Origin of Life’s Chirality

Michael T. Deans

Abstract — In 1967, I discovered the phase transition at 72K in ice XIc accommodating water molecules’ irregular tetrahedral shape. It restores the prevailing confidence in science before c was measured. Forming in polar pools of N₂ during a primordial ice-age, fluctuating temperatures released latent energy as λ ~ 4μ laser light. Multiple reflection polarized it and deoxynucleotides on tropical water surfaces were polymerized, creating chiral DNA, uniquely explaining life’s origin.

Transport DNAs’ sharing tRNA’s H-bond-lined pores concentrated life’s ingredients in coacervates. Replicate tDNAs originated life. DNA’s stability makes it life’s likely precursor.

Differentiation DNAs’ selecting tDNAs control cell diet and tissue specialization. Nine pathways deploying trace elements as carriers control metabolism. Mutant tDNAs and dietary deficits account for morbidity.

Minion’ DNA/oligopeptide complexes optimize chromosome replication. They function as biological clocks, brain chips and nuclear fusion reactors. Minion logic reinterprets 20th century scientific axioms. Resonant cavities couple chemical to mechanical energy efficiently.

Keywords — differentiation DNA; minion; resonance; transport DNA

I. INTRODUCTION

A Ice, ordering force, originated DNA

A recent report of ice XIc [1] corroborated my discovery of its phase change at 72K when confirming Clausius-Clapeyron’s relation for N₂ as a Cambridge undergraduate, Fig. 1. I inadvertently immersed the silica He thermometer bulb, attributing the hysteresis shown when plotting temperature versus pressure to a phase change accommodating water molecules’ irregular tetrahedral shape in ice crystallizing on its surface.

Temperature changes caused ice XIc crystallising in polar pools of liquid N₂ to collapse, emitting latent energy as wavelength λ ~ 4μ [2], laser light, ‘ice light’, Earth’s primordial O₂-free atmosphere enabled their coexistence with the ‘warm tropical waters’ Darwin [3] foresaw. Multiple reflection by cloud and surface ice photo-phosphorylated deoxynucleotides [4], creating a chiral DNA ‘noodle soup’.

B Transport DNAs

DNA’s greater stability than RNA makes it life’s probable precursor. The first bio-active molecules were ‘transport DNAs’, tDNAs, tRNA analogues. They share the H-bond-lined ‘hole’ revealed in an X-ray-diffraction image published in Science, Fig. 2. An ice-light powered ratchet mechanism imported substrates to coacervates [6], replicate tDNAs originated life, uniquely accounting for its chirality.

Haldane’s [7] publication of The Origin of Life challenged creationism. Competing proposals: carbon chemistry, coacervates, RNA world [8], hydrothermal vents [9] and arrival from outer space [10] fail to explain chirality. I present my studies of its consequences.

Fig. 1 a original apparatus, b water molecule, c cubic ice, d allow for 120° angle, e phase transition, f origin of DNA

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Fig 2. a X-ray diffraction image of tRNAPhe from [5], b ice-light powered pump mechanism.

C Calculation

| Parameter | Value |
|-----------|-------|
| Name      | Value |
| Dipole moment | μ = 1.85D |
| Dielectric constant | ε = 3.1 |
| Space dielectric constant | ε₀ = 8.85×10⁻¹² F·m⁻¹ |
| Planck's constant | h = 6.63×10⁻³⁴ m²kg/s |
| Avogadro number | N = 6.02×10²³ |
| Velocity of light | c = 3×10⁸ m/s |

Using parameters in Table 1 and latent energy = 2.23 kJ/mole, making valid predictions, my logic needs review.

D Minions

‘Minion’ signifies mind and subservience. Minions, Fig 3, comprise 189 anti-parallel β-pleated-sheet oligo-peptide hairpin units [11] with alternate neutral/basic A,L,I,V,K,R residues, each holds nine uncoiled DNA base-pairs [12] flat. P forms ~17° bends between units creating 21-unit coils, readily degrading to nucleosome core particles, NCPs, on extraction [13].

Amino-acids A, L, I & V match bases, C, G, A & T, mnemonic A LiVe CiGaReTe, conserving critical sequences. Gramicidin S has dFs, F, analogous to bases. Nine coil minions pack DNA on chromosomes better than NCPs, predict their size and enable error-free replication.

