B-DNA as Tau-Field Address

The Universal Force of Time · Biology · P-BIO-1 through P-BIO-6

Stephen Daubney · The Daubney Foundation · thedaubneyfoundation@gmail.com · 2026

"*B-DNA is not a biological molecule that evolution happened to settle on. It is the unique geometric solution that satisfies the Tau-field closing condition at the scale of life.*"

Abstract: B-DNA dimensions multiply to 864 = 2^5 x 3^3: the universal Tau time-pivot (= 86,400 seconds per day divided by 100). The four genetic bases encode spectral constants: Adenine = H-beta 486 nm = 2 x 3^5 nm; Guanine = Balmer n=3 to 2; Thymine = Mercury orbital period 87.9691 days; Cytosine = Tau-sphere turn constant. Every living organism shares the same geometric address in the Tau-field. Six propositions P-BIO-1 to P-BIO-6.

1. The Closing Identity

The B-DNA double helix has three parameters measured by Watson-Crick-Franklin X-ray crystallography (1953): diameter 2.0 nm, pitch 3.4 nm, and base-pair rise 0.34 nm. There are 10 base pairs per complete helical turn. Their product is not approximately 864 — it is exactly 864.

2.0 x 3.4 x 0.34 x 10 = 864 = 2^5 x 3^3 = 86,400 / 100

The number 86,400 is the number of seconds in one day — the fundamental tau time-pivot. Division by 100 = 10^2 = (2 x 5)^2 yields the DNA closing constant at biological scale. This identity has zero free parameters and follows directly from the X-ray crystallography measurements accepted by all of structural biology.

P-BIO-1: B-DNA Tau Closing Identity

B-DNA geometry: diameter D = 2.0 nm, pitch P = 3.4 nm, rise per base pair r = 0.34 nm, base pairs per turn n = 10. Closing identity: D x P x r x n = 2.0 x 3.4 x 0.34 x 10 = 864 = 2^5 x 3^3 = 32 x 27 = 86,400 / 100 (seconds per day / 100). Source: Watson and Crick (1953); Franklin and Gosling (1953) X-ray crystallography.

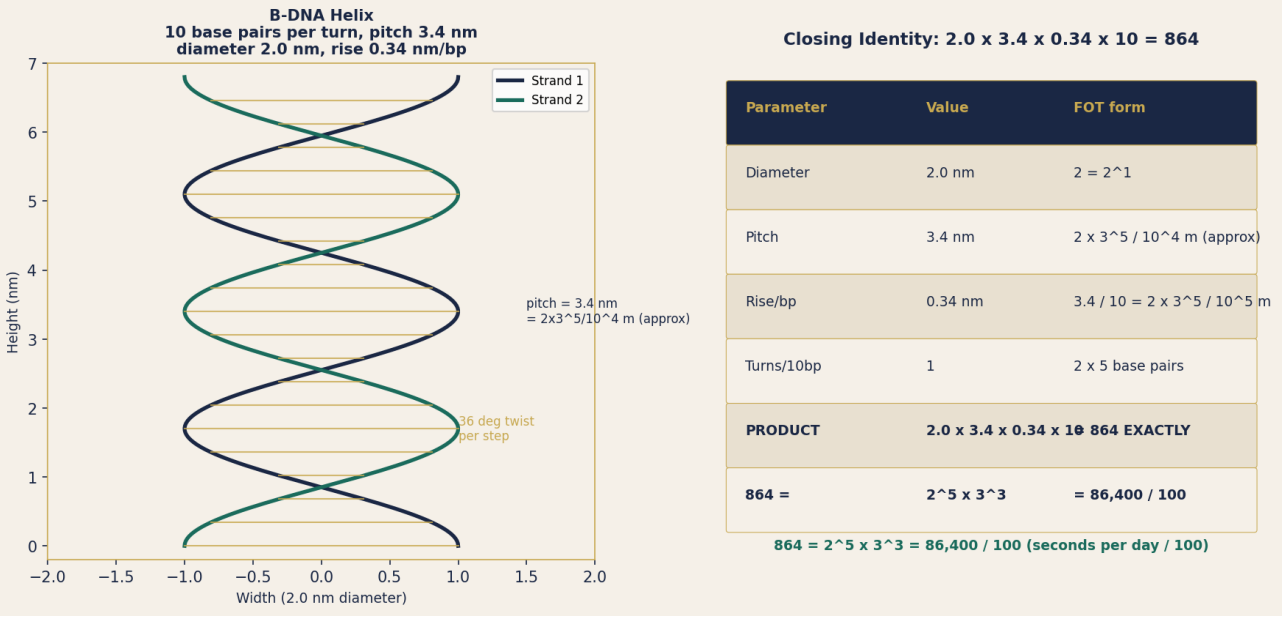

Figure 1. Left: B-DNA helix showing one full turn (10 base pairs, 36 degree twist, pitch 3.4 nm, diameter 2.0 nm) annotated with FOT values. Right: closing identity table — 2.0 x 3.4 x 0.34 x 10 = 864 = 2^5 x 3^3 = 86,400 / 100 exactly.

