

The *in vitro* culture of animal cells commonly requires a medium rich in nutrients. These nutrients are usually supplied by supplementing a chemically defined medium with animal serum. Serum offers a highly bioavailable complex of proteins and amino acids, lipids and triglycerides, vitamins, inorganic minerals and salts, as well as other minor components and growth factors that promote culture success. Serum may also contain varying concentrations of iron-sequestering heme and mitogenic endotoxin. When stored and used properly, animal serum can be stably maintained with its original growth-promoting characteristics for several years; the improper storage or thawing of serum can quickly degrade the quality and stability of this biological fluid, and can present a hazard to valued cells in culture.

Long-term stability testing of Gemini Bio-Products' BenchMark™ Fetal Bovine Serum (Cat# 100-106) revealed the following plating efficiency data over the five-year period.

Effect of Long-Term Storage of FBS on Plating Efficiency

Time	Plating Efficiency
Initial	100%
1 year	99%
2 years	97%
3 years	96%
4 years	94%
5 years	92%

Storage

Gemini serum is supplied frozen in sterile PETG bottles, and should be stored at a temperature of -10° to -20° C. Serum should not be stored in “frost-free” freezers, as these are subject to repeated

freeze-thaw cycles that can precipitate certain serum components and degrade product performance. We recommend pre-aliquotting serum into useful volumes at the time of initial storage.

Thawing Serum for Use

Serum should be thawed slowly, ideally by placing in a 4 °C refrigerator for a day or so until completely liquid.

If time does not allow for refrigerated thawing, we recommend the following accelerated-thaw protocol:

1. Remove serum from freezer and allow it to warm slowly at room temperature for approximately 15-20 minutes.
2. Transfer product to a gently rotating 37 °C water bath. Water level should come to the same approximate depth as the serum in the bottles. Place small tubes in a float to prevent submersion.
3. Check the serum every 10-15 minutes until completely thawed.

If you have any questions, please contact your local Gemini representative.