It's just a sample ... Right??

An overview of sample handling and getting the most from your sample submissions

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A scalpel gently dissects through the delicate tissue layers and slices through the adhesions that are clearly evident from first glance at the physical exam. The hard peculiar-shaped lump inside can still be palpated and the dissection takes on a slower pace and more delicate precision when nearing the lump to be excised.

What surgical procedure is this???

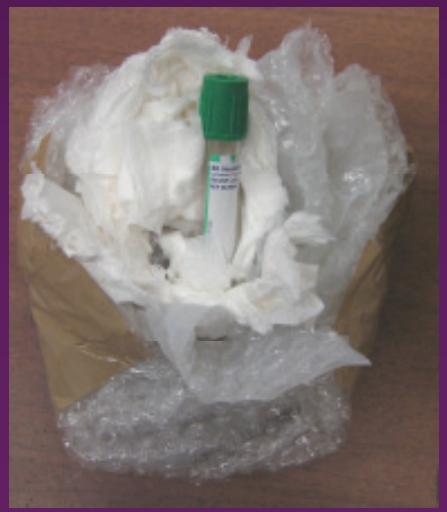
Would you believe ….. Unpacking a sample?!!

How to Excise a Sample

1. Physical Exam and Palpation

2. Select Surgical tool

3. Commence Surgery



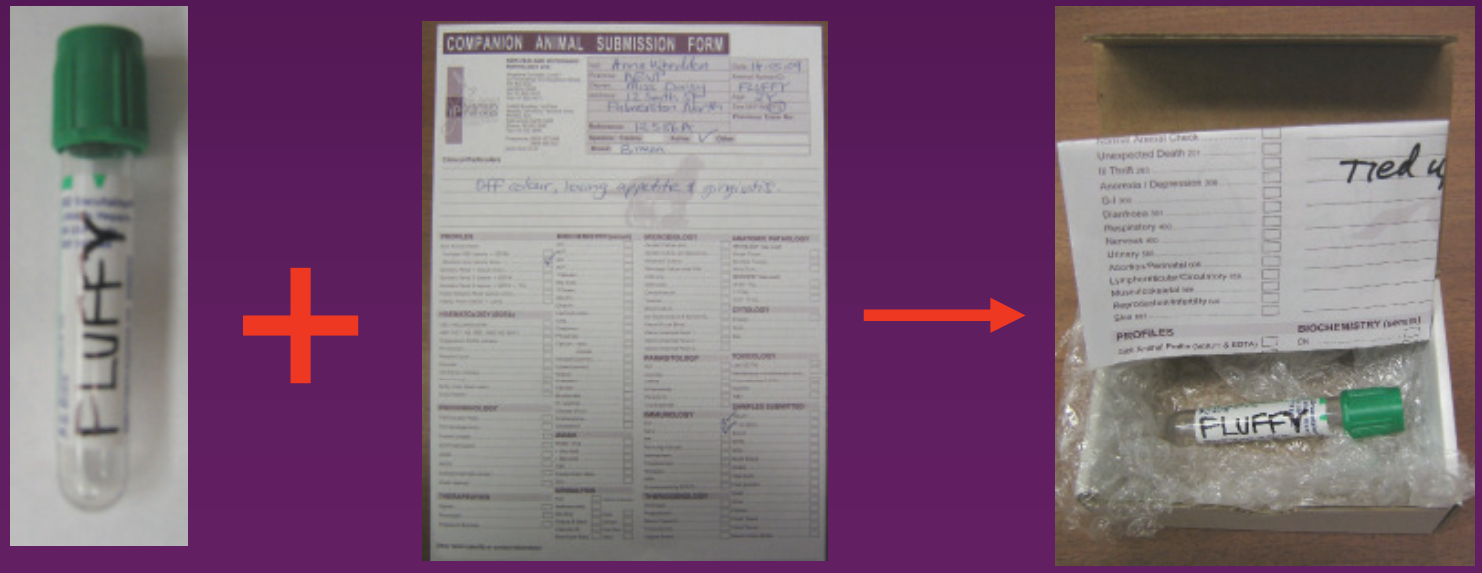
4. Excise Sample

Overview

- General tips for sample handling and packaging
- Submission forms
- Labelling of samples
- Things that affect results
- Blood smears
- Getting the most from your Laboratory Submissions

General Sample Handling and Packaging

- Clearly label all samples with animal ID
- Complete all relevant details on the submission forms
- Put all the samples and matching forms in the same parcel (one exception may be formalin-fixed samples – see later)



If samples could talk …..

