FractoGene Design-Tool for Protein-Based Self-Assembling Nanostructures, Materials and Applications

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The most important nanostructures today are biological materials (proteins). Their “natural applications” result in the structure and function of living organisms, and e.g. enable homo sapiens with intelligence, “grown” by DNA-determined biological neural networks. (references: http://usa-siliconvalley.com/inst/pellionisz).

In the second 50 years after the discovery of the structure of DNA, protein-based nanostructures will dominate, and in the opinion of leading VC firms in Silicon Valley and Worldwide, will ultimately fuse BioTech, NanoTech and InfoTech. The key to manufacturing “self-assembling” (protein based) nanodevices is, however, a mathematically exact design-utility how DNA information defines their repetitious evolution.

The first 50 years attention focused on “genes” where DNA directly defines genesis of 20 amino acids that form an immense variety of protein molecules. Some of these proteins primarily define basic electrochemical properties of (neural) membranes, e.g. form voltage-sensitive (“binary switch”) Na, K, and Ca channels, or create photovoltaic molecular machines. Other (muscular) proteins contract with force under influence of an electrochemical impulse. Once we patented (FractoGene) the blueprint for “designer proteins” in joint venture we build them; materials (from monoclonal antibodies, nanofibers to semiconductor and memory proteins).

It is evident both to leading scientists (Prof. C. Anthony Hunt, UCSF, HelixoMetry BoA) and “designer protein” manufacturing companies (Joint Venture Partmer BioChemiCon.org) that exons provide insufficient information for building sophisticated proteins. (Consistent with the fact that removal of introns is lethal.) Exons (about 1% of the DNA in human) create the “bricks”. The rest of human DNA, 98.7% self-similar repetition of “non-(nucleic acid)-coding” sequences define the “incremental design” that the FractoGene patent application put to use with fractal sets of DNA.