

Is Undirected Naturalism Sufficient?

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Overview of Presentation

Universe origin speculations (non-science) & fine-tuning

Life, origin speculations, and information content

Evolution: DNA, fossils, complexity, simulations

Philosophical implications

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Mass/Energy Origin Is Unknown to Science

Oscillating Universe violates: 2nd law & expansion

Quantum fluctuation of undetectable vacuum energy

>10⁵⁰⁰ Colliding unseeable “Universes” with 10+
dimensioned “Strings” collapse to our 3 space + time

“Infinite” energy being(s) convert energy to mass or
otherwise supernaturally create universe's 3 X 10⁵⁵ g or
3 X 10⁶⁸ joules of mass/ energy

ALL 4 have unprovable/unverifiable/unfalsifiable
assumptions not bound by known science

All are philosophical or theological beliefs

It is no more scientific to believe a natural scenario than to
believe a supernatural one since known science cannot
account for the origin.

Most violate conservation of mass/energy and/or increasing entropy

Fine-Tuned Nature of the Universe

- Physical constants for weak and strong nuclear forces, electromagnetic and gravitational forces, ratios of forces and electron/proton masses, and properties of neutrons are all critical, as are the expansion rate, mass, and density of the universe
- Earth's orbit, tilt, rotation, magnetic field, atmosphere, and composition are life-critical
- Concerning the constants of physics: **“The remarkable fact is that the values of these numbers seem to have been very finely adjusted to make possible the development of life.”** Stephen Hawking, *A Brief History of Time*, 1988

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Universe is “fine-tuned” to allow for life

- **“An accuracy of one part in 10^{123} ...the precision needed to set the universe on its course.”** Penrose in *The Emperor's New Mind*, p.344
- **“There is for me powerful evidence that there is something going on behind it all... It seems as though somebody has fine-tuned nature's numbers to make the Universe... The impression of design is overwhelming.”** Paul Davies, *The Cosmic Blueprint: New Discoveries in Nature's Creative Ability To Order the Universe*, 1988, p203

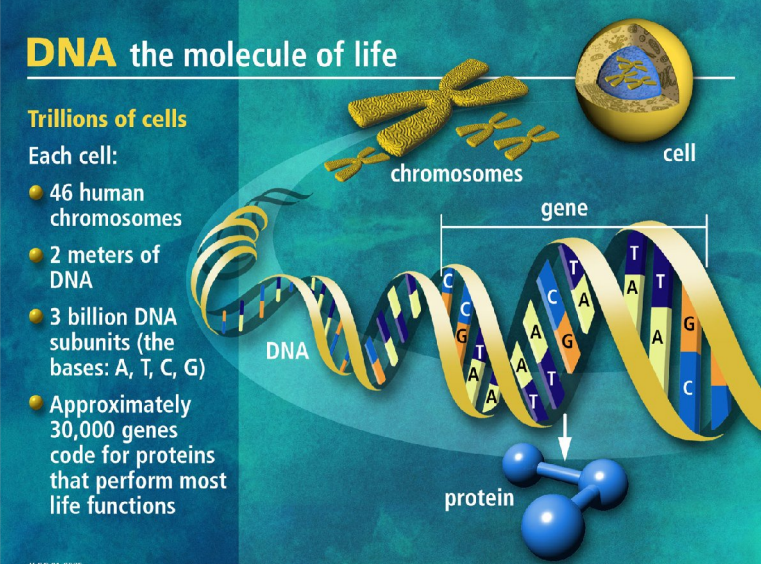
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Life and Its Origin

- High-level view of life components
- Illustrate that there's no "simple life"
- Proposed natural scenarios of life's origin
- Major difficulties with natural origin scenarios
- Natural origin killer: information & its processing