General Sample Handling and Packaging

- **Send the samples in a box – individual samples do not need to be bubble wrapped, just line the box with packing material/bubble wrap so they all fit snugly**
- **Use rubber bands to bunch tubes together rather than Sellotape**

General Sample Handling and Packaging

- Transfer syringe contents in to a sterile (red top) vacutainer
- Glass slides should be sent in plastic slide mailers in a box
- Faecal, urine, fresh tissue, or other semisolid samples should be submitted in tightly sealed screw top pottles

Sending Samples in Formalin

- **<u>Must</u> be in a solid container that has an airtight lid and extra packaging to ensure the container doesn't crack and/or there are no formalin leaks**

Double package them either by putting the container in a sealable plastic bag for the small ones or a bucket or box for the larger samples

For large samples (e.g. brains, large tumours) consider fixing the tissue at the clinic for 2 days and then draining the sample and sending the tissue only in a sealable plastic bag

Note that it is VERY important that blood and cytology smears are not exposed to formalin or even formalin fumes, so it may be preferable to send any fixed samples in a separate parcel

Acceptable Histo Containers

Sending Dead Things

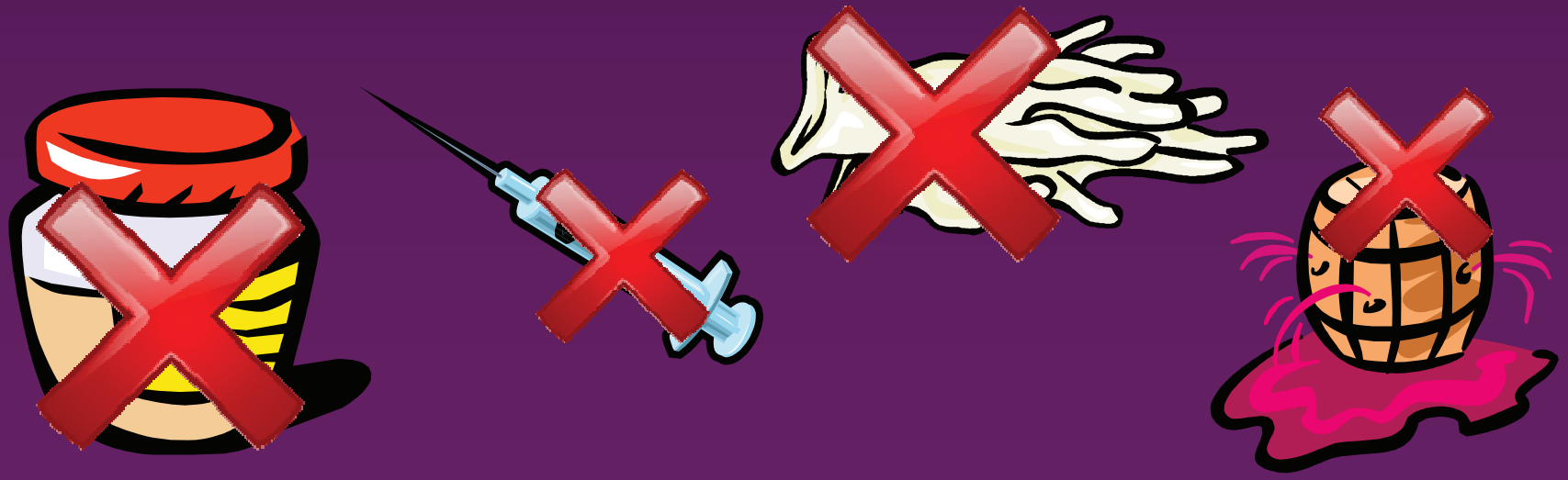
- Packaging bodies is always difficult, so please be sensitive to the courier staff
- Use plastic bins/buckets with tight fitting lids for very wet specimens (e.g. aborted foetus)
- For small animal bodies, double bagging and then placing in a cardboard box is usually sufficient

To chill or not to chill??

- **Most samples can be shipped at ambient temperature if they are to arrive at the lab within 24 hours**
- **In hot weather or if possibility of delay in transit (strikes, bad weather, holidays, weekends), it is always best to include a chilly pad particularly for milk samples**

What not to send!

