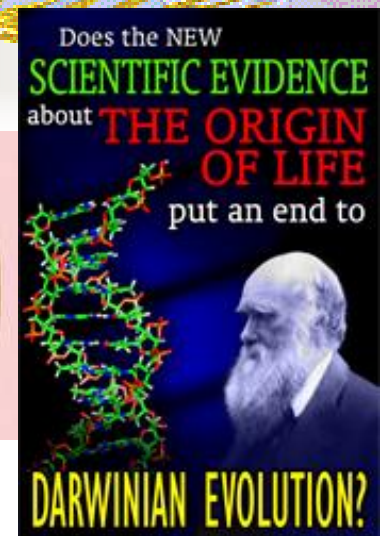
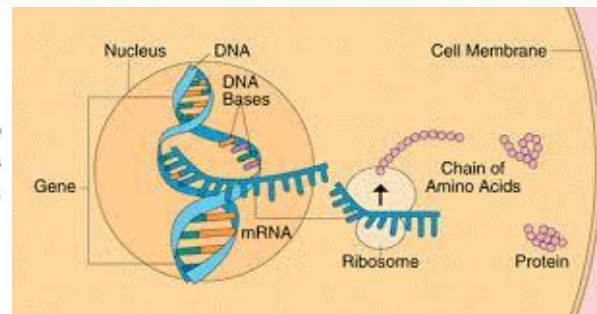
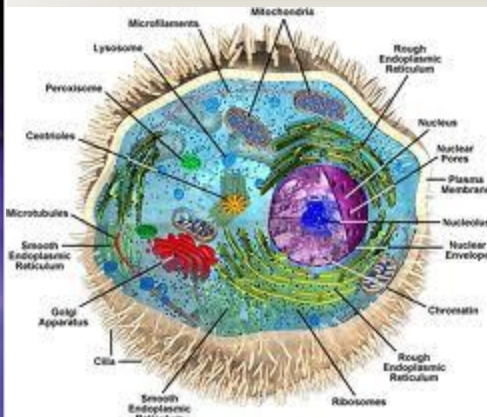
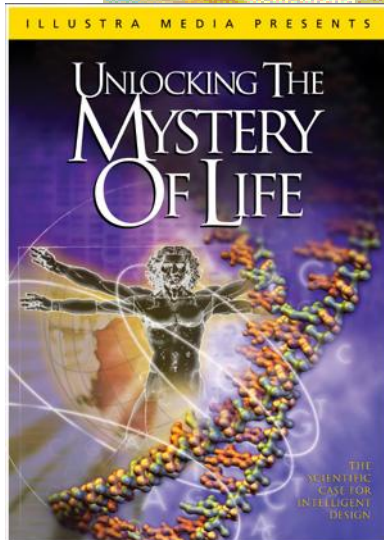


Life and Information

Dr. Heinz Lycklama

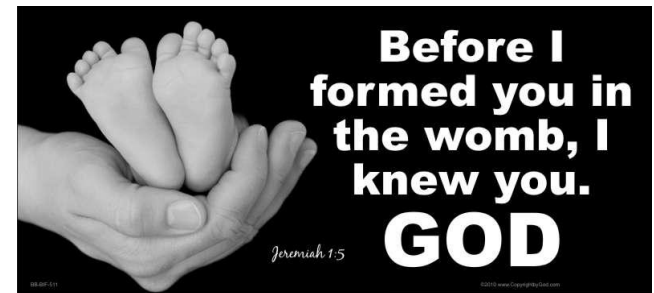
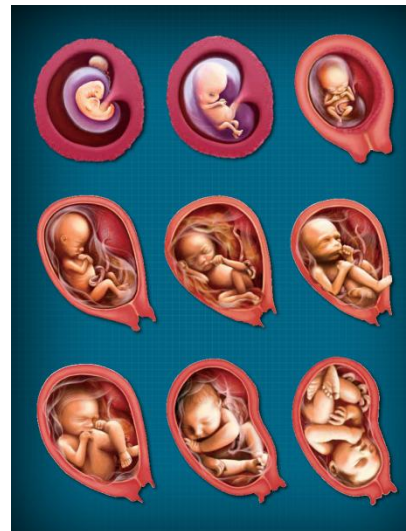
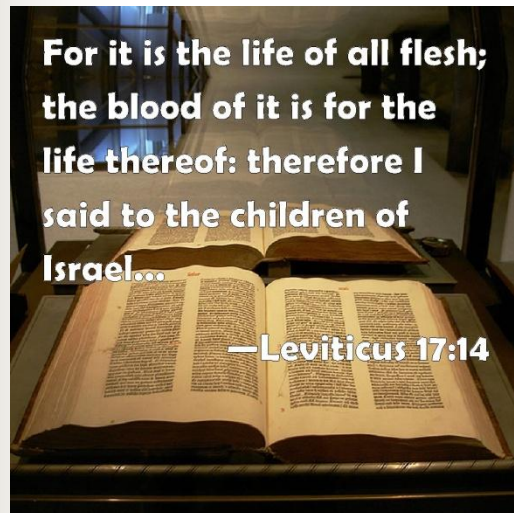
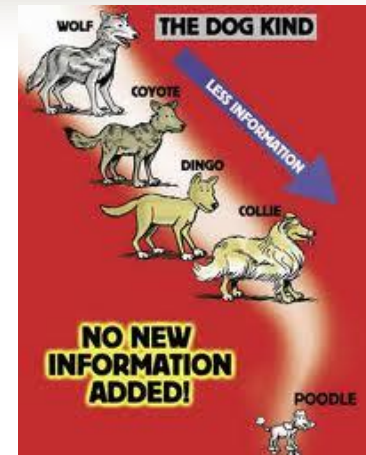
heinz@osta.com

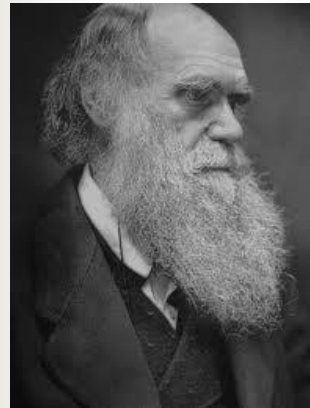
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Biblical View of Life

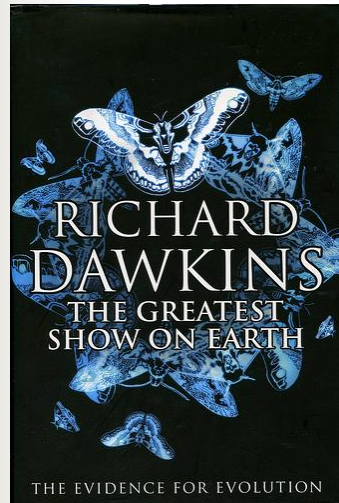
- Gen. 1:11-12, 21, 24-25, “...herb that yields seed according to its kind, ..., beast of the earth according to its kind.”
 - Indicates stability of different kinds
 - Biogenesis, each producing after its own kind [used 10 times]



