



DIAGNOSTIC TECHNIQUES

CUTANEOUS CYTOLOGY

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WHEN DO I DO IT?

- When bacterial or yeast infection is suspected (inflammatory alopecia, seborrhea, scales, papules, pustules, crusts, erosions, ulcers)
- In patients with nodules/tumors → do cytology on every nodule/tumor
- In patients with suspected pemphigoid diseases (erosions, pustules, crusts)
- In every patient with otitis externa

WHAT CAN I FIND?

- Cocci (most likely *Staphylococcus sp.*)
- Rods → culture and susceptibility advisable
- Inflammatory cells with intracellular bacteria → clinically relevant infection that may require systemic antibiotic treatment
- Eosinophils → can point to ectoparasites or allergies

- Macrophages → seen in chronic, sterile and infectious processes
- *Malassezia spp.* → one or more *Malassezia sp.* per oil immersion field (x 1000 magnification) may be clinically relevant (normal numbers vary can vary with the climate.) In cases of *Malassezia* hypersensitivity a much lower number of *Malassezia* (e.g. one in every two or three HPFs) can cause clinical disease. Topical or systemic treatment should be considered.
- Neoplastic cells

WHAT DO I NEED?

- Slides, Diff-Quick® or similar stain, mineral oil, adhesive tape, microscope, needle and syringe

EQUIPMENT VIDEO: [ExcellenceInDermatology.com](https://www.excellenceindermatology.com) → [Education Library](#) → [Videos](#)

HOW DO I DO IT?

IMPRESSION SMEAR

- Rub or impress a slide on moist, exuding or greasy surface of infected skin.
- Role a cotton bud on the skin surface or insert it in the ears and role cotton bud on the slide.
- Insert needle (25 - 27 ga.) into the pustule holding the needle parallel to the skin so that only the pustule is punctured, no deeper cells or blood are required, top is lifted off and slide impressed onto the ruptured pustule.
- Use the sticky surface of the adhesive tape to collect cells and surface organisms from dry and / or scaly skin and then place this (sticky side down) onto a glass slide with a drop of the blue Diff-Quick® stain. The tape acts as its own coverslip.
- Apply a piece of double-sided adhesive tape to a slide and collect material with the sticky slide. Stain this in the blue Diff-Quick® stain, dry and examine under oil immersion.

ASPIRATION SMEAR

- Insert needle into nodules or abscesses and re-insert a number of times without leaving the skin. Withdraw the needle. A syringe with the plunger pulled back is attached to the needle and contents is blown onto a slide and air dried.
- Stain the air dried slides (e.g. Diff-Quick®)
- Put the slides under a microscope, condenser up.

PROCEDURE VIDEO: [ExcellenceInDermatology.com](https://www.excellenceindermatology.com) → [Education Library](#) → [Videos](#)

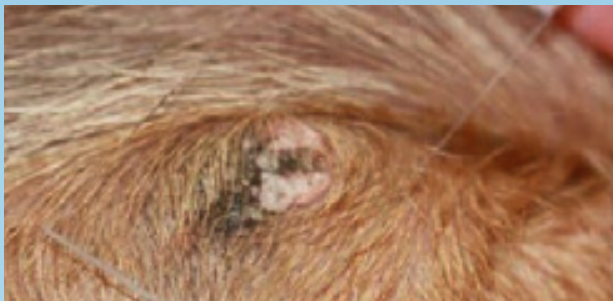
TECHNIQUE IMAGES : CUTANEOUS CYTOLOGY



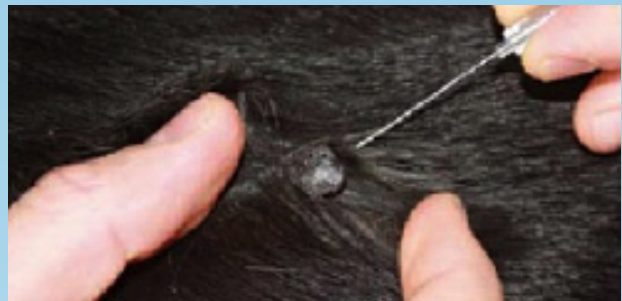
Superficial pyoderma (Courtesy: S. Bettenay)



