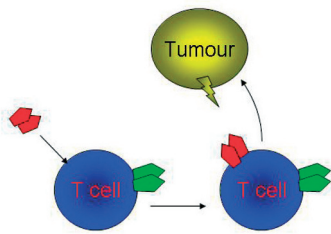


The ATTACK Project

Boosting the immune system to ATTACK cancer cells.



The ATTACK Project

Each year in the EU nearly two million people are diagnosed with cancer and there are over one million deaths from the disease. Improved treatments are clearly needed and harnessing the potential power of the immune system is one important new approach to treatment. The **ATTACK** project focuses on developing genetically engineered T cells to target cancer. Whilst the project addresses the scientific basis behind this technology it has clear clinical endpoints in sight for the future testing.

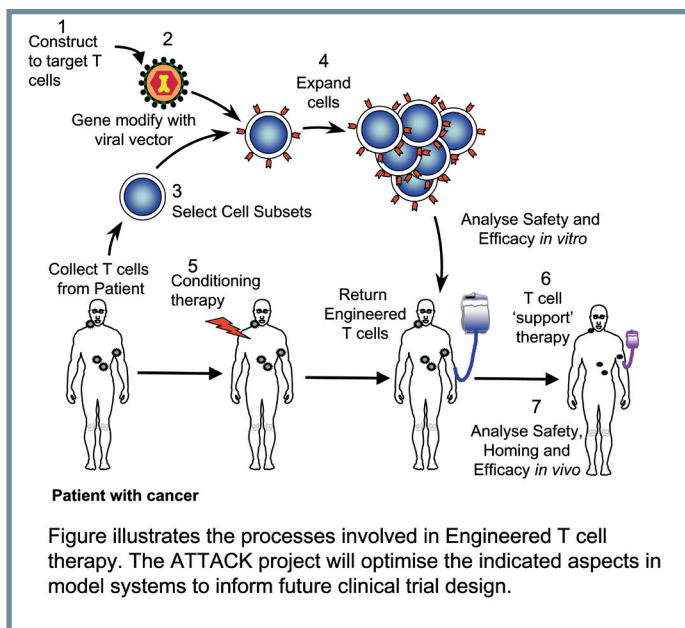
Cancer is an increasing problem within the EU and as it is predominantly a disease of old age this will continue to increase as the population ages. Despite significant progress in the fields of early diagnosis and standard treatments including radiotherapy and chemotherapy the outlook for most metastatic cancers remains bleak. In view of this, novel treatment approaches are being actively investigated. Immunotherapy is one of these and uses of the body's own natural defence mechanisms to attack cancers. T-cells are a key part of the immune defence machinery which primarily protect against viral infections. They can target cancer but when the cancer spreads they have been overwhelmed and are no longer effective. Recent treatments

specificity for cancer cells. Once genetically modified such "engineered" T cells can attach to and cause destruction of cancer cells.

The EU funded **ATTACK** project (**A**doptive engineered **T** cell **T**argeting to **A**ctivate **C**ancer **K**illing) (www.attack-cancer.org) aims to optimise the development of genetically engineered T cells to target cancer. The project is coordinated by Professor Robert Hawkins at the University of Manchester UK and focuses upon improving engineered T cell function and performing pre-clinical studies which will underpin future clinical trial proposals. Critical aspects of the project include the investigation of how these engineered T cells can target tumour in a realistic model situation and state of the art imaging studies will enable the scientists to follow the engineered T cells to the tumour in real time experiments.

Importantly, the development and testing of new products from the commercial partners of **ATTACK** will define unique protocols in the laboratory for the production, selection and expansion of engineered T cells. Model systems available will be used to determine whether the use of other treatments including standard chemotherapy can act in combination with the engineered T cells to improve tumour killing. The final aspect of the **ATTACK** project is to confirm the safety of this approach for current and future applications of T cell therapy in cancer patients. "The ultimate aim is to develop a process whereby T-cells are taken from the blood of a patient, genetically modified to enable them to target tumours, multiplied in the laboratory and injected in large numbers back into the patient and cause tumour regression" explains Professor Hawkins.

The consortium comprises 14 partners in Europe and 2 partners in Israel with multidisciplinary backgrounds. Some of the **ATTACK** partners have already cooperated in a previous European programme called **CHIMERIC-EURO CELL** coordinated by Professor Zelig Eshhar in Israel and have demonstrated key aspects of these novel immunotherapy approaches. The **ATTACK** project began in November 2005 the next five years will see the development of improved techniques and scientific understanding and lead to future trials and hopefully improved treatment for cancer.



been developed to expand T cells outside the body and then return them to cancer patients – this is known as adoptive therapy. There have been some major successes with such treatments particularly in melanoma (skin cancer) and some cancers of blood cells (lymphomas). However, it is also clear that other cancers can resist the immune system by a range of mechanisms which effectively protects the cancer from T cell assault. A greater understanding of how T cells work coupled with advances in gene therapy techniques have supported the idea of "engineered T cells" thereby facilitating the T cell attack against cancer. The basic concept involves engineering T cells to possess a tumour targeting receptor on the outside surface of the cell. The receptors used vary in format but all are designed to endow the engineered T cell with

Project web-site: www.attack-cancer.org

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