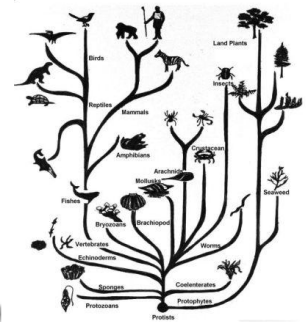
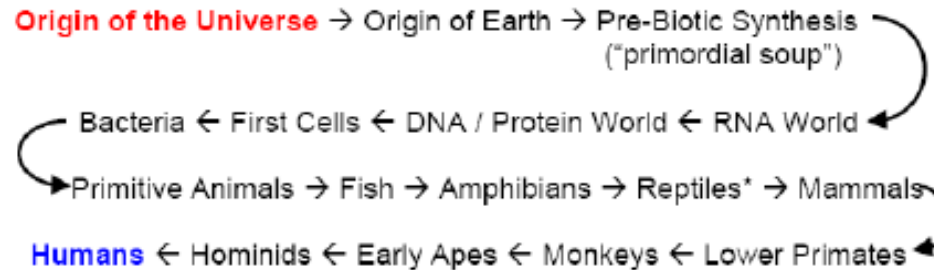


Evolution's View of Life

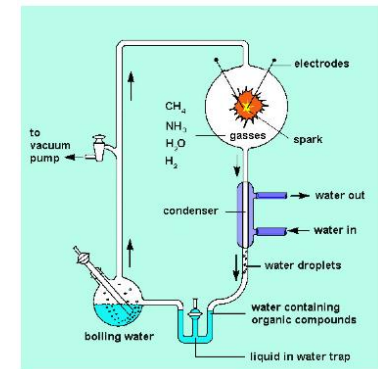
- Related through common ancestry
- Arose through mutations and natural selection
- By means of random chance processes of nature



The story of evolution:



- Spontaneous generation (abiogenesis) has never been observed or shown to be possible
 - Redi in 1688, Spallanzani in 1780
 - Pasteur in 1860, Virchow in 1858





Life and Information

1. Chance, Necessity (Law) or Design?
2. Presuppositions & Information
3. The Nature of Information
4. The Nature of Machines
5. The Nature of Programs
6. Life: Information, Complexity, Design
7. Mathematical Probability
8. Life From Non-life By Chance?
9. In Conclusion

1. Chance, Necessity (Law) or Design?



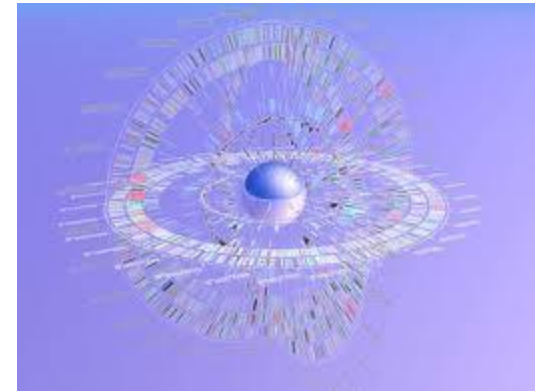
Chance, Necessity or Design?

Scratches on cave wall

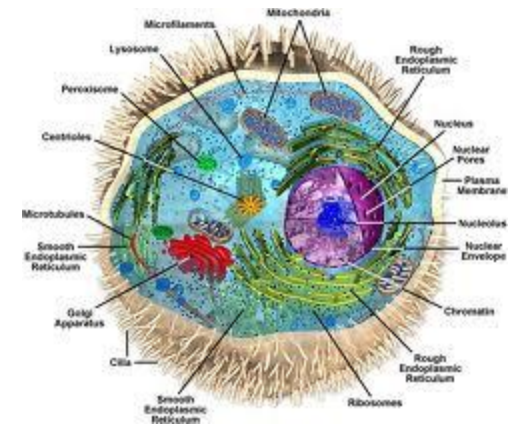


Human genome

3B
Base
Pairs



75T
Cells



The Evolutionists' Response?

- “Even if all the data point to an intelligent designer, such a hypothesis is excluded from science because it is not naturalistic.”

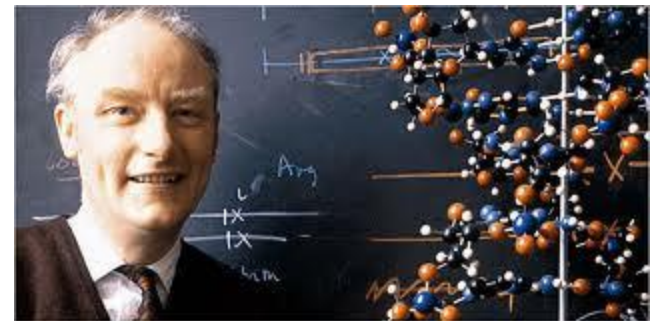
- S.C. Todd, Kansas State University Professor

- “Biology is the study of complicated things that have the appearance of having been designed for a purpose.”

- Richard Dawkins, Oxford Univ. Atheist Biologist

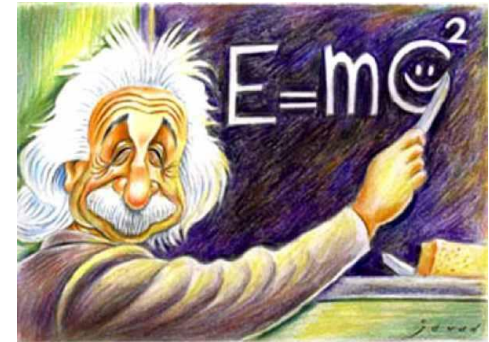
- “Biologists must constantly keep in mind that what they see was not designed, but rather evolved.”

- Francis Crick, Co-discoverer of DNA



2. Presuppositions & Information

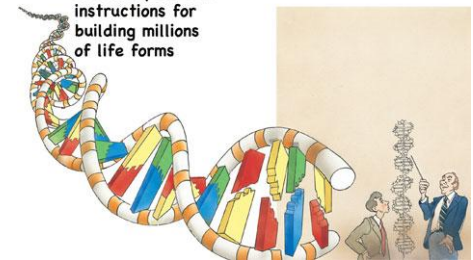
- Evolution presupposition
 - The universe consists of only two *material* entities – mass and energy
- Creation presupposition
 - A 3rd *non-material* entity – information
- Life consists of:
 - Mass + energy (*material*)
+ information (*non-material*)
 - Information is encoded in the DNA of all plant and animal cells
- Information has four parts:
 - Code, meaning, action, purpose



Book 3

DNA –
The Cell's
Library of
Information

How the four-letter language of DNA spells out instructions for building millions of life forms



