Answers in Depth, Vol. 2(2007), pp. 160–162.
https://assets.answersingenesis.org/doc/articles/aid/v2/tale-two-chromosomes.pdf

A Tale of Two Chromosomes

Jean K. Lightner, D.V.M.

Keywords
chromosomes, centric fusions, information, microRNA, science

Evolutionists can be excellent storytellers. For example, Dr. Ken Miller, a biology professor from Brown University who testified against Intelligent Design (ID) at the Dover trial,[1] tells an engaging story that he claims is compelling evidence for evolution. The problem is that because of his naturalistic assumptions, he himself is unable to distinguish fact from fiction, science from conjecture.

Background

Humans normally have 46 chromosomes. However, sometimes two chromosomes will fuse together to form one big chromosome. Centric fusions are where two acrocentric chromosomes (chromosomes with the centromere very close to one end) fuse to make a large metacentric chromosome (one with the centromere near the middle). It is estimated that around 1/1000 people carry this type of chromosomal rearrangement. While they are sometimes associated with problems such as infertility or serious chromosomal aberrations in the offspring, often they are asymptomatic.[2] This is because all of the necessary information is there in the proper amount; it is just packaged differently.

The Tale of Missing Chromosomes

There are many anatomical similarities between humans and apes. Our chromosomes are similar as well. We can see these similarities in the banding patterns of the chromosomes. One obvious difference between the human and ape karyotype is that apes have 48 chromosomes (24 pairs) and humans normally have 46 (23 pairs). Dr. Miller likes to tell an entertaining "who done it" type story asking where the missing chromosome pair went. He then points out the scientific evidence for a fusion event on human chromosome 2. There is evidence that implies a fusion event may have occurred.[3–5] Human chromosome 2 corresponds to ape chromosomes 12 and 13. Dr. Miller states, "Our chromosome number 2 was formed by the fusion of two primate chromosomes".[6] Dr. Miller assumes common ancestry and the number of chromosomes is consistent with his belief. However, he misses other important evidence that contradicts his basic claim.

Most importantly, reliable eyewitness testimony is more powerful than circumstantial evidence in establishing historical details. The Bible, inspired by the Creator himself, indicates that humans were created in the image of God and distinct from other animals.[7] Humans are clearly distinct from other animals in cognitive and language ability. Occasionally, the ability of chimps to use tools or simple sign language is touted as evidence for their close relationship with us. In reality, chimps are not significantly different in these areas from many other mammals and birds (except that they can use their hands more like us). Chimps lack the anatomy for human speech. Ironically, a few birds have been known to use human language quite well, at least for an animal.[8, 9] Simple tool making ability is also seen in a variety of animals.[10, 11] While intelligence in animals is quite fascinating, it is still significantly different from that of humans and gives no hint of common ancestry. The similarities are much more easily explained by the fact that these animals all had a common designer who reused certain excellent design elements much like engineers do in their creations today.

Observed Patterns of Chromosomal Rearrangement

Dr. Miller's enthusiasm about this chromosomal rearrangement may be tied to the older notion that such mutations are the basis for speciation.[12] This belief was shown to be overly simplistic decades ago when papers appeared describing chromosomal variations which were not eliminated by selection. One intriguing example is a single species of rodent (*Holochilus brasiliensis*) where 26 different karyotypes were identified in the 42 individuals tested.[13] Chromosomal rearrangements have been identified within many ruminant species. There are examples in both goats and sheep where individuals with one or more centric fusions are phenotypically indistinguishable from other animals.[14] One researcher who studied sheep carrying up to three different centric fusions concluded, "It is now considered that there is little or no evidence to suggest that centric fusions in a variety of combinations affect the total productive fitness of domestic sheep".[15] So, the bottom line is that centric fusions themselves do not inevitably result in a new species. It is conceivable that some apes exist with 46

chromosomes. Yet these animals will be distinctly apes; they will not be "evolving" to become a human. If the observed evidence is really from a fusion, it is best explained by the fusion of two human chromosomes.

A Diversion from the Real Issue

The biggest problem with Dr. Miller's story is that it distracts the audience from the real issue. It is not the number of chromosomes that is really a significant difference between humans and apes, but the information contained on those chromosomes. According to the evolutionary scenario, our apelike ancestors underwent major anatomical restructuring to develop upright posture, speech ability, and an astounding increase in cognitive function all by random, chance processes. Such profound changes were never observed; they are inferred because evolution has an atheistic basis and assumes there is no creator.

Despite the superficial similarities between human and ape chromosomes, there are important differences on the molecular level. There are many protein coding genes in humans that are distinctly human and are not found in chimps. Perhaps more significantly are the differences in genes that don't code for proteins. Genes have been described which code for microRNA (miRNA). The miRNA molecule is not translated, but acts directly to control gene expression. A single miRNA can regulate the expression of dozens or even hundreds of genes. A study of miRNAs expressed in the brain found 51 of 447 new miRNAs were distinctly human and 25 were only found in the chimp.[16] The idea that so many genes were altered so that they are expressed in the proper concentration according to cell type and can effectively control the many different genes they regulate is not what we would expect of chance processes.[17] It is more rational to believe that God created humans distinct from chimps, just as He tells us in the Bible.

