

**To:** [redacted] <[redacted]@rivm.nl>; [redacted] <[redacted]@rivm.nl>  
**Cc:** [redacted] <[redacted]@minvws.nl>; [redacted] <[redacted]@minvws.nl>  
**From:** [redacted]  
**Sent:** Fri 11/6/2020 2:21:30 PM  
**Subject:** RE: Antw: PRO/AH/EDR> COVID-19 update (473): animal, Denmark, mink, mutation, eradication, RFI  
**Received:** Fri 11/6/2020 2:21:37 PM

Many thanks!

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**Van:** [redacted] <[redacted]@rivm.nl>  
**Verzonden:** vrijdag 6 november 2020 15:13  
**Aan:** [redacted] <[redacted]@minvws.nl>; [redacted] <[redacted]@rivm.nl>  
**CC:** [redacted] <[redacted]@minvws.nl>; [redacted] <[redacted]@minvws.nl>  
**Onderwerp:** Antw: PRO/AH/EDR> COVID-19 update (473): animal, Denmark, mink, mutation, eradication, RFI

Hoi [redacted]

Wat ik begrijp is dat er een mutant circuleert in een specifieke regio in noord-oosten van Denemarken waar veel nerts fokkers zitten. Er worden in deze regio aanvullende maatregelen genomen om de verspreiding van deze virus mutant zo veel mogelijk te beperken.

Het is niet duidelijk wat de mutatie is en ook niet wat het effect op virulentie is.

Tot nu toe 12 mensen besmet met deze virus mutant, lijkt geen sprake van een ernstiger beloop van de ziekte.

De hoeveelheid geïnduceerde neutraliserende antistoffen in besmette mensen lijkt lager dan voor op dit moment meest voorkomende virus.

We weten niet wat het effect is op cellulaire B- en T-cell respons,

Op basis van wat we nu weten is niet te zeggen wat het effect op werkzaamheid van de kandidaat COVID vaccins zal zijn.

Laat maar weten als je meer info nodig hebt.

Groeten,

[redacted] (afgestemd met [redacted])

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**Van:** [redacted] <[redacted]@minvws.nl>  
**Datum:** 6 november 2020 om 09:17:09 CET  
**Aan:** [redacted] <[redacted]@rivm.nl>; [redacted] <[redacted]@rivm.nl>  
**CC:** [redacted] <[redacted]@minvws.nl>; [redacted] <[redacted]@minvws.nl>  
**Onderwerp:** FW: PRO/AH/EDR> COVID-19 update (473): animal, Denmark, mink, mutation, eradication, RFI

Ha [redacted] en [redacted]

Zie onderstaand bericht. Kunnen jullie dit duiden? Minister krijgt hier mogelijk vragen over na de Ministerraad van vandaag. Veel dank alvast!

@ [redacted] ik cc jullie vanwege traject vaccinontwikkeling.

Groet!

[redacted]

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**Van:** [redacted] <[redacted]@minvws.nl>  
**Verzonden:** vrijdag 6 november 2020 09:13  
**Aan:** [redacted] <[redacted]@minvws.nl>  
**Onderwerp:** FW: PRO/AH/EDR> COVID-19 update (473): animal, Denmark, mink, mutation, eradication, RFI

Zie overigens nog deze mail.

Kennelijk nog veel onduidelijkheid over wat ze nou precies hebben gevonden in DK



Hans Kluge, the World Health Organization's European regional director, said Denmark showed "determination and courage" in deciding to cull the mink population, given the "huge economic impact" it would have.

Authorities have been calling for the culling of infected mink herds since June [2020] due to persisting outbreaks at mink farms.

Denmark is [one of the 2 world's largest producers] of mink skins, producing an estimated 17 million furs per year and employing around 4000 people. Last year [2019], the Danish mink pelt industry racked up exports of around USD 800 million.

The industry association for Danish breeders called the culling a "black day for Denmark."

The government has promised to compensate farmers.

