To Dye or Not to Die: Bacterial Mutagenicity and Carcinogenesis

Johnson, Tahlor (School: The Governor French Academy)

I am researching the relationship between permanent hair dyes and their possible mutagenic properties. After reading that breast and bladder cancer were the two types of cancer most linked to hair dye and mutagenic chemicals, I performed this experiment to determine the mutagenic activity of permanent hair dyes. I hypothesized that permanent hair dyes that contained natural ingredients would have smaller mutations on the sample bacteria. To test my hypothesis, I used an Ames Test on five popular brands of hair dyes. As expected, all the testing disks contained reverbants, but of all hair dyes one of the synthetic hair dyes had the least back mutations for both of its trials, compared to the other synthetic hair dyes. The natural hair dye plate had the greatest number of back mutations for both of its trials, compared to the other “synthetic” hair dyes and control plates. The expected outcome of this scientific investigation was proven to be incorrect. While the natural hair dye claims to contain “natural” ingredients, it was proven to be a greater mutagen than the four “synthetic” dyes. By using an Ames test, the scientist indicated that the natural hair dye could be a possible carcinogen with further testing.

Awards Won: