Origin of the genetic code

TGD leads to consider the question the origin of genetic code and leads to some proposals.

1. Molecular level recognition mechanism as building brick of primitive immune system:

   (a) Molecules have U-shaped flux tube loops with fluxes going in opposite directions. This makes possible super-conductivity.

   (b) The flux loops can reconnect and this leads to the formation of 2 parallel flux tubes connecting two systems. Stable reconnection re- quires that magnetic field strengths are same at the flux tubes. Same cyclotron frequencies and resonant interaction. This would define mo- lecular mechanism of recognition and sensing presence of invader molecules.

   (c) Natural to expect that the systems with magnetic body arec onstantly varying the thicknesses of the flux tubes and in order to reconnect with the magnetic body of possible invader.

   (d) How system could stabilize itself so that it would receive signals only from one kind of molecule specified by its cyclotron frequency spectrum. The flux tube thicknesses should be stabilized.

   (e) Could dark proton sequences allow to stabilize the flux tube thickness. Dark proton sequences have also interpretation as dark DNA sequences. Could they code some information about the invader molecule, say about the knotting and braiding of its magnetic body? The model for living system as topological quantum computer utilizing 2-braiding for string world sheets at 4-D space-time leads to the idea that 3-D coordinate grids formed by flux tubes are central for TQC: each node of grid is characterized by 6 bits telling about the topology of the node concerning 2-braiding. Could the 6 bits of dark DNA code for the local topology of the invader molecule and an the flux tube complex mimicking it?

2. The naive idea is that the flux tubes assignable to the exclusion zone like regions directly mimic the magnetic body of the invader molecule. This would conform with the original idea about mimicry of the magnetic body both at the level cyclotron frequencies and topology. It seems that dark counterparts of proteins could do this whereas dark DNA need not do so but could provide only symbolic representation of the braiding.

   (a) In the proposed vision the biochemical realization of genetic code could be seen as a kind of emulation of the more fundamental realization in terms of dark proton sequences at magnetic flux tubes of the magnetic body assignable to exclusion zone like region of water defining primitive cell like structure.

   (b) One could consider the possibility that ordinary double DNA strands have formed around dark double DNA strands for which strands flux tubes are parallel but carry opposite fluxes to stabilize Cooper pairs with protons at different flux tubes.

   (c) The ordinary braiding of DNA strands look rather uninteresting and this would suggest that same is true for dark DNA. Dark DNAs would however code for dark analogs of proteins and protein folding as a dynamical process could represent the 2-braiding serving as a representation of that associated with the invader molecules magnetic body. In accordance with ZEO, 4-D geometric patterns would be fundamental. One might say that static structures become 4-D.

   (d) One can quite well imagine that dark realization of amino-acids and proteins came first and only after that dark DNA representing folding patterns symbolically emerged. The dark DNA sequence was fixed by the condition that the dark protein folds in such a manner that it represents the braiding of the flux tubes of the invader molecule.

   (e) Note that also dark RNA as a direct geometric representation of the 2-braiding could be considered. For this option the representation in terms of protein folding would have emerged at the last step.

3. This picture constrains prebiotic evolution to high degree since the evolutionary steps at the level of biomolecules would directly reflect those at the level of dark DNA.

(a) The geometric representation of 2-braiding pattern assignable to the magnetic body of invader molecule emerged first. This was outcome of trials by survival of the fittest. Either dark RNA strands or dark amino-acids realized the mimicry. Good mimicry allowed dark proteins or RNAs to attach to the invader molecule after h_{eff} reducing phase transition bringing them close to each other.

(b) The next step was emergence of dark DNA allowing symbolic represen- tation of the 2-braiding of dark RNA or aminocids. This led to emergence of DNA transcription and possibly also translation.

(c) Did dark (and thus also ordinary) aminocids emerge first and did DNA and RNA as symbolic representations of 2-braiding emerge after that? Common sense suggests this.

4. This leads to evolution of prebiotic immune system.

(a) The immune reaction involved recognition by reconnection and resonant interaction by dark cyclotron photons in visible and UV range. Clearly also the energies of photons having chemical origin are detectable and one expect that recognition also by biochemical signature became possible and also biological control by resonance mechanism.

(b) Second step was the reduction of Planck constant for the flux tube forcing the recognizing primordial life form analog of protein near to the invader and perhaps led to elimination of the invader. Elimination might have already required chemical variant of protein.

(c) With the advent of the chemical realization the dark proteins and their chemical counterparts obtains rich repertoire of functions such as catalysis, response to stimuli, and transport. All these functions however relied on same basic steps.