

NEWSLETTER JANUARY

In this newsletter:

- 🐾 [Happy 2021!](#)
- 🐾 [Sweaty hippos](#)
- 🐾 [Courses](#)
- 🐾 [Vaccines](#)
- 🐾 [FMD outbreak](#)

Dear clients,

It is already the end of January, but nevertheless... Happy New Year!! We hope 2021 will be a great year for you! After some very hot and sweaty months the rains certainly brought the much-needed relief! This brings us to... the fascinating sweaty abilities of the hippo 😊 We included some information about courses that we offer, and you can also read about the one thing that will probably dominate the news this year... vaccines! We give you a quick recap on how vaccines lead to immunity and give a short update on the FMD outbreak from late December. Kind regards, the Wildlife Vets Namibia team

HAPPY 2021!

A new year, a new beginning! We finally left the rather crazy year 2020 behind us, and to great relief, 2021 started off with good rains in many places - finally! The first part of 2021 probably still suffers under the negative effects of Covid-19, but we are positive that life will slowly but surely return to normal again. Considering the number of Covid-19 cases, we want you to know that we adhere to the social distancing and mask regulations, also during jobs. Let's keep things safe for all of us 😊 We would like to thank you once more for your support over the years and we hope to be of your assistance again in 2021. Have a great 2021, in good health and lots of happiness!



If you want to learn more, or if you ever feel bored, scroll through the [Documentation-section](#) on our website! Here you can find copies all the previous newsletters, as well as a bunch of articles and other documents which might be useful for you. We continually keep updating our website it is worth your while to check it out from time to time!

A quick reminder on our WhatsApp-groups: We have created four groups. If we are called out into a certain area, we will notify the group linked to that area. This allows other clients situated on or close to our route who also have a job for us, to give us a call or send us a private message. Combining jobs will save kilometre costs for everybody. Note, these groups are not chat-groups, they are only to inform you on where we will be working. To respect your privacy, we won't mention exact locations, just the area. If you want to be included in one of the groups, contact us.



- 🐾 North of Windhoek (e.g. Okahandja/Otjiwarongo/Outjo/Tsumeb etc. area)
- 🐾 East of Windhoek (e.g. Omitara/Witvlei/Gobabis etc. area)
- 🐾 South-east of Windhoek (Dordabis/Nina etc. area)
- 🐾 South of Windhoek (Rehoboth and south)

SWEATY HIPPOS

You might not think so, but we actually have quite a lot in common with the hippo... We both have a naked, almost hairless skin which is prone to sunburns, and we both sweat when it's hot. Not many animals have this trait. Okay, maybe the sweating part is not entirely true, because hippos have a different, but very interesting 'sweat system'!

Hippos actually do not have true sweat glands. If we humans sweat, a watery substance seeps out of our sweat glands that lie in the skin. In hippos, special glands underneath the skin produce a thick reddish substance that pours out onto the skin, making it look like they are sweating blood! But the question is why?

Since it is not so easy to collect and thus examine this "hippo sweat", it took a while for scientists to figure out (well... partially, there are still many questions) what this strange 'blood sweat' is all about. Scientists discovered that the oily liquid is actually clear when it emerges from the skin, but after exposure to air, the clear liquid turns into a crimson-reddish colour, and eventually becomes brownish. They found that 2 pigments lead to this colour change, and called them *hipposudoric acid* (red), and *norhipposudoric acid* (orange). These names refer directly to 'hippo sweat'. And now things get even more interesting...

'Hippo sweat' does help with thermoregulation, just like we sweat to cool off. In addition, it was found that the acids link into chains and when they and the mucous dry on the hippo's skin, they harden and stick on for hours. This sticky mixture is quite effective in absorbing ultraviolet light which can cause sunburn and skin cancer. While we have to buy expensive sunscreen to protect ourselves, the hippo makes its own natural sunscreen! Another fascinating feature of 'hippo sweat', is that those two acids also keep bacteria from growing. This might be the reason why wounds on hippos rarely become infected.



