

## HIV Treatment Methodology proposal using Anti-HIV Nanorobots

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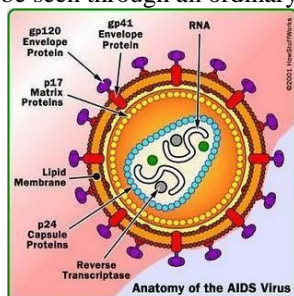
### ABSTRACT

Nanorobots are very small nanodevices that will be used for the purpose of maintaining and protecting the human body against pathogens. It is the application of different technologies primarily interested in the reduction of size. The main aspect of this paper gives the theoretical application of nanodevices in the treatment of AIDS. There is no technology for the treatment of AIDS. Some of the drugs of specific composition are given to the patients depending on the intensity of the disease. The drugs using nowadays are able to increase the lifetime to a few years only. To make the treatment more specific, we use the nanodevices that use nanosensors to sense the AIDS infected WBC's. In this we are using Nano robots to get back the HIV infected WBC's. By doing so constant levels of WBC's are maintained in the blood stream. Thus the AIDS patient is provided with the immune system so that he can defend himself from diseases. In this paper only a theoretical analysis is given and all the information provided are specifically organized by us. In India more than 50 lakhs of people are infected by this dreaded disease and it constitutes 10% of the total infected. We are doing research on this paper and we hope that this theoretical approach can be made practical in the near future, so that the killer disease AIDS could also be made in control on the hands of Human with the emerging new technology like Nanorobot designed to perform cell surgery.

**Keywords:** Anti-HIV Nanorobots, nanodevices, nanosensor,

### 1. INTRODUCTION

The virus responsible for the condition known as AIDS (Acquired Immunodeficiency Syndrome), is named HIV (Human Immunodeficiency Virus). AIDS is the condition whereby the body's specific defense system against all infectious agents no longer functions properly. HIV stands for Human Immunodeficiency Virus. Like all viruses, HIV cannot grow or reproduce on its own. In order to make new copies of itself it must infect the cells of a living organism. Outside of a human cell, HIV exists as roughly spherical particles (sometimes called virions). The surface of each particle is studded with lots of little spikes. An HIV particle is around 100-150 billionths of a meter in diameter. That's about the same as: 0.1 microns, one twentieth of the length of an E. Unlike most bacteria, HIV particles are much too small to be seen through an ordinary microscope.



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### 2. METHODOLOGY OF SPREADING OF AIDS

AIDS by itself is not a killer disease. The cause of AIDS is the HIV virus that is capable of destroying the immune system. Thereby the host system is vulnerable to small diseases which will turn into a fatal one but actually it is not a fatal disease. The HIV virus attack the WBC's by converting them into the HIV. Thereby all the WBC's are converted into HIV, so the immune system will fail. This is the reason for the death of the patient.

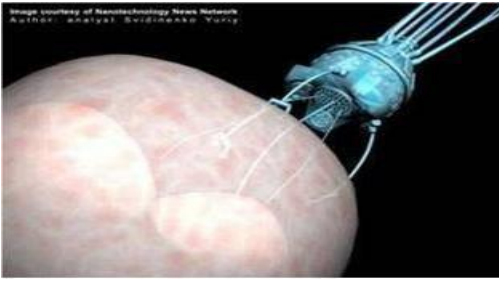
### 3. LATEST DRUGS AGAINST HIV

Zidovudine is the latest known drug that is used for treatment of aids. This drug has an affinity to the HIV genome (RNA molecule) and they binds to it before reverse transcriptase starts working and as a result DNA cannot be synthesized. But any time this drug can lose its efficiency.

### 4. NANOROBOTS PERFORMING OPERATION ON BLOOD CELLS

Zidovudine can be used to resist the HIV but the virus cannot be destroyed. Destruction of viral genome is possible by using nanorobots. This type of nanorobots will consists of a nanobiosensor developed by nanoelectronics engineers, a data converter, and a container containing high concentration (say 20 u/microlitre) of DNase and RNase enzyme.

The idea is to convert the AIDS affected WBC's back into the ORIGINAL FORM of the WBC by using a Nanorobot, thereby the patient is made to have a constant amount of immune system. Nanorobot performs the inverse process of the HIV.



## 5. REASON FOR USING NANOROBOTS

Most animal cells are 10,000 to 20,000 nanometers in diameter. This means that nanoscale devices (having at least one dimension less than 100 nanometers) can enter cells and the organelles inside them to interact with DNA and proteins. Nanotechnology could make it possible to run many diagnostic tests simultaneously as well as with more sensitivity. Tools developed through nanotechnology may be able to detect disease in a very small amount of cells or tissue. In general, nanotechnology may offer a faster and more efficient means for us to do much of what we do now.

## 6. WORKING

A navigational network may be installed in the body, with station keeping navigational elements providing high positional accuracy to all passing nanorobots that interrogate them, wanting to know their location. Physical positions can be reported continuously using an in vivo communications Network.

## 7. COMPONENTS OF NANO ROBOTS

### 7.1 DNA SENSOR:

The DNA sensor is an cantilever type. In one arm the actual sample is placed and in the second arm the sample from the WBC is placed. Even if the samples differ by a single base, it can be identified. Carbon nanotube network field-effect transistors (NTNFETs) that function as selective detectors of DNA immobilization and hybridization.

### 7.2 POWER SYSTEM:

The nanorobot uses the glucose molecules present in the human body as the power source. The conversion of this glucose molecule into the energy is accomplished by the energy converter, which is an important part of the Nanorobots.

## 8. Challenges Faced By Nanorobots:

While designing nanorobots in nanoscale dimensions there should be a better understanding of how matter behaves on this small scale. Matter behaves differently on the nanoscale than it does at larger levels. So the behavior of the nanorobots must be taken care so that they do not affect us both inside and outside the body.

## 9.1 STRUCTURE

The nanorobot's structure will have two spaces that are

**1. Interior:** It will be a closed, vacuum environment into which liquids from the outside cannot normally enter unless It is needed for chemical analysis.

**2.Exterior:** It will be subjected to various chemical liquids in our bodies.

## 9.2 Requirements Of The Nanorobot

1. It should be very small so that the blood capillary flow is not affected.

2. It should not be affected by the WBC.

3. It should be capable of sensing the HIV infected WBC only and its action is restricted to the infected WBC only.

4. It should make its operations in the RNA to convert back to the original DNA of the WBC by suitably changing the bases like the adenine, guanine.

5. It should convert the infected WBC into the original WBC in a very faster manner.

6. It should be made of cheaper rates, so that the patient can afford it easily.

## 10. ADVANTAGES

- More than million people in this world are affected by this dreaded disease. Currently there is no permanent vaccine or medicine is available to cure the disease. The currently available drugs can increase the patient's life to a few years only, so the invention of this nanorobot will make the patients to get rid of the disease.

- As the nanorobot do not generate any harmful activities there is no side effect. It operates at specific site only

## 11. DISADVANTAGES

- The nanorobot should be very accurate, otherwise harmful effects may occur.

- The initial design cost is very high. 3. The design of this nanorobot is a very complicated one.

## 12. CONCLUSION

The paper is just a theoretical justification. But the recent advancement in the field of nanotechnology gives the hope of the effective use of this technology in medical field. This paper starts by giving an introduction to nanorobots and its importance as recognized by various other technocrats. This is the beginning of nano era and we could expect further improvements such as a medicine to AIDS using nanotechnology.

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