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YOUR FIRST DISSECTION LAB

Your First Veterinary Dissection Lab: What to Expect and How to Work (PDF)

Before your first veterinary dissection lab, five things are worth knowing. Dissection is layered and one-way — skin, superficial fascia, deep fascia, muscle is the usual model, and you cannot put a layer back. Inside: Eight labelled figures, four reference tables and a 24-question self-test.

Contents

The 12 sections of this guide, in order.

IN SHORT

Before your first veterinary dissection lab, five things are worth knowing. **One.** Dissection is layered and one-way — skin, superficial fascia, deep fascia, muscle is the usual model, and you cannot put a layer back. **Two.** Your specimen has been preserved, most often by chemical fixation, which is why the tissue is firm, dull-coloured and does not bleed; ask which preparation yours is. **Three.** The smell is **formaldehyde**, a regulated hazard — wear the PPE your laboratory specifies and use the extraction as demonstrated. **Four.** Choose sharp or blunt by what you know: sharp for the cuts your manual specifies, blunt to open a plane you can already see, and neither on tissue you have not identified. **Five.** Learn what **reflect** means before you pick anything up. Free illustrated PDF.

KEY POINTS

1. **Dissection is layered, and it only goes one way.** Skin → superficial fascia → deep fascia → muscle is the working model for most of the trunk and limbs; the details vary by region and species. You can always go deeper and you can never go back.
2. **Reflect does not mean remove.** To reflect is to fold a structure aside while leaving it attached. It is what lets you see underneath something and still have it afterwards.
3. **The superficial fascia is not packing material.** The cutaneous nerves and superficial veins run in it. Strip it with your fingers and they go in the bin with it.
4. **Sharp or blunt is a decision, not a ranking.** Sharp dissection makes the cuts your manual specifies; blunt dissection opens a plane you can already see. Either one damages a structure you have not identified.
5. **Ask how your specimen was preserved.** Chemical fixation, soft embalming, saturated salt and fresh-frozen all feel different. If it was vascularly injected, the coloured material in the vessels is an injection medium, not blood — and it is there to be followed.
6. **The smell is a regulated hazard, and the number is local.** Formaldehyde is IARC Group 1. The 8-hour limit is 0.75 ppm in the US, 0.3 ppm in the EU and 2 ppm in the UK. Your school works to one of them.
7. **Feeling strange is normal.** In 168 first-year students at one school, mean state anxiety sat toward the lower end of a 0–60 scale and fell during the session, 14.8 to 10.4. If you feel unwell, stop and tell the demonstrator rather than diagnosing yourself.
8. **Do the cutting yourself.** Watching a groupmate dissect is not practice at dissecting, in exactly the way watching someone answer a question is not practice at answering.

About the images

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01 What happens in your first veterinary dissection lab?

You will be told a room number and a time, and almost nothing else. So here is the shape of it.

You arrive at a room of stainless-steel tables, with a specimen shared between a small group. Group size, specimen and session length vary by course, so check your practical brief rather than anything written here. The smell reaches you before anything else does — sharp, slightly sweet, catching at the back of the throat. It is not decay. It is the preservative, and the next section explains exactly what it is and why it is there.

Your specimen is lying on its side under a plastic sheet or in a bag. It has been prepared, which means it is firm rather than limp, its coat is damp, and its colour is not the colour of a living animal. Someone will read out a short statement about respect for the animal, and it will not be a formality. Teaching cadavers are typically donated by owners, or come from shelters after euthanasia for reasons unconnected with teaching — but sourcing policies differ between schools, and yours should be willing to tell you its own.

Then you will be given a region — often the thoracic limb or the neck — a list of structures, and a fixed block of time. How much technique instruction comes with that varies a great deal: some courses demonstrate it, some assume it. Your demonstrator will show you if you ask, and asking is always the right move — but most written resources start at what to find rather than how to work, and that gap is what this guide is for.

02 How are veterinary cadavers prepared?

Knowing the preparation is not morbid curiosity. It explains everything about how the tissue in front of you behaves — why the muscle is a dull tan rather than red, why the vessels hold their shape, why nothing bleeds, and why the whole animal is stiffer than you expect.

Evans and de Lahunta set out **one traditional protocol** in the *Guide to the Dissection of the Dog*. It is worth knowing because it explains the tissue — but it is not the only one. Your specimen may have been fixed to a different recipe, soft-embalmed, preserved in saturated salt solution, or simply fresh-frozen, and each of those feels and behaves differently. Ask which you have. In the traditional protocol the dog is anaesthetised with pentobarbital through the cephalic vein and exsanguinated through a cannula in the common carotid artery, so that the heart's own pumping empties the vessels *before* any fixative goes in. That order matters: an empty vascular tree is one the preservative can fill evenly.

That protocol, step by step:

STEP	WHAT IS USED	WHAT IT DOES TO THE TISSUE YOU WILL HANDLE
Anaesthesia	Pentobarbital, cephalic vein	The animal is unconscious before anything else happens.
Exsanguination	Cannula in the common carotid artery	The heart empties the vessels, so fixative can fill them evenly.
Embalming	5% formalin, 2% phenol, 30% ethanol in water, injected at 5 lb pressure over about 30 minutes	Proteins cross-link. Tissue firms, colour dulls, and decay stops. This is the smell.
Arterial injection	Red latex, common carotid, 50 mL hand syringe	Arteries hold their shape and their colour, so you can follow them instead of guessing.
Storage	Gauze moistened with 2% phenoxyethanol or 1% phenol; plastic wrapping	Prevents mould between sessions and stops the specimen drying out. Refrigeration helps but is not essential.

Two consequences follow, and both will surprise you. First, **a fixed organ feels nothing like a living one**. Budras and Habel warn students of exactly this in the ruminant guide: the bladder in your embalmed cadaver, they note, may be stiff in texture and contracted. Do not judge the size or the softness of anything by what you are holding. Second, **if your specimen was vascularly injected, the coloured material in its vessels is not blood** — it is an injection medium, often red latex, put there so that you can follow arteries. Medium and colour vary between preparations, and some specimens are not injected at all. Where it is there, a vessel you tear is a vessel you cannot follow next week.

Fig 1 — What fixed tissue actually looks like. Not a coloured diagram — this is the material you will have in front of you. The colour is the colour of fixation: dull, even, and nothing like living muscle. Fat has been cleared here to expose the small nerves and vessels running through the region, and they survive as pale threads precisely because the fascia around them was taken apart carefully rather than pulled.

Image — Ashdown RR, Done SH. Color Atlas of Veterinary Anatomy, Volume 3: The Dog and Cat , 2nd ed. Mosby Elsevier — Fig. 7.14. Reproduced for educational reference.

And the purpose of all this, in Evans and de Lahunta's own framing, is not to produce a tidy specimen. It is to understand normal structure, the relationships between structures, and *individual variation* — and to build the three-dimensional sense that lets you read a two-dimensional radiograph, CT or ultrasound later. Your dog will not match the atlas exactly. That is the lesson, not a mistake.

03 Is it normal to feel strange at your first dissection?

Most guides skip this, and it is the thing students actually worry about beforehand. There is some measured evidence, and it is reassuring.

Terrado and colleagues surveyed **168 first-year veterinary students** at one Spanish school immediately before and immediately after their first practical session with dog cadavers, using the State-Trait Anxiety Inventory. Mean state anxiety fell from **14.8 to 10.4**, and the fall was statistically significant.

Those numbers need their scale. Each 20-item questionnaire was scored 0–3 per item, so **the range was 0–60** — not the 20–80 of the more familiar STAI form. Both means therefore sit toward the lower end of the scale, and they went lower during the session. What the study does not offer is a validated cut-off for "low anxiety", so read it as a direction of travel from one cohort rather than as a category you either fall into or do not.