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DNA the molecule of life



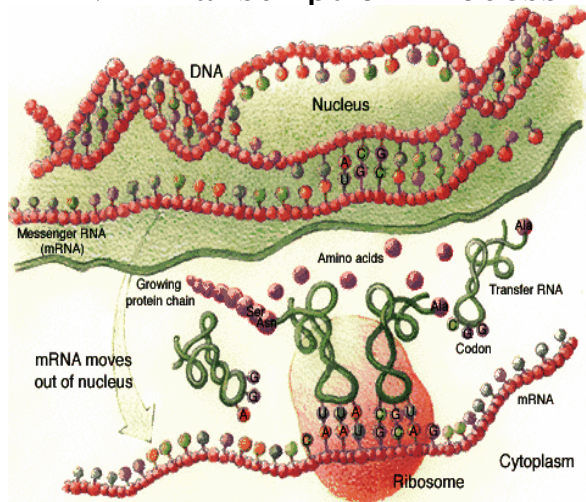
Trillions of cells

Each cell:

- 46 human chromosomes
- 2 meters of DNA
- 3 billion DNA subunits (the bases: A, T, C, G)
- Approximately 30,000 genes code for proteins that perform most life functions

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DNA Transcription Process



Life is Incredibly Complex

- >25,000 genes, each with > 1000 bits of information (many overlapping to produce >100,000 proteins)
- >10 trillion distinctive traits by DNA sequence
- >6 billion bases (ACGT) in folded 6', 10⁻¹² gram chain
- Digital (base 4) self-correcting encoded information
- 3 groups of 1-of-4 bases: 4³ (= 64) possible codons
- 20 amino acids for proteins redundantly codon-specified
- Information in 1 teaspoon of DNA: all people + all books
- Even "simplest" organism's DNA has >150,000 nucleotides
- DNA/RNA/proteins must be fully-formed/functional
- >2000 enzyme proteins enable reactions

"Human DNA is like a computer program but far, far more advanced than any software we've ever created." Bill Gates, The Road Ahead, 1995, p.228.

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Cells Are Extremely Complex

- Membrane permits/denies passage to 1000s compounds
- Organelles perform nutrition, repair, waste disposal, communication, and reproduction

Each cell is a complex chemical factory (10^{-13} Viking's size)
 <1 sec to do what scientists can manufacture in weeks
 Self-replicating, 3-D, networked computing/storage system

Examples of Specialized cells

- Manufacturing hemoglobin requires 2.5×10^{17} ops/sec
- 100 billion neurons in human brain, each linked to 10,000 other neurons (10^{15} synaptic interconnections)
- Brain performs 10^{16} ops/sec (> all computers in the world)
- 1 sec of optic nerve's data: hours on supercomputer
- Talking: $>10^5$ neuromuscular events/sec, using >100 muscles (controlling diaphragm, tongue, cheeks, jaw, etc.)

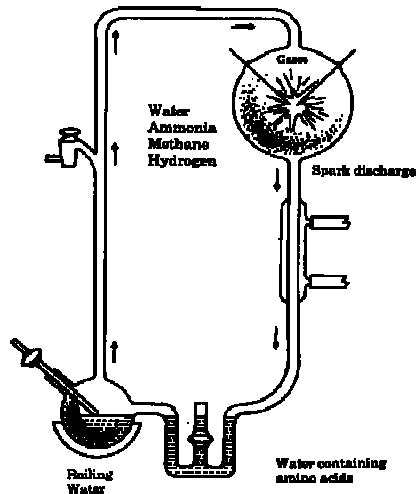
Interesting Observations

- "Physics books may be complicated, but ... the objects and phenomena that a physics book describes are simpler than a single cell in the body of its author ... organized with intricate architecture and precision-engineering into a working machine capable of writing a book... Each nucleus ... contains a digitally coded database larger, in information content, than all thirty volumes of the Encyclopedia Britannica." *Richard Dawkins, Climbing Mount Improbable, 1996*

"Biology is the study of complicated things that give the appearance of having been designed for a purpose." Dawkins "The Blind Watchmaker", p. 1

