#InspiredByLife to

Create immunotherapy treatments for cancer

Over millennia, living organisms and biological systems in nature and the human body have developed a resourceful toolbox of bio-chemical capabilities, cellular and biomolecular processes and genetic resources. Inspired by a deeper understanding of these tools, life sciences researchers have studied nature to create new biotech solutions, in sectors including healthcare, agriculture and industry that help people and the planet.

Today modern biotechnology provides breakthrough therapeutic treatments and biofortified nutrition that save lives and improve wellbeing. It enables new technologies that support a circular bio-economy and more sustainable agriculture that reduces the impact of human activity on our climate and ecosystems. It has inspired the development of new cutting-edge industrial manufacturing processes that are safer, cleaner and more efficient.

Immunotherapy treatments help patients fight cancer

Biotechnology helps us to better understand and utilise the systems of the human body to deliver new treatments and diagnostic tools that save lives.
Immunotherapy treatment is a powerful weapon against cancer; a type of biological therapy or "living drug" it helps a patient's immune system to fight cancer.

Learning from living organisms and the human biological system

As part of its normal function, the immune system identifies and attacks abnormal cells and, therefore, often prevents or helps halt the growth of many cancers. But, because cancer cells are the body's own mutated cells, they are not always recognised by the immune system as invaders. Cancer cells also have multiple ways to evade, shut down or overpower an immune attack.

Immunotherapy – a living drug - is a way of treating cancer that uses the body's own abilities to identify and kill cancer cells. Using the latest scientific methods to mimic what biology already does so well. Immunotherapy treatments may be used to attack cancer cells directly, to stimulate the immune system to react to the disease, or to prevent a repetition. Immunotherapy can also work to boost the body's natural immunity to make it easier for the immune system to destroy cancer cells and to prevent cancer from spreading to other parts of the body.

Immunotherapies save lives and improve people's health and wellbeing

Various forms of immunotherapy are being used to treat several different types of cancer, including leukaemia,

lymphoma, breast cancer, prostate cancer, lung cancer, bladder cancer, and melanoma. Immunotherapy is being studied in clinical trials for almost all other types of cancer. Immunotherapy consists of a treatments like:

Immune checkpoint inhibitors: drugs that block immune checkpoints. These checkpoints are a normal part of the immune system and keep immune responses from being too strong. By blocking them, these drugs allow immune cells to better respond to cancer.

T-cell transfer therapy is a treatment that boosts the natural ability of patients' T cells to fight cancer. In this treatment, immune cells are taken from a tumour. Those that are most active against cancer are selected or changed in the lab to better attack cancer cells, grown in large batches, and injected back into the patient's body.

Monoclonal antibodies, which are immune system proteins created in the lab that are designed to bind to specific targets on cancer cells. Some monoclonal antibodies mark cancer cells so that they will be better seen and destroyed by the immune system.

Treatment vaccines, which work against cancer by boosting a patient's immune system's response to cancer cells.

Immune system modulators, which enhance the body's immune response against cancer. Some of these agents affect specific parts of the immune system, whereas others affect the immune system in a more general way.

These treatments can save patients' lives where other, traditional forms of treatment such as chemotherapy or radiotherapy are no longer working.

Did you know?

- According to a recent report, there is now a 72 percent likelihood that new treatments for cancer or rare diseases will be developed by an emerging biopharma company?
- EuropaBio's healthcare members currently spend €62bn per year on R&D (16 percent of their revenue), creating life-enhancing and extending therapies for the EU's 30 million sufferers of rare diseases, for whom 160 drugs have already been approved in the EU?
- Biotechnology will be key to delivering on the Commission's foreseen mission on cancer?

The bio-scientists and researchers inspired by life to create immunotherapy cancer treatments for people

Immunotherapy has a long history of use against cancer: in the 1890's bacteria was injected into a tumour in an attempt to encourage a response by the immune system against the cancer.