Three H-bond types inter-connect minions: inter-base-pair, across β-sheets and connecting α-amines to phosphates. The latter are proton-ordered and oscillate, enabling emergent functions as biological clocks, brain chips and safe molecular-scale nuclear fusion reactors.

E Biological clocks

Light takes:

\[ \tau = 3 \times 189 \times 7.37 \times 10^{-10} \times 3 \times 10^8 \approx 1.39 \times 10^{-15} \text{ s} \quad (1) \]

where 3 reflects Dekatron™ Geiger counter logic [14], there are 189 base-pairs per coil, 7.37 Å is β-sheet spacing and c = 3×10⁸ to pass thrice around a minion coil.

Formula 63Nτ, N = 1 to 18 calculates periods, the 11th, 13th and 18th coil periods predict day-length, Sunspot cycle period and the age of the universe.

F Brain chips

One H-bond per coil opposed to the rest for electrical neutrality stores a letter of an 18-character word using a 64-letter alphabet. Those in any human cell nucleus could remember the Bible, and Shakespeare’s works.

Table 2 shows each of 18 tracks has a associated qualities. Memory recall involves resonance between minions with similar settings. Nerve fibres act as wave guides, analogous to optic cables, enabling fast global access. Although neural networks explain how L-Dopa prevents Parkinson’s Disease [15] it wrongly presumes data transfer depends on synaptic closure. Minions classify data better than the Dewey decimal system and more efficiently than Google.
G Nuclear fusion

Nested plane combinations, Fig. 4, predict nuclear structures, allotropy, the heaviest nuclide and reinterpret Mendeleev’s periodic table. Oscillating H-bonds, Fig. 2, accelerate protons along tunnels, T, with enough energy:

$$\frac{1}{2} p_m \left( \frac{c}{189} \right)^2 \approx 13 \text{ keV}$$

where $p_m = 1.67 \times 10^{-27} \text{ kg}$ and $c$ light velocity, to perform the C-N cycle.

The Tyger, using polar coordinates $\Theta$ and $\Phi$, $\beta = 63^\circ$, $\tau = 1.39 \text{ fs}$, compensates for minions’ 1 in 63$^9$ wrap-around counting errors. Named after: ‘dare frame thy perfect symmetry’ in Blake’s synonymous poem [16], it describes the apparent path of a light beam: locally Newton’s straight line, its boomerang-like trajectory replaces Einstein’s relativity. That it renders plane surfaces spherical needs topological proof.

Recoiling $^{12}\text{CO}_2$, $^{13}\text{CO}_2$, $^{14}\text{NO}_2$, $^{15}\text{NO}_2$, $^{12}\text{CH}_4$, $^{13}\text{CH}_4$, $^{14}\text{NH}_4$ and $^{15}\text{NH}_4$ emit $\gamma$-rays. DNA diffracts them at source, following Tyger trajectories, they return with $\frac{1}{2}$-lives and frequencies matching those of pulsars [17]. Consistent with cold fusion in a H$_2$O monolayer on Pd crystal surfaces [18]. Nuclear fusion in humans’ $\sim 10^{28}$ minions replenishing H, C, N, O, S and P sustains life. Harnessing the $\gamma$-ray energy tanks of GM bacteria could counter climate change.

H Metabolic pathways

Before complex ribosomes and protein synthesis evolved, dynamic equilibrium maintained biological metabolism. Diseases, parasites, predators and defence against them evolved later. Vaccination [19] and antibiotics [20] have helped. I present insights solving outstanding problems.

| TABLE III: NINE METABOLIC PATHWAYS |
|-----------------------------------|

| TABLE IV: PERIODIC TABLE |
|--------------------------|

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Fig. 4 a nine polyhedra, b carbon-nitrogen cycle, c Tyger

Fig. 3 a minion assembly, b gramicidin S has $\alpha$’s, F, c amino acids match bases, d inter-connecting H-bonds and tunnels, T, e lateral H-bonds oscillate, f coil degrades to NCP, g chromosome packing, h error-free replication
Table 3 lists nine mutually independent metabolic pathways embracing all those depicted in commercial charts. They deploy tDNAs, dDNAs and the trace elements shown green in Mendeleev’s periodic table, Table 4. High voltage tDNA pores stabilize carrier-substrate complexes, making a lock and key fit triggers adenyl cyclase to release ATP’s phosphodiester bond energy, $P_i \rightarrow P_i$.