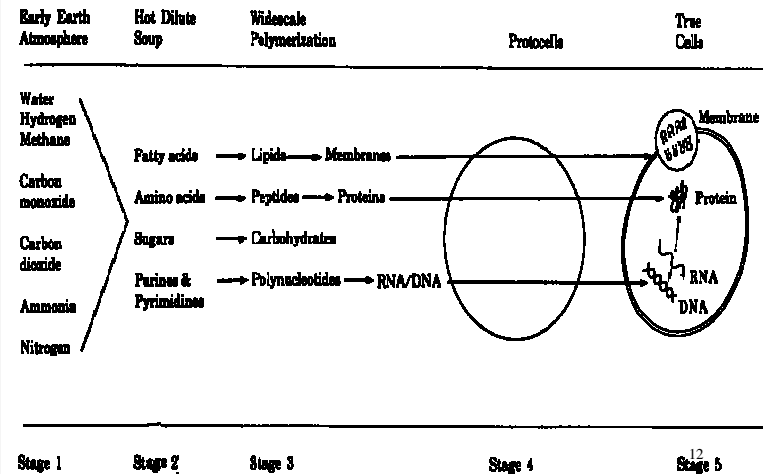
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1953 Miller Experiment for Amino Acid Formation



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Major Stages of Chemical Evolution (Thaxton, Fig.2-1)



The following is true for
Proteins First
DNA/Enzymes First
RNA (Ribozymes) First

“Chemical evolution is broadly regarded as a highly plausible scenario for imagining how life on earth might have begun. ... what has emerged over the last three decades ... is an alternative scenario which is characterized by destruction, and not the synthesis of life. ... The undirected flow of energy through a primordial atmosphere and ocean is at present a woefully inadequate explanation for the incredible complexity associated with even simple living systems”
(Tha92, p. 182 & 186)

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Interesting Observations

- "None of the papers published in JME (Journal of Molecular Evolution) over the entire course of its life (1971-) as a journal has ever proposed a detailed model by which a complex biochemical system might have been produced in a gradual, step-by-step Darwinian fashion." *Michael Behe., Darwin's Black Box: the biochemical challenge to evolution, 1996, p176*
- "The unexpected levels of complexity revealed at the molecular level have further strained the concept of the random assembly of a self-replicating system." *AW Sweet-Eng, "The Origin of Life: A Critique of Current Scientific Models", CEN Tech. J. 10-3, pp300-314, 1996*
- "It's hard to see how the chemicals on early Earth could have combined to form the complicated nucleotides that make up RNA." John R. Davenport, "Possible Progenitor of DNA Re-Created," *Science Now, 11/16/00, p1*
- "Ribosome creation requires many RNA-modification enzymes that are still unknown." Patrick Barry, "Life from Scratch," *Science News Online: 173 (2), 1/12/08, p27*¹⁴

Probabilities of Life

Law of Probability allows a maximum probability of forming-

- a typical functional protein^a: 1 part in 10^{175}
- the required enzymes for life^b: 1 part in $10^{40,000}$
- a living, self-replicating cell^c: 1 in $10^{340,000,000}$

^aThaxton, Bradley, & Olsen, *The Mystery of Life's Origin, 1992*

^bFred Hoyle, *The Intelligent Universe pp. 16-17, 1983*

^cHarold Morowitz, *Energy Flow in Biology, p. 99*

Equivalent to winning each (once is 1 in 41,416,353) CA Superlotto for: ^a23 times, ^b50 years, ^c125 million years

Life is unfathomably complex: "Functionally effective proteins have a vanishingly small chance of arising spontaneously in a prebiotic environment." Jimenez-Montano, "Applications of Hyper Genetic Code to Bioinformatics", *J. Biol. Sys. (12) pp5-20, 2004*

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Information Systems in Life

- Genetic system is a preexisting operating system
- Specific genetic programs are applications
- Native language has codon-based encryption system
- Codes are read by enzyme "computers" with own OS
- Enzyme's output is to another OS in a ribosome
- Codes are decrypted and output to the tRNA
- Codon-specified amino acid is transported to protein construction site
- There are multiple OSs, multiple programming languages, encoding/decoding hardware and software, specialized communications systems, error detection and correction mechanisms, specialized input/output channels for organelle control and feedback, and variety of specialized "devices" to accomplish the tasks of life.

