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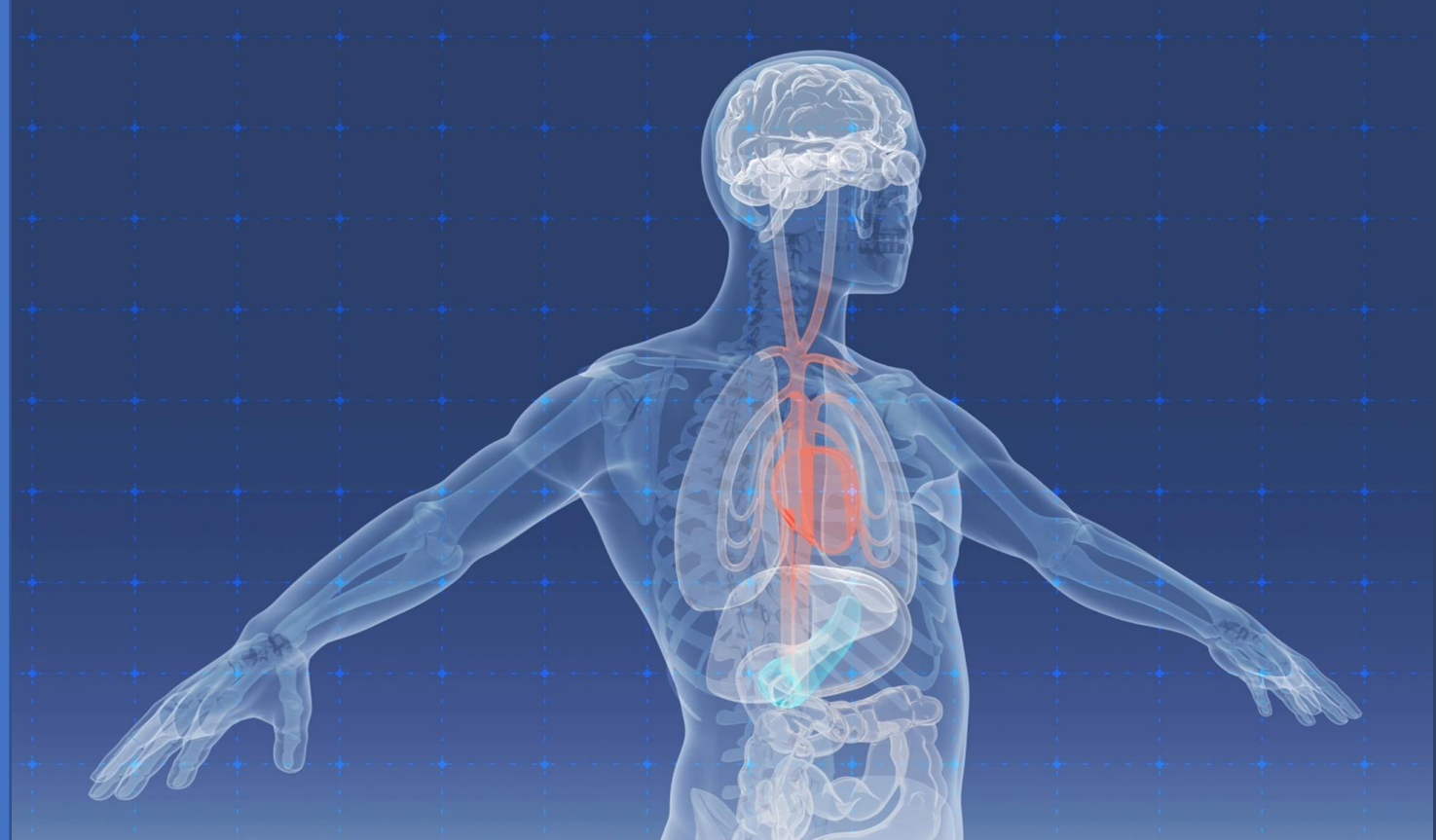


Polivinil alcol ossidato:
un biomateriale customizzabile per la medicina rigenerativa

JOURNAL OF TISSUE ENGINEERING AND REGENERATIVE MEDICINE
J Tissue Eng Regen Med 2017; **11**: 2060–2070.
Published online 29 October 2015 in Wiley Online Library (wileyonlinelibrary.com) **DOI:** 10.1002/term.2101

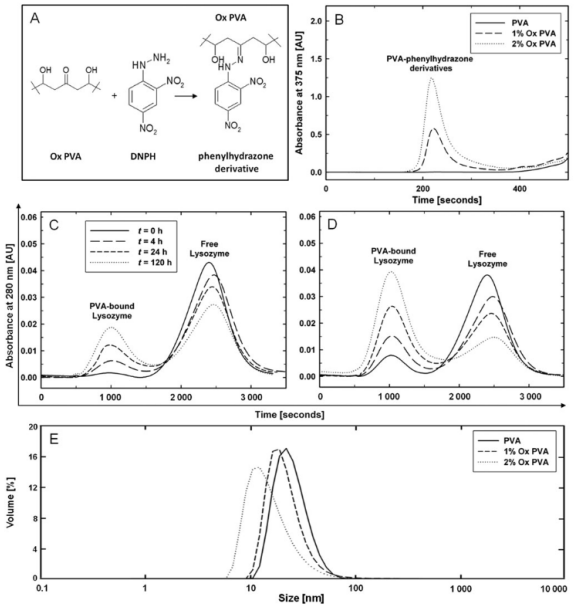
RESEARCH ARTICLE

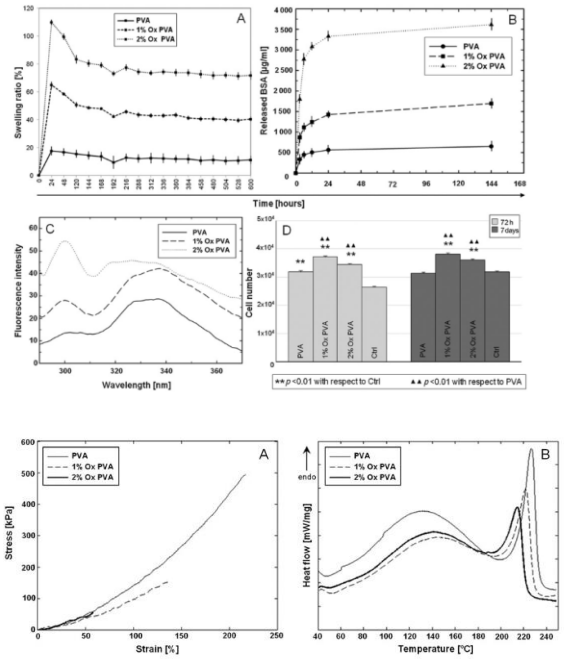
Sviluppo di un biomateriale customizzabile per applicazioni di ingegneria tissutale: una caratterizzazione chimica e biologica

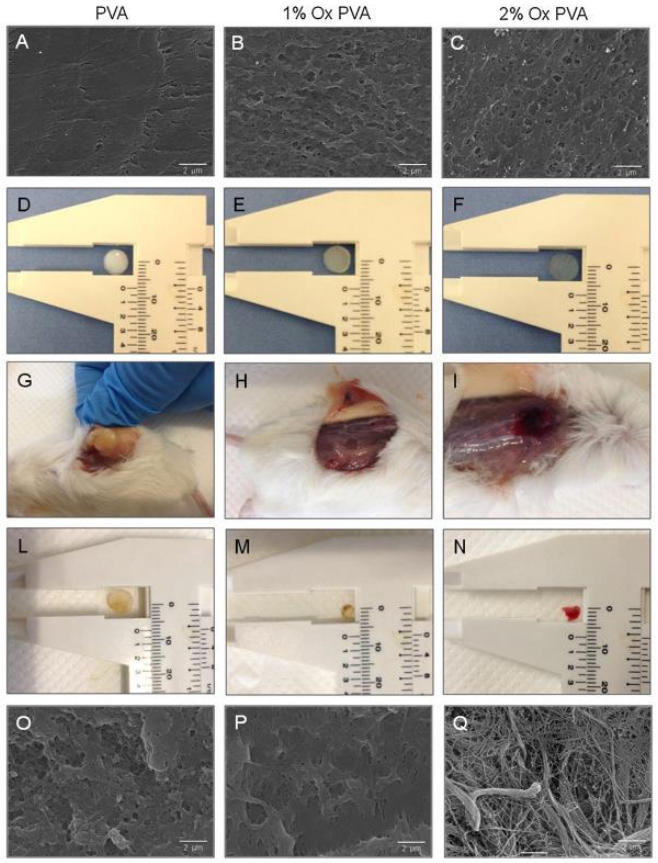
Partially oxidized polyvinyl alcohol as a promising material for tissue engineering

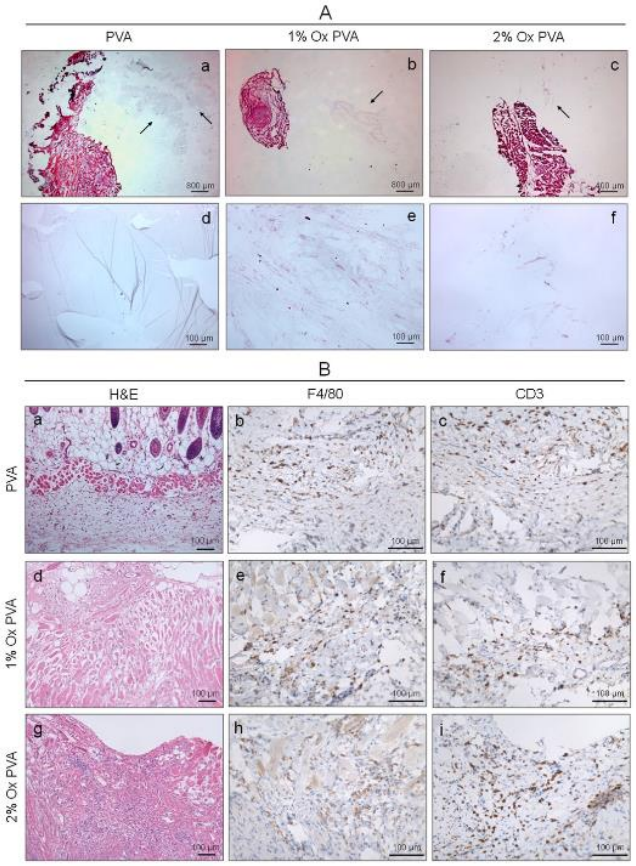
Elena Stocco[1†], Silvia Barbon[2,5†], Francesca Grandi[3], Pier Giorgio Gamba[3], Luca Borgio[1], Costantino Del Gaudio[4], Daniele Dalzoppo[1], Silvano Lora[2], Senthilkumar Rajendran[1], Andrea Porzionato[5], Veronica Macchi[5], Anna Rambaldo[5], Raffaele De Caro[5], Pier Paolo Parnigotto[1,2] and Claudio Grandi[1]*

[1]*Department of Pharmaceutical and Pharmacological Sciences, University of Padua, Italy*
[2]*Foundation for Biology and Regenerative Medicine, Tissue Engineering and Signalling (TES) ONLUS, Padua, Italy*
[3]*Department of Women's and Children's Health, Paediatric Surgery, University of Padua, Italy*
[4]*Department of Enterprise Engineering 'Mario Lucertini', Intra-Universitary Consortium for Material Science and Technology (INSTM) Research Unit, University of Rome 'Tor Vergata', Italy*
[5]*Section of Human Anatomy, Department of Molecular Medicine, University of Padua, Italy*









International Journal of
Molecular Sciences

MDPI

Article

Halogen-Mediated Partial Oxidation of Polyvinyl Alcohol for Tissue Engineering Purposes

Silvia Barbon [1,2], Elena Stocco [1,2], Daniele Dalzoppo [3], Silvia Todros [4], Antonio Canale [5], Rafael Boscolo-Berto [1], Piero Pavan [4,6], Veronica Macchi [1,2], Claudio Grandi [3,7], Raffaele De Caro [1,2,*] and Andrea Porzionato [1,2]

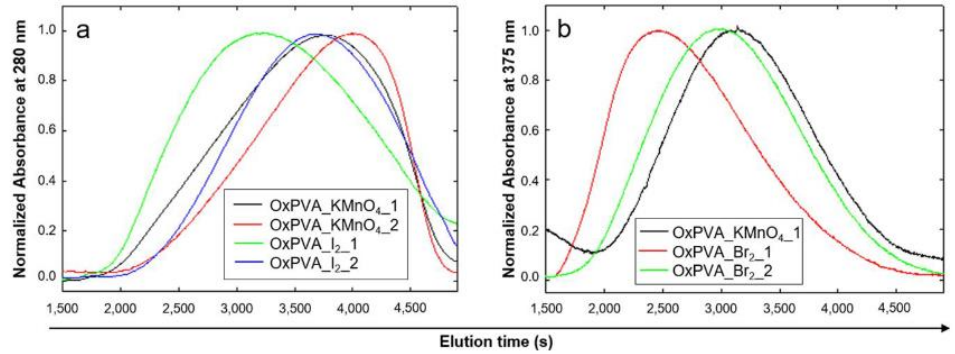
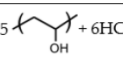
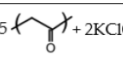
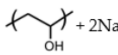
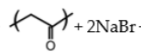
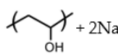
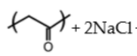
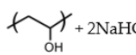
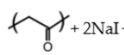
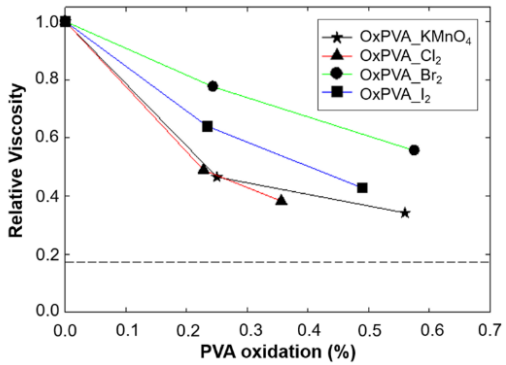
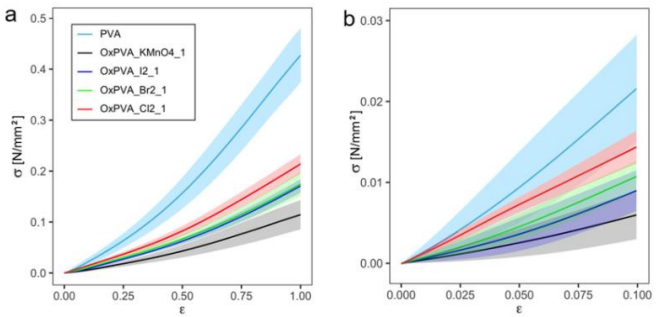


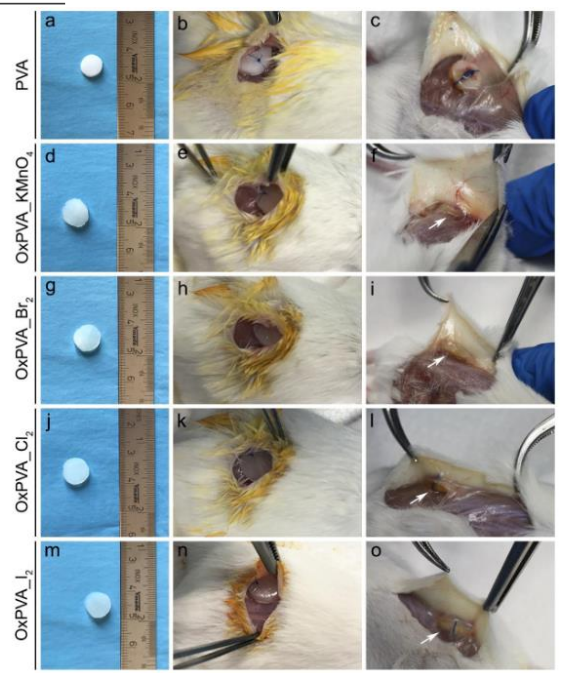
Table 1. Partial oxidation of PVA. Chemical schemes representing the reactions for PVA oxidation with different agents.

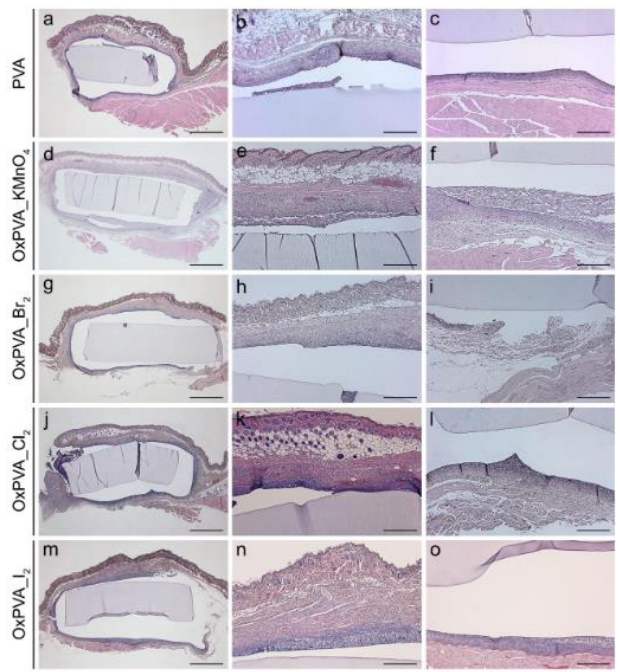
Oxidizing Agent	Chemical Reaction
$KMnO_4$	$2KMnO_4 + 5$  $+ 6HClO_4 \longrightarrow 5$  $+ 2KClO_4 + 2Mn(ClO_4)_2 + 8H_2O$
Br_2	$Br_2 +$  $+ 2NaHCO_3 \longrightarrow$  $+ 2NaBr + H_2O + 2CO_2$
Cl_2	$Cl_2 +$  $+ 2NaHCO_3 \longrightarrow$  $+ 2NaCl + H_2O + 2CO_2$
I_2	$I_2 +$  $+ 2NaHCO_3 \longrightarrow$  $+ 2NaI + H_2O + 2CO_2$

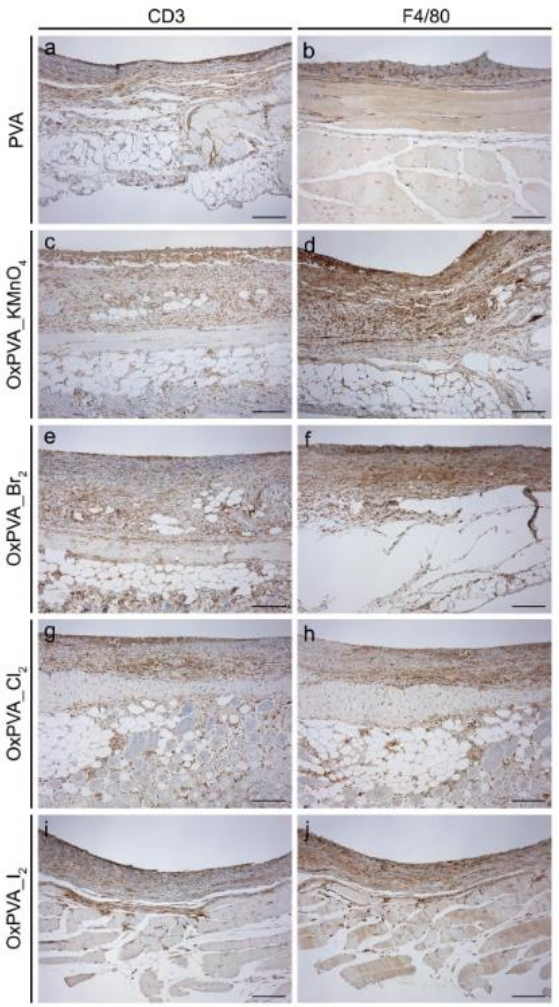
Polymer	% Oxidation	% Moisture
PVA	0.000	7.21
$OxPVA_KMnO_4_1$	0.250 ± 0.03	7.59
$OxPVA_KMnO_4_2$	0.560 ± 0.07	7.58
$OxPVA_Br_2_1$	0.244 ± 0.09	8.43
$OxPVA_Br_2_2$	0.576 ± 0.02	9.43
$OxPVA_Cl_2_1$	0.228 ± 0.04	6.52
$OxPVA_Cl_2_2$	0.356 ± 0.02	8.52
$OxPVA_I_2_1$	0.234 ± 0.05	7.86
$OxPVA_I_2_2$	0.490 ± 0.04	7.87











Rigenerazione della cartilagine articolare

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Volume 2014, Article ID 762189, 12 pages
http://dx.doi.org/10.1155/2014/762189

Hindawi

Research Article

Tailored PVA/ECM Scaffolds for Cartilage Regeneration

Elena Stocco,[1] Silvia Barbon,[1,2] Daniele Dalzoppo,[1] Silvano Lora,[2] Leonardo Sartore,[3] Marcella Folin,[4] Pier Paolo Parnigotto,[1,2] and Claudio Grandi[1]

[1] *Department of Pharmaceutical and Pharmacological Sciences, University of Padua, Via Marzolo 5, 35131 Padua, Italy*
[2] *Foundation for Biology and Regenerative Medicine, Tissue Engineering and Signaling (TES) ONLUS, Via De Sanctis 10, Caselle di Selvazzano Dentro, 35030 Padua, Italy*
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[4] *Department of Biology, University of Padua, Viale Colombo 3, 35121 Padua, Italy*

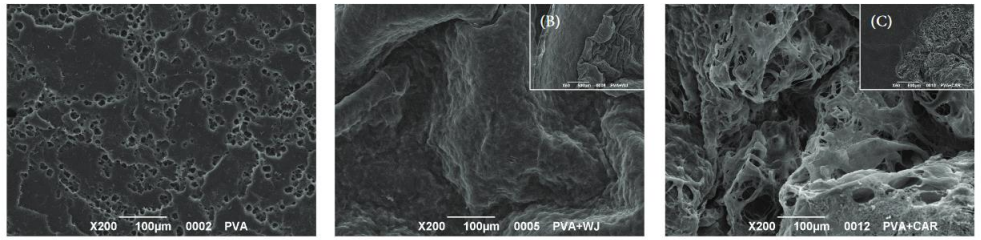


FIGURE 2: SEM investigation of PVA (a), PVA/W's J (b), and PVA/AC (c) scaffold surface morphology. The edge of PVA scaffold not covered by W's J and AC matrix is represented in (b) and (c), respectively. Magnification: ×200 (a, b, c); ×50 (b, c).

