

## **ABSTRACT (SCIENTIFIC)**

In this proposal I will conduct a clinical protocol of IL-12 gene therapy of cancer including evaluation of gene delivery and immunologic response. Interleukin-12 (IL-12) is a heterodimeric cytokine which has potent anti-tumor effect suppressing tumor growth when administered systemically or locally using fibroblasts genetically modified to produce IL-12. Induction of long term tumor immunity was variable in a systemic administration model but significant immune protection is observed when irradiated tumor cells are administered mixed with fibroblasts genetically engineered to secrete IL-12 . Furthermore, injection of fibroblasts infected with a retroviral vector expressing IL-12 can eradicate the well established day 7 tumors. This form of IL-12 administration, when appropriately modified, appears suitable for a clinical trial. Thus, we propose to perform phase II clinical trials of IL-12 cancer gene therapy. This clinical trial will include patients with disseminated cancers (head and neck cancer, and melanoma) who have accessible subcutaneous tumor(s). The efficacy and immunomodulatory effect of this treatment will be examined on both the local tumor or uninjected tumors at other sites.