How much weight to put on it

One school, one country, one session, no control group. Women scored higher than men but **not significantly** so. And the paper's headline emotion percentages come from a questionnaire the authors built for the study, with a Cronbach's α of **0.32** — alpha measures whether a scale's questions are really measuring one thing, and 0.7 is the usual minimum to trust one at all, against 0.92–0.93 for the STAI in the same paper. Treat the anxiety scores as solid and the emotion percentages as soft. The paper also reports that students **rated pre-session videos positively**; it did not compare videos against no videos, so it cannot show they reduce anxiety.

If you feel light-headed or unwell, stop, tell the demonstrator, and follow the laboratory's first-aid procedure. Do not diagnose yourself and do not push on: emotional stress, formaldehyde irritation, a missed breakfast and an unrelated illness can all feel much the same from the inside, and only one of them is fixed by sitting down for five minutes. Nobody in the room will think anything of it.

04 The smell: formaldehyde, and what the rules actually say

The sharp smell is formaldehyde, released from the formalin in the embalming fluid. It is an irritant to eyes, nose and throat at low concentrations, and the International Agency for Research on Cancer classifies it in **Group 1 — carcinogenic to humans** (Monographs volume 100F), with nasopharyngeal cancer and leukaemia the cancers it is listed against.

That sounds alarming and should not be. The classification describes the hazard, not your personal risk from a two-hour class in a ventilated room. What it does mean is that the exposure is regulated, and that your school is legally required to control it.

Here is where it gets genuinely useful, because **the legal limit is not the same number anywhere**:

WHERE	8-HOUR LIMIT	SHORT-TERM LIMIT (15 MIN)	SOURCE
United States	0.75 ppm	2 ppm	OSHA, 29 CFR §1910.1048(c)
European Union	0.3 ppm (0.37 mg/m³)	0.6 ppm (0.74 mg/m³)	Directive (EU) 2019/983, in force from 11 July 2021
United Kingdom	2 ppm (2.5 mg/m³)	2 ppm (2.5 mg/m³)	HSE EH40/2005, flagged **Carc**

The UK long-term limit is **nearly seven times the EU's** for the same substance, and the US sits between them. **These are three selected national limits, not a complete picture** — national implementation differs and institutions routinely set their own action levels below the legal one. The rule that governs your bench is your laboratory's.

> **What this means for you, practically**
>
> Wear everything your laboratory's hazard assessment specifies — gloves, coat, and the eye protection it names. **Ordinary spectacles are not chemical-splash protection;** if goggles or a face shield are specified, wear those. **Use the local exhaust exactly as you were shown** and keep your face out of its capture path rather than leaning over the specimen: bench airflow differs by design, so follow the demonstration for your room rather than a general rule. Do not put your face close to the tissue to see better — move the light instead. **On contact lenses:** NIOSH reviewed the evidence and found it did not support the old blanket ban, so lenses may be worn where the workplace policy permits them — but they are **not** eye protection and they do not replace goggles. Follow your laboratory's contact-lens policy and wear the specified eye protection either way. If your eyes stream, your throat burns or you get a headache that lifts when you leave the room, that is an exposure symptom and you should report it rather than tolerate it.

Before you start, every session: tie back long hair, cover any broken skin on your hands with a waterproof dressing, put on the PPE your laboratory specifies, check where the eyewash and the sharps container are, and wear closed shoes. Keep your phone out of the room or out of your gloves — not both in play at once. If something is spilled or splashed, stop and follow the laboratory's spill procedure rather than mopping it up yourself.

Wash your hands before you eat, drink or touch your phone, and never take a specimen, an instrument or a glove out of the room. Those two rules cover almost every way a dissection-room exposure becomes a problem outside the dissection room.

If you cut yourself, stop and say so. Wash it straight away under running water with plenty of soap — do not scrub it, do not squeeze it, do not put it in your mouth — then cover it and **report it**, so that the assessment your laboratory's incident procedure requires actually happens. A cut from a blade that has been in fixed tissue is a chemical exposure as well as a wound, so it gets recorded even when it looks trivial. Used blades go into the sharps container: never the general bin, never loose on the tray, never carried in a hand. Fit and remove them with the holder or forceps your kit provides, never with your fingers.

05 Blunt vs sharp dissection: your kit and when to use it

You will be handed or asked to buy a kit of eight to thirty pieces. You will use four of them. The skill is not owning the right instruments — it is deciding, at each step, whether this is a cut you have been told to make or a plane you can already see.

YOUR KIT

Sharp or blunt?

Scalpel	Planned cuts only
Blunt forceps	Lift, to open a plane
Scissors	Open a sheath; spread
A gloved finger	Explore a space you can see

Sharp for the cuts your manual specifies. Blunt to open a plane you can already see. Neither is safe on tissue you have not identified.

Fig 2 — Sharp or blunt? The decision that matters is not which tool is safer — it is whether you already know what is under your hand. **Sharp dissection** makes a deliberate, planned division: the skin incision, and the transections your manual specifies. **Blunt dissection** opens a natural plane you can already see, using forceps, closed scissors spread open, or a finger. Either one damages an unidentified structure.

Diagram — Vet-eBooks.com, drawn for this guide. Data from the instrument use described in Budras & Habel, Guide to Ruminant Anatomy , 2nd ed., and Evans & de Lahunta, Guide to the Dissection of the Dog , 8th ed.

The scalpel. For cuts you have decided to make, not for exploring. That includes the skin incision and every transection your manual asks for — and manuals do ask for them well below the skin: muscles are transected so they can be reflected, sheaths are opened, body walls are incised. What a blade must never do is find out what is underneath. Budras and Habel's instruction to students is to use *a new scalpel blade* to skin a limb, and the reason is mechanical: a sharp blade makes the cut you intended with little pressure, while a dull one needs force, and force is what drives a blade further than you meant. Change the blade when it starts to drag.

Hold it like a pen rather than a knife, with your fingers close to the blade and short controlled strokes, steadying your hand with your gloved fingers where it is safe to do so — and keep your other hand, and anyone standing next to you, out of the blade's path. Your demonstrator will show you the grip your course expects; follow that over anything written here.

Blunt forceps. Their job is not cutting but *tension.* Lift the edge of a layer and pull gently, and the plane between it and the next layer opens and shows you where the boundary actually runs. Without tension you are guessing where to cut.

Scissors. For opening a tube or a sheath along its length — Budras and Habel use exactly this for the vaginal tunic around the testis, the sleeve of peritoneum the testis carried down with it as it descended: cut the skin with a scalpel, then open the tunic with scissors. Blunt-tipped scissors pushed closed into a plane and then opened are also a good blunt dissector.

Your gloved finger. The most under-used instrument in the room, and the one with the best feedback. Budras and Habel direct students to insert a gloved finger or a probe to explore *particular named recesses* — a space the book has already told them is there. That is the right use: exploring somewhere you know exists. It is not a licence to push into anything you cannot see. Blunt does not mean harmless; a finger forced through tissue that has no plane in it will stretch, avulse or tear the small nerves and vessels running through it just as effectively as a blade would.

TOOL	THE JOB IT IS FOR	THE JOB PEOPLE WRONGLY USE IT FOR
Scalpel	The skin incision, and the transections your manual specifies	Finding out what is underneath — it divides the nerve before you see it
Blunt forceps	Lifting a layer to put it under tension so its plane opens	Gripping and tearing tissue you have not yet defined
Scissors	Opening a tunic, sheath or vessel along its length; blunt spreading	Snipping through fascia to reach the muscle faster
Gloved finger or probe	Exploring a space you already know is there; following a visible plane	Forcing a plane that is not there — blunt dissection still avulses small nerves

06 Five words to know before you pick anything up

These five will be used in the first ten minutes as if you already know them. Four are verbs — instructions about what to do with your hands — and one is a pair of adjectives that organises the whole body.

Reflect. To fold a structure back out of the way *while leaving it attached at one end*. It is not a synonym for remove. You reflect a muscle so that you can see what lies under it and still identify the muscle afterwards, still see where it ran, still put it back. When a manual says the biceps femoris has been reflected, the muscle is still on the animal, hinged aside like a door.