Blind to Alternatives

While the evidence for a fusion appears consistent with the evolution model, Dr. Miller implies that it is inconsistent with ID or creation models. He makes the ludicrous claim that the only way creationists can respond to this evidence is: "That's the way the designer made it".[18] This statement reveals Dr. Miller's inability to think outside his paradigm. As a creationist who finds chromosomal rearrangements fascinating, I can honestly say I never thought of that possibility. One possibility I had considered is that humans and apes (and perhaps other animals too) were created with the same number of chromosomes with similar banding patterns.[19] Since chromosome numbers vary within created kinds, it is not in the chromosome number where we should expect the most significant differences to lie, but in the coded information.

Although Ken Miller's story does not properly consider current scientific understanding of chromosomal fusions or significant genomic differences between apes and humans, he promotes it enthusiastically to support his belief that humans descended from apes. Furthermore, he is ardently opposed to teaching intelligent design in the schools, claiming that it is not scientific.[20] He appears to be blind to the fact that the belief that humans descended from apes is a religious (atheistic) one; such changes have never been observed. Thus, he is not able to distinguish between science and religious indoctrination.

True Science and the Bible Believer

Despite the misunderstanding and wild story telling of evolutionists, science is truly a fascinating and rewarding field for Christians who believe the Bible. The sciences were founded by people with a strong Christian worldview.[21] There are still many fascinating questions waiting to be answered. For example, why do chromosomal rearrangements occur? It has been pointed out in the literature that they are non-random.[22] Do they have a purpose? (Evolutionists aren't supposed to ask this.) Do they play a role in speciation? If so, how? Do they help animals adapt to new environments? Why are there times when they cause problems (that is, some carriers have a high percentage of unbalanced gametes[23] which results in infertility or abnormalities in their offspring)? How can they become fixed in a population? God's world is out there waiting to be explored. The truth is far more fascinating than fairy tales.

Footnotes

1. Sheppard, P., 2005. Dover, Pennsylvania (USA) Intelligent Design trial ends today. Retrieved from http://www.answersingenesis.org/docs2005/1104dover.asp.
2. Morel, F., et al., 2004. Meiotic segregation of translocations during male gametogenesis. *International Journal of Andrology* **27**(4):200–212.
3. There are patterns of DNA that generally occur at the end of chromosomes which appear in the middle of chromosome 2 where the fusion is believe to have occurred (subtelomeric duplications). While there is no second centromere, there are patterns of DNA found near centromeres that occur in chromosome 2 where the second centromere is believed to have previously existed

(pericentromeric duplications).
4. Hillier, L.W., et. al., 2005. Generation and annotation of the DNA sequences of human chromosomes 2 and 4. *Nature* **434**(7034):724–731.
5. The possibility of human chromosome 2 being the result of a fusion is not a problem for creationists. It is only the idea that this chromosome was derived from a nonhuman ancestor that we would take issue with.
6. Miller, K. Human Evolution. Retrieved from, http://www.youtube.com/watch?v=zi8FfMBYCkk.
7. Genesis 1:26–28; 2:7
8. Catchpoole, D. Petulant parrot proves a point—but atheists can't (or won't) see it. Retrieved from, http://www.creationontheweb.com/content/view/4592/.
9. Jaroncyk, R. Parrot prodigy. Retrieved from, http://www.creationontheweb.com/content/view/4901/.
10. Jaroncyk, R. Jumbo minds. Retrieved from, http://www.creationontheweb.com/content/view/4713/.
11. Weir, A.A.S., et al. Shaping of hooks in New Caledonian crows. Retrieved from, http://www.sciencemag.org/feature/data/crow/.
12. Chromosomal rearrangement may play some role in speciation, but it is not associated with the type of major anatomical rearrangements that ape to human evolution demands. They also come at a cost, since some DNA is generally lost during the rearrangements. Also, some rearrangements are associated with abnormalities. For example, it is estimated that 5% of Down's syndrome cases are the result of an extra 21st chromosome carried on a translocation. Ref. 14.
13. Nachman, M.W., and Myers, P., 1989. Exceptional chromosomal mutations in a rodent population are not strongly underdominant. *Proceedings of the National Academy of Sciences* **86**(17):6666–6670.
14. Lightner, J.K., 2006. Changing chromosome numbers. *Journal of Creation* **20**(3):14–15.
15. Bruere, A.N., and P.M. Ellis, 1979. Cytogenetics and reproduction of sheep with multiple centric fusions (Robertsonian translocations). *Journal of Reproduction and Fertility* **57**(2):363–375.
16. Berezikov, E., et al., 2006. Diversity of microRNAs in human and chimpanzee brain. *Nature Genetics* **38**(12):1375–1377.
17. Miller, Ref. 6.
18. Borger, P., and R. Truman, 2007. Ultraconserved sequences pose megaproblems for evolutionary theory. *Journal of Creation* **21**(2):8–9.
19. While it may turn out that this is not the case, it is fully consistent with a straightforward interpretation of the Bible. Nothing in Scripture implies that God must have created different kinds with different chromosome numbers or even different banding patterns.
20. A victory for science and education in Dover. Retrieved from, http://www.millerandlevine.com/dover/index.html.
21. Patterson, R., 2006. *Evolution exposed,* chap. 1. Petersburg, Kentucky: Answers in Genesis.
22. Bandyopadhyay, R., et al., 2002. Parental origin and timing of de novo Robertsonian translocation formation. *American Journal of Human Genetics* **71**(6):1456–1462.
23. Gametes normally contain one of each chromosome pair. When there is a loss or gain of chromosomal material during formation, an unbalanced gamete results. This can be from a missing chromosome, or from a translocated chromosome occurring along with one (or both) of its homologues. If a translocation is present without either homologue, then the gamete will be balanced.

© 2007 Answers in Genesis