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\$1 million Origin-of-Life Prize® www.us.net/life/

- “The Origin-of-Life Prize® ... will be awarded for proposing a highly plausible natural-process mechanism for the spontaneous rise of genetic instructions in nature sufficient to give rise to life.”
- **LAW of biogenesis: life comes only from life**
- “Those who insist on undirected natural causes of life are thus in an untenable position when it comes to known science. Not only can they not prove that it’s possible (nonzero probability) for life to come about by undirected natural processes, but the information content of life precludes that possibility.” Don Johnson, *Probability’s Nature and Nature’s Probability*, 2009, p54

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Biological Evolution: descent with modification

- **Microevolution: small-scale genetic changes** (proven observable fact accepted by all scientists)
- **Macroevolution: descent from common ancestor**
- “All our data suggests that small-scale evolution cannot produce the sort of large-scale change Darwinism requires.” C. Hunter, *Darwin’s Proof*, 2003, p60
- “The central question ... whether the mechanisms underlying microevolution can be extrapolated to explain the phenomena of macroevolution..., the answer can be given as a clear, No.” Roger Lewin, “Evolutionary Theory under Fire,” *Science*: 210, 1980, p883

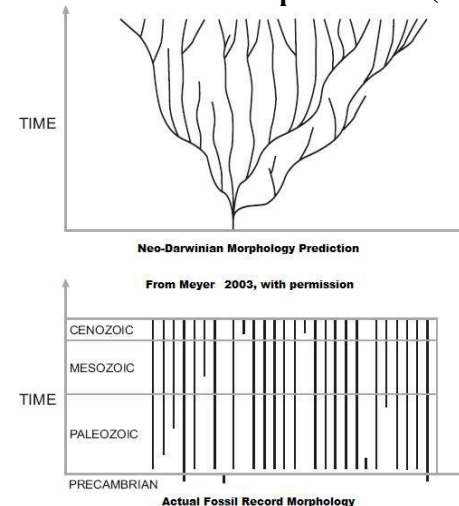
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Junk DNA: “the remains of nature’s experiments which failed.”

S. Ohno, “So much ‘junk’ DNA in our genome,” *BH Symposia in Biology*: 23, 1972, p366-370

- **Non-coding DNA seen as the result of mutations that haven’t yet formed of useful genes**
- “Creationists might spend some earnest time speculating on why the Creator should bother to litter genomes with untranslated pseudogenes and junk tandem repeat DNA.” Dawkins, “The Information Challenge,” 1998
- Junk DNA “may well go down as one of the biggest mistakes in the history of molecular biology... what was damned as junk because it was not understood may, in fact, turn out to be the very basis of human complexity.” John Mattick, “Challenging the Dogma,” *BioEssays*: 25, 10/03, p930-939

The Cambrian Explosion (Fossil Structures)



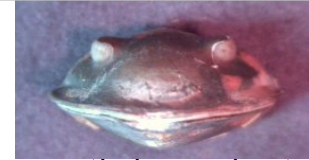
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Sudden Appearance and Fixity of Phyla

- “Most of the animal phyla that are represented in the fossil record first appear, ‘fully formed,’ in the Cambrian... The fossil record is therefore of no help with respect to the origin and early diversification of the various animal phyla.” Barnes, Clow & Olive, *The Invertebrates*, 2001, p9–10
- “It is as though they were just planted there, without any evolutionary history.” Richard Dawkins, *The Blind Watchmaker*, 1996, p229

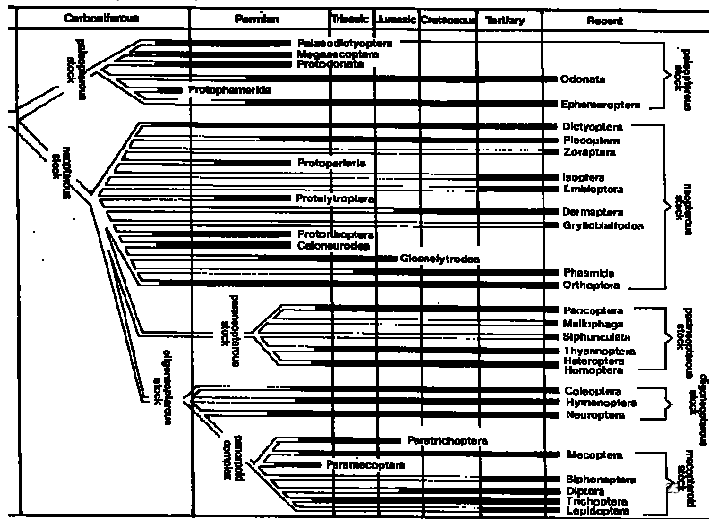
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Cambrian Trilobite Eye