Transect. To cut across, dividing something into two parts. Deliberate, and usually the step that makes reflection possible: you transect a muscle near one attachment so that you can reflect the rest of it. The word tells you the cut is intended, which is exactly what distinguishes it from the tear you make by accident.

Blunt dissection. Separating tissues along a plane that already exists, using fingers, closed scissors opened, or a probe — no cutting edge. Slower than sharp dissection and almost always the right choice, because a natural plane runs *between* structures rather than through them, and nerves and vessels travel in those planes.

Sharp dissection. Dividing tissue with a blade or scissors. Necessary for skin and for deliberate transection, dangerous everywhere else, because a blade does not know what it is cutting.

Superficial and deep. Superficial means nearer the surface; deep means further from it. They are relative, not absolute: the superficial fascia is deep to the skin and superficial to the muscles. Almost every dissection instruction you will read is a statement about this axis, and if you want the wider set of directional terms, our guide to veterinary anatomical terminology covers them properly.

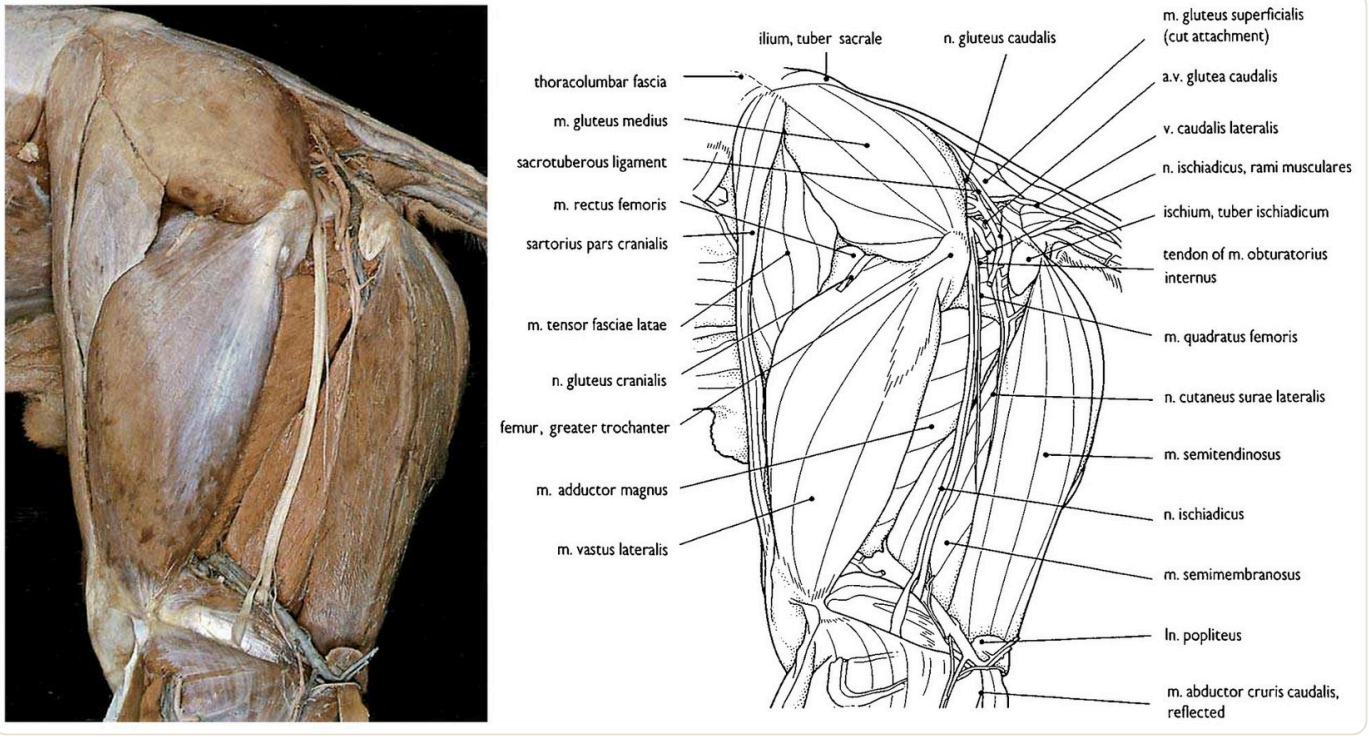

Fig 3 — Reflected, cut, and removed — three different things, in one plate. The photograph is on the left and the book's labelled key on the right. Two labels in the key are worth finding: **"m. gluteus superficialis (cut attachment)"**, marking where a muscle was deliberately divided, and **"m. abductor cruris caudalis, reflected"**, marking a muscle folded aside and still present. The sacrotuberous ligament is now visible because the structures over it were moved, not destroyed.

07 The one idea that makes dissection make sense: the body is layered

If you take one thing from this guide, take this. **The body is built in layers, you remove them one at a time and in order, and you cannot put one back.** Everything else — every instruction in every manual, every warning your demonstrator gives you — follows from it.

The working model for most of the trunk and limbs is **skin → superficial fascia (the subcutis) → deep fascia, where it is distinct → muscle**. Treat it as a useful default rather than a law: how many layers there are, how cleanly they separate, and whether the deep fascia is a real sheet or barely a film, all vary by region and by species. What does not vary is the direction of travel, and the fact that it only goes one way.

Ashdown and Done's atlas makes the point better than any description can, because it photographs the *same region of the same dog* at successive stages. Nothing moves, nothing is redrawn: the only thing that changes between frames is what has been taken off.

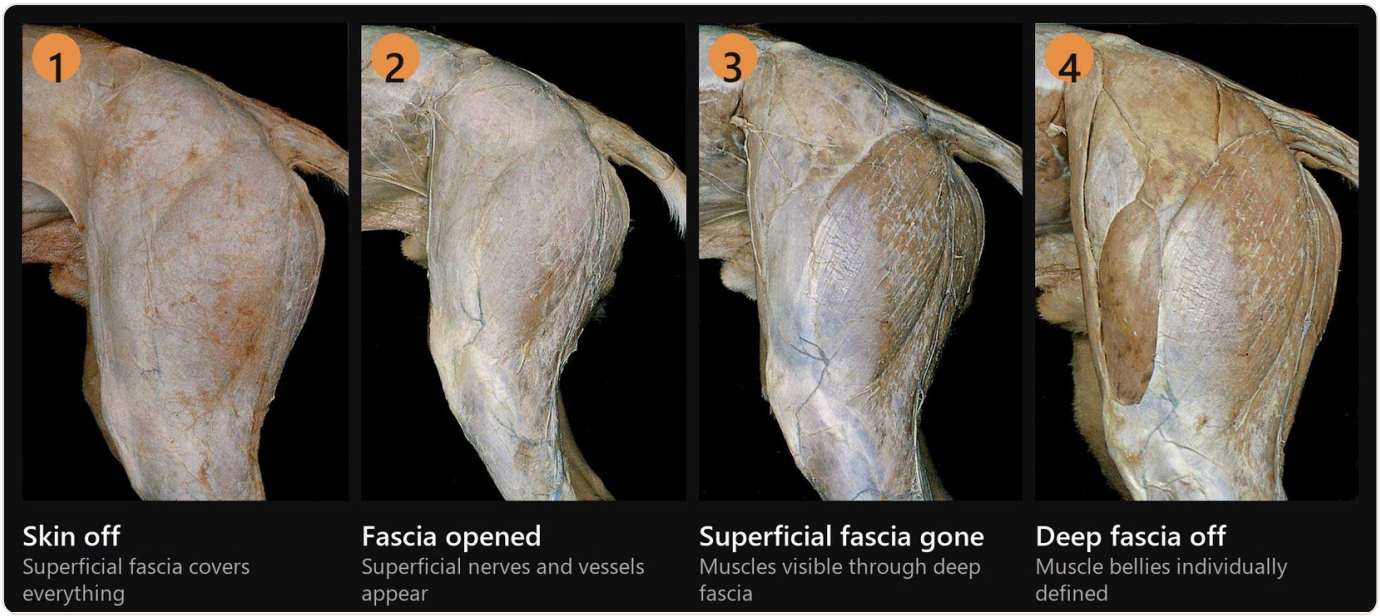

Fig 4 — One region, four layers, in order. The same left rump and thigh, photographed four times. **1** — only the skin is off, and the superficial fascia covers everything. **2** — some of that fascia has been cleared and superficial nerves and vessels appear in it; all the deep fascia is still intact. **3** — all the superficial fascia and its fat are gone, and the muscles show through the deep fascia. **4** — the gluteal and lateral femoral fascia are off and the muscle bellies are individually defined. Four stages, one animal, no diagram.

