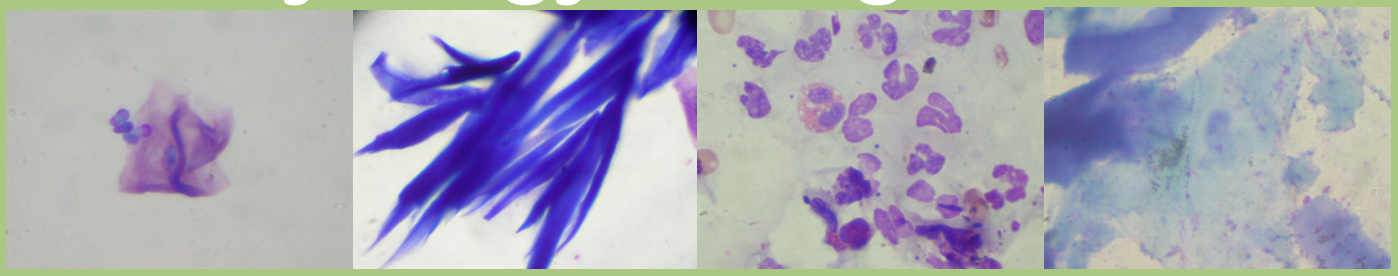
Skin Cytology in Dogs and Cats



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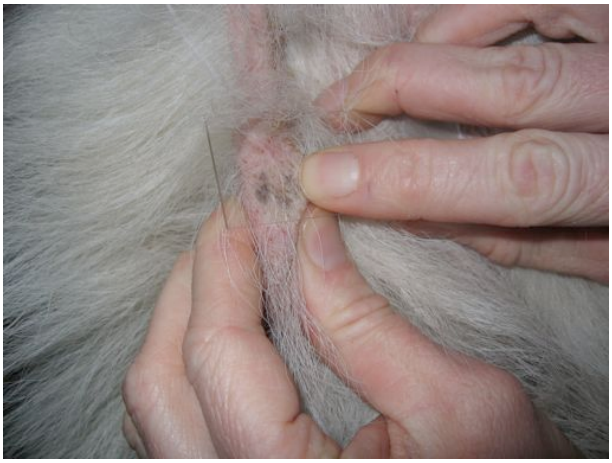
Why do skin cytology?

Skin cytology is a very high-yield procedure for patients with skin disease. It tells us more about what is going on with the skin, more quickly, compared to most other diagnostic tests. It is also inexpensive to perform. Nearly all patients with skin disease, and particularly those with skin lesions, should have this test performed. It is also very useful for monitoring therapy.

How is cytology collected?



Cytology can be collected by **direct** and **tape** techniques.

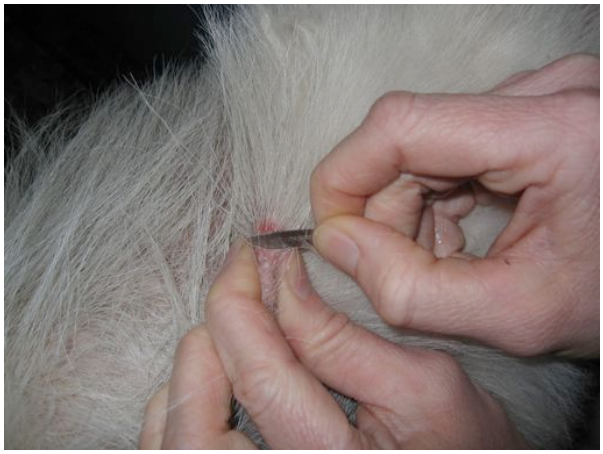
For the **direct** techniques, material can be collected from the surface of the skin as follows:

1) **impressions**: directly pressing the slide on the skin several times

2) **swabbing** the affected area vigorously, then rolling swab onto a slide (like making an ear cytology preparation)

3) **scraping** the surface debris from the skin and smearing the material onto a slide like buttering bread - scrapings are superficial (do not draw blood) and no oil is used

Samples from dry or greasy (not moist) skin should be heat-fixed. All direct techniques are stained with Diff Quick (fixative + 2 stains) and examined under oil immersion.



For the **tape** technique, samples are collected as follows:

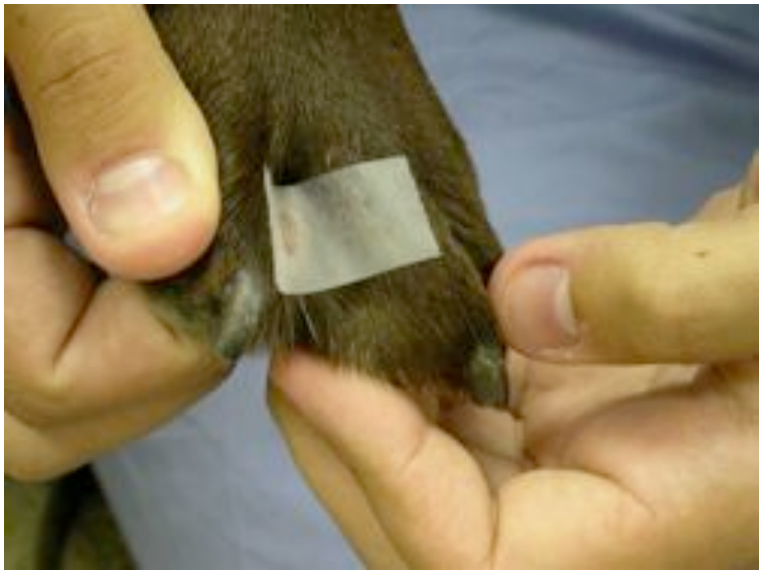
1) A 3-5 cm piece of tape is pressed onto the skin several times, sticky side down. Clear tape is ideal, but Scotch tape can be used as well.