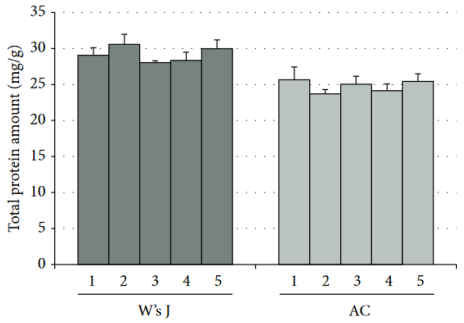
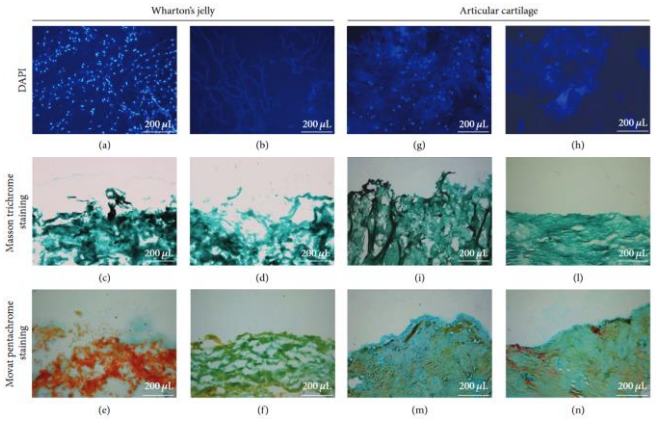
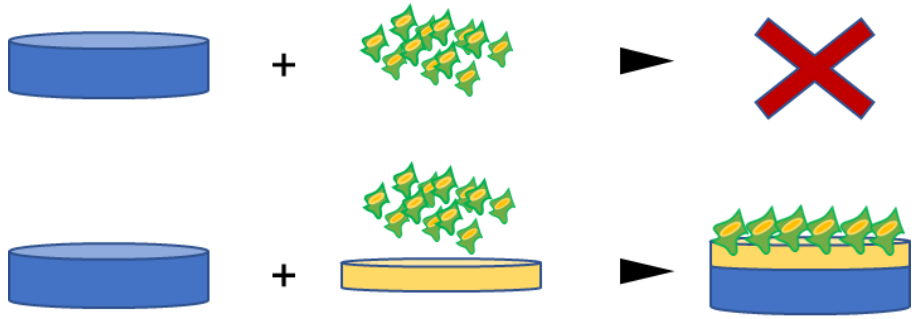
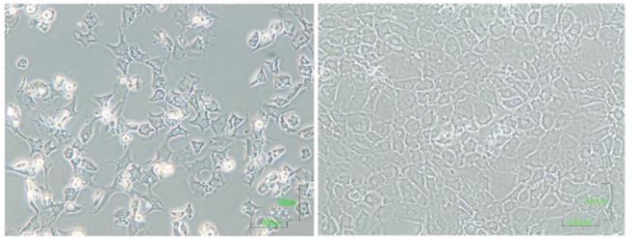


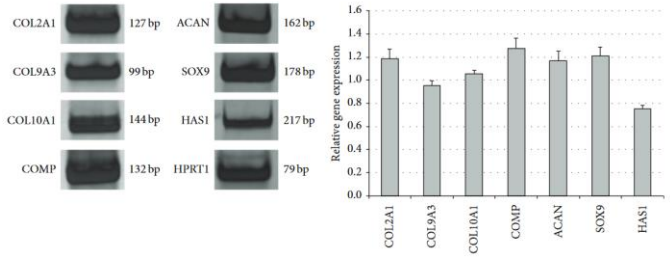
FIGURE 3: Total protein quantitation by BCA assay in decellularized Wharton's jelly and articular cartilage.

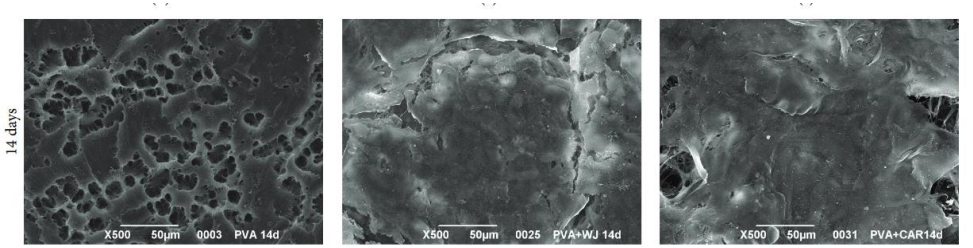


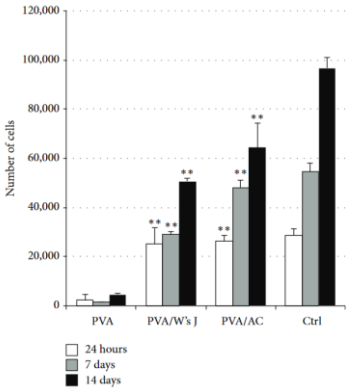
Sviluppo di una protesi bio-ibrida PVA/gelatina di Wharton per la rigenerazione del tessuto cartilagineo









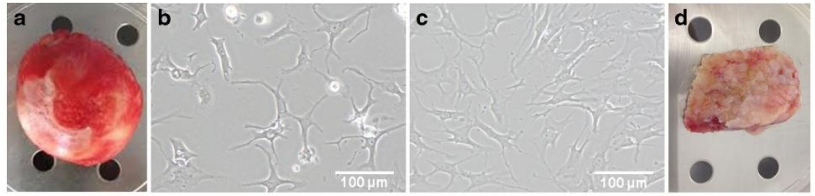


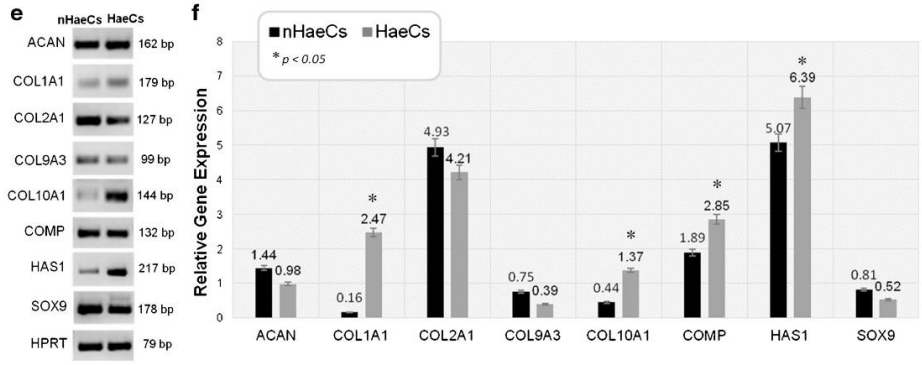
Cell Tissue Res (2016) 366:51–61
DOI 10.1007/s00441-016-2408-8

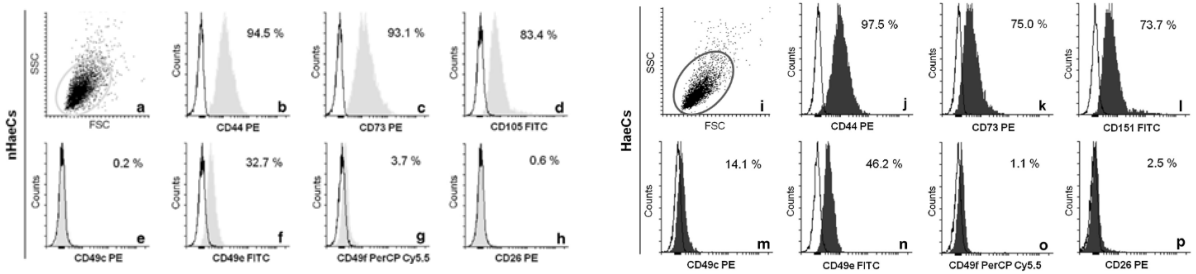
REGULAR ARTICLE

Autologous chondrocytes as a novel source for neo-chondrogenesis in haemophiliacs

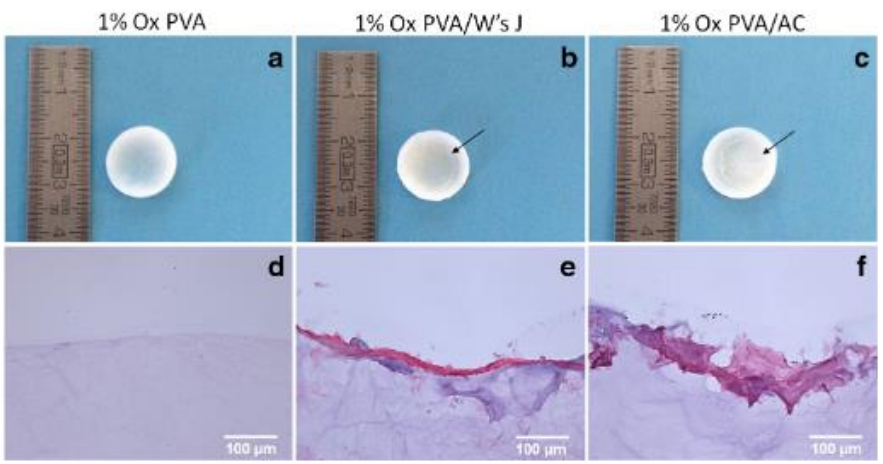
Elena Stocco[1,2] · Silvia Barbon[1,2] · Paolo Radossi[3] · Senthilkumar Rajendran[1] · Daniele Dalzoppo[1] · Marina Bortolami[4] · Andrea Bagno[5] · Francesca Grandi[6] · Pier Giorgio Gamba[6] · Pier Paolo Parnigotto[2] · Giuseppe Tagariello[3] · Claudio Grandi[1,2]

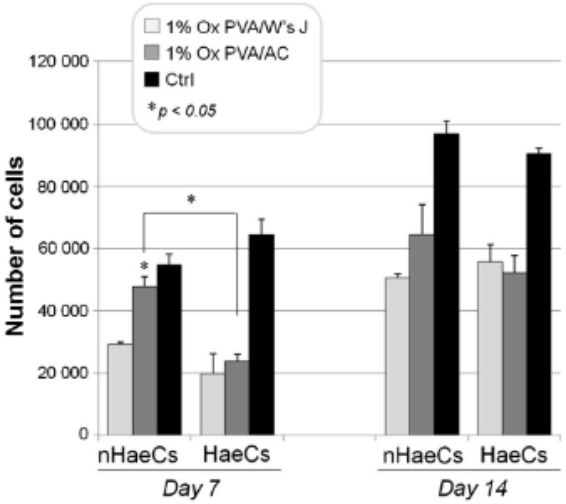


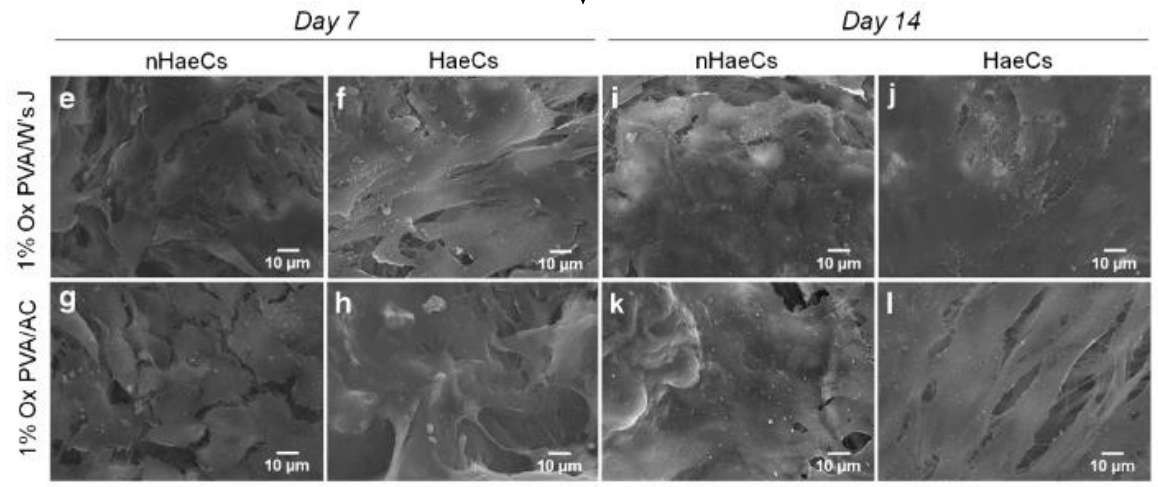




Sviluppo di una protesi bio-ibrida, riassorbibile, per il recupero del danno cartilagineo focale nei pazienti affetti da artropatia emofilica







Rigenerazione del nervo periferico

Toxicology and Applied Pharmacology 309 (2016) 121–128

Contents lists available at ScienceDirect

Toxicology and Applied Pharmacology

journal homepage: www.elsevier.com/locate/ytaap

In vitro assessment of TAT — Ciliary Neurotrophic Factor therapeutic potential for peripheral nerve regeneration

Silvia Barbon [a,b,1], Elena Stocco [a,b,1], Alessandro Negro [c], Daniele Dalzoppo [a], Luca Borgio [a], Senthilkumar Rajendran [a], Francesca Grandi [d], Andrea Porzionato [e], Veronica Macchi [e], Raffaele De Caro [e], Pier Paolo Parnigotto [b], Claudio Grandi [a,*]

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[b] Foundation for Biology and Regenerative Medicine, Tissue Engineering and Signaling (TES) ONLUS, Via De Sanctis 10, Caselle di Selvazzano Dentro, 35030 Padua, Italy
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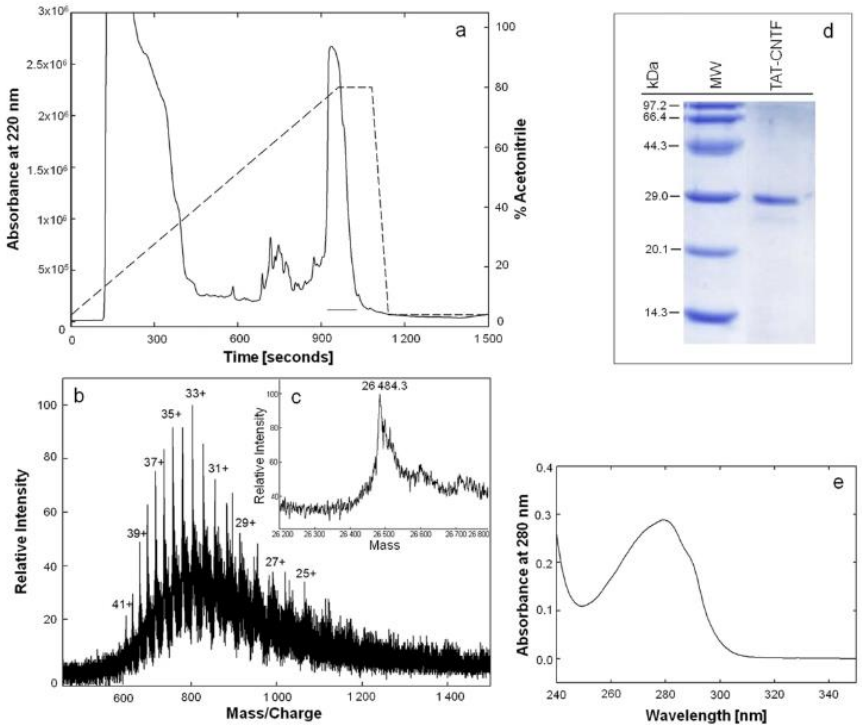
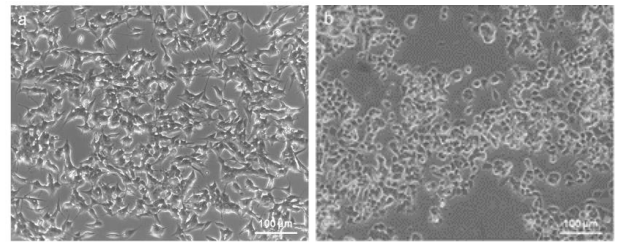
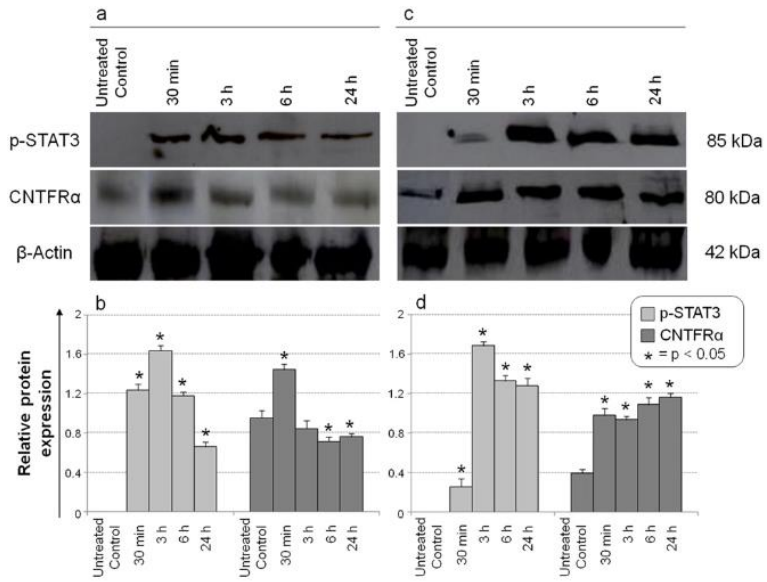
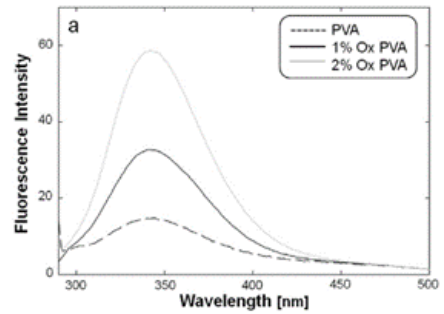
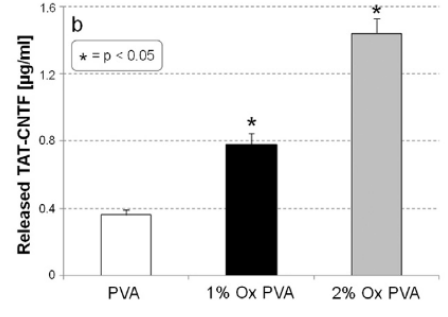
[e] Section of Human Anatomy, Department of Molecular Medicine, University of Padua, Via Gabelli 65, 35121 Padua, Italy

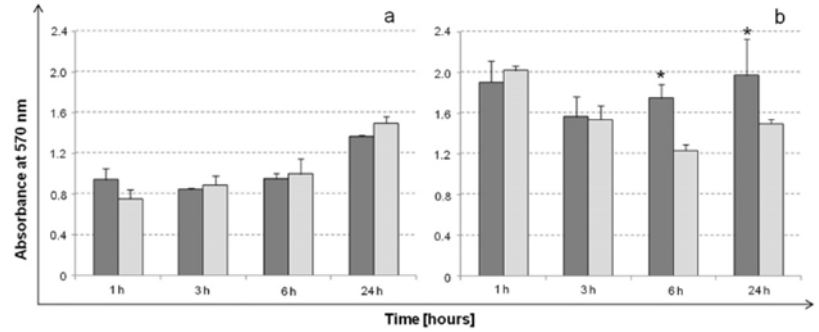


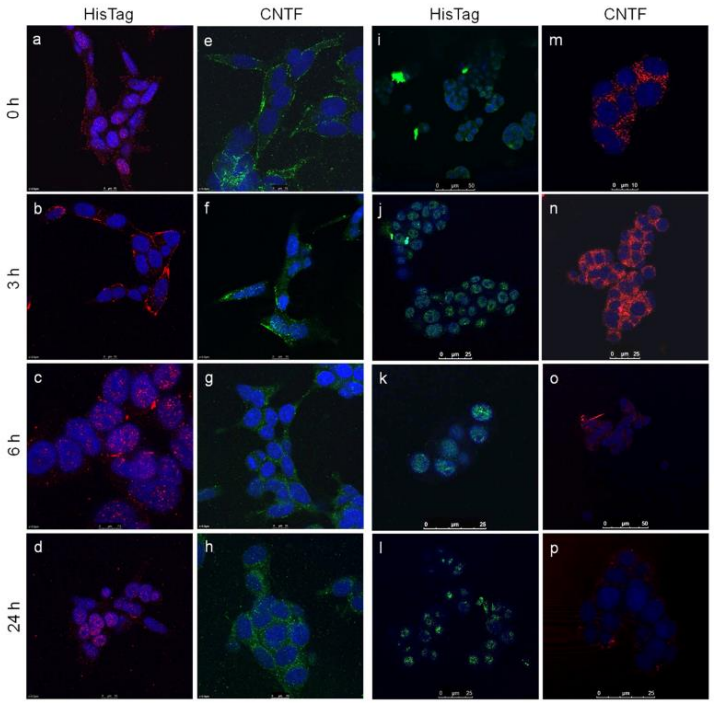












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SCIENTIFIC REPORTS

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Partially oxidized polyvinyl alcohol conduitfor peripheral nerve regeneration