3. The Nature of Information

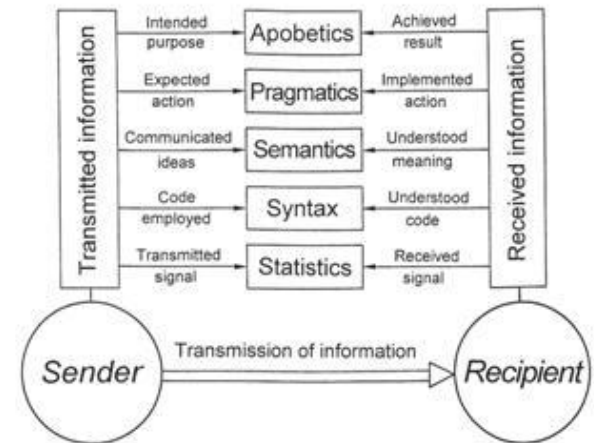


A 0065	B 0066	C 0067	D 0068	E 0069	F 0070	G 0071
H 0072	I 0073	J 0074	K 0075	L 0076	M 0077	N 0078
O 0079	P 0080	Q 0081	R 0082	S 0083	T 0084	U 0085
V 0086	W 0087	X 0088	Y 0089	Z 0090		



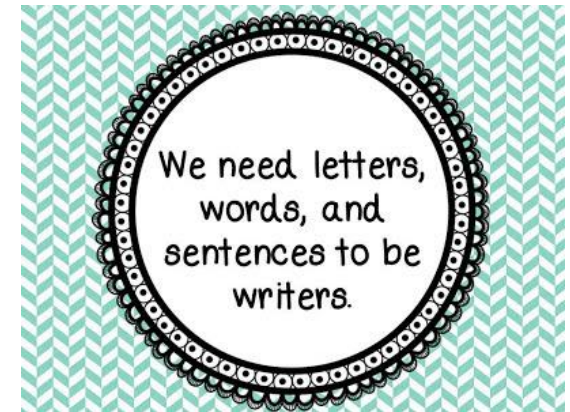
Information Definitions

- Information attributes:
 - **Code** (syntax): alphabet, DNA (ATCG)
 - **Meaning** (semantics): words, codons
 - Expected **Action** (pragmatics)
 - Intended **Purpose** (apobetics): design, result
- All structural attributes are non-material
- **Information** is an **encoded**, symbolically represented **message** conveying expected **action** and intended **purpose**.



Information in Writing

- Information requires:
 - Code: letters, numbers, etc.
 - Meaning: words
 - Action: sentence with verb
 - Purpose: result, design
- Complex but unspecified
neojct oheeh otvp ct mo muj
- Specified Complexity
the cow jumped over the moon



Information in Computers



Example of Pseudocode to determine odd-even number

BEGIN

Number = Input Number

Result = Number % 2

IF Result = 0

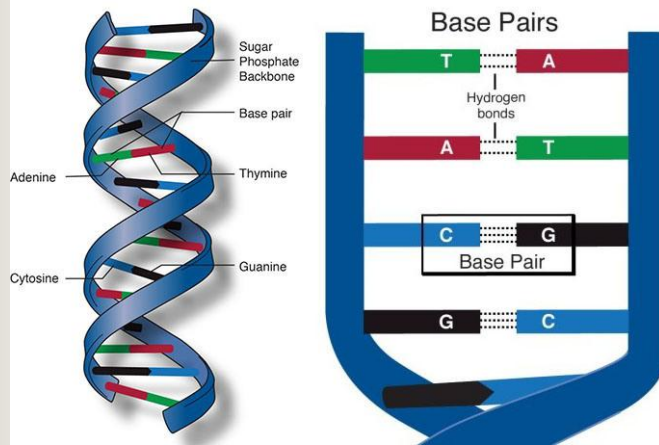
 THEN Print "The number is even number"

ELSE

 THEN Print "The number is odd number"



Information in Living Systems

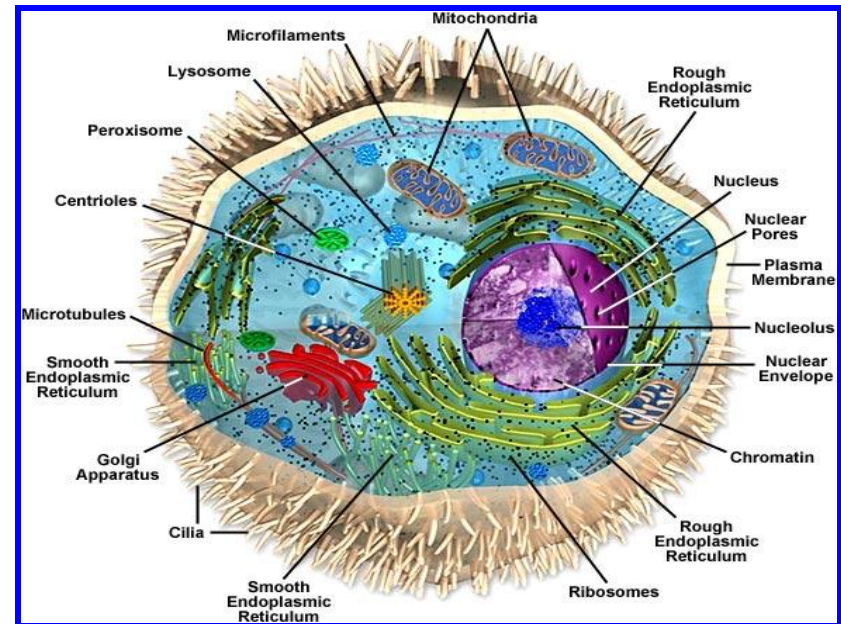


DNA the molecule of life

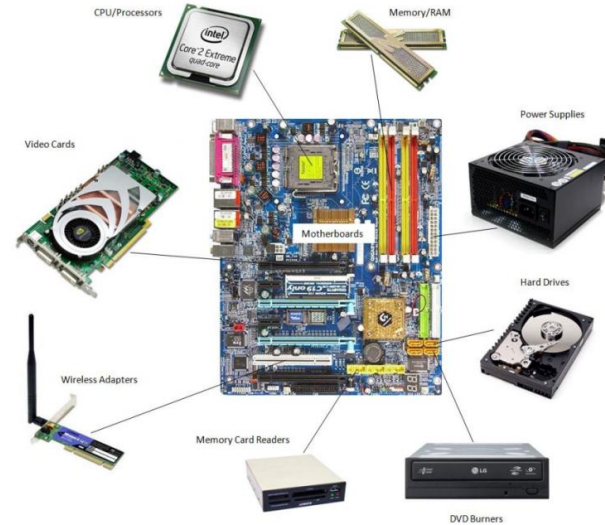
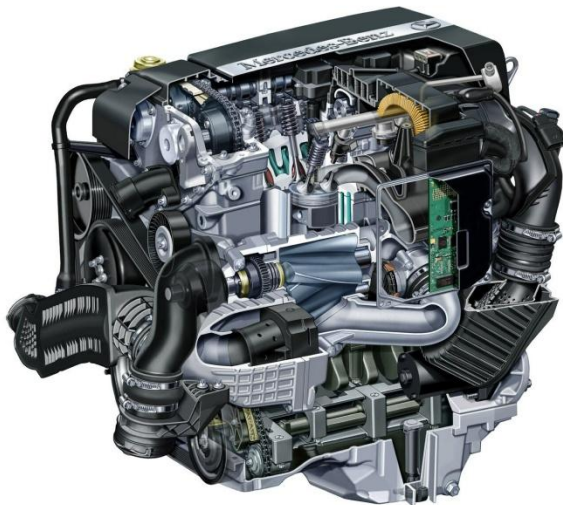
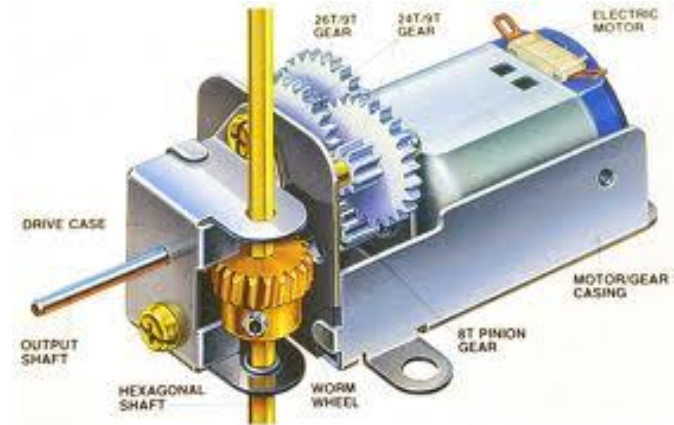
Trillions of cells
Each cell:

