

PERSONALIZED CANCER CELLULAR IMMUNOTHERAPIES AND TECHNOLOGIES: VISION 2020

Conventional cancer treatments like Surgery, Radiotherapy and Chemotherapy have shown a plateau in overall survival rates of the cancer patients. Scientific breakthrough in identifying the molecular mechanisms of carcinogenesis, immune surveillance through both immune cells/ cytokines, and blockers of T cells function like CTLA4 and PD1, has added Cellular and Immunotherapies into the armamentarium of Cancer treatment. Recent advances in the understanding of molecular and cellular mechanisms of cancer have led to development of Personalised-Prediction, Prevention and Cure of Cancer.

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SERVICING NO-OPTION MEDICAL CONDITIONS

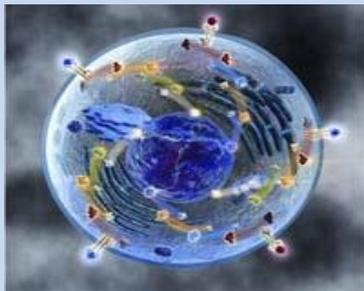


List of Personalised Services and Solutions offered by DiponEd's -

Merisis Therapeutics Cancer Program

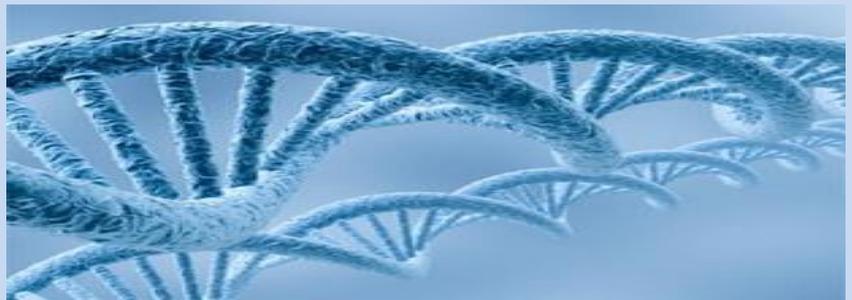
CAN-DETECT™: Genetic Predisposition Cancer Screening

Personal Genomics is the next major medical paradigm, allowing doctors to use genetic information to choose the most ideal drugs/treatment to help curing patients. We will help you discover if you are genetically predisposed to one or several cancers:



- ❖ Melanoma
- ❖ Meningioma
- ❖ Ovarian Cancer
- ❖ Pancreatic Cancer
- ❖ Prostate Cancer
- ❖ Renal Cell Carcinoma
- ❖ Thyroid Cancer
- ❖ Neuroblastoma
- ❖ Testicular Cancer

- ❖ Basal cell carcinoma
- ❖ Bladder Cancer
- ❖ Breast Cancer
- ❖ Chronic Lymphocytic
- ❖ Leukemia
- ❖ Colorectal Cancer
- ❖ Follicular Lymphoma
- ❖ Hodgkin's Lymphoma
- ❖ Lung Cancer



NK TEST: NK cell Functional Activation Profiling

This Flow cytometry based test is intended to investigate altered NK function found in various disorders and to evaluate the effects of drugs on NK activity. A depression of NK cell activity is usually observed in patients with advanced cancer and with metastatic disease. Depression of NK cell activity is observed in patients with preleukemia, acute or chronic leukemia. NK cell cytotoxic activity is of prognostic value for the probability of developing metastasis in patients with primary tumors. NK cell activity can now be proven in an objective and reproducible manner with this test.

Hematopoietic Stem Cell (HSCs) based services

Design and training for low cost BMT units, Bone Marrow Stem Cell (BM-HSC) Transplantations, PB MNCs, T cell depletions, Haploidentical Transplants, MUD, Cord blood HSCs, Bone Marrow preservation banking, HLA matching and search at BM registries.

