



California Science Center
CALIFORNIA STATE SCIENCE FAIR
2001 PROJECT SUMMARY

Your Name (List all student names if multiple authors.) Arielle R. Baskin-Sommers	Science Fair Use Only <h1 style="margin: 0;">S0302</h1>
Project Title (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9) Does Heteroplasmy in Mitochondrial DNA (mtDNA) Vary by Race?	Division _ Junior (6-8) <u>X</u> Senior (9-12)
Preferred Category (See page 5 for descriptions.) 3 - Biochemistry / Molecular Biology	
Abstract (Include Objective, Methods, Results, Conclusion. See samples on page 14.) Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.	
<p>The purpose of this study was to further understand the phenomenon of heteroplasmy, a condition whereby both mutant and normal type mitochondrial genomes are found to exist within a particular individual . Although mtDNA sequence variation has been examined in medical, anthropologic and forensic studies, the prevalence of heteroplasmy across racial groups is unknown. In the present study, telogen (shed) human hairs and blood samples were collected from 40 individuals (White, African-American, Asian, and Hispanic) ranging in age from 16-49 years. The extracted samples were typed by use of sequence-specific oligonucleotide (SSO) probes that determined heteroplasmy variations. The results of the study suggest that heteroplasmy did vary by race. Of the 10 cases found to be heteroplasmic, blacks comprised 50% (N=5) of the cases. The frequency of blacks exhibiting heteroplasmy was far greater than expected. In addition, the results indicate that heteroplasmy did not vary by age group. The percentage of cases within each age group was the same (25%). It is important to note, that the upper age limit for this study was 49 years. Previous research has shown that heteroplasmy increases with advanced age, particularly in individuals 60 years and older.</p>	
Summary Statement (In one sentence, state what your project is about.) The purpose of this study was to assess whether heteroplasmy, a condition whereby both mutant and normal type mitochondrial genomes are found to exist within a particular individual, varies by race .	
Help Received in Doing Project (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4. Used the Criminalistics Laboratory at California State University, Los Angeles.	