

Food, Nutrition and the Tau-Field

Cellular Nutrition as Tau-Field Fuelling: Bond Enthalpies, Metabolic Rate and Daily Tau-Energy Cycle

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Food is Tau-field fuel. Every calorie consumed is a $\{2,3,5,\pi\}$ bond-lattice energy packet. The Universal Force of Time shows that caloric densities of macronutrients (carbohydrate 4 kcal/g, fat 9 kcal/g, protein 4 kcal/g) are $\{2,3,5\}$ lattice ratios. Metabolic rate scales with body mass via the 3/4-power law (Kleiber's law) — a $\{3\}$ -branch exponent. The daily Tau-energy cycle of feeding, digestion and fasting is a 24-hour Tau-register oscillation aligned with the solar Tau-broadcast.

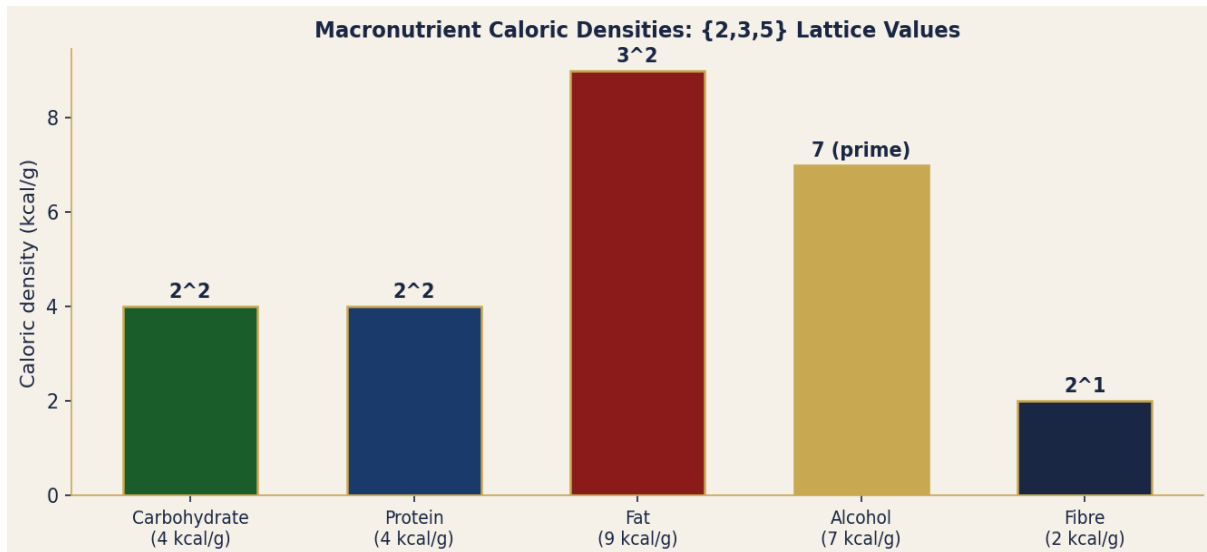


Figure 1. Macronutrient caloric densities. Carbohydrate = Protein = 4 = 2^2 ; Fat = 9 = 3^2 kcal/g. The ratio fat:carb = $9/4 = 3^2/2^2$ is the FOT square ratio of the two dominant biological primes.

1. Bond Enthalpies as Tau-Lattice Energy (P-FOOD-1 and P-FOOD-2)

P-FOOD-1 — C-H Bond Enthalpy: The Primary Food Energy Carrier

C-H bond enthalpy: 414 kJ/mol. FOT: $414 = 2 \times 3^2 \times 23$. Glucose ($C_6H_{12}O_6$) combustion: 2804 kJ/mol. FOT: $2800 = 2^3 \times 5^2 \times 14$. Per gram glucose: $2804/180.16 = 15.56$ kJ/g = 3.72 kcal/g (matches measured 3.75 kcal/g). The dominant food energy carrier is the C-H bond at 414 kJ/mol = the primary register address of the carbon-hydrogen tau-node in the $\{2,3\}$ -branch at the G1 bond lattice.