Donor Lymphocyte Infusions: Graft versus malignancy

Giving chemotherapy/ total-body irradiation before a donor peripheral blood stem cell transplant, helps stop the growth of cancer and abnormal cells and helps stop the patient's immune system from rejecting the donor's stem cells. When stem cells from a donor are infused into the patient they may help the patient's bone marrow make stem cells, red blood cells, white blood cells, and platelets. Sometimes the transplanted cells from a donor can make an immune response against the body's normal cells. Removing/ depleting the T cells from the donor cells before transplant may stop this from happening. Giving an infusion of the donor's T cells (donor lymphocyte infusion) after the transplant may help destroy any remaining cancer cells (graft-versus-tumor effect).

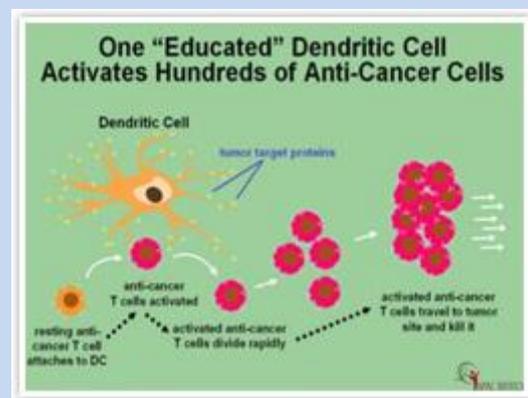


Flow Cytometry Cellular Markers: LEUKEMIA / LYMPHOMA PANEL

Merisys provides -Immunophenotyping based on CD45 gating. Additional markers include antibodies to help identify the cell lineage of myeloid cells, erythroid precursors, megakaryocytic precursors, as well as T-cell markers and light chain expression on B cells.

Dendritic Cell Therapies

Dendritic cells (DC) are one of the component of the immune system - where it plays through its antigen presentation, with appropriate molecules on the surface for destruction by the immune system. These cells were described by Ralph Steinman few decades ago. The functions of Dendritic cells (DC) - the functions of Dendritic cell in the human body is through 3 mechanisms involving antigen presentation. The



foremost is the antigen presentation and activation of T cells, maintaining immune tolerance and the third is the maintaining the immune memory in tandem with B cells. The mature dendritic cells are exploited for its use in cancer immunotherapy. In vitro these dendritic cells can be cultured with both CD34+ and/or CD14 monocytes rich peripheral blood cells, in the presence of various cytokines GM-CSF, IL-4, TNF α . The advantage of using peripheral blood monocytes is that, large volumes of DC can be generated in the presence of GM-CSF & IL-4. It has also been expanded by loading tumor lysates, tumor antigen derived peptides, MHC class I restricted peptides or whole protein have all shown to generate anti-cancer immune responses inducing complete tumor regression.

Adoptive T cell therapies

Adoptive T cell therapy involves the isolation and ex vivo expansion of tumor specific T cells to achieve greater number of T cells than what could be obtained by vaccination alone. The tumor specific T cells are then infused into patients with cancer in an attempt to give their immune system the ability to overwhelm remaining tumor via T cells which can attack and kill cancer. There are many forms of adoptive T cell therapy being used for cancer treatment; culturing tumor infiltrating lymphocytes or TIL, isolating and expanding one particular T cell or clone, and even using T cells that have been engineered to potently recognize and attack tumors.



Activation of PB-MNCs

Merisis has found out molecules which work at the nano and picogram quantities to activate the Peripheral Blood Mononuclear Cells (PB-MNCs). Some of these molecules are classified as biologicals, new age homeopathic drugs, and also some as -traditional herbal medicines. *In vitro* exposure of the patients PB-MNCs to these molecules followed by their administration IV has shown reduction in tumor sizes and cured 1st relapse patients- disease free.



Immunotherapies with Biologicals

Merisis has been able to develop some very effective treatment protocols using immunomodulatory cytokines, growth factors, immunoglobulins, small molecules, vitamine binding proteins and homeopathic approaches. These molecules and preparations are known to modulate the immune system, and have shown encouraging results in various end stage cancer patients including renal cell carcinomas.

Genetic and Cellular Chemo sensistivity prediction: We use a personalised approach to predict best prescription options for chemo therapies to our partner doctors. This is done by genetic analyses of the tumor biopsy and also by high throughput screening of anticancer drugs against the patient's cancer cells.

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