Image — Ashdown RR, Done SH. Color Atlas of Veterinary Anatomy, Volume 3: The Dog and Cat , 2nd ed. Mosby Elsevier — Figs. 7.11, 7.12, 7.13 and 7.15, composited for this guide. Reproduced for educational reference.

Read the sequence as a set of instructions, because that is what it is.

Skin. The outermost layer, and what the incision is for. Over parts of the trunk and neck a thin sheet of muscle lies within the superficial fascia and attaches to the skin's undersurface — the **cutaneous muscle**, of which *m. cutaneus trunci* is the largest. It is regional, not universal. Depending on the region and on what your manual asks for, it will either reflect with the skin or stay on the cadaver to be reflected separately. Both are normal, so read the instruction before you start pulling.

Superficial fascia. A loose, fatty layer, and the one beginners destroy. It looks like packing material and it is not: the **cutaneous nerves and superficial veins run in it**. Panel 2 is what it looks like when it is cleared carefully — structures emerge. Strip it with your fingers in thirty seconds and those structures leave with it, and you will spend next week looking for a nerve that is in the bin.

Deep fascia. Tough, white, organised, and firmly attached. It binds muscles into groups and gives them surfaces to slide on. Ashdown and Done describe how far that continuity runs. Over the rump and thigh, the superficial gluteal fascia carries on into the superficial fascia of the trunk and of the tail. The deep gluteal fascia becomes the fascia lata over the lateral thigh. And the fascia lata is continuous with the fascia on the medial side. It is one garment, not a set of covers.

Muscle. Only now do individual bellies have edges you can trace. If you are working out which is which, our guide to canine muscle origins and insertions is the companion to this stage.

Why the order is not negotiable

You can always go deeper. You can never go back. A structure removed early is simply gone for the rest of the course — and the students at the next table will still have theirs. That asymmetry is the single reason to work slowly at the start, when there is least to see and it feels least necessary.

08 How to skin and reflect a cadaver: your first cut

Skinning is the first thing you will do and the first chance to ruin something. It is also the easiest step to do well, because the plane you want is obvious once you have found it.

Budras and Habel's instruction for a limb is exactly four sentences long, and every clause earns its place: use a new scalpel blade to carefully skin the entire limb; clean the fat and connective tissue off the regions of the limb and identify the muscles; and *ask your instructor whether you should preserve the blood vessels*.

That last clause is the one to notice. **What you preserve is a decision, and it is not always yours.** Different schools run different schedules, and the structures your group is asked to keep in week two may be the ones another group is told to clear. Ask before you clear anything you cannot replace.

The mechanics, in order:

Use the incision lines you were given. Your manual prescribes them region by region, and they are not all the same shape: some run along the long axis, some pass circumferentially around a limb, some are T-shaped, some are a rectangle of several cuts. Each is chosen so the resulting flap exposes what the session needs and still folds out of the way. Read them before the first cut rather than improvising a line because it looks easier.

Cut through the skin and stop. Skin has a definite thickness and a definite feel. The blade should part it and no more. If you are pressing hard enough that the blade suddenly gives, the blade is blunt — change it rather than pressing harder.

Lift, do not dig. Grip the corner of the flap with forceps and pull it up and back, so the skin is under tension. The plane between skin and superficial fascia becomes visible as a pale tissue line under tension. Cut that line with the blade almost flat, or push through it bluntly.

Reflect the flap; do not cut it off. Leave it attached along one edge and fold it out of the way. It protects the tissue underneath when you are not working on it, it stops the specimen drying, and it can be folded back over at the end of the session.

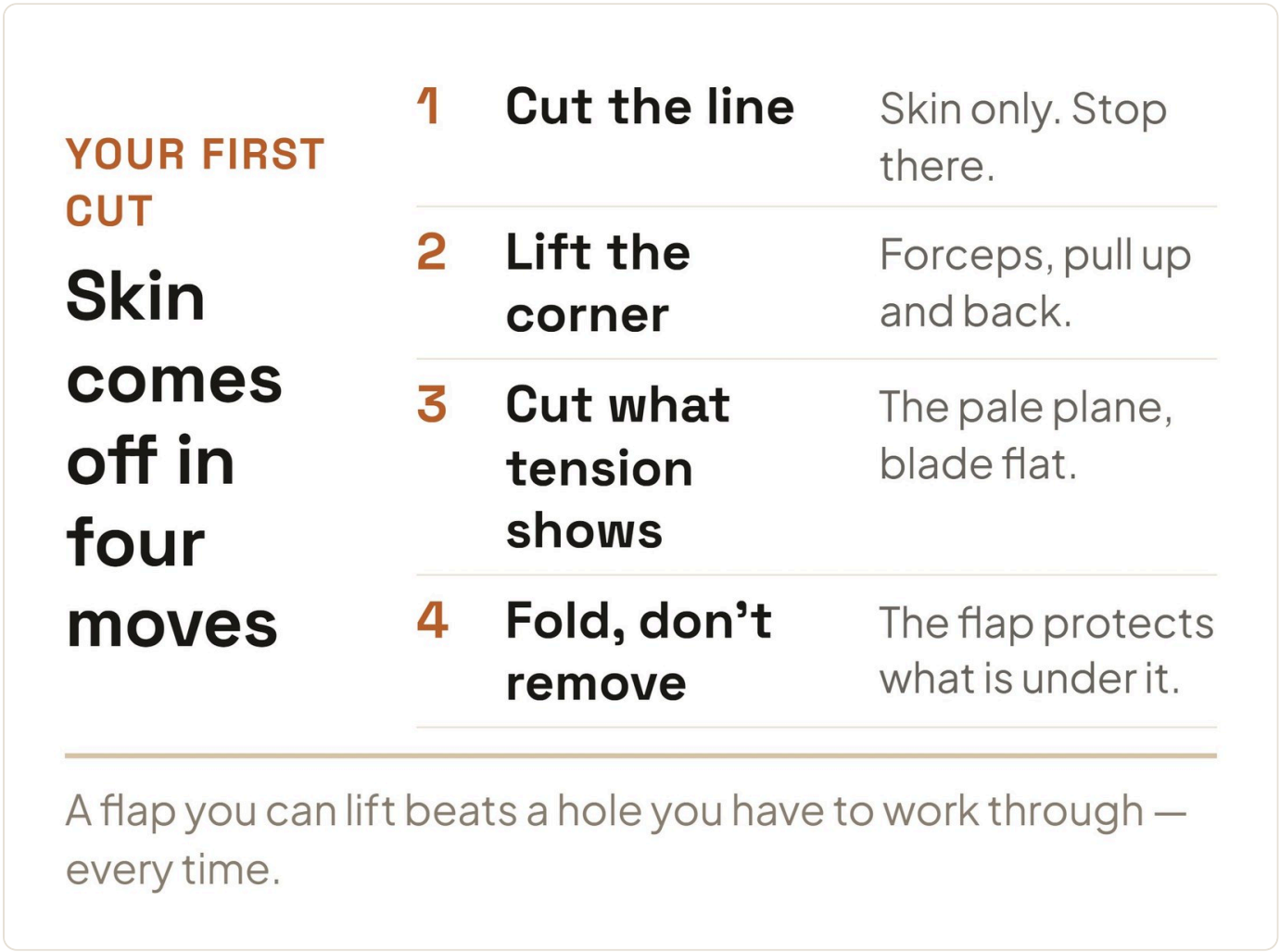

Fig 5 — Skin comes off in four moves. The whole of skinning, in sequence. Each step exists to make the next one possible: the incision gives you an edge, the edge gives you tension, tension shows you the plane, and the plane is where you cut. Reverse any two and you are digging rather than dissecting.

