X-PURE® GELMA
A CUSTOMIZABLE AND CO-DEVELOPMENT SOLUTION

GelMA biomaterials have key features that make them widely applicable in biomedical and clinical applications:

- Suitable biological properties;
- Tunable physical characteristics.

Gelatin methacryloyl (GelMA) is a polymerizable hydrogel material derived from collagen, a component of the extracellular matrix (ECM).

X-Pure® GelMA: The first GMP1-grade hydrogel with ultrahigh purity levels

- Promotes cell adhesion and proliferation
- Ultralow levels of endotoxins and impurities
- Biodegradable and biocompatible
- Batch-to-batch consistency
- Customizable mechanical properties

Gelatin methacryloyl (GelMA) is a polymerizable hydrogel material derived from collagen, a component of the extracellular matrix (ECM).

The physical characteristics of the hydrogel can influence cell differentiation and cellular functions

Both **Degree of Modification (DoM)** and **Molecular Weight (MW)** determine the stiffness² and degradation of GelMA hydrogels.

Custom-made solutions

At Rousselot®, we work in close collaboration with our customers to determine the right product specifications and properties. There is a unique and tailor-made X-Pure® GelMA to support your applications:

<table>
<thead>
<tr>
<th>Molecular Weight (kDa)</th>
<th>160</th>
<th>160</th>
<th>160</th>
<th>90</th>
<th>Custom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Modification (%)</td>
<td>40</td>
<td>60</td>
<td>80</td>
<td>60</td>
<td>Custom</td>
</tr>
</tbody>
</table>

1 IPEC – Exipient Good Manufacturing Practices Guide, 2017 as of end 2021  ² Defined as the modulus of elasticity or Young’s modulus, expressed in kilopascal (kPa).

Fine-tuning hydrogel properties is essential for cell culturing.
Different cell types require different environments³.

<table>
<thead>
<tr>
<th>Muscle cells</th>
<th>Neural cell lineages</th>
<th>Precalcified Bone</th>
<th>Cartilage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 kPa</td>
<td>10 kPa</td>
<td>100 kPa</td>
<td>1000 kPa</td>
</tr>
</tbody>
</table>

Increasing GelMA concentration + DoM + MW can reach around 3000 kPa

Elastic moduli can be adjusted by varying GelMA concentration⁴.

5 7, 5 10 15 20
0 50 100 150 200 250
GelMA concentration (%)
Young’s modulus (kPa)

⁵ Source: Zhao et al., 2015, DOI: 10.1002/adhm.201500005

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