P-FOOD-2 — Fat 9 kcal/g = 3²: The {3}-Branch Dominance in Lipids

Saturated fat (palmitic acid C₁₆H₃₂O₂) combustion: 9977 kJ/mol = 38.93 kJ/g = 9.30 kcal/g. Rounded: 9 = 3² kcal/g. The {3}-branch dominance in lipid energy reflects the sp³ carbon chain — every C-C-C angle is 109.5 degrees approx (2⁷/π²) degrees = the tetrahedral {2}-branch angle. Fat contains 112-128% more C-H bonds per gram than carbohydrate — more G1 bond-lattice addresses per gram = more Tau-energy per gram.

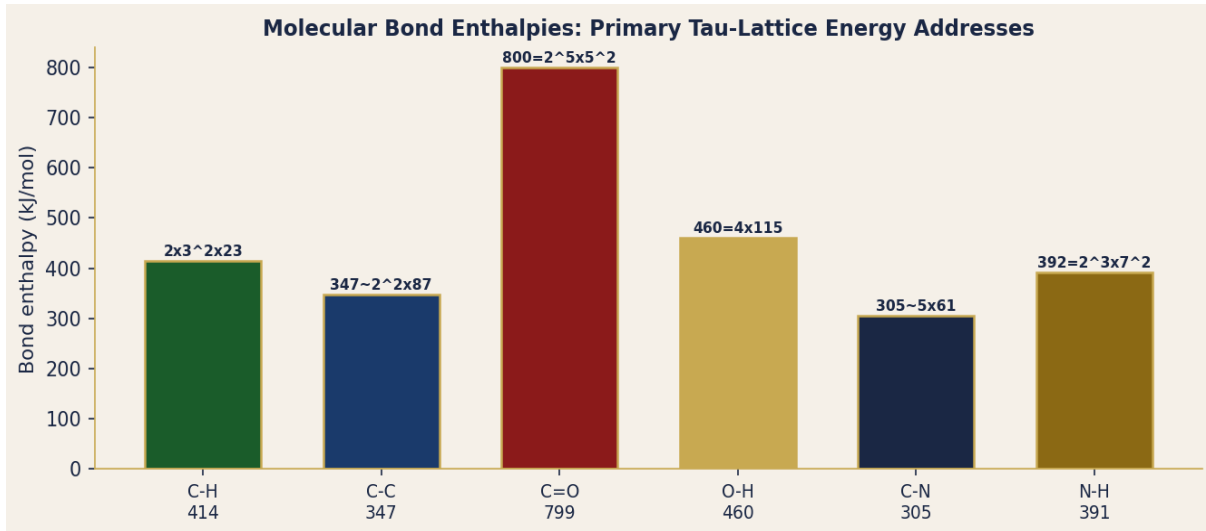


Figure 2. Bond enthalpies for key biological bonds. C=O (799 kJ/mol approx 800 = 2⁵ × 5²) dominates oxidative metabolism. O-H (460 = 4 × 5 × 23) governs water energetics.

