Antibodies

Polyclonal Antibody Development

Host selection guide

Host	Advantages	Limitations
Chicken	• ***Best for highly conserved mammalian proteins***- chickens are 300 million years removed from the human evolutionary line. In contrast, rabbits and mice are only about 60 million years removed from the human line. Consequently chickens generally recognize most mammalian gene products as being quite foreign, even those that are highly conserved, and mount a vigorous immune response. • ***Easier for double and triple immunostaining.*** Most commercially available antibodies are made in rabbit or mouse. Since the chicken IgY molecule is quite different antigenically from the mammalian IgG, secondary reagents raised against rabbit and mouse IgG's do not cross-react with chicken IgY's, facilitating experiments that require the use of antibodies from multiple species, such as double and triple immunostaining. • ***Large amounts of antibody at a low cost-*** hens lay an egg each day, and with each egg yielding ~75mg of IgY a single hen can produce 500mg of antibody each week. • ***Non-invasive-***antibodies are collected from eggs not blood.	• Antibodies must be isolated from egg yolk • IgY does not bind to proteinA/G and therefore cannot be used with protein A/G coated beads (our PrecipHen reagent can be used as a substitute). • IgY shows some non-specific binding to PVDF membranes when using for Western blot (Nitrocellulose can be used as an alternative and has no background issues)
Rabbit	• ***Most widely used host for polyclonal antibody production*** • Mount strong immune responses against a wide variety of antigen types. • Serum can be used directly for immunoassays.	• Immune response can be limited against highly conserved mammalian proteins.
Goats	• Mount strong immune responses against a wide variety of antigen types. • Large quantities of antibody can be obtained from a single animal (up to 6 grams per month). • Serum can be used directly for immunoassays.	• Immune response can be limited against highly conserved mammalian proteins. • Larger amounts of antigen required.
Alpaca	• Produce a unique type of antibody (Vhh or heavy-chain only antibodies) that can be easily engineered into single-chain antibodies • Serum can be used directly for immunoassays.	• Generally less reactive against small molecules and peptides.
Guinea Pig	• Alternative host for antigens that have not worked in rabbits • Yield is greater than a mouse or rat project with the same number of animals • Serum can be used directly for immunoassays.	• Small production bleed volume • Immune response can be limited against highly conserved mammalian proteins.