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# NANO-RESPIROCYTES

## A FUTURISTIC AND CUTTING-EDGE TOOL FOR THE MEDICAL SCIENCE

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**N**ANOTECHNOLOGY involves developing, manufacturing, and using materials and systems with nanoscale and advanced properties; it has potential applications in medicine, electronics, energy, and materials science. The medical science sector uses a multidisciplinary approach for timely disease detection and treatment. Nanotechnology is the advanced engineering field providing multiple platforms in the healthcare sector to eradicate incurable and fatal diseases. Respirocytes are an example of modern nanodevices bringing together researchers working to detect numerous markers associated with diseases and their treatment without wasting more time, which usually occurs using conventional tools and techniques.

The nanomachine that behaves like a red blood cell is called a respirocyte. As a potential carrier of oxygen and carbon dioxide gases in the bloodstream, it can replace natural red blood cells. The respirocytes are spherical with a

diameter of about 1  $\mu\text{m}$ . Robert A Freitas originally proposed the concept of respirocytes. Respirocytes act and perform like mechanical red blood cells. This artificial nanodevice can function even at 1000 atmospheric pressure with active blood pumping. Compared to natural red blood cells, respirocytes can oxygenate living organs 236 times more per unit volume. Nano respirocytes, also known as medical nanorobots, could be used to enhance or replace the function of human red blood cells. They are designed to circulate in the bloodstream, carrying oxygen and carbon dioxide to and from tissues. They may provide medical benefits such as removing toxins or repairing damaged tissue. However, it is still in the early stages of research investigation.

Nanorespirocytes are significant because they can treat illnesses like anaemia, ischemia, and carbon monoxide poisoning. By providing a more efficient and manageable