A few papers (projects, products) that all come under the central, focal programme of:

Synthetic bio-engineering for realistic, 2015-2020 applications in areas of:

- **medicine (mainly: cancer, infectious diseases, pandemics)**
- **energy (mainly: fuel generation/production) &**
- **environment (mainly: pollution abatement, agricultural enhancement, CBRNE-defense/cleanup)**

In simple words, this has to do with some very important and popular things, like better solutions and treatments for certain types, if not the general types, of:

- **cancer**
- **degenerative and autoimmune diseases**
- **Alzheimer's and other forms of degenerative dementia**
- **major infectious diseases, especially viral forms of influenza and related types (e.g. SARS) and their potential for planet-wide pandemics**
- **clean, efficient, feasible, rational development of synfuels as alternatives to petroleum**
- **cleaning up our environment, both the open sea and land and especially the areas used for agriculture and human habitation**

On the very broad scale, this is the "21st century Manhattan Project" that we need as a nation and as a society, in order to address not only our economic situation and needs right now (2011+) but our long-term Survival.

On the "seed"scale this is what is the confluence and integration of everything that has been done through Silicon Dominion, Tetrad Technologies, Tetradyn, and the Institute for Innovative Study.

Having deep logical affinity with the much-better-known Human Genome Project and the Human Epigenome Project, and for simplicity and maybe because I as a fan of "Star Trek" years ago, I call this the *"epiGENESIS Project."*

EXAMPLES and SAMPLES**:**

[1] Synthetic viral-like agents for cell-specific biomolecular delivery.
(brief description): A synthetic virus, but not a replicative type (e.g., Venter, Denison, others) using C60 or one of several proteins as the capsid, with the replacement of the DNA or RNA by the chemical agent designed to perform its specified action. In most cases this action is to negate telomerase activity or to otherwise spur apoptosis (cell death) in the target cell, affecting only that cell.

The viral-like agent works by entering only the cell that has a specific biomarker on its surface, one that acts as a flag indicating that this is a cell to be targeted for removal. These are "one-off" synthetic virus-like nanostructures, the viral part being really only that this entity should be easily absorbed like a bio-virus into the cytoplasm of a cell and specifically on the basis of certain distinct and unique biomarkers that the target cell produces. Once inside, then the task is for the agent structure to either break down partially or otherwise allow what is stored and carried in its intereior - instead of DNA or RNA - to engage doing its work to destroy that particular cell.

There is no reproduction of the agent and the aim is that no cells other than the target type will be affected or will ingest the agent.

[2] The inverse use of pathological agents. Employment of viruses, bacteria and prions to serve an organism by aiding its natural immune system against hostile viruses, bacteria, parasites, prions, and its own defective cells, including cancer cells.
(brief description): Along the lines of [1] above but with a focus upon two types of action - either the destruction of target entities (cancer cells, bacteria, viruses, parasites) by actions that are internally toxic to those entities, or else by epigenetic action that triggers the activation or deactivation of particular genes in the target cells, through the employment of directed transposons ("jumper genes") from noncoding DNA segments into specific gene targets within the cell.

[3] An object-oriented computational model for the design of synthetic microorganisms for use in the enhancement or reduction of gene activity within target tissues and specific cell types.
(brief description): The objective is to build a functional set of algorithms that can be employed to optimize the manner of recombinant DNA design and construction for the purpose of introducing such nucleic acid into cells that are affected or prone to being affected by either external pathogens or internal transformations that, as in the case of cancer, pose threats to the life of the host organism. The focus is upon transposons and the role of the previously-thought "non-coding" DNA material.

[4] Synthetic viral functions for intracellular epigenetic self-healing processes including genetic recombination and cybernetic manipulation.
(brief description): In any cellular process in response to an external pathogen, biological or otherwise (e.g., radiation, heavy metals, and other toxins and the inbalance out of equilibrium of otherwise non-toxic substances or biological agents), the cellular response often involves epigenetic transformations of the genetic material through methylation that deactivates or activates specific genes or through transposon changes to the DNA sequence in manners that also effect changes in genetic function.

The objective is to perform such functions in a directed and controlled manner such that cells in vivo can be modified through the application of synthetic viral structures that will interact with the target cells and not with other host tissues. This approach offers a vast and open-ended approach to a new and more holistic and less invasive form of medicine, one that does not depend upon surgery or radiation or chemo/pharmaceutical therapy and which is both less disruptive to the host organism as a whole system and also more thorough and comprensive in addressing the presence of external biopathogens or internal cancer cells. This is an approach that can be applied to infectious diseases as well as a wide variety, if not all types, of cancers. It holds promise also for therapy for additional diseases as well of an autoimmune and more broadly of a genetic origin.