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Communicated by:  
ProMED-mail  
<5.1.2e@promedmail.org>

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[2]  
Date: Wed 4 Nov 2020  
<<https://www.nytimes.com/2020/11/04/health/covid-mink-mutation.html>>

The Danish government will slaughter millions of mink at more than 1000 farms, citing concerns that a mutation in the novel coronavirus that has infected the mink could possibly interfere with the effectiveness of a vaccine for humans.

Prime Minister Mette Frederiksen made the announcement at a news conference on Wednesday [4 Nov 2020]. There are 15 million or more mink in Denmark, which is one of the world's major exporters of mink furs. She said the armed forces would be involved in the culling of mink.

5.1.2e, the head of the State Serum Institute, the government's public health and infectious disease arm, warned at the news conference that a mutation could interfere with the effectiveness of future vaccines. The government has notified the World Health Organization of the virus mutation, and also said 12 people in its Jutland region are known to have it and that it shows a weak reaction to antibodies, according to news reports.

The WHO acknowledged by email that it had been "informed by Denmark of a number of persons infected with coronavirus from mink, with some genetic changes in the virus." The WHO said that Denmark was "investigating the epidemiological and virological significance of these findings, and culling the mink population. We are in touch with them to find more about this event."

Without published reports on the nature of the mutation or how the virus variant was tested, research scientists outside Denmark who study the virus were left somewhat in the dark. Dr. Stanley Perlman, a microbiologist at the University of Iowa and a specialist on the novel coronavirus, said he could not evaluate the Danish statements without more information.

Dr. 5.1.2e Epstein, vice president for science and outreach at the EcoHealth Alliance, a conservation organization, said he had not seen any details so far, but "someone would have to release the sequences soon, and the evolutionary biologists will be all over it."

On Twitter, 5.1.2e, a geneticist at the University of Basel, Switzerland, who is tracking the spread of the novel coronavirus, urged caution. "Don't panic," Dr. Hodcroft tweeted. "Scientists will update when we have more info."

In September [2020], Dutch scientists reported in a paper that has not yet been peer-reviewed that the virus was jumping between mink and humans. In Denmark, the government is describing a version of the virus that migrated from mink to humans.

The coronavirus mutates slowly but regularly, and a different variant of the virus would not, in itself, be cause for concern, experts have said.

Researchers have studied one mutation labeled D614G in the spike protein of the virus which may increase transmission. They concluded that there is no evidence so far that the particular mutation increases virulence or would affect the workings of a vaccine.

Denmark had already begun killing all mink at 400 farms that were either infected, or close enough to infected farms to cause concern.

The killing of all mink will wipe out the industry, perhaps for years.

Mink are in the weasel family, along with ferrets, which are easily infected with the coronavirus. Ferrets appear to suffer mild symptoms.

Mink, which are kept in crowded conditions ideal for spreading a virus, can become quite sick and die. Mink have been infected in other countries as well, including the Netherlands and some US states. Thousands of mink were killed in Utah because of a coronavirus outbreak, but authorities there said there it did not appear that the mink transmitted the virus to humans, but the opposite.

Many conservation scientists have become concerned about the spread of the virus to animal populations, like chimpanzees, which are believed to be susceptible, although cases have not been identified yet. Groups of researchers are testing bats and pets and wild animals in the United States.

Researchers are also concerned about what occurs when the virus moves from one species to another and may acquire changes, or mutations. While most such changes are not likely to be a problem for humans, there is always the chance that strains of the virus could become more infectious or more virulent.

Animal Protection Denmark, an advocacy group, recommended a long-term solution to the problem of mink and coronavirus: "The right decision would be to end mink farming entirely and help farmers into other occupation that does not jeopardize public health and animal welfare."

[Byline: James Gorman]

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Communicated by:

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[Human infections with mink variants have already been identified in North Jutland during the early stages of COVID-19 epizootic in Denmark. According to a report submitted to the authorities on 18 Sep 2020 by SSI in cooperation with Copenhagen University, in June 2020 a "unique mink variant" spread from a mink herd in North Jutland to a nearby care center and a number of people associated with it. In the period 8 Jun to 16 Jul 2020, a total of 90 people with mink variant COVID-19 were diagnosed in North Jutland. The mink variant was identified in several passengers of a travel company to Bornholm [a Baltic Sea island nearly 400 km (249 mi) southeast of North Jutland] where there was a secondary infection of at least one person. In addition, the mink variant was found to have spread to one or more persons in Croatia. The original report (in Danish) is available at <<https://www.ssi.dk/-/media/arkiv/dk/aktuelt/sygdomsudbrud/covid19/besvarelse-virkemidler-til-at-forebygge-smitte-mink-menneske.pdf?la=da>>.

