Supporting Information

PLA-Poloxamer/Poloxamine Copolymers for Ligament Tissue Engineering: Sound Macromolecular Design for Degradable Scaffolds and MSCs Differentiation

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Figure S1. Typical stress-strain curve of ligament (adapted from A. C. Vieira, R. M. Guedes, A. T. Marques, *J. Biomech.* 2009, **42**, 2421)
Figure S2. Stress at failure before and after 4 weeks degradation (PBS, pH 7.4, 37°C) for polymer films prepared by compression molding of PLA homopolymers with various L-lactic contents (Mn = 200 000 g/mol), PLA-Pluronic copolymer (Mn = 200 000 g/mol) and PLA-Tetronic copolymers (Mn = 200 000 g/mol). Black area corresponds to the range of values reported for ACL stress at failure.[29] All data refers to results obtained by our group in previous studies (94P200 and 94T200 Mater. Sci. Eng. C 2013, 33, 4133 ; PLA homopolymers Makromol. Chem.-Macromol. Chemi. Phys. 1981, 5, 30)
Figure S3. Cell differentiation – expression of fibroblast-related markers by C3 cells maintained in proliferative or inductive culture medium on TCPS versus time ($p < 0.05$) as a function of cell seeding density.
Figure S4. Mechanical stimulation device
Movie S1. Live/Dead assay fluorescent microscopy 3D reconstitution: staining highlights viable cells in green and copolymer autofluorescence in blue
### Table S1. Copolymers composition and molecular weights

<table>
<thead>
<tr>
<th>Copolymer</th>
<th>Composition</th>
<th>L-LA (wt %)</th>
<th>DL-LA (wt %)</th>
<th>Initiator (wt %)</th>
<th>$\bar{M}_n$ (kg/mol)</th>
<th>$T_m$ (°C)</th>
<th>$\Delta H_m$ (J/g)</th>
<th>$T_g$ (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>94P200</td>
<td>PLA$_{94}$ Pluronic F127 200 kg·mol$^{-1}$</td>
<td>82.5</td>
<td>11.2</td>
<td>6.3</td>
<td>104</td>
<td>169</td>
<td>145</td>
<td>20</td>
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<tr>
<td>94T200</td>
<td>PLA$_{94}$ Tetronic 1107 200 kg·mol$^{-1}$</td>
<td>81.4</td>
<td>11.1</td>
<td>7.5</td>
<td>92</td>
<td>172</td>
<td>147</td>
<td>10</td>
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</table>

### Table S2. List of primers used for RT-qPCR

<table>
<thead>
<tr>
<th>Gene</th>
<th>Full name</th>
<th>Sequences</th>
</tr>
</thead>
</table>
| GAPDH | Glyceraldehyde-3-phosphate dehydrogenase | forward 5'-GGTGCTGAGTATGTCGTGGA-3’  
reverse 5'-GTGCTGTTCACACCACCTACAA-3’ |
| Col I | Type I collagen | forward 5'-TGTTCAAGCTTTTGTGGACCTC-3’  
reverse 5'-TCAAGCTATACCTCAGGGTT-3’ |
| Col III | Type III collagen | forward 5'-CGGTGAACGGGGCGAAGCTGGTT-3’  
reverse 5'-GCCATCTCTGCCGACCTC-3’ |
| Sex | Scleraxis | forward 5'-GGGAAGAACACCCAGAGAGAC-3’  
reverse 5'-TCTTTTCTGTCAGCTGTGTTTGTCAACT-3’ |
| Tnc | Tenascin-C | forward 5'-TCGTTGGGCGGTGTGGAGAAGCGC-3’  
reverse 5'-GCGGTCGAGCAGTGGGTTGG-3’ |
| Tnmd | Tenomodulin | forward 5'-CGCCACACACAGAAGACGAAGCGC-3’  
reverse 5'-AGGTTCAGACACCGCGGCA-3’ |