- Transparent calcium carbonate
- “Trilobites had solved a very elegant physical problem and apparently knew about Fermat’s principle, Abbe’s sine law, Snell’s laws of refraction and the optics of birefringent crystals.” Clarkson & Levi-Setti, “Trilobite Eyes and the Optics of Des Cartes and Huygens,” *Nature*: 254, 4/24/75, p663 - 667
- “These lenses optimize both light collecting and image formation **better** than any lens...that optical physics has ever been able to formulate.” N. Eldredge, “A Trilobite Panorama in Eastern North America,” *Fossils Magazine*: 1, 1976, p58-67
- “The design of the trilobite’s eye lens could well qualify for a patent disclosure.” R. Levi-Setti, *Trilobites: A photographic atlas* (2nd edition), 1993, p58

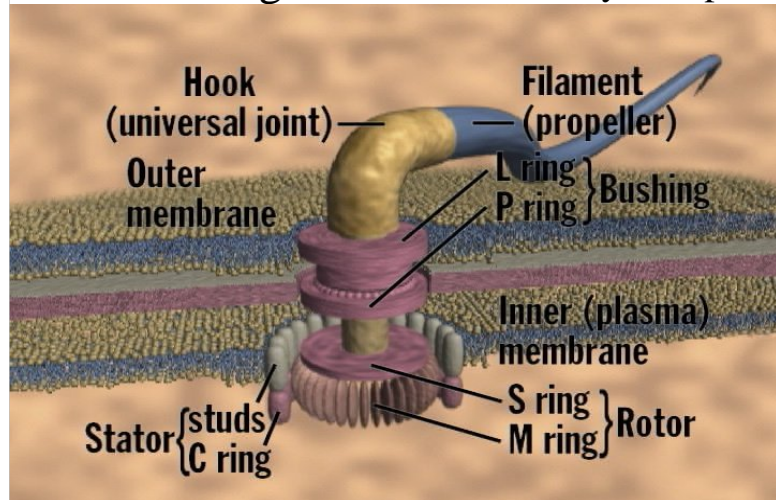
Actual (black) vs. Presumed Connections (‘77 Ency. Brit.)



Neo-Darwinian Biology

- “Each successive change in the gradual evolutionary process was simple enough, relative to its predecessor, to have arisen by chance.” Dawkins, *The Blind Watchmaker* 1986, p43
- “We conclude—unexpectedly—that there is little evidence for the neo-Darwinian view: its theoretical foundations and the experimental evidence supporting it are weak.” Orr & Coyne, “*The Genetics of Adaptation: a Reassessment*”, *Am Nat*, p726, 1992
- “The failure to observe even one mutation that adds information is more than just a failure to support the theory. It is evidence against the ... neo-Darwinian theory.” Spetner, *Not By Chance*, 1996 , p160

Bacterial Flagellum: Irreducibly Complex



Computer Simulations & Artificial Life

Dawkins (*Scientific American*, 6/88) randomly changed:

“WDLTMNLT DTJBK WIRZREZLMQCO P”

to produce on the 43rd try:

“METHINKS IT IS LIKE A WEASEL”

He knew the goal in advance and stopped mutation if correct proving that intelligently designed programs can solve problems.

“Everywhere on the apparatus and in the ‘genetic algorithms’ appear the scientist’s fingerprints: the ‘fitness functions’ and ‘target sequences.’ These algorithms prove what they aim to refute: the need for intelligence and teleology [targets] in any creative process.” George Gilder, “Evolution and Me,” National Review, 7/17/06

“Neglect of key factors or unrealistic parameter settings permit conclusions to be claimed which merely reflect what the decision maker intended a priori.” Royal Truman, “Evaluation of Neo-Darwinian Theory Using the Avida Platform,” PCID 3.1.1, 11/04.

