On Hair Color in France

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Introduction

Sex-linked coloration is a familiar phenomenon in the animal kingdom. Most people are familiar with the bright coloration of the male in many species of birds [2]. Instances of sex-linking of hair color in mammals are rare, but not unknown. For example, the tricolor pattern in the domestic house cat *felix domesticus* is found almost exclusively in the female [4]. We report here our discovery of sex-linking of hair coloration in a population of humans (*homo sapiens*). It is, to our knowledge, the first such reported observation in this species.

Protocol

On a trip to France, we were struck by our informal observation that, while almost all the men we encountered had brown hair, many of the women were blondes. This observation inspired us to conduct a scientific survey. Our preliminary observations made us suspect that this phenomenon was limited to the native French population of European origin. We therefore surveyed only Caucasian subjects whom we could ascertain to be of French origin.[1] Our data were obtained in several parts of France including Paris, the Basque region, and the Mediterranean coast.

We classified each subject's hair color as either *brown*, *blonde*, *red*, or *other*. The *other* category included individuals with black or gray hair, as well as with hair below the limit of detection.

[1]Details of our selection criteria will be published in a separate report.

Results

The results of our study are shown in the following table.

	Blonde	*Brown*	*Red*	*Other*	*Total*
Female	46	45	13	12	116
	39.66%	38.79%	11.21%	10.34%	100%
Male	1	101	0	20	122
	0.82%	82.79%	0.00%	16.39%	100%

These results are displayed graphically in the following tart charts:[2]

The disparity between males and females is evident from even a casual observation of these data. A formal statistical analysis using Fisher's exact test was carried out. The probability that this disparity was due to chance (the p-value) is 7.62×10^{-21}.

Discussion

While the evidence for the existence of this phenomenon is overwhelming, its evolutionary significance is unclear. A clue is provided by our observation that a number of the blonde and red-haired female subjects showed brown coloration in the few millimeters of hair closest to the scalp. This suggests two obvious possibilities. One is that chimerism may be involved. However, our data were obtained in the fall, and so we offer an alternative

[2] "A table is nearly always better than a dumb pie chart; the only worse design than a pie chart is several of them." [3]

conjecture: that the bright coloration displayed by females may be a seasonal phenomenon, with their hair turning brown in the colder months and then lighter with the return of warm weather.

Further complicating the situation are some reports we received of an apparent rightward shift across the table for females, moving away from blonde towards brown and red. Perhaps we are witnessing a period of rapid evolution between equilibria [1]. Additional research may clarify what, exactly, is going on here.

References

[1] Niles Eldredge and Stephen Jay Gould. Punctuated equilibria: The tempo and mode of evolution reconsidered. *Paleobiology*, 3:115–151, 1977.

[2] Roger Torey Peterson. *The Birds of North America*. Houghton Mifflin, 1998.

[3] Edward R. Tufte. *The Visual Display of Quantitative Information*. Graphics Press, 1983.

[4] Carolyne Vella, John McGonagle, Lorraine Shelton, and Terry W. Stanglein. *Robinson's Genetics for Cat Breeders and Veterinarians*. Butterworth Heinemann, 1999.