Diagram — Vet-eBooks.com, drawn for this guide. Data from the skinning method described in Budras & Habel, Guide to Ruminant Anatomy , 2nd ed., ch. 5.

Expect the cutaneous muscle to come with it. Over the trunk in particular, the thin sheet of cutaneous muscle is bound to the skin's undersurface and lifts away with the flap. That is normal and not a mistake — but it is the reason the very first layer you meet afterwards is often already the superficial fascia.

09 How to read an atlas plate against your specimen

Before you name anything, match the specimen to the plate on four things: **side, orientation, region, and what has already been removed.** The atlas shows a labelled drawing and your table shows an unlabelled animal, and most misidentifications turn out to be a plate read the wrong way round rather than a structure genuinely misnamed.

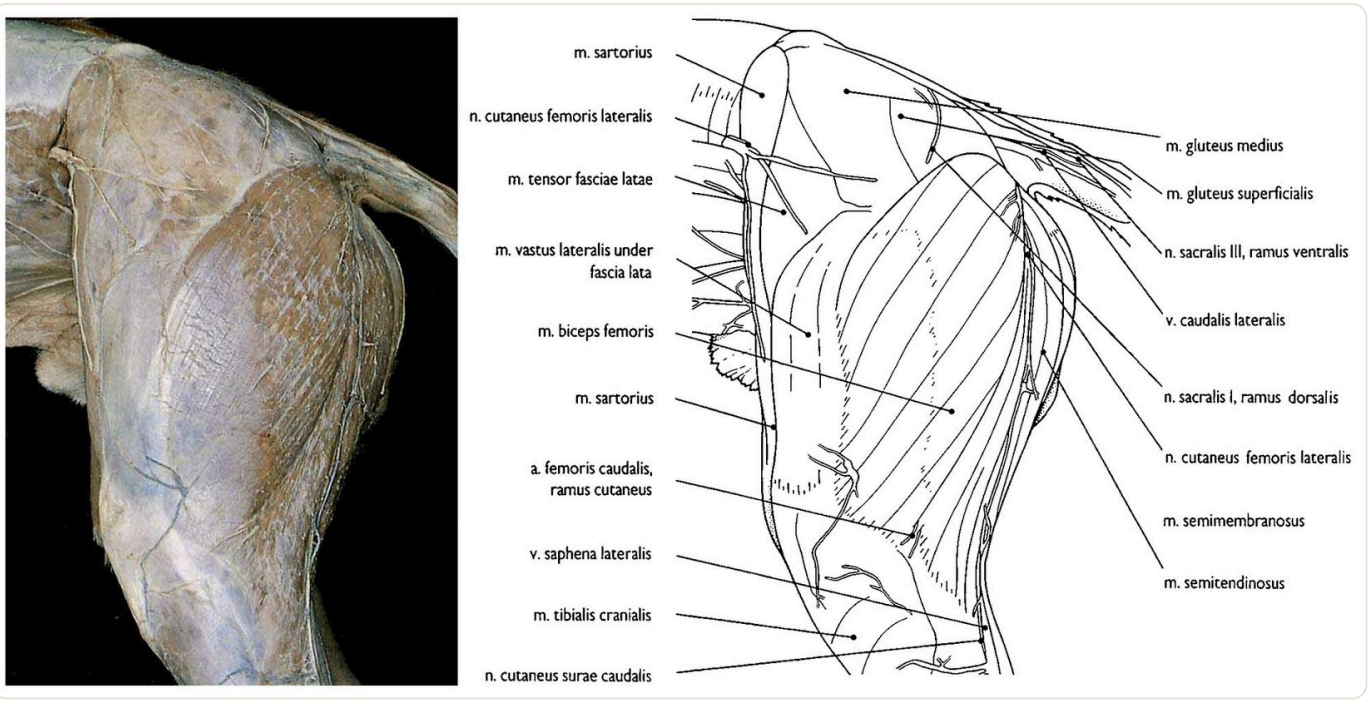

Fig 6 — The same specimen, twice. On the left, the dissection as it looks. On the right, the book's key to it — same view, same scale, same orientation, with lead lines to **m. biceps femoris**, **m. gluteus medius**, **m. semitendinosus** and the rest. Notice how little the photograph tells you on its own, and how little the key would mean without it. Working between the two is the skill.

Image — Ashdown RR, Done SH. Color Atlas of Veterinary Anatomy, Volume 3: The Dog and Cat , 2nd ed. Mosby Elsevier — Fig. 7.13. Reproduced for educational reference.

Four habits make this work.

Orient before you identify. Find head, tail, dorsal and ventral on your specimen, then find them on the plate, before you look for a single structure. Most misidentifications are a plate read the wrong way round.

Start from something unmistakable. A bony landmark you can feel, a large vessel, the edge of a big muscle. Work outward from it. Never start from the small structure you are hunting.

Expect your animal to differ — but rule out the dull explanations first. Evans and de Lahunta name individual variation as one of the purposes of dissecting rather than an inconvenience of it, so a vessel branching in an unfamiliar place may well be a real finding. Before you record it as one, check the four things that look identical to it: wrong orientation, misidentification, an incomplete or absent vascular injection, and damage done earlier in your own dissection.

Read the caption, including the caveats. Atlas captions carry real qualifications: which side was dissected, whether the image has been reversed, what has been removed. Ignoring them is how a student learns a structure on the wrong side.

If planes and section language are new, our guide to anatomical planes in animals covers what “transverse” and “median” mean on a real body.

10 Veterinary dissection mistakes to avoid

Every mistake below is recoverable in a drawing and permanent in a cadaver. That is the whole difference between studying anatomy and doing it.

THE MISTAKE	WHAT IT COSTS	WHAT TO DO INSTEAD
Stripping the superficial fascia with your fingers	The cutaneous nerves and superficial veins that run in it — gone, and they are on the identification list	Clear it in small pieces with forceps and blunt scissors, watching for anything running *through* it
Cutting a muscle to see behind it	The muscle's shape, its attachments, and usually the nerve entering it	Reflect it: transect near one attachment and fold it back, still attached
Working through a hole instead of a flap	Light, access, and a torn specimen edge that never lies flat again	Make the flap your manual specifies and reflect it
Cleaning a region before you have identified it	Everything you had not yet noticed was there	Identify first, clean second, and only what the list asks for
Letting one person do all the cutting	Three students who have never held a blade, before an exam that assumes they have	Rotate at every structure — watching someone dissect is not practice at dissecting
Letting the specimen dry out	Tissue planes fuse; the fascia becomes impossible to separate cleanly	Re-wrap and re-moisten before you leave, every session