- **Breakable (glass) jars**
- **Rubber gloves or rectal sleeves with faecal samples enclosed**
- **Syringes, needles or other sharp objects**
- **Leaking bags or cardboard boxes etc.**



Cost effective couriering

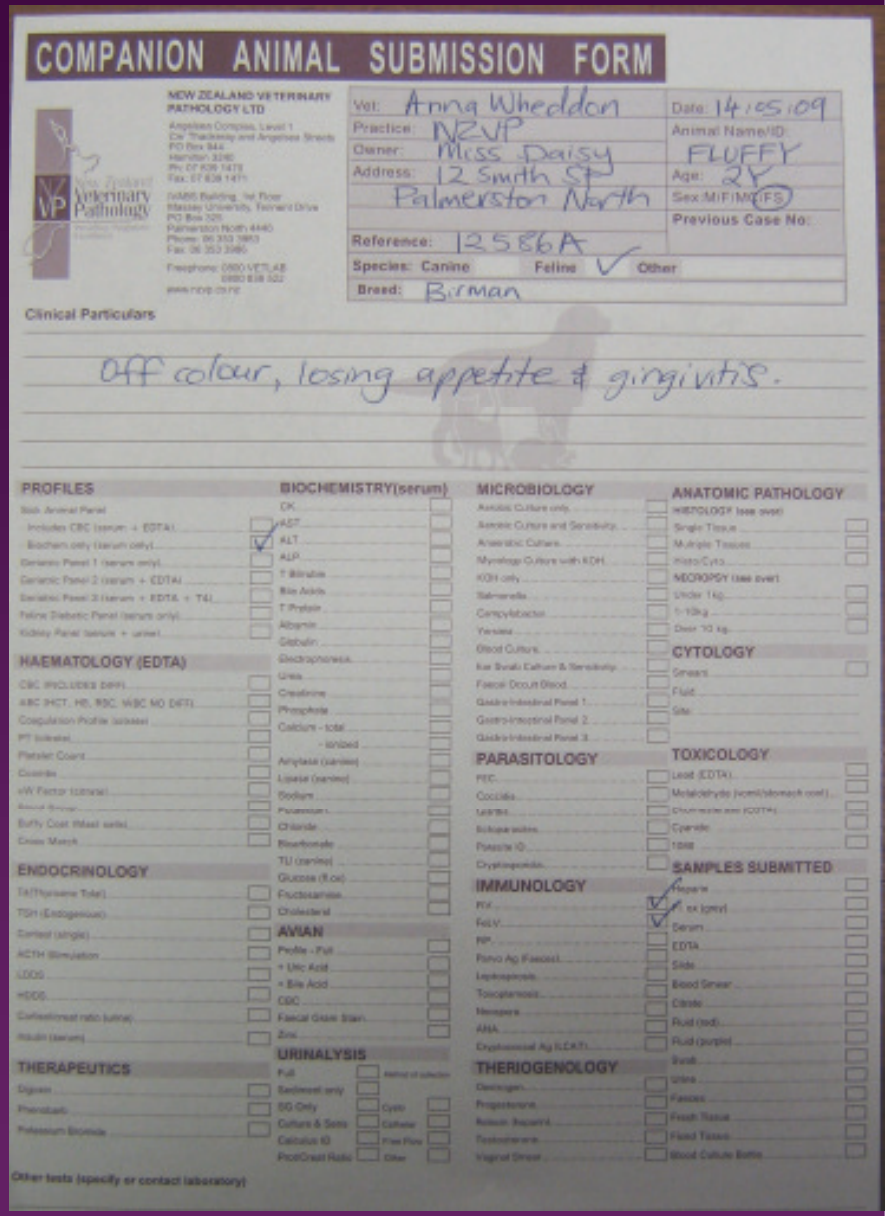
- **NZ couriers – NZVP courier of choice**
- **Saturday delivery – make sure sticker on package to ensure delivery on Saturday**
- **Prepaid envelopes/bags – most cost effective way vs. tickets (put several boxes in envelope)**
- **South Island – always overnight**

  delivery to North Island

Submission Forms

- Clinic name and submitting vet's name clearly identified
- Animal ID on the form matches the sample/s
- Species important for ensuring correct reference ranges
- Age and breed for age or breed specific anomalies (e.g. foals)
- Relevant history
- Select required tests

- Legible hand writing is a bonus!!