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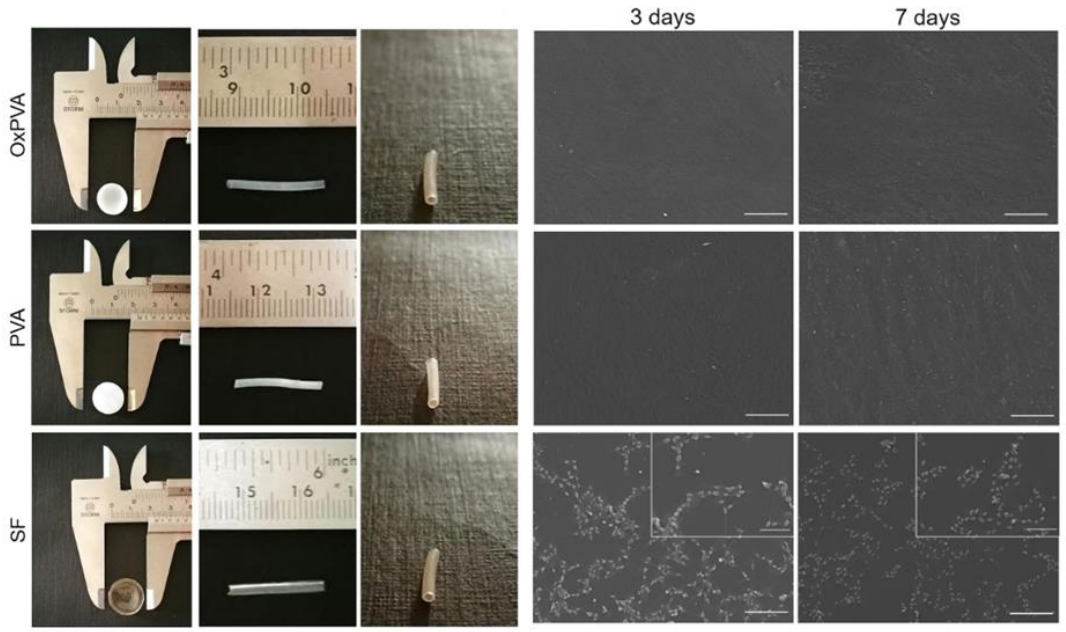
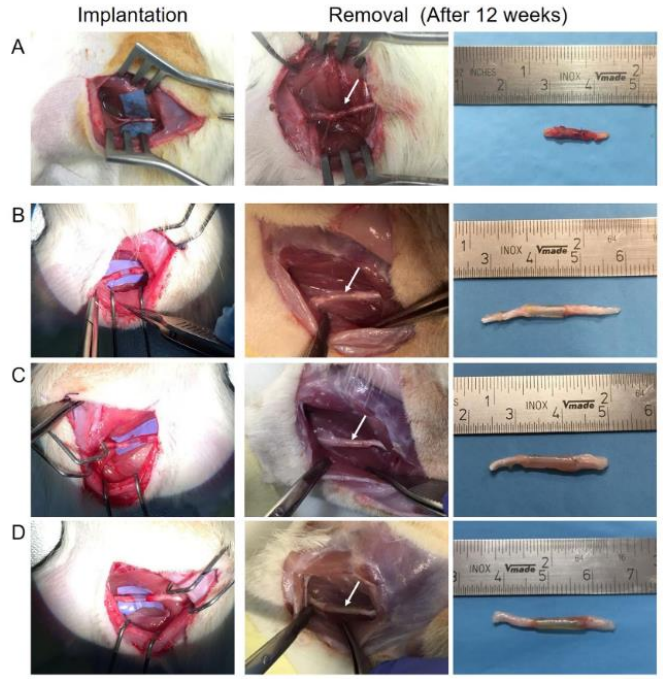
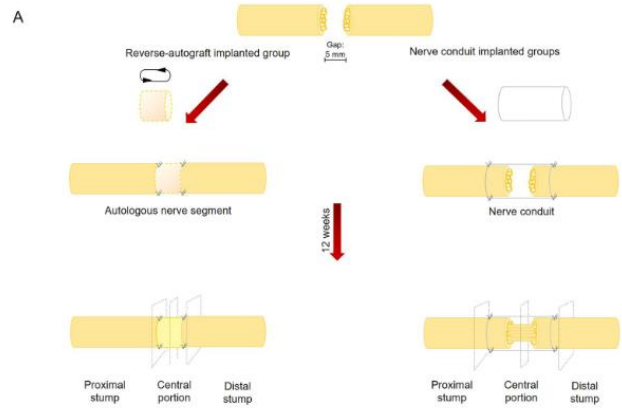
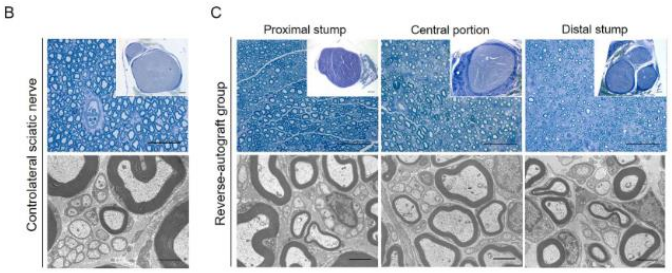
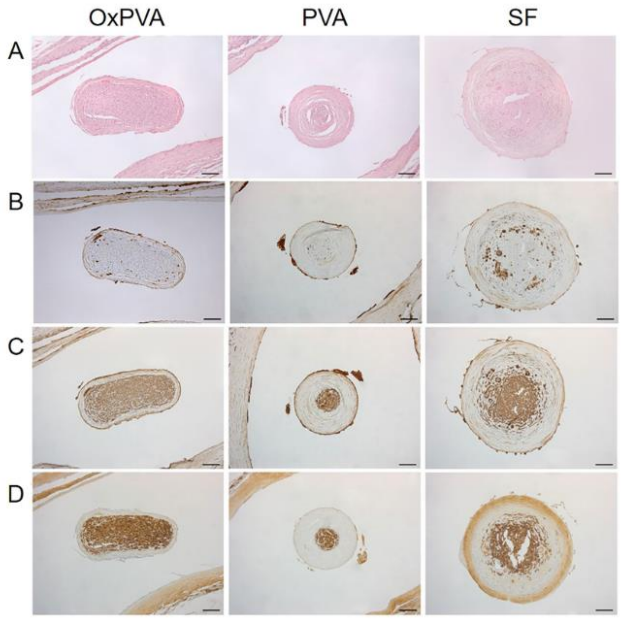
Elena Stocco[1,6], Silvia Barbon[2,6], Lucia Lora[2], Francesca Grandi[3], Leonardo Sartore[4], Cesare Tiengo[5], Lucia Petrelli[1], Daniele Dalzoppo[2], Pier Paolo Parnigotto[6], Veronica Macchi[1], Raffaele De Caro[1], Andrea Porzionato[1] & Claudio Grandi[2]

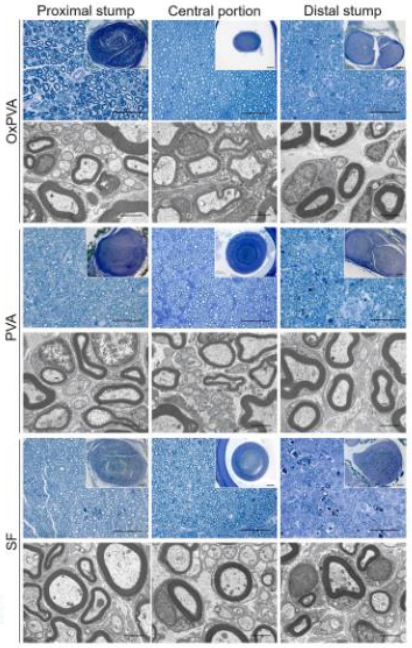












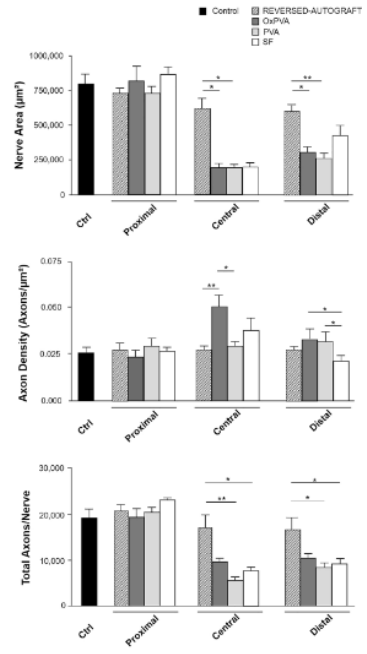


Figure 4. Histological and immunohistochemical analysis. Characterization of the central portion of explanted OxPVA, PVA and SF grafts by HE staining (**A**) and immunohistochemical anti-CD3 (**B**), anti-β-tubulin (**C**) and anti-S100 (**D**) reactions (scale bar = 100 μm).

materials

MDPI

Article

Development of Oxidized Polyvinyl Alcohol-Based Nerve Conduits Coupled with the Ciliary Neurotrophic Factor

Andrea Porzionato [1,2,†], Silvia Barbon [1,2,*,†], Elena Stocco [1,2], Daniele Dalzoppo [3], Martina Contran [1], Enrico De Rose [1], Pier Paolo Parnigotto [4], Veronica Macchi [1,2], Claudio Grandi [3] and Raffaele De Caro [1,2]

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2 L.i.f.e.L.a.b. Program, Consorzio per la Ricerca Sanitaria (CORIS), Veneto Region, Via N. Giustiniani 2, 35128 Padova, Italy

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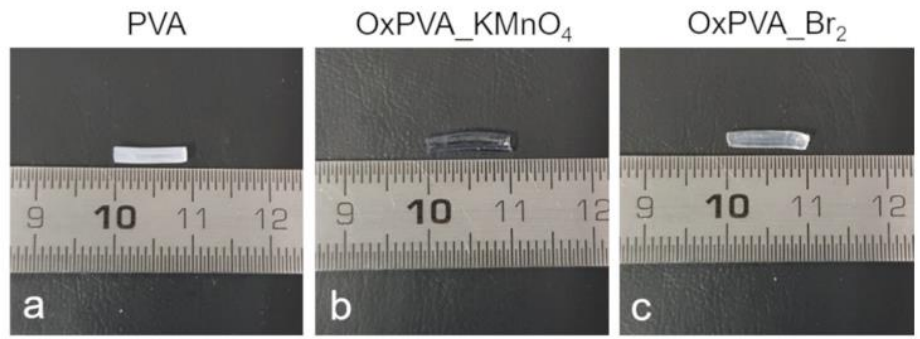

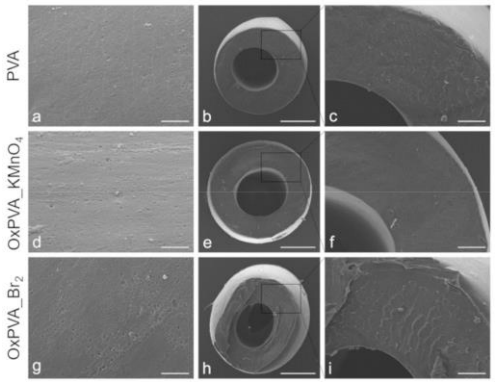

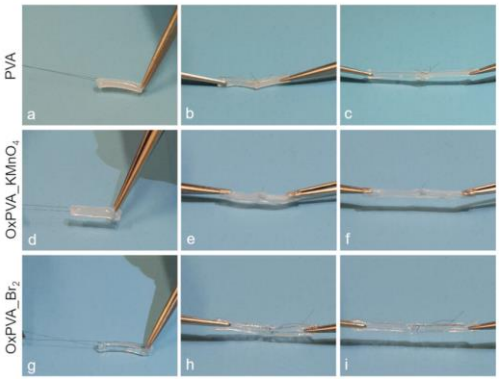

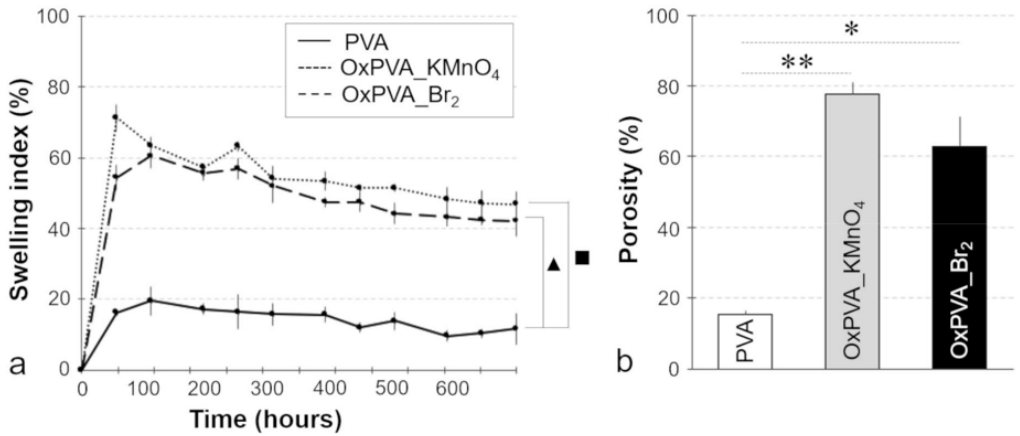

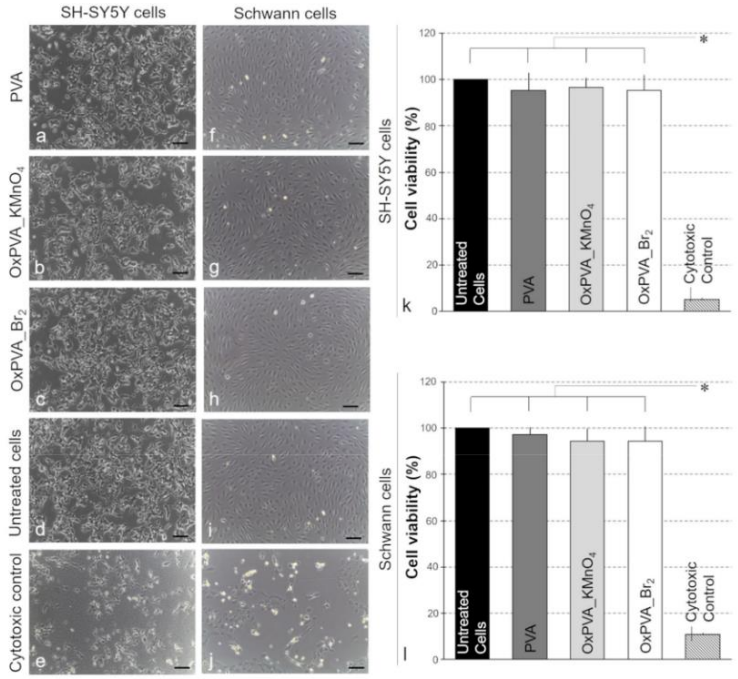

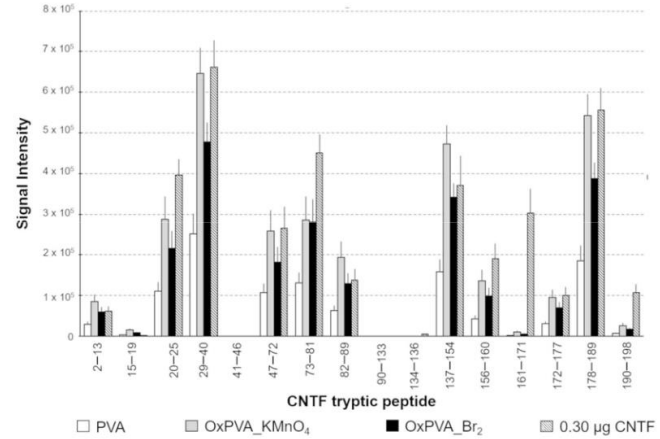

Nerve Guidance Conduit	Area of Extracted IonP (29–40) m/z = 663.84 z = 2^+	Bound CNTF (µg)
PVA	251,254 ± 50,751	0.11 ± 0.021
OxPVA_KMnO$_4$	645,445 ± 63,984	0.29 ± 0.033
OxPVA_Br$_2$	477,030 ± 48,103	0.22 ± 0.029

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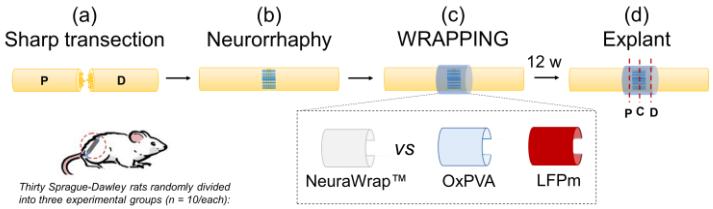
SCIENTIFIC REPORTS
nature research

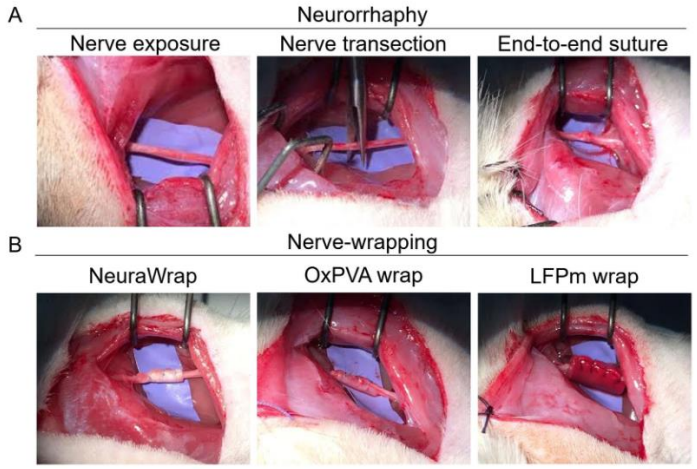
Sviluppo di nerve wrap riassorbibili per il recupero della LNP senza perdita di sostanza: Polivinil alcol ossidato e membrana leucofibrinopiastrinica vs Neurawrap

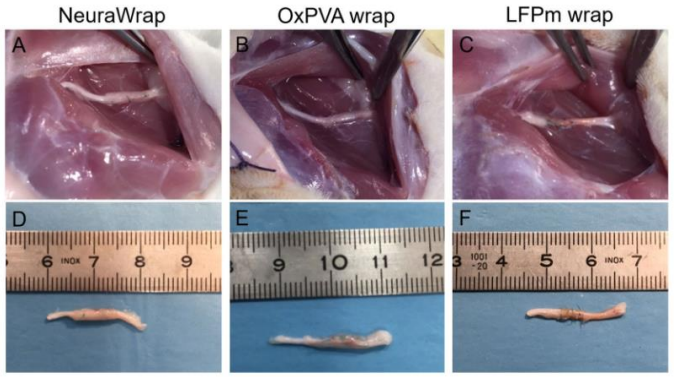
OPEN

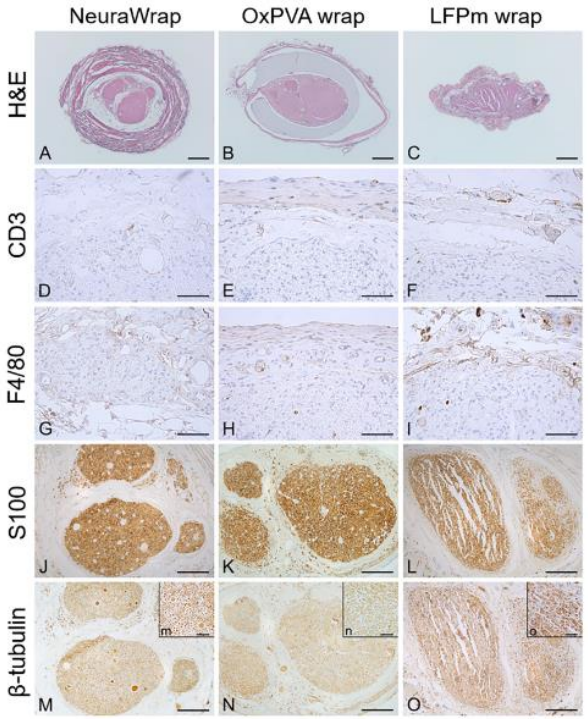
New bioresorbable wraps based on oxidized polyvinyl alcohol and leukocyte-fibrin-platelet membrane to support peripheral nerve neurorrhaphy: preclinical comparison *versus* NeuraWrap

