Supporting Information

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

Adrien Leroy, Benjamin Nottelet, Claire Bony, Coline Pinese, Benoît Charlot, Xavier Garric, Danièle Noël *, Jean Coudane*

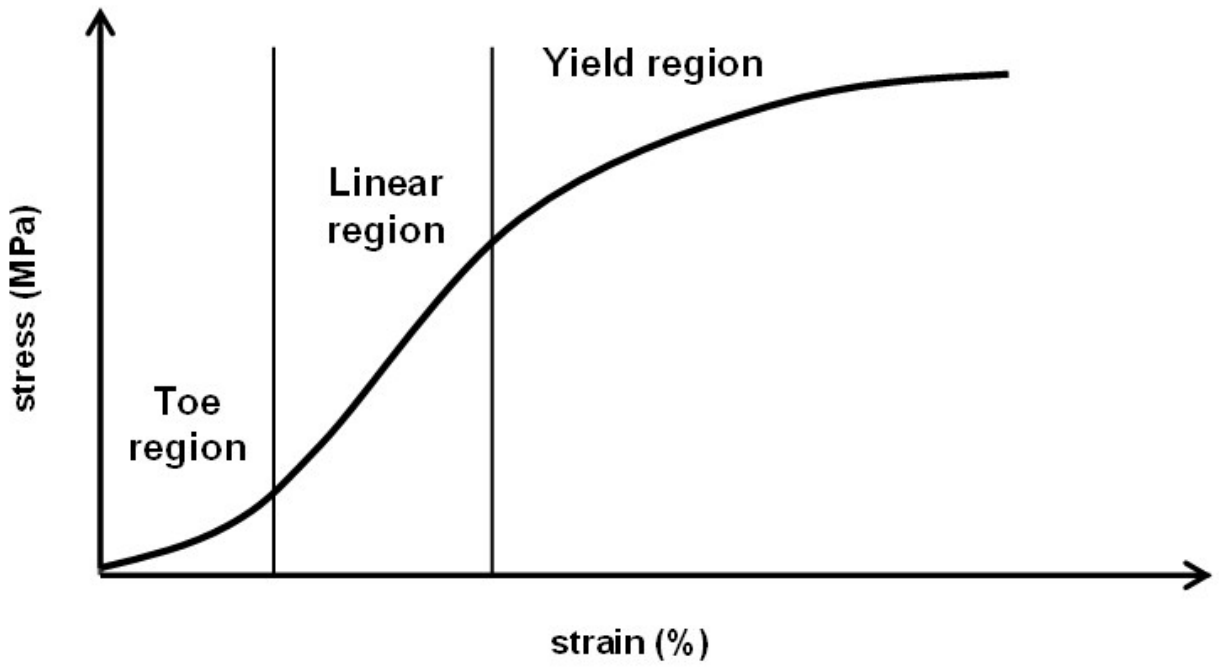

Figure S1. Typical stress-strain curve of ligament (adapted from A. C. Vieira, R. M. Guedes, A. T. Marques, *J. Biomech.* 2009, **42**, 2421)