COMPANION ANIMAL SUBMISSION FORM

NEW ZEALAND VETERINARY PATHOLOGY LTD

Vet: Anna Wheeldon
Practice: NZVP
Owner: Miss Daisy
Address: 12 Smith St Palmerston North
Reference: 12586A
Species: Canine Feline ✓ Other
Breed: Birman

Date: 14/05/09
Animal Name/ID: FLUFFY
Age: 2Y
Sex: M/F/M(C)/F(S)
Previous Case No:

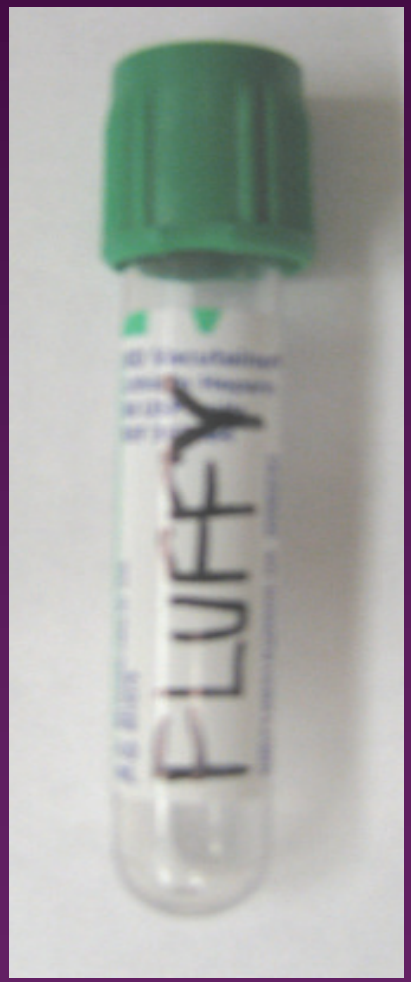
Clinical Particulars

Off colour, losing appetite & gingivitis.

PROFILES
BIOCHEMISTRY(serum)
MICROBIOLOGY
ANATOMIC PATHOLOGY
HAEMATOLOGY (EDTA)
CYTOLOGY
ENDOCRINOLOGY
AVIAN
PARASITOLOGY
TOXICOLOGY
IMMUNOLOGY
SAMPLES SUBMITTED
THERAPEUTICS
URINALYSIS
THERIOGENOLOGY
Other tests (specify or contact laboratory)

Labelling Samples

- Make sure all samples are clearly labelled with
  - Animal ID
  - Site (e.g. swabs, FNA's, fluids)
  - Sample type (e.g. urine in a red top tube can look like spun serum)
- Reduces opportunity for error and allows sample to be correctly matched to form



Interfering Substances

- Haemolysis
- Lipaemia
- Icterus
- May be visible in the serum - possibility that any laboratory results which do not correlate with clinical findings may be erroneous
- Mild, moderate or marked lipaemia or haemolysis of the sample, it will be recorded as 1+, 2+ or 3+ on your report

Haemolysis

- **Interferes with the spectrophotometric absorbance readings and alter the pH of enzymatic reactions**
- **Might not be apparent until the serum or plasma has been separated**
- **Common causes of haemolysis:**
  - **Vigorous shaking of samples**
  - **Exposure of unseparated samples to excessive temperatures**
  - **Use of fine gauge needles during venepuncture**
  - **Excessive pressure on the plunger of the syringe during sample collection**
  - **Haemolytic anaemia's**
  - **Failure to separate serum or plasma prior to couriering or storage**
  - **Poor phlebotomy due to over-active animals**

Lipaemia

- Does not affect as many analytes as does haemolysis, but could be significant
- Affects many biochemistry tests by light scattering in spectrophotometric methods and can also affect automated haematology counts
- More likely to become haemolysed -serum separation at the time of sampling is recommended
- Larger sample volume is required for lipaemic samples
  - they give a smaller serum yield
  - some serum is lost in the spinning/separation process
  - analytical methods often involve reruns and dilutions to generate results
- Best avoided by sampling after a 6-12 hour overnight fast

Lipaemia

- **If sample continues to show lipaemia:**
  - **presence of very low density lipoproteins as in endogenous lipaemia**
  - **pancreatitis**
  - **some cases of diabetes mellitus, hypothyroidism, hyperadrenocorticism and nephrotic syndrome may have mild lipaemia**
  - **More rarely, some hereditary conditions – e.g. primary hyperlipidaemia of Miniature Schnauzers – will show persistent marked lipaemia**

What it looks like

Normal Lipaemic Icteric Haemolysed

Other things affecting results

- Vacutainers come in different sizes and require differing amounts of blood to provide the correct sample to anticoagulant ratio “fill line” on the label

- The correct ratio is important e.g. EDTA
  - Too much blood : amount of EDTA = ↑ clotting
  - Too little blood : amount of EDTA = “EDTA artefact”, or shrinkage of the red blood cells with distortion of the red cell morphology

