The Process of DNA Collection Using Semen Samples

Overview

Unlike many other somatic cells, sperm DNA is very compact mainly due to replacement of histones (proteins) with protamines. Disulfide bonds formed within and between the protamines make the extraction of sperm DNA through standard techniques difficult when compared to other common material used for extraction e.g. Saliva or Blood. Furthermore, the spermatozoa themselves are protected by a membrane which is rich in disulphide bonds, making cell lysis very difficult.

Semen can be used to extract DNA and is a useful tool for assessing and identifying the semen – a DNA profile (fingerprint) is unique and identifies that semen sample. Extracted DNA from the semen sample can also be used to run for hereditary diseases.

What do we need?

We can extract DNA from a semen straw or pellet. The straw or pellet can be shipped at room temperature – no liquid nitrogen is required. Let the sample thaw in the fridge and store at 4°C before shipping. Leaving the sample at room temperature for long periods can cause mould to appear on the sample. Place the specimen in a plastic zip lock bag – label the bag – and post as normal.

How much semen do you need?

Of course the more sample we have the more DNA we can extract. A full straw or breeding unit (pellet) gives the highest success rates and substantial quantity of DNA to allow you to screen for all diseases, traits and a DNA profile.

Any special conditions for shipping?

Option1

Place **the breeding unit (straw or pellet)** into a plastic zip lock bag (the smaller the better). An excellent way to ensure the straw is protected is to use the outside shaft of a ball point pen. Use the plastic top to seal one end. This shaft also helps protect the straw from any postal damage. Pellets are usually stored and shipped in an Eppendorf tube and this is sufficient for transporting.

Option 2

Blot the semen straw or pipette the semen pellet directly onto a blotting card (filter paper). Blotting cards are available from Orivet free of charge and are preferred to normal filter paper. This tends to work well as "fresh is best" and therefore no issue of sample leaking or drying.

Option 3

An **empty straw** can be used and in many cases is sufficient to get a DNA profile. To assist and ensure that the sample is successful, simply place the empty straw in a small zip lock bag. Do not seal the ends with tape or other plugs. The straws are flushed out with sterile saline and this allows for any residual semen to be eluted into a tube.

One of the limitations of semen is the inability to store any sample surplus to the initial DNA testing requirements for future DNA testing of the animal. Since the amount of DNA extracted is limited, we carry out DNA profiling (fingerprint) as a priority and will screen for diseases and traits as a second option if there is sufficient DNA quantity available.

Please Note: Inhibitors in various extenders may impact on the ability to extract quality DNA. Since these vary from extender to extender, we cannot provide 100% guarantee on obtaining quality DNA.

In some cases, only "partial profiles" can be obtained from a semen sample as this is sufficient for our laboratory to carry out screening and parentage confirmation.