Hippos generally don't stay out in the sun for long. © M. Bijsterbosch



*Hippo sweat is often referred to as blood sweat, but it is neither sweat, nor blood. ©
Photographer unknown, both photos retrieved from [Hippo Haven](#)*

Sweat that is both a sunscreen and antibiotic, how cool can nature be 😊



If you are interested, these scientific articles describe the chemistry side of 'hippo sweat' more into detail:
[Saikawa et al \(2004\) The red sweat of the hippopotamus](#) &
[Hashimoto et al \(2007\) Studies on the red sweat of the Hippopotamus amphibius](#)

COURSES

Finally, we have organized a few courses again! Here you find some basic information. If you would like to receive the detailed course outlines, sent us an email or SMS/WhatsApp.

Post-Mortem course

Why? When you find a dead animal in the field, it is important to figure out why he or she has died. Getting a vet in to do a PM is not always practical, due to the vast distances in Namibia. But doing a PM on a fresh carcass, improves the chances of figuring out why an animal has died. This knowledge helps you to improve the general herd management, and possibly prevent a disease from spreading. Therefore, we designed this 1.5-day PM course, in where we teach you the basic principles of doing a thorough and systematic PM by yourself.

What? Topics will include e.g. when to do (or NOT to do) a PM, an introduction to anatomy and physiology, sample collection, medical/forensic photography, lesion identification, and we conduct a PM examination together where we will assist you step by step. This course is meant for farmers (game and livestock), managers and other interested persons.

Where and when? We have organized two courses:

- | | |
|---|------------------|
| 1. ISAP facility (northwest of Okahandja) | 27 – 28 February |
| 2. Kifaru Bush Camp (45km outside of Outjo) | 07 – 08 April |

Animal crime scene- and evidence handling course

Why? One of the biggest threats to both wildlife and livestock is poaching. When an animal has been poached, it is important that the correct investigative approach is taken as soon as possible. Here is where a few problems come in... Due to logistics and low availability of competent police officers, it sometimes can take days for an official to come out. However, in outdoor crimes it is important to quickly protect the crime scene and possible evidence. Another issue is that when a crime has been detected, people who are first on site often immediately start looking everywhere, thereby accidentally destroying important evidence, and possibly even contaminating the crime scene, making themselves a suspect! Therefore, we designed this 2.5-day course, in where we will discuss the proper approach to and handling of a crime scene and evidence.

What? In the mornings there will be lectures, topics include e.g. DNA, how to approach and handle a crime scene, types of evidence, forensic photography, documenting findings, maintaining the chain of evidence, body language, court cases. In the afternoons we do practical training on photography and evidence handling and collection. On the final day everything comes together, where we investigate a 'crime scene' from A to Z. This course is designed for people that may become involved in crime directed against wildlife and/or livestock, such as farmers, managers, anti-poaching units, game rangers, reservist police officers etc.

Where and when? We have organized three courses all over Namibia:

- | | |
|---|---------------|
| 1. ISAP facility (northwest of Okahandja) | 05 – 07 March |
| 2. Farm Kweekwal (65km from Aroab) | 19 – 21 March |
| 3. Kifaru Bush Camp (45km outside of Outjo) | 09 – 11 April |

