Togiak Archaeological Site Hair Samples- What Species?

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Introduction
- The Togiak Archaeological site is on the SW coast of Bristol Bay, Alaska
- The site contains the remains of an old Yu’pik village, across the bay from a current Yup’ik village: New Togiak Village
- Dr. Kristen Barnett and the Togiak Archaeological and Paleoecological Project (TAPP) studied the site using surface/subsurface mapping, surface mapping using GIS, sub surface mapping using a geomagnetometer, and 36 core samples-no excavating out of respect for the current Yu’pik
- The core samples radiocarbon dated core samples to a minimum of 141 years ago and a maximum of 1242 years ago.
  ○ Included charcoal, shell, bone, and HAIR
- Mitochondrial (mtDNA) analysis of the hair samples could reveal what or whom the hairs belong by sequencing the 16S region
- If the mtDNA analysis turned out to be human, we were to stop analysis and confer with the New Togiak Village elders: the current residents of the closest village to the site and the descendants of those who lived there
- Nonhuman samples were to be analyzed further with additional molecular markers- we hypothesized that the hairs could be a) from the people who lived there b) from animals they lived with or c) from animals they used and/or ate

My Lab Methods

- My Results
  - Every time we check to see if the extraction and PCR worked using electrophoresis the only bands we were able to see were from the control samples we added.

Future Research Plans and Implications
- The most important part of this project is involving the community: the Togiak site (before Dr. Barnett’s time) has a history of exploitation and exclusion from archaeologists. They hope to use all findings to create a rich ethnohistory for the people and land
- Dr. Barnett has and will have community meetings with local Togiak community: Traditional Council, Elders Council, and Tri-Village Council as well as the greater Bristol Bay community at large including Bristol Bay Native Corporation (BBNC) and Bristol Bay Native Association (BBNA) to present and discuss her findings concerning their ancestors
- Once we get mtDNA analysis working on the hair samples the information in the DNA could be used for data on dog domestication, ancient caribou migration, or maybe used to defend subsistence rights for indigenous populations
- Developing the skills needed for working with ancient DNA is just as important to me as helping this project- very important! Figuring out a way to extract the mtDNA will be great practice

Acknowledgments
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Science is hard..and Ancient DNA is harder!

Lab Conclusions
- After Dr. Barnett’s team picked through their core samples and removed a number of hairs, which were sent to the Molecular Anthro lab: we tried to extract and amplify the mtDNA. If it had worked we would have analyzed it.
- Because we were able to get bands from our control groups we know it wasn’t a problem with PCR and that we just weren’t able to get any mtDNA out of Dr. Barnett’s samples.
- We suspect that this is because of problems with our extraction methods, especially since the hairs didn’t dissolve into solution. It’s likely the mtDNA with the answers to our questions is still trapped in the hair so we will try again soon.
- I considered the whole process to be lab learning experience; each failure is a chance to practice again!

Togiak Archaeological Site

Core Sample Map

The location of these core samples isn’t random- Dr. Barnett’s team, after much analysis, chose sites for samples that were most likely to be roasting pits inside the remains of houses.

This put artifacts found in the sites in cultural context!