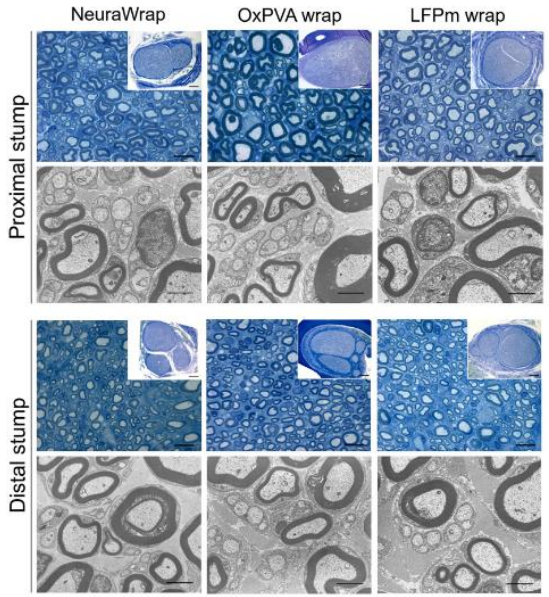
Elena Stocco[1,2], Silvia Barbon[1,2], Veronica Macchi[1,2], Cesare Tiengo[3], Lucia Petrelli[1], Anna Rambaldo[1], Alessio Borean[4], Stefano Capelli[4], Andrea Filippi[5,6], Filippo Romanato[2,5,6], Pier Paolo Parnigotto[7], Claudio Grandi[8], Raffaele De Caro[1,2*] & Andrea Porzionato[1,2]

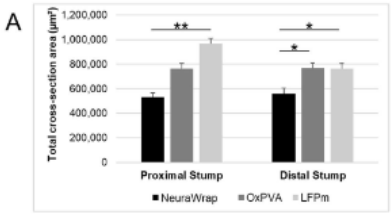


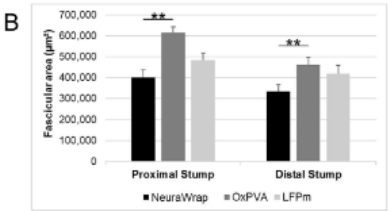


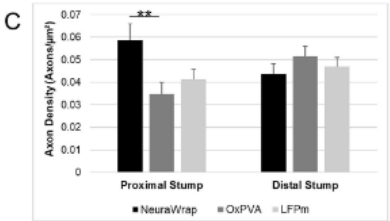


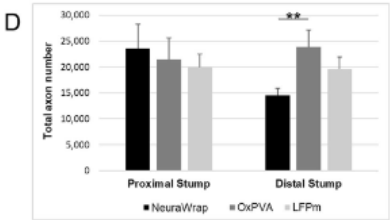




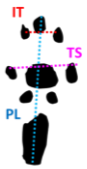








$$SFI = -38.3\frac{EPL - NPL}{NPL} + 109.5\frac{ETS - NTS}{NTS} + 13.3\frac{EIT - NIT}{NIT} - 8.8$$



	2 WEEKS	12 WEEKS
Non-operated foot	3.15 ± 0.52	2.25 ± 0.15
NeuraWrap™	82.45 ± 1.55	52.14 ± 1.18
OxPVA	81.18 ± 2.25	46.5 ± 2.55
LFPm	81.55 ± 2.15	49.46 ± 3.24

Osteoartrite

Journal of Anatomy

J. Anat. (2018) **233**, pp146–154 doi: 10.1111/joa.12820

REVIEW ARTICLE

The infrapatellar fat pad and the synovial membrane: an anatomo-functional unit

Veronica Macchi,[1] Elena Stocco,[1] Carla Stecco,[1] Elisa Belluzzi,[2,3] Marta Favero,[3] Andrea Porzionato[1] and Raffaele De Caro[1]

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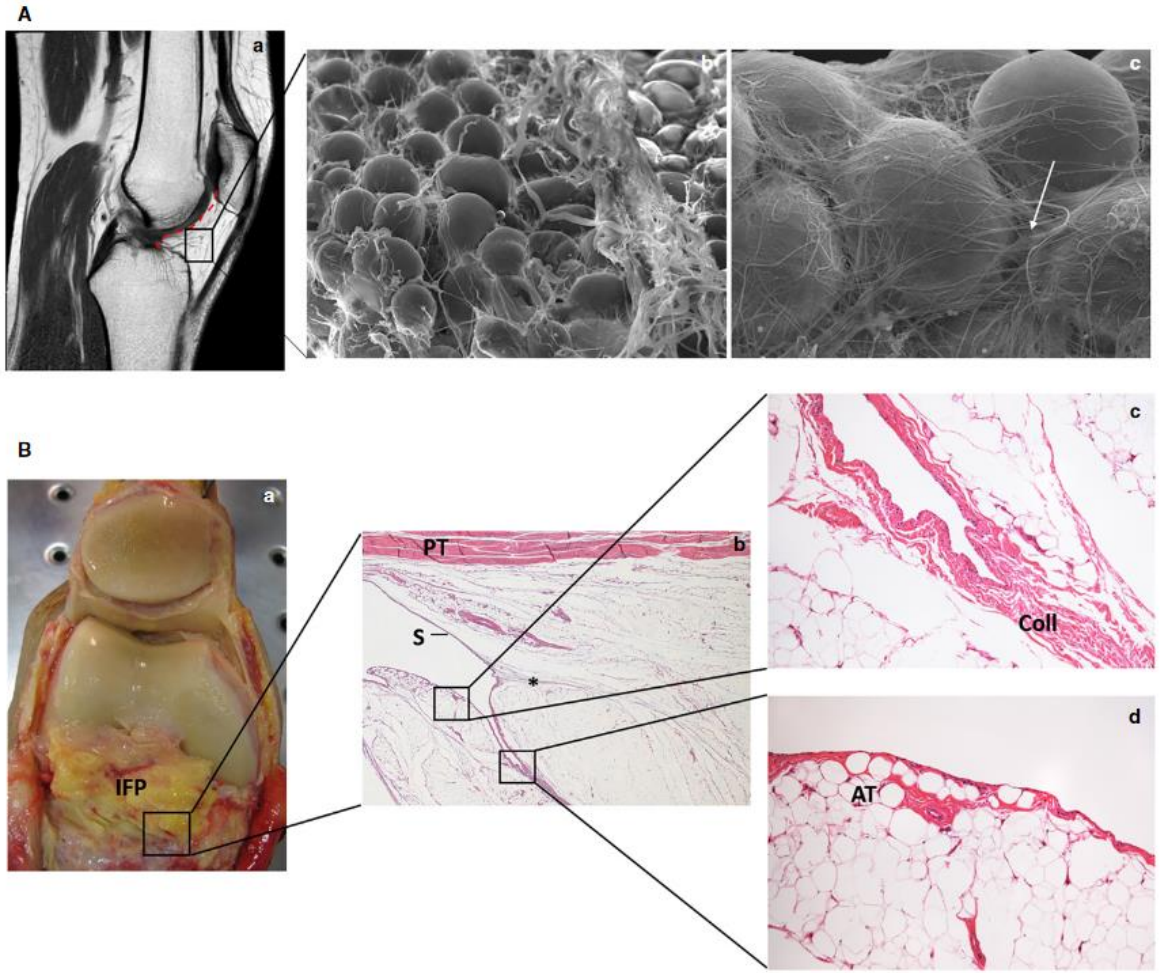
	IFP
Gross appearance/tissue organization	A central body of white adipose tissue organized in lobules characterized by collagenic stroma Presence of medial and lateral extensions Ligamentum mucosum is located inferiorly Eventually, two clefts (horizontal and vertical, respectively) are identifiable
Vascularization	Superior and inferior genicular arteries connected by anastomosis Anastomoses with the vessels of menisci, patellar tendon and tibial periosteum
Innervation	Nerve fibres from the posterior tibial nerve Free nerve fibres within adipose lobules with corpuscles along the interlobular septa
Function	*Biomechanical:* promotes synovial fluid distribution absorbing loads of the knee joint *Biochemical:* secretes proinflammatory mediators (i.e. adipokines, interleukins) and growth factors showing endocrine-paracrine and autocrine-like activity on the cartilage and synovial membrane

	Main evidence
Macroscopic anatomy	Synovial membrane lines the posterior aspect of the IFP Synovial membrane lies beneath the IFP projecting into the joint as two fingers
Imaging	In OA signal alteration in IFP, in front of the IFP and suprapatellar fat pad Synovial thickening within the IFP in early OA IFP opacity in radiographs is correlated with synovitis grades in MR
Histopathology	Both the IFP and synovial membrane show increase of inflammatory features (i.e. infiltration and vascularization, thickness of interlobular septa and hyperplasia) in OA Loss of IFP adipocytes associated with synovial proliferation and subsynovial fibrosis in experimental models
Molecular biology	In end-stage OA, IFP inhibits catabolic mediators of the cartilage IFP has a profibrotic effect on synovial membrane exerted by mediators such as prostaglandin F2a

Il cuscinetto adiposo infrapatellare (IFP) e la membrana sinoviale costituiscono un'unica unità anatomo-funzionale con un ruolo attivo nell'innesco e nella progressione dell'osteoartrite



Hindawi
BioMed Research International
Volume 2019, Article ID 6390182, 18 pages
https://doi.org/10.1155/2019/6390182

Review Article

Contribution of Infrapatellar Fat Pad and Synovial Membrane to Knee Osteoarthritis Pain

Elisa Belluzzi,[1] **Elena Stocco**,[2,3] **Assunta Pozzuoli**,[1] **Marnie Granzotto**,[4] **Andrea Porzionato**,[2,3] **Roberto Vettor**,[4] **Raffaele De Caro**,[2,3] **Pietro Ruggieri**,[5] **Roberta Ramonda**,[6] **Marco Rossato**,[4] **Marta Favero**,[6] **and Veronica Macchi**[2,3]

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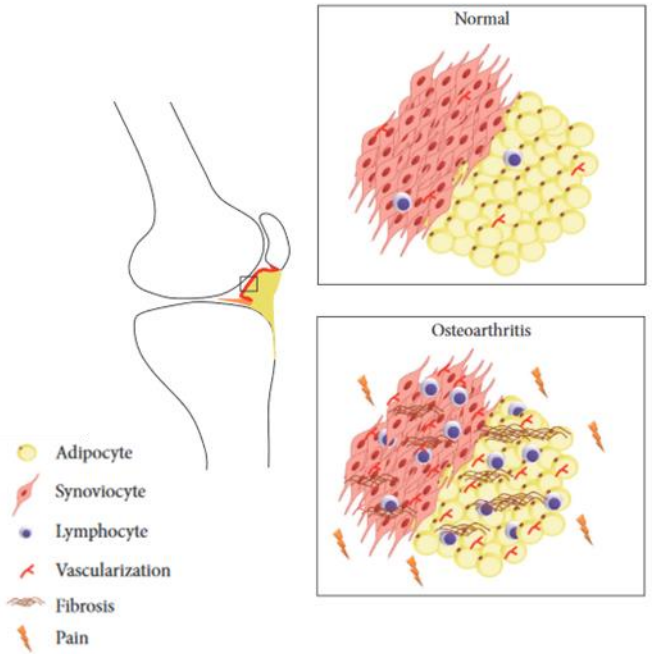
[5]*Department of Orthopaedics and Orthopaedic Oncology, University of Padova, Padova, Italy*
[6]*Rheumatology Unit, Department of Medicine, DIMED, University Hospital of Padova, Italy*



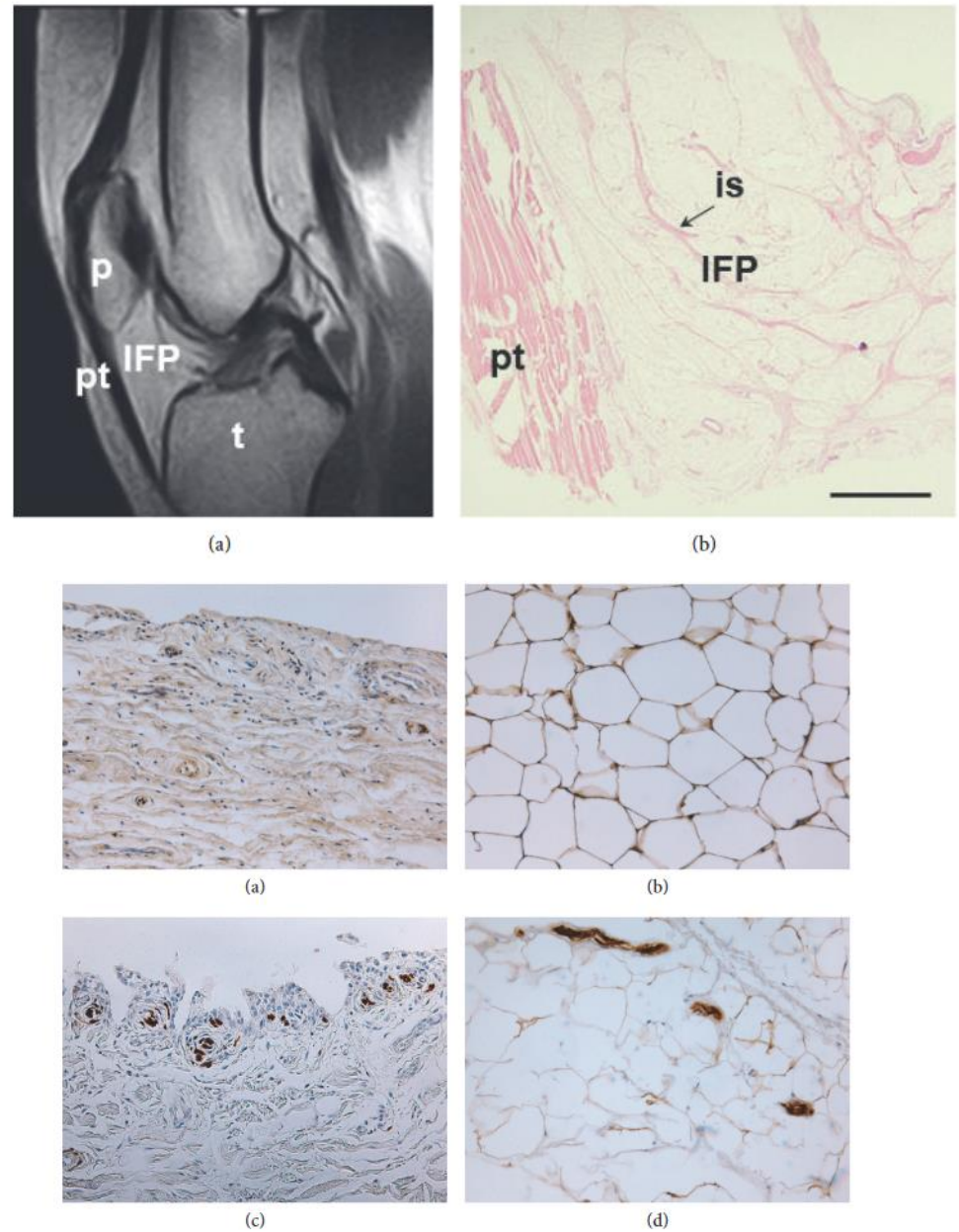


FIGURE 3: *S-100 immunostaining of infrapatellar fat pad (on the right) and synovial membrane (on the left) in normal subjects and in osteoarthritic patients*. Synovial membrane (a) and infrapatellar fat pad (b) of a healthy subject. Synovial membrane (c) and infrapatellar fat pad (d) of an osteoarthritic patient. In both tissue samples from OA patients immunostaining highlighted an increase of nervous fiber compared to controls. Original magnification 20X.

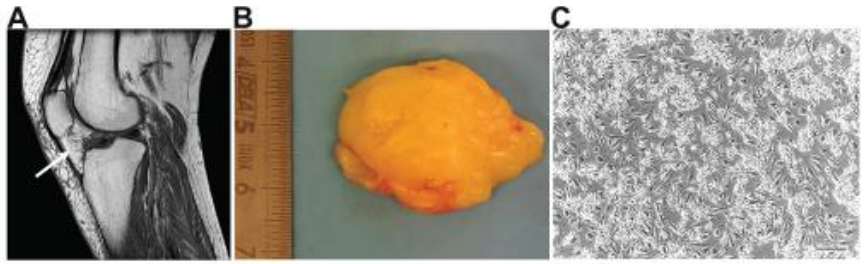
frontiers in Cell and Developmental Biology

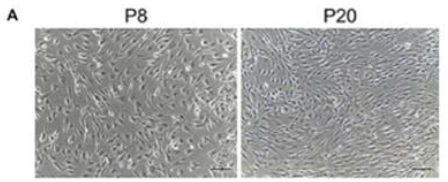
ORIGINAL RESEARCH
published: 10 December 2019
doi: 10.3389/fcell.2019.00323

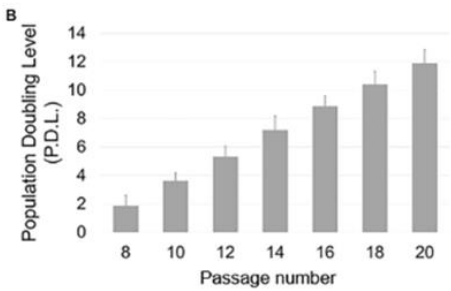
Infrapatellar Fat Pad Stem Cells Responsiveness to Microenvironment in Osteoarthritis: From Morphology to Function

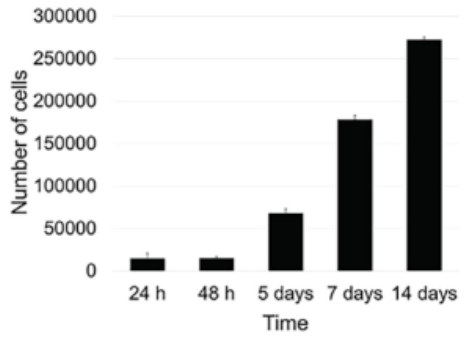
Elena Stocco[1,2,3], Silvia Barbon[1,2,3], Monica Piccione[4], Elisa Belluzzi[5,6], Lucia Petrelli[1], Assunta Pozzuoli[5,6], Roberta Ramonda[7], Marco Rossato[8], Marta Favero[7], Pietro Ruggieri[6], Andrea Porzionato[1,2], Rosa Di Liddo[3,4], Raffaele De Caro[1,2*†] and Veronica Macchi[1,2†]*

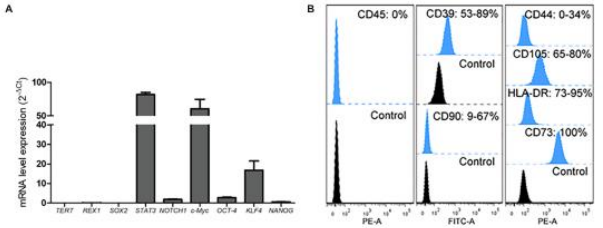
[1] Department of Neurosciences, Institute of Human Anatomy, University of Padova, Padua, Italy, [2] LifeLab Program, Consorzio per la Ricerca Sanitaria (CORIS), Padua, Italy, [3] Foundation for Biology and Regenerative Medicine, Tissue Engineering and Signaling ONLUS, Padua, Italy, [4] Department of Pharmaceutical and Pharmacological Sciences, University of Padova, Padua, Italy, [5] Musculoskeletal Pathology and Oncology Laboratory, Department of Surgery, Oncology and Gastroenterology DiSCOG, University of Padova, Padua, Italy, [6] Department of Orthopaedics and Orthopaedic Oncology, University of Padova, Padua, Italy, [7] Rheumatology Unit, Department of Medicine – DIMED, University Hospital of Padova, Padua, Italy, [8] Clinica Medica 3, Department of Medicine – DIMED, University of Padova, Padua, Italy

