## Can ELISA accurately measure levels of antibodies against the AD virus?

In recent years, a number of mink ranchers in North America and Europe have embarked upon selecting their herds for increased tolerance to the AD virus infection. Some select healthy looking animals in their herds without a laboratory test, some use the iodine agglutination test (IAT) and some use ELISA. The ELISA system is intended to identify animals that produce low levels of antibodies against the virus. When using ELISA, three questions should be clearly answered:

- First, can those animals with low antibody levels really tolerate the infection?
- Second, is the level of antibody against the virus constant over the animal's lifetime? If the antibody level changes with age, season or time elapsed since infection, then a single measure at a specific time would not be representative of the animal's antibody level at all times and would not accurately reflect the animal's ability to tolerate the virus.
- Third, can ELISA accurately measure the antibody level?

In this study, we primarily looked at the last question, and measured the accuracy of the ELISA test which was developed in Finland. We also measured some serum components as an indirect measure of the relationship between antibody level and animal health (the first question).

We measured antibody levels against the AD virus by serial dilution of plasma in 303 black mink which had been inoculated with a local strain of the AD virus. Animals were tested between 16 and 71 weeks after inoculation and showed a wide range of

antibody levels. We sent blood serum samples from the same animals to Fin Furlab in Finland to be tested by ELISA.

The results showed that the ELISA measured antibody level with a moderate accuracy. The major problem was that animals having the same ELISA result included a wide range of antibody levels, suggesting that some animals with low ELISA results have high antibody levels, and vice versa. It should be noted that while some mink ranchers are using this method, the company which developed this ELISA has not yet validated the system for measuring the level of antibodies against the AD virus.

Blood serum profiles showed that there is a tendency for animals with low antibody levels to have blood profiles of healthy animals and vice versa, suggesting that animals with low ELISA results may be healthy at the time of sampling. This observation was based on 37 mink, and is not a very strong evidence.

We concluded that, in the absence of any other practical method, this ELISA system could be a useful tool for ranking mink for antibody level. More information on the relationships between antibody level and degree of tolerance of mink to the AD virus is needed before recommending the use of ELISA as tool for selecting tolerant animals.

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For more information, please see the following published paper:

Farid, A.H. and Segervall, J. 2014.
A comparison between ELISA and CIEP for measuring antibody titres against Aleutian mink disease virus. Virology and Mycology, Volume 4, 137.

http://omicsonline.org/open-access/a-comparison-between-elisa-and-ciep-for-measuring-antibody-titres-against-aleutian-mink-disease-virus-2161-0517.1000137.pdf