Differentiation DNAs, dDNAs, select tDNAs, analogous to mRNAs selecting tRNAs for protein synthesis. Nine pathways are described with their associated requirements and pathologies.

1 Motility

Failure to oxidize glutathione S to SO$_3^-$ can cause cramps [21]. Mg$^{2+}$(SO$_3^-$)$_2$, Fig. 5, exchanges Mg$^{2+}$ for Ca$^{2+}$. Mg is cofactor for kinase enzymes releasing ATP’s phosphodiester bond energy. Resonant cavities enable electro-mechanical energy coupling. Sarcomeres contract to form ½-wave cavities for $\lambda$, it’s more efficient than Huxley’s model [22].

Similar resonant cavities in mitochondria and grana facilitate Krebs cycle [23] and photosynthesis. At cell division, centrioles fire on none cylinders, $\lambda$ passes via spindle fibres’ entwined $\alpha$-helical $\sim \sim$ bonds to the centromeres of chromosomes. Protons circulate their minions creating alternating magnetic fields with chromosome-length-dependent frequencies, causing daughter chromosomes to mutually repel. Pulling them apart contravenes Newton’s ‘equal and opposite’ third law of motion.

2 Sensitivity

Na$^+$ ions forming such large hydrates, as Na$^+$ (H$_2$O)$_{28}$, Fig. 6, renders cell sap viscous, slowing metabolism. K$^+$ substitution binding less water, speeds it. Catecholamines [nor]-adrenaline and dopamine form 4-/6-member rings around Na$^+$/K$, exchanging 3Na$^+$ for 2K$^+$ at synapses. Inserting morphine or codeine creates larger complexes, blocking tDNAs and preventing pain transmission.

Pain sensitivity increases when more are enrolled to compensate, explaining drug addiction [24]. Neural network theory adequately explains ¥Dopa preventing Parkinson’s Disease but wrongly assumes pain transmission depends on slow synaptic closure. Nerve fibres serve as wave guides, analogous to optic cables, enabling fast minion inter-communication.

K Excretion

Aldosterone, angiotensin, rennin, and aspirin maintain pH and ionic strength. Manganese chlorides: MnCl$_3^-$, MnCl$_4^-$ and MnCl$_6^{4-}$ excrete salt in urine, sweat and tears. Bicarbonate, HCO$_3^-$ is exchanges for chloride, Cl$, the ‘chloride shift’ [25]. Zinc cofactors carbonic anhydrase controlling pH:

$$CO_2 + H_2O \leftrightarrow HCO_3^- + H^+$$

L Respiration

Oxygen is exchanged for carbon dioxide, O$_2$ for CO$_2$ in the lungs and erythrocyte Fe$^{2+}$ haemoglobin binds it for distribution. V$^{2+}$ replaces Fe$^{3+}$ in some species. Since membranes are impermeable to oxygen hydrate, O$_2$:H$_2$O, it is actively transported.

Thyroamine distributes iodine from the thyroid gland. At target tissues a proton releases purple metallic iodine, iodonium, I$, complexing with O$_2$:H$_2$O as I$(O_2[H_2O])$: for transport, iodine is recycled as I$^-$. tDNAs deliver pr.

tDNAs deliver pr.
Iodine deficiency causes goitre and $\Gamma(\text{O}_2[\text{H}_2\text{O}]_2)^2$ entering the aqueous humor exophthalmos. Doll [27] reported the lethality of tobacco smoking, is probably nicotine independent.

Mutant tDNAs disrupt brain $\text{O}_2$ supply causing bipolar disorder [28]. Mania and depression correspond to excess and deficient $\text{O}_2$. Substituting Li$^+$ for I$^-$ controls mood, excess can cause kidney failure. The inheritance of tDNA-related conditions is non-Mendelian. 1 in 7 siblings inherits bipolar disorder [28], confirming the ‘seventh son of a seventh son’ tradition, implicitly, respiration involves seven tDNAs.

M Growth

The Biuret test illustrates copper’s high affinity for peptide bonds. The hepatic portal vein transfers amino acids from digested protein for inter-conversion in the liver, Fig. 6, ensuring the brain receives a balanced mixture [29] and maintaining sanity. Growth disorders: dietary Cu controls acromegaly, dwarfism and gigantism, copper bracelets may ameliorate arthritis and its accumulation in the eyes explains Wilson’s disease.

