Lipids in the origin of intracellular detail and speciation in the Cambrian epoch and the significance of the last double bond of docosahexaenoic acid in cell signalling

PART 1.

Lipid membranes were the driving force for the origin of intracellular compartmentalization which meant specialization of function, so cell specialization and speciation would have followed.

You cannot build membranes that encapsulate mitochondria, the nucleus with its genome, and indeed the cell itself without lipids. The composition of the lipids depends on temperature, pressure, and environmental chemistry so they are variable in response. Neither DNA nor protein varies like that. As membrane lipid variation changes cell function, we propose it was the lipids that governed specialization which led to speciation with the origin of the 32 phyla of the Cambrian epoch.

PART II

The brain is largely lipid. The origin of the brain started with photoreception. Our hypothesis is that the omega 3 docosahexaenoic acid (DHA) which is so rich in the brain and especially the photoreceptor, converts the information of a photon into an electron so the brain can see.

In photoreception, it is known that an incoming photon energizes the 11-cis double-bond, π-electron of retinal (vitamin A derivative). It leaves orbit so the 11-position becomes a single bond. Retinal then re-captures the electron which collapses back but into the trans-position. That causes a shape change that activates rhodopsin and a cascade of events. That is known and accepted.

What is not described is that the recapture of the electron must eject a photon.

The energy of the ejected electron will be 1) a quantized function of the original 2) of greater energy because the TRANS configuration is at a lower energy state than the CIS. However, that will be a fixed energy component which means that the emerging photon is carrying information on the original photon but at a higher energy state i.e., the visible into the UV. DHA does not absorb in the visible range but does so in the *near and full UV range.*

When DHA absorbs the photon that energizes a π-electron in a quantized manner. So it carries the original information, Then the classical hyperpolarization does the rest whipping the electron out of orbit, depolarizing the membrane and sending it off.

How then does the brain see the intricate detail seen by the bombardment of the retina with photons? Single-electron detectors in the brain then re-assemble what the retina sees! Single-electron detectors sound like a wild hypothesis, however in a news flash at the time of proofreading Fermi Lab and others announced the teleportation of photons of different wavelengths being received by single-photon detectors 41 KM distant. So surely the brain can do it with electrons with different energies which again means different wavelengths hence the wonderful detail seen by the retina. The retina sees with photons and the brain with electrons – the conversion achieved by cooperation of retinal and the surrounding sea of DHA.

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