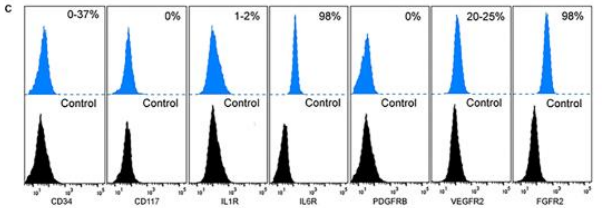


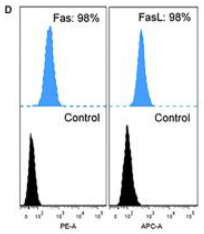


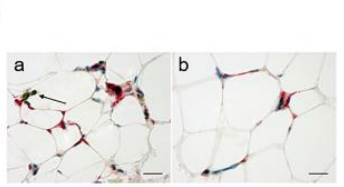


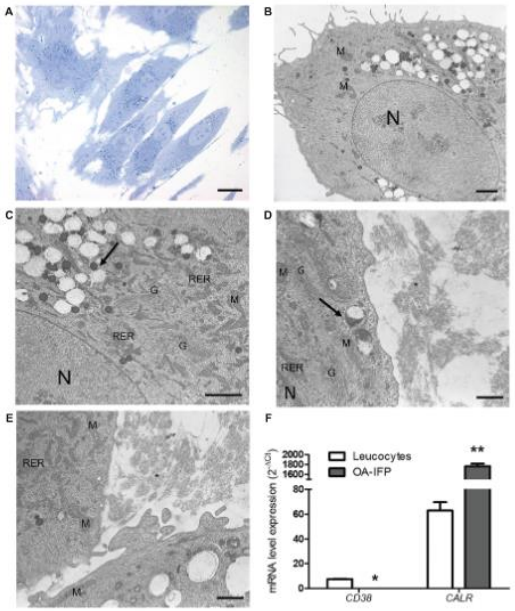




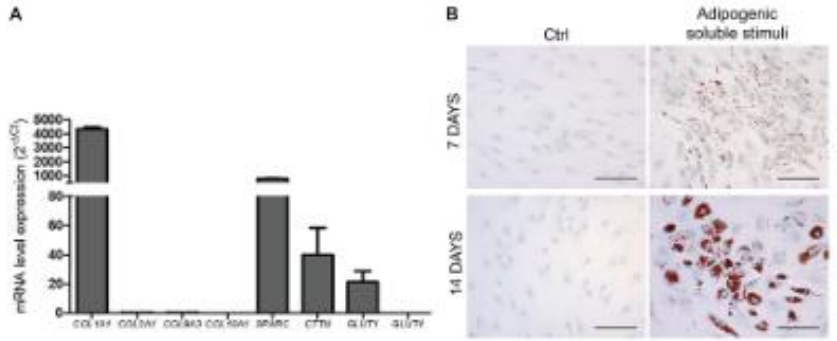


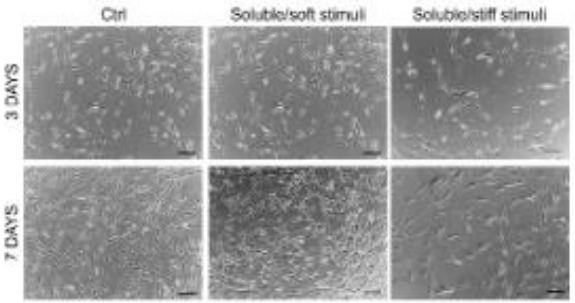


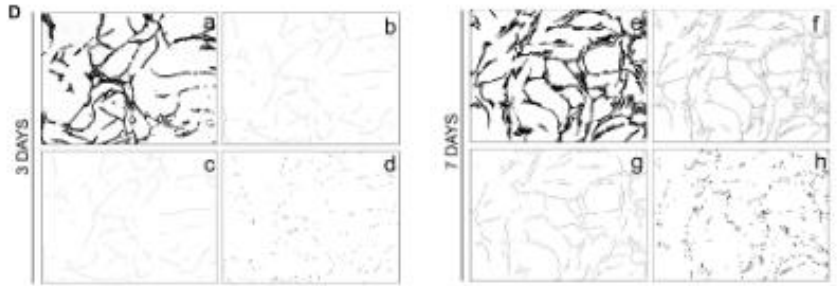




Caratterizzazione di una popolazione staminale da IFP di paziente osteoartritico:
il priming dell'infiammazione e
un possibile modello di patologia in vitro







frontiers in Medicine

ORIGINAL RESEARCH
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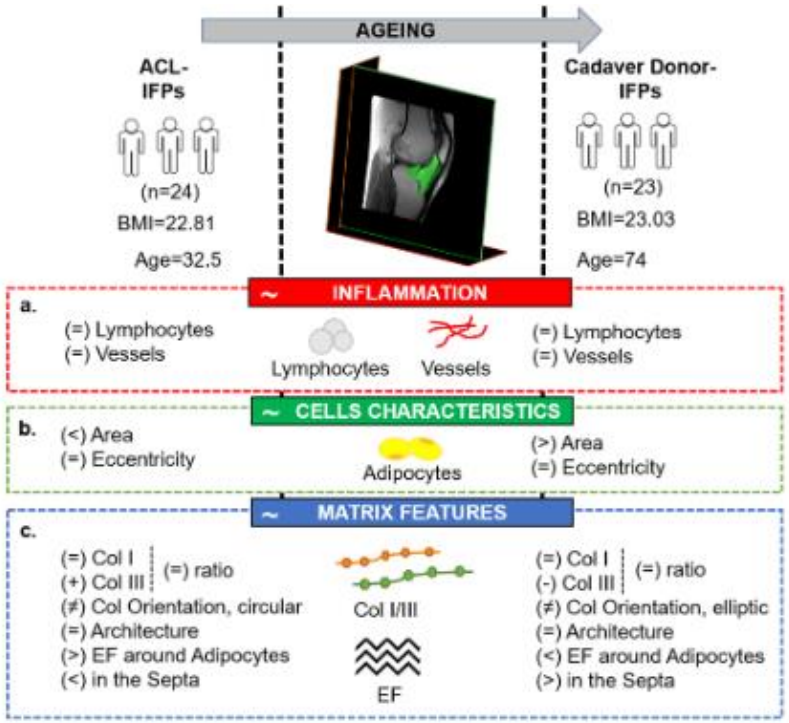
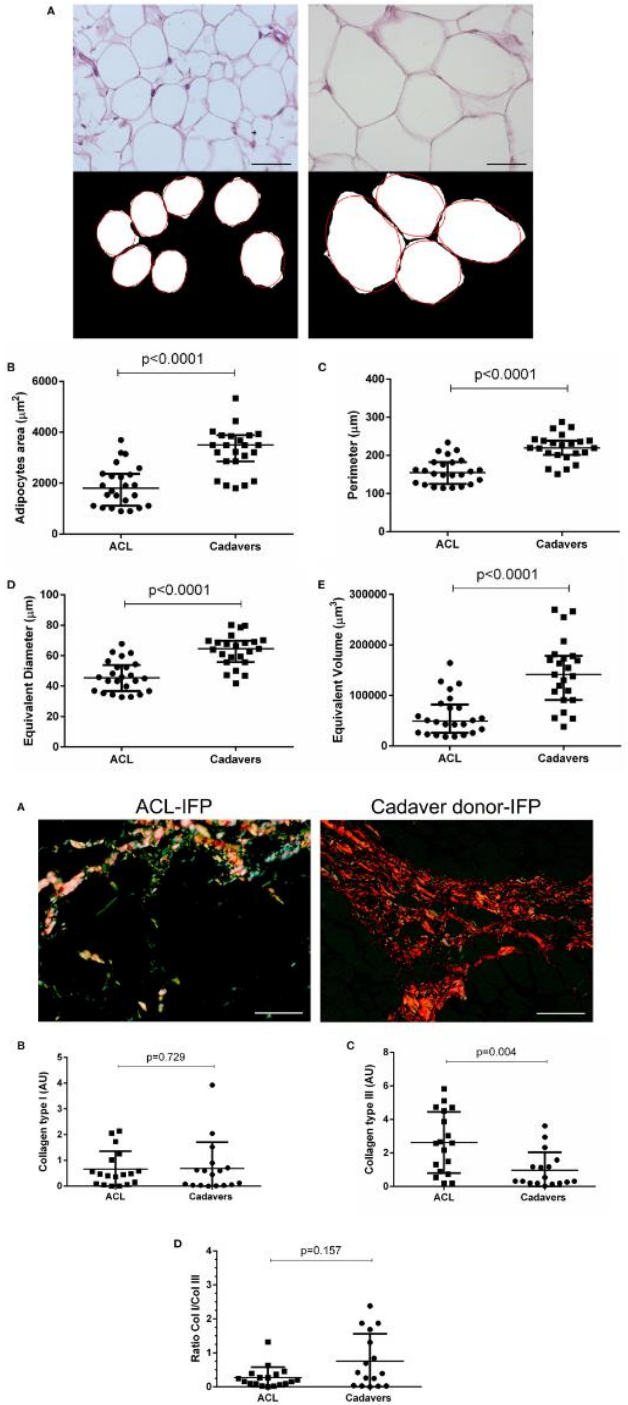
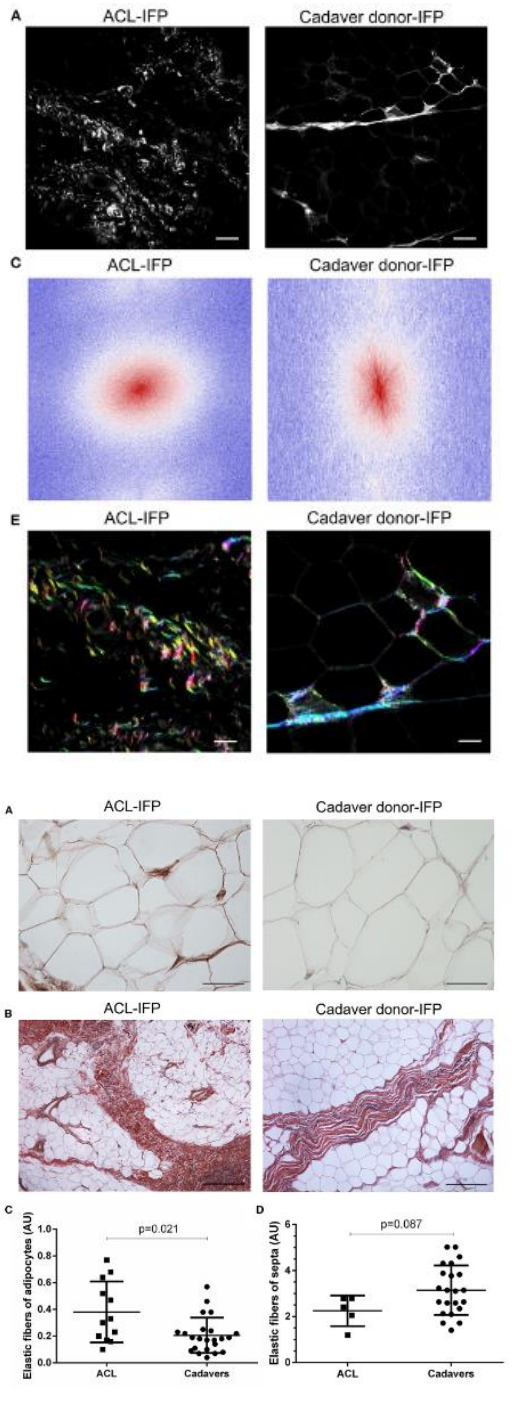
doi: 10.3389/fmed.2021.661403

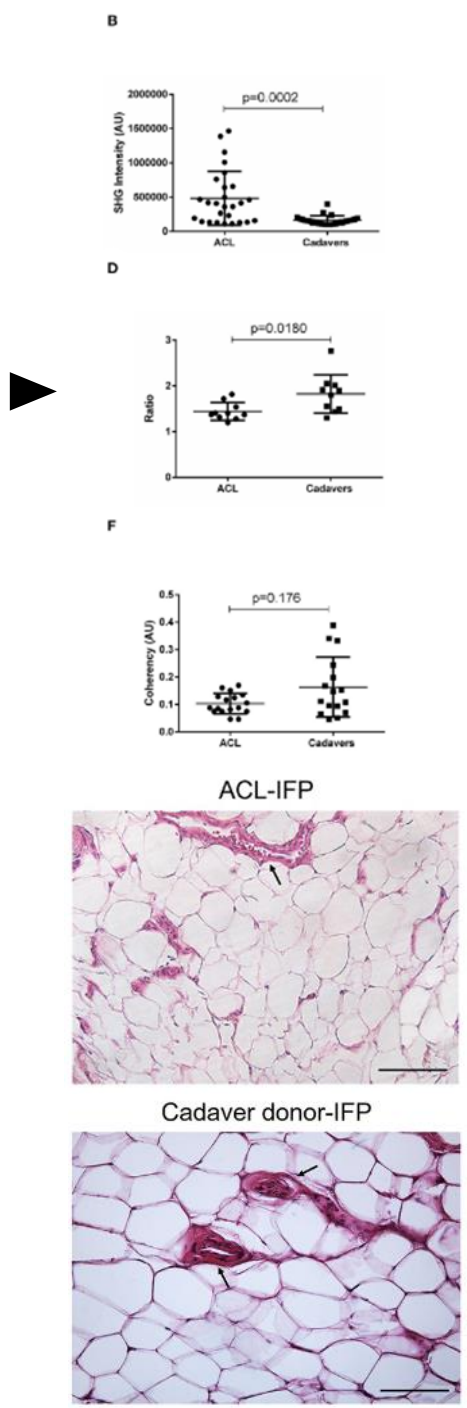
Age-Dependent Remodeling in Infrapatellar Fat Pad Adipocytes and Extracellular Matrix: A Comparative Study

Elena Stocco [1,2], Elisa Belluzzi [3,4†], Martina Contran [1†], Rafael Boscolo-Berto [1], Edgardo Picardi [1], Diego Guidolin [1], Chiara Giulia Fontanella [5,6], Eleonora Olivotto [7], Giuseppe Filardo [8], Giulia Borile [2,9,10], Filippo Romanato [2,9,10], Roberta Ramonda [11], Pietro Ruggieri [3], Marta Favero [11,12], Andrea Porzionato [1,2], Raffaele De Caro [1,2] and Veronica Macchi [1,2]*









Matrici decellularizzate

Human Tissues & Organs for

BODY DONATION PROGRAM

Anat Sci Educ. 2012 Sep-Oct;5(5):264-72. doi: 10.1002/ase.1285. Epub 2012 May 9.

Quality management of Body Donation Program at the University of Padova.

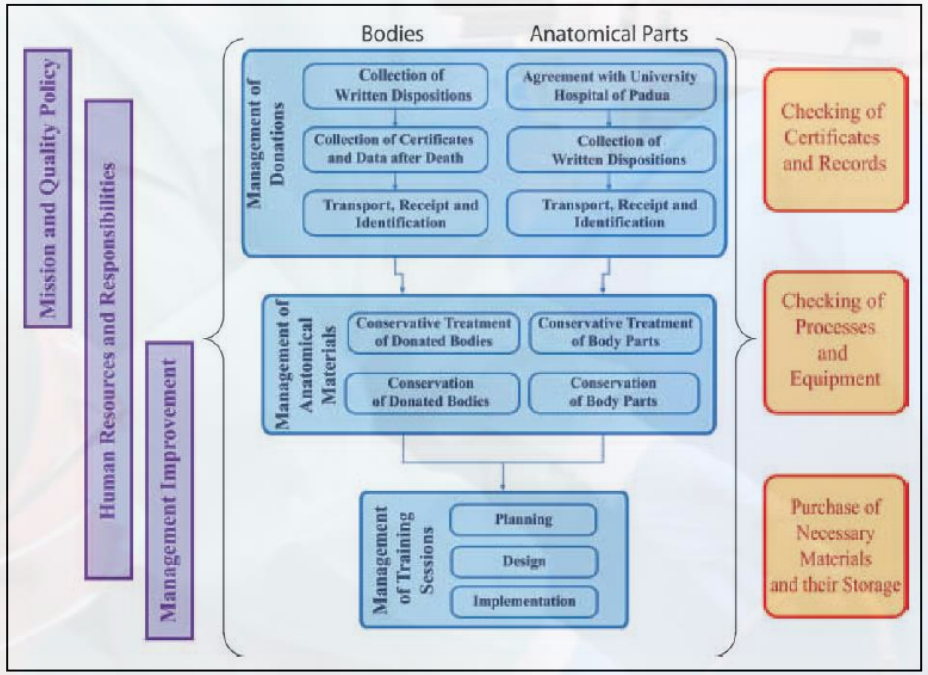
Porzionato A, Macchi V, Stecco C, Mazzi A, Rambaldo A, Sarasin G, Parenti A, Scipioni A, De Caro R.

Department of Human Anatomy and Physiology, Section of Anatomy, Faculty of Medicine and Surgery, University of Padova, Padova, Italy.

Running a Body Donation Program

Andrea Porzionato, Veronica Macchi, Carla Stecco, and Raffaele De Caro

CERTIQUALITY
ISTITUTO DI CERTIFICAZIONE DELLA QUALITÀ



CENTRO REGIONALE
per la
DONAZIONE DEL CORPO

ISTITUITO CON DELIBERA DELLA GIUNTA REGIONALE
N. 245 DEL 8 MARZO 2019

DIRETTORE
PROF. RAFFAELE DE CARO

INTERDEPARTMENTAL RESEARCH CENTER FOR THE TRAINING ON THE CORPSE
"A. Vesalio" CIRSOMA
Prof. Raffaele De Caro

International Journal of
Molecular Sciences

MDPI

Review

Tissue-Engineered Grafts from Human Decellularized Extracellular Matrices: A Systematic Review and Future Perspectives

Andrea Porzionato [1,2], Elena Stocco [1,*], Silvia Barbon [1], Francesca Grandi [3], Veronica Macchi [1,2] and Raffaele De Caro [1,2]

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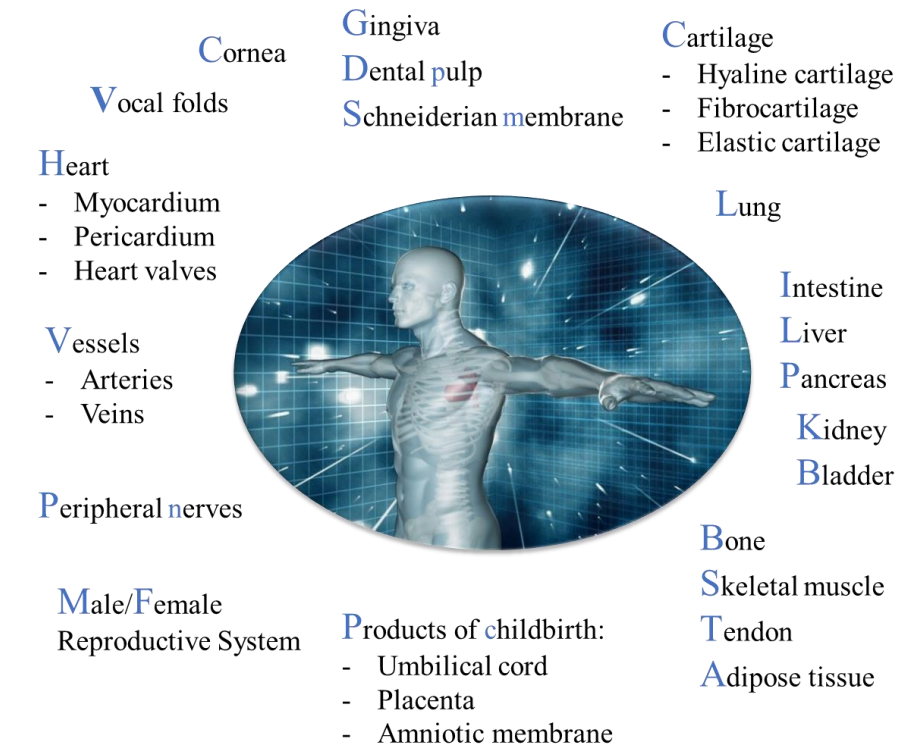
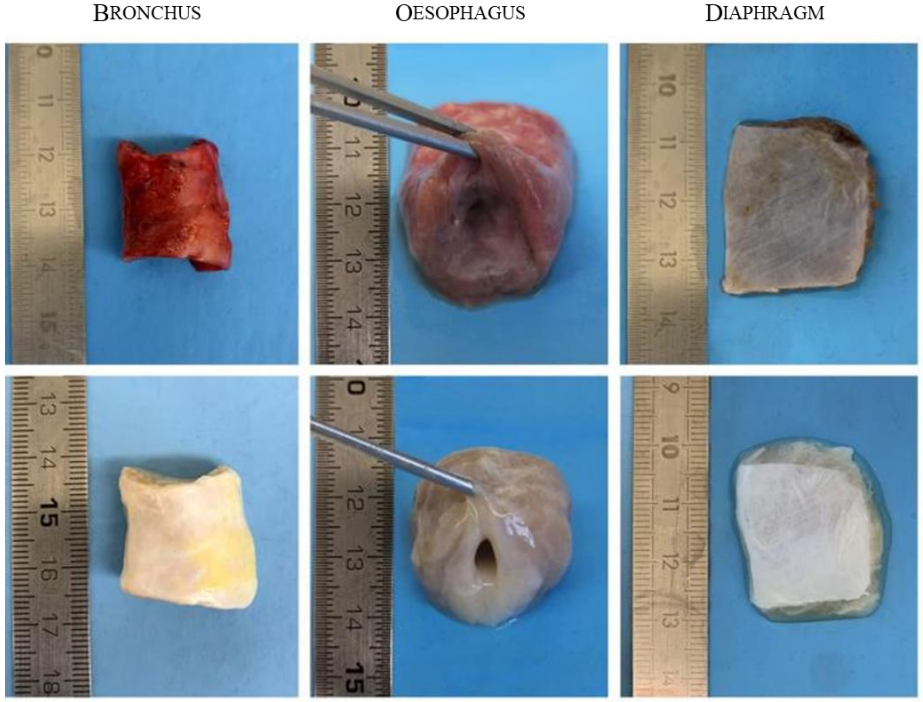




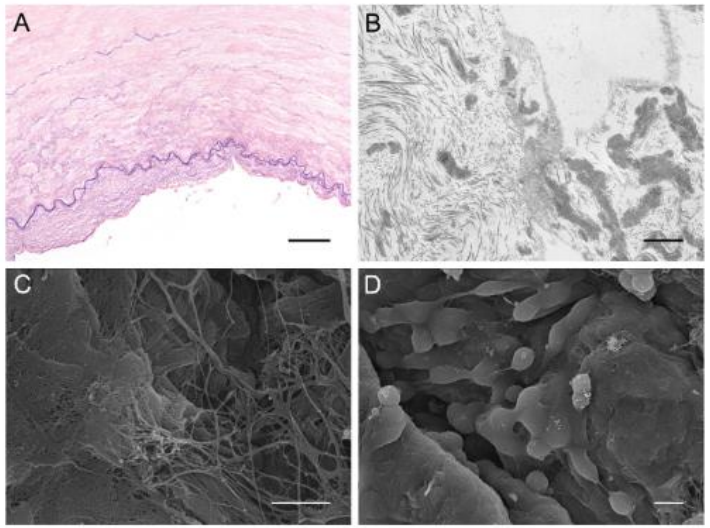


Figure 3. Scaffolds from human radial artery and umbilical cord Wharton's jelly. Hematoxylin/eosin staining (**A**) and transmission electron microscope micrograph (**B**) of decellularized radial artery. Ultrastructural appearance at electron scanning microscope of Wharton's jelly scaffold before (**C**) and 24 h after SH-SY-5Y cells seeding (**D**) (unpublished data). Wharton's jelly was decellularized, homogenated, and lyophilized according the experience of our group. Scale bars: (**A**), 100 µm; (**B**), 1 µm; (**C**), 5 µm; and (**D**), 10 µm.