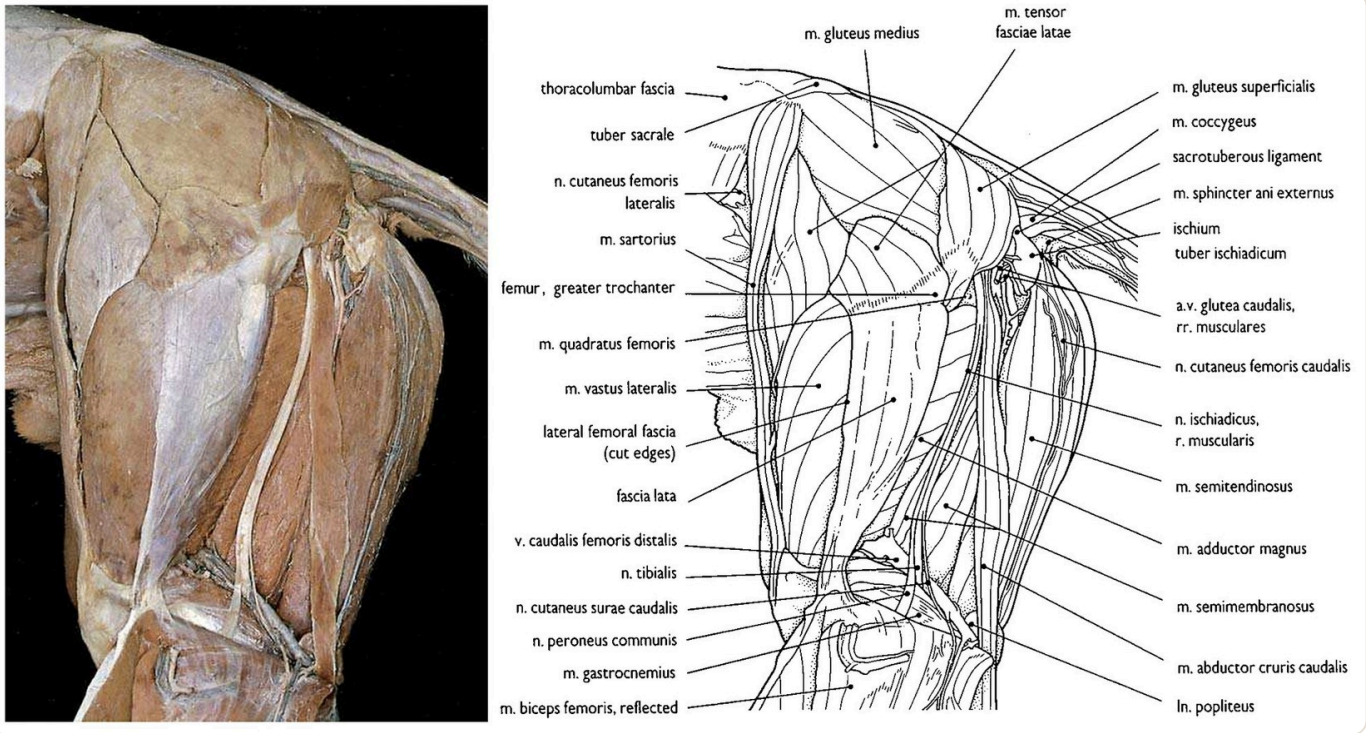

Fig 7 — What reflection buys you. Here the biceps femoris has been **reflected** rather than cut away, and the reward is everything that was underneath it — the sciatic nerve, the adductor and the deeper hamstring muscles. The muscle that was moved is still on the animal and can still be studied. Had it been removed, this view would exist and its owner would not.

Image — Ashdown RR, Done SH. Color Atlas of Veterinary Anatomy, Volume 3: The Dog and Cat , 2nd ed. Mosby Elsevier — Fig. 7.16. Reproduced for educational reference.

The same logic runs deeper into the animal. Once you are through the body wall you have opened a serous cavity, and the membrane lining it behaves like every other layer here: continuous, thinner than you expect, and not replaceable. Our guide to body cavities and serous membranes covers what is on the other side of that wall before you get there.

Four things before you leave, every time: re-wrap and re-moisten the specimen, fold the flap back over what you exposed, clean and dry your instruments, and put used blades in the sharps container. None of it takes two minutes and all of it decides whether the specimen is still worth having next week.

And label your group's specimen and **leave it as you found it**. Wrapped, moist, flap folded back, instruments cleaned and dried. Poor wrapping and inadequate moistening dry a specimen progressively and degrade its tissue planes, and how fast depends on how it was prepared and how it is stored. There is no replacement, so the cheapest insurance in the whole course is the two minutes you spend at the end of each session.

11 Making the hour count

Lab time is the scarcest thing in the course: a few hours a week, not repeatable, with material you cannot take home. The single biggest waste is standing at the bench reading the manual, which is the one activity that does not need a cadaver.

Read the approach the night before, so you arrive knowing what is superficial to your target, what you will cut through and what you must not cut. Then, in the room, do the cutting yourself, name structures out loud as you expose them, and photograph what you find if your school allows it.

The study side of this — how to space your review, what to do with the photographs, how to turn a lab into retrieval practice — is covered properly in our guide to how to study veterinary anatomy, which is the companion to this one. This guide is about the hands; that one is about the memory.

12 What changes with a horse or an ox

Most schools start you on the dog, and the principles transfer unchanged. Three practical things do not.

What you are given. Large-animal teaching does not necessarily mean a whole animal on a table. Depending on the course you may work on a recumbent or suspended whole cadaver, on a half-carcass, on an isolated limb, or on a single region prepared for the session. Find out which before you plan anything, because it decides how you stand, how the specimen is secured, and what you can turn over.

Scale. The flap is heavier and the fascia thicker and tougher, so skinning is slower and often a two-person job — one to hold tension, one to cut. How much slower depends on the species, the region, the preservation and how the specimen is presented, so take the timing from your own session rather than from a rule of thumb. Plan for fewer structures per session, not more.

What the region is for. Large-animal dissection is usually taught with a clinical approach in view, and the structures you are asked to preserve are the ones a surgeon meets, in the order a surgeon meets them. In adult cattle the **paralumbar fossa** — the soft hollow in front of the hip and below the lumbar spine — is the region behind the common left-flank approach for a **rumenotomy**, opening the rumen in the standing animal to retrieve something it should not have eaten. That is a cattle approach, and it should not be carried across to the horse: equine abdominal surgery is usually a ventral midline coeliotomy under general anaesthesia, which is a different operation in a different position. You will meet both properly in surgery.