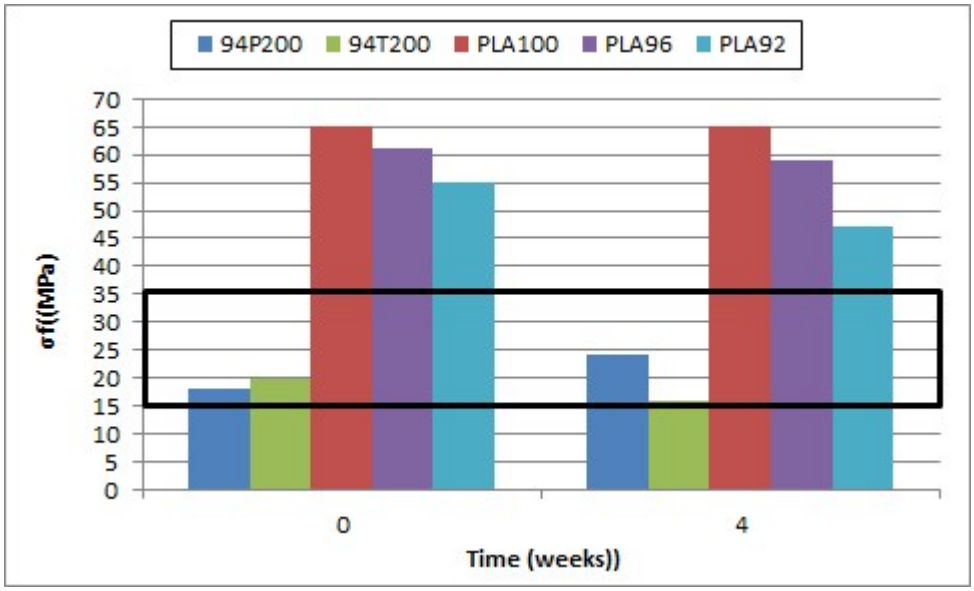

Figure S2. Stress at failure before and after 4 weeks degradation (PBS, pH 7.4, 37°C) for polymer films prepared by compression molding of PLA homopolymers with various L-lactic contents (Mn = 200 000 g/mol), PLA-Pluronic copolymer (Mn = 200 000 g/mol) and PLA-Tetronic copolymers (Mn = 200 000 g/mol). 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)

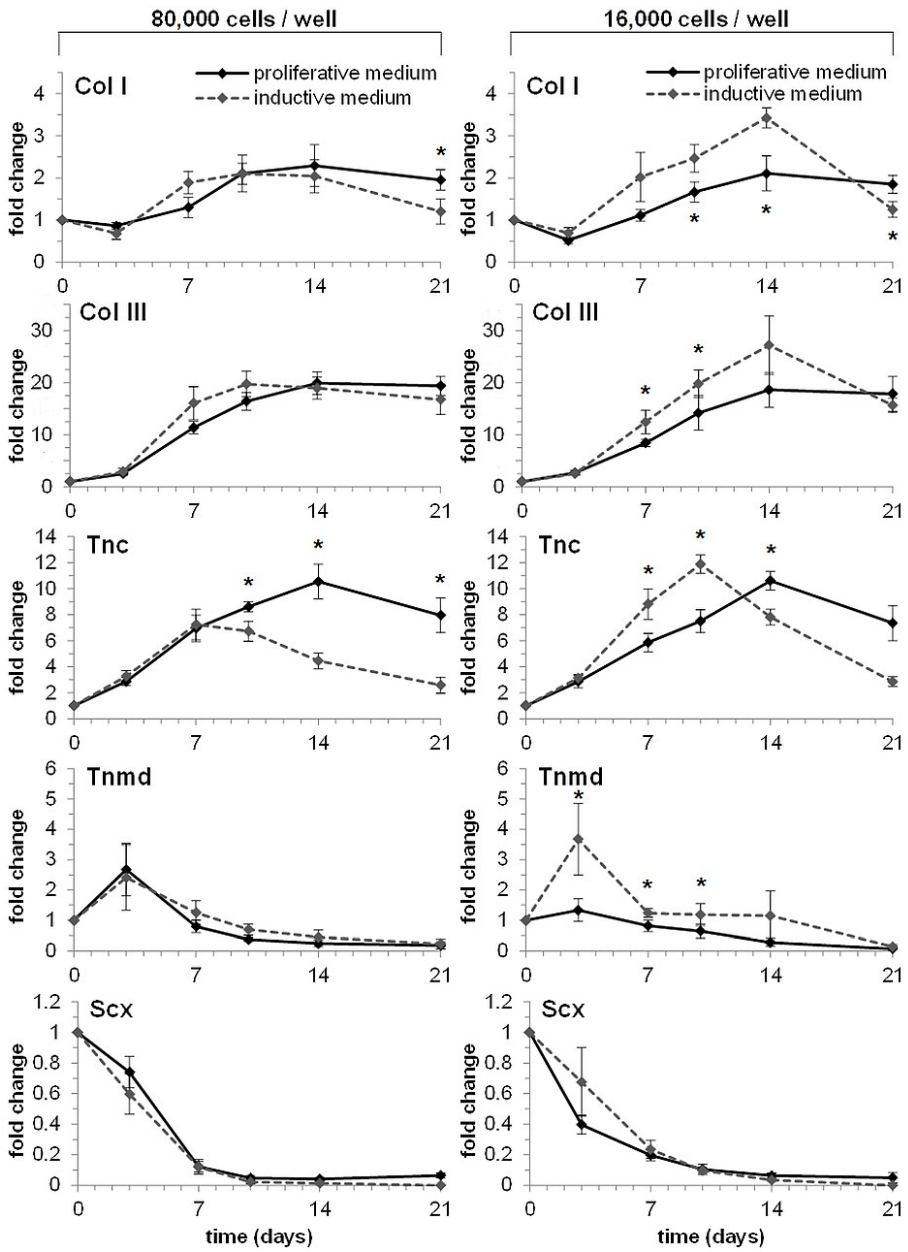

Figure S3. Cell differentiation – expression of fibroblast-related markers by C3 cells maintained in proliferative or inductive culture medium on TCPS versus time ($p < 0.05$) as a function of cell seeding density.