The Cu in coil contraceptives competes with Zn, it starves sperm of glucose, preventing their reaching ova.

At cell division, tDNAs feeding from gastrula and blastula, Fig. 7, are nutrient-starved and ‘over-heat’. Guanyl cyclase driven ‘hook-protein’ synthesis replaces adenyl cyclase driven substrate transport. Hook protein pairing inter-connects daughter cells, determining tissue morphology. Stem cells lack hooks, leukocytes and gametes, spirogyra filaments, sponges and simple worms have one, two, three and four. Five suffice to form all tissues, limiting their growth. One-hook leukocytes bind to any sixth hooks arising, preventing tumor and cancer growth.

A published proof of my Five hook theorem: ‘Five hooks suffice to create all nature’s beauty’, 3D equivalent of the 2D Four color mapping theorem [30], would focus attention on cancer prevention.

N Rigidity

The stability of fluorspar, aka ‘Blue John’ illustrates calcium’s high affinity for fluorine. Osteoblast and osteoclast membrane tDNAs transport apatite and fluorapatite, $\text{Ca}_{10}\text{(PO}_4\text{)}_6\text{OH}_2$ and $\text{Ca}_{10}\text{(PO}_4\text{)}_6\text{F}_2$ for skeletal maintenance. The $\sim 265 \text{ nm}$ UV sunlight energy [31] vitamin $\text{D}_3$ stores synthesizes the Si $\sim$ F bonds of silicon hexafluoride, SiF$_6^-$, carrier for apatite, Fig. 8.

Parathyroid hormone, PTH, delivers fluorine and the conjugated $\sim fee$ bonds of retinal transfer energy as solitons [32], synthesizing SiF$_6^-$ via the pH-sensitive reaction:
Phosphate ions are highly charged, preventing their passage through tDNA pores. Melatonin and serotonin distribute silver, Ag⁺ from the pineal in 6-member rings resembling those catecholamines form around K⁺, Fig. 6. The conjugated =/─ bonds of vitamin A, retinal transfer energy from vitamin D₃ as solitons, esterifying phosphate to pyrophosphate, P₂ to PP. Its complex with arginine, PPArg₂: is transported.

The continuous secretion of PTH prevents F⁻ poisoning the gland. Low pH at menopause or in renal failure can cause osteoporosis. Vitamin D₃ deficiency causes rickets, childhood F⁻ deficiency dental caries [33], excess explains mottled teeth. Ag was commonly used in medicine before the introduction of antibiotics and should be reinstated [34].

SO₂/NOₓ air pollution can cause inappropriate SiF₆⁻ synthesis in the nasal fossa. Olfactory nerves transfer it to the brain, there its breakdown deposits alumino-silicate plaques releasing fluoride. F⁻ causes all Alzheimer Disease symptoms: poisoning Krebs cycle kills cells and disrupting protein folding creates β-amyloid [35] and τ-protein tangles [36].

The April 1977 AD Society newsletter reported symptomatic relief four days after (presumably) fluorinated anaesthetic administration. Simultaneous with renal AlF₆⁻ excretion [37], the brain is cleared of F⁻. Associated distress obstructs AD research. Diesel exhaust abatement or a pharmaceutical designed to introduce F⁻ to the brain might prevent this condition. Anaesthetists liaising with psychiatrists could test this proposal.

O Assimilation

Pavlov observed his dog enjoying a diabetic’s sweet urine and suggested anticipating food causes insulin secretion. Banting and Best [38] discovered insulin and its structure is established. All carbohydrate metabolism metabolites exhibit the Zn-binding ‘triangle of sweetness’ [39], Fig. 6 n/o.

Normally, steady sugar concentrations in blood and plant xylem/phloem are maintained. Failure signifies diabetes [40]. Pancreatic β-cells distribute insulin-bound Zn, α-cell glucagon recycles it. Vitamin C metabolite diketo-gulonate takes Zn to places insulin cannot reach. Its delivery to the nasal mucosa blocks tDNAs, preventing rhinovirus entry (by a mechanism parallel to substrate transport), justifying Pauling’s advocacy for vitamin C preventing cold and flu infection [41].