- 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

The diagram shows a cell containing chromosomes. A specific gene is highlighted, showing its DNA sequence (A, T, C, G) and how it is transcribed into a protein molecule.

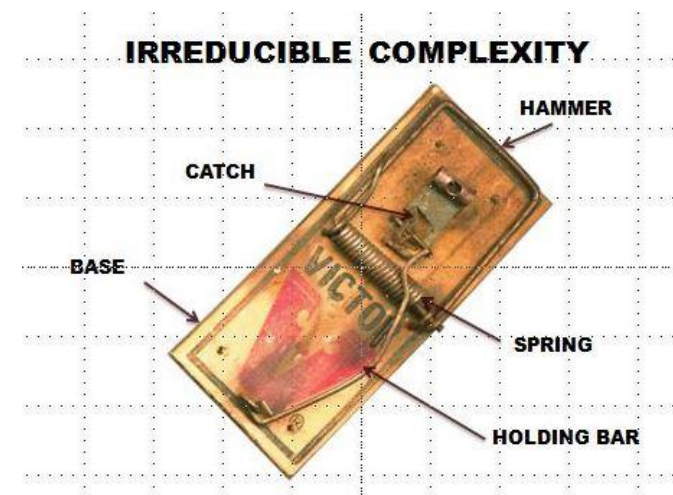
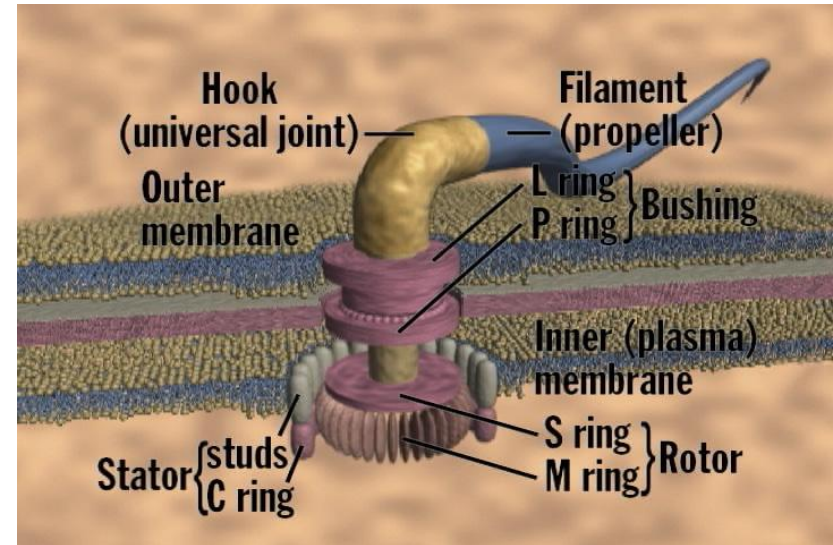


4. The Nature of Machines

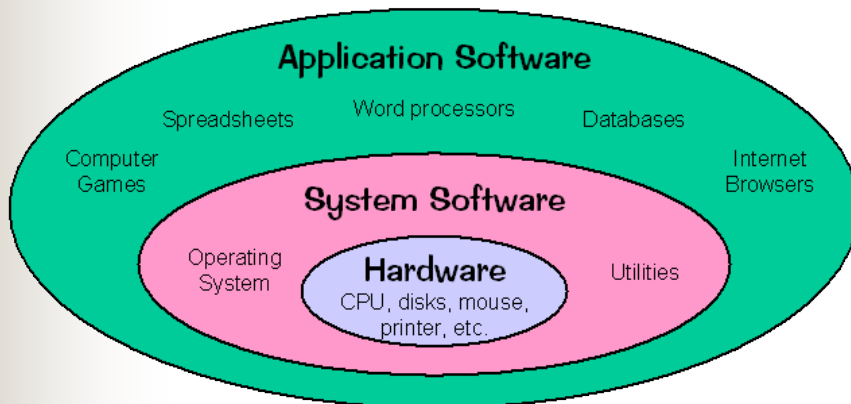
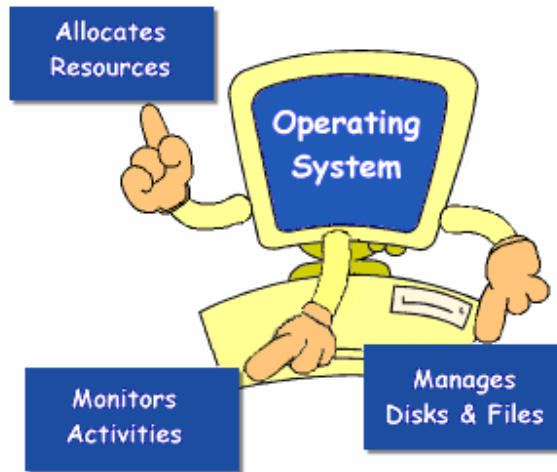


Molecular Machines, e.g. Motors

- Behe showed that the cell, Darwin's Black Box, is filled with **Irreducibly Complex** (**all parts functional**) molecular machines that could not be built by natural selection
- Over 100 molecular motors are now known to exist inside the cell with very specific analogies to human designed motors

