By its large orbital radius dark valence electron (dark in TGD sense, $h_{eff}=n\times h$) sees atomic nucleus and other electrons, which are ordinary, effectively as an object of charge $Z_{eff}=1$. The spectrum of bound state energies and transition energies is scaled down by the factor $(h/h_{eff})^2$. This irrespective of what the atom is. The only condition is that there is single unpaired valence electron guaranteed if Z for the atom is odd. For even Z odd number of valence electrons must be associated with valence bonds: this would be the case for OH radical for instance.

The dynamics of dark valence electrons is universal with universal transition energy spectrum. One obtains a fractal hierarchy of dynamics labelled by the value of $(h/h_{eff})^2$, where $h_{eff}=n\times h_0$, h_0 the minimal value of Planck constant, not necessary equal to h so that one has $h=n_0\times h_0$. The quantum critical dynamics characterizing living matter in TGD Universe is indeed universal.

The dark photon communications in living matter could utilize these universal energy spectra besides cyclotron energy spectrum and Larmor spectrum assignable to dark particles at flux tubes and the spectrum of generalized Josephson frequencies assignable to cell membrane.

In particular, vision and even other sensory modalities could rely on the transitions induced by the absorption of dark valence electron. In TGD also other sensory percepts are communicated from sensory receptors to the sensory areas of cortex and also here same universal transitions of dark valence electrons might be involved. This hypothesis when combined with the earlier ideas about color qualia leads to a highly predictive and testable model for the perception of colors. In particular the condition $h=n_0\times h_0$, $n_0>1$, is necessary for the model to work. $n_0=4$ and $n_0=6$ look the most realistic options. For $n_0=4$ the number of values of $n=8,9,10$ and correspond to the number 3 of color sensitive receptors whereas $n_0=6$ the number of values $n=12,13,14,15$ suggests the existence of a fourth color receptor sensitive to red light.

The statistical aspects of color summation can be understood from TGD inspired theory of consciousness in terms of the hypothesis that self experiences the mental images of sub-self as kind of statistical averages. The identification of quark colors as fundamental color qualia, the entanglement of quarks and antiquarks to form states in one-one correspondence with charged gluons, and the twistor space of CP_2 play key roles in the model of color summation.