Zn accumulating in diabetics’ vitreous humor can cause glaucoma, their poor peripheral glucose distribution creates foot and kidney problems. Mutant tDNAs may explain gluten intolerance [42]. An implanted Zn monitor might improve diabetes management.

P Reproduction

Arg₂PP, Fig. 9a, provides the atoms for synthesizing DNA, b, anti-cancer drugs, Fig. 8 e/h mimic it. Further research is necessary to investigate novel approaches to cancer prevention and management.

Q Osmoregulation

Mitchell’s chemi osmotic hypothesis [43] presumes membranes are impermeable to H₂O. Exchanging 3Na⁺ for
2K⁺ maintaining membrane potential, prevents diffusion. Residue of saturated fat metabolism, mevalonate mediates water transport. It was named after the herb ‘Valerian’, aka ‘all-heal’.

7 HgMe²⁺, competing with SeMe₂⁺
8 Se and vitamin E deficiency
dietary selenium deficiency is most significant.

An isolated Chinese community suffering Keshan Disease [44] first evidenced Se deficiency. In Western societies, it is the prime cause of morbidity: heart attacks, strokes, eclampsia of pregnancy and cancers of breast [45], bowel, prostate and cervix.

Animal husbandry affords further evidence: sheep grazing Se-deficient pastures suffer swayback, Se-deficient cattle succumb to white muscle disease and Se-deficient swine have heart attacks on route to market [46]. The longevity of European Royal families may be attributed to their Se-rich diet [47].

Having percolated through chalk and limestone containing the fossilized remnants of early Se-dependent life, London’s ‘hard’ water supply is Se-rich unless lost during treatment. Plate tectonic subduction introduced Se to volcanic magma, rendering soils in Snowdonia, North Wales safe. Glasgow’s ‘soft’ water, derived from ancient granites, is Se-deficient.

R Conclusions

Malthus [48] warned population increase would limit prosperity. Pasteur established that life does not arise spontaneously, Miller and Urey [49] synthesized amino acids from methane and ammonia, CH₄ and NH₃. Michelson and Morley [50] measuring the velocity of light in 1887, compromised public faith in science.

All biological clocks being in phase contradicts Heisenberg’s uncertainty principle [51]. My ‘Tyger’ replaces Einstein’s relativity [52]. 63¹⁸τ predicting the age of the universe challenges Le Mâitre’s Big Bang cosmology [53].

Lovelock’s Gaia Hypothesis [54] advocated all life-forms sharing Earth’s resources equitably. Carson’s Silent Spring [55] and the Club of Rome Report appealed for conservation. Minion logic affords better understanding of the human mind. By accounting for chirality, my model obviates SETI, the search for life elsewhere. Public trust is
essential if climate change, morbidity, Alzheimer’s dementia, and pandemic infection are to be resolved.

II. CONCLUSION

When my proposals:
• Trace element supplements prevent morbidity
• AI modelled on mojitos for better diplomacy
• Molecular-scale cold fusion to resolve climate change
• Diesel exhaust control addressing Alzheimer’s Disease have been ratified, public education is essential to avoid irrational opposition.

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**Author profile**

As a teenage undergraduate, I fortuitously discovered the phase transition in ice at 72K. During a primordial ice-age it released latent energy as ~4μ infrared laser light and activated deoxynucleotides. Their polymerisation created DNA, basis for our existence. I believe basic things must be simple and recommend a daily dose of selenium for maintaining optimal health.

. My studies of the ‘minion’ complex of DNA and protein reveal how your mind works. Understanding the functions of minions can improve your relationships. Rewriting science makes it truer, rewriting history gives a false impression. Hopefully, publishing this paper will pave the way for a peaceful, loving, progressive future for mankind and all Earth life.

My intention is to converse with anyone interested during an annual pilgrimage along the Pennine Way or round the British coast. You may prefer to apply my discoveries to solving such problems as climate change, pandemic diseases or establishing peaceful relationships with those from different nations and religions.

Artificial intelligence modelled on minions could create an intelligent utopia putting ‘Big brother’ on the watch, an intimidating prospect. Charismatic leaders would discourage our realization of childhood dreams. I am not competitive, over-indulgent or inclined to belligerence.

Resources should be shared, not squandered. Spend your limited time wisely. Ensure everyone has a home and health care. I wish all readers Goodness, Truth, Beauty, PEACE, LOVE, PROGRESS, Stability, Justice and Unity.