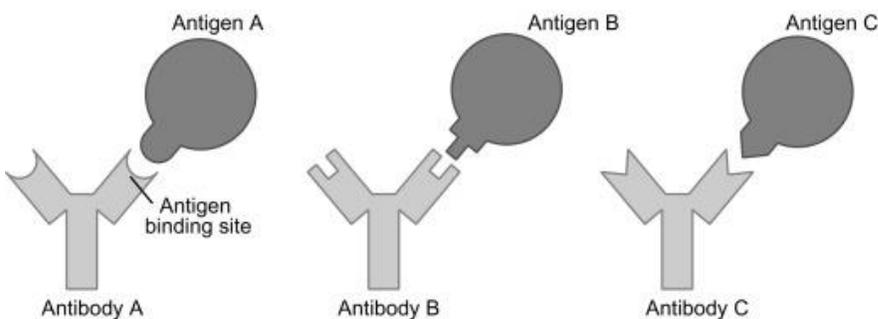
VACCINES

Vaccines will feature prominently in the 2021 news... With all the different opinions and masses of “Fake news” it is difficult these days to know what to believe. Well, the text below is science-based and real 😊. Since vaccinations are important for both animals and humans we believe it can't do harm to provide a quick recap of an old article. You can read the entire article, describing how vaccination leads to immunity, on our [website](#). This article is focussed on rabies in kudu and eland, but is applicable to any vaccination.

Immune system

Before we go into vaccinations, it is important to understand how the immune system works. The immune system is highly complex, but we try to keep it simple here. The immune system is made up of a specialized network of different cells, tissues and organs. They all work together, and are constantly checking for anything foreign to the body, such as bacteria or viruses. The immune system can differentiate between normal healthy cells and abnormal (e.g. cancer cells) as well as disease causing organisms.

When the immune system ‘sees’ something that should not be there, for example a virus, it launches an attack. But it can take a few days to activate the full attack. The immune system first identifies the specific characteristics on the abnormal cells or disease-causing organisms (called antigen – Ag), and it then needs to ‘activate’ a plan on how and where to best attack it. Within this time, the virus is happily replicating and going around in the body.

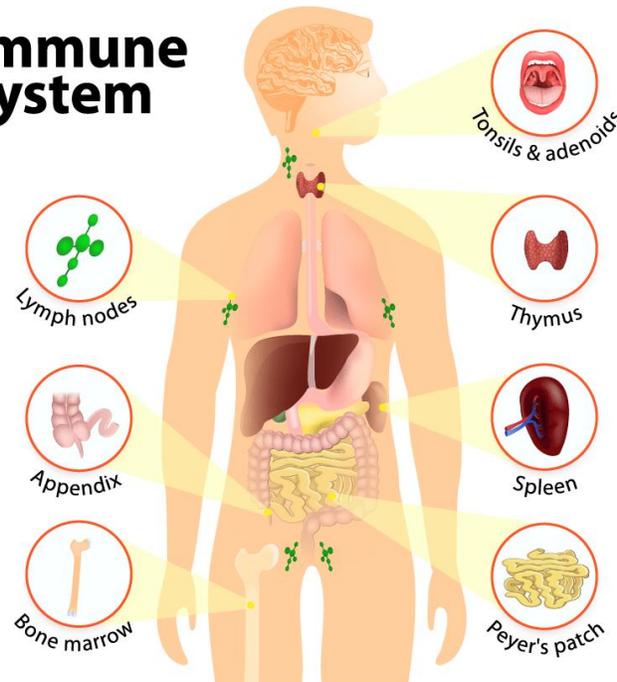


Antibodies are special proteins that lock onto specific antigens. The shape of antibodies varies, and matches the shape of the antigen perfectly. The antibodies that are attached to the antigen to form a so-called Antibody-Antigen complex. This then activates T lymphocytes as well as other white blood cells (phagocytes) who destroy the invaders. © [Thomas M. Chused](#)

Human immune system

© [RevereHealth](#)

Immune system



During the attack, the immune system makes specific antibodies (Ab) against the antigen. The antibodies attach to the antigen, and this triggers an immune response. For example, certain white blood cells come in, and destroy the virus.

Once the body has ‘won the battle’ and fought off the virus, special memory cells of the immune system remember the virus. So next time this virus infects the body, the memory cells will recognize this virus and immediately launch a much stronger and faster immune response to destroy the virus before it can make a person or animal sick. This protection is called immunity.