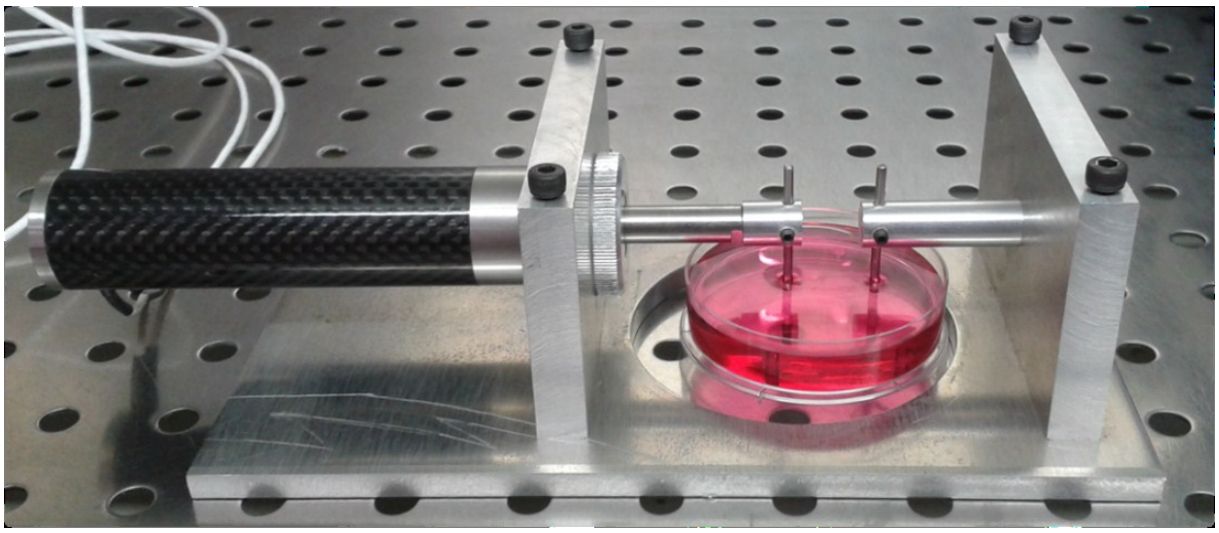

Figure S4. Mechanical stimulation device

supp2.avi

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

Copolymer	Composition	L-LA (wt %)	DL-LA (wt %)	Initiator (wt %)	$\bar{M}n$ (kg/mol) GPC	$\bar{M}n$ (kg/mol) ^{1}H NMR	**Tm** (°C)	**ΔHm** (J/g)	**Tg** (°C)
94P200	PLA_{94} Pluronic F127 200 kg·mol^{-1}	82.5	11.2	6.3	104	169	145	20	54
94T200	PLA_{94} Tetronic 1107 200 kg·mol^{-1}	81.4	11.1	7.5	92	172	147	10	44

Table S2. List of primers used for RT-qPCR

Gene	**Full name**	**Sequences**	
GAPDH	Glyceraldehyde-3-phosphate deshydrogenase	forward	5'-GGTGCTGAGTATGTCGTGGA-3'
		reverse	5'-GTGGTTCACACCCATCACAA-3'
Col I	Type I collagen	forward	5'-TGTTCAGCTTTGTGGACCTC-3'
		reverse	5'-TCAAGCATACCTCGGGTTTC-3'
Col III	Type III collagen	forward	5'-CGGTGAACGGGGCGAAGCTGGTT-3'
		reverse	5'-GACCCCTTTCTCCTGCGGCTCCT-3'
Scx	Scleraxis	forward	5'-CGGCGAGAACACCCAGCCCAA-3'
		reverse	5'-TCTTTCTGTCACGGTCTTTGCTCAACT-3'
Tnc	Tenascin-C	forward	5'-TCGTGGGCGGTGTGTGGAGAACG-3'
		reverse	5'-GCGGTCGAAGCAGTCGTTGGGG-3'
Tnmd	Tenomodulin	forward	5'-CGCCACACCAGACAAGCAAGCG-3'
		reverse	5'-AGGTTCACAGACACGGCGGCA-3'