

**Genetic Testing of color types of human hair: To determine correlation overtime with hair problems such as brittleness or fading luster**

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**Abstract**



*Blondes*



*Redheads*



*Brunettes*

A panel of 300 people will be monitored over time from three hair colors: blond, redhead, and brunette. Hair sample from each person will be taken over a three year span every week. The hair strands will be tested by a 3100 prism genetic analyzer to determine sequences common to each hair color yet different from each other. Each week the hair samples will be graded for brittleness and luster fading by experts in the field. After the three year study, using the panel results and the genetic sequence data, correlation studies will be done to verify which hair type is affected more over time with the 2 various hair problems.

If there is a genetic basis for this, treatment of hair early in the person life could help prevent the person's proclivity for problems. In conclusion this data can be studied by chemo metrics to correlate the testing to a simple FTIR test to in seconds help proscribe a treatment for a subjects future hair concerns.

MB 3600 NIR Spectrometer



ABI Spectrum 3100 Genetic Analyzer



### **100 women of each hair type chosen for the study by hair experts**

Hair swatches are split into 2 parts-one for DNA extraction and the other for FTIR. Swatches of hair are treated and the DNA extracted. The sequences are determined by ABI Prism 3100. The sequences found to be identical for each hair type are used to segregate each hair type and individual. The hair swatch not DNA extracted is run on a ABB MB160 NIR FTIR spectrophotometer. This procedure is repeated each week for 3 years to collect data. Hair experts examine the hair of each individual over each week over the three year span listing grades for brittleness on a 1-10 scale and luster on a 1-10 scale. The results are logged in a chart to follow the change of the hair over the span of the testing.

Once all the data is collected a chemometric correlation will be performed on the datasets to see which hair type may have a proclivity to this kind of future hair damage. Once the calibration curves are determined, then a person of a particular hair type can have their hair tested by the NIR instrument which can give a probability that the person may be prone to the brittleness or luster fade in the upcoming years. If a person is prone steps can be taken to soften the hair and add luster using the various commercial products available over the counter. A preemptive strike as it were. The final prototype instrument is still years away but it is something we can look forward to in the future

#### **Biography**

He has worked as a Chemist for over 39 years. He has been associated with different Multi-National Corporations - Bristol-Myers Squibb, Hoffmann-La Roche, Helene Curtis Industries, Inc., Lever Brothers, Menley & James, Quaker Oats, Procter & Gamble, Elsag Bailey, Siemens, PerkinElmer and Johnson & Johnson

He has developed over 420 products that are widely used today all over the world. I have worked in most of the current chemical industries and have contacts throughout these industries.