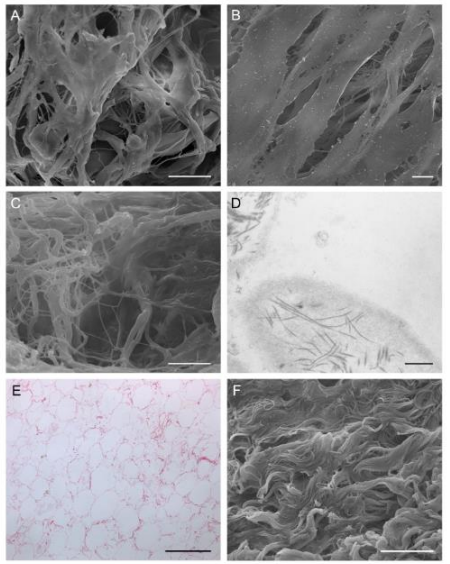
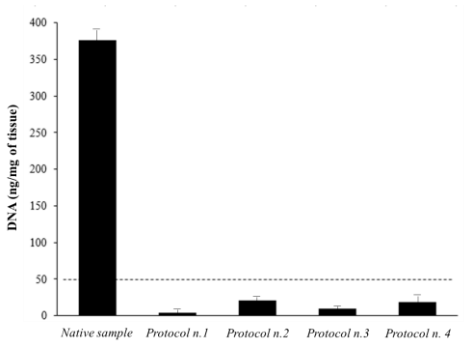
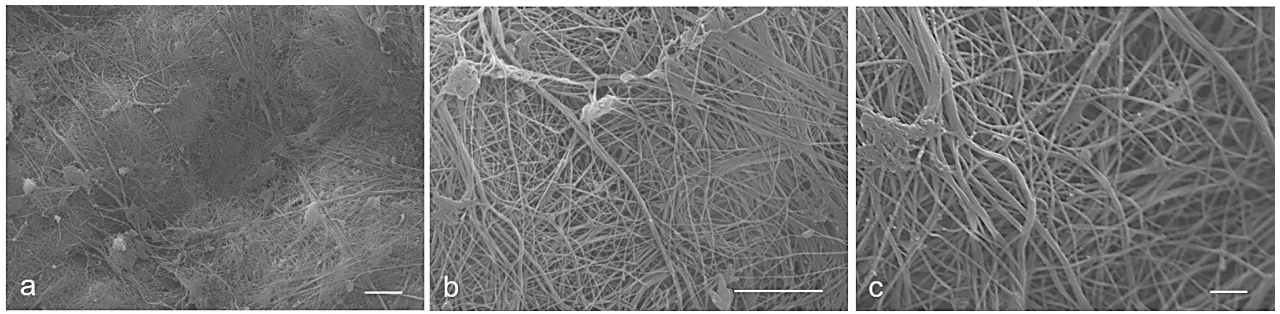
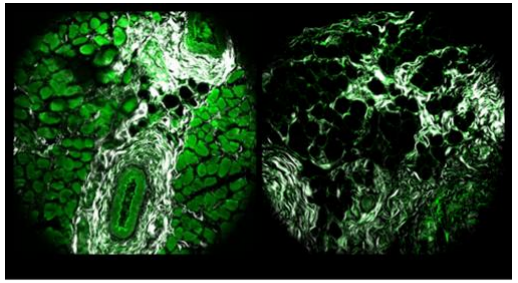


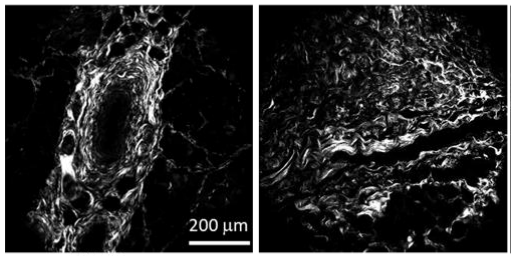
Figure 2. Decellularized human extracellular matrices. Ultrastuctural appearance: scanning electron microscope image of an articular cartilage scaffold before (**A**) and 14 days after primary human chondrocytes seeding (**B**). Human cartilage was decellularized, homogenated, and lyophilized according to the experience of our group. Scanning (**C**) and transmission (**D**) electron microscope micrographs of decellularized skeletal muscle. Hematoxylin/eosin staining (**E**) and scanning electron microscope ultrastructural analysis (**F**) of decellularized omentum. Scale bars: (**A**,**F**), 50 µm; (**B**,**C**), 10 µm; (**D**), 1 µm; (**E**), 100 µm.

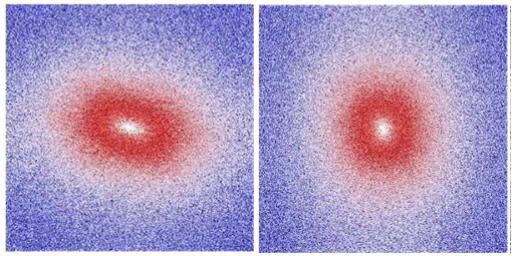
DECELLULARIZED HUMAN SKELETAL MUSCLE as BIOLOGIC SCAFFOLD for RECONSTRUCTIVE SURGERY

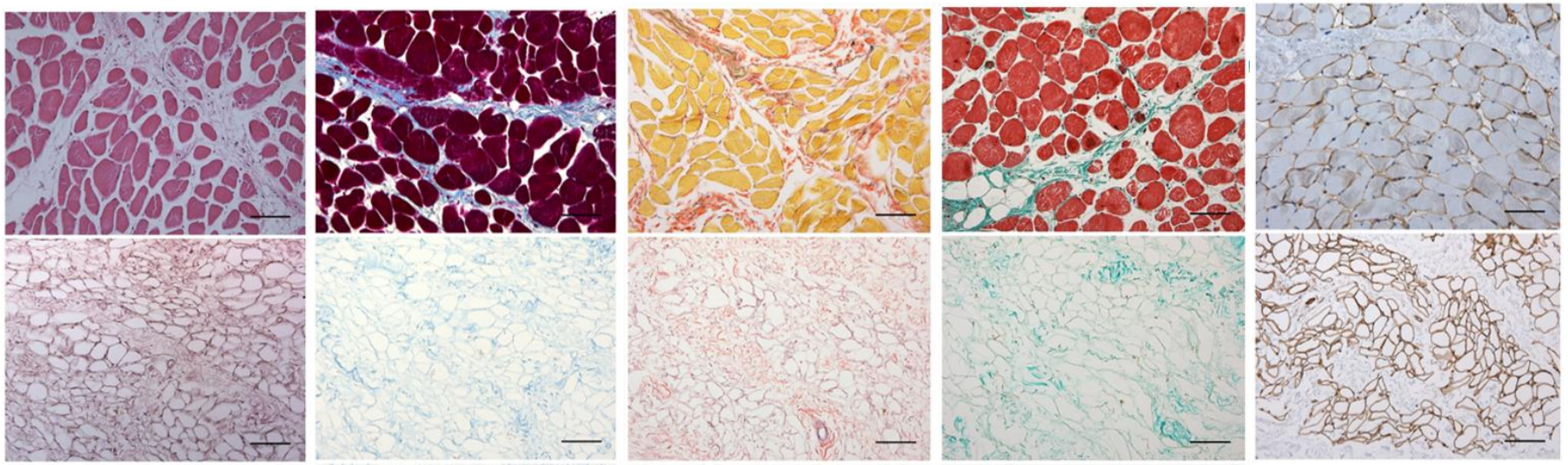


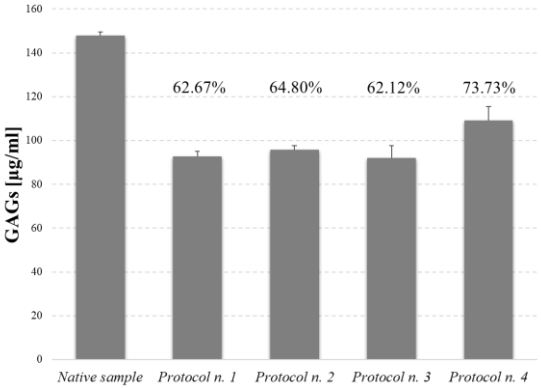


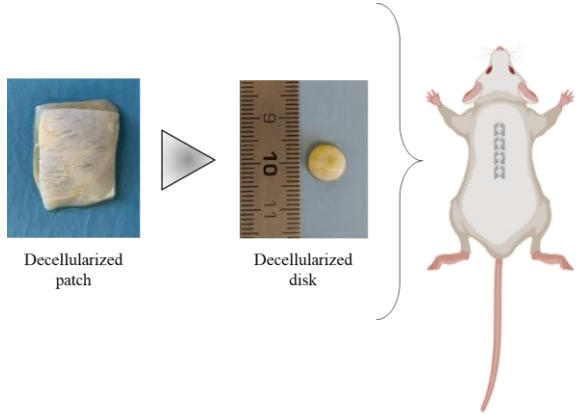


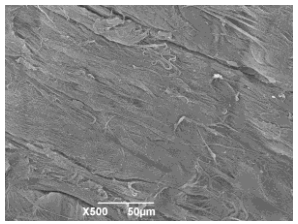


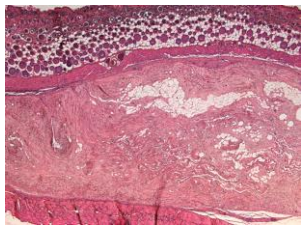












La Sindrome dell’Intestino Corto

Hindawi
BioMed Research International
Volume 2018, Article ID 7824757, 13 pages
https://doi.org/10.1155/2018/7824757

Research Article

Composite Scaffolds Based on Intestinal Extracellular Matrices and Oxidized Polyvinyl Alcohol: A Preliminary Study for a New Regenerative Approach in Short Bowel Syndrome

Francesca Grandi,[1] Elena Stocco,[2,3] Silvia Barbon,[3,4] Anna Rambaldo,[2] Martina Contran,[2] Francesco Fascetti Leon,[1] Piergiorgio Gamba,[1] Pier Paolo Parnigotto,[3] Veronica Macchi,[2] Raffaele De Caro,[2] and Andrea Porzionato[2]

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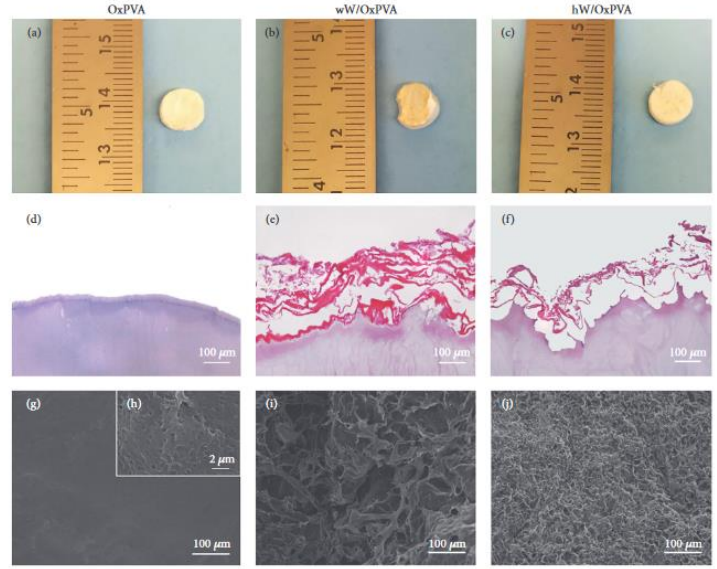
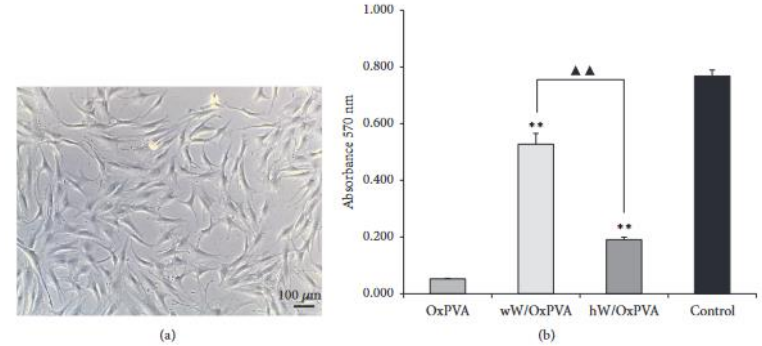
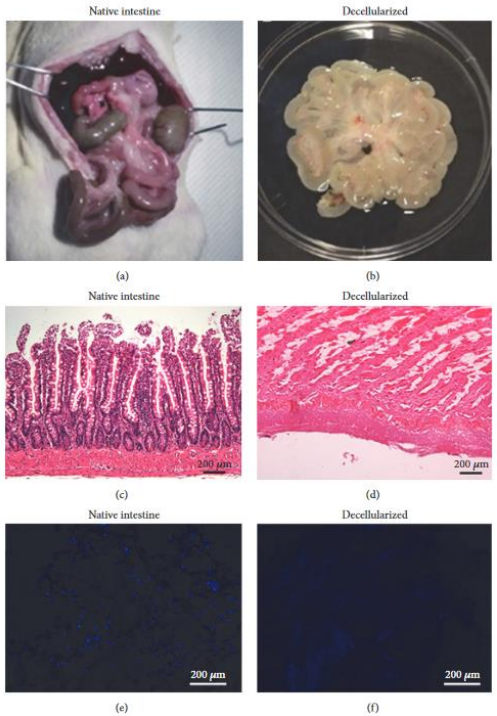
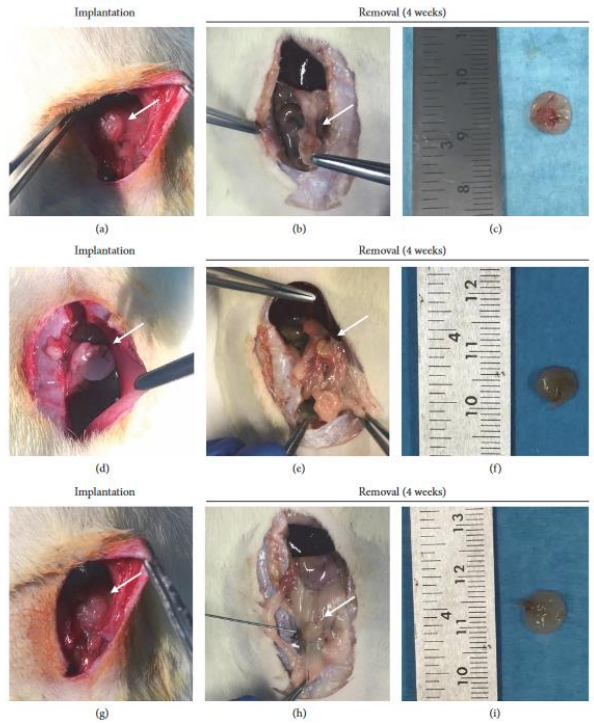
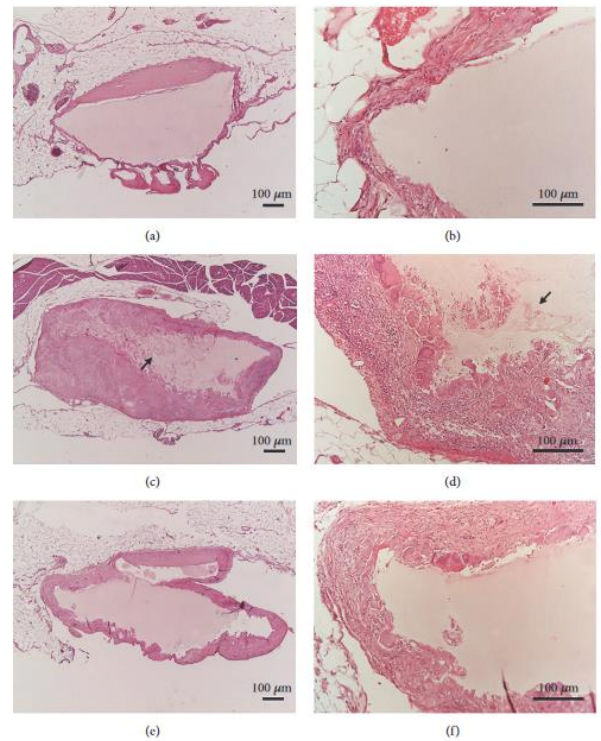
Correspondence should be addressed to Andrea Porzionato; andrea.porzionato@unipd.it











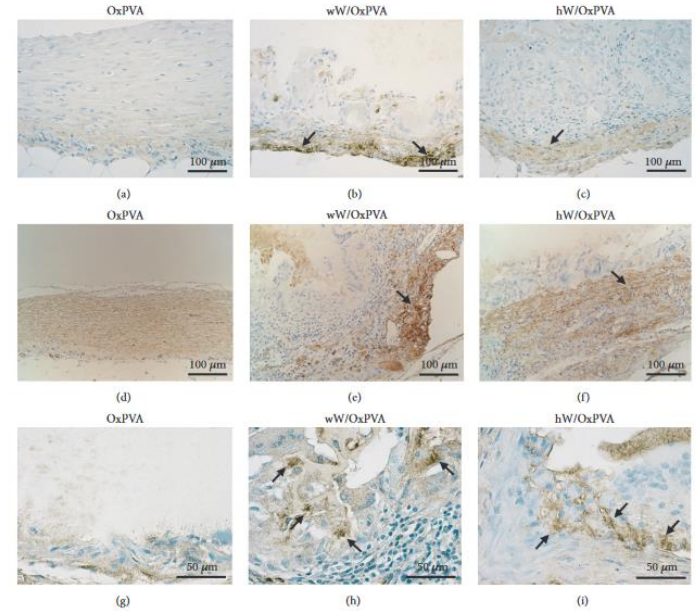


FIGURE 6: Immunohistochemical characterization of explants. Localization of cells positive to desmin ((a)–(c)), α-SMA ((d)–(f)), and MNF116 ((g)–(i)) in OxPVA, wW/OxPVA, and hW/OxPVA samples at 12 weeks from surgery. Moderate anti-desmin and anti-α-SMA immunoreaction (black arrows) is recognizable in the outer layers of the tissue surrounding the wW/OxPVA and hW/OxPVA scaffolds, indicating myofibroblastic and/or smooth muscle cell differentiation. Conversely, such positive staining is absent (desmin) or scant (α-SMA) in tissues around OxPVA. Partial positivity for the pan-cytokeratin marker MNF-116 is shown in cells in the inner layer of the tissue surrounding the wW/OxPVA and hW/OxPVA scaffolds (black arrows) (scale bar: ((a)–(f)) 100 μm; ((g)–(i)) 20 μm).