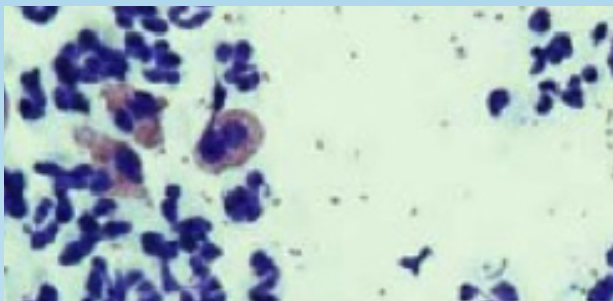
Use adhesive tape technique on dry skin or in ainterdigital area (Courtesy: S. Bettenay)



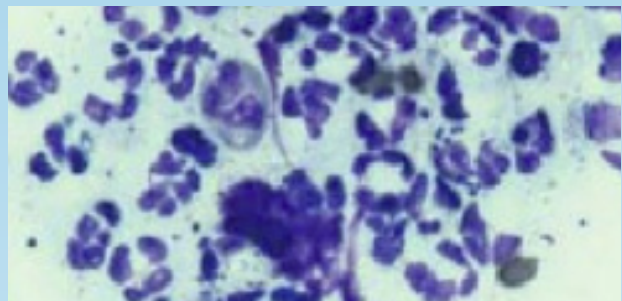
Impression smear: slide pressed on skin (Courtesy: S. Bettenay)



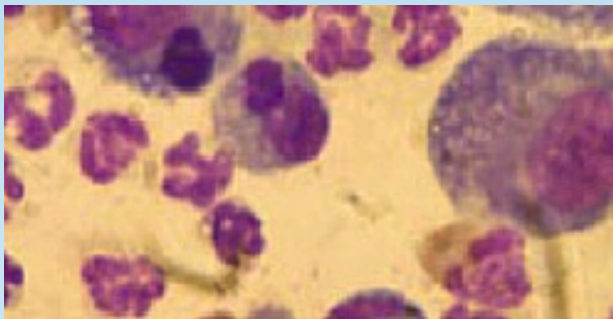
Aspiration smear: insert needle into nodule (Courtesy: S. Bettenay)



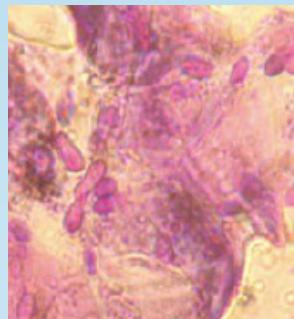
Eosinophils, neutrophils and bacteria (Courtesy: S. Bettenay)



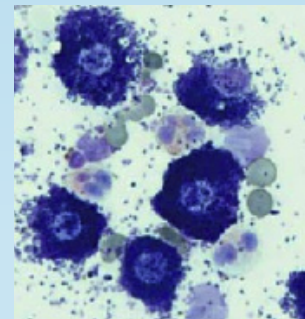
Superficial pyoderma: neutrophils with intracellular cocci (Courtesy: S. Bettenay)



Pyogranulomatous inflammation: many neutrophils, macrophages, few bacteria



Malassezia and bacteria (Courtesy: S. Peters)



Grade 1 mast cell tumor with eosinophils (Courtesy: S. Bettenay)

TIP

- In case of dry skin or in the interdigital area:
 - Insert needle into nodules or abscesses and re-insert a number of times without leaving the skin. Withdraw the needle. A syringe with the plunger pulled back is attached to the needle and contents is blown onto a slide and air dried.
 - Stain the air dried slides (e.g. Diff-Quick®)
 - Put the slides under a microscope, condenser up.