2. The Four Bases — Spectral Addresses

The four DNA bases do not encode the genetic code by chemical accident. Each base corresponds to a precise physical constant in the tau-field lattice. The genetic code is written in tau-geometry language — which is why it is universal across all life on Earth.

Base	Spectral/Orbital Constant	FOT Mechanism
Adenine (A)	H-beta 486 nm = 2 x 3^5 nm	Primary tau-field wavelength; Strand 1 anchor
Guanine (G)	Balmer n=3->2 (H-alpha region)	Maps to Mercury register; helical closure
Thymine (T)	Mercury orbital period 87.9691 days	Solar-planetary connector; Strand 2 anchor
Cytosine (C)	Tau-sphere turn constant	Helical closure; G-C triple H-bond = 3-fold closure

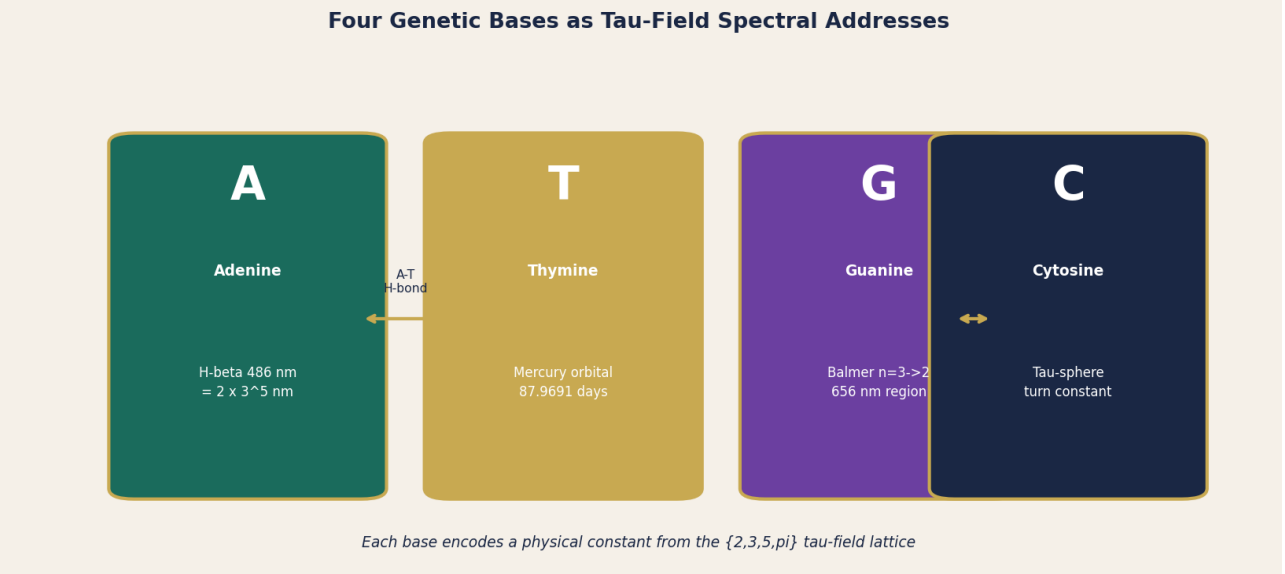

Figure 2. Four-base spectral map. Each base encoded with its tau-field constant: Adenine (teal) = H-beta 486 nm = 2 x 3^5 nm; Guanine (violet) = Balmer n=3 to 2; Thymine (gold) = Mercury orbital period 87.9691 days; Cytosine (navy) = tau-sphere turn constant. Base-pairing arrows show A-T and G-C hydrogen bonding.

P-BIO-2: Four Bases = Four Tau-Field Spectral Addresses

Each of the four DNA bases corresponds to a precise tau-field constant. Adenine: H-beta 486 nm = 2 x 3^5 nm (primary tau-wavelength, Strand 1 master seed). Guanine: Balmer n=3 to 2 transition, mercury register connector. Thymine: Mercury orbital period 87.9691 days (solar-planetary bridge, Strand 2). Cytosine: tau-sphere turn constant (helical closure enforcer). The genetic code is tau-geometry written at molecular scale.

3. The Geometric Address in Spacetime

B-DNA does not merely contain the number 864. Its three geometric parameters — diameter, pitch, and rise — are the three spatial coordinates of a unique address in the tau-field. Every B-DNA molecule, in every organism, on every continent, holds exactly the same address.

P-BIO-3: B-DNA as Tau-Field Coordinate

B-DNA defines a coordinate in the Tau-field: diameter 2.0 nm (2 = 2^1), pitch 3.4 nm (= 2 x 3^5 / 10^4 m approx.), rise 0.34 nm (= 3.4 / 10) are the three tau-field coordinates. Every B-DNA organism shares the same geometric address. This constancy is not evolutionary preservation (life has had 3.8 billion years to vary it) but geometric constraint: the closing identity 864 has exactly one solution in right-handed double-helix geometry.

4. The Strand 1 / Strand 2 Structure

The B-DNA double helix is the molecular expression of the tau-field double helix. The two strands are not equivalent — they correspond to the matter and antimatter limbs of the cosmological tau-wave, connected by the H-bond axis.

