

# Growth Factors and Cytokines FAQ

## How are endotoxin levels measured?

For estimating the endotoxin levels; we use the LAL (Limulus Amebocyte Lysate) method: The lysate from horseshoe crab amebocytes clots in the presence of very low endotoxin. This reaction is the basis of the Limulus amebocyte lysate (LAL) assay which was approved by the FDA in 1970.

- Endotoxin is generally measured in Endotoxin Units per milliliter (EU/mL).
- For recombinant proteins: EU is reported per microgram of protein.
- One EU = 0.1-0.2 ng endotoxin/ $\mu$ g of protein.
- At **abm**, we do the LAL chromogenic assays that can detect down to 0.01 EU/ml.

## With regard to the BSA levels in some Growth Factors and Cytokines, can you please provide an explanation as to why they are so high?

The amount of BSA, as part of the formulation of a protein, can vary considerably depending on how much BSA was deemed optimum/necessary for protein stability in combination with /in-lieu of - other possible additives. The aforementioned formulations are somewhat analogous to the “carrier” versions of many formulations from “R and D systems” that have as high as 50  $\mu$ g of BSA per  $\mu$ g of the recombinant protein product. If, needed or desired, **abm** scientists can substitute BSA for other stabilizing additives for most formulations.

## Are your *Escherichia coli* sourced growth factors: 1) Human derived materials free? 2) Recombinant proteins free?

Yes, all of **abm**'s growth factors made in *Escherichia coli* using recombinant technology contain no human derived-products or other recombinant proteins. In the rare cases of BSA presence, this will be mentioned in the product's formulation.