

## ALEUTIAN DISEASE

### Aleutian (Mink) Disease Virus (ADV)

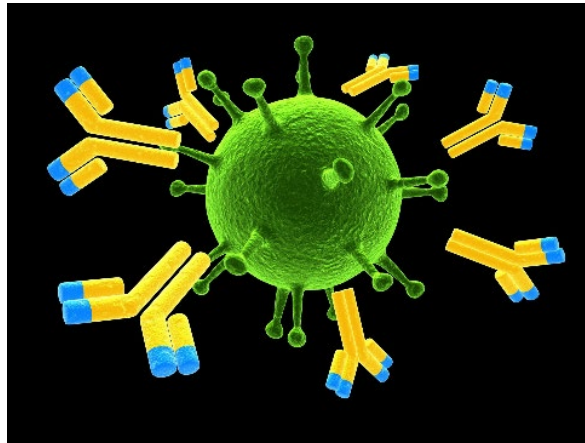
#### Overview

**Aleutian disease** (also called **mink plasmacytosis**) is a highly contagious infection caused by a parvovirus, *Carnivore amdoparvovirus 1*, also known as the **Aleutian (Mink) Disease Virus (ADV)**.

The ADV virus is naturally found in the members of the Mustelidae Family: mink, ferrets, polecats, otters, stone and pine martens, and more. The virus has also been found in other animal populations, including skunks, foxes, raccoons, and the genet, an African cat-like carnivore.

ADV is considered a very hardy virus, which can live outside the body of a host for a long period of time. It is believed that there are multiple strains of ADV that can affect ferrets, with some strains of ADV more contagious and more deadly than others.

As with most viral infections, the body's immune response reacts by producing antibodies directed against the invading organism. This is a normal response; however, in Aleutian disease the antibodies can form large complexes that lodge in major organs, such as the kidneys, liver, spleen, causing the organs to fail. Fortunately, this disease is not terribly common.



Antibody (yellow-blue)- viral (green) complex

#### Diagnosis

Diagnosis is made based on the clinical history of the ferret, physical examination, and laboratory testing. Clinical signs include:

- Weight loss
- Enlarged abdomen
- Paleness (due to anemia)
- Black-colored feces (gastro-intestinal bleed)
- Muscle wasting and weakness, particularly of the hind legs
- Neurological signs (e.g., lethargy, stumbling, circling, difficulty walking, stupor, coma)
- Spontaneous abortion in infected pregnant animals.

Laboratory testing should include a complete blood count (CBC), blood chemistries, electrolytes, and urinalysis.

An ADV test should also be ordered. The virus and antibodies to the virus can be detected through serum tests. These included: polymerase chain reaction (PCR), enzyme-linked immunosorbent assay (ELISA), and counterimmunoelectrophoresis.

### **Disease Course and Prognosis**

ADV+ ferrets may not show signs of the disease for up to 3 years. ADV+ ferrets can be silent “carriers” (persistent nonprogressive form). Others may lose weight over time (progressive form), or they may become very ill and die (progressive form). The vast majority of infected ferrets will become very ill and die (progressive form).

When a ferret is showing clinical signs of the disease, its condition is generally considered incurable.

It is also possible for a ferret to have caught the disease and to recover fully. In such case the ferret is not a carrier of the virus and cannot infect other animals.

### **Treatment**

There is no specific treatment for ADV. Therefore, treatment consists of supportive care (fluids, etc.) Depending on the clinical status of the a ADV+ ferret, euthanasia should be considered.

### **Transmission**

The virus spreads through contact with ADV-infected animals. Viral transfer can occur from contact with infected bodily fluids- urine, feces, saliva, blood, and from pregnant mother to kit through the placenta. Due to the hardiness of ADV, transmission is possible through the air and through contact with contaminated surfaces, including bedding, dishes, clothing, etc.

### **Prevention**

**Currently there is no vaccine to prevent ADV. Prevention is the key to stop the spread of Aleutian disease. Recommendations:**

- **Avoid exposure to unknown ferrets, mink, and similar animals.** This includes avoiding any event (Expo, Ferret Show, etc.) that does not require proof of ADV negative status from all ferrets attending.
- **Test a “new” ferret for ADV prior to introducing it to your ferret household or shelter.** The new ferret’s history and clinical status should also be taken into account.
- If you have a ferret that tests positive for ADV, **consider testing all of your ferrets for ADV+.**
- **ADV is both contagious and deadly. In a multiferret environment, any ferret that tests ADV+ should be considered for culling.**

- **Strict Quarantine:** Handling an ADV+ ferret requires strict quarantine procedures. This means housing the ADV+ ferret in a separate room, using separate equipment (blankets, dishes, etc.); following rigorous cleaning protocols. Human care-takers of ADV+ ferrets: shower and change clothing, including shoes, before handling ADV negative animals.

**Veterinary Diagnostic Laboratories (United States):**

- Michigan State University, Diagnostic Center for Population and Animal Health [www.animalhealth.msu.edu](http://www.animalhealth.msu.edu);
- University of Georgia Infectious Diseases Laboratory <https://vet.uga.edu/diagnostic-service-labs/infectious-diseases-lab/available-tests/>
- Veterinary Molecular Diagnostics [www.vmdlabs.com](http://www.vmdlabs.com)
- Zoologix [www.zoologix.com](http://www.zoologix.com)).

***For further reading:***

Hadlow W, Race R, Kennedy R. Comparative pathogenicity of four strains of Aleutian disease virus for pastel and sapphire mink. Infection Immunity Sep 41(3): 1016-1023, 1983. doi: [10.1128/iai.41.3.1016-1023.1983](https://doi.org/10.1128/iai.41.3.1016-1023.1983)

Markarian N, Abrahamyan L. AMDV vaccine: challenges and perspectives. Viruses Sep 13(9): 1833 (19pp), 2021. doi: [10.3390/v13091833](https://doi.org/10.3390/v13091833)

Porter H, Porter D, Larsen A. Aleutian disease in ferrets. Infection and Immunity. Apr 36(1): 379-386, 1982. doi: [10.1128/iai.36.1.379-386.1982](https://doi.org/10.1128/iai.36.1.379-386.1982)