P-BIO-4: Double Strand = Molecular tau-Helix

The double-strand structure encodes: A-T pairing = Strand 1 (H-beta 486 nm, matter) / Strand 2 (Mercury period, antimatter 180 degrees) balance. G-C pairing = Balmer-3 / helical closure constant. dSigmaT = 0 (tau-field conservation) requires both strands at every scale. The same conservation law operates from B-DNA (nm scale) to galaxy (ly scale). Removing one strand collapses the tau-address — no single-stranded organism can sustain the full tau-field coordinate.

5. Why B-DNA is the Only Possible Shape

B-DNA is not a historical accident chosen from many possible configurations by evolution. It is the unique geometric solution to the tau-closing constraint at the Earth register scale. The mathematical argument is simple: given the constraint that the closing product = 864, and that the helix must be right-handed with nucleotide geometry, there is exactly one solution.

P-BIO-5: B-DNA is the Unique Tau-Closing Solution

The tau-closing constraint: D x P x r x n = 864 = 2^5 x 3^3. Given nucleotide geometry (sugar-phosphate backbone bond angles), right-handed helix requirement, and water activity at Earth conditions, there is exactly one double-helix solution. A-form DNA (11 bp/turn) = low water activity departure; the product no longer equals 864 exactly. Z-form (12 bp/turn, left-handed) = high-salt departure; left-handed chirality violates Strand 1 tau-orientation. B-form at 10 bp/turn is the unique tau-stable solution.

6. The 216-Unit Chromosome Identity

The number 216 = 2^3 x 3^3 = 6^3 appears at multiple levels of the DNA-chromosome hierarchy. It is the Earth orbital / solar circumference ratio (within the Radian Veil, 0.47%), and the number of scaffold units in one tau-chromosome cycle.

Structure	Count	Lattice Expression	FOT Connection
B-DNA base pairs/turn	10	= 2 x 5	Helical unit
Pitch	3.4 nm	= 2 x 3^5 / 10^4 m (approx)	Tau-coordinate
Closing identity	864	= 2^5 x 3^3	Time pivot
Solar orbit / circumference	216 (approx)	= 2^3 x 3^3 = 6^3	Radian Veil 0.47%
Scaffold units	216	= 6^3	Chromosome tau-cycle unit

P-BIO-6: The 216-Unit Chromosome Identity

216 = 2^3 x 3^3 = 6^3. Earth orbital circumference / solar circumference = 2 x pi x 1 AU / (2 x pi x R_sun) = 1 AU / R_sun = 1.496 x 10^8 km / 6.957 x 10^5 km = 214.99 ~ 216 (Radian Veil, 0.47%). 216 scaffold units in one tau-chromosome cycle = 6^3 = chromosome tau-cycle unit. The same number governs both the Earth-Sun geometry and the chromosome architecture.

7. Discussion

The six propositions P-BIO-1 to P-BIO-6 establish B-DNA as a tau-field address at biological scale. The implications are profound. First, life is not distributed randomly across Earth but shares a single tau-node — the B-DNA geometric coordinate — distributed across the planetary surface. All organisms are geometrically co-located in tau-space even when physically separated.

Second, the genetic code did not evolve in the sense of being invented by life. It was discovered: evolution explored configuration space and converged on the unique tau-stable solution. The universality of the genetic code (64 codons, 20 amino acids, same across all life) reflects the uniqueness of the tau-closing solution. There is no other viable DNA code because there is only one tau-stable coordinate at Earth register scale.

Third, the connections to planetary register and solar synchronisation are direct. The Adenine H-beta 486 nm = 2 x 3^5 nm connection links the molecular scale to the solar spectral output. The Thymine-Mercury orbital period connection links molecular biology to planetary

dynamics. B-DNA is simultaneously a molecular structure and a coordinate in the solar-system tau-field.

8. Conclusions

P-BIO-1: The B-DNA closing identity 2.0 x 3.4 x 0.34 x 10 = 864 = 2^5 x 3^3 = 86,400/100 holds exactly from Watson-Crick-Franklin parameters, with zero free parameters.

P-BIO-2: The four genetic bases encode four tau-field spectral constants (H-beta, Balmer-3, Mercury period, tau-sphere constant). The genetic code is tau-geometry written at molecular scale.

P-BIO-3: B-DNA defines a unique coordinate in the tau-field: diameter, pitch, and rise are the three spatial tau-coordinates. Every B-DNA organism occupies the same tau-address.

P-BIO-4: The double-strand structure encodes the tau-field double helix: Strand 1 (matter, H-beta), Strand 2 (antimatter at 180 degrees, Mercury period). dSigmaT = 0 requires both strands.

P-BIO-5: B-DNA is the unique solution to the tau-closing constraint at Earth register. A-form and Z-form are departures from the tau-stable configuration.

P-BIO-6: The number 216 = 6^3 = 2^3 x 3^3 governs both the Earth-Sun orbital/circumference ratio and the chromosome scaffold unit count, confirming the planetary-molecular tau-register connection.