Hantavirus in Alaskan rodents

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Introduction-
Hantavirus is found in the urine, droppings, and saliva of infected rodents and causes diseases such as Hemorrhagic fever with renal syndrome (HFRS) and human pulmonary syndrome. There are multiple carriers of Hantavirus including the common vole, the deer mouse, and the rice rat as well as many others. Hantavirus is grouped into two categories: Old World, and New World (Figure1). We are studying Hantavirus because it has never been found in Alaska until now and it poses a threat to humans if we come into contact with infected particles.In my lab, we have are looking to evaluate the status of Hantavirus in Alaska and identify threats to humans. One third of people who come into contact with Hantavirus die from the disease, which is enough reason to study Hantavirus and how it can affect us. We have taken various samples from a variety of rodents and tested for Hantavirus.

Figure1

Old World Hantaviruses

HFRS

Lethal rates up to 15%

Cause Hemorrhagic fever with renal syndrome (HFRS)

Person to person have never been reported

3 to 4 day symptoms

New World Hantaviruses

Pathogenic

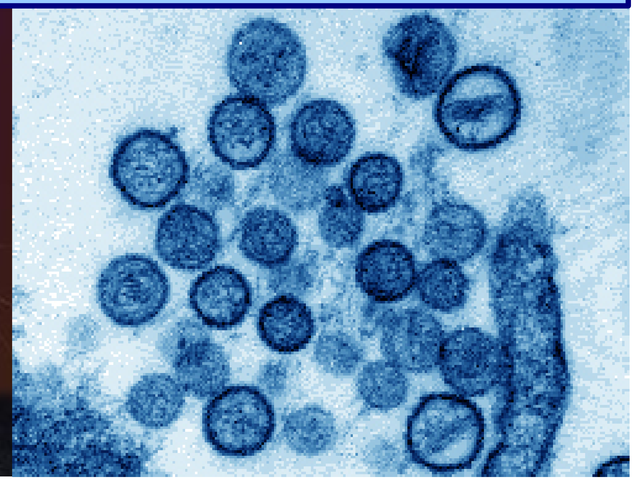
Lethal rates up to 50%

Cause human pulmonary syndrome (HPS)

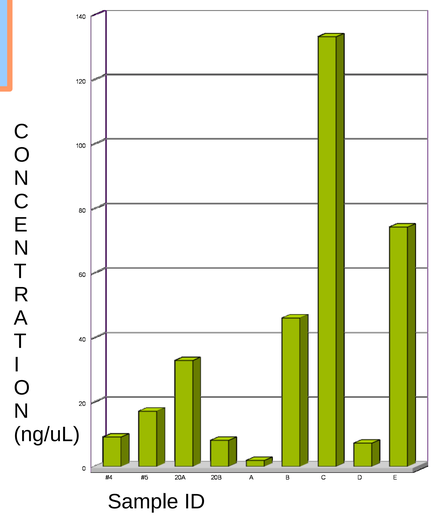
SNV infection

2 to 15 day symptoms

Methods
We started by collecting our liver samples and extracting RNA from the tissue using the MELT Nucleic Acid Isolation kit. We tested our samples for presence of RNA and the purity levels using the nanodrop. To convert our RNA into cDNA we used the omniscript kit and then did RT-PCR to see if our samples were Hantavirus positive.



Results
- Using the Nanodrop we identified quantity and purity of the RNA (figure 2 & 3)
- The concentrations (ng/uL) ranged from 1.85- 133.20
- The purity levels varied from 1.59-2.42.
- We were aiming for anything between 1.8 and 2
- .The RT-PCR showed 9 out of 11 samples did have Hantavirus.
- We did not identify what type of Hantavirus or specific rodent, future study is needed to compete the full project



Sample ID	Concentration(ng/uL)	Purity (260/280)
A	1.85	2.20
B	46.07	1.98
C	133.20	2.03
D	7.21	2.42
E	74.24	2.00
20A	32.78	1.82
20B	8.08	1.80
4	9.07	1.59
5	17.12	1.82

Conclusion
All in all this experiment way very successful and eye opening, in the sense of working in a lab. Hantavirus has the potential to be a very dangerous virus and only research will tell us the rest of the story. In our lab we were able to identify that our rodent samples, from Alaska were Hantavirus positive. In other areas in the world Hantavirus is present people are dying because of the diseases it causes. It raises the question, what does this mean for the people living in Alaska?

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