Subsequently, Denmark has identified in minks several different SARS-CoV-2-related clusters. It is only "cluster-5" that shows decreased in vitro neutralisation when exposed to convalescent sera. Only 12 people have been found with mink-related cluster-5, and all 12 were diagnosed in August-September [2020].

The following genomes of Denmark mink's SARS-CoV-2/mink are available in GenBank (thanks due to Herve Berkovier): Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/mink/DK/KL14\_Farm1/2020, complete genome Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/mink/DK/KL11\_Farm1/2020, complete genome Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/mink/DK/AL64\_Farm1/2020, complete genome Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/mink/DK/AL35\_Farm3/2020, complete genome Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/mink/DK/AL25\_Farm1/2020, complete genome Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/mink/DK/AL3\_Farm1/2020, complete genome Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/mink/DK/AD40\_Farm3/2020, complete genome Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/mink/DK/AD38\_Farm2/2020, complete genome Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/mink/DK/AD37\_Farm3/2020, complete genome Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/mink/DK/AD6\_Farm1/2020, complete genome Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/mink/DK/AD4\_Farm1/2020, complete genome Severe acute respiratory syndrome coronavirus 2 isolate SARS-CoV-2/mink/DK/AD3\_Farm1/2020, complete genome

In case the mutated sequences, especially cluster 5, have been deposited in GeneBank, their access numbers are requested. If not, they deserve becoming publicly available as soon as possible, given that yesterday [Wed 4 Nov 2020] the prime minister declared that the Danish outbreak with a mutated virus is of international concern. - Mods.EP/AS

HealthMap/ProMED-mail map:

North Jutland, Denmark: <<http://healthmap.org/promed/p/16381>>

[See Also:

