Champions Toolkit: Antibody Selection Workshop

About this workshop

This workshop format works well online. We recommend an audience of around 10 — small enough that everyone gets individual attention. Invite people near the start of their projects, or anyone with antibody selection decisions to make now.

The workshop is both educational and practically useful. Participants leave having actually searched for antibodies for their own targets, guided by someone who can show them what good evidence looks like.

Format (~90 minutes)

Start with a brief introduction. You could play the "Why antibody choice matters" video, or go straight to the key message slides (available at onlygoodantibodies.co.uk/champions/). Keep the presentation short. The value of this session is in the live, practical work.

Ask each participant to briefly introduce their project, which antibody-based applications they're using, and which protein targets they're interested in. Write these down — you'll come back to them.

Then move to a shared screen and work through each person's target live, showing them what comes up when you search for antibodies. The process is deliberately visible — the audience learns by watching you navigate the same mess of results they'd face alone.

What to demonstrate on screen

1. **Start with Google.** Search for the target and application. Show how to get past the sponsored links. Demonstrate how changing your search terms to include "knockout validated" or "knockdown validated" changes what you find. Explain that even good validation data only proves the antibody works in the specific sample type and protocol tested.
2. **Show the OGA database.** Search for the target. Walk through what the characterisation data shows, how to compare antibodies, and what "recommended for" means versus what a vendor claims.
3. **Show CiteAb and BenchSci.** Demonstrate how these tools show published usage data. Explain that citation count reflects popularity, not quality — but these tools are useful for finding published images and identifying which antibodies others have used for the same application.

4. **Show HCDM workshop data** (if relevant to flow cytometry targets). Explain that just because an antibody is labelled "anti-CD-whatever" does not mean it has been through the community standardisation process.
5. **End with the Resource Pack.** Make sure everyone has the links and knows where to get support.

If you're not confident running this yourself

Invite your mentor and/or ask Katherine Blades (keb43@leicester.ac.uk) for support in linking you to an expert. These sessions work best when someone can navigate the databases fluently, but even a less experienced facilitator can run a useful session — the shared problem-solving is the point.

Practical tips from experience

These are drawn from real sessions.

- **It will be messy — that's the point.** Live searching doesn't always produce clean answers. Sometimes you won't find knockout-validated data for someone's target. Sometimes the vendor data is ambiguous. Show this honestly. The audience learning that antibody selection is genuinely difficult is itself one of the most important outcomes.
- **Clone names matter more than product names.** Multiple vendors often sell the same clone under different names and catalogue numbers. Point this out when you spot it — it's one of the most practically useful things people learn.
- **Think about controls, not just antibodies.** The core lesson is about robust positive and negative controls. A robust positive control is overexpressed protein (e.g. from OriGene, typically ~£200 for 20µg, often discounted through university purchasing). A robust negative control is a knockout cell line. If knockout isn't available, siRNA knockdown is an option — but note that siRNA specificity has its own problems.
- **Overexpression vectors are cheap and reusable.** For ~£90–100 from Addgene, you can clone your own overexpression vector and have an unlimited supply of positive control lysate.
- **Free samples exist.** Some antibody vendors offer free samples. If someone has a good positive control, they can use free samples as a quick screen before committing budget.
- **Having a positive control helps with refunds.** If you have strong evidence an antibody doesn't work (e.g. it fails against overexpressed protein), vendors are much more likely to issue a refund.
- **Offer follow-up.** Not every target can be resolved in the session. Offer to help outside the workshop, or connect the person with someone who can.

Frequently asked questions

Based on questions that arise in real workshops.

What if there's no knockout-validated data for my target?

This is common. Use the best available evidence — look for independent antibody concordance, orthogonal data, or tagged expression data. The e-learning Module 2 covers the five pillars of validation and which to use when knockout isn't available. For some targets, you may need to generate your own controls.

I found a cheap antibody that looks fine on the vendor website. Why pay more?

The upfront cost of a validated antibody is almost always less than the cost of failed experiments, wasted samples, and repeated purchasing. If you have strong positive control data and your cheap antibody fails against it, you can get a refund — but only if you have the evidence.

This antibody has hundreds of citations. Isn't that enough?

Citation count reflects popularity, not performance. In the YCharOS dataset, highly cited antibodies fail at similar rates to less cited ones. Each protein target was linked to an average of ~12 papers using antibodies with demonstrated poor performance.

My supervisor says to use the antibody the lab has always used.

This is one of the most common situations. The e-learning and this workshop give you the language and evidence to have that conversation constructively. You're not challenging your supervisor's judgement — you're applying a standard of evidence that funders and journals are increasingly going to require. Frame it as future-proofing the work.

My target isn't in the OGA database.

You can nominate it for future characterisation via the Contact page at onlygoodantibodies.co.uk. In the meantime, the general principles still apply: prioritise recombinant antibodies, look for knockout-validated vendor data, and check independent databases.

I'm using flow cytometry for CD markers. Where do I check?

The HCDM (Human Cell Differentiation Molecules) workshop data provides community-standardised flow cytometry clone comparisons for leukocyte markers. Just because an antibody is sold as "anti-CD106" does not mean it has been through this process. Check hcdm.org for workshop-validated clones.