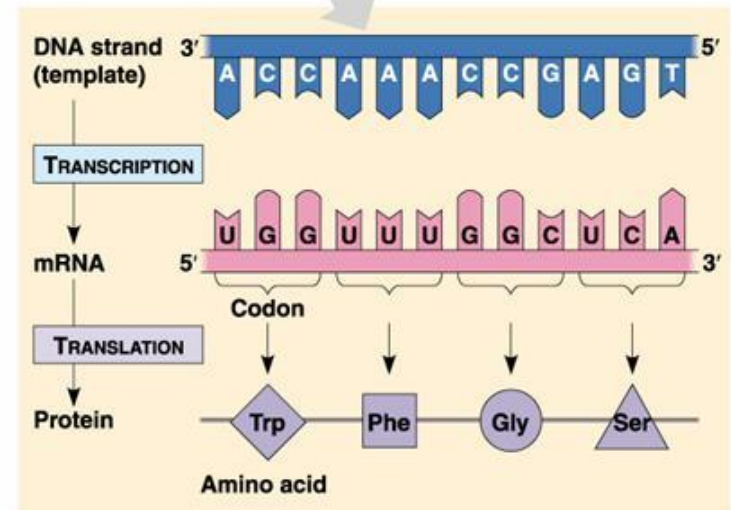
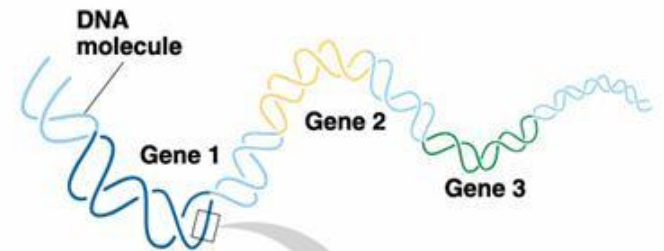
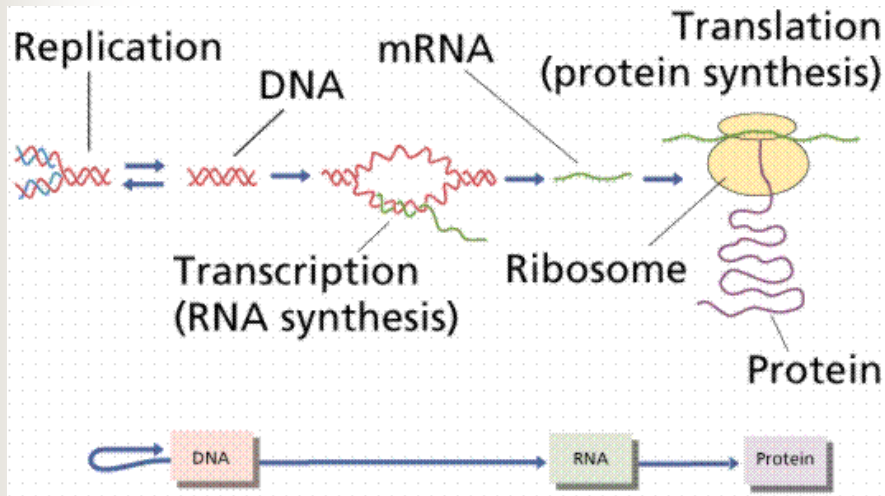


5. The Nature of Programs



```
1 /**
2  * @version 1.30 2000-03-27
3  * @author Cay Horstmann
4  */
5
6 import java.util.*;
7
8 public class CalendarTest
9 {
10     public static void main(String[] args)
11     {
12         // construct d as current date
13         GregorianCalendar d = new GregorianCalendar();
14
15         int today = d.get(Calendar.DAY_OF_MONTH);
16         int month = d.get(Calendar.MONTH);
17
18         // set d to start date of the month
19         d.set(Calendar.DAY_OF_MONTH, 1);
20
21         int weekday = d.get(Calendar.DAY_OF_WEEK);
22
23         // print heading
24         System.out.println("Sun Mon Tue Wed Thu Fri Sat");
25
26         // indent first line of calendar
27         for (int i = Calendar.SUNDAY; i < weekday; i++)
28             System.out.print("  ");
29
30         do
31         {
32             // print day
33             int day = d.get(Calendar.DAY_OF_MONTH);
34             if (day < 10) System.out.print(" ");
35             System.out.print(day);
36
37             // mark current day with *
38             if (day == today)
39                 System.out.print("* ");
40             else
41                 System.out.print(" ");
42
43             // start a new line after every Saturday
44             if (weekday == Calendar.SATURDAY)
45                 System.out.println();
46
47             // advance d to the next day
48             d.add(Calendar.DAY_OF_MONTH, 1);
49             weekday = d.get(Calendar.DAY_OF_WEEK);
50         }
51         while (d.get(Calendar.MONTH) == month);
52         // the loop exits when d is day 1 of the next month
53
54         // print final end of line if necessary
55         if (weekday != Calendar.SUNDAY)
56             System.out.println();
57     }
58 }
```


Programs in the Cell



©1999 Addison Wesley Longman, Inc.

“Human DNA is like a computer program but far, far more advanced than any software we’ve ever created.”

Bill Gates, Microsoft

6. Life: Information, Complexity, Design

- Information in living systems

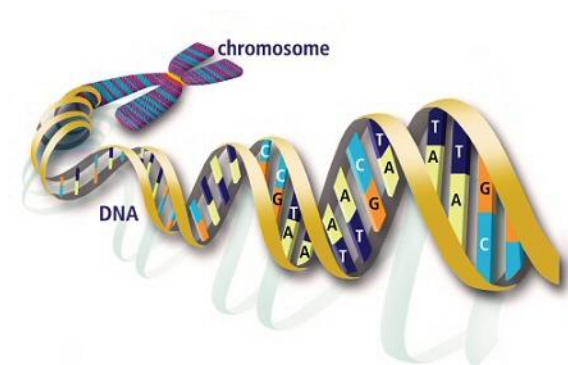
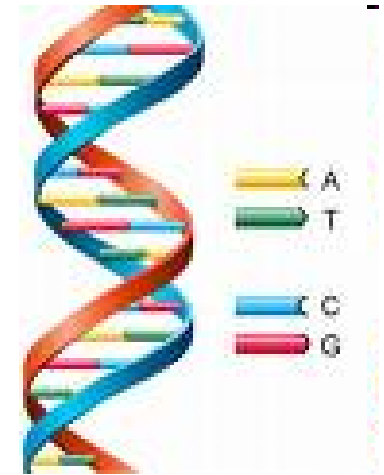
- DNA: base pairs (AT, CG),
codons, 20 left-handed amino acids



- Biological systems exhibit Specified Complexity and use Irreducibly Complex (all parts) subsystems
- Naturalistic mechanisms or undirected causes do not suffice to explain origin of Complexity
- Intelligent Design constitutes the best explanation for the origin of specified complexity and irreducible complexity in biological systems