Citrate

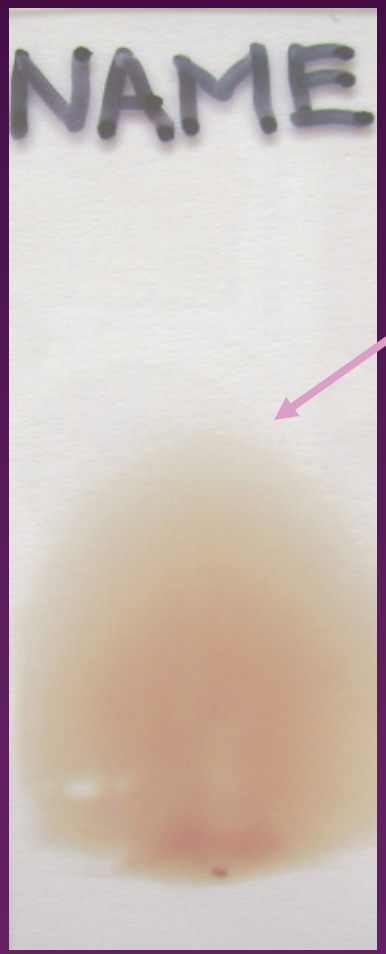
- Citrate tubes contain differing amounts of anticoagulant, and essential to fill these tubes with the correct blood volume
  - volume of anticoagulant equivalent to 10% of the total volume required i.e. the final sample should be a 1:9 dilution
  - Too little blood = affects clotting times
  - reference ranges are determined taking the dilution factor of a properly filled tube into account

Blood Smears

- Poor quality smear can make interpretation difficult
- Potential causes
  - dirty slides/unsuitable “spreader” slide
  - water artefact
  - exposure to formalin
  - too thick or heavily contaminated with blood
  - poor smear preparation (smudged cells, etc)

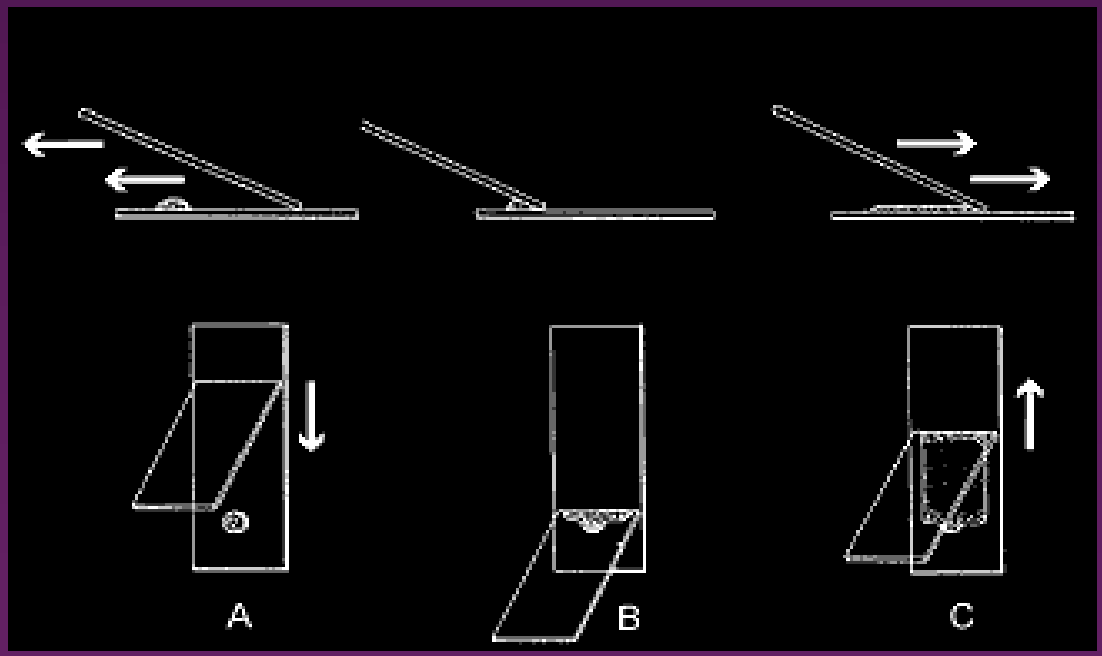
Any smear is better than no smear so don’t be afraid to send your freshly made smears in!

The Good …..