Sangue periferico come fonte di cellule staminali e scaffold biologico

Tissue Eng Regen Med (2021) 18(3):411–427
https://doi.org/10.1007/s13770-021-00330-7

Online ISSN 2212-5469 TERM

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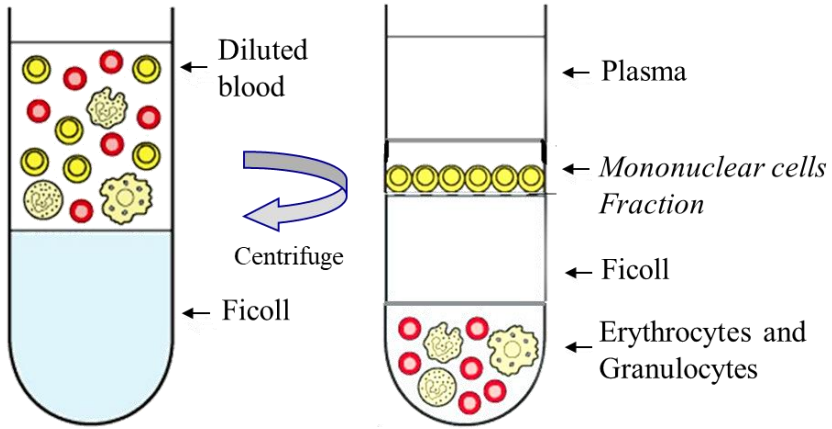
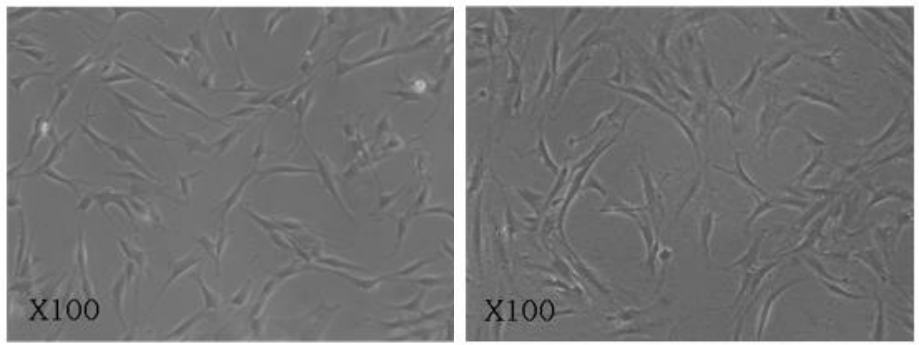
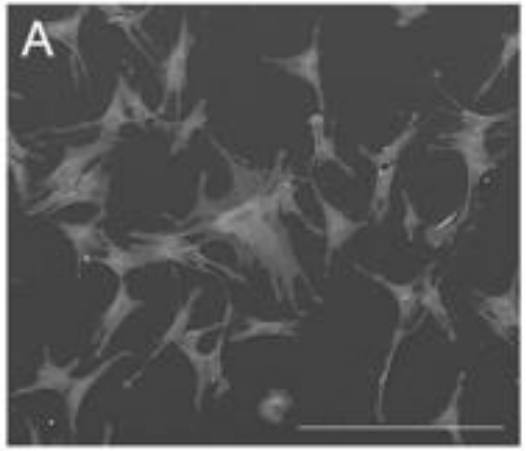
ORIGINAL ARTICLE

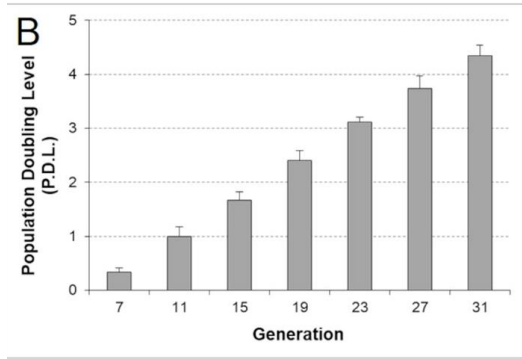
Growth and Differentiation of Circulating Stem Cells After Extensive *Ex Vivo* Expansion

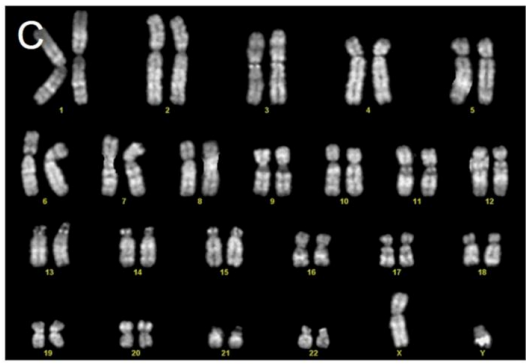
Silvia Barbon[1,2] · Senthilkumar Rajendran[3] · Thomas Bertalot[3] · Monica Piccione[3] · Marco Gasparella[4] · Pier Paolo Parnigotto[2] · Rosa Di Liddo[3] · Maria

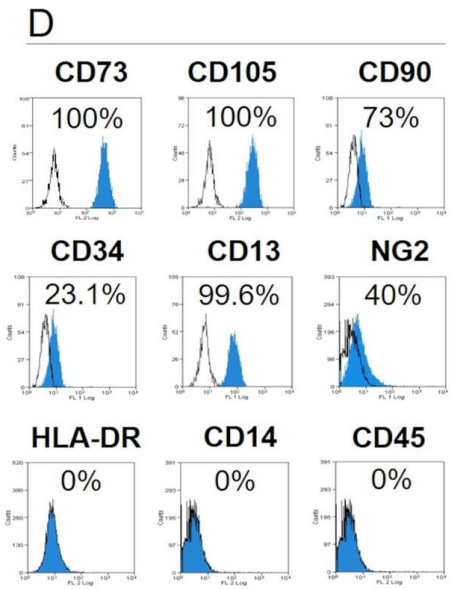






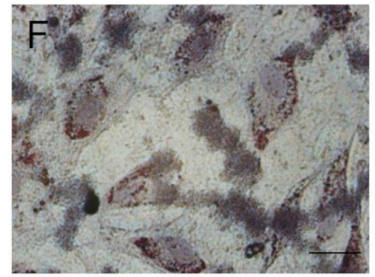


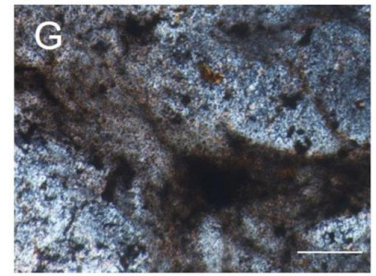


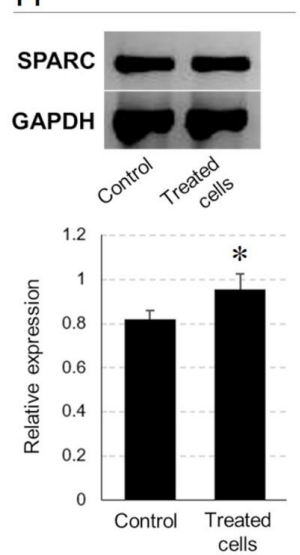


E

Pluripotency gene	Fold increase ($2^{-\Delta Ct}$)
NANOG	1.28 ± 0.11
OCT4	3.15 ± 0.28
REX1	1.12 ± 0.14
SOX2	2.29 ± 0.20
TERT	2.21 ± 0.16
KLF4	2.45 ± 0.19
C-Myc	1.39 ± 0.09
NOTCH	3.91 ± 0.45
STAT3	3.30 ± 0.21







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Online ISSN 2212-5469 TERM

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Growth and Differentiation of Circulating Stem Cells After Extensive *Ex Vivo* Expansion

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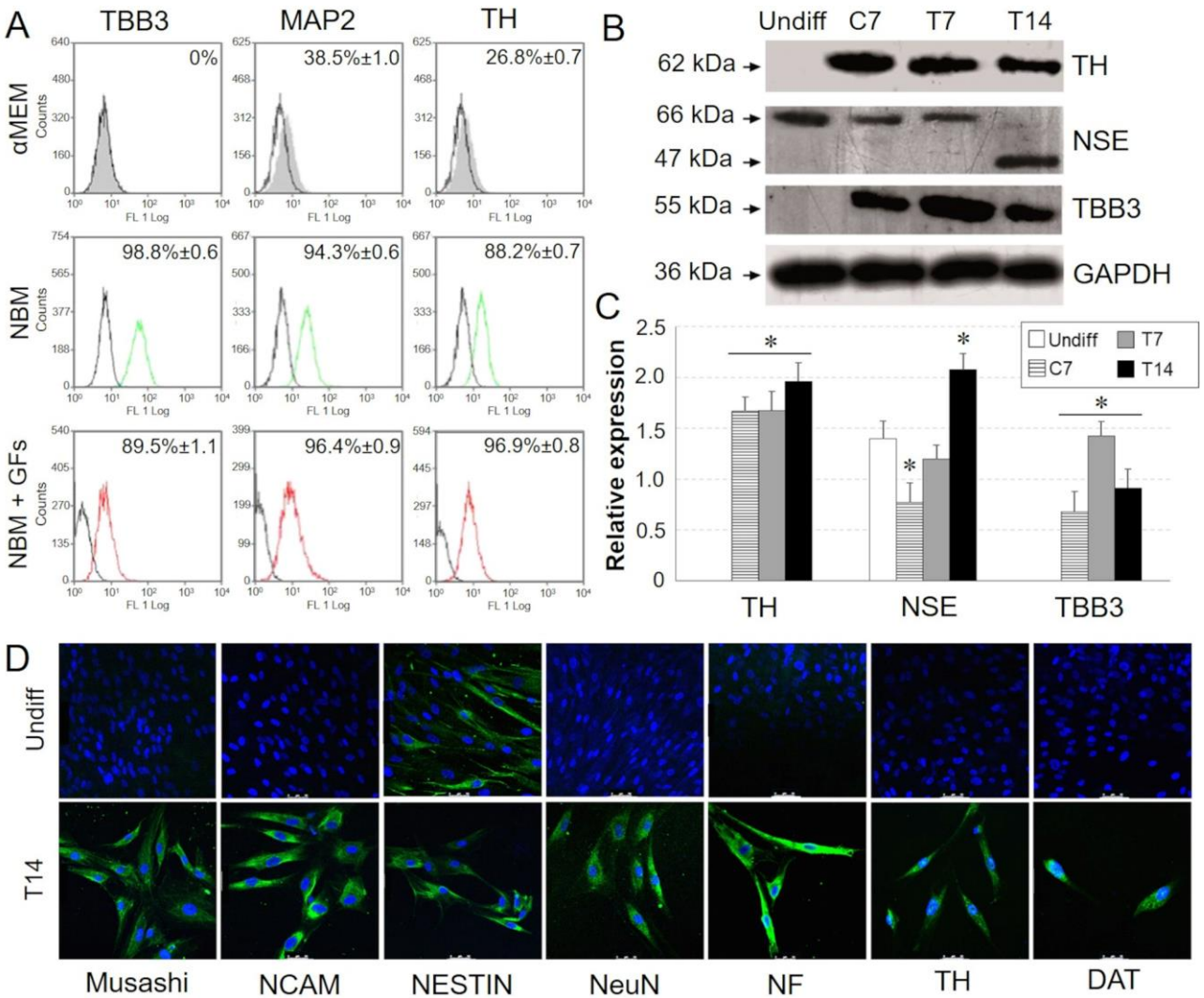

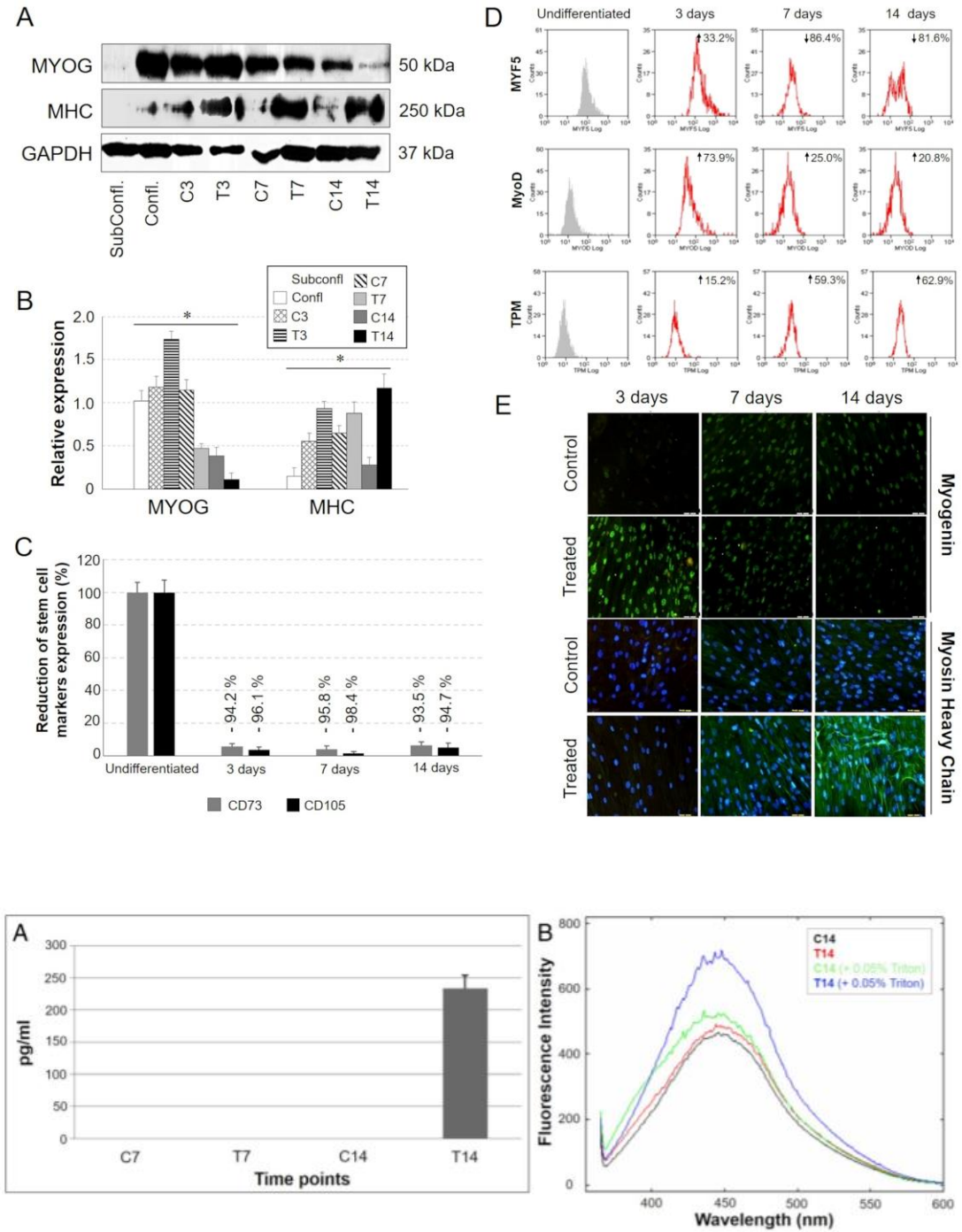

International Journal of Nanomedicine

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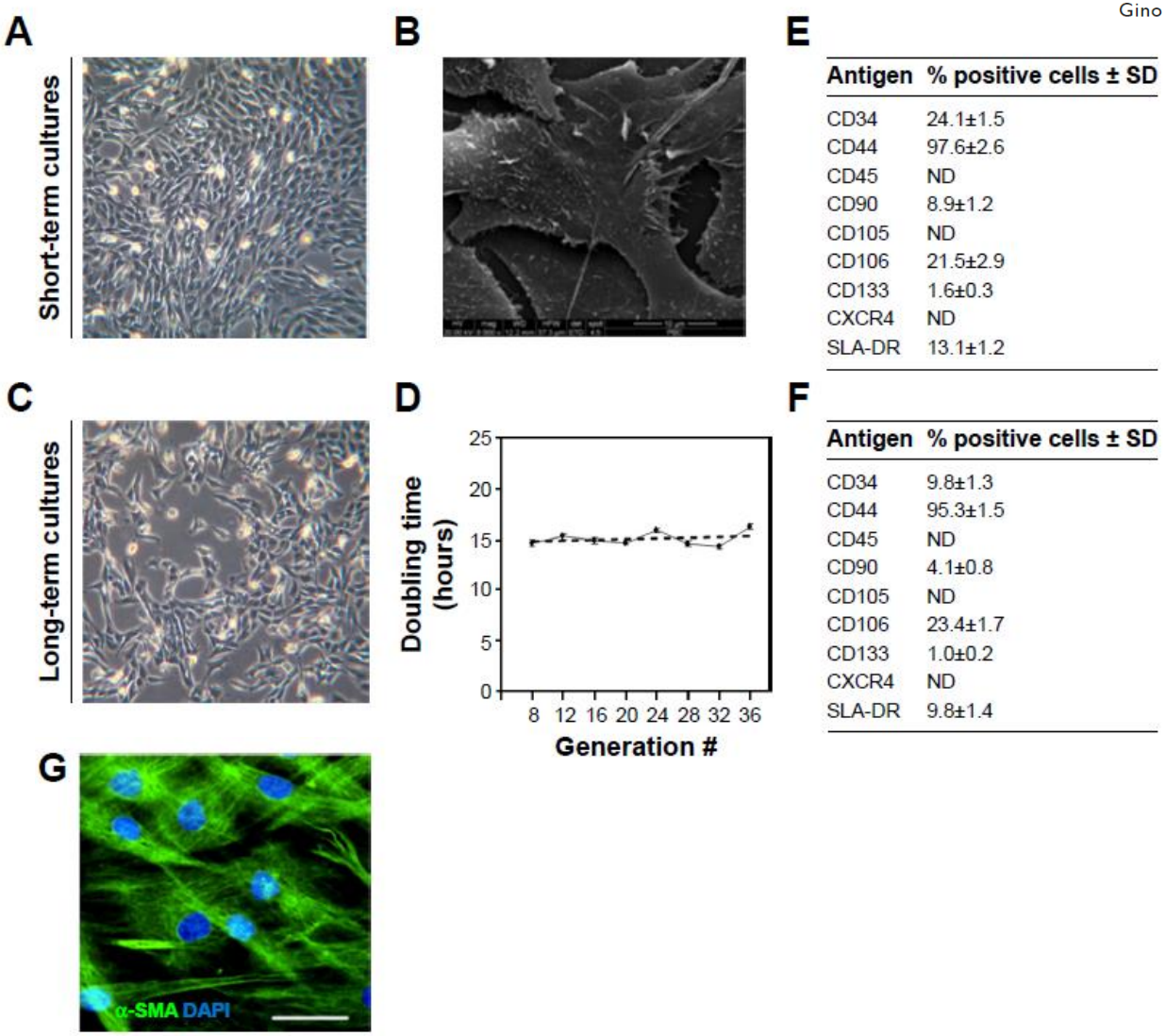
ORIGINAL RESEARCH

Nanopatterned acellular valve conduits drive the commitment of blood-derived multipotent cells

Rosa Di Liddo[1,2]
Paola Aguiari[3]
Silvia Barbon[1,2]
Thomas Bertalot[1]
Amit Mandoli[1]
Alessia Tasso[1]
Sandra Schrenk[1]
Laura Iop[3]
Alessandro Gandaglia[3]
Pier Paolo Parnigotto[2]
Maria Teresa Conconi[1,2]
Gino Gerosa[3]

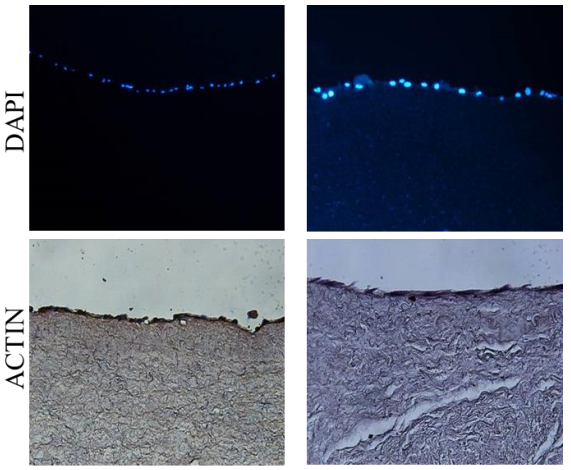


E

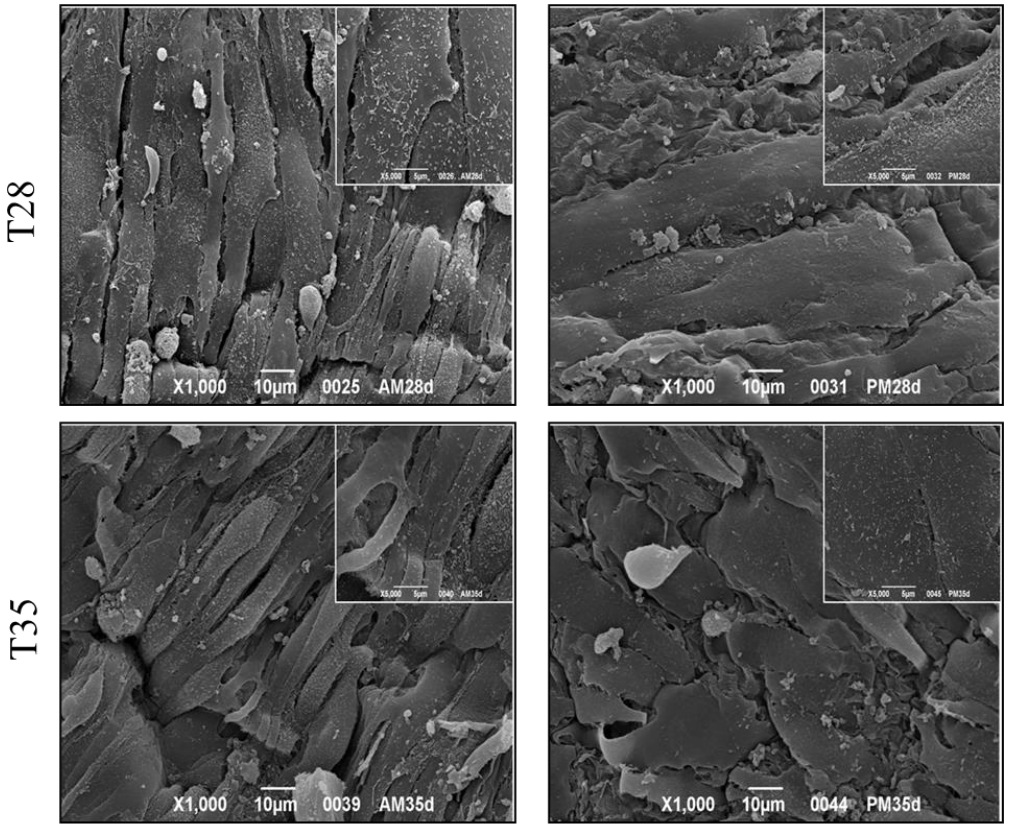
Antigen	% positive cells ± SD
CD34	24.1±1.5
CD44	97.6±2.6
CD45	ND
CD90	8.9±1.2
CD105	ND
CD106	21.5±2.9
CD133	1.6±0.3
CXCR4	ND
SLA-DR	13.1±1.2

F

Antigen	% positive cells ± SD
CD34	9.8±1.3
CD44	95.3±1.5
CD45	ND
CD90	4.1±0.8
CD105	ND
CD106	23.4±1.7
CD133	1.0±0.2
CXCR4	ND
SLA-DR	9.8±1.4



pCMC/AVL pCMC/AVL



pCMC/AVL pCMC/PVL

Received: 13 April 2017 | Revised: 4 April 2018 | Accepted: 1 June 2018

DOI: 10.1002/term.2713

RESEARCH ARTICLE

WILEY

Biofabrication of a novel leukocyte-fibrin-platelet membrane as a cells and growth factors delivery platform for tissue engineering applications