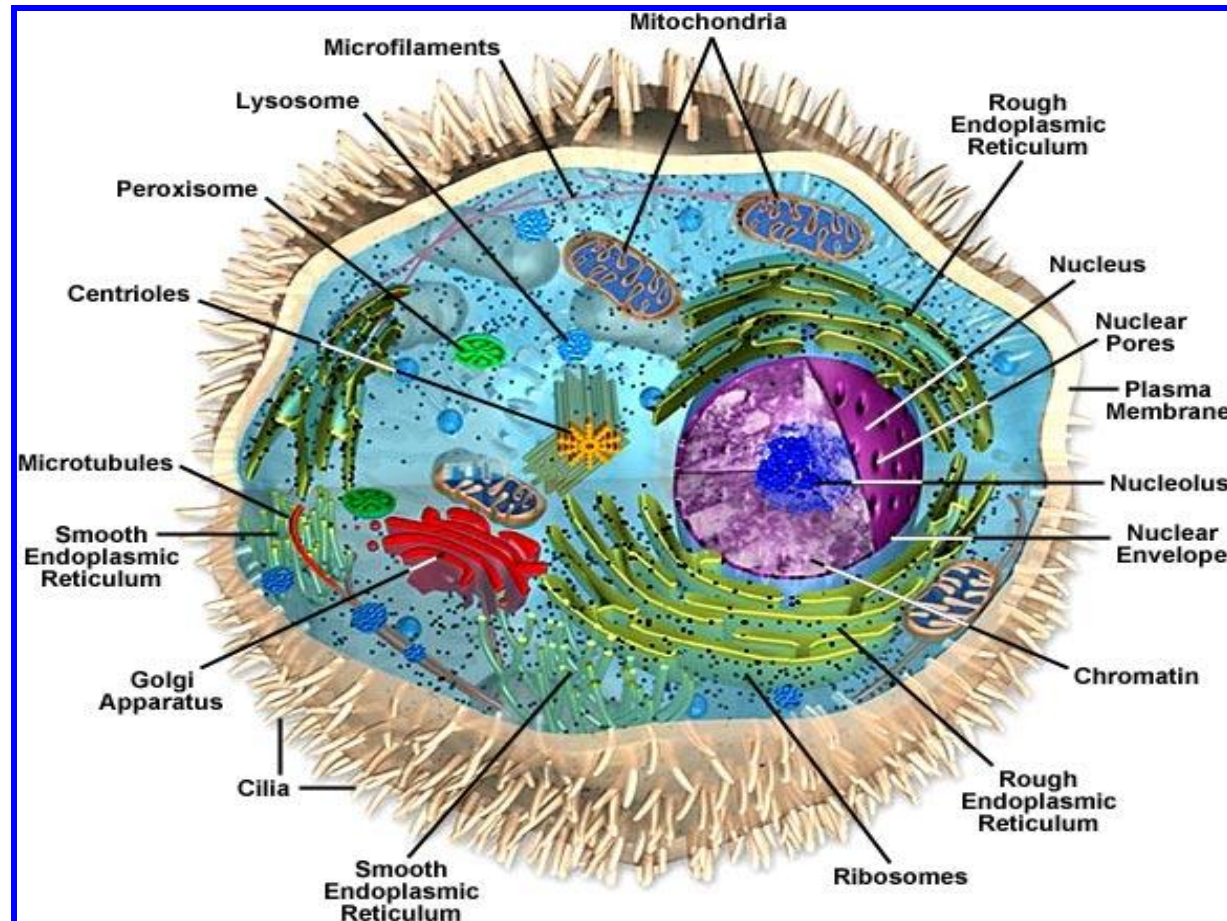
More on Information in Life

- Code: 4 letters – adenine (A), cytosine (C), guanine (G), thymine (T)
 - Words (codons) composed of 3 letters
- Meaning: each 3-letter word represents 1 of the 20 [left-handed] amino acids necessary for protein formation
 - Sequence of codons in the DNA represents sequence of amino acids in a protein
- Action: proteins needed for construction, function, maintenance, reproduction of the organism and its cellular components
- Purpose: reproduction of life