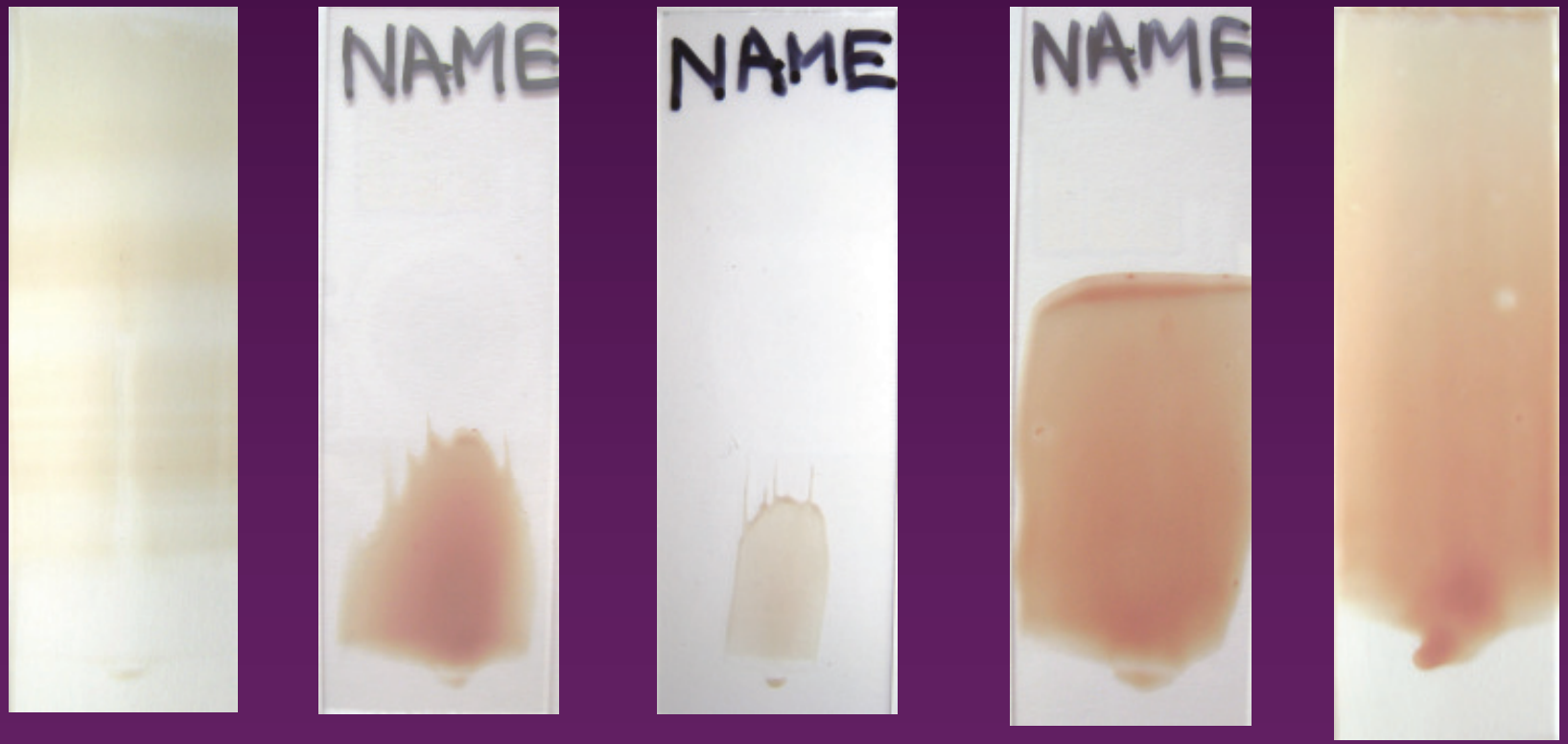


Animal ID (pencil is best if frosted ends)

Rounded/feathered end – not too thick or thin



The Hairy, Bad and Ugly ….



Cytology

- Include clinical information e.g. site
- If staining in clinic – send some unstained slides with stained ones
- Keep separate from histo samples and formalin fumes
- Multiple slides from same site = Single Cyto charge
- Single/multiple slides from multiple sites = Additional Site charge
- Histo/cyto package – same site only (include previous case numbers)

Getting the best from your case submissions

- Good quality samples/specimens/blood smears
- Labelled specimens
- Complete submission forms
- Appropriate packaging/couriering
- Relevant history/clinical particulars
- Appropriate test selection

Call lab staff if you need assistance or supplies

Any Questions??