DNA Barcoding in Alaskan Mosquito Species

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Introduction

There are greater than 3500 known species of mosquito, and only a small fraction of them are disease vectors. In order to identify the disease vectors, knowledge about the species is essential, however morphological identification of mosquitoes is time consuming and requires specialists. A new way of identifying species, by DNA barcoding, is being developed. The COI gene of mosquitoes are being analyzed and inserted into the BOLD database. Currently there is no information for Alaskan mosquitoes.

Methods

Figure 1: A lateral view of a mosquito number 153. Identified as Excrucians.

- Identify mosquitoes
- Use DNeasy Extraction kit by Qiagen
- Used Nano Dropper to determine if DNA is good enough for PCR
- PCR the DNA
- Use Gel Electrophoresis to see if DNA works
- Wizard SV Gel + PCR Cleanup kit
- Big Dye sequencing reaction
- Sephadex columns to remove dye
- Dry DNA samples and then send them to the CORE lab to sequence them with ABI 3100 Genetic Analyzer
- Input DNA sequences into Barcode of Life Data Systems.

Results

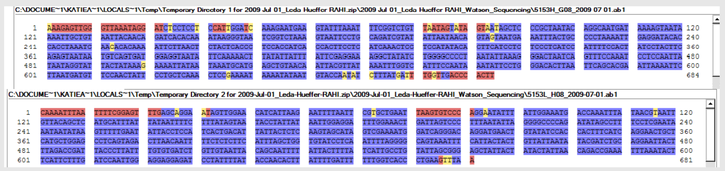

Figure 2: Sequenced DNA from mosquito number 153 in base form.

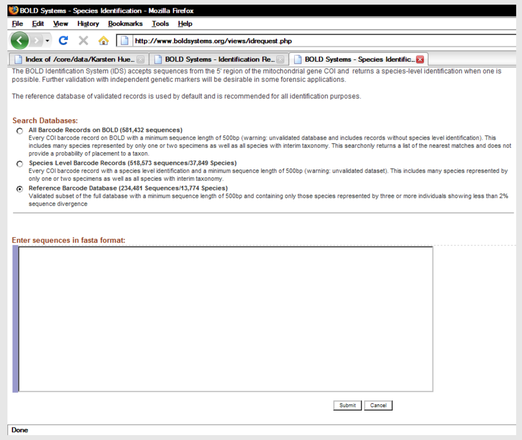

Figure 3: Then the sequences are copied and pasted into the BOLD database identification system.

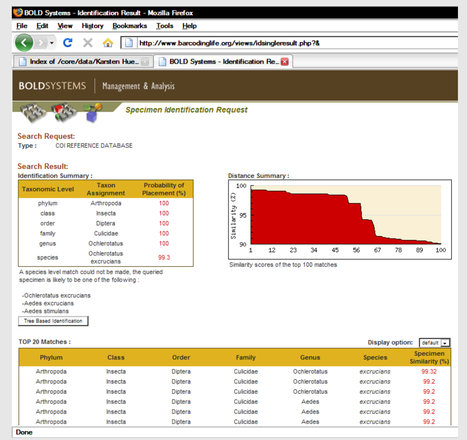

Figure 4: The BOLD database then gives you search results of the closest relationship based on DNA sequences.

Discussion

Analyzing the COI gene of mosquitoes will help prevent the spread of pathogens that are being carried by the disease vectors.

By inserting the DNA sequences into the BOLD database the information will be accessible to scientists all over the world.

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