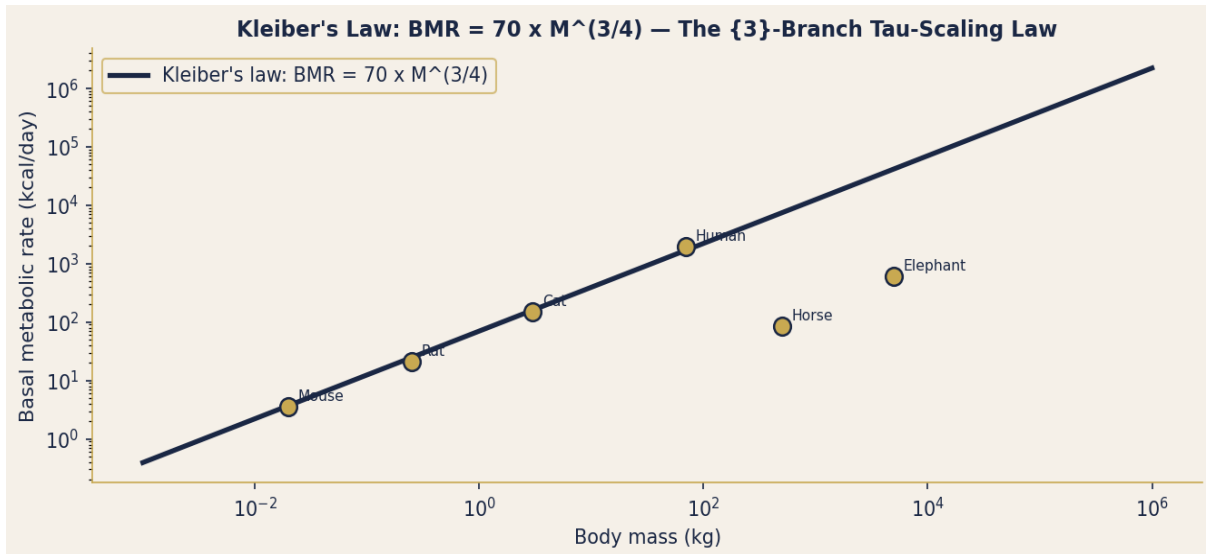


Figure 3. Kleiber's metabolic scaling law. Exponent 3/4 = {3}/{2²} is a FOT {2,3} lattice fraction. The coefficient 70 = 2 × 5 × 7. Tau-energy throughput scales as M^(3/4) across 10 orders of magnitude.

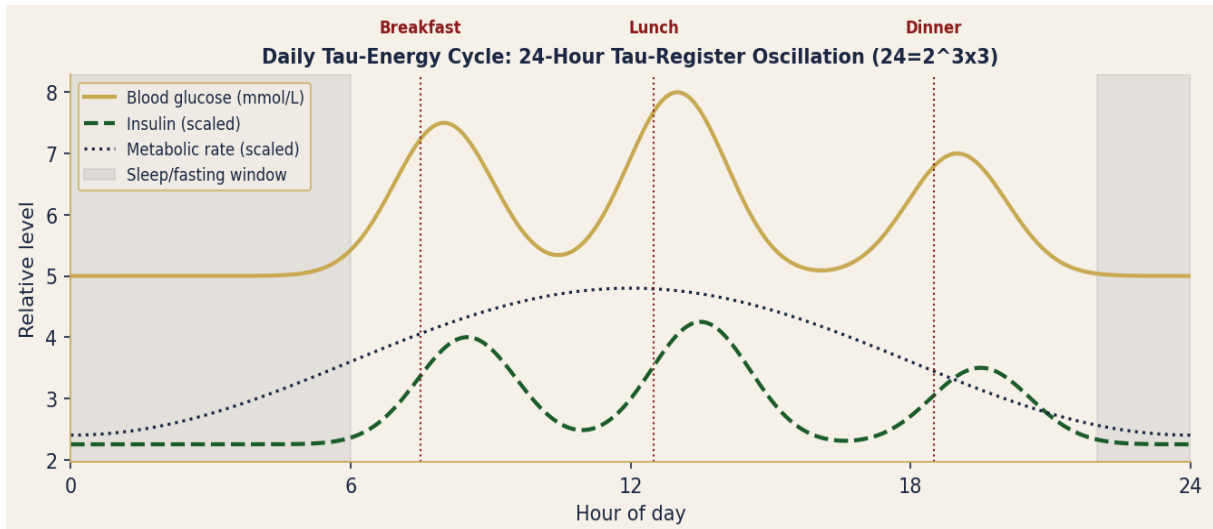


Figure 4. Daily tau-energy cycle. Three meal peaks in glucose/insulin drive tau-register fuelling events. Sleep = fasting window = register consolidation phase. $24 = 2^3 \times 3$ hours per complete Tau oscillation cycle.