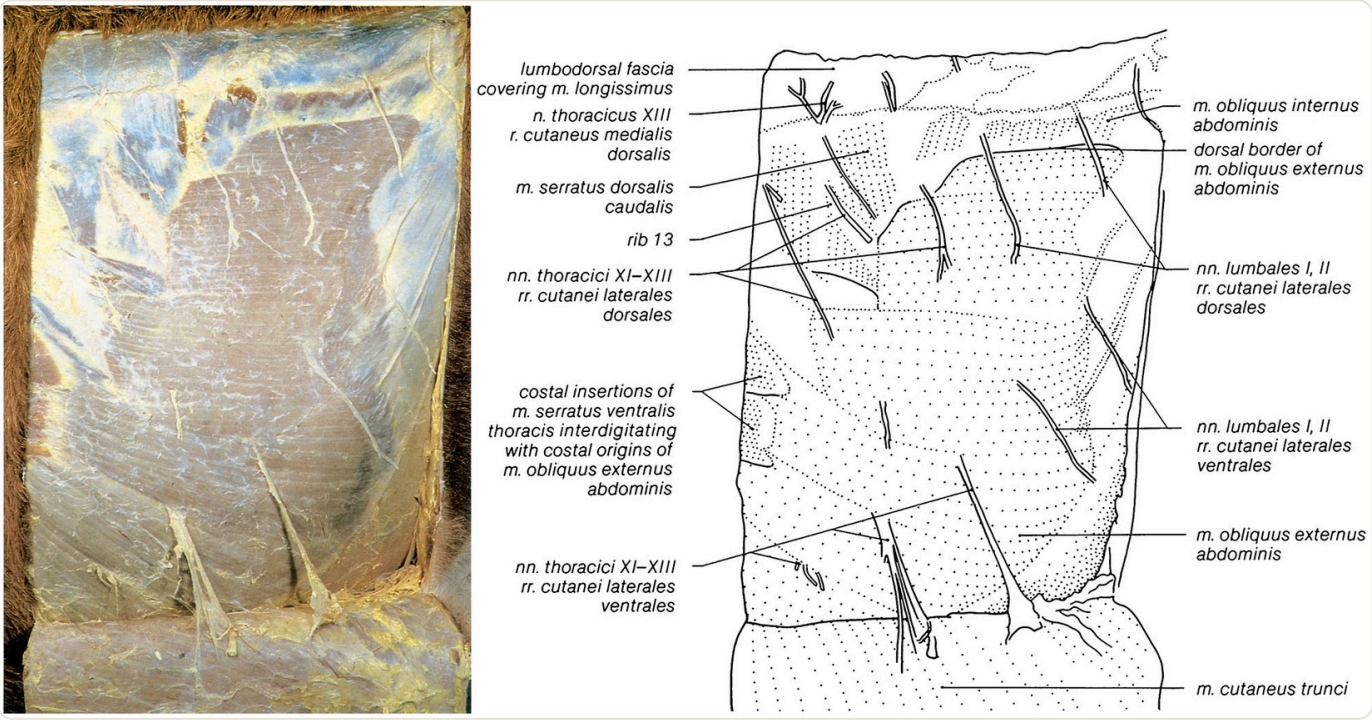

Fig 8 — The same operation, a bigger animal. A calf's lateral abdominal wall. The flap of skin **and cutaneous muscle** has been reflected ventrally — not cut off — and the cutaneous nerves have been traced where they run in the superficial fascia. The key names **m. cutaneus trunci** at the lower edge: the sheet that lifts away with the skin here. And note the book's own caveat, which is why captions are worth reading: the atlas states that these photographs were *reversed for publication*, so do not infer left or right from the image as displayed.

Image — Ashdown RR, Done SH. Color Atlas of Veterinary Anatomy, Volume 1: The Ruminants , 2nd ed. Mosby Elsevier — Fig. 5.5. Reproduced for educational reference.

The horse adds one more difficulty, and it follows from the first two: over a region this large, a single line of your manual can take most of a session to carry out. Read a whole section before you start it rather than following it sentence by sentence, so you know where the sequence is going before you commit the first cut.

Where to go from here. Everything you expose in a lab has a guide behind it. Our veterinary anatomy article archive collects the regional and species guides that pick up where this one stops, and the animal anatomy book library holds the atlases and dissection manuals themselves, including both of the books recommended above.

13 Quiz: test yourself

Eighteen questions. Every answer is somewhere above — if one is not, that is a fault in this article rather than in your reading.

1. What does it mean to *reflect* a muscle, and how is it different from removing it?**Answer:** To reflect is to fold the muscle aside while leaving it attached at one end — usually after transecting it near the other attachment. The muscle is still on the animal, so you can see what lies underneath it and still identify it, trace it and replace it. Removing it destroys all of that.2. When should you use sharp dissection rather than blunt, and what does neither of them excuse?**Answer:** Use sharp dissection for the cuts your manual specifies — the skin incision and any transection it asks for, including below the skin. Use blunt dissection to open a natural plane you can already see. Neither excuses working on tissue you have not identified: a blade divides it and blunt technique stretches, avulses or tears it.3. Give the usual working model of the layers, from the surface inwards, and say what varies.**Answer:** Skin → superficial fascia (subcutis) → deep fascia, where it is distinct → muscle. How many layers there are, how cleanly they separate and whether the deep fascia is a real sheet all vary by region and species — the model is a default, not a law. Over parts of the trunk and neck a cutaneous muscle lies in the superficial fascia and may reflect with the skin or be reflected separately.4. Why is the superficial fascia the layer beginners most often destroy, and what is lost?**Answer:** It looks like loose fatty packing, so it gets stripped away with fingers. The cutaneous nerves and superficial veins run inside it, so they are removed with it — and they are usually on the identification list.5. Evans and de Lahunta give one embalming recipe for a teaching dog. What is it — and why should you still ask how your own specimen was prepared?**Answer:** 5% formalin, 2% phenol and 30% ethanol in aqueous solution, injected at about 5 lb pressure over roughly 30 minutes. It is one traditional protocol, not the only one: specimens may be fixed to a different recipe, soft-embalmed, preserved in saturated salt solution or fresh-frozen, and each handles differently.6. Why is the animal exsanguinated *before* the fixative is injected?**Answer:** So the heart's own pumping empties the vascular tree first. An empty vessel network fills evenly with fixative, and later with the latex that makes arteries followable.7. You see coloured material in the vessels of your specimen. What is it, and what should you not assume?**Answer:** An injection medium — often red latex — put there so that you can follow arteries. It is not blood. Do not assume every specimen has it: medium and colour vary between preparations and some specimens are not injected at all. Where it is present, a torn vessel is a real loss.8. What is the difference between blunt and sharp dissection, and why is blunt not simply the safe option?**Answer:** Blunt dissection separates tissue along a plane that already exists, using fingers, a probe or closed scissors spread open; sharp dissection divides tissue with an edge. Blunt is the right choice for opening a visible plane, because that plane runs between structures rather than through them. It is not harmless: forced through tissue with no plane in it, blunt technique stretches, avulses and tears small nerves and vessels.9. Formaldehyde is classified by IARC in which group, and what does that classification describe?**Answer:** Group 1, carcinogenic to humans (Monographs volume 100F), listed against nasopharyngeal cancer and leukaemia. The group describes the hazard — that the agent can cause cancer — not your personal risk from a ventilated class.10. A classmate says the formaldehyde limit is 2 ppm. Under what circumstances are they right?**Answer:** If they are quoting the UK (HSE EH40: 2 ppm long-term and short-term) or the US 15-minute short-term limit. They are wrong for the US 8-hour limit (0.75 ppm) and well wrong for the EU (0.3 ppm 8-hour, 0.6 ppm short-term). These are three selected national limits; implementation differs and institutions often set stricter internal action levels, so the number that governs your bench is your laboratory's.11. A classmate tells you contact lenses are banned in the dissection room because they trap vapour against the eye. What is the actual position?**Answer:** That is an old rule that the evidence did not support. NIOSH reviewed it and now recommends that contact lens wear be permitted where the workplace policy allows, subject to its safety guidance. What has not changed: contact lenses are **not** eye protection and do not replace goggles. Follow your laboratory's contact-lens policy and wear the chemical-splash eye protection it specifies, whether or not you wear lenses.12. Your eyes stream and you get a headache that clears when you leave the room. What is that, and what should you do?**Answer:** Those are formaldehyde exposure symptoms. Report them rather than tolerating them — the ventilation or your working position may need changing, and exposure is something the school is legally obliged to control.13. Before clearing connective tissue off a region, what should you ask, and why?**Answer:** Ask your instructor whether the blood vessels are to be preserved (Budras & Habel give exactly this instruction). What you preserve is a curriculum decision, not yours, and different groups may be asked to keep different structures.14. Why cut a skin flap rather than a hole?**Answer:** A flap can be lifted, put under tension so the plane beneath it opens, folded out of the way while you work, and folded back to protect and moisten the specimen afterwards. A hole gives poor light and access and leaves a torn edge.15. In 168 first-year students, state anxiety fell from 14.8 to 10.4. Why is the scale essential to reporting that honestly?**Answer:** Because each 20-item questionnaire was scored 0–3 per item, giving a range of 0–60, not the 20–80 of the more familiar STAI form. On 0–60 both means sit toward the lower end and the score fell during the session. Quoting the numbers without the range implies a far more distressed group than was measured — though the study offers no validated cut-off, so it shows a direction of travel in one cohort rather than a category.16. Why does an embalmed bladder feel wrong, and what should you not conclude from it?**Answer:** Fixation cross-links proteins, so the bladder is stiff and contracted (Budras & Habel note this explicitly). Do not judge the normal size, softness or capacity of any organ from a fixed specimen.17. What happens to a specimen that is left uncovered between sessions?**Answer:** It dries. Tissue planes fuse as they dry, and fascia that could have been separated cleanly becomes impossible to lift. Re-wrap and re-moisten every session.18. Your dog's vessel branches in a different place from the atlas. What should you do before recording it as anatomical variation?**Answer:** Rule

out the four things that look identical to variation: wrong orientation, misidentification, an incomplete or absent vascular injection, and damage done earlier in your own dissection. Variation is real — Evans and de Lahunta name it as one of the purposes of dissecting — but it is the conclusion, not the first assumption.