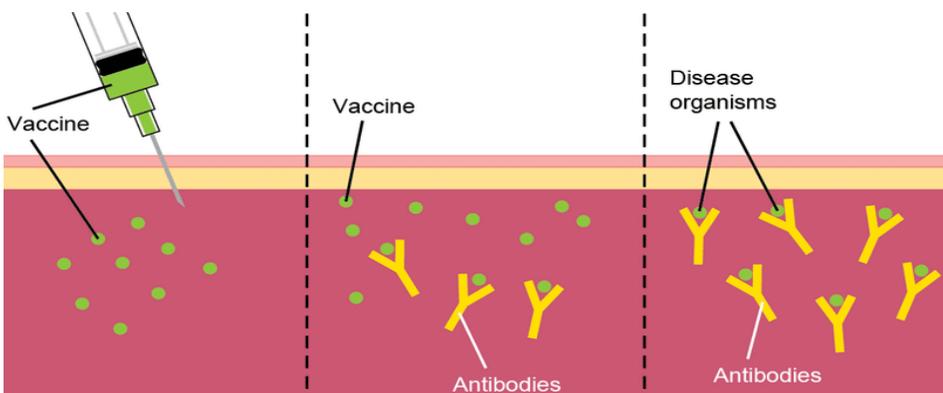
Vaccines

When the lab needs to make vaccination, it will take a close look at the pathogen (disease-causing organism) to decide which would be the best way for the immune system to launch an attack and how will this attack go? There are four main types of vaccines:

- 🐾 Live-attenuated vaccines – these vaccines contain a weakened form of the pathogen. These vaccines cause a very mild (usually asymptomatic) infection which then stimulates a strong and often long-lasting immune response. Examples are the measles, yellow fever and anthrax vaccine. It is important to note that one should be very careful in using these vaccines in non-target species. If, for instance, a farmer accidentally injects himself with anthrax vaccine, it may cause very serious disease. The same will happen where wild dog/ bat eared fox or jackal pups are vaccinated with a distemper vaccine for dogs.
- 🐾 Inactivated vaccines – these vaccines have a killed version of the pathogen in them. They may produce a less strong immunity than the live vaccines, so a booster is often needed. Examples are flu and rabies vaccines.
- 🐾 Subunit, recombinant, polysaccharide, and conjugate vaccines – these vaccines target a specific part of the invader (e.g. part of the cell wall, a protein etc.). Examples are hepatitis B and whooping cough vaccines.
- 🐾 Toxoid vaccines – these vaccines use a toxin that is made by the pathogen. The immune response is targeted to the toxin, not the pathogen itself. Examples are diphtheria and vaccines against the various Clostridium species (tetanus, botulism, black quarter etc.).

With the advances in gene technology many new and promising vaccines are being developed such as the new RNA and Recombinant vector vaccines. The mRNA vaccines (e.g. the Pfizer-BioNTech and Moderna Covid-19 vaccines) contain material from the virus that causes Covid-19. It instructs our immune system to make a harmless protein that is unique to the virus. Our bodies recognize that the protein as foreign to the body, resulting in an immune response to remove that protein (and by extension, the virus) from our body. This way the vaccine teaches the body to protect itself against the particular invader. The recombinant vector vaccines (e.g. the Everbio Ebola vaccine and Oxford-AstraZeneca Covid-19 vaccine) consists of a harmless virus (for example the common cold) or fat bubbles, and part of the genetic code of an invader (for example the spike protein). The harmless virus or fat bubble transports this protein with the genetic code into our cells, and our cells start producing that protein. The immune response will see that invader again, and attacks it.

So, to recap: the immune system sees the antigen as an invader → it responds by making antibodies → it remembers the antigen and how to destroy it. Next time, when the body is exposed to the specific antigen, the immune system will, with the aid of memory cells, be able to quickly identify and destroy the disease-causing organism before it can cause disease. This is how immunity is acquired from a vaccine.