COVID-19 update (471): animal, Denmark, mink, zoonotic, eradication

<http://promedmail.org/post/20201104.7916300>

COVID-19 update (468): animal, Sweden, mink, 1st rep, OIE

<http://promedmail.org/post/20201103.7912846>

COVID-19 update (464): animal, Denmark, mink, control, One Health

<http://promedmail.org/post/20201101.7906484>

COVID-19 update (461): animal, Sweden, mink, 1st case, RFI

<http://promedmail.org/post/20201030.7903582>

COVID-19 update (458): animal, Italy, mink, RFI

<http://promedmail.org/post/20201028.7897986>  
 COVID-19 update (445): animal, Netherlands, Denmark, mink, spread, epidemiology  
<http://promedmail.org/post/20201019.7873326>  
 COVID-19 update (439): animal, Denmark, mink, spread, control  
<http://promedmail.org/post/20201014.7861560>  
 COVID-19 update (437): animal, Netherlands, Denmark, mink, spread, control <http://promedmail.org/post/20201013.7858915>  
 COVID-19 update (433): animal, Denmark (ND, MJ) farmed mink, spread, control  
<http://promedmail.org/post/20201010.7851707>  
 COVID-19 update (430): animal, USA (UT) mink  
<http://promedmail.org/post/20201009.7847704>  
 COVID-19 update (425): animal, Denmark (ND) farmed mink, spread, control <http://promedmail.org/post/20201004.7835635>  
 COVID-19 update (414): animal, Netherlands (LI), Denmark (ND), farm mink, spread  
<http://promedmail.org/post/20200925.7813579>  
 COVID-19 update (406): animal, Netherlands (LI), Denmark (ND), farm mink, spread  
<http://promedmail.org/post/20200918.7794239>  
 COVID-19 update (401): Netherlands (NB), Denmark, farmed mink, spread  
<http://promedmail.org/post/20200914.7777661>  
 COVID-19 update (394): Netherlands (NB) animal, farmed mink, spread  
<http://promedmail.org/post/20200908.7759382>  
 COVID-19 update (387): Netherlands, mink, animal & public health, research <http://promedmail.org/post/20200902.7740793>  
 COVID-19 update (382): Netherlands, animal, farmed mink, spread, control <http://promedmail.org/post/20200830.7730463>  
 COVID-19 update (376): animal, ferret, mink, comment  
<http://promedmail.org/post/20200827.7721923>  
 COVID-19 update (366): animal, USA (UT) mink  
<http://promedmail.org/post/20200818.7692815>  
 COVID-19 update (363): animal, Denmark (ND) Netherlands (NB,LI) mink, spread  
<http://promedmail.org/post/20200817.7687830>  
 COVID-19 update (340): animal, China, enviro monitoring, Netherlands (NB), mink  
<http://promedmail.org/post/20200801.7635820>  
 COVID-19 update (334): animal, Netherlands, mink, spread, UK, cat, 1st rep, OIE  
<http://promedmail.org/post/20200727.7617582>  
 COVID-19 update (324): Netherlands (NB) animal, farmed mink, spread  
<http://promedmail.org/post/20200719.7591013>  
 COVID-19 update (317): Netherlands (NB) animal, farmed mink, spread  
<http://promedmail.org/post/20200716.7578453>  
 COVID-19 update (307): Netherlands (NB), Denmark (ND) farmed mink, spread, control  
<http://promedmail.org/post/20200708.7553067>  
 COVID-19 update (301): Denmark (ND) Netherlands (NB) farmed mink, spread, control  
<http://promedmail.org/post/20200703.7536980>  
 COVID-19 update (284): Denmark (ND) animal, farmed mink, spread, dog  
<http://promedmail.org/post/20200624.7506728>  
 COVID-19 update (281): Netherlands (NB, LI) farmed mink, spread, animal, global  
<http://promedmail.org/post/20200623.7502849>  
 COVID-19 update (266): Denmark (ND) animal, farmed mink, 1st rep  
<http://promedmail.org/post/20200617.7479510>  
 COVID-19 update (251): Netherlands (NB, LI) animal, farmed mink, spread, culling  
<http://promedmail.org/post/20200610.7453845>  
 COVID-19 update (248): Netherlands (NB, LI) animal, mink, spread, culling, cat <http://promedmail.org/post/20200609.7446478>  
 COVID-19 update (236): Netherlands (NB, LI) animal, farmed mink, spread, culling  
<http://promedmail.org/post/20200604.7427849>  
 COVID-19 update (230): Netherlands (NB, LI) animal, farmed mink, spread, control  
<http://promedmail.org/post/20200602.7420433>  
 COVID-19 update (215): Netherlands (NB) animal, mink-to-human, epidem., control  
<http://promedmail.org/post/20200527.7385049>  
 COVID-19 update (209): Netherlands (NB) farmed mink, animal-to-human, cat, epid  
<http://promedmail.org/post/20200525.7375359>  
 COVID-19 update (198): Netherlands (NB) farmed mink, animal-to-human infect susp  
<http://promedmail.org/post/20200520.7359976>  
 COVID-19 update (189): Netherlands (NB) animal, farmed mink, research, cat, dog  
<http://promedmail.org/post/20200517.7344274>  
 COVID-19 update (177): Netherlands (NB) animal, farmed mink, Spain  
 (CT) cat susp <http://promedmail.org/post/20200512.7328587>  
 COVID-19 update (174): Netherlands (NB) animal, farmed mink, comment  
<http://promedmail.org/post/20200511.7323845>  
 COVID-19 update (169): Netherlands (NB) animal, farmed mink, spread, rabbit susp  
<http://promedmail.org/post/20200509.7316646>  
 COVID-19 update (154): Netherlands (NB) animal, farmed mink, research  
<http://promedmail.org/post/20200503.7294846>  
 COVID-19 update (146): Netherlands (NB) animal, farmed mink, epidemiology <http://promedmail.org/post/20200501.7286113>  
 COVID-19 update (135): Netherlands (NB) animal, farmed mink <http://promedmail.org/post/20200427.7272289>  
 .....ep/arn/tw/ml

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