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Information Increase Moving up Tree

- The simplest life has only 267,000 information bits
- Human DNA has over 6 billion information bits
- Ratio of probabilities based on functional information $10^{300,000,000}$
- No known mechanism to produce ANY info increase (all known mutations produce information decrease)

100 Rolls of a die produces a complex pattern with

6^{-100} (1.5×10^{-78}) probability for that pattern

If any roll is acceptable, the probability is 1^{100} (1)

CSI: both complex and specified for information 27

Interesting Observations

- “Biological functionality is turning out to be much more highly specified and precise than we had originally envisioned... biology is really a science of engineering, where the constraints for bio-functionality are extreme – to the point that nearly every molecular interaction is remarkably precise and tightly controlled. Molecular biology is much like a jigsaw puzzle where each piece must be specifically shaped to fit with the other pieces around it.” www.iscid.org/papers/Bracht_GoodenoughResponse_021203.pdf
- Philip Skell, chemist and member of the US-NAS, writes: “Darwinian evolution – whatever its other virtues – does not provide a fruitful heuristic in experimental biology.” “Why Do We Invoke Darwin? Evolutionary Theory Contributes Little to Experimental Biology,” *The Scientist*, 8/29/05 28

Evolution and Religion

- Evolution is “a full-fledged alternative to Christianity... Evolution is a religion. This was true of evolution in the beginning, and it is true of evolution still today.” Michael Ruse, “Saving Darwinism from the Darwinians,” National Post, 5/13/00
- Supreme Court (1961) held “Among religions in this country which do not teach what would generally be considered a belief in the existence of God are ... Secular Humanism.”
- “Atheism is religion, and the group... was religious in nature even though it expressly rejects a belief in a supreme being.” (2005 Appellate decision)

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Summary & References

- Origins of universe & life have no scientific explanations
- Life is incredibly complex and information rich
- Chance is incapable of producing information or life
- Natural mechanisms can't account for life or speciation
- Evolution has been (but needn't be) an “acceptable” religion

Probability's Nature and Nature's Probability, Johnson, 2009

The Privileged Planet, Gonzalez & Richards, 2004

Darwin's Black Box, Michael Behe, 1996

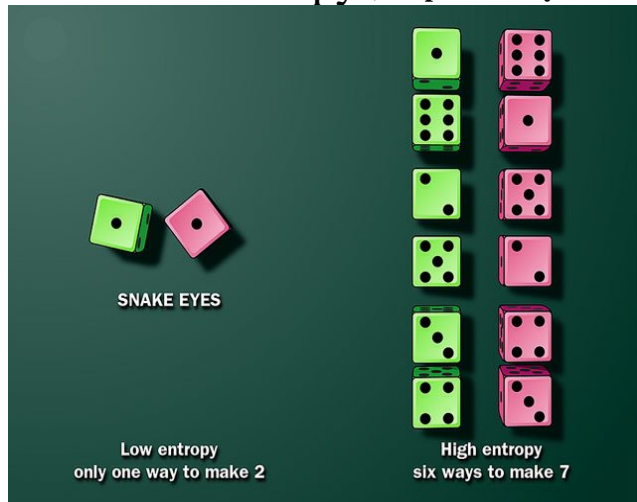
Science and Evidence for Design in the Universe, Behe, 2001

Uncommon Dissent, William Dembski, 2004

arn.org, intelligentdesign.org, uncommondescent.com, scienceintegrity.net

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Information Entropy (low probability = low entropy)



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Shannon Channel Capacity (maximum mutual entropy)

Mutual entropy between input (x) and output (y) channels

$I(B;A) = I(A;B) = H(x) - H(x|y)$ (for alphabets A & B)

has conditional (x_i given y_i received) entropy

$H(x|y) = -\sum_{ij} p_{ij} \log_2 p_{ij}$ and information entropy

$H(x) = -\sum_i p_i \log_2(p_i)$ with probability vector elements

$p_j = \sum_i p_i p_{ij}$ (relates to conditional probability matrix)

The DNA-mRNA-protein system is:

discrete because all symbols in the alphabet are defined, **memoryless** with no dependence on previous symbols, and **unconstrained** since any symbol may follow any symbol.

Therefore, a particular DNA message can be treated as one member of a stochastic ensemble generated by a stationary Markov process, completely characterized by probability space coding $[Q, A, p_A]$, $[Q, B, p_B]$ with A(& any predecessors) $\geq B$ (or channel capacity would be exceeded).