Biological Information and Genetic Entropy

This week: An introduction to the complexity of biological systems

1. Information
   1. Information in a structure can be quantified—but methods are not universal
   2. Nature conserves (physical) information, as with other physical quantities
   3. Structure complexity relates to information content
2. Biological systems are complex information processors
   1. Cells are exceedingly complex machines—David Goodsell images
   2. Complexity is in *arrangement*, not *composition* (e.g., small alphabet, large volume of written works)—size doesn’t matter, amoeba vs. human
   3. DNA molecules are written in a 4-character alphabet (ACTG nucleotides)
   4. DNA molecules are non-periodic and determine large parts of cell production and function
   5. DNA alone does not determine all organism features and behavior
   6. DNA is like a computer code, but written in a complex language to be run on a machine more complicated than humans have ever conceived.
3. Two possible directions for historical information content
   1. Up: Development of simple to complex organisms through selection
      1. Standard evolutionary paradigm
      2. Requires long times, cycles of reproduction and death, etc.
      3. Even if true, does not solve the information creation problem.
   2. Down: Genetic degradation from primary “pure” organisms
      1. Consistent with very conservative Biblical view
      2. Evidence from contemporary science (*Genetic Entropy*, J.C. Sanford)
         1. Mutations rates are high
         2. Mutations are rarely, if ever, beneficial
         3. Most mutations are not selectable
      3. Evidence from Biblical ages
         1. Adam to Noah—nearly constant lifetimes
         2. Noah to Present—striking exponential decay
      4. Requires initial, external information creation: Logos, John 1:1
4. Engaging evolutionists
   1. Avoid: Evolution (simple to complex) violates and 2nd law of thermodynamics—no, our system is not closed (lots of energy input from the sun)
   2. Avoid: Random processes can’t create information—True, but natural selection is not random
   3. Source of information?
   4. Selection requires functioning reproducing organism. Origin?
   5. Bring scriptural explanations of complexity, life, information, energy, morality, conscience

Next week: Is *Intelligent Design* science or religion?