

## **Why Would I Want My Doctor to have Studied Evolution?**

If my doctor were treating me, I would want to know that he or she knew about evolution. Evolution is so ingrained in medicine that every doctor should have studied it. As Theodosius Dobzhansky stated, “Nothing in biology makes sense except in the light of evolution”; evolution is inescapable in all of the life sciences, including medicine. I have been fortunate in that my personal physicians have been knowledgeable about evolution; I even learned a bit from them. However, it disappoints me that a few doctors do not hold such a view<sup>1</sup>, and I feel even sorrier for their patients.

Medicine depends highly upon evolution by natural selection; far more than meets the eye. The more obvious examples are the evolution of antibiotic resistance by pathogens and the behavior of certain inherited diseases. These are examples of microevolution (a term hijacked heavily by most, if not all, creationists). As obvious as these might be, they are extremely important. One instance is the elusiveness of the Human Immunodeficiency Virus (HIV). The virus evolves so quickly that its surface is altered significantly between generations; by the time antibodies are made against the virus, it has mutated and made the antibodies useless<sup>2</sup>. Luckily, evolution has also given us several tools against the virus. The part of the virus that invades cells is preserved by natural selection because it is needed for reproduction. It is this part which is the virus’s weak point and may have it succumb to a vaccine or cure<sup>3</sup>. Another tool has to do with treatment. When an infected person is being treated for AIDS, they usually have to take several different medications to be treated effectively. This is because if someone is taking only one drug, the virus would easily gain a resistance to it because of its fast mutation rate. Luckily, some strategies have been found to bypass this. First of all, a wild type virus reproduces faster than a resistant virus. This means that without selective pressures, the wild type is more successful than resistant types, thus a person with a resistant virus could revert back to the wild type by stopping medication. After that person is back to being infected with the wild type virus, the physicians hit it with several different drugs. Since the virus would need a different mutation for every drug, it would be extremely difficult for the virus to gain immunity, and hopefully it would be eliminated.

However, there are also a few places where common descent (macroevolution) is directly related to medicine. One is the testing of medicines and drugs on animals. The reason we test

medicines on animals is because we assume that animals are related to us, thus they would react in a similar manner<sup>4</sup>. Without common descent, there would be no reason to test drugs on animals and we would have to resort to human testing, which is only done once the drug is considered relatively safe. Another place is the tracking of diseases. There are certain diseases that are able to cross species barriers, called zoonoses (more specifically, are transmitted between humans and other vertebrates)<sup>5</sup>. A couple of popular zoonoses are mad cow disease, the bubonic plague, and rabies. These diseases are usually transmitted through homologous mechanisms between different species. Mad cow disease affects the central nervous system of its victims. Due to the similarity between bovine and human nervous systems, this makes the disease able to cross from cows to humans. Any effort to accurately track the spread of mad cow disease must also track cows because they are capable of spreading it to other animals or other humans. The same relationship occurs for the bubonic plague between humans and rats; even though the plague must be spread by a vector (a tick or flea), the symptoms and mechanisms of infection are similar. The same happens with rabies. Without assuming common descent, our understanding of zoonoses would not be complete because the infected animals must have some similar structures to be infected by the same pathogen. In order to track the zoonoses, we must know which structures are needed for transmission, and how the diseases are transmitted.

Fortunately, I have a doctor who is knowledgeable about evolution. One time, when I had an ear infection, he told me the pros and cons about taking antibiotics to clear it up. One of the cons he mentioned was that it could help progress resistance to the antibiotics. He also told me the history of antibiotic resistance in the United States. Decades ago, in America, whenever someone had an infection, a doctor would automatically prescribe antibiotics. However, in some European countries, doctors encouraged their patients to wait to see if the infection would clear up by itself, without the aid of antibiotics. Most of the time, it did. Antibiotics were used only as a last resort. Now we see that antibiotic resistance is much more prevalent in the United States than in Europe. If only doctors in the past could have known the detrimental effects of overprescription of antibiotics, perhaps they would have reduced their usage. In order to prevent follies such as these from happening again, I think all doctors, including mine, should have studied evolution.

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1 “Physicians and Surgeons Who Dissent from Darwinism” <http://www.pssiinternational.com/list.pdf>

2 “A Chink in HIV’s evolutionary Armor”. Understanding Evolution. (<http://evolution.berkeley.edu/>)  
March 2007.

[http://evolution.berkeley.edu/evolibrary/news/070301\\_hiv](http://evolution.berkeley.edu/evolibrary/news/070301_hiv)

3 Zhou, T., Xu, L., Dey, B., Hessel, A. J., Van Ryk, D., Xiang, S., Yang, X., Zhang, M., Zwick, M., Arthos, J., Burton, D. R., Dimitrov, D. S., Sodroski, J., Wyatt, R., Nabel, G. J., and Kwong, P.D. (2007). Structural definition of a conserved neutralization epitope on HIV-1 gp120, *Nature*, 445:732-737.

4 Burt Humberg. Panda’s Thumb. 2007, March 9. Accessed 2007, March 11.

[http://www.pandasthumb.org/archives/2007/03/egnorance\\_combo\\_arrogance.html](http://www.pandasthumb.org/archives/2007/03/egnorance_combo_arrogance.html)

5 World Health Organisation (1959). Zoonoses: Second report of the joint WHO/FAO Expert Committee.