## Human DNA repair process video - by chance?

Uncommon Descent - Sat, 2009-01-31 00:42

More details of DNA repair have been revealed.

See: Human DNA repair process recorded in action (Video)

(PhysOrg.com) — A key phase in the repair process of damaged human DNA has been observed and visually recorded by a team of researchers at the University of California, Davis. The recordings provide new information about the role played by a protein known as Rad51, which is linked to breast cancer, in this complex and critical process.

. . . In 2006, the researchers recorded a portion of the bacterial DNA repair process, a system considerably less complex than its human counterpart.. . .

This filament composed of a fluorescently-labeled DNA molecule and the repair protein Rad51 grows progressively brighter and longer as more and more Rad51 molecules assemble onto the DNA.

Human DNA is under constant assault from harmful agents such as ultraviolet sunlight, tobacco smoke and a myriad of chemicals, both natural and man-made. Because damage can lead to cancer, cell death and mutations, an army of proteins and enzymes are mobilized into action whenever it occurs.

. . .

Rad51 takes a leading role in the action. Always on call in the cell, molecules of the protein assemble into a long filament along a damaged or broken segment of DNA, where they help stretch out the coiled strands and align them with corresponding segments on the cell′s second copy of the chromosome, which serves as a template for reconstruction. Because this protein is regulated by a gene linked to increased risk of breast cancer,

BRCA2, it is also thought to play a role in suppression of that disease.

With the ability to watch the assembly of individual filaments of Rad51 in real time, Kowalczykowski's team made a number of discoveries. Among those are that, in contrast to their bacterial counterparts, Rad51 filaments don't grow indefinitely. This indicates that there is an as-yet undiscovered mechanism that regulates the protein's growth, Kowalczykowski said.

Another surprising difference between the human and bacterial processes, Kowalczykowski said, is that Rad51 doesn't fall away from the DNA when repair is complete. Instead, proteins that motor along DNA are required to dislodge it.

See full news item:

Article: Jovencio Hilario, Ichiro Amitani, Ronald J. Baskin, and Stephen C. Kowalczykowski, **Direct imaging of human Rad51 nucleoprotein dynamics on individual DNA molecules,** PNAS 2009 106:361-368; doi:10.1073/pnaires.0811965106

In review, the steps identified here:

1) Detect DNA damage

2) Call repair mechanism

3) Assemble protein into a long filament

4) Locate it along the damaged/broken segment of DNA

5) Stretch out the coiled strands

6) Align corresponding strands with cell's second copy of the chromosome

7) Reconstruct using the second chromosome as a template

Protein regulated by a gene

9) Undiscovered mechanism that regulates the protein's growth

10) Motor proteins required to dislodge Rad51 from DNA.

Each of these steps requires highly selective matching configurations. There are probably more steps and regulation involved. This long series of steps suggests an irreducibly complex system.And we are expected to accept that all this occurred by non-directed random mutations and selection?

How does the organism survive while randomly creating this mechanism? Not having any repair mechanism would probably rapidly lead to death. See Sanford, J. C. 2006. Genetic Entropy and the Mystery of the Genome. Elim Publications. Elim, NY.208 pages.

This evidence looks to me like evidence for blind belief in neoDarwinism!