IDEA
Intelligent Design and Evolution Awareness Center

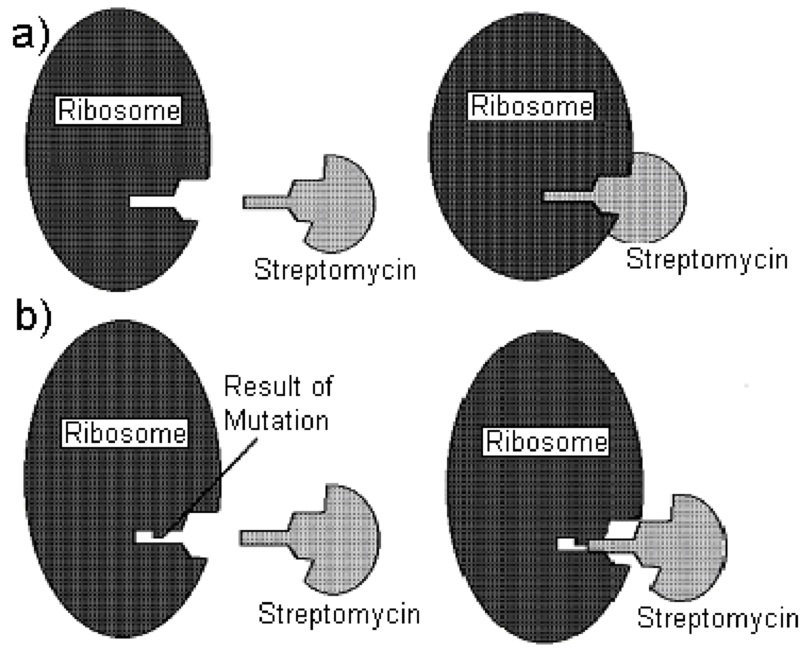
Mutations in a Nutshell

Evolutionary theory asserts that random mutations (changes in the DNA code), followed by natural selection, can result in complicated and functional protein structures. But mutations are almost always harmful. As Nobel Prize winner H.J. Muller concedes, "*[i]t is entirely in line with the accidental nature of natural mutations that … the vast majority of them (are) detrimental to the organism in its job of surviving and reproducing, just as changes accidentally introduced into any artificial mechanism are predominantly harmful to its useful operation.*" French evolutionist Pierre-Paul Grasse noted, "*[n]o matter how numerous they may be, mutations do not produce any kind of evolution.*" Similarly, leading biologist Lynn Margulis (who opposes intelligent design) argues that “new mutations don't create new species; they create offspring that are impaired” and writes that “Mutations, in summary, tend to induce sickness, death, or deficiencies. No evidence in the vast literature of heredity changes shows unambiguous evidence that random mutation itself, even with geographical isolation of populations, leads to speciation.”

The cat sat and ate the rat.	Normal code
The ats ata nda tet her at.	Deletion mutation
The eca tsa tan dat eth era t.	Insertion mutation
The cat sat and ate the rat. The cat sat and	Duplication
The rat the and cat sat.	Inversion

DNA consists of a complex code formed of four “letters” that are arranged into three letter “words.” Each word codes for a subunit of a protein, an amino acid. The proteins are analogous to complex machines, in that they have moving parts that repetitively perform a task. Several classes of mutations are shown above, but even in this simple illustration it is obvious that random changes in code do not increase the information content, making it unlikely that DNA mutations are responsible for the complex specificity of life.

One oft-cited "beneficial" mutation is bacterial antibiotic resistance. Yet antibiotic resistance does not introduce new information into the genome (see right). This is *microevolution* because it involves only minor change "within a species" and does not add information. Antibiotic resistance is not *macroevolution* and does not explain how new biological structures arise; it never results in one bacterial species becoming another. Interestingly, antibiotic resistant bacteria face a net "fitness cost" and are weakened by the very mutation that made them drug-resistant.



In part a, streptomycin, an antibiotic, attaches to a matching site on bacterial ribosomes to interfere with protein synthesis. In part b, a mutation in the ribosome prevents the streptomycin molecule from attaching, making the bacterial cell resistant to the streptomycin. This represents a trivial change that does not add new information into the genome. Illustration from *Not by Chance!* by Lee Spetner.