2) The piece of tape is placed sticky side down on the slide and attached to it by one end in order to hold it in place. Most of the tape is sitting on the glass slide but is not actually adhering to the slide.

3) The slide is immersed in the purple (last) stain of Diff Quick for a couple of seconds to allow the stain to enter the space between the tape and the slide. *

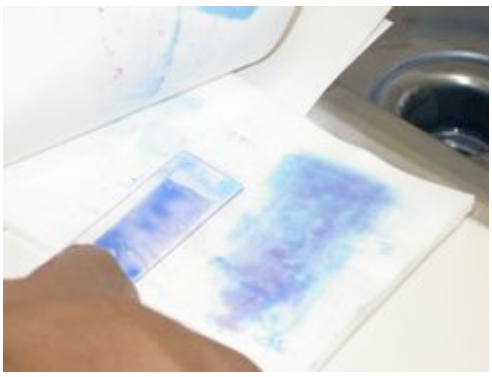
3) The back of the slide is rinsed gently.

4) The slide is blotted in a paper towel or bibulous paper.



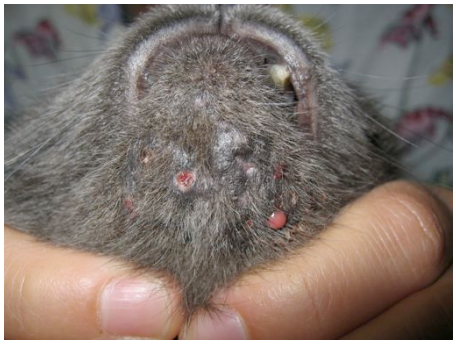
5) The tape is examined under oil immersion. Note that if Scotch tape is used, nothing will be seen on lower powers due to its opacity - only under oil immersion does the tape become clear.

* Some veterinarians find it easier to place a drop of the purple Diff Quick stain directly on the slide, and then put the tape sticky side down onto it, then blot. For me, this results in purple fingers.



Why 4 different techniques?

Some of it depends on personal preference - many practitioners will always use one technique. However, each one is best for certain situations and has advantages over the other techniques



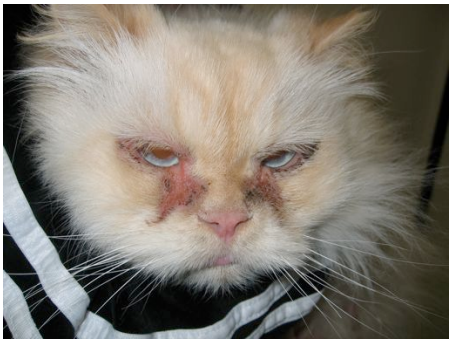
Impression

Works well for:

moist, exudative lesions
pustules (open with needle)
crusts (peel crust, touch skin)
very greasy skin
draining lesions

Not good for:

dry or minimally exudative lesions
small areas (e.g.. nail folds)
awkward areas (e.g.. interdigital)



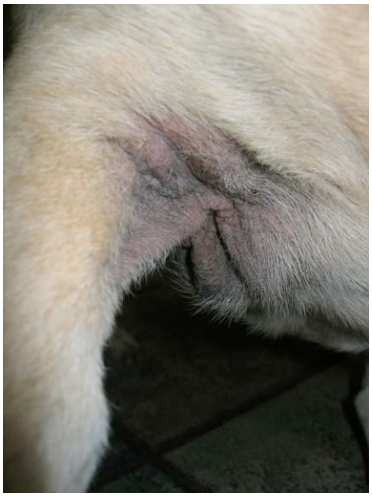
Swab

Works well for:

moist, exudative lesions
small areas (e.g.. face & lip folds, nail beds)
ears

Not good for:

dry or minimally exudative lesions



Scraping

Works well for:

large greasy lesions

Not good for:

sensitive areas
rambunctious patients
near eyes

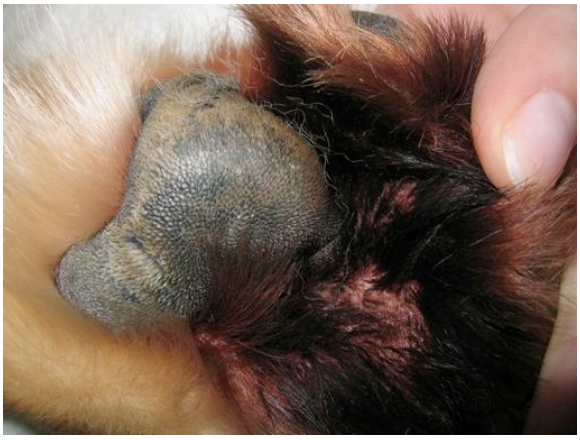
Tape

Works well for:

greasy or dry skin
minimally abnormal skin
awkward areas
small areas
sensitive areas

