**Antibody preservation**

With proper storage and handling, most antibodies should retain activity for months, if not years. Perhaps the two most important considerations when storing antibodies are the storage container and the temperature.

**Storage Containers**

Ideally, preferred materials for storage containers of antibodies solutions should have negligible protein adsorptivity. Glass is recommended and is used widely. Solutions containing very low concentrations of antibodies should receive an addition of immunochemically inert protein. Generally, 0.1% to 1.0% bovine albumin is used to reduce antibodies loss through polymerization and adsorption onto the container. Containers made of clear and colorless materials are preferred, as these will allow ready inspection of contents.

**Storage Conditions for Antibodies and Antibody-Enzyme Conjugates**

Antibody stock solutions often may be stored at 4°C for days to weeks without significant loss in activity. For increased stability, glycerol or ethylene glycol may be added and the antibody stored at -20°C. Alternatively, the antibody solution may be stored in small working aliquots at -20°C to avoid repeated freeze-thaw cycles. Anti-microbial agents such as sodium azide may be added to avoid microbial growth.

Generally, antibody conjugates are best stored at -20°C with glycerol or ethylene glycol. Conjugates typically maintain good activity for 1-2 years if stored at -20°C with glycerol or ethylene glycol. Ethylene glycol does not support microbial growth, making it preferable to glycerol.

• Enzyme-conjugated antibodies should not be frozen at all and should instead be kept at 4C. Freezing and thawing will reduce enzymatic activity in addition to affecting the antibody binding capacity.

• Conjugated antibodies should be stored in dark vials or wrapped in foil. Exposure to light will compromise the activity of conjugates.

• Antibodies of the IgG3 isotype are unique in their tendency to form aggregates upon thawing and should always be stored at 4C.

**When NOT to use sodium azide:**

• If staining or treating live cells with antibodies, or if using antibodies for *in vivo* studies, be sure to use preparations that do not contain sodium azide. This antimicrobial agent is toxic to most other organisms.

• Sodium azide will interfere with any conjugation that involves an amine group, and should be removed before proceeding with the conjugation. After conjugation, antibodies can be stored in sodium azide

**Complement Inactivation**

The lytic complement activity of serum can be abolished by heating at 56°C for 30 min. In order to avoid denaturation of the antibody, it is important not to exceed this temperature.

**Freeze/thaw damage**

Repeated freeze/thaw cycles can denature an antibody, causing it to form aggregates that reduce the antibody’s binding capacity.

Some researchers add the cryoprotectant (glycerol or ethylene glycol.) to a final concentration of 50% to prevent freeze/thaw damage.