14 Your first veterinary dissection — frequently asked questions

Do I need to buy my own dissection kit?

That depends entirely on your school — some issue kits, some require you to buy a specified one, some provide instruments at the bench. Work from your course's equipment list rather than a general recommendation. Whatever you end up with, you will use four things for almost everything: a scalpel handle with blades, blunt forceps, scissors and your gloved hands. Spare blades are always worth having.

Will I have to dissect an animal that was killed for the purpose?

Sources vary between institutions and between countries, so this is a question to put to your school rather than to the internet. Body-donation schemes and shelter animals euthanased for unrelated reasons are both common routes, and many schools publish a sourcing and consent policy. Asking for it is a reasonable thing to do and you should not have to justify the question.

Is the smell dangerous?

It is a regulated hazard rather than an emergency. Formaldehyde is an irritant and is IARC Group 1, and your school is legally required to keep exposure under a limit set by your jurisdiction — 0.75 ppm over 8 hours in the US, 0.3 ppm in the EU, 2 ppm in the UK. Use the ventilation properly, wear what you are given, and report symptoms.

What do I do if I feel faint or have to leave?

Say so and step out. It is a common response to an unfamiliar situation, it is not a judgement on your suitability for the profession, and it passes. The measured evidence is that anxiety falls during a first session rather than building.

Can I take photographs?

Check your laboratory's written policy before you take anything — rules differ, and where photography is permitted at all it is often restricted to the room and prohibited from being shared or posted. Where it is allowed it is genuinely useful, because a photograph of what you exposed is something you can revise from and the specimen is not.

What is the difference between dissection and prosection?

You do a dissection. A prosection is a specimen already dissected by staff and used for demonstration. Prosections are cleaner and quicker to learn from; dissecting is where the manual skill and the three-dimensional sense come from. How much of each your course uses varies, and some now use prosection or virtual alternatives throughout — your practical handbook will say.

How do I not fall behind if my group is faster than me?

Rotate deliberately rather than letting the fastest person do the cutting, and agree it at the start of the session rather than halfway through. Watching someone dissect is not practice at dissecting, and the exam will not be group work.

Should I read the manual before the lab or during it?

Before. Reading at the bench is the single most common way to waste lab time, because it is the one activity that does not need a cadaver. Twenty minutes the night before converts a whole session from reading into doing.

What if I cut something I should not have?

Tell your demonstrator rather than hiding it. It is a normal part of learning, it changes what your group is asked to do next, and an unreported mistake becomes a wrong identification later. Note what was lost so you can study it on another group's specimen or a prosection.

Do I need a dissection guide as well as an anatomy textbook?

Yes, and they do different jobs. A textbook or atlas tells you what things are; a dissection guide tells you what to do with your hands, in what order, for a specific region. Most courses specify one — for the dog it is usually Evans and de Lahunta.

Sources

1. Ashdown RR, Done SH. *Color Atlas of Veterinary Anatomy, Volume 3: The Dog and Cat*, 2nd ed. Mosby Elsevier — the fourteen-stage dissection of the left rump and thigh used throughout this guide: skin removed with superficial fascia intact (Fig. 7.11); superficial fascia partly cleared, deep fascia intact (Fig. 7.12); all superficial fascia and fat removed (Fig. 7.13); gluteal and lateral femoral fascia removed (Fig. 7.15); biceps femoris reflected (Fig. 7.16); superficial gluteal removed and caudal crural abductor reflected, with the sacrotuberous ligament exposed (Fig. 7.17). The continuity of the gluteal fascia with the fascia of the trunk and tail, and of the fascia lata with the medial femoral fascia, is from the caption to Fig. 7.11.
2. Ashdown RR, Done SH. *Color Atlas of Veterinary Anatomy, Volume 1: The Ruminants*, 2nd ed. Mosby Elsevier — the calf's lateral abdominal wall with the skin and cutaneous muscle flap reflected ventrally and the cutaneous nerves traced in the superficial fascia (Fig. 5.5, p. 106), including the book's own note that these photographs were laterally reversed.
3. Evans HE, de Lahunta A. *Guide to the Dissection of the Dog*, 8th ed. Elsevier — the preparation of a teaching cadaver: pentobarbital via the cephalic vein, exsanguination through a common carotid cannula, embalming with 5% formalin / 2% phenol / 30% ethanol at 5 lb pressure over about 30 minutes, arterial injection of red latex from a 50 mL hand syringe, and storage with 2% phenoxyethanol or 1% phenol and plastic wrapping (ch. 1). The stated purposes of dissection — normal structure, relationships, individual variation, and reading three-dimensional anatomy from two-dimensional images — are from the same chapter.
4. Budras K-D, Habel RE, et al. *Guide to Ruminant Anatomy: Dissection and Clinical Aspects*, 2nd ed. Wiley — bench technique written in the second person: using a new scalpel blade to skin a limb and asking the instructor whether to preserve the blood vessels (ch. 5); cutting skin with a scalpel and opening the vaginal tunic with scissors (ch. 4); exploring a recess or pouch with a gloved finger or probe (chs. 3–4); and the observation that a bladder in an embalmed cadaver may be stiff in texture and contracted (ch. 4).
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7. Directive (EU) 2019/983 amending Directive 2004/37/EC, Annex — formaldehyde (CAS 50-00-0) at 0.37 mg/m³ (0.3 ppm) over 8 hours and 0.74 mg/m³ (0.6 ppm) short-term, in force from 11 July 2021, with a transitional 0.62 mg/m³ (0.5 ppm) for the health care, funeral and embalming sectors until 11 July 2024.
8. Health and Safety Executive, *EH40/2005 Workplace exposure limits* — formaldehyde (CAS 50-00-0) at 2 ppm (2.5 mg/m³) long-term and 2 ppm (2.5 mg/m³) short-term, flagged as a carcinogen.
9. National Institute for Occupational Safety and Health. *Current Intelligence Bulletin 59: Contact Lens Use in a Chemical Environment*, DHHS (NIOSH) Publication No. 2005-139 — NIOSH concluded that the injury data do not support restricting contact lens wear during work with hazardous chemicals, and recommends that wear be permitted subject to its safety guidance. Contact lenses are not themselves eye protection and do not replace the specified goggles or face shield.
10. Preparation methods other than traditional formalin fixation — soft (Thiel-type) embalming, saturated salt solution and fresh-frozen specimens — are in routine use in veterinary anatomy teaching, and each handles differently. Cited here to qualify the single protocol given in section 2, not to describe any one alternative.
11. IARC Monographs on the Identification of Carcinogenic Hazards to Humans — formaldehyde (CAS 50-00-0) in Group 1, volumes Sup 7, 62, 88 and 100F, listed against nasopharyngeal cancer and leukaemia.
12. Terrado J, Gómez O, Chicharro D, García-Manzanares M, Juárez M, Romo-Barrientos C, Mohedano-Moriano A, Criado-Álvarez JJ. Anxiety, emotions, and thoughts of veterinary medicine students during their first visit to the dissection room. *Anatomical Sciences Education* 2023;16(3):547-556. doi:10.1002/ase.2258 — 168 first-year students, State-Trait Anxiety Inventory scored 0–3 per item over 20 items per scale, giving a 0–60 range; state anxiety 14.8 before and 10.4 after ($p < 0.05$); STAI Cronbach's α 0.92–0.93 against α 0.32 (95% CI 0.15–0.48) for the authors' own emotions questionnaire; 64% unwilling to donate a pet's body. The paper reports that students rated pre-session videos positively; it did not test videos against no videos.

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