Not good for:

purulent lesions
pustules
wet skin

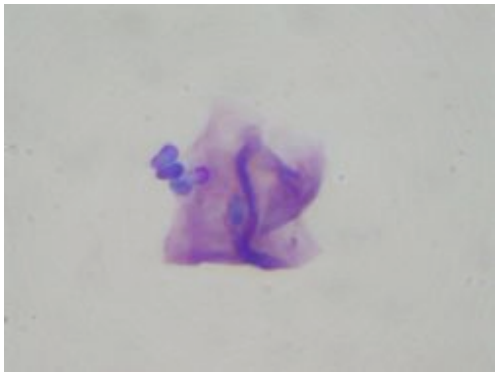


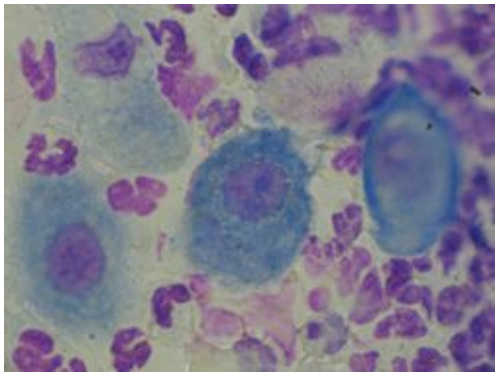
Direct technique or tape technique?

Each technique provides certain advantages and none are perfect. Until you become very comfortable with cytology, I recommend trying the tape technique as well as one of the direct techniques on each patient. Here are some tips about their advantages. Compare the two Malassezia slides below.

Direct techniques

Good:





1) The direct techniques make a smear that is somewhat easier to read.

2) It is a thinner preparation so you don't need to focus up and down as much. Nothing moves on a direct smear - it is stationary.

3) Organisms stain more deeply.

4) It is easier to identify and quantitate bacteria on direct techniques - rods vs. cocci can be differentiated more easily.

5) Inflammatory cells and other cells such as acantholytic cells can be identified more easily.

6) Makes nice preparations with moist, exudative lesions.

Bad:

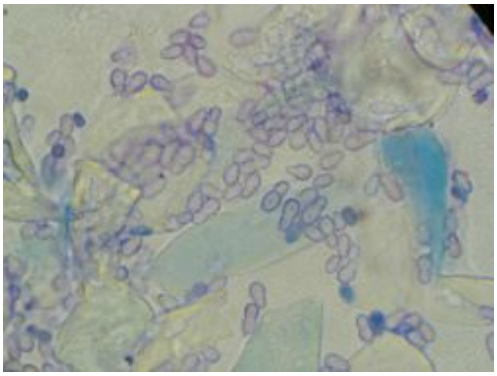
1) Picks up much less material than a tape smear from most skin lesions.

2) May not obtain adequate samples from dry or minimally greasy skin.

3) Staining takes longer than with the tape preparations, as all 3 Diff Quick steps are used, and the slide must dry.

Tape technique

Good:



1) Much better at picking up material from minimally exudative or dry skin.

2) Much faster staining and no air-drying.

3) Well tolerated by pets in areas such as interdigital spaces.

4) Great for looking for Malassezia.

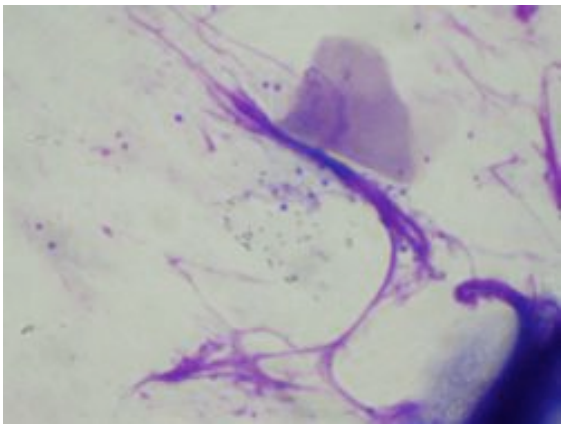
Bad:

1) The tape technique makes a very "busy" slide with lots of material. It can be a bit overwhelming when you first look at these types of preparations.

2) More difficult to examine bacteria, which are usually "swimming" in the slide.

3) Not good for identifying cellular inflammation.

One last note:



Learn the difference between bacteria (which stain blue/purple) and melanin (similar in size, oval, but always **brown/black** and NOT **blue/purple**).