneticists are predicting that the project will be completed within a decade. That leaves our society with a mere ten years to sort out all the social and ethical implications involved. The prevailing fear of genetics is probably the only possible force that could stop the project's completion. We, as a society, must weigh out the advantages and disadvantages of mapping our entire genome and take an immediate decision with regards to this project's social, ethical, political and economical implications.



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