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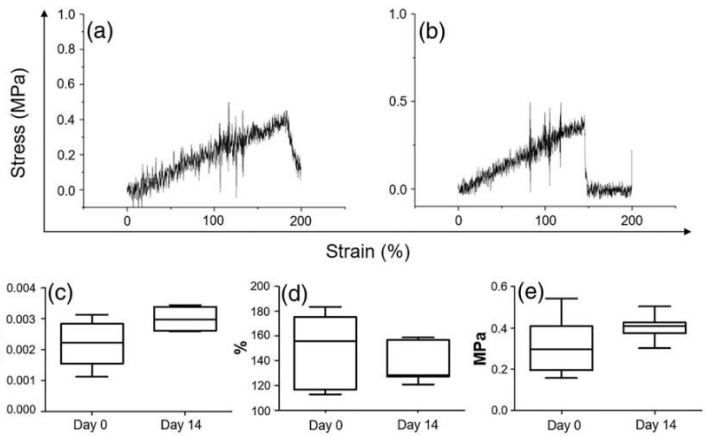
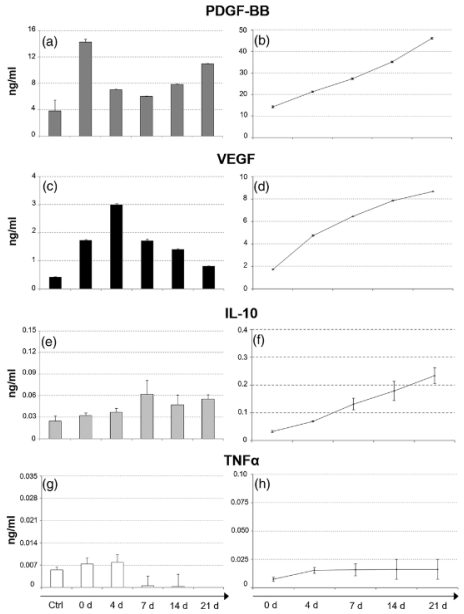
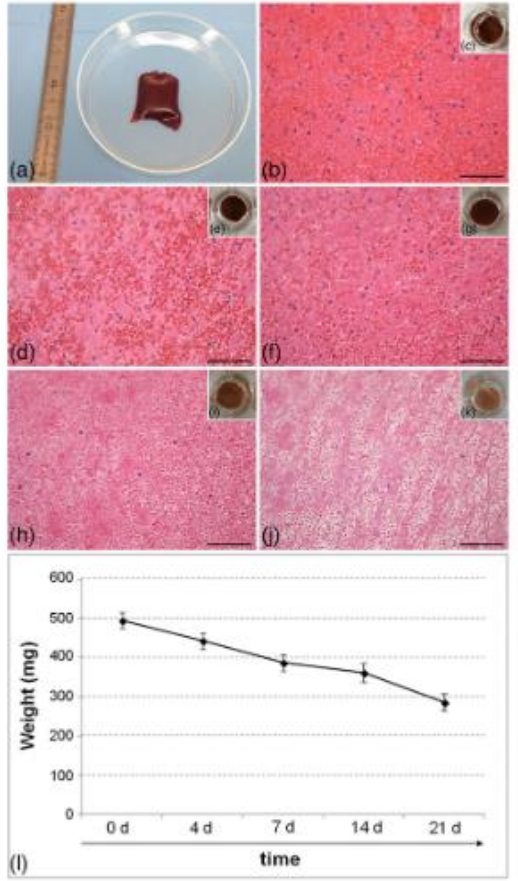
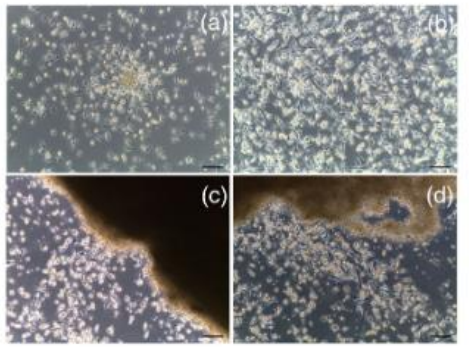
TABLE 1 Hemocomponent specific composition

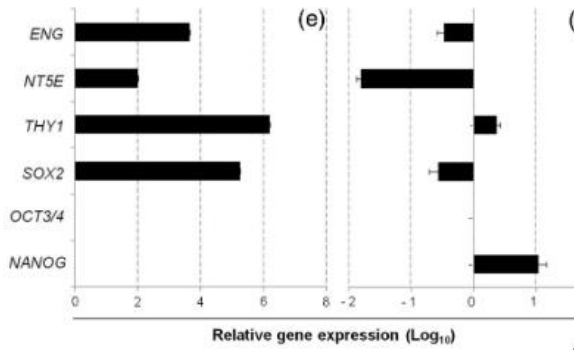
	Control	Leukocyte-platelet concentrate (CLP) / cryoprecipitat	Leukocyte-platelet concentrate (CLP-M)	Supernatant	Leukocyte-fibrin-platelet membrane (LFPm)	Enrichment factor
Platelets (×10^3/μl)	264.6 ± 0.4	4,022 ± 1,481*	1,969 ± 608#	3.42 ± 1.24	8,392 ± 3,689	31.7
Wite blood cells (WBCs; ×10^3/μl)	9.0 ± 3.5	81.4 ± 29*	39 ± 15#	0.34 ± 0.19	159.2 ± 63.9¶	17.7
Mononucleated cells (MNCs; ×10^3/μl)	2.5 ± 0.7	63.1 ± 19.3*	30.1 ± 12.6#	0.23 ± 0.09	124.1 ± 58.0	49.6
Lymphocytes (×10^3/μl)	1.9 ± 0.6	47.7 ± 19.6*	23.3 ± 12.9#	0.18 ± 0.07	96.3 ± 58.2	50.7
Monocytes (×10^3/μl)	0.6 ± 0.1	15.4 ± 7.5*	6.8 ± 3.7#	0.04 ± 0.05	27.8 ± 15.3	46.3
Neutrophils (×10^3/μl)	6.3 ± 3.3	17.0 ± 15.4*	8.4 ± 7.1#	0.10 ± 0.17	32.6 ± 27.3	5.2
CD34$^+$ cells (cells/μl)	n.d.	82.5 ± 17.1	47.14 ± 9.8#	n.d.	198.0 ± 41.0	n.d.
Fibrinogen (mg/dl)	314.5 ± 75.2	1,572 ± 376*	857.8 ± 197.8#	n.d.	3,774 ± 902	12.0

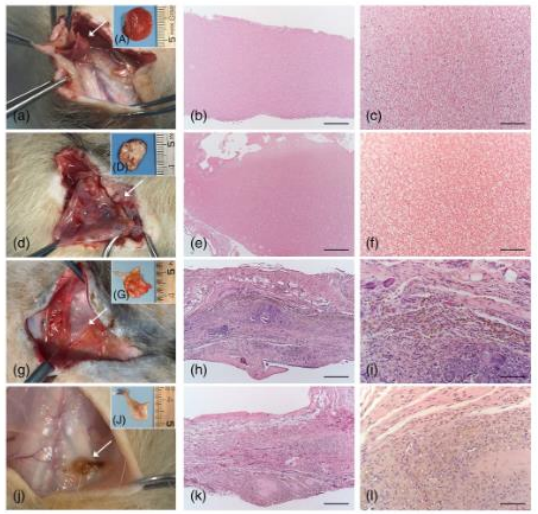


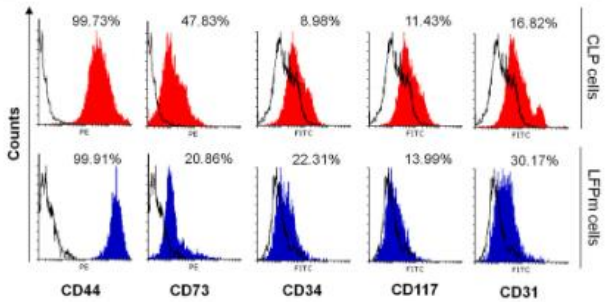












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Review

Platelet-Rich Fibrin Scaffolds for Cartilage and Tendon Regenerative Medicine: From Bench to Bedside

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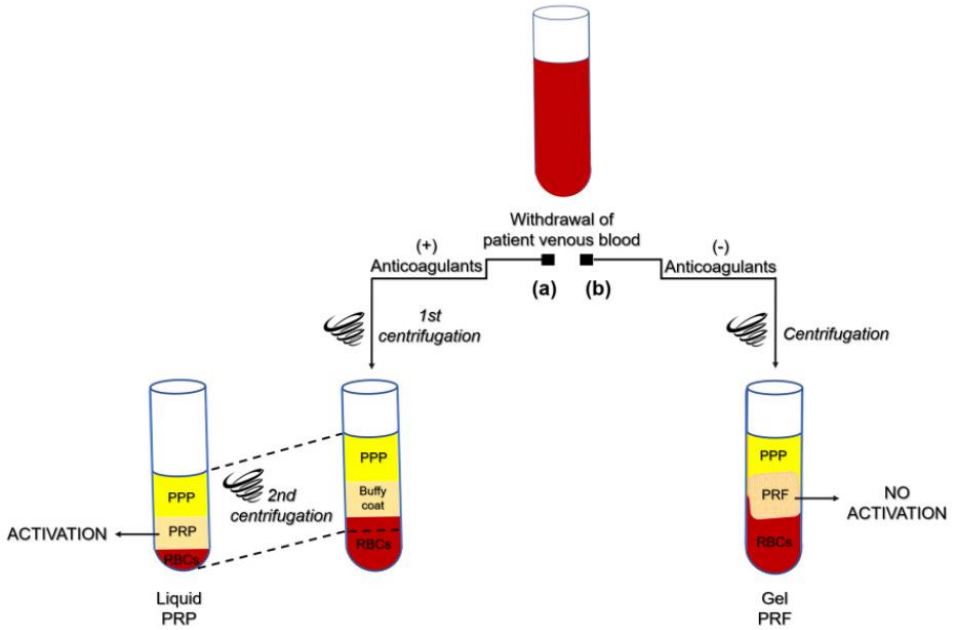
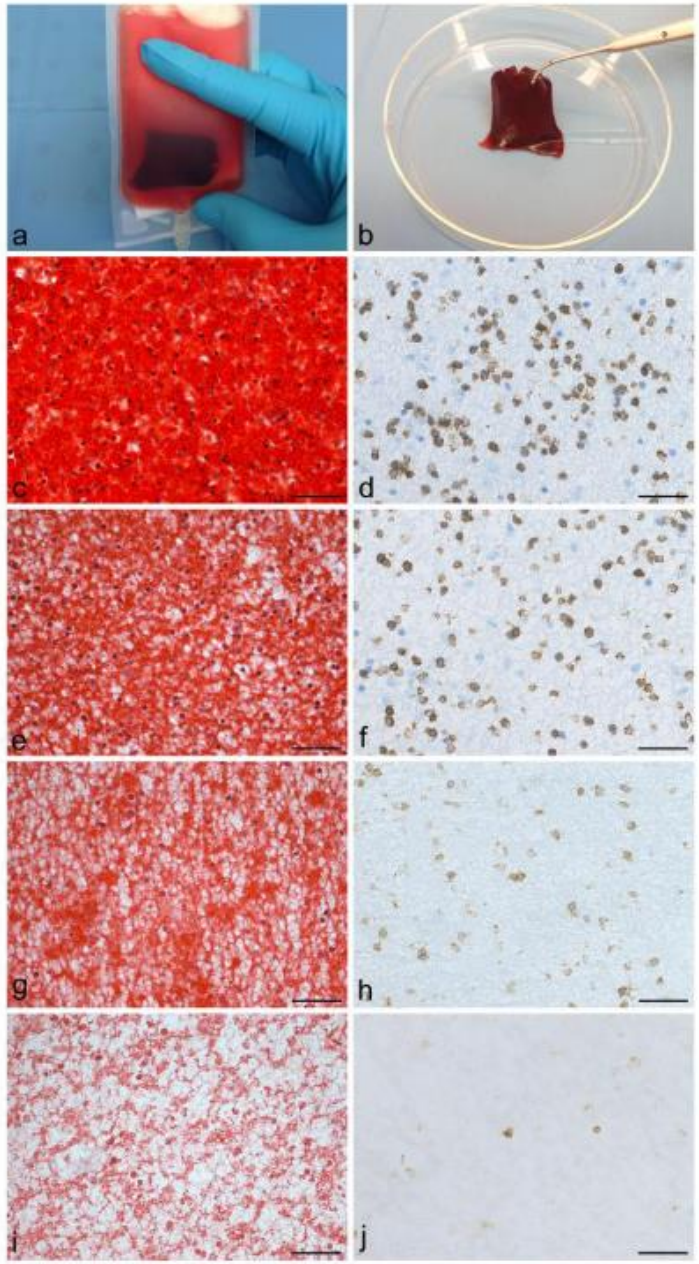




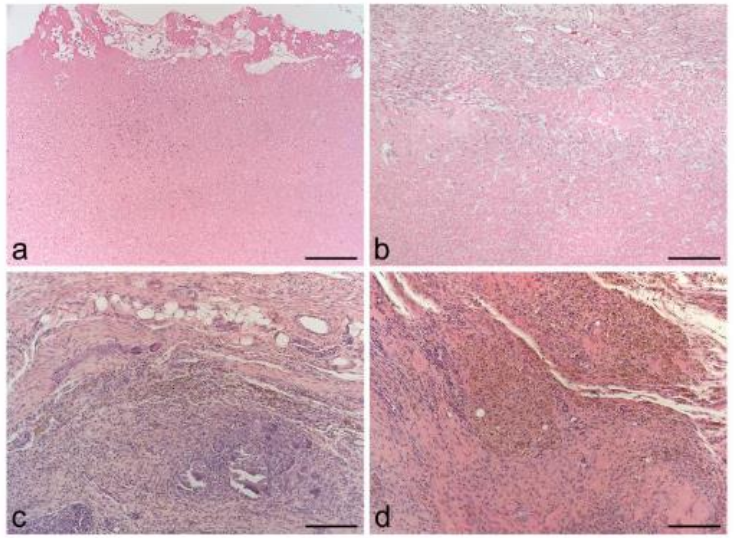


Figure 3. Hematoxylin and Eosin staining of the CLP-MB after 4 (**a**), 7 (**b**), 14 (**c**) and 21 (**d**) days of subcutaneous implantation into the dorsal region of athymic rats. A progressive reabsorption of the fibrin matrix is shown; in (**c**,**d**) the membranes are not easily detectable due to the almost complete biodegradation. Scale bars: 37.5 µm.

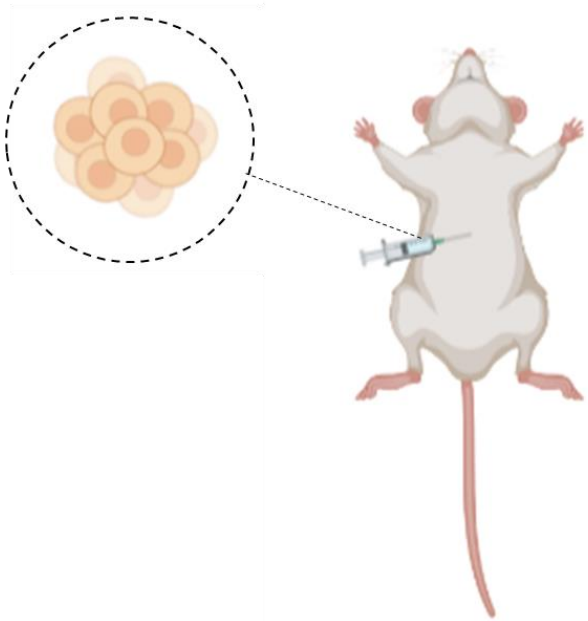
Cellule staminali multipotenti per il trattamento dell’Emofilia A

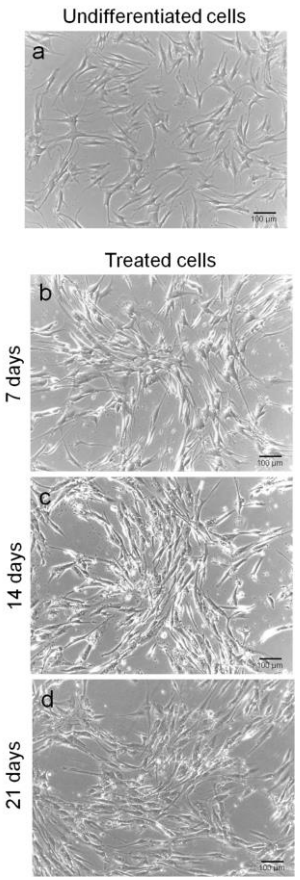
UNIVERSITA' DEGLI STUDI DI PADOVA

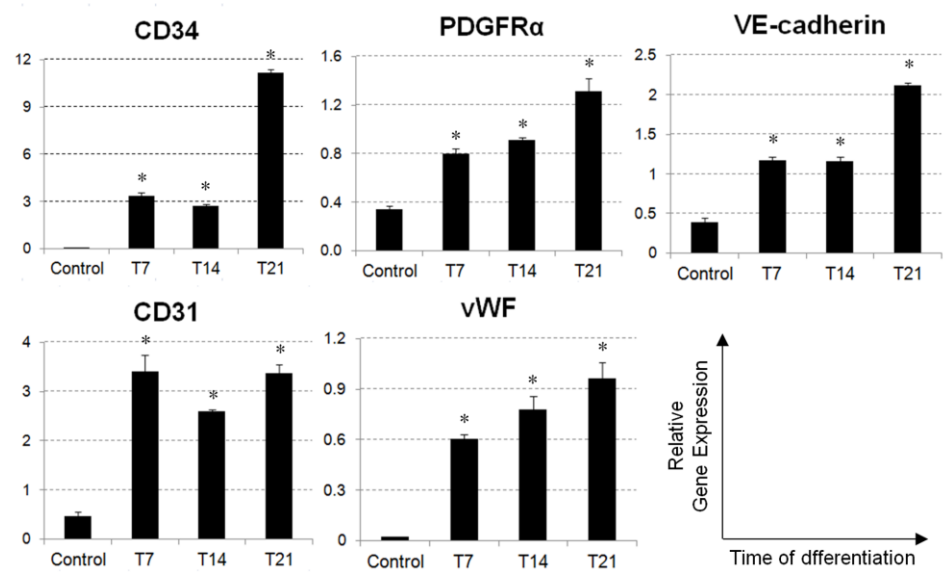
Allegato "VI" (ai sensi dell'art. 31)

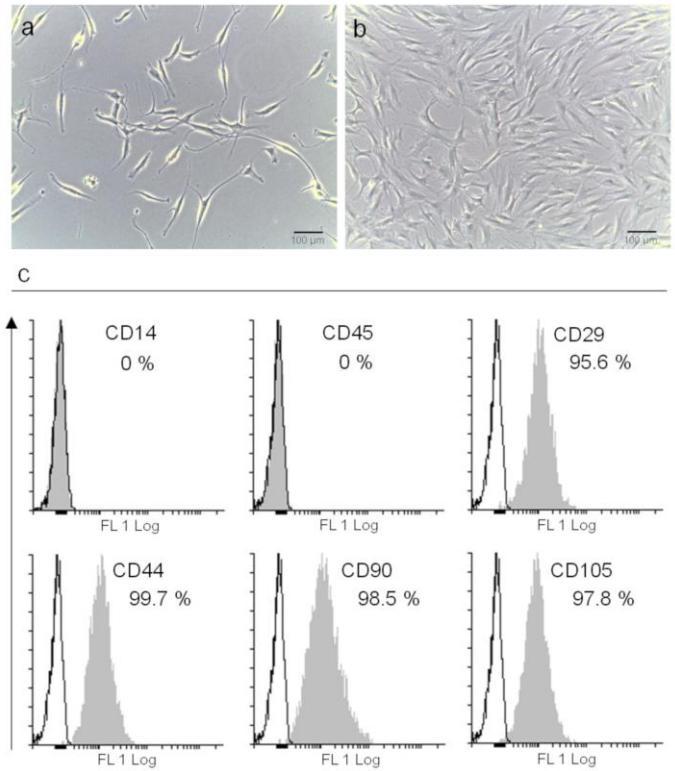
1. Titolo della ricerca:	**Impianto di cellule staminali umane ottenute da sangue e tessuto adiposo nel fegato di topi emofilici C57BL/6 129S-F8^{tm1Kaz}/J e topi *wild type* C57BL/6**
2. Parole Chiave: *Massimo 5 parole*	**Cellule staminali, terapia cellulare, Emofilia A**
3. Responsabile del progetto di ricerca: *Ai sensi dell'art. 3, lett. g*	**Prof. Andrea Porzionato**

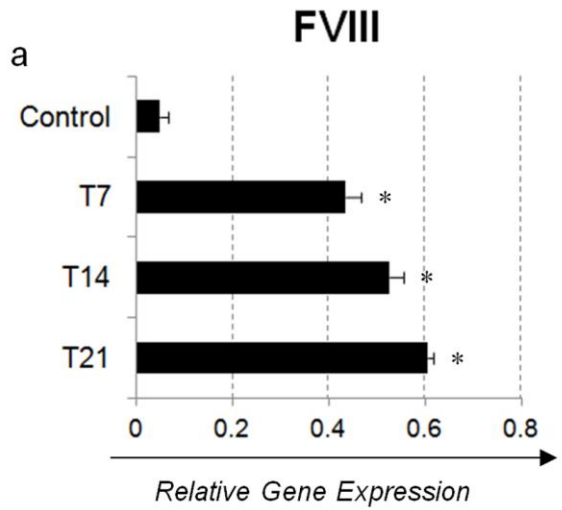
Ministero della Salute

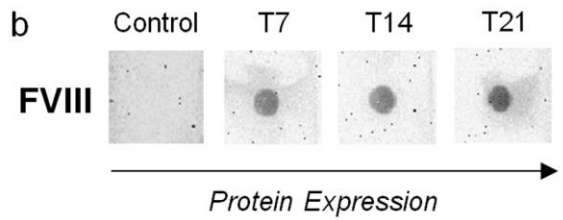












“La scienza, prima di essere esperimenti, misure, matematica, deduzioni rigorose, è soprattutto visioni.”

Carlo Rovelli