Schematic drawing on how a vaccine works; a weakened or killed form of a disease is injected. The body creates antibodies to fight against the disease. Whenever the disease comes back, the antibodies return and destroy the disease © [Frank Adusei-Mensah](#)

To read the entire 'How vaccination leads to immunity' article, click [here](#)

Booster vaccinations

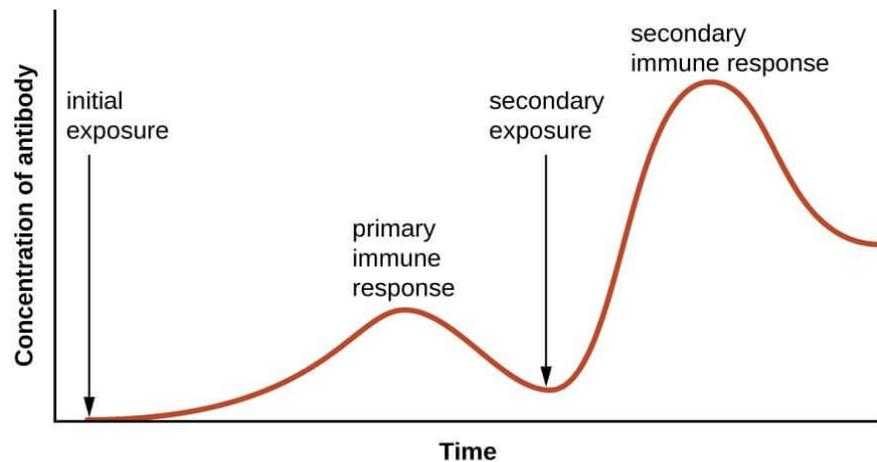
After getting a vaccination, the doctor or vet will usually ask you to return for a booster shot. This is not to make money... Some vaccines simply do not stimulate an efficient, long term immunity following a single dose. This means that more than one shot is needed for the body to build up a complete immunity.

Further, immunity often starts to 'wear off' after a while. You know by now that when the pathogen enters the body (or the vaccination is given), the body starts the attack, but this takes a while. This is the primary immune response. When the is subsequently re-exposed to the same pathogen (or it's booster vaccine), the memory cells in the immune system immediately recognise the disease and launches a full-on attack with massive near immediate Ab production, thereby neutralising the disease before it can cause disease. This is called the secondary immune response.

When the body is not exposed to that particular disease for a long time, the memory cells "forget" about the invader. The patient gradually becomes susceptible again to the disease.

When an antigen enters the body, an immune reaction will occur after a specific time. If the same antigen enters the body again after a few months or even years, a secondary immune response will be shaped, and the antibodies' response will be faster, and longer-lasting. ©

[Immune System Health](#)



FMD-OUTBREAK

In case you have missed it, we would like to make you aware of another Foot and Mouth Disease (FMD) outbreak. The Ministry of Agriculture, Water, and Land Reform has announced that FMD outbreaks were detected in the northern regions of Oshana and Ohangwena. Following previous outbreaks, it now means that the Oshikoto, Ohangwena, Oshana, Omusati, and Kunene regions have been declared as disease management areas (DMAs), and FMD control measures have been implemented.

Measures include a complete restriction on the movement of cloven-hoofed animals within and out of the affected areas. The restriction includes cattle, goats, sheep, pigs and wildlife, but also hides, skins, game trophies, grass, and plant material. Read the news article from Reuters [here](#).

In our online [Newsletter from November 2020](#) you can read more about the disease FMD.

