

### Session Information

**Session Title:** Evolutionary and Population Genetics **Session Type:** Poster

**Session Location:** Exhibit Hall, Lower Level South, Moscone Center **Session Time:** Wed 10:00AM-4:30PM

### Abstract Information

**Program Number:** 3329W **Presentation Time:** Wed, Nov 7, 2012, 2:15PM-3:15PM

**Keywords:** Evolutionary and Population Genetics, KW072 - genetic diversity, KW159 - SNP analysis/discovery, KW054 - ethical, legal and social issues, KW079 - genome sequencing, KW081 - genomic methodologies

### Abstract Content

**Genetic ancestry and admixture analysis in a Bermudian population reveals evidence of Native American origins consistent with oral histories and genealogies.** *J. B. Gaieski<sup>1</sup>, E. Elhaik<sup>2, 3</sup>, A. C. Owings<sup>1</sup>, M. G. Vilar<sup>1</sup>, A. T. Walia<sup>1</sup>, D. F. Gaieski<sup>4</sup>, R. S. Wells<sup>5</sup>, T. G. Schurr<sup>1</sup>, The Genographic Consortium* 1) Anthropology, University of Pennsylvania, Philadelphia, PA; 2) Department of Mental Health, Johns Hopkins University Bloomberg School of Public Health, Baltimore, MD; 3) McKusick-Nathans Institute of Genetic Medicine, Johns Hopkins University School of Medicine, Baltimore, MD; 4) Department of Emergency Medicine, Hospital of the University of Pennsylvania, Philadelphia, PA; 5) Mission Programs, National Geographic Society, Washington, D.C.

**Background:** Shortly after its colonization in the early 17th century, Bermuda became the first English speaking dependency to forcibly import its labor by trafficking in enslaved Africans, European ethnic minorities, and indigenous Americans. Unlike the many ethnic groups that now call the island home, Bermuda's St. David's Islanders claim to be linked to Native American ancestors. In particular, their use of oral traditions and complex genealogies helps to reinforce their Native American identity. To elucidate the influence of historical events on genetic ancestry and native cultural identity among St. David's Islanders, we examined mtDNA and Y-chromosomal variation in over 100 individuals. We found that the majority of their mtDNA and Y-chromosome haplotypes (greater than 98%) were African and West Eurasian in origin. However, due to the limitations of this approach in reconstructing the genetic history of admixed populations, and because most participants were interested in learning more about their genetic genealogies, we expanded our analysis to include autosomal markers using a novel genotyping platform. **Methods:** To identify genetic contributions of putative indigenous American ancestors among the St. David's Islanders, we used the GenoChip to genotype Bermudians along with 200 samples from ~20 worldwide populations. Developed by Genographic Project scientists, the GenoChip is a SNP array ascertained from over 450 worldwide populations, and is dedicated to enhancing our knowledge of genetic anthropology. **Results:** Principal component analysis of the autosomal SNP data separated our participants into three discrete clusters. An admixture analysis identified up to 9% ancestry associated with Native Americans overall. The two largest clusters overlapped with African Americans and Puerto Ricans, and distributed evenly amongst the two main clusters (mean of 3% each). Samples from the third cluster averaged an unusually high Native American ancestry (mean of 6%). **Conclusions:** The GenoChip enabled us to detect otherwise elusive Native American ancestry among the Bermudians of St. David's Island. We speculate that the uneven distribution of this ancestry is due to admixture of Africans, Europeans, and

Native Americans in varying degrees in the different source populations for modern-day St. David's Islanders. Application of this novel genotyping platform has provided new insights into the complex history of the Bermudian population.

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