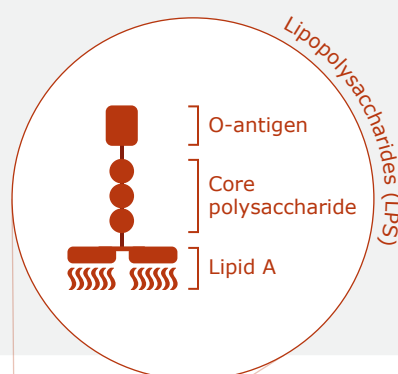


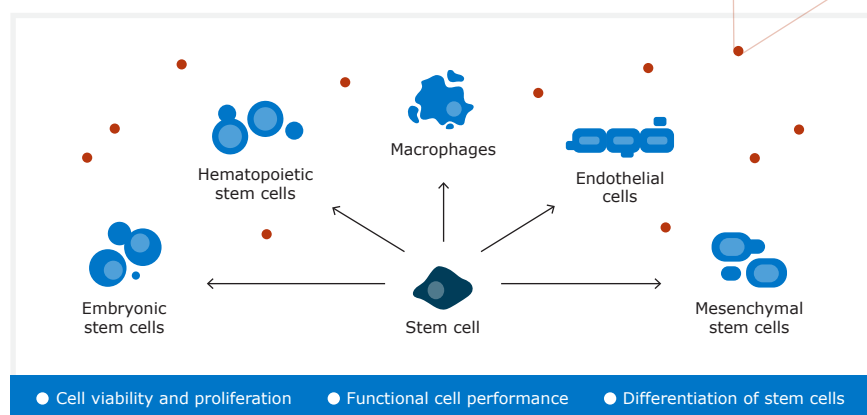


## X-PURE® GELATIN BRIDGING THE GAP BETWEEN RESEARCH AND PATIENT

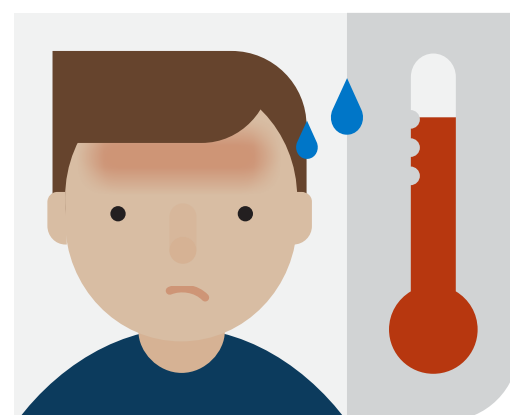


Endotoxins or lipopolysaccharides (LPS) are toxins found in the outer membrane of gram-negative bacteria and can prevent your biomedical application from reaching the market.

**Research:** LPS can cause results misinterpretation by affecting:



**Patient:** LPS can cause immune reactions



**Rousselot® has developed a patent protected process (Patent WO2016085345) to remove endotoxins from gelatins.**

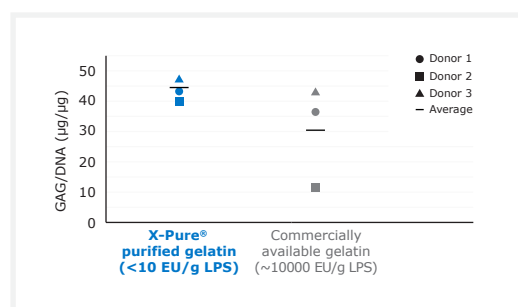
X-Pure® gelatin is a purified (<10 EU/g LPS) natural biomaterial with:

- Ability to promote cell adhesion and proliferation;
- Biocompatibility and biodegradability;
- Batch to batch consistency;
- Reliability and security of supply;
- Full and validated traceability of raw materials<sup>1</sup>.

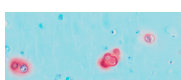
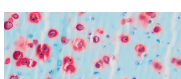
<sup>1</sup> Upon request.

### 1. Chondrogenic differentiation of Mesenchymal Stem Cells may be negatively impacted by the presence of endotoxins

An overall trend in a decreased glycosaminoglycans (GAG) production could be observed in high-endotoxin type A gelatin-based hydrogels.

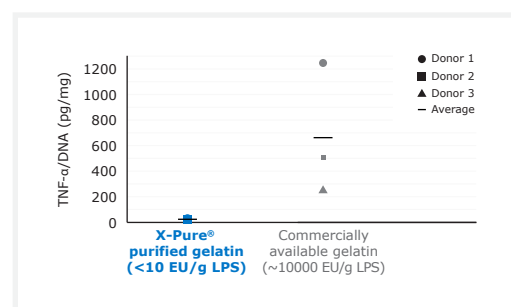


**Safranin-O/Fast Green stains GAGs red/pink**



### 2. High levels of endotoxins may stimulate an immune response in Peripheral Blood Mononuclear Cells (PBMCs)

PBMCs cultured in high-endotoxin hydrogels release significantly more tumour necrosis factor-α (TNF-α) compared to low-endotoxin hydrogels.



Reference: Groen WMGAC, Utomo L, Castilho M, Gawlitta D, Malda J, Weeren PRV, Levato R, Korthagen NM. Impact of Endotoxins in Gelatine Hydrogels on Chondrogenic Differentiation and Inflammatory Cytokine Secretion In Vitro. Int J Mol Sci. 2020 Nov 13;21(22):8571.