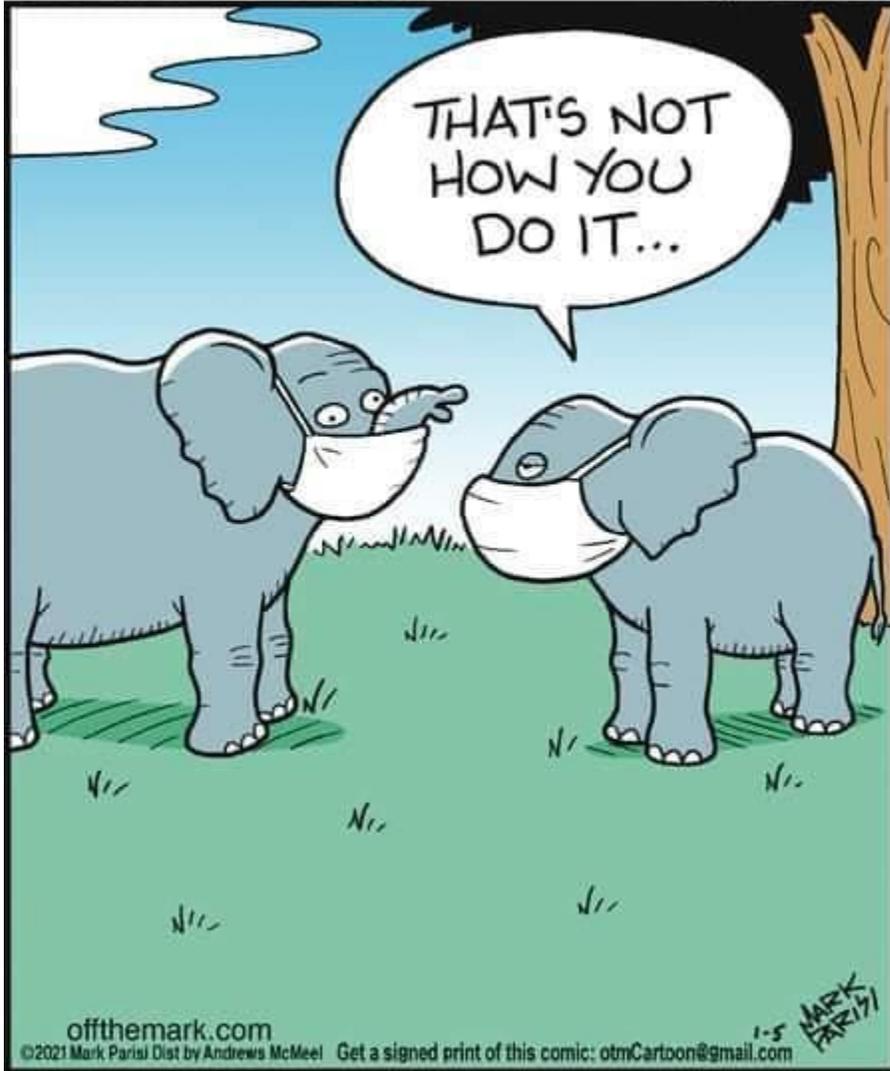
DIVA Vaccines

For several viral infections of livestock, effective conventional vaccines are available but cannot be used, as they would interfere with disease surveillance based on serological testing and may result in the loss of a country's disease-free status. FMD is a classic example where effective FMD vaccines are available, but they are not used in **FMD-free countries**, as this would compromise this status and hence international trade.

The ability to identify and selectively delete genes from a pathogen has allowed the development of “marker vaccines” that, **combined with suitable diagnostic assays**, allow differentiating infected from vaccinated animals (DIVA) by differentiation of antibody responses induced by the vaccine (no antibodies generated to deleted genes) from those induced during infection with the wild-type virus. Such DIVA vaccines and their companion diagnostic tests are now available or in development for several diseases including FMD. Who knows, maybe we will soon have buffalo roaming free on our game farms!

off the mark.com

by Mark Parisi



DR ULF TUBBESING
P.O. BOX 50533, BACHBRECHT,
WINDHOEK
+264 (0)81 128 3050
ULFT@AFRICAONLINE.COM.NA

MARISKA BIJSTERBOSCH
+264 (0)81 382 8473
+31 (0)6 4369 3095 (WHATSAPP ONLY)
MARISKA@WILDLIFEVETSNAMIBIA.COM

WWW.WILDLIFEVETSNAMIBIA.COM
FACEBOOK: [WILDLIFE VETS NAMIBIA](#)
YOUTUBE: [WILDLIFE VETS NAMIBIA](#)

