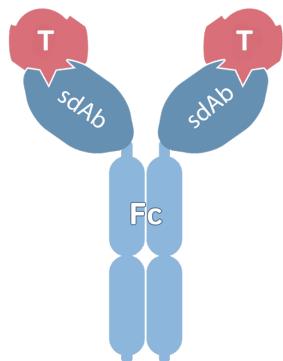# Recombinant Heavy-Chain Antibodies

Recombinant heavy-chain antibodies (rHcAbs) are fusions of alpaca-derived single-domain antibodies (sdAbs) with Fc domains of conventional IgG antibodies from commonly used host-species (e.g., mouse, rabbit, guinea pig, human). The resulting bivalent binders combine the high target specificity of sdAbs with maximal flexibility and coherence needed for Fc-domain-based applications e.g., immunohistochemistry and Western blot. The rHcAbs can be detected with both conventional secondary antibodies and NanoTag's Smart Secondaries™.

Sketch of a recombinant heavy-chain antibody in complex with its target.

T: target protein
sdAb: single-domain antibody
Fc: IgG heavy chain constant domain

Recombinant heavy-chain antibodies are **lyophilized from PBS pH 7.4** and shipped as lyophilized powder at ambient temperature. The lyophilized reagent can be stored at 2-8°C for up to 12 months. Before usage, the reagent has to be reconstituted using the protocol below.

After reconstitution in 100 µL, the final concentration of rHcAb is 1 mg/mL.

Protocol: Reconstitution of Recombinant Heavy-Chain Antibodies

1. Prepare sterile 50% glycerol (v/v) in deionized water.
   If applicable, we recommend including 0.1% sodium azide as a preservative. Sodium azide should be avoided when staining live cells or conducting *in vivo* studies.

2. Open the vial containing the lyophilized recombinant heavy-chain antibody.

3. Add 100 µL of sterile 50% glycerol (v/v) in deionized water.

4. Mix gently and allow to sit at room temperature for ~5 min.

5. Optional: Briefly spin down the vial for 2 min at 100 xg using a 50 mL conical tube with tissue paper at the bottom.

6. Distribute into aliquots. Use small tubes and avoid aliquots below 20 µL.

7. Storage:
   - Short-term: Working aliquot can be stored at -20°C for up to 4 weeks.
   - Long-term: Ideally store at -80°C (up to 6 months).

Notes:
   - Avoid repeated freeze-thaw cycles.

Only for research applications, not for diagnostic or therapeutic use!