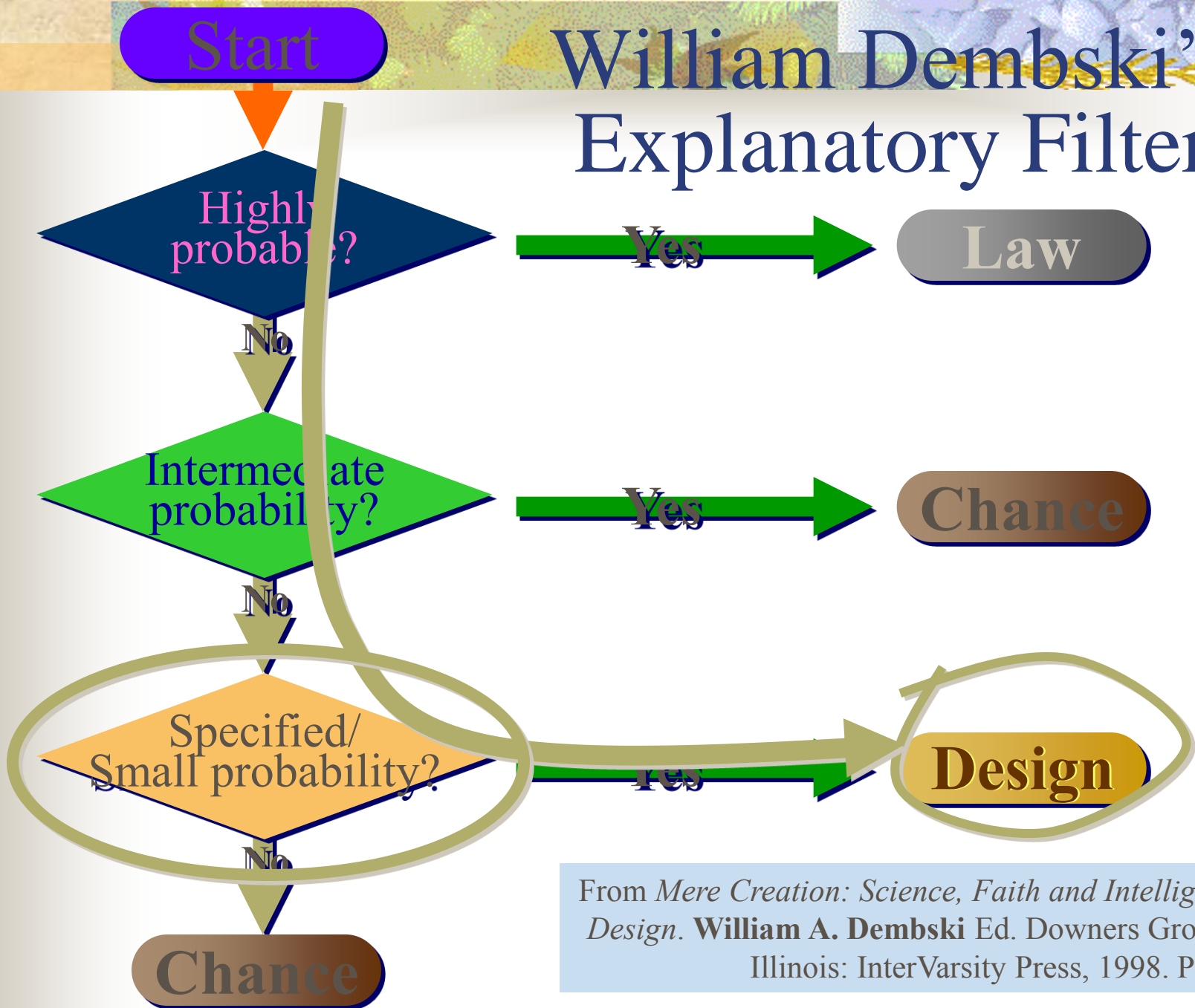


Complexity of the Cell

- Average human body contains 75+ trillion cells



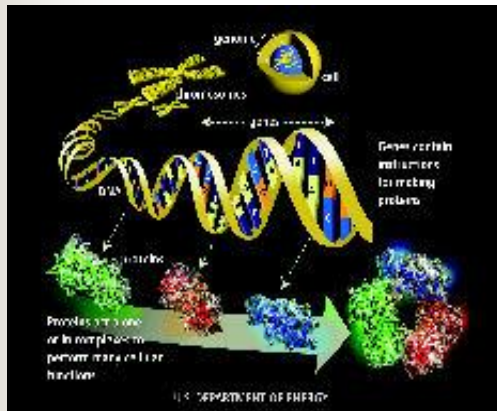
William Dembski's Explanatory Filter



From *Mere Creation: Science, Faith and Intelligent Design*. William A. Dembski Ed. Downers Grove, Illinois: InterVarsity Press, 1998. P99.

Evidence for Design in Life

- **Biology**: the presence of complex and functionally integrated machines has cast doubt on Darwinian mechanisms of self-assembly
- **Molecular biology**: the presence of information encoded along the DNA molecule has suggested the activity of a prior designing intelligence



Harvard biologist **Richard Lewontin** urges scientists to embrace a "materialism [that] is absolute" and to stick with "material explanations, no matter how counter intuitive."

7. Mathematical Probability

- Chances of getting all heads in a row when flipping a coin?

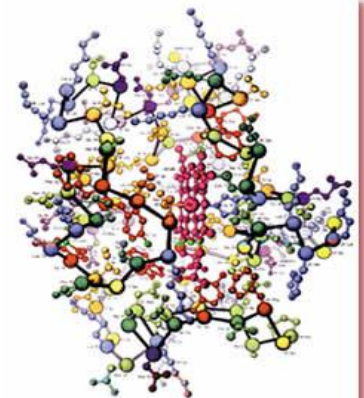


- | | |
|-----------------------|--|
| ■ 1 head | ■ 1 in 2 ($\frac{1}{2}$) |
| ■ 2 heads in a row | ■ 1 in 4 ($\frac{1}{2} * \frac{1}{2}$) |
| ■ 3 heads in a row | ■ 1 in 8 ($\frac{1}{2} * \frac{1}{2} * \frac{1}{2}$) |
| ■ 10 heads in a row | ■ 1 in 2^{10} (1024) or 10^3 |
| ■ 100 heads in a row | ■ 1 in 2^{100} or 10^{30} |
| ■ 1000 heads in a row | ■ 1 in 2^{1000} or 10^{300} |

Law of Probability: < 1 in 10^{50} is mathematically impossible

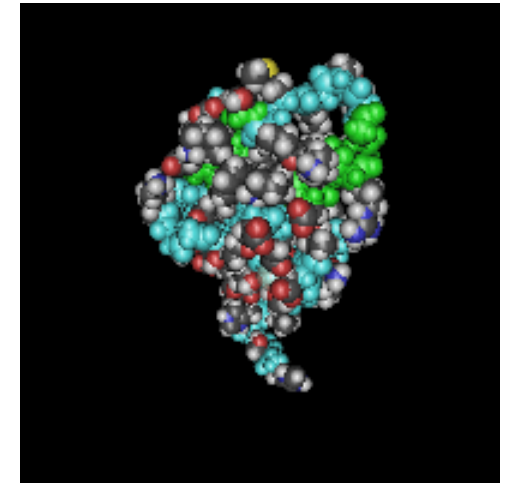
8. Life From Non-Life By Chance?

- What is the probability that an explosion in a junk yard would “create” a car?
- What is the probability of creating a Boeing airplane (5M non-flying parts) from such an explosion?
- What is the probability that 200 monkeys pawing away at a typewriter could “write” a Shakespearean play?
- What is the probability of a protein coming into being by chance?



Proteins and Amino Acids

- Amino acids
 - A few thousand types
 - Right- and left-handed
- Proteins - the building blocks of life
 - Large organic molecule
 - Contain 100's to a few 1000 amino acids
 - Specified long sequences of amino acids
 - Contain 20 different left-handed amino acids
- Crucial protein fact
 - Absence, addition, or replacement of a single amino acid in the structure of a protein causes protein to be useless





Probability of Forming one Protein

- Take 200 parts and line them up in a specific order
 - 200! ways of aligning these parts = 10^{375}
 - Try a new alignment 1 billion times a second
 - Assuming 20 billion years of time, we have $20 * 10^{18}$ seconds
 - The probability of finding the right alignment is practically zero, i.e. 1 in 10^{356}
 - Only 10^{80} atoms in the whole universe
 - Anything less than 1 in 10^{50} is regarded as **zero probability**
- Living organisms contain many more than 200 parts
- Human being contains 75+ trillion cells

How Simple Can Life Be?

- Smallest bacteria
 - 482 genes
 - 600 types of proteins
 - **580,000 DNA base pairs** (letters)
 - Probability of chance formation is zero!

- Human genome
 - 25,000 genes
 - 100,000+ types of proteins
 - **3,000,000,000 DNA base pairs**

