Discovery of new vaccine approach for treatment of cancer

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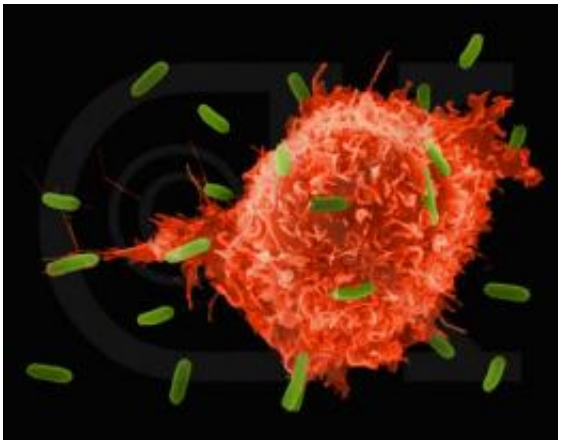

Killer T cells attacking tumor.

(Medical Xpress) -- Scientists in Trinity College Dublin, Ireland, have developed a new vaccine to treat cancer at the pre-clinical level. The research team led by Professor Kingston Mills, Professor of Experimental Immunology at Trinity College Dublin discovered a new approach for treating the disease based on manipulating the immune response to malignant tumors. The discovery has been patented and there are plans to develop the vaccine for clinical use for cancer patients.

The first cancer vaccine Sipuleucel-T (Provenge) was licensed last year for use in prostate cancer patients unresponsive to hormone treatment. Unfortunately, this cell based vaccine only improves patient survival by

an average of 4.1 months. Vaccines for infectious diseases are highly effective at generating immune responses that prevent infection with bacteria or viruses. The immune system can also protect us against tumours and in theory a vaccine approach should be effective against cancer. In practice this has proven very difficult because unlike infectious diseases, tumors are derived from normal human cells, and not made up of foreign substances or antigens capable of triggering an immune response. The tumors instead produce molecules that suppress the efficacy of the immune system. They generate regulatory cells that inhibit the immune response that could potentially clear the tumors.

Professor Mills' group has developed a novel vaccine and immunotherapeutic approach that can overcome these obstacles and has the potential to significantly improve on existing technologies.

The therapy is based on a combination of molecules that manipulates the immune response to curb the regulatory arm while enhancing the protective arm, allowing the induction of specialist white blood cell called killer T cells to target and eliminate the tumours. The new vaccine approach was found to be highly effective at pre-clinical stage in treating a range of cancers in murine models.

The findings are published this month online in *Cancer Research*, the leading journal of The American Association of Cancer Research. The research was performed by a Senior Postdoctoral Fellow Dr. Neil Marshall, at Trinity College Dublin, with the help of two PhD students, Anna-Maria Corcoran and Karen Galvin and was funded by a Science Foundation Ireland Principal Investigator award to Professor Mills. The discoveries have been patent protected and Professor Mills has plans to translate them to the clinic via a TCD Campus Company, TriMod Therapeutics that he co-founded with Dr. Jeremy Skillington.

More information: For a copy of the *Cancer Research* article click on:

cancerres.aacrjournals.org/con … CAN-11-0307.abstract