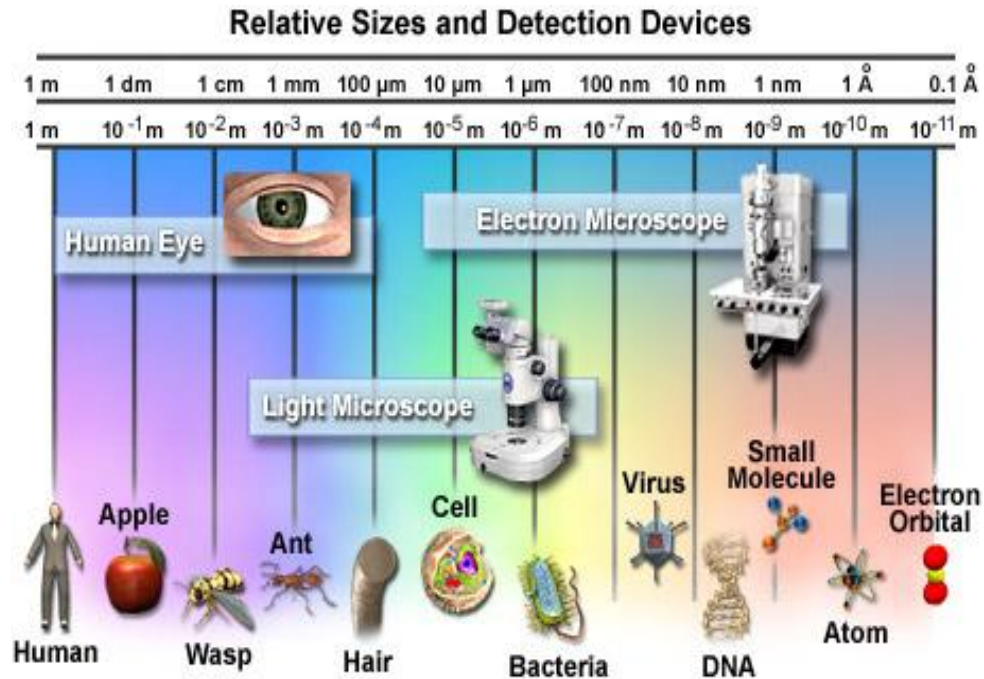
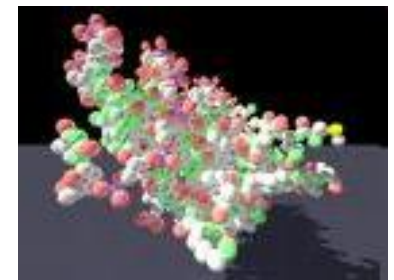
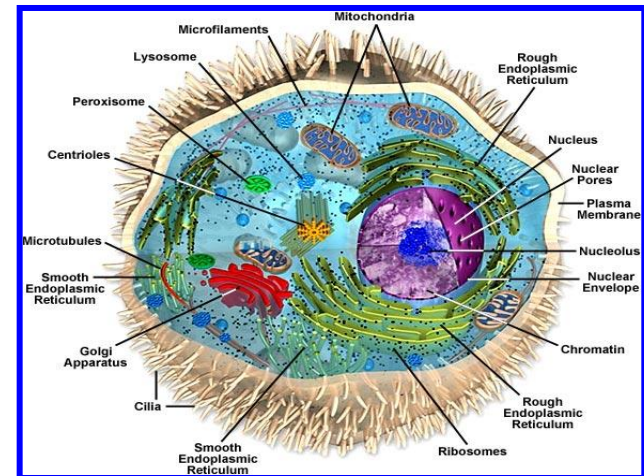


Figure 1

Probability & Life

- A single protein: 1 in 10^{240}
 - 400 amino acids
- A single cell: 1 in $10^{40,000}$
 - Spontaneous formation of life
- Atoms in the universe: 10^{80}
- Law of Probability: 1 in 10^{50}





Living Matter and Information

“It’s a shame that there are precious few hard facts when it comes to the origin of life. We have a rough idea when it began on Earth, and some interesting theories about where, but the how part has everybody stumped.

Nobody knows how a mixture of lifeless chemicals spontaneously organized themselves into the first living cell.”

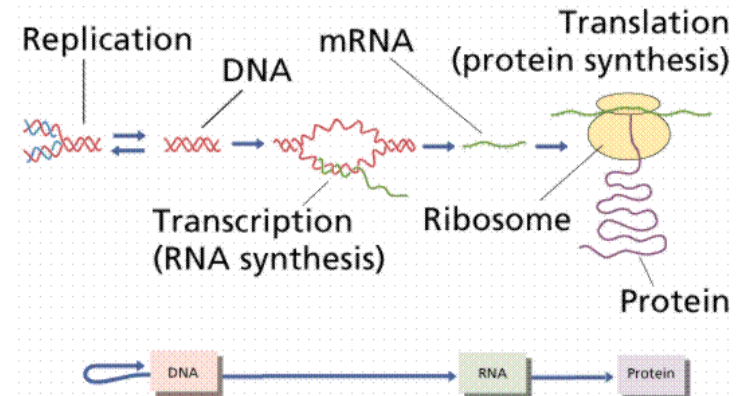
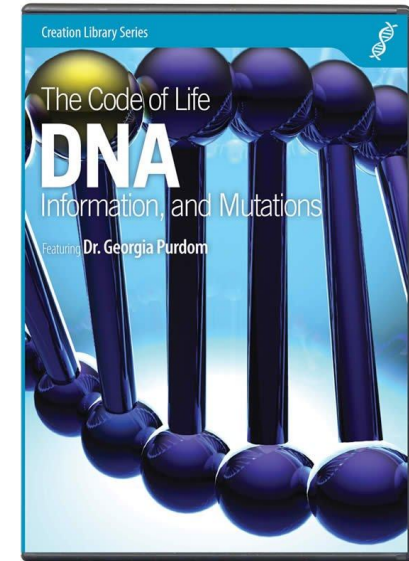
- **Paul Davies**, *Australian astrobiologist* [Evolutionist]

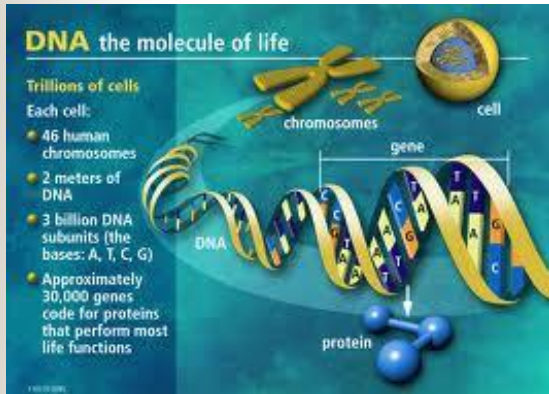
“There is no known law of nature, no known process and no known sequence of events which can cause information to originate by itself in matter.”

- **Werner Gitt**, *German information scientist* [Creationist]

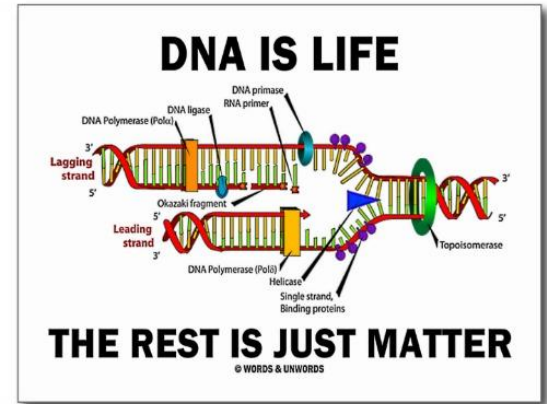
9. In Conclusion

- Life = mass + energy (*material*) + information (*non-material*)
- Life requires:
 - Information stored in DNA
 - Machines (storage + programming)
 - Programs , e.g. replication
 - Complexity: Irreducible (all parts) & Specified (meaning)
 - Design ---> a Designer
- Life from non-life? NOT by chance!
 - Proven by scientific experiments
 - Mathematically impossible





**Thank you
for your
attention!**



**Life did not, does not, and will not
start from non-life by chance!**

Dr. Heinz Lycklama
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www.heinzlycklama.com/messages



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- Probability's Nature and Nature's Probability, Don Johnson
- Evolution's Achilles Heels, CMI